



Culcairn to Wagga Wagga Gas Pipeline

MOD 1 Uranquinty Compressor Station – Noise and Vibration Impact Assessment

APA Group

06 August 2025

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Key terms, acronyms and abbreviations

Term	Definition
A-weighting	The frequency weightings used in sound level measurements are often related to the response of the human ear so that the meter better responds to what you actually hear.
APA	APA Group
Ambient noise	The all-encompassing noise associated within a given environment. It is the composite of sounds from many sources, both near and far. This is described using the Leq descriptor
AS	Australian Standard
AVTG	Assessing Vibration: a technical guideline (DEC, 2006)
AWS	Automated Weather Station
Background noise	The underlying level of noise present in the ambient noise, excluding the noise source under investigation, when extraneous noise is removed. This is described using the L_{A90} descriptor
BoM	Bureau of Meteorology
C-weighting	C-weighting is an adjustment made to sound-level measurements that takes account of low-frequency components of noise within the audibility range of humans
CEMP	Construction Environmental Management Plan
CNVG	Construction Noise and Vibration Guideline (Roads) (TfNSW, 2024)
CoRTN	Calculation of Road Traffic Noise (Department of Transport, Welsh Office, 1988)
CW	Culcairn to Wagga Pipeline which is an 88 km natural gas pipeline
dBA	Decibel expressed with the frequency weighting filter used to measure 'A-weighted' sound pressure levels, which conforms approximately to the human ear response, as our hearing is less sensitive at low and high frequencies.
dB(C)	Decibel expressed with the frequency weighting filter used to measure 'C-weighted' sound pressure levels. The C-weighting is flatter than A-weighting, allowing more low-frequency sound energy to be included, making dB(C) useful for assessing low-frequency noise, such as from industrial machinery or concerts.
DEC	NSW Department of Environment and Conservation
DECC	NSW Department of Environment and Climate Change
DECCW	NSW Department of Environment, Climate Change and Water
DEM	Digital Elevation Model
East Coast Grid Expansion project	The East Coast Grid Expansion project seeks to expand the gas transportation capacity of the East Coast Grid of Australia.
EIS	Environmental Impact Statement
EPA	NSW Environment Protection Authority
Feasible and reasonable measures	Feasibility relates to engineering considerations and what is practical to build. reasonableness relates to the application of judgement in arriving at a decision, taking into account the following factors: - Noise mitigation benefits (amount of noise reduction provided, number of people protected). Cost of mitigation (cost of mitigation versus benefit provided). Community views (aesthetic impacts and community wishes). Noise levels for affected land uses (existing and future levels, and changes in noise levels)
GHD	GHD Pty Ltd
HV	Heavy Vehicles
Hz	The measure of frequency of sound wave oscillations per second. 1 oscillation per second equals 1 hertz.

Term	Definition
ICNG	Interim Construction Noise Guideline (DECC, 2009)
ISO	International Organization for Standardization
$L_{Aeq,period}$	Equivalent sound pressure level: the steady sound level that, over a specified period of time, would produce the same energy equivalence as the fluctuating sound level actually occurring.
$L_{A90, period}$	The A-weighted sound pressure level that is exceeded for 90% of the time over which a given sound is measured. This is considered to represent the background noise e.g. $L_{A90,15min}$.
L_{Amax}	The absolute maximum noise level in a noise sample.
LGA	Local government area
Low frequency	Noise containing major components in the low-frequency range (10 hertz [Hz] to 160 Hz) of the frequency spectrum
LV	Light Vehicles
Maximum noise event	The loudest event or events within a given period of time. This is generally described using the L_{max} descriptor
Meteorological conditions (adverse)	Wind and temperature inversion conditions
Most-affected location	Location(s) that experience (or will likely experience) the greatest noise impact from the construction works under consideration. In determining these locations, existing background noise levels, noise source location(s), distance and any shielding between the construction works (or proposed works) and the residences and other sensitive land uses need to be considered.
NML	Noise Management Level
NPfl	Noise Policy for Industry (EPA, 2017)
NSW	New South Wales
NVIA	Noise and Vibration Impact Assessment
Octave band	A division of the frequency range into bands, where the upper limit is twice that of the lowest.
ONMP	Operational Noise Management Plan
One-third octave band	Single octave bands divided into three parts.
Pasquill-Gifford stability scheme	The Pasquill-Gifford stability scheme is a system that categorises atmospheric turbulence into stability classes (A to F) based on wind speed, solar elevation, and cloud cover.
PL23	Pipeline Licence No. 23 issued under the NSW Pipelines Act 1967 (Pipelines Act).
PNTL	Project Noise Trigger Level
Project noise trigger level	Target noise levels for a particular noise generating facility. They are based on the most stringent of the intrusive criteria or amenity criteria. Which of the two criteria is the most stringent is determined by measuring the level and nature of existing noise in the area surrounding the actual or propose noise generating facility.
Proposed modification	The construction of the proposed Uranquinty Compressor Station (UCS) as part of Stage 3 of APA's East Coast Grid Expansion Plan.
RBL	Rating Background Level, the overall single-figure background level representing each assessment period (day/evening/night) over the whole monitoring period.
RNP	Road Noise Policy (DECCW, 2011)
Sensitive receiver	A location with the potential to be affected by noise or vibration from construction or operation of the project: this may include a dwelling, school, hospital, office or public recreational area.
Study area	For the purpose of the assessment the study area has been defined as a three-kilometre buffer around the proposed modification site.
SSI	State Significant Infrastructure
SWL	Sound Power Level

Term	Definition
Temperature inversion	The Turner Scheme is a method for determining atmospheric stability classes (A to F) using surface meteorological observations such as wind speed, cloud cover, solar radiation, and time of day. It builds on the Pasquill-Gifford stability scheme and is used in environmental modelling to estimate how sound disperse in the atmosphere by assigning a stability class based on real-world weather conditions.
TJ	Terajoule
Turner scheme	The Turner Scheme builds onto the Pasquill-Gifford stability scheme that is more amenable to application with computed-based databases and classifies atmospheric stability bases on net radiation and wind speed, with net radiation being a function of cloud cover and the height of the cloud ceiling.
UCS	Uranquinty Compressor Station
UPS	Uranquinty Power Station
VDV	Vibration Dose Value - As defined in BS6472 – 2008, VDV is given by the fourth root of the integral of the fourth power of the frequency weighted acceleration.

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1. Introduction

1.1 Overview

East Australian Pipeline Pty Ltd, part of APA Group (APA) own and operates the Culcairn to Wagga Wagga Pipeline, an 88 km natural gas pipeline extending from Wagga Wagga to Culcairn in NSW. The Culcairn to Wagga Wagga Pipeline was constructed in 1997 and is operated subject to the conditions of Pipeline Licence No. 23 issued under the NSW *Pipelines Act 1967*.

APA is proposing an expansion of gas transportation capacity within its East Coast Grid linking Queensland to southern states of Australia. This is in response to forecasted potential supply issues during the winter months. To achieve expansion of the East Coast Grid and build capacity to move more gas to address shortfalls, the construction of a compressor station on the Culcairn to Wagga Wagga Pipeline is proposed.

APA seeks to construct the Uranquinty Compressor Station (UCS) as part of Stage 3 of APA's East Coast Grid Expansion Plan (the proposed modification). The UCS would be located in Uranquinty, NSW along Uranquinty Cross Road within the Wagga Wagga LGA on land owned by APA (Lot 781 DP 878179).

GHD Pty Ltd (GHD) has been engaged by APA to prepare the Modification Report for the proposed modification of the Culcairn to Wagga Wagga pipeline SSI application to construct and operate a compressor station, namely the UCS at Uranquinty, NSW (the proposed modification). The proposed modification would form part of the larger East Coast Grid Expansion project currently being undertaken by APA, which seeks to expand the gas transportation capacity of the East Coast Grid of Australia. The key elements of this proposed modification are described in section 1.5.

1.2 Purpose and scope of this report

This report has been prepared by GHD as part of the Modification Report to support the proposed modification.

The purpose of this report is to assess potential noise and vibration issues from the construction and operation of the proposed modification. Where required, feasible and reasonable mitigation and management measures to reduce noise impacts have been identified.

This Noise and Vibration Impact Assessment (NVIA) includes:

- A description of the existing environment with respect to noise and vibration.
- Assessment of the noise and vibration impacts of the construction and operation of the proposed modification.
- Recommendations to mitigate and manage the identified impacts.

1.3 Scope and limitations

This report has been prepared by GHD for APA Group and may only be used and relied on by APA Group for the purpose agreed between GHD and APA Group as set out in section 1.2 of this report.

GHD otherwise disclaims responsibility to any person other than APA Group arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report. GHD disclaims liability arising from any of the assumptions being incorrect.

1.4 Structure of this report

The report is structured as follows:

- Section 1 – introduces the proposed modification and the assessment.
- Section 2 – describes the methodology for the assessment.
- Section 3 – describes the existing environment.
- Section 4 – assesses the impacts of the proposed modification.
- Section 5 – provides mitigation measures for the impacts identified.
- Section 6 – provides a conclusion to the assessment.

1.5 Summary of the proposed modification

The proposed modification comprises the following:

- Construction, operation and decommissioning of a compressor station (Full Life Cycle)
- Interim and full rehabilitation of the site.

Construction of the works is anticipated to commence in the second half of 2026, pending relevant approvals, with the compressor station having a 25-year design life.

The construction of the proposed modification will take approximately 12-months and a three-month commissioning period.

Construction activities associated with the proposed modification encompass both site preparation and construction of the proposed modification. Site preparation will include implementation of construction environmental management controls, mobilisation of construction equipment, vegetation clearance (as required) within the site, establishment of construction work areas and internal access roads and ramps, supply of power, water and other utilities to site. Construction of the proposed modification will include bulk earthworks (including excavation for buried services and cut to fill to establish levels for infrastructure installation, installation of steel piles, installation of steel structures, prefabricated piping, prefabricated buildings, electrical equipment and installation, supply and install communication and controls infrastructure, pre-commissioning and commissioning of the compressor and demobilisation of construction equipment.

Interim rehabilitation strategies would continue to be employed as per the conditions of approval, to minimise dust generation, soil erosion and weed incursion on parts of the sites that cannot yet be permanently rehabilitated. Permanent rehabilitation would occur following the final use of the site and decommissioning of the proposed modification.

2. Methodology

2.1 Assessment requirements and guidance

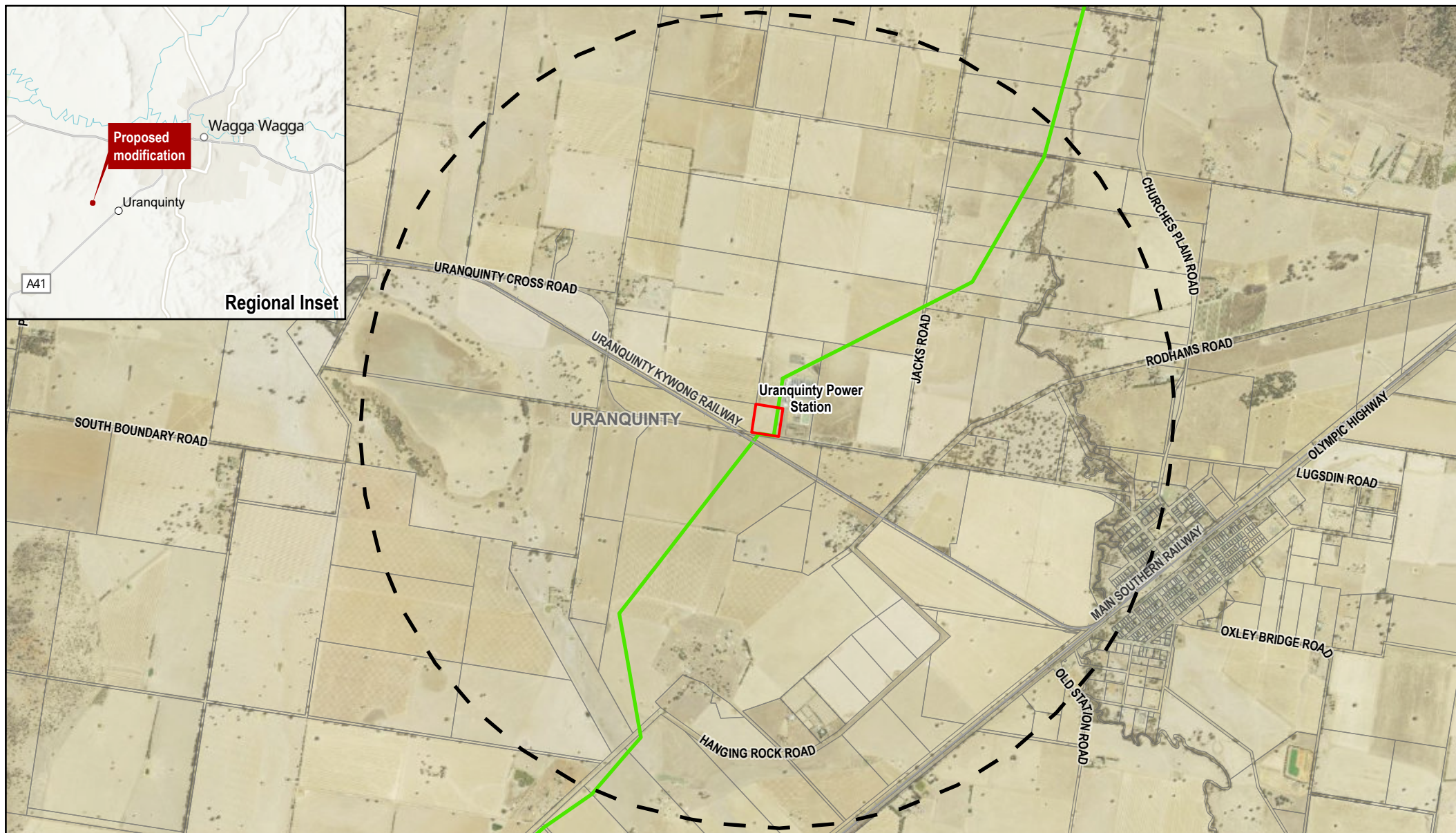
Guidelines relevant to the assessment are listed in Table 2.1. The assessment criteria and methodology for the assessment, developed in accordance with these guidelines, are provided in sections 2.4 to 2.7.

Table 2.1 Noise and vibration assessment guidelines

Guidelines and regulations	Relevance to the assessment
<i>Interim Construction Noise Guideline</i> (DECC, 2009) (ICNG)	Used to inform the assessment of construction noise impacts on sensitive receivers, including the identification of the construction noise management levels (NMLs) and sleep disturbance impacts (see sections 2.4 and 4.1).
<i>Construction Noise and Vibration Guideline (Roads)</i> (TfNSW, 2024) (CNVG)	Used to inform the perception categories that are used in the assessment to categorise the exceedances of the construction NMLs (see sections 2.4.3 and 4.1).
<i>Noise Policy for Industry</i> (EPA, 2017) (NPfl)	Used to inform the assessment of operational noise impacts (including from maintenance activities) and establishing noise trigger levels (see sections 2.7 and 4.4).
<i>NSW Road Noise Policy</i> (DECCW, 2011) (RNP)	Used to inform the assessment of road traffic noise impacts during construction and operation (see sections 2.6 and 4.3).
<i>Assessing Vibration: a technical guideline</i> (DEC, 2006) (AVTG) <i>BS 5228.2 – 2009, Code of Practice Part 2 Vibration for noise and vibration on construction and open sites – Part 2: Vibration</i> (British Standards, 2009)	Used to inform the assessment of human comfort vibration impacts on sensitive receivers during construction (see sections 2.5.1 and 4.2.1).
<i>BS 7385-2:1993 Evaluation and measurement for vibration in buildings Part 2 – Guide to damage</i> (British Standards, 1993)	Used to identify criteria for cosmetic damage to vibration sensitive structures (see sections 2.5.2 and 4.2.2).

2.2 Study area

For the purpose of the assessment, the study area has been defined as a three-kilometre buffer around the proposed site and is shown in Figure 2.1. This buffer distance is considered sufficient to identify noise and vibration impacts to sensitive receivers from the construction, operation and decommissioning of the proposed modification.



LEGEND

- Study area
- Culcairn to Wagga Wagga Pipeline
- Proposed site
- Railway
- Lot

Paper Size ISO A4
 0 250 500 750 1,000
 Metres

Map Projection: Transverse Mercator
 Horizontal Datum: GDA 1994
 Grid: GDA 1994 MGA Zone 55



East Australian Pipeline Pty Ltd
Culcairn to Wagga Wagga Gas Pipeline –
MOD 1 Uranquinty Compressor Station
Noise and Vibration Assessment

Project No. **12614690**
 Revision No. **0**
 Date **10/06/2025**

Study area

FIGURE 2.1

2.3 Noise monitoring

Noise monitoring was undertaken from Thursday 20 March 2025 to Tuesday 22 April 2025 at two residential locations proximal to the proposed site, and at the proposed site itself to quantify and characterise the existing ambient noise environment in the study area.

The long-term noise monitoring program was undertaken in accordance with the *Approved methods for the measurement and analysis of environmental noise in NSW* (EPA, 2022), which references the methodology outlined in the NPfI. Details of the noise monitoring methodology used for this assessment are outlined in Appendix A.

The proposed modification would be situated next to the Uranquinty Power Station (UPS), owned and operated by Origin Energy. As such, the noise monitoring data was analysed to determine the existing noise levels from the UPS at the closest sensitive receivers using the following approach:

- APA provided gas flow rate data of their meter station to the power station, which indicates when the UPS was operational during the monitoring period. This data was filtered for gas flow rates of more than 10 TJ/d to exclude small flows, which are unlikely to be related to operation of the UPS.
- The average L_{Aeq} , L_{A90} and L_{Ceq} noise levels when the UPS was operational and not operational were determined for each time period to establish the difference in noise levels and determine the contribution of the UPS relative to the background noise level.

2.4 Construction noise assessment

2.4.1 Construction outline

2.4.1.1 Timing and methodology

Construction of the proposed modification is scheduled to begin in the first half of 2026, subject to approval of the proposed modification. The construction of the proposed modification will take about 12 months, followed by about three months of commissioning.

Construction activities associated with the proposed modification are:

- **Site preparation**
 - Implement construction erosion and sediment controls.
 - Mobilise construction equipment.
 - Clear vegetation (as required).
 - Establish construction compounds / work areas and associated internal roads and ramps to facilitate access to work areas.
 - Establish power, water and other utilities to the proposed site.
- **Construction of the proposed modification**
 - Site bulk earthworks including excavation for buried services and cut/fill to establish levels for infrastructure installation.
 - Install steel piles.
 - Install associated steel structures, prefabricated piping, electrical equipment and instrumentation.
 - Install prefabricated buildings and workshop
 - Supply and install communication and controls infrastructure.
 - Pre-commissioning and commissioning of the proposed modification.
 - Demobilisation of construction equipment.

2.4.1.2 Construction hours

Construction would generally be undertaken within the recommended standard construction hours in accordance with the *Interim Construction Noise Guideline* (DECC, 2009) being:

- Monday to Friday between the hours of 7:00 am to 6:00 pm.
- Saturday between the hours of 8:00 am to 1:00 pm.

Piling activities would only be undertaken during the above recommended standard construction hours. For other construction activities, approval is sought to undertake work outside of standard hours as follows:

- Saturdays: 7:00 am to 6:00 pm
- Sundays and/or public holidays between 7:00 am to 6:00 pm.

During the commissioning phase, compressor station activities would occur between 7:00 am and 6:00 pm seven days a week, with the exception of the final two weeks of commissioning activities which would be for 24 hours.

Justification for outside of standard hours work

The ICNG acknowledges that works outside standard hours may be necessary, however, justification should be provided to the relevant authorities. Section 2.3 of the ICNG includes provisions for construction works outside of standard hours on public infrastructure and nominates the following:

In general, only works undertaken on public infrastructure need to be undertaken outside the recommended standard hours. This need is typically based on a requirement to sustain the operational integrity of public infrastructure, as works to restore operation of the infrastructure provide benefit to the greater community (that is more than just local residents). Examples of public infrastructure are:

- *transport – railways, roads, ferries, airports*
- *utilities – water, electricity or gas, sewerage or drainage.*

Whilst the pipeline and associated gas compression station are not necessarily public infrastructure, they do provide for increased service of gas resources to the greater community and therefore provide a justification for the proposed construction hours in the modification. In any event, construction noise outside of standard construction hours should aim to achieve the construction noise management levels (NMLs) relevant to the out of hours periods.

Additionally, the proposed extended working hours for construction activities would reduce the overall construction timeframe of the project, including the length of time that individual receivers are exposed to noise and maximise the use of the workforce once mobilised to site.

2.4.1.3 Construction workforce

Construction of the proposed modification will require an average workforce of 40 full-time equivalent personnel, with a peak of 65 full time equivalent personnel over the 12-month construction period and three month commissioning period. Mobilisation and demobilisation of the workforce will likely be from the Wagga Wagga Airport. The workforce will commute to the proposed site each day from local areas where they reside temporarily for the duration of construction works.

2.4.1.4 Construction scenarios and equipment

The construction works would be undertaken using the equipment provided in Table 2.2 below. The sound power levels (SWL) of the equipment have been sourced from the following guidelines and standards where available:

- *AS 2436 – 2010 Guide to Noise and Vibration Control on Construction* (Australian Standard, 2010).
- *Construction Noise and Vibration Guideline (Roads)* (TfNSW, 2024) (CNVG).
- *BS 5228 Code of practice for noise and vibration control on construction and open sites – Part 1: Noise* (British Standards, 2009).

Decommissioning impacts of the proposed modification would likely be equal to or less than during the construction and as such the construction scenarios are considered to represent the worst-case impacts during construction and decommissioning of the proposed modification.

Table 2.2 Construction equipment and associated sound power levels

Construction Scenario	Equipment	Sound power level, dB(A)	Source	Total SWL per construction scenario	Proposed construction hours
CS1 - Site Preparation, access upgrades and bulk earthworks	Grader	113	CNVG	120	Monday to Sunday 7am to 6pm
	Excavator 35 tonne (tracked)	110	CNVG		
	Dump truck	110	CNVG		
	Roller	103	BS5228		
	Smooth drum roller	107	CNVG		
	D7R Dozer, D8T Dozer	116	CNVG		
	Scraper	113	CNVG		
	Water cart	107	CNVG		
	Wheel loader	96	BS5228		
CS2 - Piling	Drilling rig 28 tonne	115	BS5228	127	Monday to Friday 7am to 6pm and Saturday 8am to 1pm
	Piling rig 50 tonne	126 ^{1 2}	AS2436		
CS3 - Construction of the compressor station	Compacter	106	CNVG	118	Monday to Sunday 7am to 6pm
	Angle griding (steel)	109	BS5228		
	Impact wrench	111	CNVG		
	Telehandler	99	BS5228		
	Air Compressor	109	CNVG		
	Torque gear	102	AS2436		
	Roller	103	BS5228		
	Welding machines	110	CNVG		
	Forklifts	106	AS2436		
	Water cart	107	CNVG		
	Crane (up to 250T)	99	BS5228		
	Generator	93	BS5228		
	Excavator	110	CNVG		

Notes:

1. The L_{Amax} level presented in AS2436 has been time corrected for the hammer cycle to obtain a representative $L_{Aeq,15 min}$ level.
2. A 5 dB correction has been added for annoying characteristics.

2.4.2 ICNG construction hours

The ICNG recommends the following standard hours for construction work:

- Monday to Friday: 7:00 am to 6:00 pm
- Saturday: 8:00 am to 1:00 pm
- no works on Sundays or public holidays.

Figure 2.2 shows the ICNG recommended standard construction hours and periods outside of recommended standard hours. The time periods in the figure are based on the NPfI, as the ICNG does not nominate time periods for the day, evening and night.

Hour commencing	12 am	1 am	2 am	3 am	4 am	5 am	6 am	7 am	8 am	9 am	10 am	11 am	12 pm	1 pm	2 pm	3 pm	4 pm	5 pm	6 pm	7 pm	8 pm	9 pm	10 pm	11 pm
Monday																								Outside
Tuesday																								Outside of
Wednesday																								standard hours -
Thursday																								Evening period
Friday																								Night
Saturday																								Period
Sunday																								Outside of standard hours - Day period

Figure 2.2 Standard and outside of standard construction hours

Construction activities should generally aim to be undertaken during the recommended standard hours. However, the following activities are considered justified to be undertaken outside the recommended standard hours:

- The delivery of oversized plant or structure that police or other authorities determine require special arrangements to transport along public roads.
- Emergency work to avoid the loss of life or damage to property, or to prevent environmental harm.
- Maintenance and repair of public infrastructure where disruption to essential services and/or considerations of worker safety do not allow work within standard hours.
- Public infrastructure works that shorten the length of the project and are supported by the affected community.
- Works for which it can be demonstrated that there is a need to operate outside the recommended standard hours. If noise levels cannot be maintained at receivers below the noise NML, after all reasonable and feasible mitigation measures are implemented, an agreement should be negotiated with the community. Justifications have been provided in section 2.4.1.2.

2.4.3 Construction noise management levels

The NML during recommended standard hours represent a noise level that, if exceeded, would require management measures including:

- Reasonable and feasible work practices.
- Contact with the residences to inform them of the nature or works to be carried out, the expected noise levels and durations and contact details.

The management measures are aimed at reducing noise impacts at the residential receivers. However, it may not be reasonable and feasible to reduce noise levels to below the noise affected management level. The noise affected construction NMLs during recommended standard hours are not intended as a noise limit but rather a level where noise management is required and as such, should not be included as a noise limit in the environmental protection license or consent conditions.

The determination of the NML is dependent on the time of day and the rating background level (RBL) at the residential receivers. This is explained in detail in Table 2.3 including a description of each relevant NML. As several non-residential receivers are identified within the study area, the NMLs at these non-residential receivers are provided Table 2.4.

Table 2.3 Residential noise management levels

Time of day	Noise management level, $L_{Aeq,15\text{ min}}$	Application notes
Recommended standard hours	Noise affected: RBL + 10 dBA	The noise affected level represents the point above which there may be some community reaction to noise: - Where the predicted or measured $L_{Aeq,15\text{ min}}$ is greater than the noise affected level, the proponent should apply all feasible and reasonable work practices to meet the noise affected level. - The proponent should also inform all potentially impacted residents of the nature of works to be carried out, the expected noise levels and duration, as well as contact details.
	Highly noise affected: 75 dBA	The highly noise affected level represents the point above which there may be strong community reaction to noise. Where noise is above this level, the relevant authority (consent, determining or regulatory) may require respite periods by restricting the hours that the very noisy activities can occur, taking into account: - times identified by the community when they are less sensitive to noise (such as before and after school, or mid-morning or mid-afternoon for works near residences) - if the community is prepared to accept a longer period of construction in exchange for restrictions on construction times.
Outside standard hours	Noise affected: RBL + 5 dBA	A strong justification would typically be required for works outside the recommended standard hours. The proponent should apply all feasible and reasonable work practices to meet the noise affected level. Where all feasible and reasonable measures have been applied and noise is more than 5 dBA above the noise affected level, the proponent should negotiate with the community.

Table 2.4 Non-residential receivers noise management levels

Land use	Noise management level $L_{Aeq,15\text{ min}}$ (dBA)
Places of worship (when in use)	External noise level 55 dBA ¹
Passive recreation areas	60 dBA (when in use)
Commercial premises	70 dBA
Industrial premises	75 dBA

Notes: 1. Based on an internal noise level of 45 dBA and a 10 dB reduction when noise travels from outside to inside through an open window.

The construction NMLs detailed in Table 2.5 have been adopted for the assessment of potential construction noise impacts at residential receivers. The table specifies which NML is applicable during the proposed construction hours. The NMLs for non-residential receivers identified are provided in Table 2.6.

Table 2.5 Adopted construction noise management levels at residential receivers

Assessment period	Adopted noise management level $L_{Aeq,15\text{ min}}$	Applicable times
Recommended standard hours	45 dBA (noise affected) ¹	Monday to Friday – 7am to 6pm
	75 dBA (highly noise affected)	Saturday – 8am to 1pm
Outside of recommended standard hours	40 dBA (noise affected) ¹	Saturday – 7am to 8am and 1pm to 6pm Sunday or public holiday – 8am to 6pm
	35 dBA (noise affected) ²	Sunday or public holiday – 7am to 8am

Notes: 1. Based on the NPfI recommended minimum RBL of 35 dBA for the day period (7am to 6pm).

2. Based on the NPfI recommended minimum RBL of 30 dBA for the evening period (6pm to 10pm) and night period (10pm to 7am, or 8am on Sundays).

Table 2.6 Adopted construction noise management levels at non-residential receivers

Sensitive receiver type	Adopted noise management level $L_{Aeq,15min}$	Applicable times
Places of worship	55 dBA	When in use
Passive recreation areas	60 dBA	
Commercial premises	70 dBA	
Industrial premises	75 dBA	

The approach described in the CNVG has been adopted to summarise potential construction-related noise impacts to sensitive receivers within the study area. The CNVG provides perception categories based on the difference between predicted noise levels and the NML to describe the level of anticipated construction noise exceedances at sensitive receivers. The noise perception categories from the CNVG are outlined in Table 2.7.

Table 2.7 Construction noise perception categories

Noise perception category	Noise level range above NML	
	Standard hours	Outside standard hours
Noticeable	Not applicable	1 dBA to 5 dBA above the NML
Clearly audible	1 dBA to 10 dBA above NML	5 dBA to 15 dBA above the NML
Moderately intrusive	10 dBA to 20 dBA above NML	15 dBA to 25 dBA above the NML
Highly intrusive	More than 20 dBA above NML	More than 25 dBA above the NML

A comparison of typical noise levels is provided in Figure 2.3 for reference. The perception of noise is strongly influenced by people's environment. A noise level that is perceived as loud in one situation may appear quiet in another.

Noise level comparisons

People's perception of noise is strongly influenced by their environment.

A noise level that is perceived as loud in one situation may appear quiet in another.

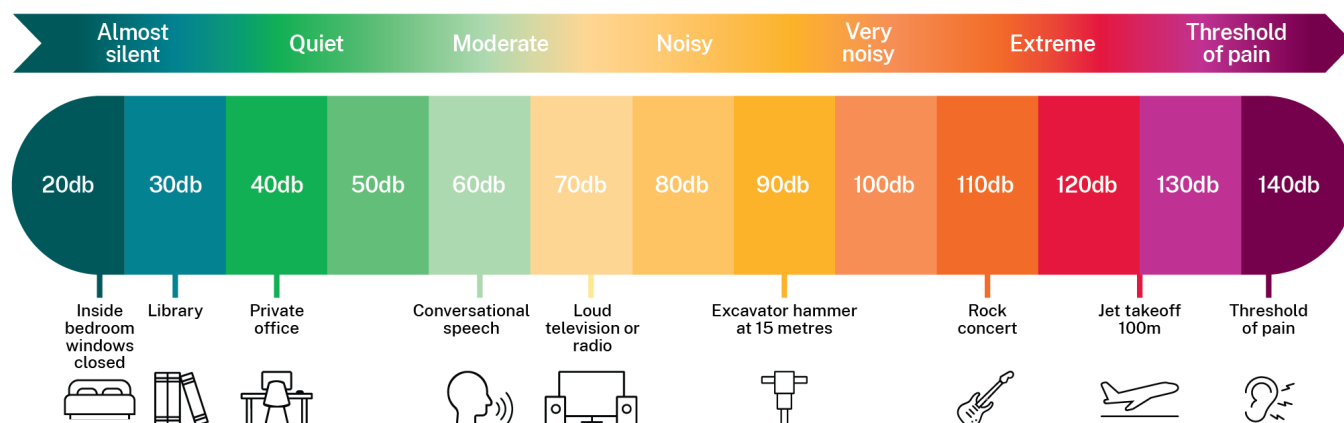


Figure 2.3 Noise level comparisons

2.4.4 Sleep disturbance impacts

The ICNG requires assessment of sleep disturbance impacts for construction works which are planned to extend over more than two consecutive nights. The proposed construction hours during the nighttime are limited to the Sunday early mornings between 7am and 8am, and as such, maximum noise level events would not occur during consecutive nights. Additionally, during the early morning period, sleep disturbance is less likely to be significant. As such, sleep disturbance impact during construction of the proposed modification are not anticipated.

2.4.5 Noise modelling methodology

Noise modelling was undertaken using SoundPLAN 8.2. SoundPLAN is a computer program for the calculation, assessment and prognosis of noise exposure. SoundPLAN calculates environmental noise propagation according to ISO 9613-2 'Acoustics – Attenuation of sound during propagation outdoors' (ISO, 1996). A summary of the noise modelling parameters and inputs is provided in Table 2.8.

Table 2.8 Construction noise modelling parameters

Input / assumption	Description
Prediction algorithm	ISO 9613-2 'Acoustics – Attenuation of sound during propagation outdoors' (ISO, 1996)
Weather conditions	Based on an average temperature of 10°C and an average humidity of 70 per cent
Meteorological conditions	A moderate temperature inversion or downwind meteorological conditions is considered in the ISO 9613-2 prediction algorithm
Model inputs	
Topography	5 m interval contours based on the DEM 1 m Grid of Australia
Buildings	Building footprints and heights have been sourced from Geoscape and have been manually checked to exclude anomalies
Receiver height	1.5 m above ground level
Ground absorption	0.25, assumed majority hard ground within the project site and the Uranquinty Power Station site 0.75, assumed majority soft ground for all other areas
Reflections	A maximum number of 3 reflections from surrounding structures have been considered
Equipment height	General construction equipment has been modelled at a height of 2 metres

2.5 Construction vibration assessment

2.5.1 Human comfort

Guidance for acceptable vibration levels for human comfort is based on *Assessing Vibration: A Technical Guideline* (AVTG) (DEC, 2006) which references *BS6472-1: Guide to Evaluation of Human Exposure to Vibration in Buildings (1 Hz to 80 Hz)* (British Standards, 1992).

AVTG provides three assessment methods, depending on whether the vibration source is continuous, impulsive, or intermittent. These can be defined as:

- Continuous vibration – normally generated by fixed plant (such as generators and fans) where the vibration emissions could continue uninterrupted throughout the day and night periods.
- Impulsive vibration – normally generated by short duration (i.e., less than two seconds) events with no more than three occurrences in an assessment period (e.g., ground compaction by dropping a large mass).
- Intermittent vibration – normally generated by continuous vibration sources that may be interrupted (e.g., vibratory rolling, rock breaking and truck passbys) or continuous periods of impulsive vibration (e.g., impact piling). For intermittent vibration, human comfort levels are assessed on the basis of Vibration Dose Value, or VDV, based on the level and duration of the vibration events.

For construction works related to the proposed modification, construction vibration is considered to be intermittent and assessed using VDV. The acceptable VDV values are shown in Table 2.9.

Table 2.9 Acceptable Vibration Dose Values for Human Comfort (BS 6472-2008)

Receiver	Assessment Period	x, y and z axes	
		Preferred values	Maximum values
Critical areas	Day or night	0.10 m/s ^{1.75}	0.20 m/s ^{1.75}
Residential	Day	0.20 m/s ^{1.75}	0.40 m/s ^{1.75}
	Night	0.13 m/s ^{1.75}	0.26 m/s ^{1.75}
Offices, schools, educational institutes and places of worship	When in use	0.40 m/s ^{1.75}	0.80 m/s ^{1.75}
Workshops	When in use	0.80 m/s ^{1.75}	1.60 m/s ^{1.75}

2.5.2 Cosmetic damage to buildings

BS 7385-2:1993 *Evaluation and measurement for vibration in buildings Part 2 – Guide to damage* (British Standards, 1993) sets guide values for building vibration bases on the lowest vibration levels above which damage has been credibly demonstrated. The use of BS7385 is the preferred standard in NSW to assess potential vibration impacts to standard structures and is consistent with the CNVG.

The guide values from BS7385 for transient vibration to ensure minimal risk of cosmetic damage to residential and industrial buildings are presented in Table 2.10.

Table 2.10 Transient vibration guide values - minimal risk of cosmetic damage

Type of building	Peak Component Particle Velocity in Frequency Range of Predominant Pulse ¹	
	4 Hz to 15 Hz	15 Hz and above
Reinforced or framed structures industrial and heavy commercial building	50 mm/s at 4 Hz and above	
Unreinforced or light framed structures residential or light commercial type buildings ²	15 mm/s at 4 Hz increasing to 20 mm/s at 15 Hz	20 mm/s at 15 Hz increasing to 50 mm/s at 40 Hz and above

Notes: 1. Values referred to are at the base of the building.

2. At frequencies below 4 Hz, a maximum displacement of 0.6 mm (zero to peak) should not be exceeded.

BS7385 also states that the guide values relate predominantly to transient vibration which does not give rise to resonant responses in structures, and to low-rise buildings. The standard states that *'where the dynamic loading caused by continuous vibration is such as to give rise to dynamic magnification due to resonance, especially at the lower frequencies where lower guide values apply, then the guide values in Table 16 may need to be reduced by up to 50%'*. Construction activities such as vibratory rolling have the potential to cause dynamic loading in some structures. As such, a conservative vibration damage screening level is given below:

- reinforced or framed structures: 25 mm/s
- unreinforced or light framed structures: 7.5 mm/s.

2.5.3 Construction vibration prediction method

The method for the assessment of construction vibration included:

- Identifying safe working distances to comply with the human comfort and the cosmetic damage criteria. These buffer distances have been adopted from CNVG.
- Safe working distances for vibration intensive equipment are shown in Table 2.11.
- Buildings within the safe working distances have been identified for consideration of management measures.

Vibration intensive equipment associated with the proposed modification are the vibratory roller and impact hammer piling rig.

Table 2.11 Vibration safe working distances

Equipment	Human comfort (OH&E Vibration guideline)	Cosmetic damage (BS7385)
Piling rig – Bored <800 mm	N/A	2 m (nominal)
Piling rig – Hammer (12 t down force)	50 m	15 m
Piling rig – Vibratory (sheet piles)	20 m	2 m to 20 m
Vibratory roller (>18 tonnes)	100 m	25 m
Vibratory roller (13-18 tonnes)	100 m	20 m
Vibratory roller (7-13 tonnes)	100 m	15 m
Vibratory roller (4-6 tonnes)	40 m	12 m
Vibratory roller (2-4 tonnes)	20 m	6 m
Vibratory roller (1-2 tonnes)	15 m	5 m
Small hydraulic hammer 300 kg (5-12t excavator)	7 m	2 m
Medium hydraulic hammer 900 kg (12-18t excavator)	23 m	7 m
Large hydraulic hammer 1600 kg (18-34t excavator)	73 m	22 m
Jackhammer (handheld)	Avoid contact with structure	1 m (nominal)

2.6 Road traffic noise assessment

2.6.1 Assessment criteria

The RNP provides traffic noise criteria for residential receivers in the vicinity of existing arterial and local roads and new local roads and are reproduced in Table 2.12. The criteria are applied to operational and construction traffic on public roads to identify potential road traffic noise impacts and the requirement for reasonable and feasible mitigation measures.

The RNP application notes state that *“for existing residences and other sensitive land uses affected by additional traffic on existing roads generated by land use developments, any increase in the total traffic noise level as a result of the development should be limited to 2 dB above that of the noise level without the development. This limit applies wherever the noise level without the development is within 2 dB of, or exceeds, the relevant day or night criterion.”*

The objectives of the RNP are met, and no specific mitigation measures are required, when:

- the criteria in Table 2.12 are achieved, or
- the criteria in Table 2.12 are exceeded, but the increase in traffic noise level as a result of the development is limited to 2 dB above the existing traffic noise levels.

Should the criteria in Table 2.12 be exceeded and the traffic noise levels increase more than 2 dB, the RNP requires consideration of mitigation measures.

Table 2.12 Road traffic noise criteria in dBA

Road category	Development type	Day 7 am to 10 pm	Night 10 pm to 7 am
Freeway/arterial/ sub-arterial roads	Existing residence affected by additional traffic on existing freeways / arterial / sub-arterial roads generated by land use developments	60 Leq,15hr	55 Leq,9hr
Local roads	Existing residence affected by additional traffic on existing local roads generated by land use developments	55 Leq,1hr	50 Leq,1hr

2.6.2 Existing traffic volumes

Existing traffic volumes have been sourced from the report *Olympic Highway Intersection Upgrades Noise and Vibration Impact Assessment – Appendix B Existing Traffic Counts* (TfNSW, 2021). The following assumptions were made when establishing the existing traffic volumes:

- Traffic counts for 2024 were estimated by applying a growth rate of 2.0 percent per annum on the count data collected in 2021.
- Based on the referenced report for traffic counts, five percent of the vehicles travelling on Olympic Highway and Uranquinty Cross Road will consist of trucks.
- The average weekday daily traffic was split into day and night volumes using a 91 percent and 9 percent split, based on the referenced traffic counts.

Table 2.13 Existing traffic volumes

Road Name	Direction	Average weekday daily traffic	Number of vehicle movements					
			Day (7am to 10pm)		Night (10pm to 7am)		AM/PM Peak	
			LV	HV	LV	HV	LV	HV
Olympic Highway	Northbound	8,874	7,685	404	745	39	895	47
	Southbound	8,970	7,768	409	753	40	895	47
Uranquinty Cross Road	Both	2,168	1,878	99	182	10	105	6

2.6.3 Construction traffic generation

2.6.3.1 Construction stages

The anticipated traffic generation for the construction works is summarised in Table 2.14. The various construction stages will not coincide, but will be staggered over the twelve-month construction, pre-commissioning and commissioning stages.

Construction traffic generation is assessed using the worst-case peak traffic scenario, which assumes that the activities of structural, mechanical and piping structures, and electrical and instrumentation equipment accompanying with workforce transportation would occur concurrently and accordingly, the peak daily trips are expected to consist of 23 light vehicle trips and 15 heavy vehicle trips.

Table 2.14 Peak daily traffic generation – construction stage

Construction activity	Trips		Vehicle Movements	
	LV	HV	LV	HV
Construction stage – Daily vehicles	LV	HV	LV	HV
Mobilisation of construction equipment and establishment of access	13	6	23	12
Earthworks and piling	6	4	12	8
Transportation of construction workforce	3	4	6	8
Installation of structural, mechanical and piping structures, and electrical and instrumentation equipment	20	11	40	22
Pre-commissioning and commissioning of compressor station	11	2	22	4
Demobilisation of construction and commissioning equipment	13	5	26	10
Total (daily)	66	32	132	64
Total (worst-case)	23	15	46	30

The hourly construction trips are provided in Table 2.15, calculated from the peak daily traffic generation based on the following assumptions:

- The construction workers and light vehicles will arrive at the proposed site in the morning and leave in the afternoon.
- 50 percent of the daily heavy vehicle trips will occur in the peak hour.

Table 2.15 Hourly traffic generation – construction stage

Construction stage – Peak hour	Hourly vehicle trips
Number of Light Vehicle Trips	23
Number of Heavy Vehicle Trips	8

2.6.3.2 Site access and vehicle routes

The site is accessed by Uranquinty Cross Road via Olympic Highway. Estimates of the vehicle distribution on the road network have been made based on high level assumptions on construction methodology, location of the proposed site, and sources of construction materials. For the purposes of this assessment, traffic distribution to the site has been assumed as follows:

- Olympic Highway:
 - light vehicles 75 percent to/from the north 25 percent to/from the south
 - heavy vehicles 75 percent to/from the north 25 percent to/from the south
- Uranquinty Cross Road:
 - light vehicles 100 percent to/from the east zero (0) percent to/from the west
 - heavy vehicles 100 percent to/from the east zero (0) percent to/from the west.

2.6.3.3 Summary of traffic generation

A summary of the worst-case traffic generation during construction of the proposed modification is shown in Table 2.16.

Table 2.16 Estimated worst-case traffic generation during construction

Road	Direction	Daily traffic movements		Peak hour traffic movements	
		LV	HV	LV	HV
Olympic Highway	Northbound	34	22	34	12
	Southbound	12	8	12	4
Uranquinty Cross Road	Between site and Olympic Highway	46	30	46	16

2.6.4 Operation of the modification

The proposed modification would be operated remotely with no on-site staff for day-to-day operation. Operational traffic to the proposed site would be limited to personnel required for ad-hoc maintenance works, which would typically be a limited number of personnel. As such, noise impacts from operational traffic would be negligible and therefore have not been assessed.

2.6.5 Prediction methodology

The road traffic noise assessment considers existing traffic volumes and proposed traffic generation, percentage of heavy vehicles, time periods and road surface types in the calculations. Traffic noise modelling was conducted using the *Calculation of Road Traffic Noise* (CoRTN) (Department of Transport, Welsh Office, 1988) algorithm for the Olympic Highway and Uranquinty Cross Road.

2.7 Operational noise assessment

2.7.1 Noise Policy for Industry

2.7.1.1 Applicability of the NPfl

The Noise Policy for Industry (NPfl) provides guidance on the assessment of operational noise impacts. The guideline includes both intrusiveness and project amenity noise levels that are designed to protect receivers from noise significantly louder than the background level, and to limit the total noise level from industry near a receiver.

The NPfl project noise trigger levels provide an objective for assessing a project and are not mandatory limits required by legislation. The project noise trigger levels assist the regulatory authorities to establish licensing conditions. Where project noise trigger levels are predicted to be exceeded, feasible and reasonable noise mitigation strategies should be considered. In circumstances where noise criteria cannot be achieved, residual noise impacts are used to assess noise impacts and manage noise from the site in negotiation between the regulatory authority and community. The regulatory authority then sets statutory compliance levels that reflect the achievable and agreed noise limits from the development.

The intrusiveness noise level controls the relative audibility of operational noise compared to the background level at residential receivers. The amenity noise level limit the total level of extraneous noise for all receiver types. Both levels are calculated and the lower of the two in each time period is set as the project noise trigger level. The intrusiveness noise level is assessed over a 15-minute period however the amenity noise level is assessed over the day, evening or nighttime period. For the purposes of assessment to standardise the approach the NPfl recommends that the $L_{Aeq,15min} = L_{Aeq,period} + 3$ dBA unless an alternative approach can be justified.

2.7.1.2 Intrusiveness noise level

The intrusiveness noise level is determined by a 5 dB addition to the measured or adopted background noise level with a minimum intrusiveness noise level of 35 dBA for the evening and night period and 40 dBA for the day period. The NPfl recommends that the intrusiveness noise level for the evening and night period should not exceed the daytime period. The intrusiveness noise levels are only applicable to residential receivers.

2.7.1.3 Amenity noise levels and project amenity noise levels

The recommended amenity noise level applies to all industrial noise in the area which when combined should remain below the recommended amenity noise level. The recommended amenity noise level represents the total industrial noise sought to be achieved at a receiver location from all new and approved sources.

Residential receiver areas are characterised into 'urban', 'suburban', 'rural' based on land uses and the existing level of noise from industry and road traffic. With consideration to the NPfl 'noise amenity area' classification, the residential receivers are located in 'RU1 – primary production' and 'RU5 – Village' land use areas and have been considered as 'Rural Residential' for this assessment.

The recommended amenity noise levels for the identified receiver categories are shown in Table 2.17.

Table 2.17 Recommended amenity noise levels

Receiver category	Time of day	Recommended amenity noise level $L_{Aeq,period}$ (dBA)
Rural residential	Day	50
	Evening	45
	Night	40
Place of worship	When in use	50 ¹
Passive recreation	When in use	50
Commercial premises	When in use	65
Industrial premises	When in use	70

Notes: 1. Based on an internal noise level of 40 dBA and a 10 dB reduction when noise travels from outside to inside through an open window.

The project amenity noise level is the objective for noise from a single premise and is set at 5 dBA below the recommended amenity noise level to ensure that the industrial noise levels remain within the recommended amenity noise level. However, where numerous industrial sites are to be redeveloped or are proposed in an area, it may be relevant to divide the amenity noise level amongst the additional new noise generating premises.

As the proposed modification is situated adjacent to the UPS, which has previously received noise complaints in the community, the potential for cumulative noise impacts is considered. The NPfI states: *“Where the project amenity noise level applies and it can be met, no additional consideration of cumulative noise is required. However, In circumstances where this level cannot be feasibly and reasonably met, an assessment of existing industrial, and the combined resulting noise level from existing and the proposed industries, is required so the impact of the residual noise levels can be determined in accordance with Section 4.2. Therefore, it may be prudent to determine the existing level of industrial noise during initial surveys.”*

As detailed in section 2.7.1.4, the project noise trigger level (PNTL) is set below the project amenity noise level and consideration of cumulative noise would therefore not be required. Nonetheless, existing noise levels from the UPS were quantified to determine the potential cumulative noise impacts at the rural residential receivers. The criteria for the cumulative noise level is set at $L_{Aeq,15min}$ 43 dBA during the nighttime.

2.7.1.4 Project noise trigger levels

The PNTLs reflect the most stringent noise level requirements derived from the intrusiveness and project amenity noise level. For residential receivers, the PNTLs are provided in Table 2.18. To standardise the time periods for the intrusiveness and project amenity noise levels, the NPfI assumes that the $L_{Aeq,15min}$ is equal to $L_{Aeq,period} + 3$ dBA.

Table 2.18 Project noise trigger levels – residential receivers

Receiver	Assessment period ¹	Intrusive noise level $L_{Aeq,15min}$ dBA	Project amenity noise level ² $L_{Aeq,15min}$ dBA	Project noise trigger level $L_{Aeq,15min}$ dBA
Rural residential receivers	Day	40	48	40
	Evening	35	43	35
	Night	35	38	35

Notes: 1. The NPfI defines time periods as follows:

- Day as 7 am to 6 pm Monday to Saturday and 8 am to 1 pm Sunday & Public Holidays
- Evening as 6pm to 10 pm
- Night as the remaining periods

2. The project amenity noise levels ($L_{Aeq,15min}$) have been calculated by subtracting 5 dB from the recommended amenity noise levels and applying a 3 dB addition to the $L_{Aeq,period}$ noise level to convert the amenity noise level to a $L_{Aeq,15min}$.

2.7.1.5 Modifying factor corrections

The NPfI requires that corrections for annoying characteristics are applied if the noise sources contain tonal, intermittent, or low frequency characteristics, which have the potential to increase annoyance. The modifying factor adjustments are detailed in Table 2.19.

Table 2.19 NPfl modifying factor corrections

Factor	Assessment/measurement	When to apply	Correction ^{1,2}
Tonal noise	One-third octave or narrow band analysis	Level of one-third octave band exceeds the level of the adjacent bands on both sides by: – 5 dB or more if the centre frequency of the band containing the tone is in the range of 500 to 10,000 Hz – 8 dB or more if the centre frequency of the band containing the tone is in the range 160 to 400 Hz – 15 dB or more if the centre frequency of the band containing the tone is in the range 25 to 125 Hz.	5 dBA ²
Low frequency noise	Measurement of C-weighted and A-weighted level	Measure/assess C and A weighted $L_{eq,T}$ levels over same time period. Correction to be applied if the difference between the two levels is 15 dB or more and: – Where any of the one-third octave noise levels in Table C2 of the NPfl are exceeded by up to and including 5 dB and cannot be mitigated, a 2 dBA positive adjustment to measured/predicted A-weighted levels for the evening/night period – Where any of the one-third octave noise levels in Table C2 of the NPfl are exceeded by more than 5 dBA and cannot be mitigated, a 5 dBA positive adjustment to measured/predicted A-weighted noise levels applies for the evening/night period and a dBA positive adjustment for the daytime period.	5 dBA ²
Intermittent noise	Subjectively assessed	When the night-time noise level drops to that of the background noise level with a noticeable change in noise level of at least 5 dBA.	5 dBA

Notes: 1. Where two or more modifying factors are present the maximum correction is limited to 10 dBA.

2. Where a source emits a tonal and low-frequency noise, only one 5 dB correction should be applied if the tone is in the low frequency range.

2.7.1.6 Sleep disturbance

The proposed modification would be operational 24 hours a day, however, no maximum noise events are anticipated to occur during the nighttime period. As such no sleep disturbance impacts are expected to occur during operation of the proposed modification.

2.7.2 Modelling methodology

Noise modelling was undertaken using SoundPLAN (version 8.2) software to predict the operational noise levels at the sensitive receivers within the study area. A summary of the noise modelling parameters and inputs is provided in Table 2.20.

Table 2.20 Operational noise modelling parameters

Input / assumption	Description
Prediction algorithm	ISO 9613-2 'Acoustics – Attenuation of sound during propagation outdoors' (ISO, 1996)
Weather conditions	Based on an average temperature of 10°C and an average humidity of 70 per cent
Meteorological conditions	A moderate temperature inversion or downwind meteorological conditions is considered in the ISO 9613-2 prediction algorithm
Model inputs	
Topography	5 metre interval contours based on the DEM 1 m Grid of Australia
Building footprints and heights	Building footprints and heights have been sourced from Geoscape and have been manually checked to exclude anomalies
Receiver height	1.5 m above ground level
Ground absorption	0.25, assumed majority hard ground within the project site and the Uranquinty Power Station site 0.75, assumed majority soft ground for all other areas
Reflections	A maximum number of 3 reflections from surrounding structures have been considered
Equipment height	Operational equipment has been modelled at varying heights, representing the equipment dimensions.

2.7.3 Operation of the proposed modification

No operational staff will be required as the proposed modification will be operated remotely. Operational staff would only be required for maintenance works that would occur as required during the operational life of the proposed modification.

2.7.4 Operational noise sources

The main operational noise sources of the compressor station are the compressor components and the associated cooling equipment. SWLs of the compressor and cooling equipment have been provided by the supplier and are replicated in Table 2.21. The location of the site layout and location of noise sources is shown in Figure 2.4.

Instrument air and nitrogen packages would be present on the site. These are not anticipated to contribute significantly to the overall noise emissions and their contribution is expected to be negligible compared to the main noise sources such as the compressor unit and associated cooling equipment.

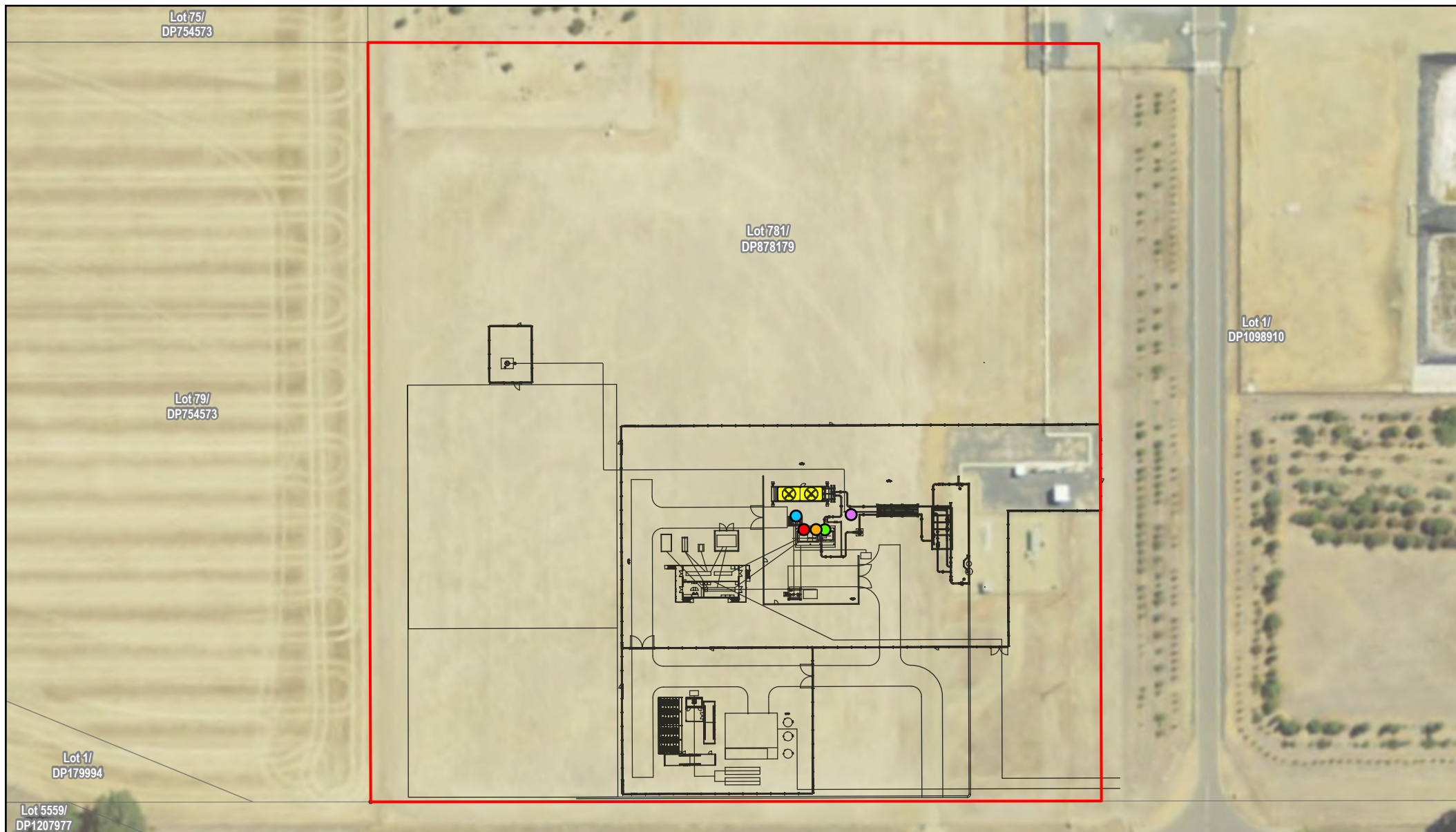
Venting events during emergency shutdown or prior to maintenance activities are anticipated to occur infrequently, up to three times a year, and would be short in duration. Because of the short duration and rare occurrence, noise impacts from these events are anticipated to be negligible.

Table 2.21 *Operational noise sources and sound power levels per octave band*

Source ID	Equipment	Sound power level per octave band (dBA)									Overall SWL (dBA)	Source
		31.5	63	125	250	500	1k	2k	4k	8k		
CMP	Compressor	39	50	61	71	79	87	94	91	80	97	Provided by supplier
GB	Gearbox	-	78	87	89	92	92	93	91	88	99	
MT	Motor ¹	-	81	88	97	101	103	104	103	100	110	
LOC	Lube Oil Cooler	-	76	83	83	84	84	81	77	70	91	
ASV	Anti-Surge Valve	31	44	54	61	72	80	86	91	89	94	Based on 85 dBA @ 1m ²
AC	After cooler	59	79	86	88	88	90	89	86	79	96	Based on 75 dBA @ 1m provided by supplier ³

Notes:

1. The supplier provided overall A-weighted value only. Octave band data has been estimated based on other motors from the supplier.
2. A reference spectrum for steam control valves has been adopted from section 10.8.7 of Engineering Noise Control (Bies, Hansen, & Howard, 2017).
3. The supplier provided a sound pressure level of 75 dBA at 1m, which has been converted to a SWL based on the dimensions of the after cooler. A reference spectrum was used for the octave band data, based on typical data from the report *The Design of Quiet Air-Cooled Heat Exchangers* (Pinkerton & Chapple, 1993).



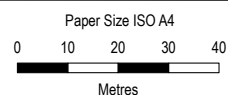
LEGEND

- Proposed site
- After cooler
- Lot
- Site layout

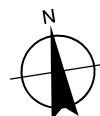
Noise sources

- Anti-Surge valve
- Compressor
- Gearbox

- Lube Oil Cooler
- Motor



Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 55



East Australian Pipeline Pty Ltd
Culcairn to Wagga Wagga Gas Pipeline –
MOD 1 Uranquinty Compressor Station
Noise and Vibration Assessment

Project No. 12614690
Revision No. 0
Date 29/07/2025

Site layout and noise source locations

FIGURE 2.4

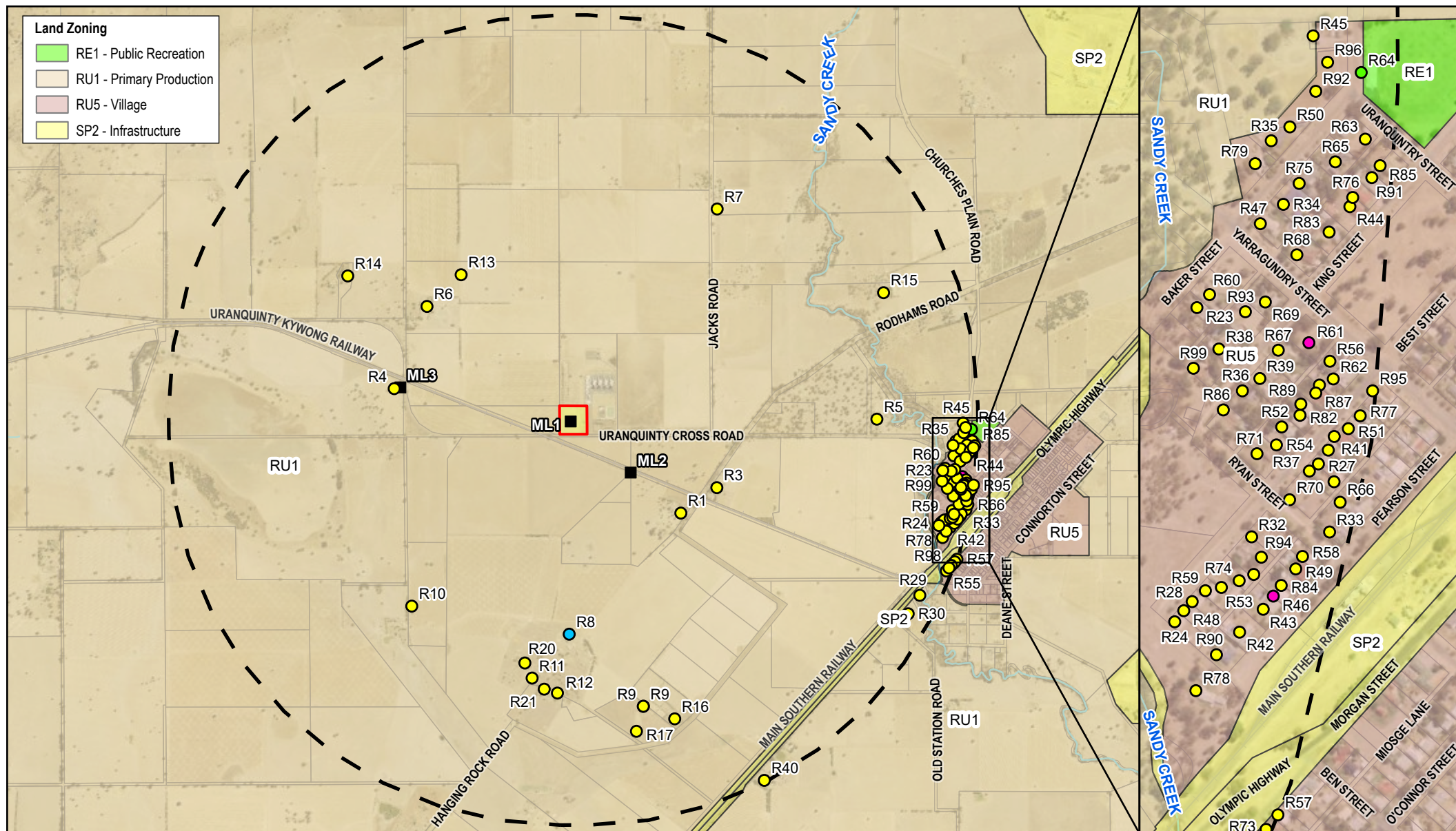
3. Existing environment

3.1 Sensitive receivers

Noise and vibration sensitive receivers are defined based on the type of occupancy and the activities performed in the land use. Receivers sensitive to noise and vibration can be categorised as:

- residential dwellings
- classrooms
- hospitals
- places of worship
- passive and active recreational areas such as parks, sporting fields, golf courses. Note that these recreational areas are only considered sensitive when they are in use or occupied
- hotels, motels, caretaker's quarters, holiday accommodation and permanent resident caravan parks
- commercial premises
- industrial premises.

The closest residential dwellings are located about 880 m and 1.1 km south-east of the proposed site. There is also one residential dwelling located about 1.3 km north-west of the proposed site. Further to the south-east, the Uranquinty town is located within which several sensitive receivers were identified. These sensitive receivers are predominantly residential receivers, with a few non-residential receivers, such as the Saint James Uniting Church, the Seven Day Adventist Reform Church and the Uranquinty Community Hall. The identified sensitive receivers are shown in Figure 3.1.



LEGEND

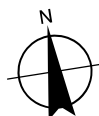
- Study area
- Proposed site
- Lot
- Railway
- ~ Waterway
- Monitoring locations

Sensitive receivers

- Commercial
- Passive Recreation
- Place of Worship
- Residential

Paper Size ISO A4
0 250 500 750 1,000
Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 55



East Australian Pipeline Pty Ltd
Culcairn to Wagga Wagga Gas Pipeline –
MOD 1 Uranquinty Compressor Station Noise
and Vibration Assessment

**Sensitive receivers and
monitoring locations**

Project No. 12614690
Revision No. 0
Date 10/06/2025

FIGURE 3.1

3.2 Existing noise environment

3.2.1 Background noise monitoring results

As described in section 2.3, long-term unattended noise monitoring was undertaken at two residential locations and on the proposed site. The noise monitoring locations are shown in Figure 3.1 and a summary of the noise monitoring results are presented in Table 3.1. The daily noise monitoring charts are included in Appendix A.

The locations of the noise monitoring are described as follows:

- Monitoring Location 1 (ML1), located on the proposed modification site.
- ML2, located 750 metres from the UPS and 480 metres from the residential receiver R1, at 70 Hanging Rock Road, Uranquinty.
- ML3, located at 449 Uranquinty Cross Road, Uranquinty.

The RBLs are not influenced by operation of the UPS, as it operates intermittently only during periods of peak demand. The intermittency of the UPS is excluded in the process of establishing the RBLs, which is done by analysing the $L_{A90,15min}$ noise levels, which represent the noise level that is exceeded 90% of the time during a 15-minute period and determining the 10th percentile of all the measured $L_{A90,15min}$ noise levels to calculate the RBL for each time period.

The monitoring results show that the established RBLs from the monitoring data at ML2 and ML3 are equal or below the minimum RBLs from the NPfI, which is 35, 30 and 30 dBA during the daytime, evening and nighttime respectively. In accordance with the NPfI, the minimum RBLs have been adopted.

Table 3.1 Unattended noise monitoring results

Location	Address	Rating Background Level ¹ (dBA)			Ambient noise descriptors ¹ (dBA)		
		Day	Evening	Night	Day	Evening	Night
ML1	Proposed modification site	35 (28)	32	33	51	41	41
ML2	70 Hanging Rock Road, Uranquinty	35 (27) ²	30	30 (23) ²	47	55	48
ML3	449 Uranquinty Cross Road, Uranquinty	35 (27) ²	30 (24) ²	30 (19) ²	47	44	41

Note: 1. The NPfI defines day, evening and night-time periods as:

- Day: 7am to 6pm Monday to Saturday and 8am to 6pm Sunday
- Evening: 6pm to 10pm
- Night: 10pm to 7am Monday to Saturday and 10pm to 8am Sunday.

2. The minimum RBLs of 35, 30 and 30 dBA for the daytime, evening and nighttime respectively have been adopted where the measured RBL is lower than the minimum RBL

3.2.2 Uranquinty Power Station

The UPS was operational on 13 of the 34 days during the monitoring period, typically between 5pm and 9pm. Table 3.2 presents the average L_{Aeq} , L_{Ceq} , and L_{A90} noise levels during the evening period, both with and without the UPS operating, to assess the differences in noise levels. Daily graphs showing the L_{Aeq} , L_{A90} and L_{Ceq} and operating load of the UPS are shown in Appendix B.

The following observations are made based on the average noise levels:

- At monitoring location ML1, the noise levels were significantly higher when the UPS was operational compared to when it was not. This is expected, as ML1 is situated close to the UPS and is therefore directly impacted by its operation.
- At monitoring location ML2, the L_{Aeq} and L_{A90} noise levels were slightly higher when the UPS was operational, though not significantly. However, it should be noted that ML2 is located approximately 480 metres from the closest residential receiver. It is also noteworthy that the L_{Aeq} and L_{A90} noise levels at this this monitoring

location are greater than those at ML1, indicating that noise levels at ML2 could have been influenced by another noise source.

- At monitoring location ML3, the L_{Aeq} and L_{A90} noise levels did not change when the UPS was operational. As this monitoring location is located at a residential receiver, the measured noise levels at this receiver have been considered representative.
- At all monitoring locations, the C-weighted noise levels (L_{Ceq}) showed a significant difference between times when the UPS was operational and when it was not. This indicates that the UPS emits a considerable amount of low frequency noise, which does not affect the A-weighted noise levels, but can still cause noise annoyance.

The noise levels at ML3 are regarded as representative, as this location is a residential area, unlike the other monitoring locations. At ML3, the L_{Aeq} noise level from the UPS is below 41 dBA, given that the average L_{Aeq} noise levels remain consistent regardless of whether the UPS is operational. However, it is important to note that the UPS does contain a low frequency noise component. The one-third octave band data at ML3 was analysed and found sporadic exceedances of the low frequency noise thresholds in the 40 and 50 Hz bands, which are generally limited to 5 dB or less and would result in a 2 dB penalty to account for low frequency noise characteristics.

Table 3.2 *Difference in noise levels with and without UPS operating*

Location	Period	Average noise levels without UPS operating			Average noise levels with UPS operating			Difference (dB)		
		L_{Aeq}	L_{Ceq}	L_{A90}	L_{Aeq}	L_{Ceq}	L_{A90}	L_{Aeq}	L_{Ceq}	L_{A90}
ML1	Evening	37	51	32	43	71	41	6	20	9
ML2	Evening	44	52	39	46	68	42	2	16	3
ML3	Evening	41	47	31	41	58	31	0	11	0

3.3 Local meteorological environment

3.3.1 Atmospheric conditions

Temperature and humidity affect how sound is absorbed by the atmosphere. With a fixed temperature at 15°C, a decrease in relative humidity from 80% to 20% can decrease the sound level at a listener standing 800 m from the noise source by 3 dB (at 1000 Hz). Fixing the relative humidity at 80%, an increase in temperature from 15 °C to 30 °C can decrease the sound level at 800 m from the noise source by 3 dB (at 1000 Hz).

Adopting an average temperature of 10°C and average humidity of 70% is generally representative of the atmospheric conditions for environmental noise propagation and is considered appropriate for the purposes of this assessment.

3.3.2 Noise enhancing conditions

Certain meteorological/weather conditions can increase noise levels at a receiver by focusing wave propagation paths toward a single point. This will occur during temperature inversions (atmospheric conditions where temperature increases with height above ground level), and where there is a wind gradient (that is, wind velocities increase with height) with wind direction from the source to the receiver. These conditions are defined in the following way in the NPfI:

- Wind gradients when the atmospheric stability is unstable or neutral (categories A – D) and the source-to-receiver wind speed is 3 m/s or less, or
- Temperature inversions, during the night-period, when the atmospheric stability is moderately to extremely stable (category F) and the source-to-receiver wind speed is 2 m/s or less.

A review of meteorological conditions at the Bureau of Meteorology (BoM) Wagga Wagga Automated Weather Station (AWS) (SN: 072150) was undertaken to determine the significance of noise-enhancing meteorological conditions and atmospheric conditions on noise propagation in accordance with the NPfI.

3.3.2.1 Atmospheric stability

The atmospheric stability is defined in the NPfl using the Pasquill-Gifford stability scheme, where stability categories A – C represent unstable atmospheric conditions, category D is representative of neutral conditions and categories E – F represent stable conditions. Stability categories have been determined using the Turner Scheme, as described in Fact Sheet D1 of the NPfl.

Temperature inversions occur during the night-time period in moderate to extreme stable atmospheric conditions (category F) and when combined with light winds (less than 2m/s) have the potential to increase noise levels from ground operations. Wind gradients can occur during unstable or neutral conditions (categories A – D) and when combined with light winds (less than 2m/s) have the potential to increase noise levels from ground operations.

3.3.2.2 Frequency of winds

To determine the significance of noise-enhancing meteorological conditions the wind speed and wind direction is required. Noise-enhancing conditions occur during light winds, up to 3 m/s, in the source to receiver direction. To determine the significance of these conditions the vector component of the wind is analysed.

A thorough review of the vector components of hourly wind data from 2020 – 2024 was undertaken for data from the BoM Wagga Wagga AWS (number 072150). The BoM observations are approximately 22 km east of the site. Figure 3.2 shows the wind roses (2020 – 2024) for wind speeds between 0.5 and 3 m/s in each NPfl assessment period and for each season. The wind roses show a significant portion of light winds from the east during all seasons of the year.

3.3.2.3 Assessment of significance

The NPfl recommends consideration of the effects of temperature inversions and wind gradients with wind direction from the source to the receiver if they are “significant”. The NPfl defines “significant” as occurring for 30% of the time in any assessment period and season in the direction of sensitive receivers. Table 3.4 provides a summary of the percentage occurrence of noise-enhancing conditions for 16 wind compass directions.

Noise-enhancing conditions are significant during the day and night periods in autumn, winter and spring, and during the day period in summer for receivers located west of the site.

The significance of noise enhancing conditions at representative sensitive receptors surrounding the site are outlined in Table 3.3. Although several receivers do not experience significant noise enhancing conditions as per the NPfl, the noise predictions do conservatively consider noise enhancing conditions from source to receiver.

Table 3.3 Assessment of significance of noise enhancing conditions at receiver locations

Receiver ID	Address	Direction from receiver to site	Significant noise enhancing conditions?
R1	70 Hanging Rock Road, Uranquinty	NW	No
R4	449 Uranquinty Cross Road, Uranquinty	E	Yes (all season's day and night, except summer night)
R5	56 Uranquinty Cross Road, Uranquinty	W	No
R6	478 Uranquinty Cross Road, Uranquinty	SE	Yes (autumn and winter night)
R7	176 Jacks Road, Uranquinty	SW	No
R8	88 Hanging Rock Road, Uranquinty	N	No

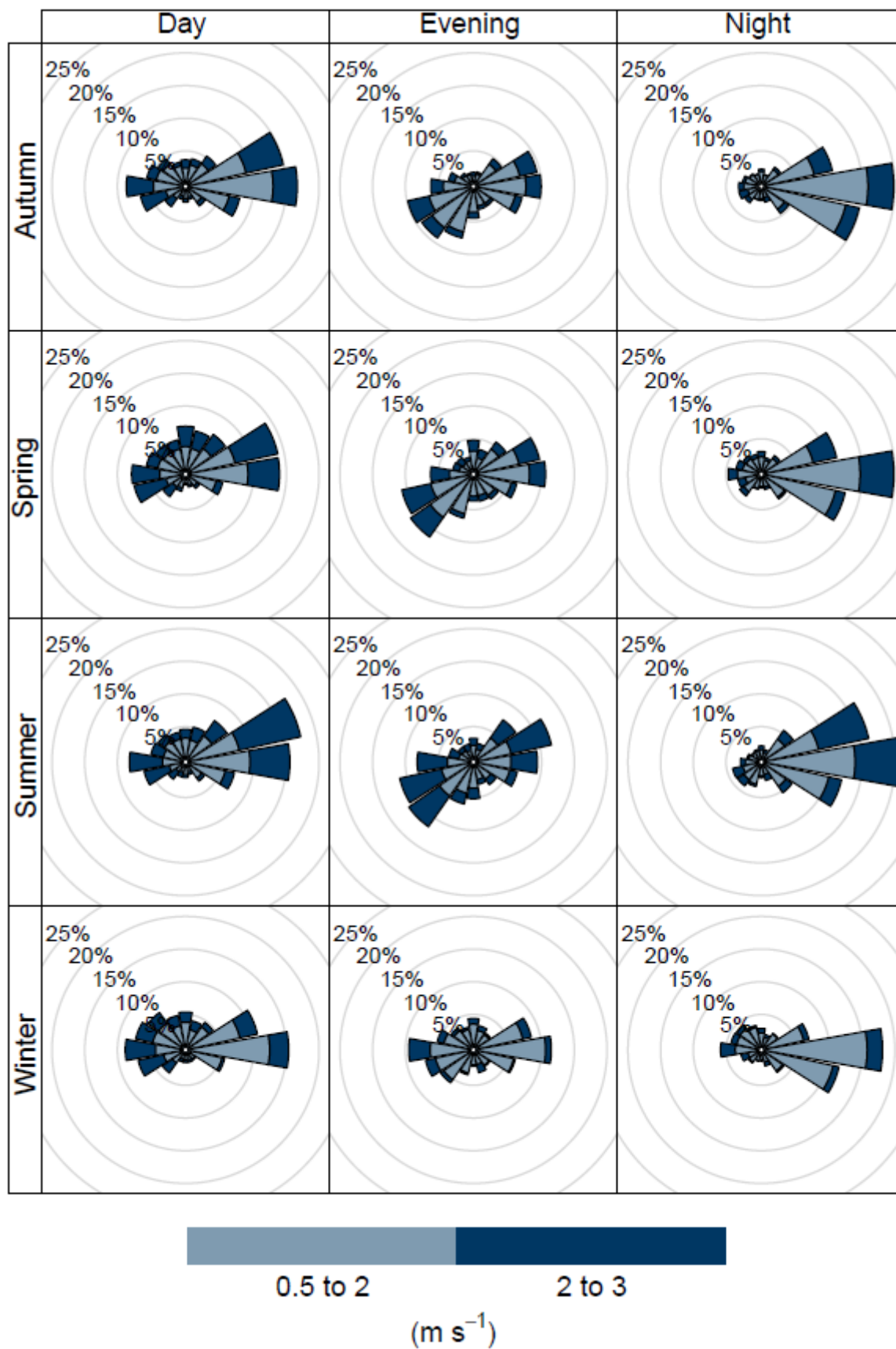


Figure 3.2 5-Year wind rose (seasonal and relevant assessment periods) – Wagga Wagga AWS

Table 3.4 **Significant noise-enhancing conditions analysis – Wagga Wagga AWS 2020 - 2024**

Wind Direction	Summer				Autumn				Winter				Spring			
	Day	Evening	Night		Day	Evening	Night		Day	Evening	Night		Day	Evening	Night	
	A – D	A – D	A – D	F	A – D	A – D	A – D	F	A – D	A – D	A – D	F	A – D	A – D	A – D	F
N	20%	7%	1%	7%	18%	2%	0%	9%	22%	1%	0%	12%	24%	7%	1%	10%
NNE	30%	10%	2%	12%	26%	3%	0%	14%	26%	1%	0%	15%	31%	9%	1%	14%
NE	39%	11%	4%	21%	37%	3%	0%	27%	34%	1%	0%	27%	39%	10%	2%	25%
ENE	41%	12%	6%	27%	40%	3%	0%	38%	33%	0%	0%	35%	37%	10%	3%	33%
E	40%	13%	6%	30%	39%	3%	0%	40%	31%	0%	0%	37%	34%	10%	3%	35%
ESE	35%	11%	6%	28%	36%	3%	0%	39%	28%	0%	0%	36%	30%	9%	3%	34%
SE	23%	9%	5%	23%	25%	2%	0%	33%	20%	0%	0%	31%	20%	7%	3%	28%
SSE	13%	8%	3%	15%	13%	2%	0%	20%	9%	0%	0%	18%	10%	6%	1%	17%
S	9%	10%	1%	11%	10%	3%	0%	10%	8%	0%	0%	9%	9%	8%	1%	10%
SSW	11%	12%	1%	10%	13%	4%	0%	8%	13%	1%	0%	7%	13%	11%	0%	9%
SW	17%	14%	1%	10%	19%	5%	0%	9%	19%	1%	0%	8%	18%	11%	1%	10%
WSW	19%	14%	1%	10%	22%	5%	0%	9%	24%	1%	0%	10%	22%	11%	1%	11%
W	21%	13%	1%	8%	24%	5%	0%	9%	28%	1%	0%	12%	24%	11%	1%	11%
WNW	22%	10%	1%	7%	24%	4%	0%	9%	29%	1%	0%	14%	25%	9%	1%	11%
NW	21%	8%	1%	6%	22%	3%	0%	9%	28%	1%	0%	14%	24%	6%	1%	11%
NNW	19%	5%	1%	5%	18%	2%	0%	8%	24%	1%	0%	12%	23%	6%	1%	10%

Note: the significant noise-enhancing conditions analysis considers wind speeds between 0 and 3 m/s.

4. Impact assessment

4.1 Construction noise impacts

4.1.1 Summary of exceedances

Construction noise levels have been predicted at the sensitive receivers with consideration to the NML. A summary of the predicted construction noise levels at residential and non-residential receivers for each construction scenario is presented in Table 2.5 and Table 2.6 respectively. An overview of the predicted noise levels at all sensitive receivers within the study area is included in Appendix C and noise contours of each scenario are shown in Figure 4.1 to Figure 4.3.

The predicted noise levels of each construction scenario are compared against the assessment period and associated NMLs as detailed in Table 2.5 and Table 2.6.

4.1.1.1 Standard construction hours (NML of 45 dBA)

During standard construction hours (Monday-Friday 7am-6pm and Saturday 8am-1pm), the following impacts are predicted:

- Piling works (CS2): 6 residential receivers would experience noise levels exceeding the 45 dBA NML by up to 7 dBA
- Site preparation, access upgrades and bulk earthworks (CS1): 1 residential receiver would exceed the NML by up to 1 dBA
- Construction of compressor station (CS3): no residential receivers would exceed the NML.

All predicted noise levels remain below the highly noise affected level of 75 dBA at all residential receivers and non-residential receivers are not predicted to experience noise levels above the respective NML.

4.1.1.2 Outside of standard construction hours – Daytime (NML of 40 dBA)

For construction during the daytime, outside of standard hours (Saturday 7am-8am and 1pm-6pm, Sunday/public holidays 8am-6pm), impacts are predicted as follows:

- CS1 (Site preparation): 5 receivers exceeding the NML by up to 6 dBA
- CS3 (Construction of compressor station): 4 receivers exceeding the NML by up to 3 dBA.

4.1.1.3 Outside standard construction hours – Early morning (NML of 35 dBA)

For construction during early morning (Sunday/public holidays 7am-8am), impacts are predicted as follows:

- CS1 (Site preparation): 17 residential receivers would exceed the NML in the following perception categories:
 - 12 receivers: 1-5 dBA above NML (noticeable)
 - 5 receivers: 5-15 dBA above NML (clearly audible).
- CS3 (Construction of compressor station): 6 residential receivers would exceed the NML in the following perception categories:
 - 2 receivers: 1-5 dBA above NML (noticeable)
 - 4 receivers: 5-15 dBA above NML (clearly audible).

4.1.2 Duration of exceedances

Construction of the proposed modification would take approximately twelve months, followed by three months of commissioning. The intensity of the construction works is likely to vary throughout the construction of the proposed

modification. During the commissioning phase, no significant construction noise impacts are anticipated as required works would be minimal.

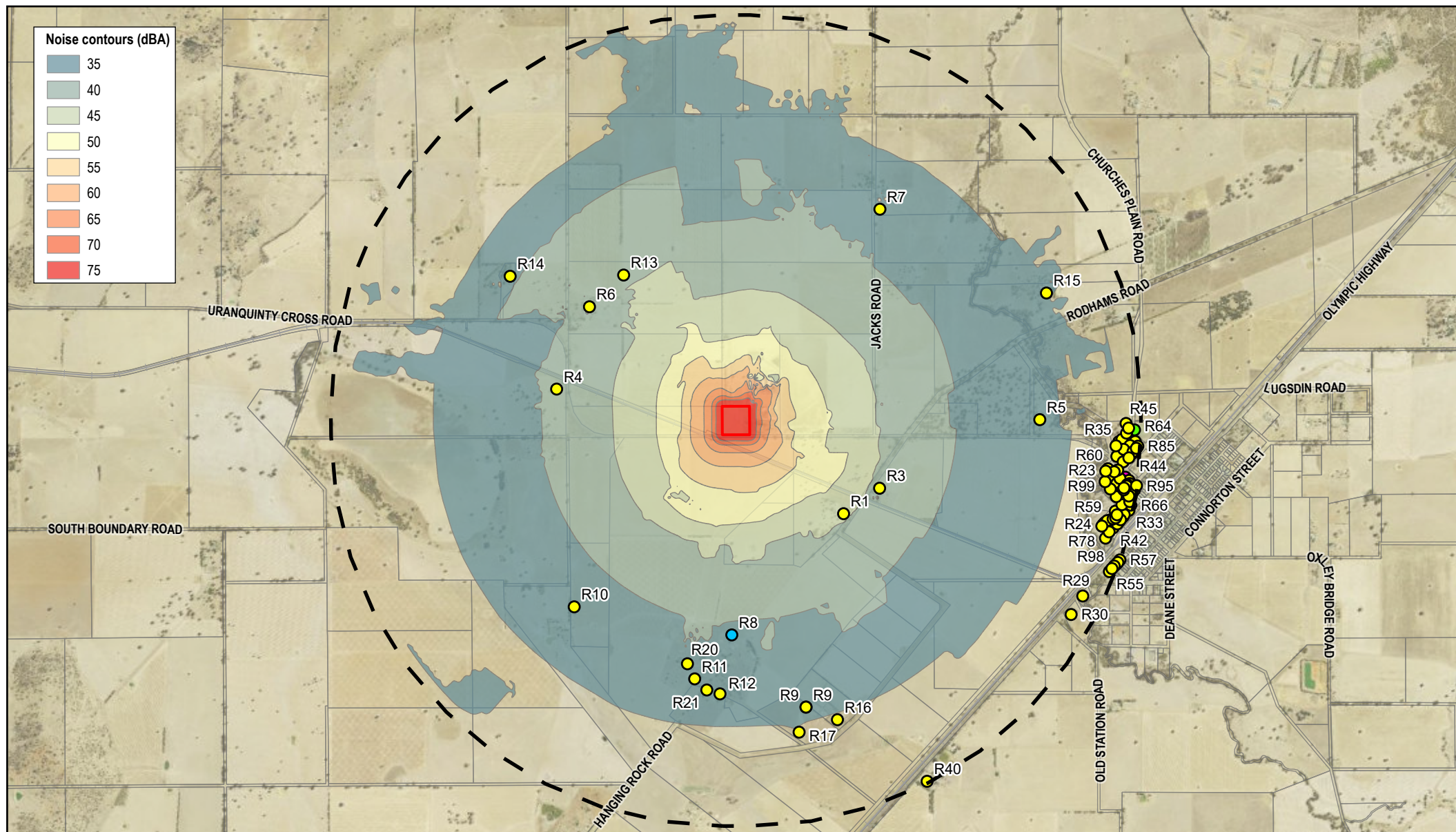
4.1.3 Significance of exceedances

Potential exceedances of the NMLs would vary depending on the construction activities. Where works occur during standard construction hours, exceedances of the NMLs are minor and only a few sensitive receivers are predicted to be impacted.

Construction works outside of the standard construction hours, particularly where works are undertaken on Sunday between 7am and 8am, would have a greater impact on receivers. Nonetheless, appropriate mitigation measures, particularly for works outside of the standard construction hours, would make the exceedances manageable and are provided in section 5.1.

Table 4.1 Summary of construction noise levels at residential receivers

		Site preparation, access upgrades and bulk earthworks	Piling	Construction of the compressor station
		CS1	CS2	CS3
Highest predicted noise level (dBA)		46	52	43
NML of 45 dBA - Standard hours (Monday-Friday 7am-6pm and Saturday 8am-1pm)				
Total number of exceedances.		1	6	0
Number of receivers per perception category.	1 to 10 dBA	1	6	0
	10 to 20 dBA	0	0	0
	>20 dBA	0	0	0
NML of 40 dBA – Outside of standard hours daytime (Saturday 7am-8am and 1pm-6pm, Sunday/public holidays 8am-6pm)				
Total number of exceedances.		5	Not applicable.	4
Number of receivers per perception category.	1 to 5 dBA	4		4
	5 to 15 dBA	1		0
	15 to 25 dBA	0		0
	>25 dBA	0		0
NML of 35 dBA – Outside of standard hours early morning (Sunday/public holidays 7am-8am)				
Total number of exceedances.		17	Not applicable.	6
Number of receivers per perception category.	1 to 5 dBA	12		2
	5 to 15 dBA	5		4
	15 to 25 dBA	0		0
	>25 dBA	0		0



LEGEND

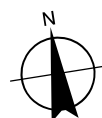
- Study area
- Proposed site
- Lot
- Railway

Sensitive receivers

- Commercial
- Passive Recreation
- Place of Worship
- Residential

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Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 55

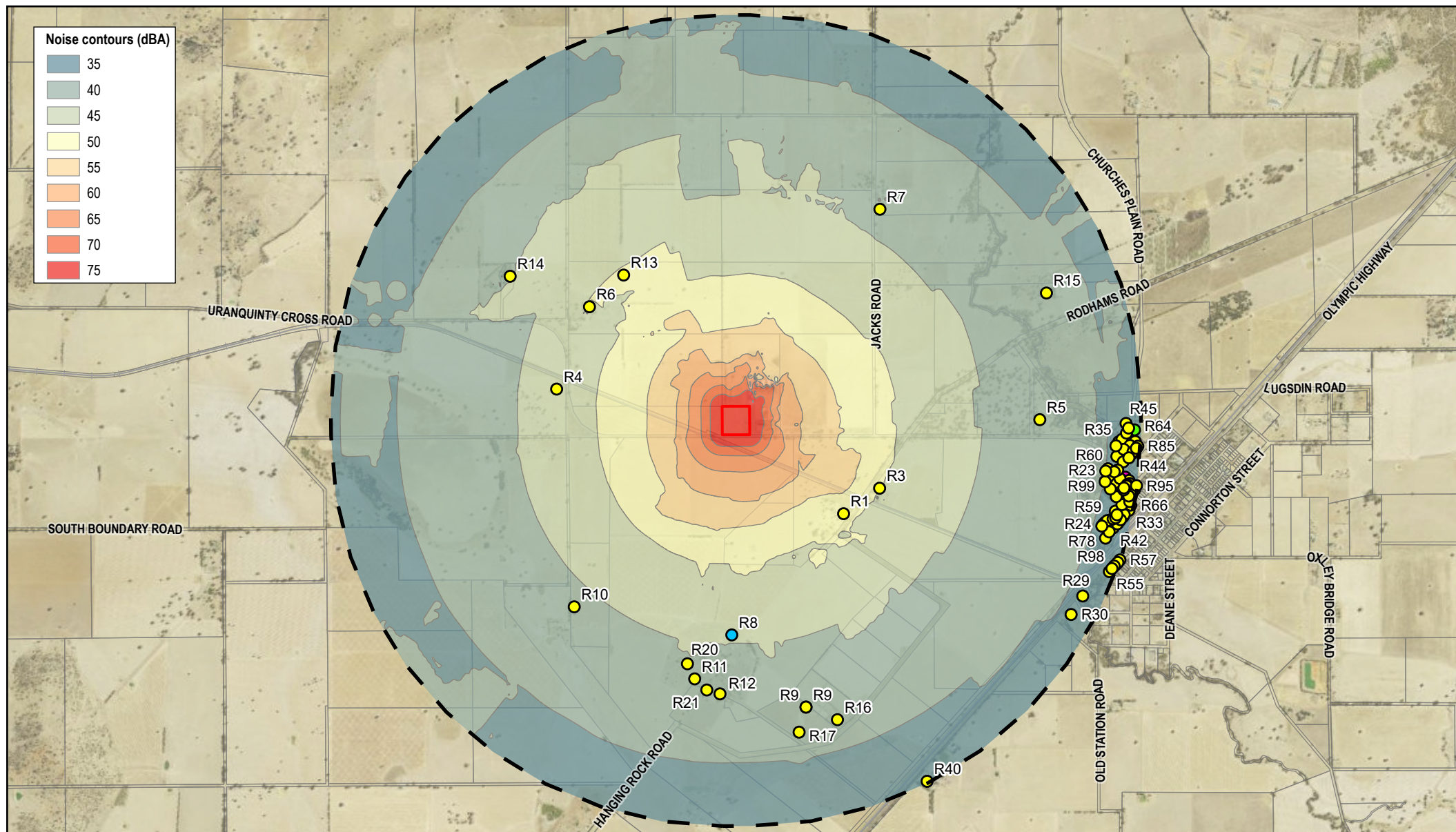


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**Construction noise contours CS1 -
Site preparation, access upgrades
and bulk earthworks**

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FIGURE 4.1



LEGEND

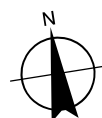
- Study area
- Proposed site
- Lot
- Railway

Sensitive receivers

- Commercial
- Passive Recreation
- Place of Worship
- Residential

Paper Size ISO A4
0 290 580 870 1,160
Metres

Map Projection: Transverse Mercator
Horizontal Datum: GDA 1994
Grid: GDA 1994 MGA Zone 55

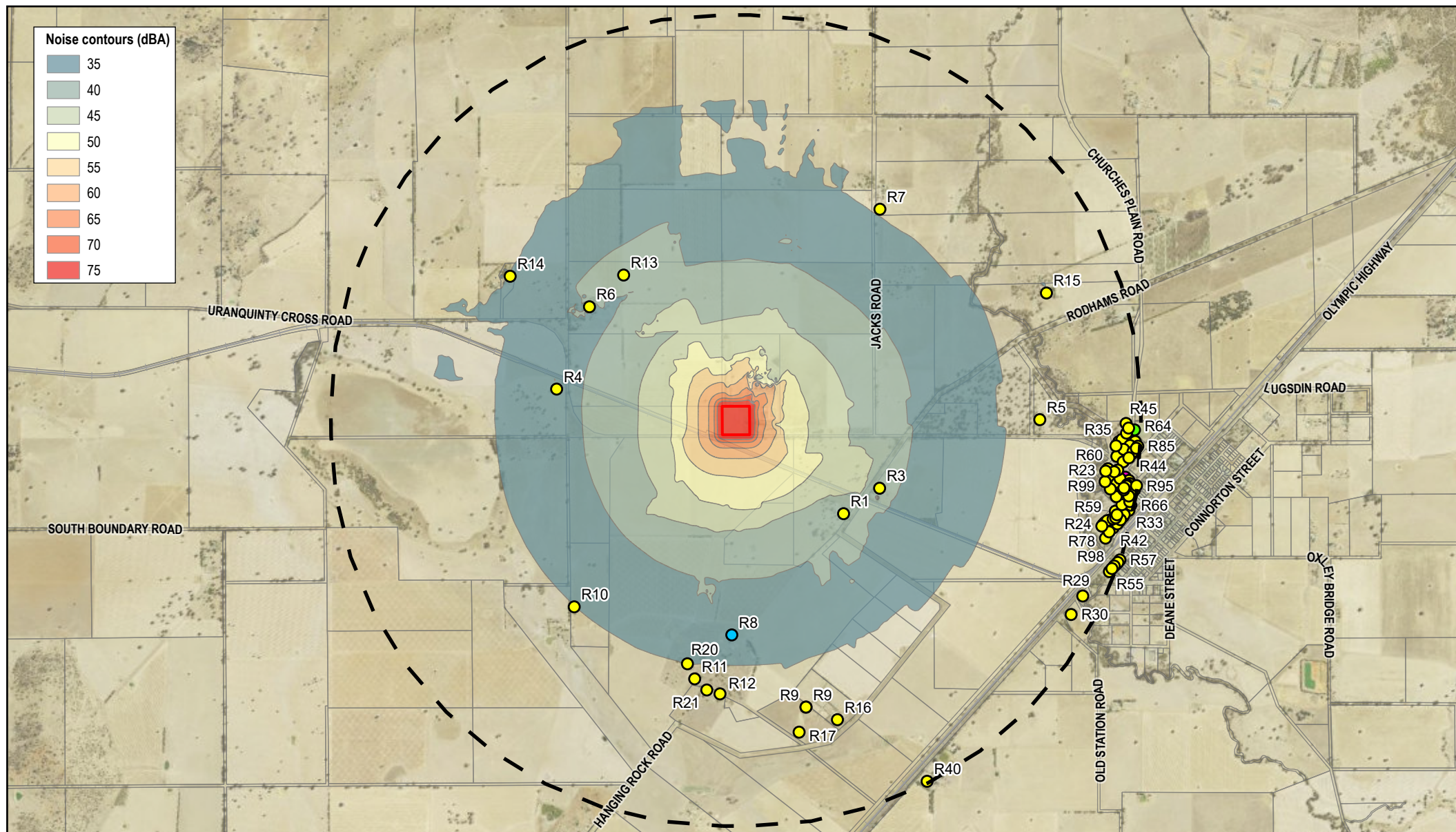


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MOD 1 Uranquinty Compressor Station Noise
and Vibration Assessment

Construction noise contours CS2 -
Piling

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FIGURE 4.2



4.2 Construction vibration impacts

4.2.1 Human comfort

The most vibration intensive activity associated with the construction of the proposed modification is anticipated to be impact piling or vibratory rollers (13-18 tonnes). Vibrations from this equipment has the potential to exceed the human comfort vibration criteria should these works occur within 100 m of residences. No residences are located within this distance from the proposed modification site and as such, no adverse human comfort vibration impacts are anticipated.

4.2.2 Cosmetic damage

Vibrations from vibratory rollers (13-18 tonnes) has the potential to exceed the cosmetic damage vibration criteria should these works occur within 20 m of buildings. No sensitive buildings are located within 20 m of the proposed site and as such no adverse cosmetic damage vibration impacts are anticipated.

4.3 Road traffic noise impacts

The increase in road traffic noise level at sensitive receivers located along Olympic Highway and Uranquinty Cross Road is presented in Table 4.2. The table shows that along Olympic Highway the road traffic noise levels do not increase by more than 2 dB and as such no impacts are anticipated at receivers located along the Olympic Highway.

Along the Uranquinty Cross Road, sensitive receivers are anticipated to experience an increase of 3.7 dB during the worst-case peak hour. Mitigation and management measures to minimise noise impacts from construction traffic generation are provided in section 5.1 and should be implemented.

Table 4.2 Construction road traffic noise results

Road	Road type	Distance to nearest residence (m)	Period	Direction	Daytime controlling criteria (dBA)	Existing noise level (dBA)	Predicted noise level (dBA)	Noise level increase difference (dB)	Consideration for mitigation?
Olympic Highway	Arterial Road	20 ¹	Day	Northbound	60 L _{Aeq,15hr}	62	62	0.1	No
				Southbound	60 L _{Aeq,15hr}	62	62	0.0	No
Uranquinty Cross Road	Local Road	25	Day	Both directions	55 L _{eq,1hr}	54	57	3.7	Yes

Notes:

1. Residential receivers within the town of Uranquinty.

4.4 Operational noise impacts

4.4.1 Modifying factor correction discussion

Compressor stations are known sources of low frequency noise, which can be considered an annoying characteristic requiring a modifying factor correction analysis. However, the available supplier data is limited to octave band noise levels, and one-third octave band data, which is necessary for a more detailed assessment, is not available. This limitation prevents a detailed analysis of whether the noise levels at sensitive receivers exhibit annoying low frequency characteristics.

Despite this, an initial trigger for low-frequency noise is a difference of 15 dB or more between the C-weighted and A-weighted noise levels. An assessment at representative receivers, presented in Table 4.3, indicates that receivers closer to the proposed modification show differences below 15 dB, while those farther away show differences of 15 dB or more.

Given that this analysis suggests the presence of low frequency noise characteristics at some receivers, a conservative 5 dB penalty has been applied to the predicted operational noise levels at those sensitive receivers where the noise level has the potential to contain low frequency noise characteristics. This is considered conservative as the NPfl threshold levels are not expected to be exceeded.

Table 4.3 Low frequency noise analysis – difference between dBA and dBC

Receiver ID	Address	Distance to UPS (m)	Predicted operational noise level		Difference (dB)	Contains low frequency noise characteristics?
			A-weighted (dBA)	C-weighted (dBC)		
R1	70 Hanging Rock Road, Uranquinty	1,070	31	42	11	No
R4	449 Uranquinty Cross Road, Uranquinty	1,500	26	41	15	Yes
R5	56 Uranquinty Cross Road, Uranquinty	2,030	21	34	13	No
R6	478 Uranquinty Cross Road, Uranquinty	1,370	27	38	11	No
R7	176 Jacks Road, Uranquinty	1,510	22	35	13	No
R8	88 Hanging Rock Road, Uranquinty	1,875	24	37	13	No

4.4.2 Predicted noise levels

An overview of the predicted $L_{Aeq,15min}$ noise levels at representative sensitive receivers for the proposed modification are presented in Table 4.4 and are assessed against the most stringent Project Noise Trigger Level (PNTL). If noise levels at the receiver are found to include low frequency noise characteristics, a 5 dB penalty is applied as described in section 4.4.1 and is indicated in brackets.

An overview of the predicted noise levels at all sensitive receivers within the study area is included in Appendix D and noise contours are shown in Figure 4.4.

The predicted operational noise levels are expected to comply with the PNTLs at all sensitive receivers. Receivers R1 and R4 are anticipated to be the most-affected sensitive receivers, experiencing a noise level of 31 dBA.

Table 4.4 Predicted operational noise levels

Receiver ID	Address	PNTL nighttime $L_{Aeq,15min}$ (dBA)	Predicted operational noise level $L_{Aeq,15min}$ (dBA)	Compliance with the PNTL?
R1	70 Hanging Rock Road, Uranquinty	35	31	Yes
R4	449 Uranquinty Cross Road, Uranquinty	35	31 (26 + 5) ¹	Yes
R5	56 Uranquinty Cross Road, Uranquinty	35	21	Yes
R6	478 Uranquinty Cross Road, Uranquinty	35	27	Yes
R7	176 Jacks Road, Uranquinty	35	22	Yes
R8	88 Hanging Rock Road, Uranquinty	35	24	Yes

Notes: 1. The predicted operational noise levels are corrected to account for potential low frequency noise characteristics by applying a 5 dB penalty.

4.4.3 Cumulative impacts with the UPS

The proposed modification amenity noise level of 38 dBA is achieved at all sensitive receivers and no additional consideration of cumulative noise impacts would be required in accordance with the NPfl. Nonetheless, the potential for cumulative noise from the proposed modification and the existing UPS are assessed against the recommended amenity noise level of 43 dBA ($L_{Aeq,15min}$) for rural receivers during the nighttime.

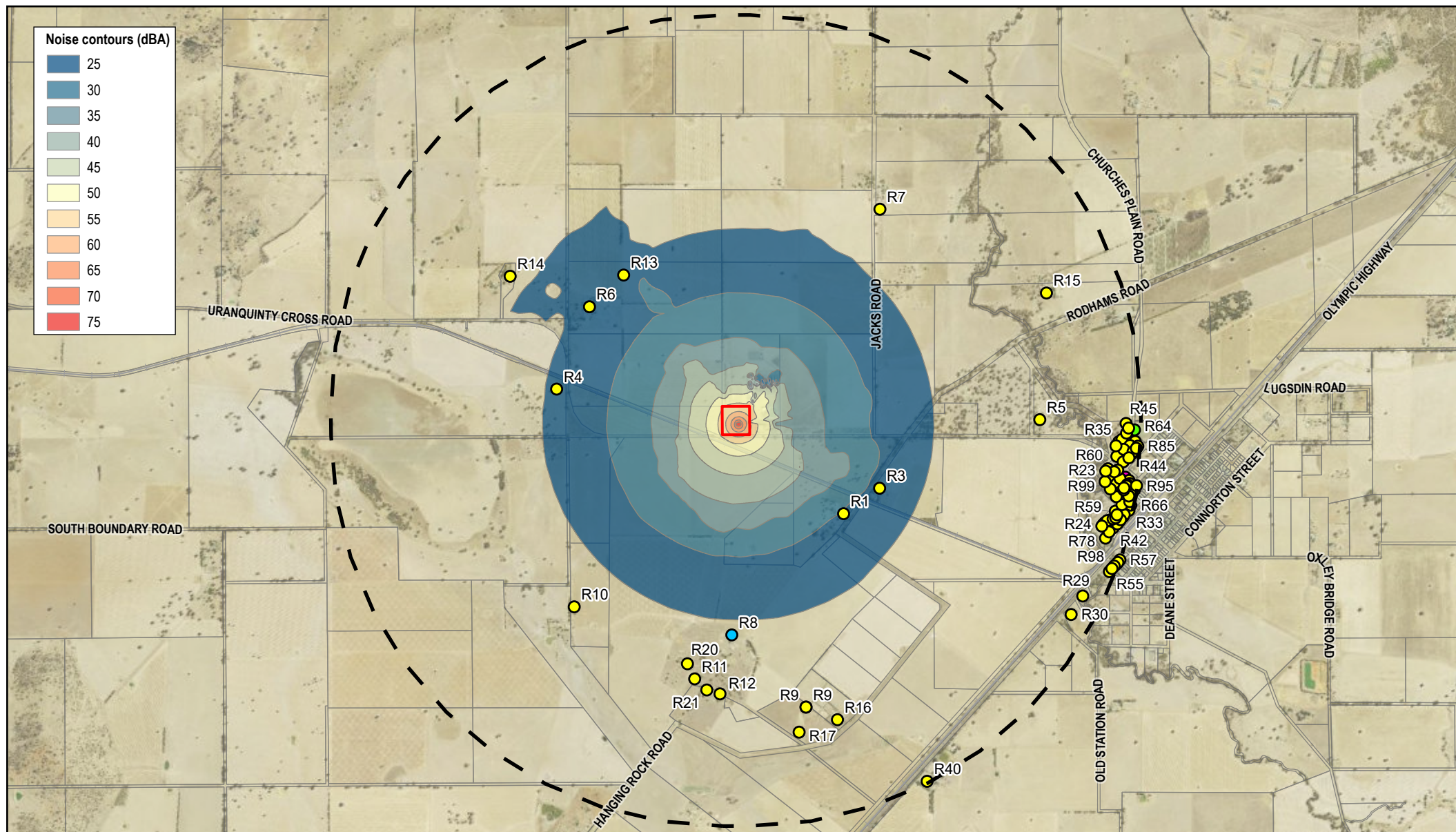
The UCS will be designed and operated to achieve the PNTL of 35 dBA at the most-affected receiver, while the noise level from the UPS is considered to be less than 41 dBA at receiver R4. Cumulatively, this would result in a noise level of 42 dBA, which achieves the recommended amenity noise level during the nighttime. The proposed modification would increase the noise levels by 1 dB, which would not be noticeable.

4.5 Decommissioning impacts

The decommissioning phase will likely involve rehabilitation of temporary disturbance areas back to their original state, which may include filling excavated areas, reinstating topsoil and revegetation of disturbed areas.

The proposed site will be rehabilitated progressively as construction activities are completed. The site will be fully rehabilitated following decommissioning of the compressor station at the end of its project life which is estimated to be around 25 years.

Noise impacts during decommissioning of the proposed modification would likely be equal to or less than during the construction of the proposed modification.



LEGEND

- Study area
- Proposed site
- Lot
- Railway

Sensitive receivers

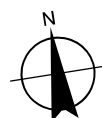
- Commercial
- Passive Recreation
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- Residential

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Operational noise contours

FIGURE 4.4

5. Recommended mitigation measures

The assessment shows that construction of the proposed modification has the potential to affect sensitive receivers. Mitigation measures to minimise the potential for construction noise and vibration impacts where reasonable and feasible are provided in section 5.1.

Noise during operation of the proposed modification is anticipated to achieve the PNTLs. Nonetheless, mitigation measures to be considered during the detailed design and to be implemented for the operational phase of the proposed modification are provided in section 5.2.

5.1 Construction noise and vibration

The ICNG identifies that, due to the nature of construction, it is inevitable that impacts arise where construction occurs near sensitive receivers. During construction, there would be noise impacts on some receivers during certain times and during certain construction activities. The assessment identified the following key potential noise impacts:

- Exceedances of the NMLs during the construction works at some receivers with the number of receivers affected depending on the type of work and time of day in which works occur.
- Sensitive receivers along Uranquinty Cross Road may experience temporary noise levels above the road traffic noise criteria as a result of peak traffic movements associated with the proposed modification.

5.1.1 Construction environmental management plan

A Construction Environmental Management Plan (CEMP) would be prepared prior to commencement of construction of the proposed modification. The CEMP would detail the selected noise control measures used to minimise construction noise and vibration impacts and would be reviewed and updated as necessary as additional information on construction becomes available. Once a detailed construction methodology is developed, appropriate noise control measures should be implemented by the selected contractor.

5.1.2 Construction mitigation and management measures

The construction impact assessment shows that the construction activities associated with the proposed modification would exceed the established NMLs depending on the type of work and time of day in which works occur. The noise mitigation measures detailed in Table 5.1 are recommended, where reasonable and feasible, to reduce and manage the impact on the surrounding receivers during construction.

Table 5.1 Mitigation measures for construction noise and vibration

Action required	Details	Responsibility and timing
Management measures		
Best practice requirements to manage construction NML exceedances	Noise generated by any construction, upgrading or decommissioning activities will be minimised in accordance with the best practice requirements outlined in the <i>Interim Construction Noise Guideline</i> (DECC, 2009), or its latest version.	APA / Contractor Construction
Site inductions	An environmental induction will be provided to all employees, contractors and subcontractors entering site. The induction will include, but is not limited to: – all relevant project specific and standard noise and vibration mitigation measures – relevant licence and approval conditions – permissible hours of work – location of nearest sensitive receivers – construction employee parking areas – designated loading/unloading areas and procedures – site opening/closing times (including deliveries) – environmental incident procedures.	APA / Contractor Construction
Construction hours and scheduling	Activities on site will be undertaken as per the approved CEMP and only during the proposed construction hours. The proposed modification construction hours are: – Monday to Friday: 7am to 6pm – Saturday: 7am to 6pm – Sunday and/or Public Holidays: 7am to 6pm. With the exception of the following circumstances: – emergency work to avoid the loss of life, property and/or material harm to the environment – Where police or other authorities determine that the delivery of oversized plant or structures require special arrangements to transport along public roads, these deliveries could be undertaken outside of the recommended standard hours to minimise impacts on the community. – where a negotiated agreement has been reached with affected receivers. High noise generating works (i.e. piling works) will only be conducted during the ICNG recommended standard construction hours.	APA / Contractor Construction
Construction activities outside of recommended standard hours (extended working hours)	The following requirements will be implemented to manage potential noise impacts during outside of the recommended standard hours: – Where reasonable and feasible, restrict construction works that are predicted to exceed the NMLs outside of standard hours at nearby receivers to standard construction hours only. – Where works are required out of hours, and where reasonable and feasible, only undertake 'low impact noise activities' outside of standard hours. This is defined as construction activities that cause $L_{Aeq,15min}$ noise levels of no more than 5 dB(A) above the RBL for that period.	APA / Contractor Construction
Community consultation and notification		
Community consultation and notification	The following community consultation and notification will be undertaken: – Provide at least 7 days' notice to the identified receivers prior to starting work, unless it is emergency works or it is discussed with the affected receivers face-to face. The notification would likely be in the form of a letter, including the following information: a description of the works and why they are being undertaken • details of the works that will be noisy • work hours and expected duration • what is being done to minimise the impacts • 24-hour contact number	APA / Contractor Construction

Action required	Details	Responsibility and timing
	maintain good communication between the community and staff. This may include a local community update letter for specific construction activities and a project info line.	
Complaints management	Complaints will be managed in accordance with the procedure outlined below. Signage at each site will clearly and visibly provide a contact number and name to receive complaints and enquiries about construction. Potential complaints specific to these works could include: - noise impacts from works that significantly affect the identified receivers. - a cluster of noise and/or vibration complaints. In this instance the response would be to: - verbally respond to complainant - provide a written response within seven calendar days if the complaint cannot be resolved verbally - log the complaint, and any actions taken with regards to the complaint within a complaints register - undertake monitoring at the complainant's residence(s) - investigate the nature and reasons of the impact - investigate and implement further mitigation measures to minimise the impact.	APA / Contractor Construction
Source controls		
Equipment selection	Quieter and less vibration emitting construction methods will be used where reasonable and feasible, with only the necessary size and power to be used. The noise levels of plant and equipment will have an operating SWL lower or similar to the levels presented in Table 2.2. Broadband reversing alarms will be used in preference to 'beeper' reversing alarms on construction vehicles and machinery. Where vibratory rollers are required during construction, the size of the rollers must be less than 18 tonnes to achieve the safe working distances detailed in Table 2.11.	APA / Contractor Construction
Construction road traffic noise	Where compliance with the road traffic noise criteria in the RNP is unable to be achieved, reasonable and feasible noise mitigation and management measures will be included in the CNVMP, including: - reducing heavy vehicle speeds on Uranquinty Cross Road - managing driver behaviour via inductions, toolbox talks and minimise the use of engine compression brakes - minimising peak hour heavy vehicle movements on local roads where practicable	APA / Contractor Construction

5.2 Operation

The operational noise levels of the proposed modification are predicted to achieve the PNTLs. It is recommended that a noise validation assessment is undertaken once the proposed modification is operational to confirm compliance.

Furthermore, an operational noise management plan (ONMP) will be developed to minimise the risk of adverse noise impacts during the operation of the site. Table 5.2 provides recommendations of mitigation measures for inclusion in the ONMP. The ONMP will consider:

- The relevant licence conditions (to be confirmed)
- Conditions of approval (to be confirmed)
- The *Noise Policy for Industry* (EPA, 2017)
- *Australian standards 1055 acoustics – description and measurement of environmental noise* (Australian Standard, 2018)
- *Approved methods for the measurement and analysis of environmental noise in NSW* (EPA, 2022).

Table 5.2 Operational noise and vibration mitigation measures

Control type	Recommended mitigation measure	Responsibility
Equipment selection and detailed design		
Main noise sources	The sound power levels of the operational equipment should be equal or lower than those presented in Table 2.21 of this report. Should one-third octave band noise data for plant and equipment become available during further detailed design of the site, this should be incorporated into the noise model to assess the potential for tonal or low frequency noise characteristics. This would identify potential mitigation requirements to ensure compliance with the project noise trigger levels.	APA
Operational noise validation assessment		
Operational noise validation assessment	Within 12 months of commissioning of the proposed modification, a noise validation assessment would be undertaken and include, but not be limited to: – At-source measurements of the equipment to confirm overall and one-third octave band noise levels. – Noise monitoring at the most-affected receivers or an intermediate location to quantify noise levels from the proposed modification at distance and will be undertaken in accordance with the methodology outlined in <i>Approved methods for the measurement and analysis of environmental noise in NSW</i> (EPA, 2022). – Assessment of the measured operational noise levels against the PNTL of 35 dBA $L_{Aeq,15min}$ and include an assessment for annoying characteristics as defined in Fact Sheet C of the NPfI. – Reporting of the findings to show if the site complies with the PNTLs and identify whether mitigation measures are required to reduce noise levels to comply with the PNTLs.	APA
Operational noise validation assessment qualifications	The operational noise validation assessment would be carried out by a suitably qualified noise specialist. Records of routine equipment calibration and testing would be maintained by the qualified noise specialist undertaking the assessment.	APA
Operational noise management measures for operators and workers		
Operational noise management measures for operators and workers	– All equipment should be properly maintained in accordance with the manufacturer's specifications. – All equipment should be operated in the appropriate manner. – Where noisy maintenance is required, it should be scheduled to occur during periods when receivers are less sensitive, such as during the daytime.	APA
Complaints handling protocol		
Complaints handling	Complaints regarding situations where noise emission levels are perceived by residents to be a problem will be managed in accordance with the APA's community grievance, complaint and feedback guidelines and procedure. The complaints management process will include: – Receive and record details of the complaint. – Acknowledge receipt of complaint with complainant. – Screen the category and type of complaint. – Investigate complaint and inform complainant of investigation status. – Resolve/mitigate the complaint with appropriate corrective actions, within agreed timeframes. – A site manager will investigate to determine the possible source of the noise. – Should a problem noise source be identified, the method of operation is to be altered or controlled where reasonable and feasible. – If required, noise monitoring at the complainant's property will be undertaken if the complainant is not satisfied with the corrective action. – Any corrective action is to be recorded and reported to the site manager, who is to keep a record of all actions. – The site manager will be informed of any complaint and details must be recorded in a complaints register.	APA

Control type	Recommended mitigation measure	Responsibility
	The site manager will notify potentially affected receivers if observations indicate that the noise criteria is being exceeded due to activities carried out on site. The affected receivers will be notified of exceedances and the source of the impact in writing within 48 hours of detection and verification.	
Noise monitoring in response to complaints	Where compliance noise monitoring is undertaken in response to complaints, the noise monitoring will be undertaken with the following considerations: – Monitoring would be carried out by a suitably qualified noise specialist. records of routine equipment and testing would be maintained by the qualified noise specialist undertaking the assessment. – Monitoring would be undertaken at the most critical time of day near the complainant and near the identified source of the impact. – The prevailing meteorological conditions during the monitoring will be noted. – A report will be prepared detailing the findings of the compliance noise monitoring in accordance with the requirements provided in the NPfI	APA

6. Conclusion

APA commissioned GHD to undertake a noise and vibration impact assessment as part of the Modification Report for the proposed modification.

The proposed modification is expected to have manageable exceedances of the noise management levels during construction. Several receivers are anticipated to experience exceedances during construction activities, particularly when construction activities are undertaken outside of the standard construction hours. However, mitigation measures to minimise noise impacts as far as practicable will be implemented during construction of the proposed modification.

Human comfort or cosmetic damage vibration impacts are not anticipated to affect any sensitive receiver due to their distance from the construction activities.

Construction traffic is not anticipated to significantly increase noise levels along the Olympic Highway. However, sensitive receivers along Uranquinty Cross Road may experience road traffic noise levels above the road traffic noise criteria during peak hour construction traffic movements. Mitigation measures to reduce road traffic noise impacts will be implemented as far as reasonably practicable.

Operation of the proposed modification is predicted to achieve the PNTL at all sensitive receivers. It is recommended that a noise validation assessment is undertaken once the proposed modification is operational to confirm the noise predictions.

Cumulative noise impacts from concurrent operation of the proposed modification and the UPS are not anticipated as the recommended amenity noise level criteria for rural residential receivers will be achieved.

The mitigation and management measures detailed in section 5 will be implemented to minimise noise and vibration impacts to sensitive receivers.

7. References

- Australian Standard. (2010). *AS2436: Guide to Noise Control on Construction, Maintenance and Demolition Site*.
- Australian Standard. (2018). *AS1055: Acoustics - Description and measurement of environmental noise*.
- Bies, D., Hansen, C., & Howard, C. (2017). *Engineering Noise Control - Fifth Edition*.
- British Standards. (1992). *BS6472: Guide to Evaluation of Human Exposure to Vibration in Buildings*.
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- British Standards. (2009). *BS5228-2: Code of Practice Part 2 Vibration for noise and vibration on construction and open sites - Part 2: Vibration*.
- DEC. (2006). *Assessing Vibration: A Technical Guideline*.
- DECC. (2009). *Interim Construction Noise Guideline*.
- DECCW. (2011). *NSW Road Noise Policy*.
- Department of Transport, Welsh Office. (1988). *Calculation of Road Traffic Noise (CoRTN)*.
- EPA. (2017). *Noise Policy for Industry*.
- EPA. (2022). *Approved methods for the measurement and analysis of environmental noise in NSW*.
- ISO. (1996). *ISO9613-2: Acoustics - Attenuation of sound during propagation outdoors - Part 2: General method of calculation*.
- Origin. (2024). *Uranquinty Power Station Environmental Management Plan*.
- Pinkerton, A., & Chapple, S. (1993). *The Design of Quiet Air-Cooled Heat Exchangers*.
- TfNSW. (2021). *Olympic Highway Intersection Upgrades Noise and Vibration Impact Assessment - Appendix B Existing Traffic Counts*.
- TfNSW. (2024). *Construction Noise and Vibration Guideline (Roads)*.

Appendices

Appendix A

**Noise monitoring methodology and
results**

A-1 Noise monitoring methodology

Long-term unattended noise monitoring was undertaken from Thursday 20 March 2025 to Tuesday 22 April 2025 at two residential locations and at the proposed modification site to quantify and characterise the existing ambient noise environment in the study area.

The methodology for the noise monitoring program included the following:

- All monitoring activities were undertaken with consideration of the specifications outline in Australian Standard AS1055 (2018) *Description and measurement of environmental noise*.
- A calibration check was performed on the noise monitoring equipment using a sound level calibrator with a sound pressure level of 94 dBA at 1 kHz. At completion of the measurements, the meter's calibration was re-checked to ensure the sensitivity of the noise monitoring equipment had not varied. The noise loggers were found to be within the acceptable tolerance of ± 1 dBA.
- Noise monitoring was undertaken using one Svantek SVAN 977 environmental noise logger at the proposed modification site and two Svantek SVAN SV200A environmental noise monitoring stations. The noise loggers were programmed to accumulate L_{A90} , L_{A10} , and L_{Aeq} noise descriptors continuously over the entire monitoring period. Details of the noise monitoring equipment are provided in the table below.
- The data collected by the logger was downloaded and analysed, and any invalid data removed. Invalid data generally refers to periods of time where average wind speeds were greater than 5 m/s, or when rainfall occurred. Meteorological data was sourced from a weather station deployed at logger location ML2.

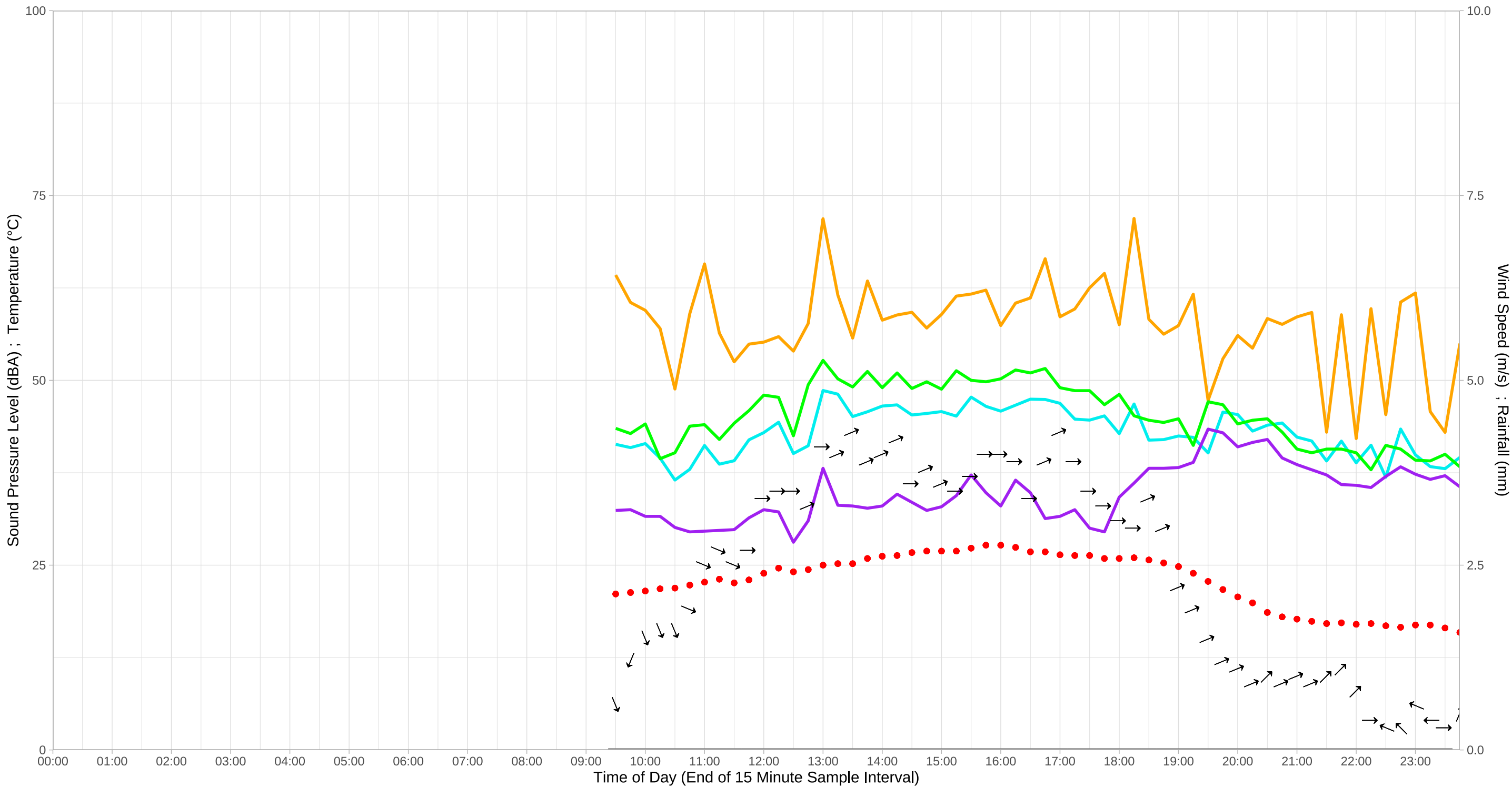
Details of the monitoring equipment and locations are provided in the table below. Additionally, daily graphs of the monitoring results are included below.

Table A.1 *Noise monitoring results and location*

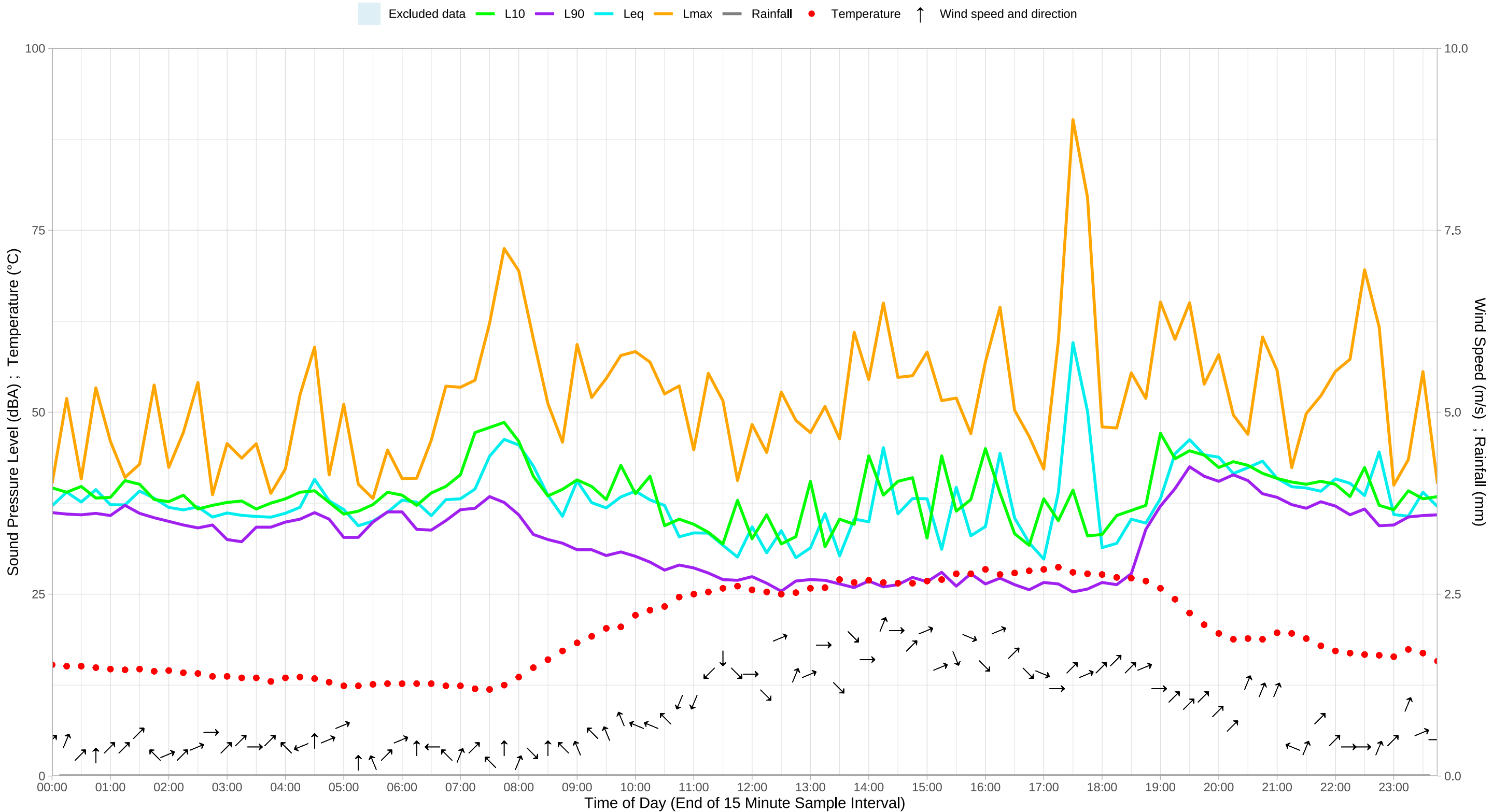
Location	Equipment details	Equipment settings	Logger photo
ML1, proposed modification site	Sound level meter: SVAN977 (SN: 97591) Class 1 sound level meter IEC 61672-3:2013-compliant Manufactured prior to 2019 Calibrator: SVAN SV30A (SN: 29030) IEC 61672-3:2013-compliant Manufactured prior to 2017	Weighting: A-weighted Response type: Fast Interval period: 15 minutes Pre to post calibration variance: 0.5 dB	
ML2, 70 Hanging Rock Road, Uranquinty	Sound level meter SVAMNN SV200A (SN: 65115) Class 1 sound level meter IEC 61672-3:2013-compliant Calibrator: SVAN SV30A (SN: 29030) IEC 61672-3:2013-compliant Manufactured prior to 2017	Weighting: A-weighted Response type: Fast Interval period: 15 minutes Pre to post calibration variance: 0.0 dB	
ML3, 449 Uranquinty Cross Road	Sound level meter SVAMNN SV200A (SN: 138986) Class 1 sound level meter IEC 61672-3:2013-compliant Calibrator: SVAN SV30A (SN: 29030) IEC 61672-3:2013-compliant Manufactured prior to 2017	Weighting: A-weighted Response type: Fast Interval period: 15 minutes Pre to post calibration variance: 0.0 dB	

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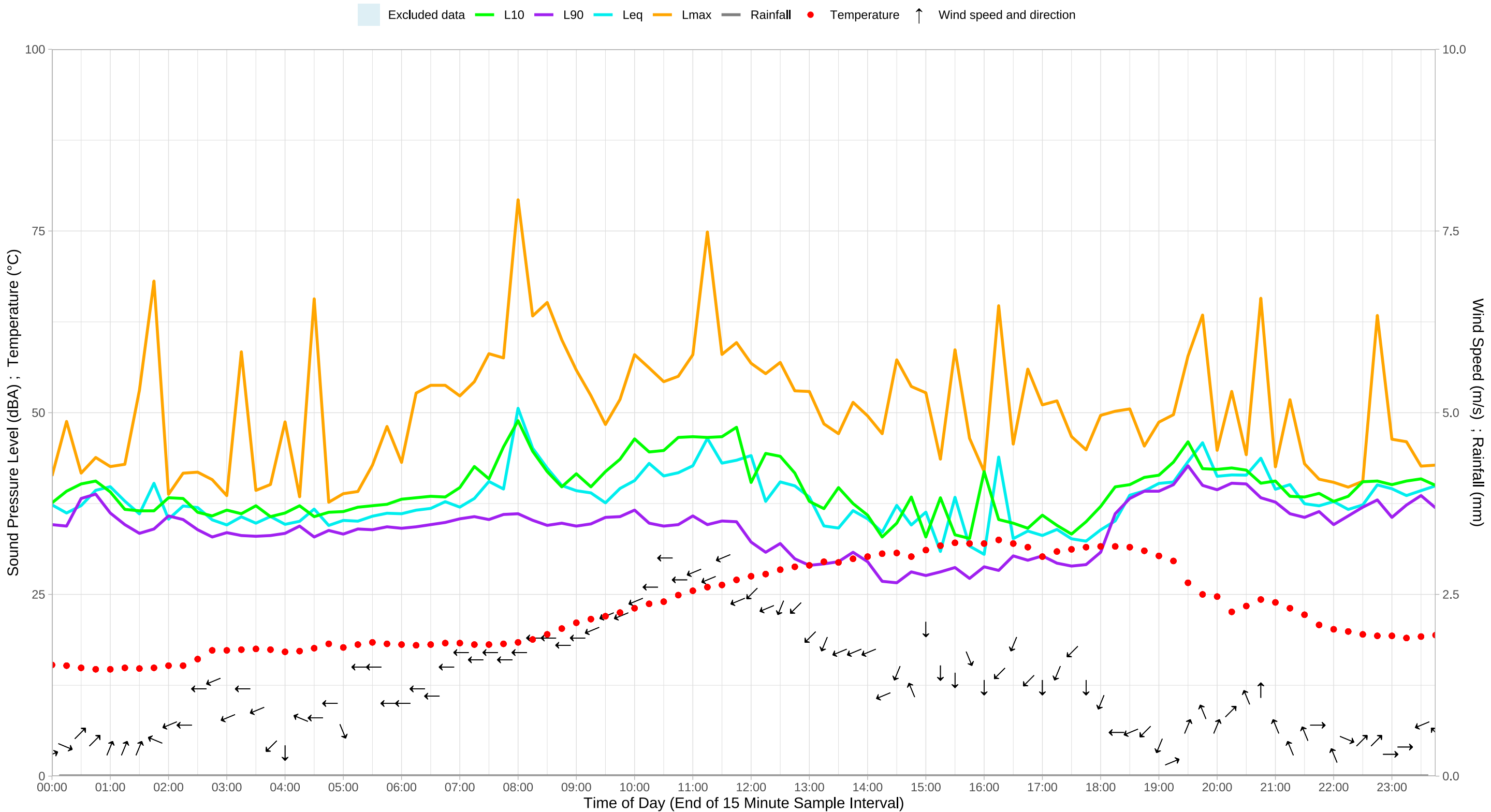
Excluded data L10 L90 Leq Lmax Rainfall Temperature Wind speed and direction



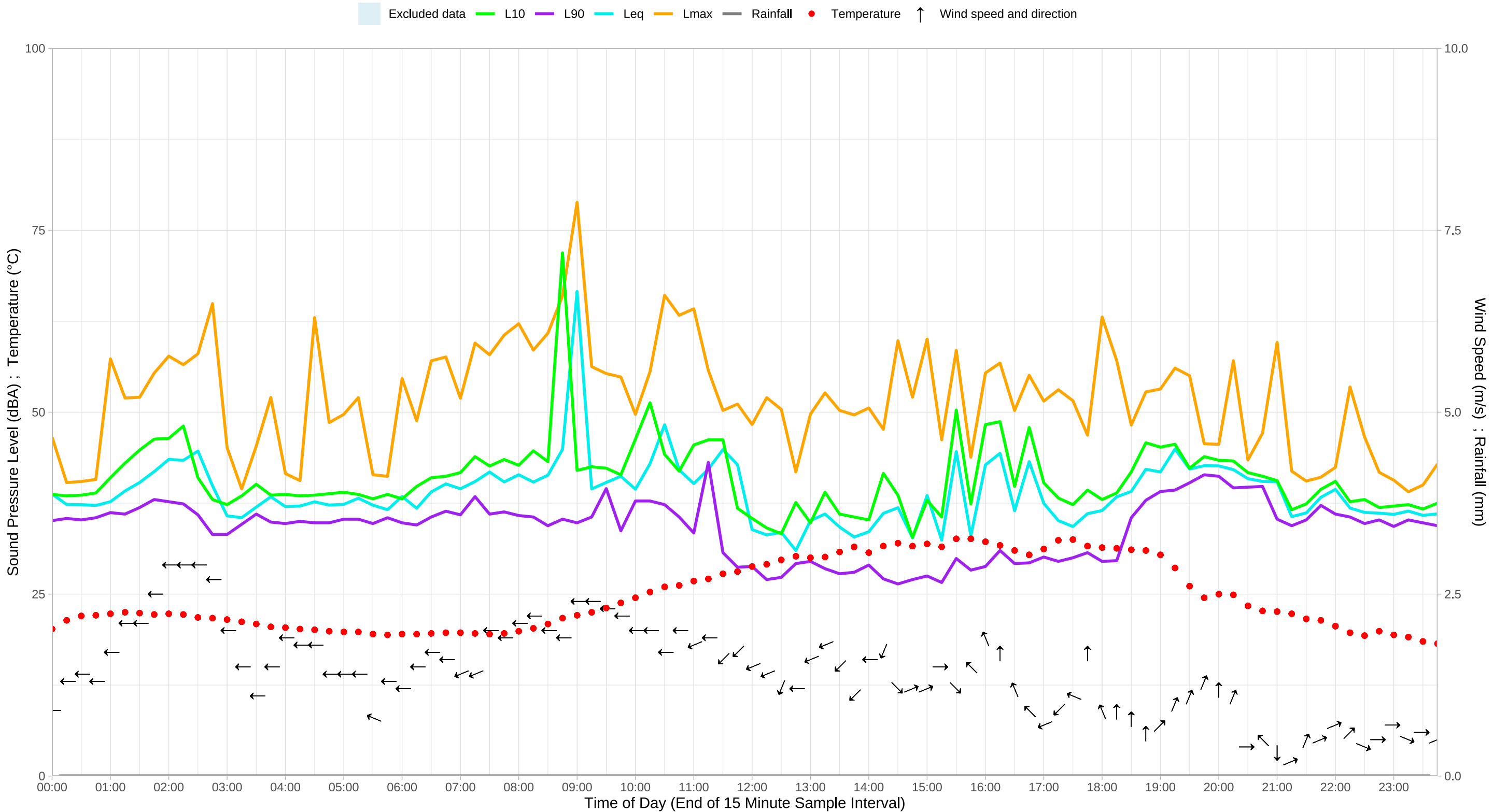
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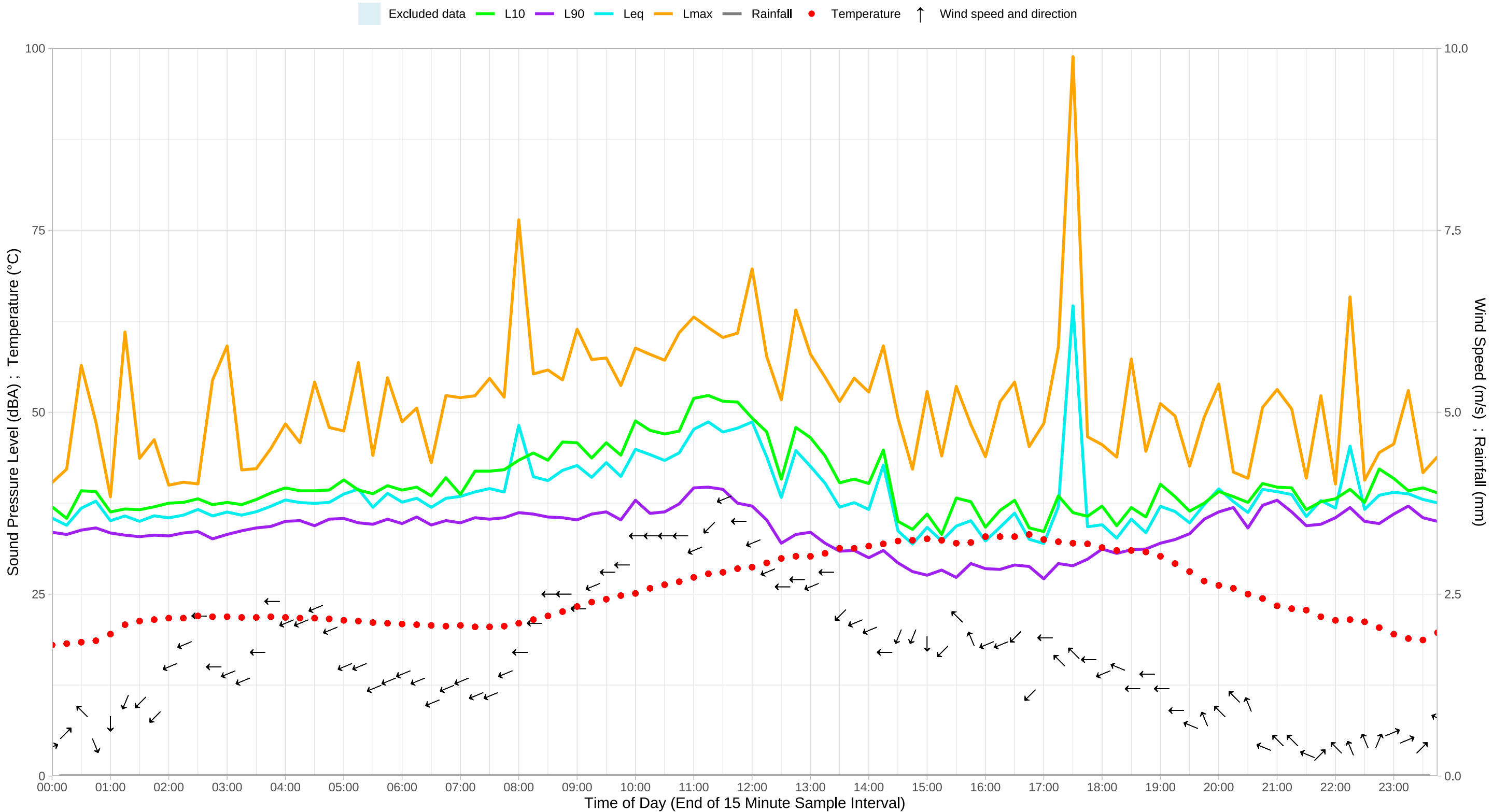
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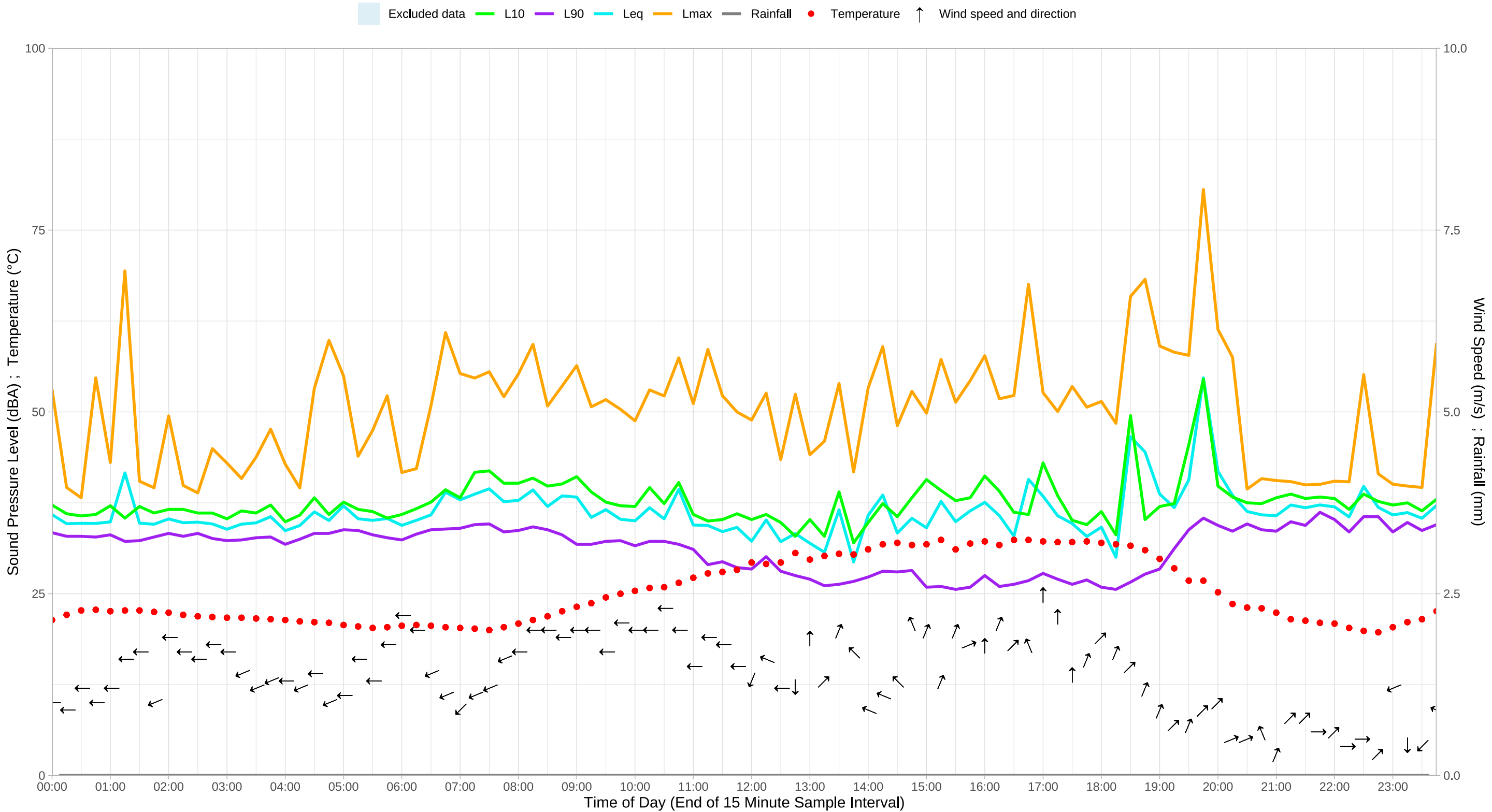
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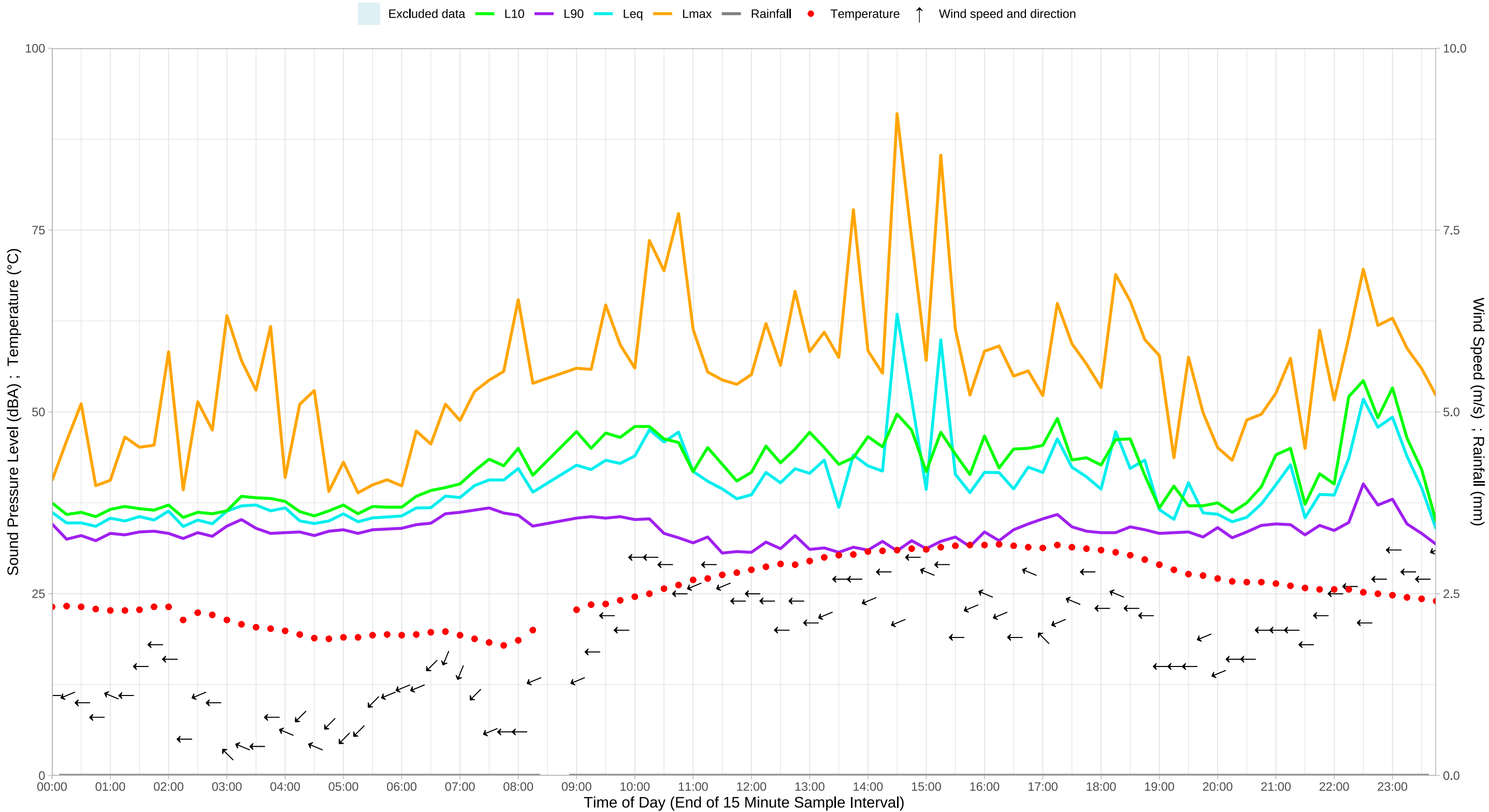
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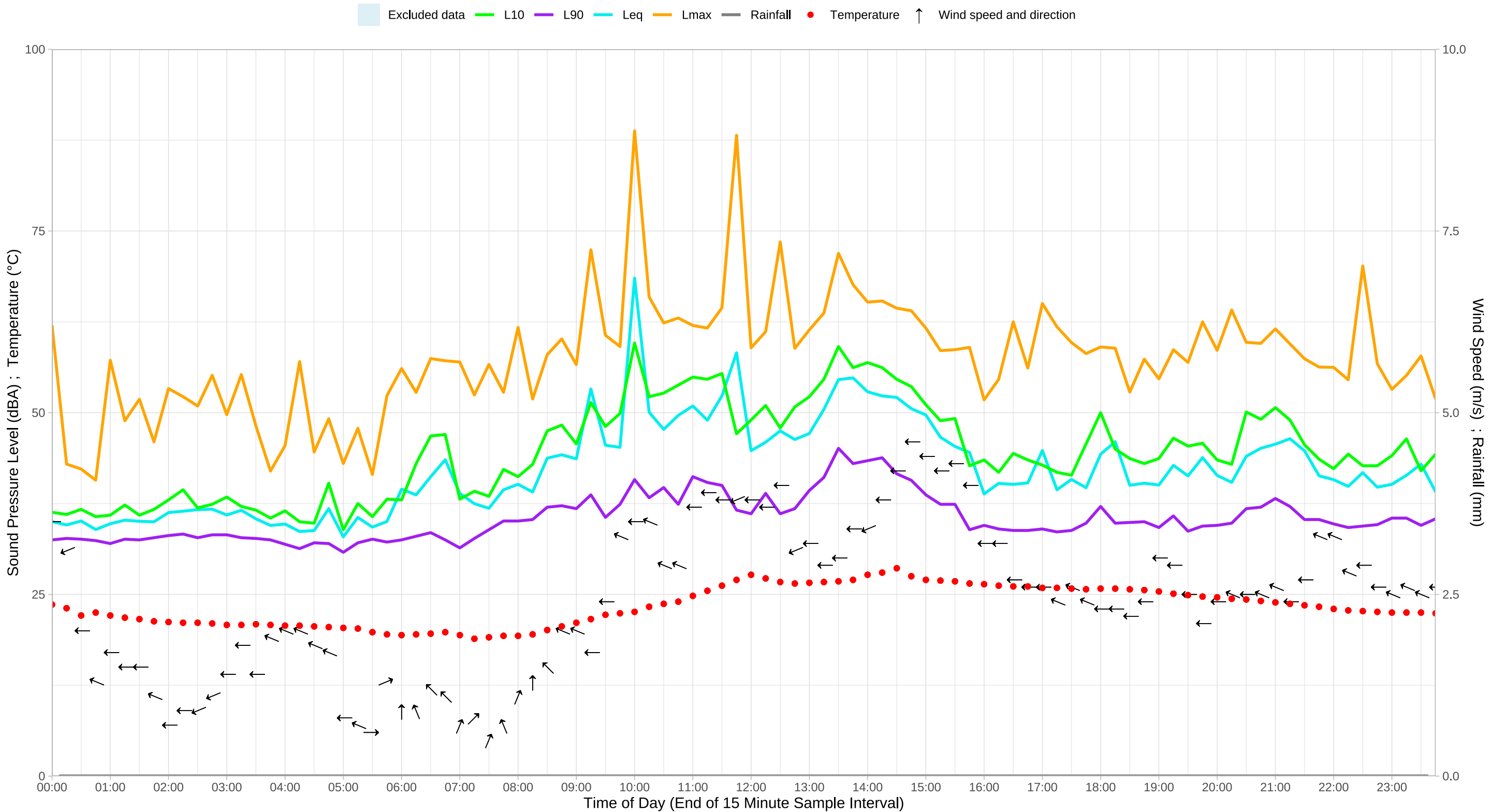
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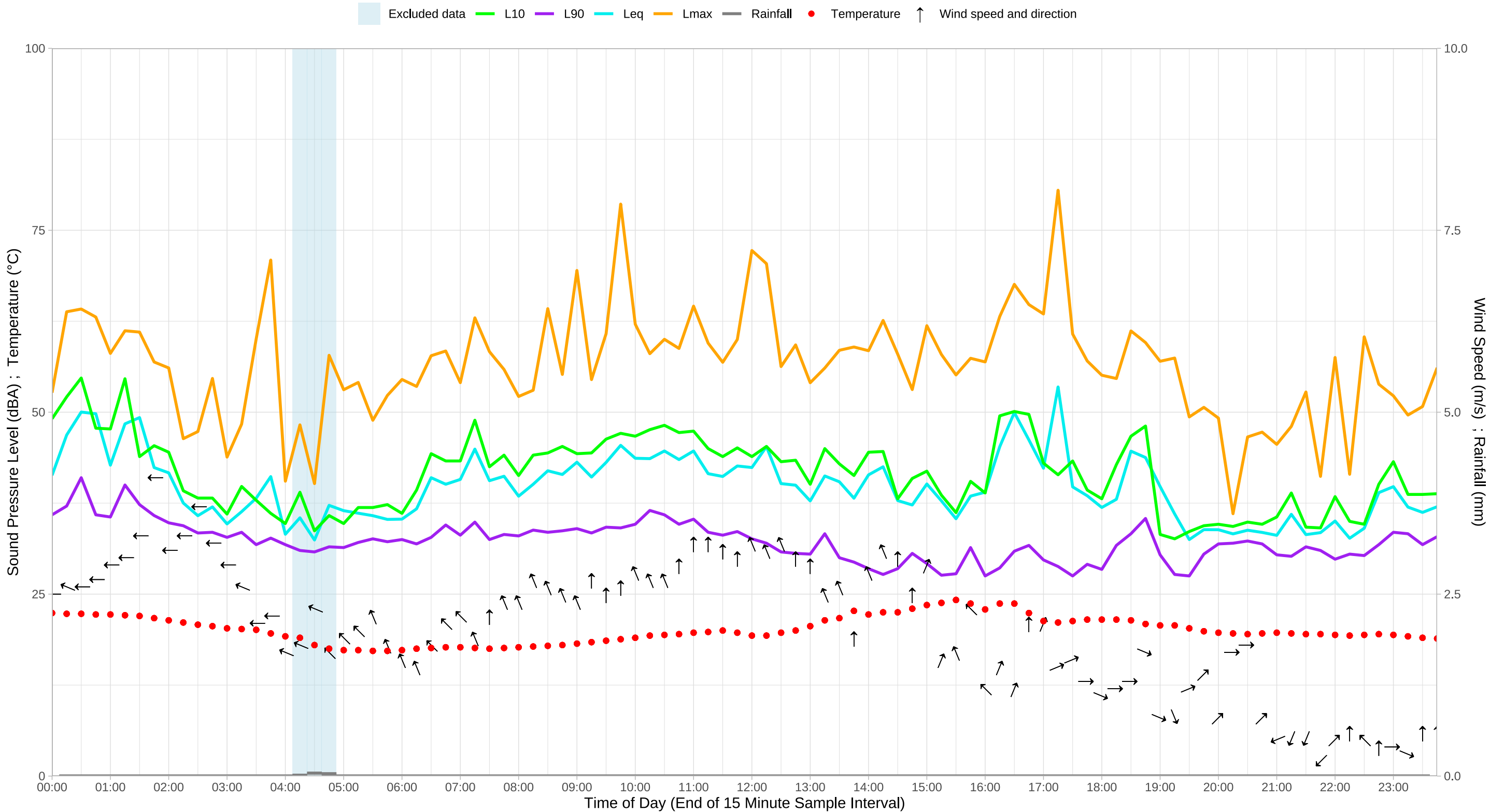
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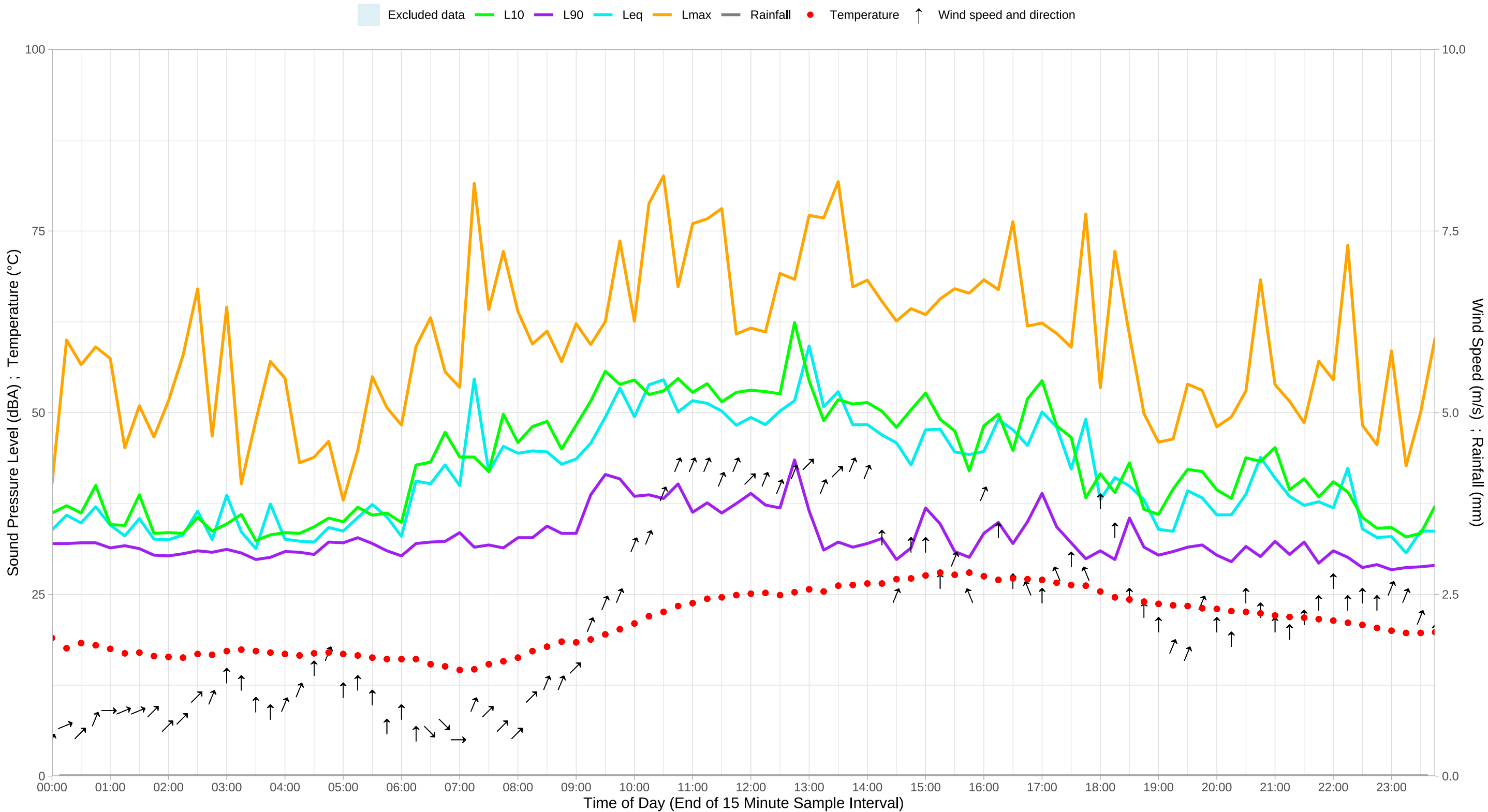
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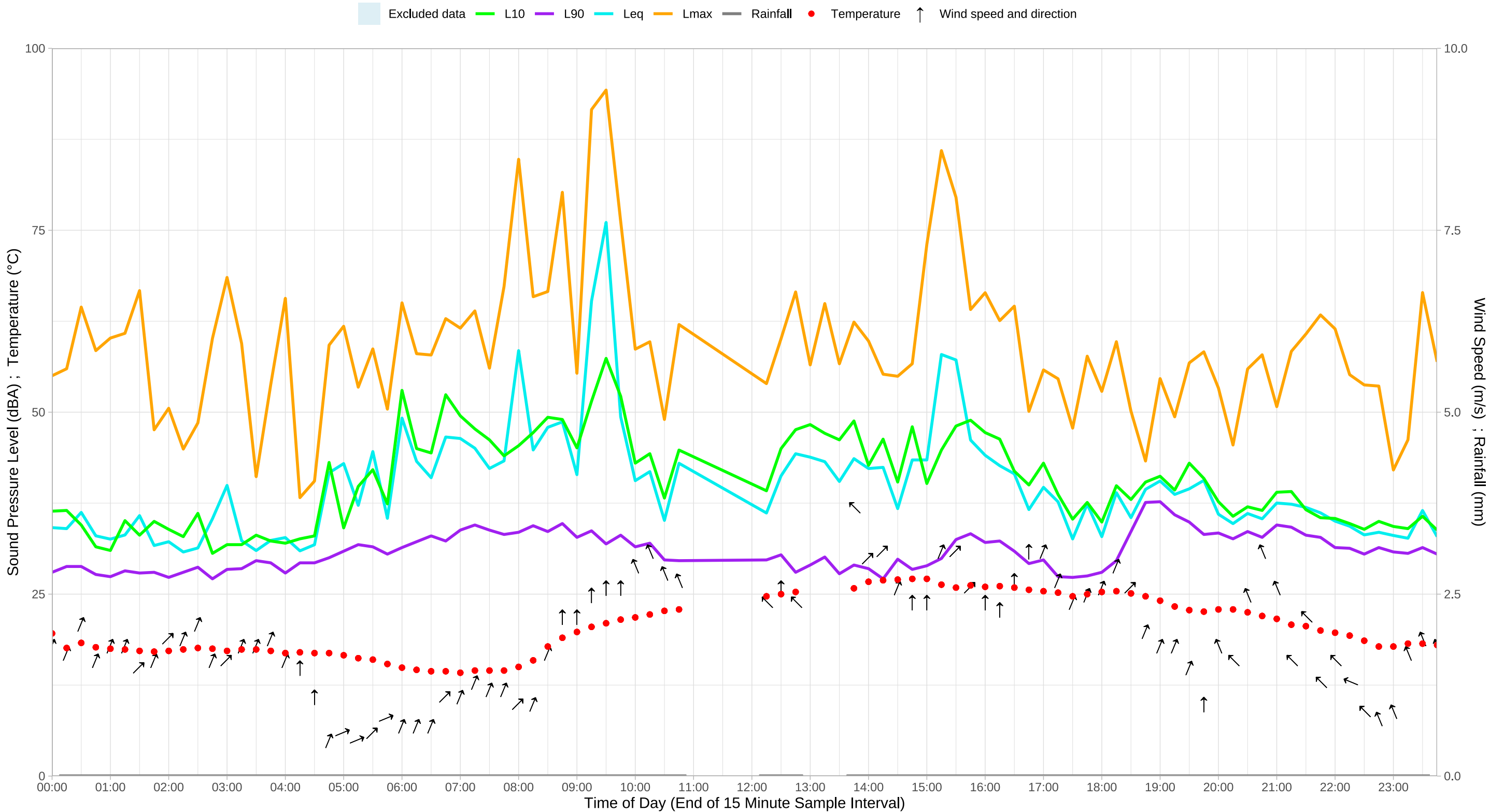
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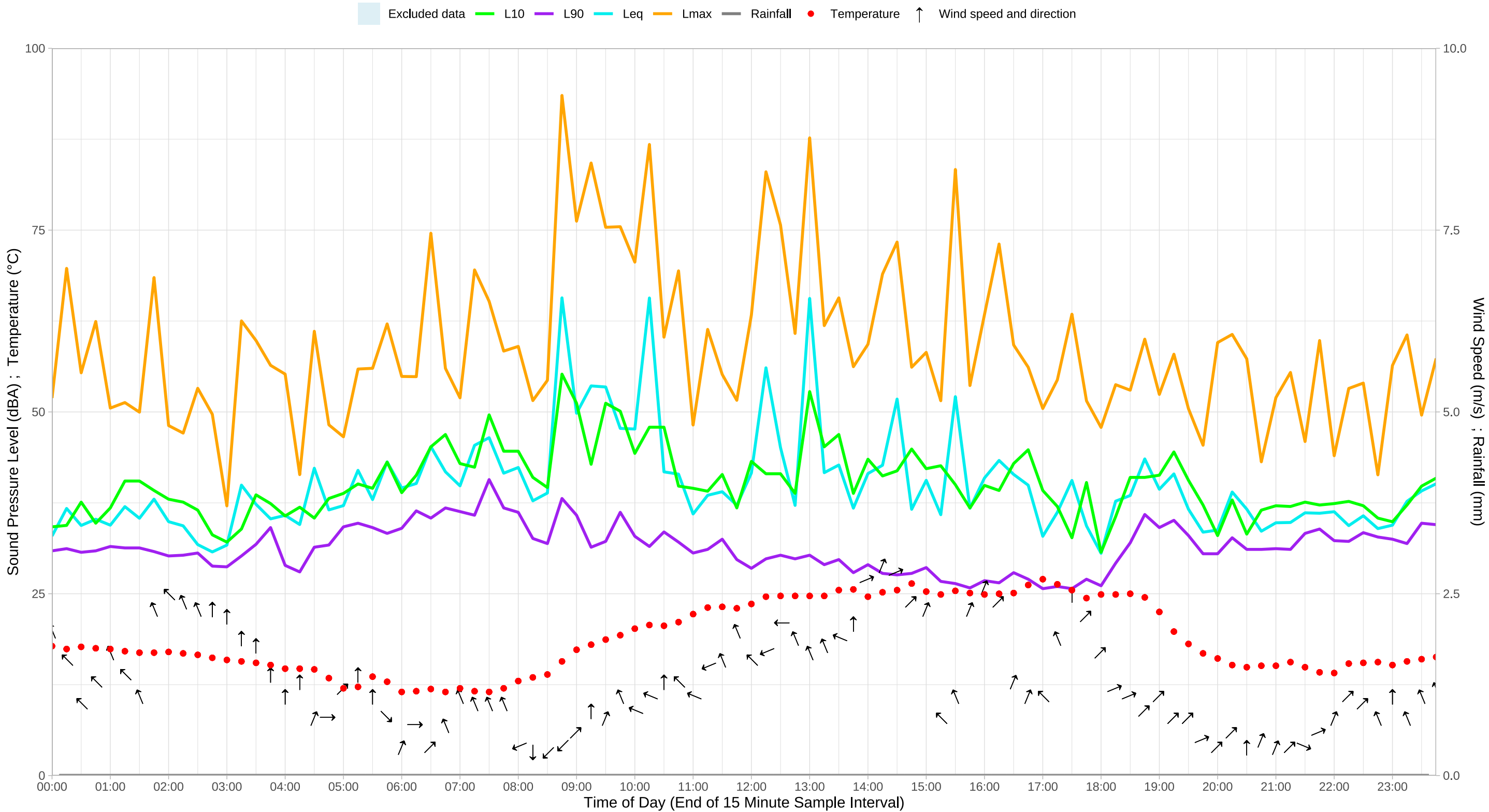
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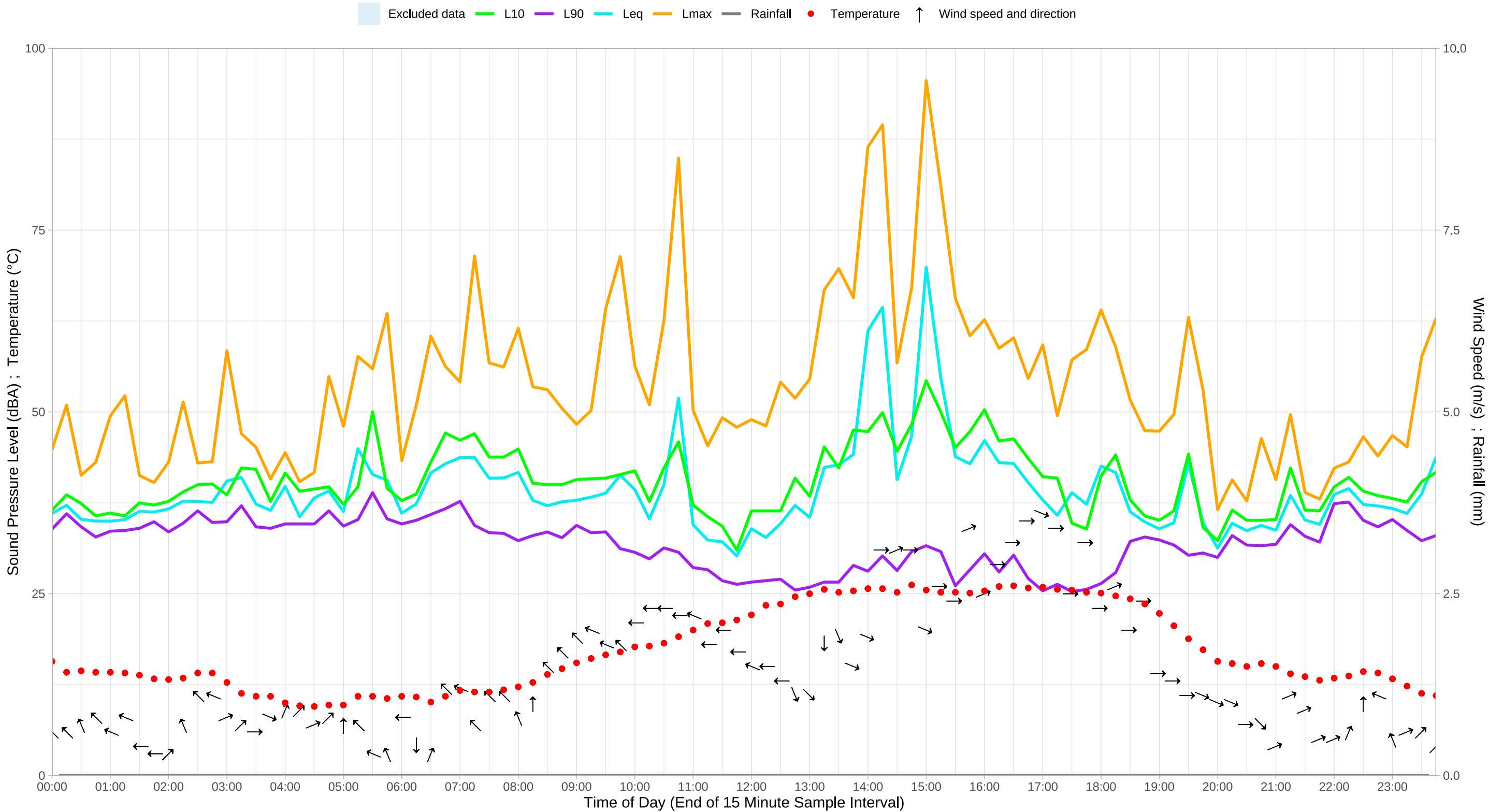
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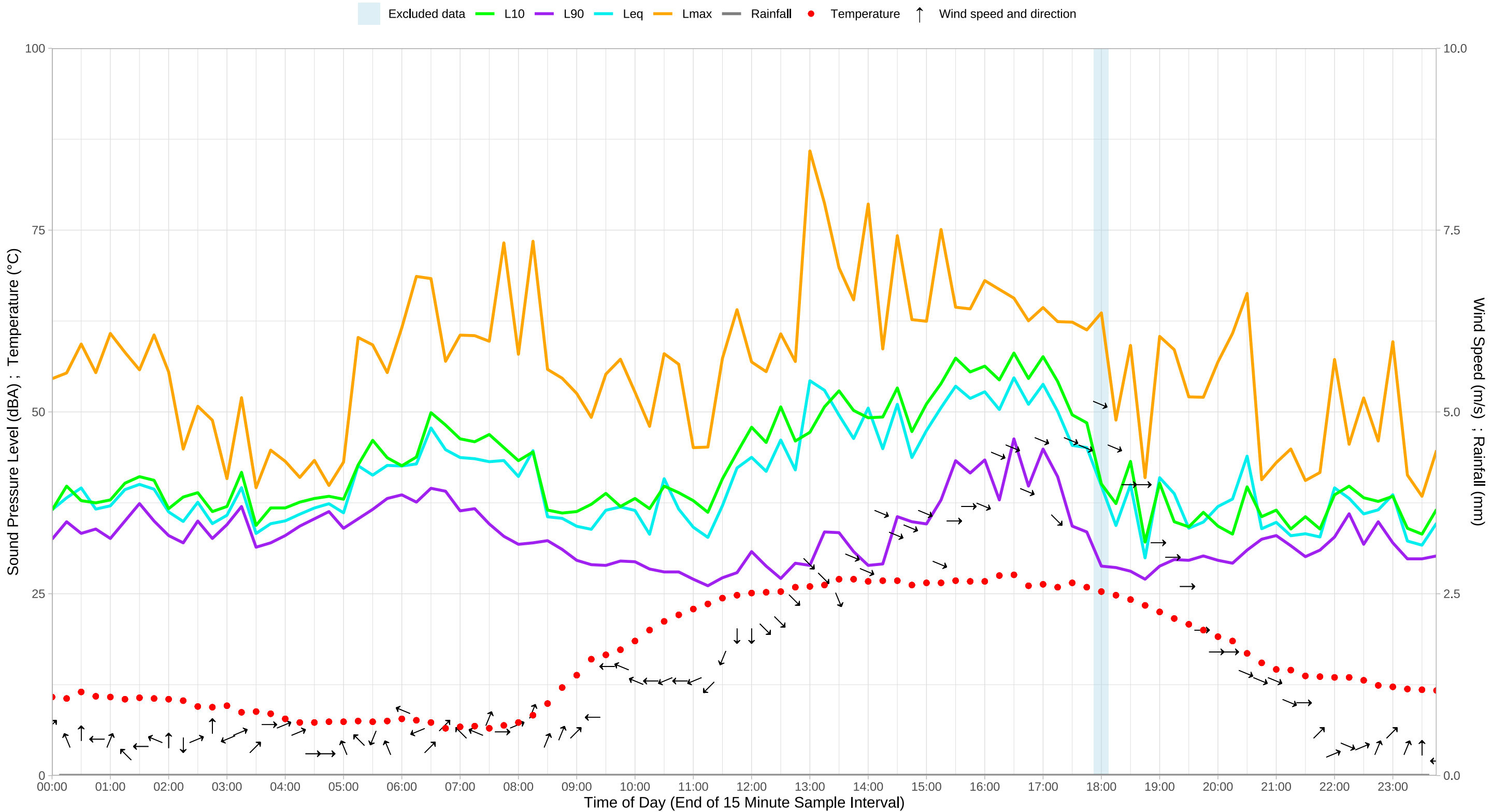
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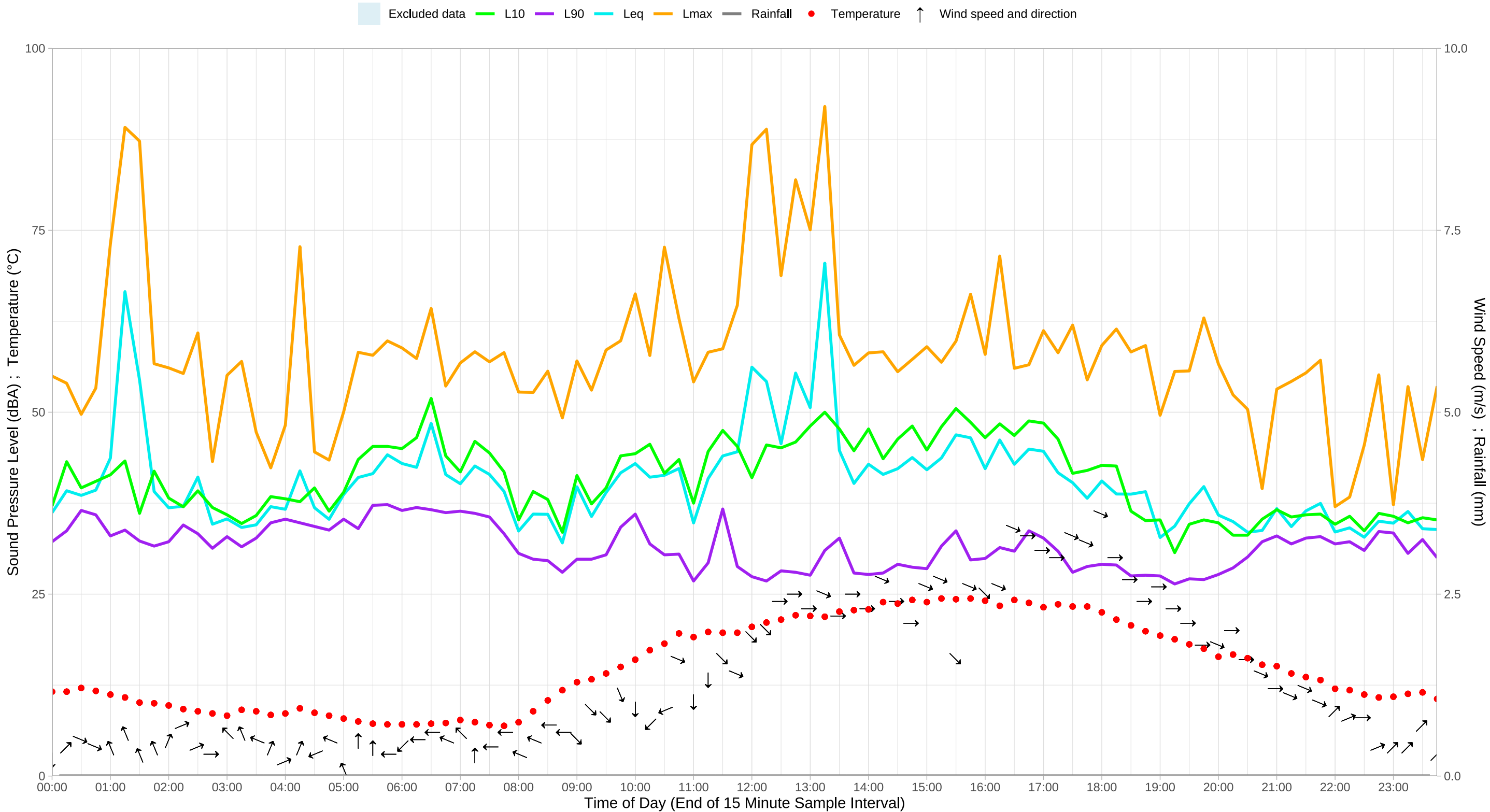
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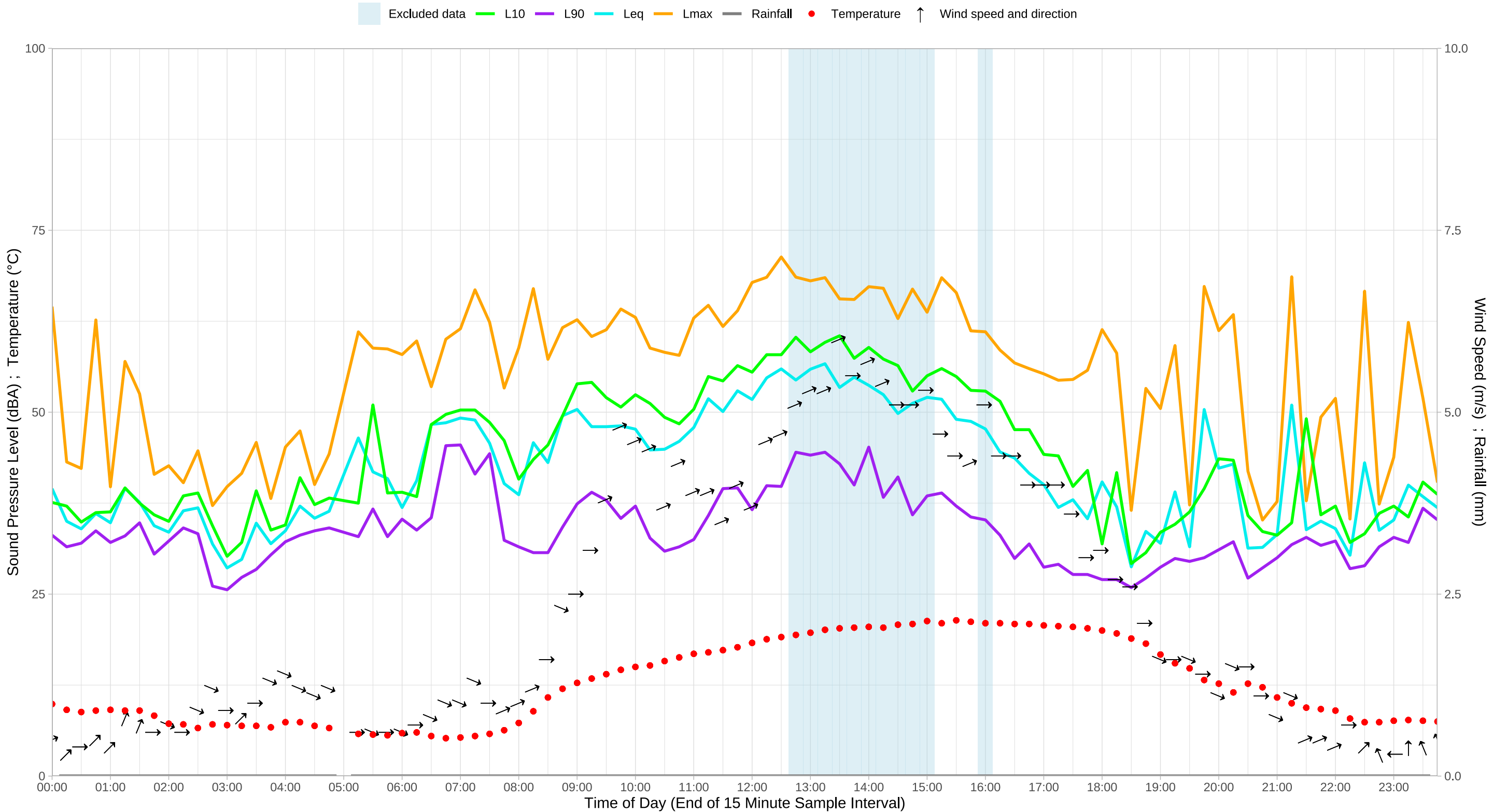
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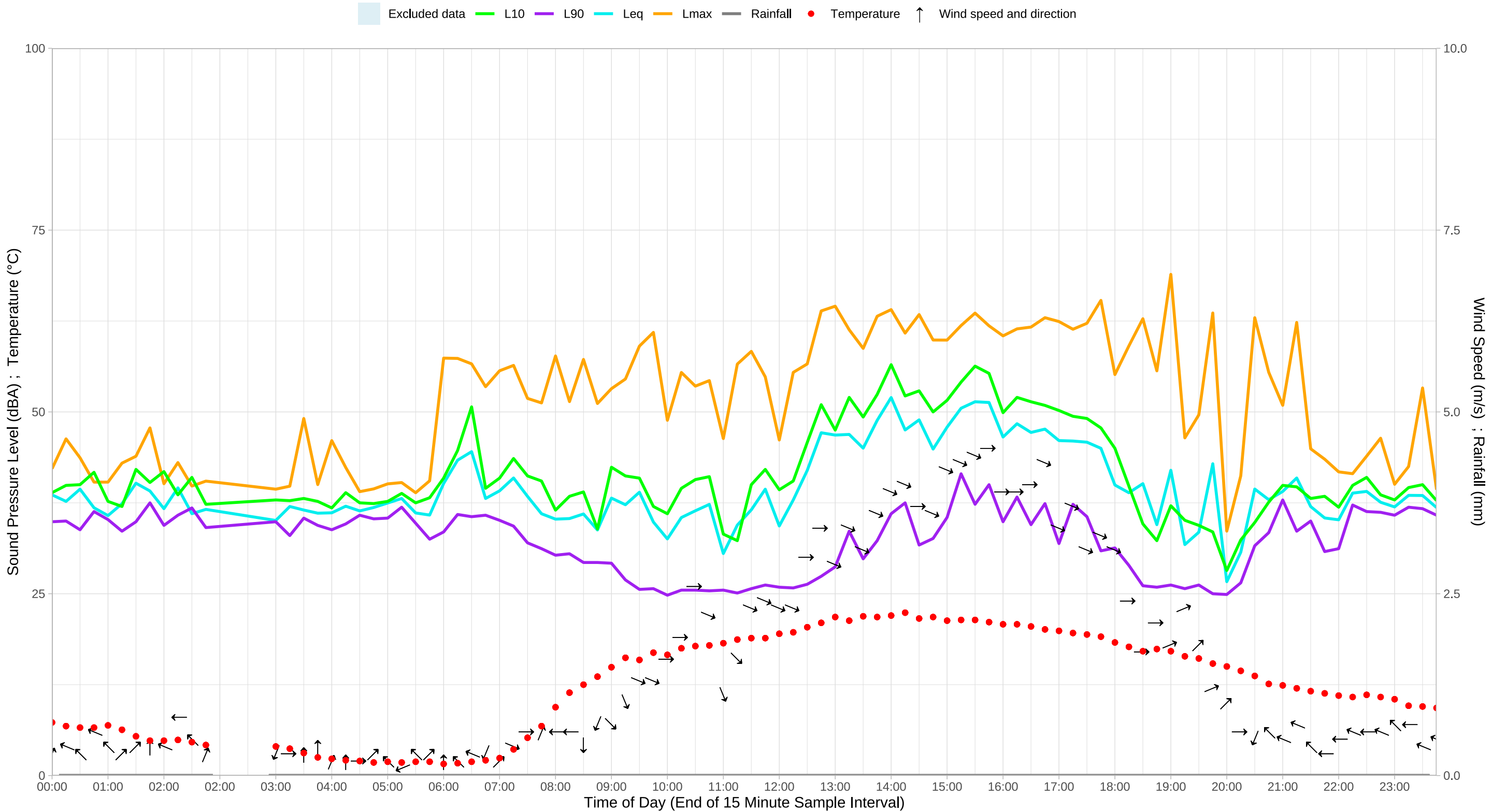
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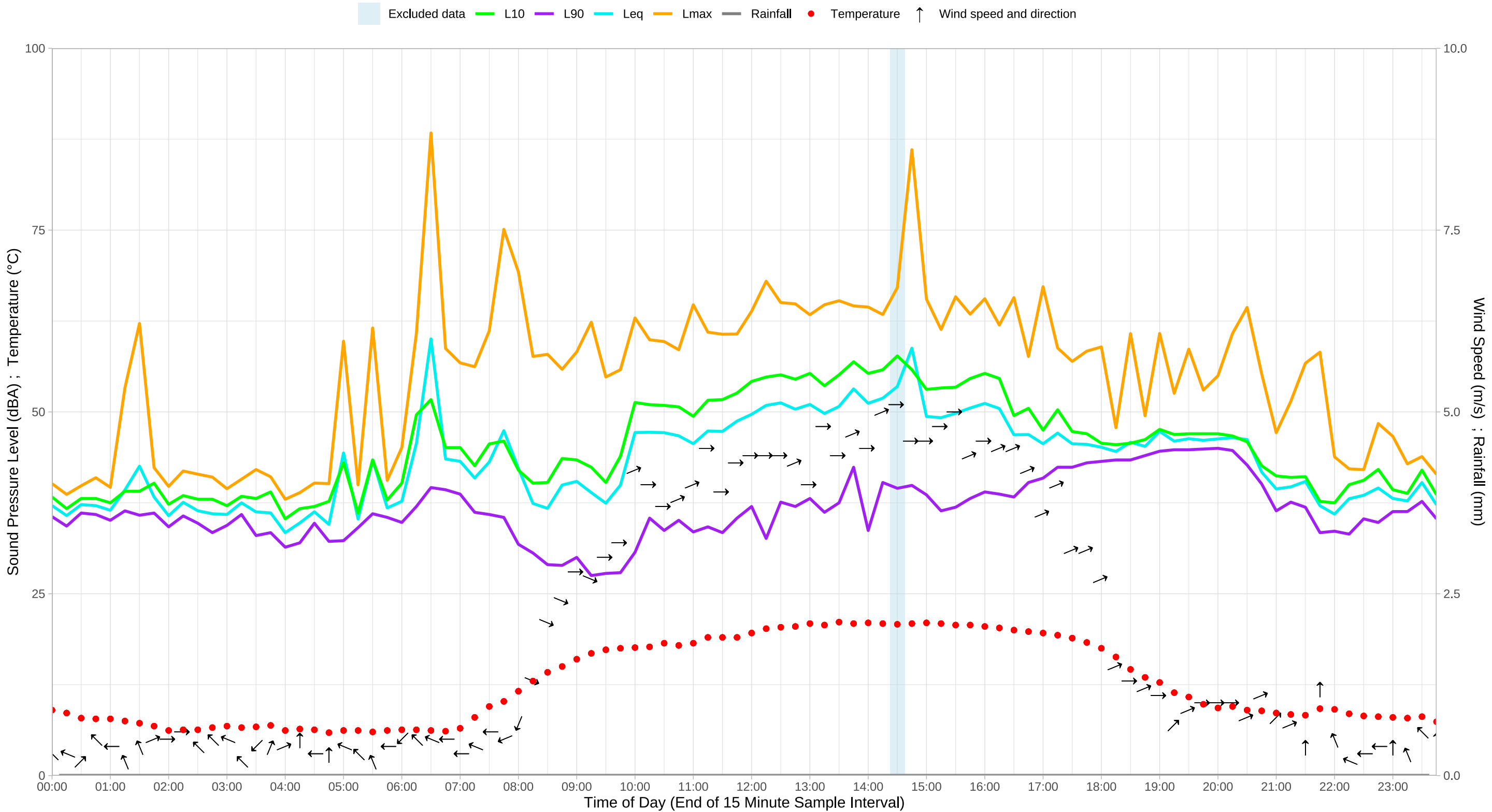
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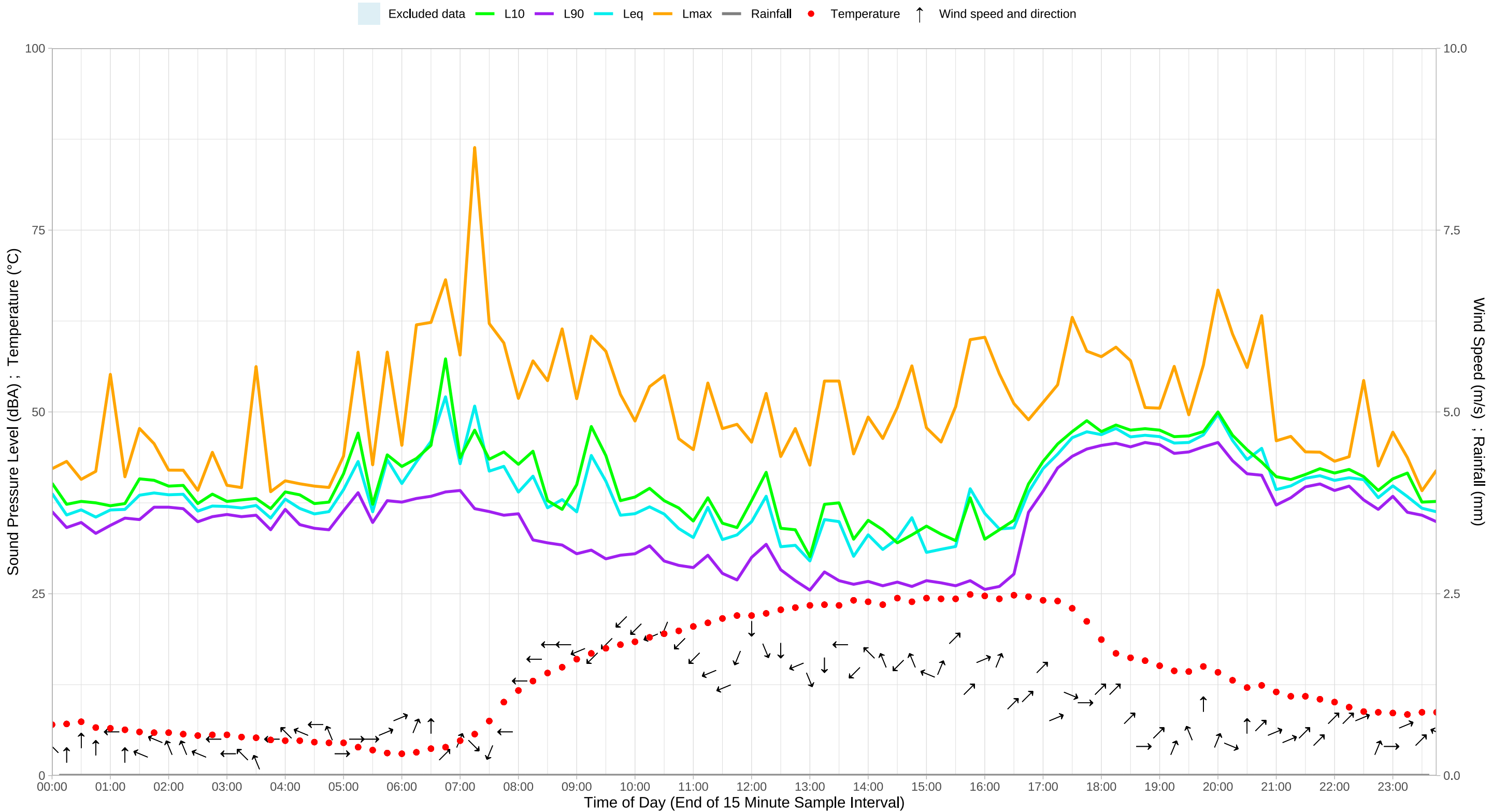
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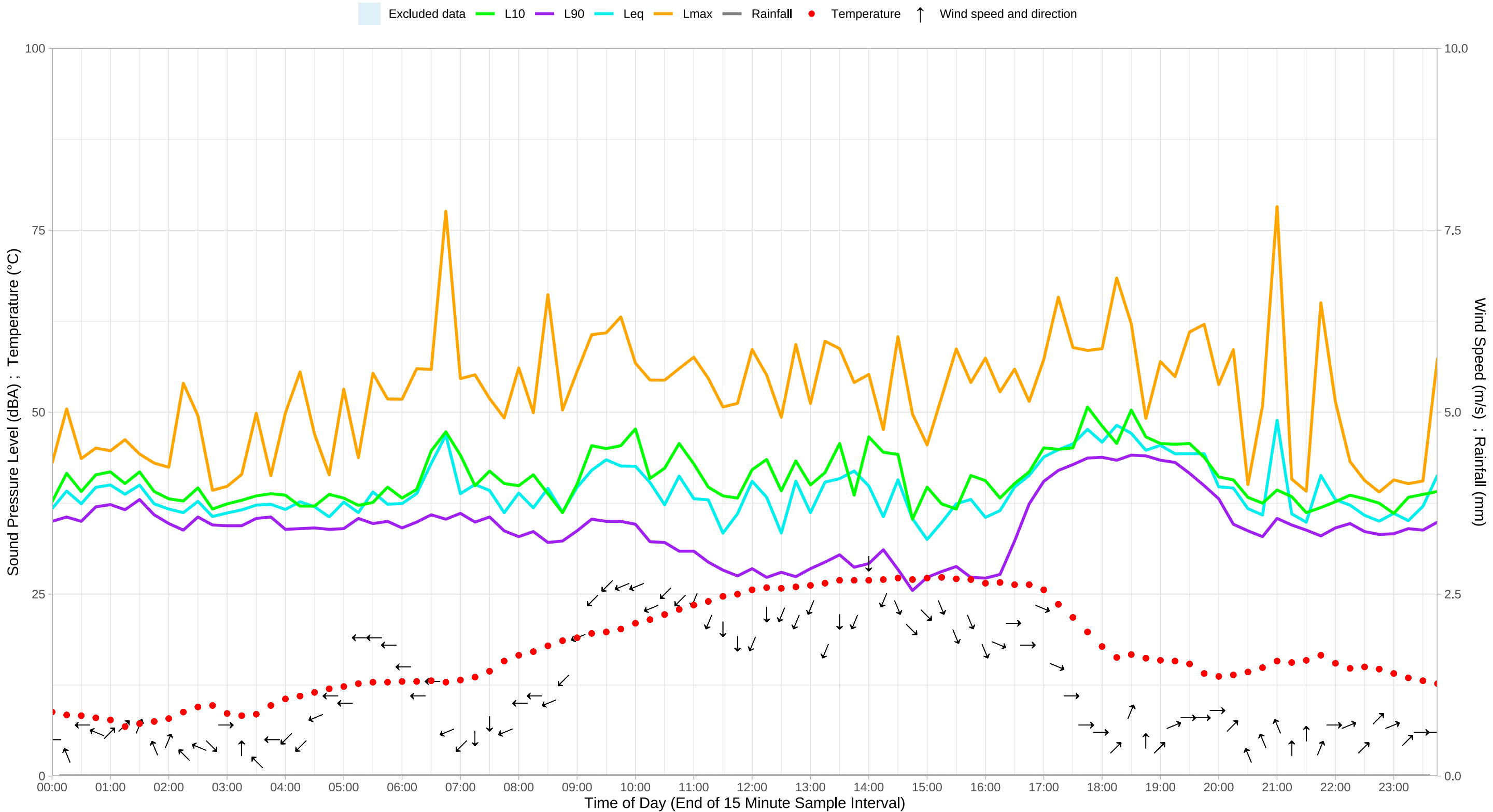
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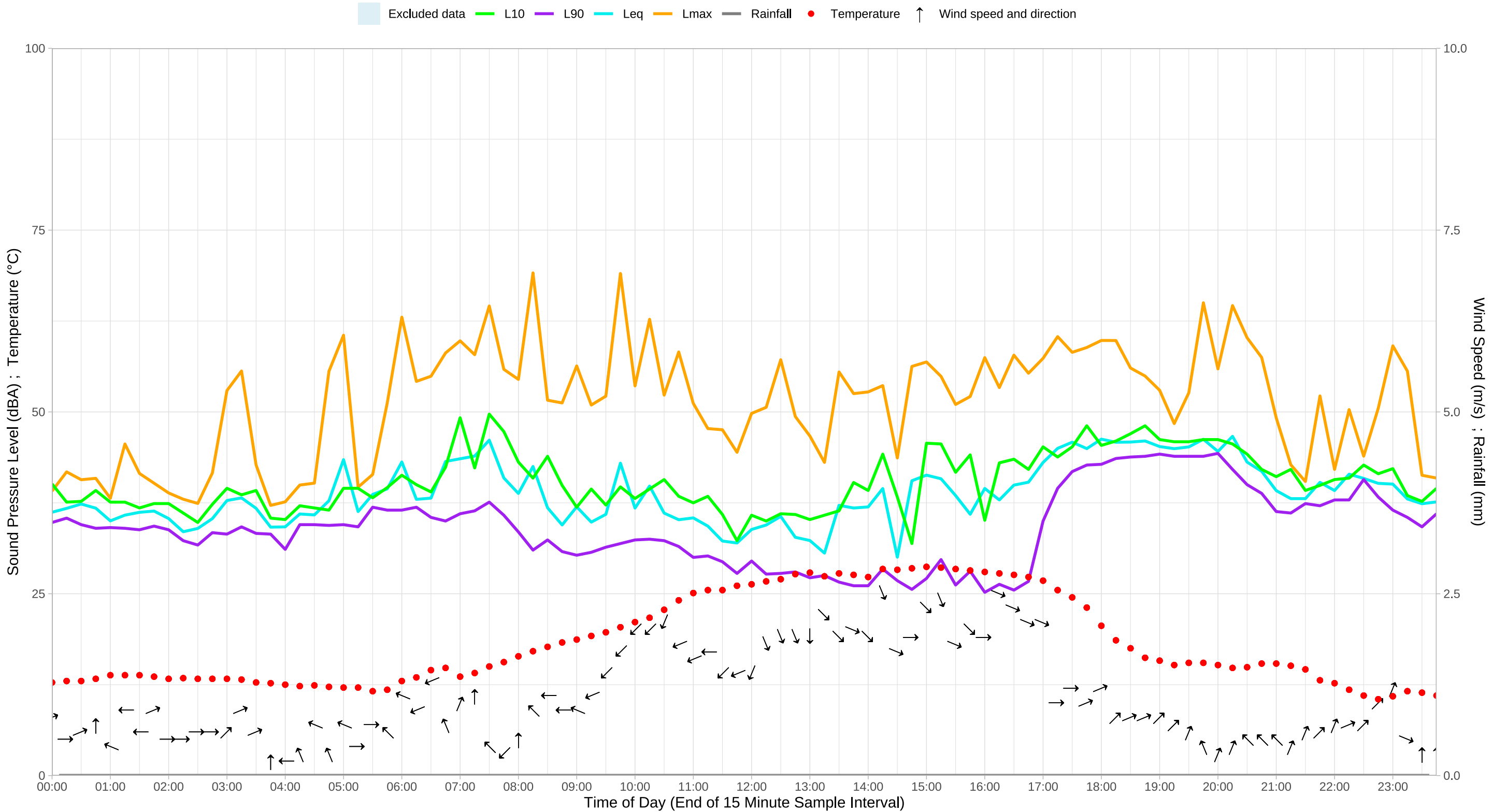
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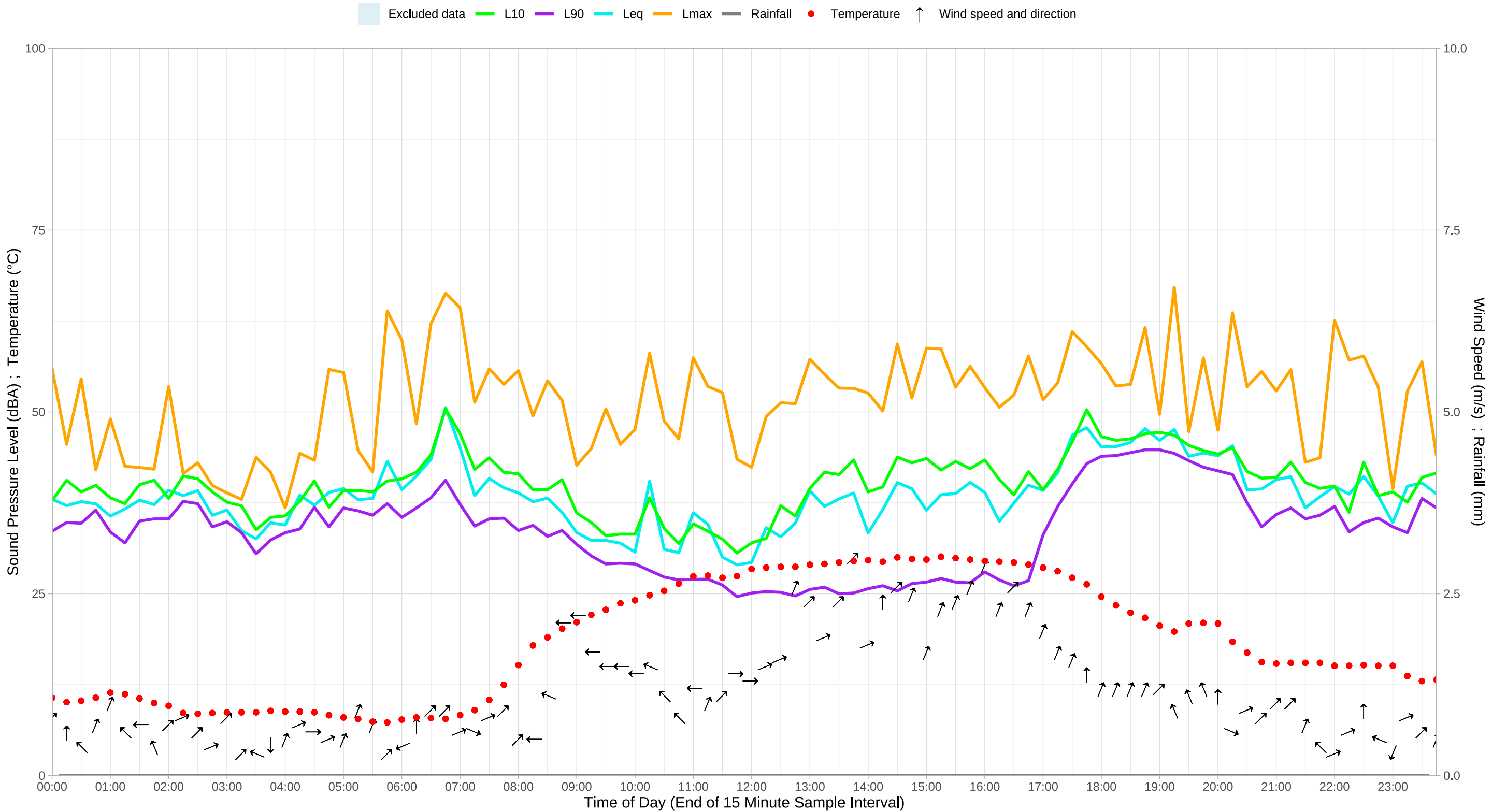
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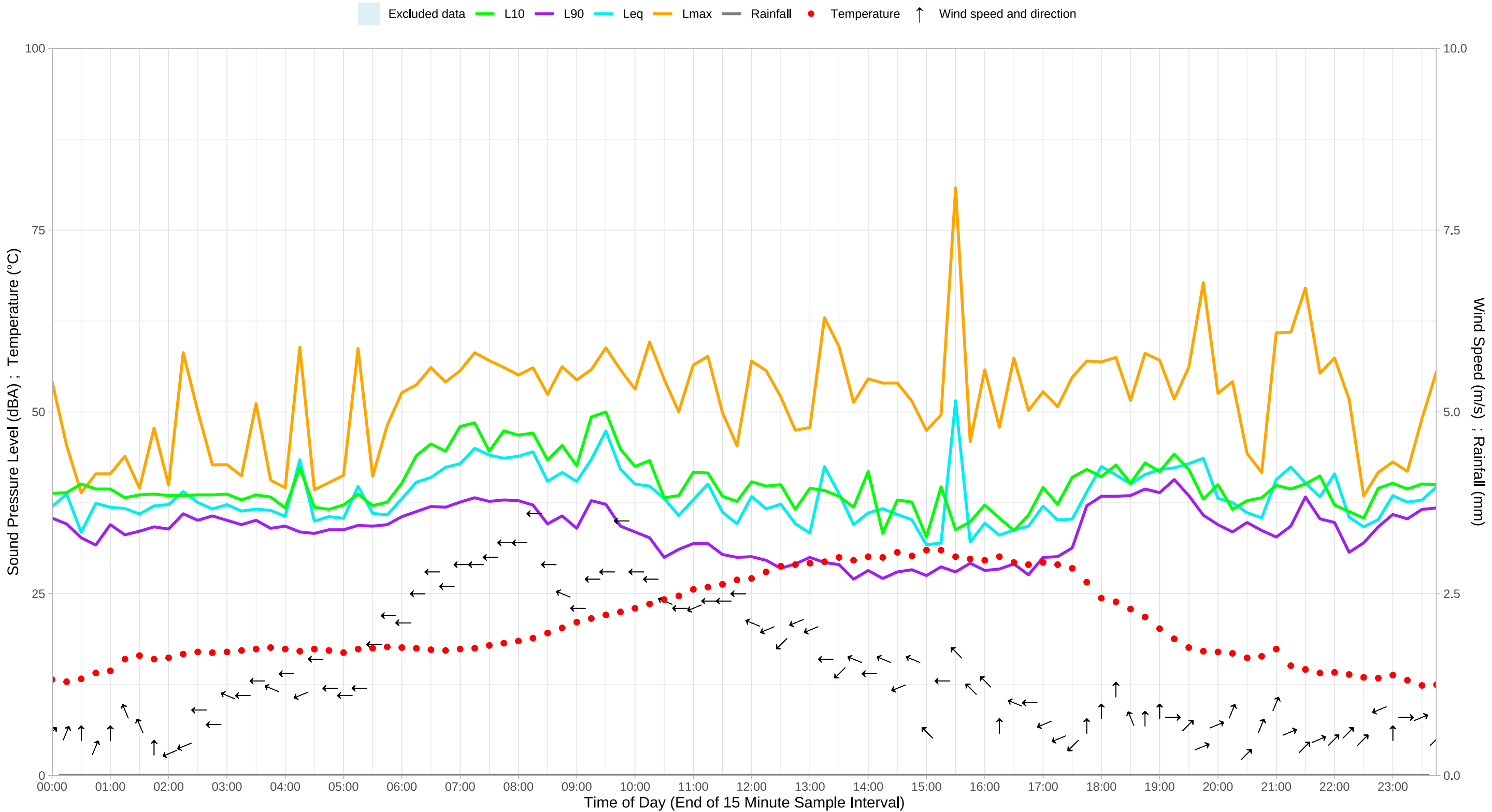
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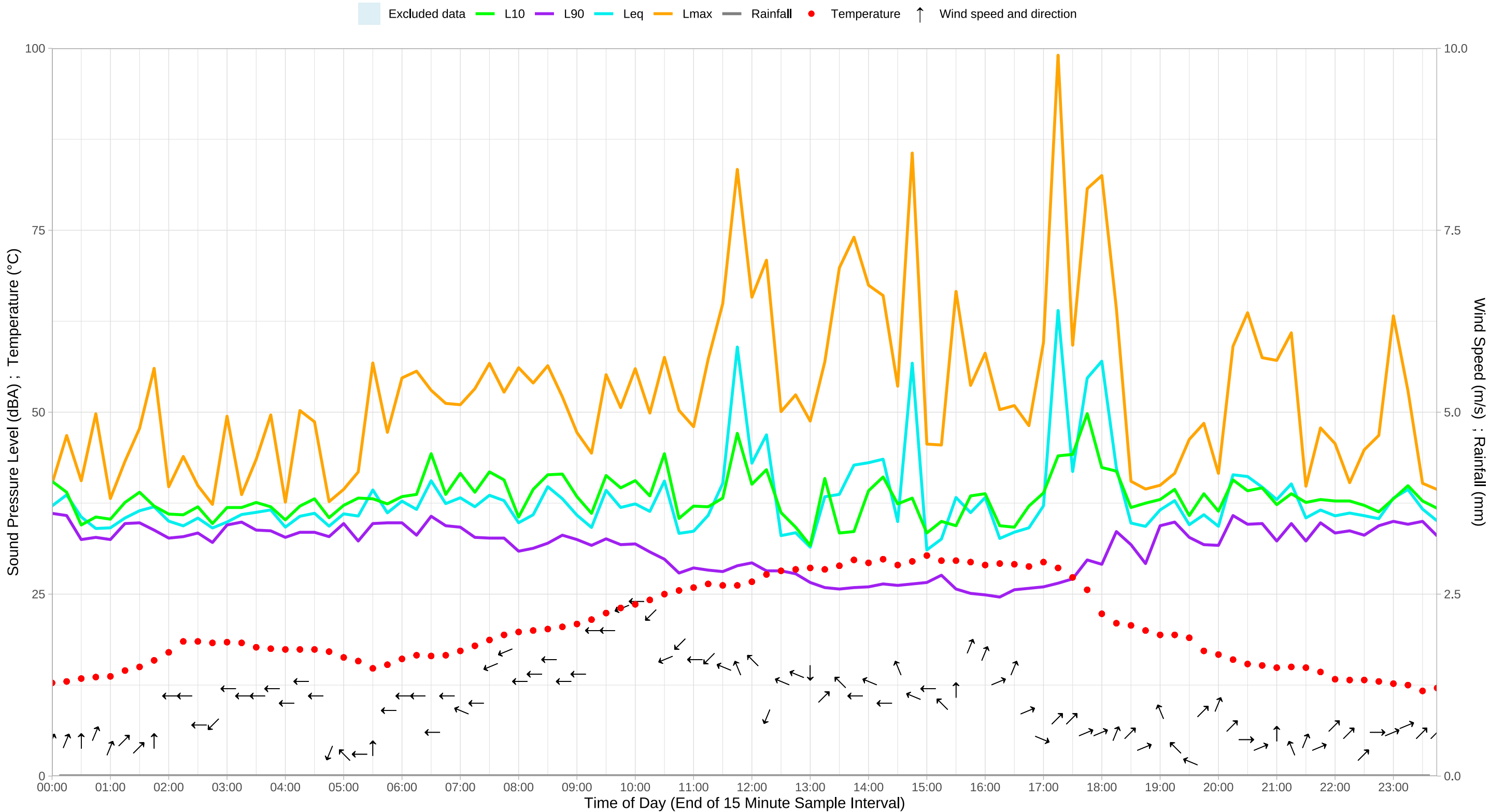
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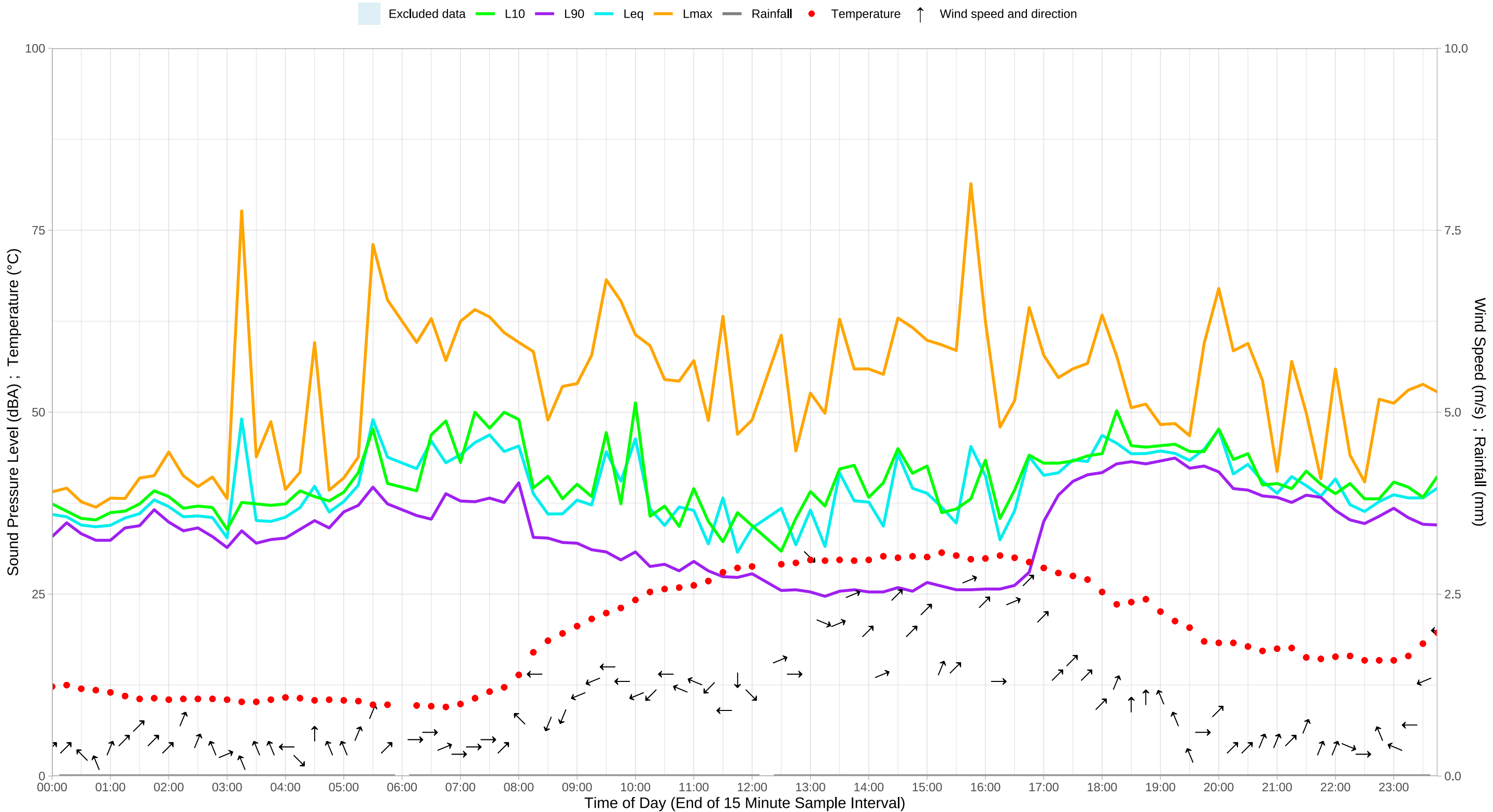
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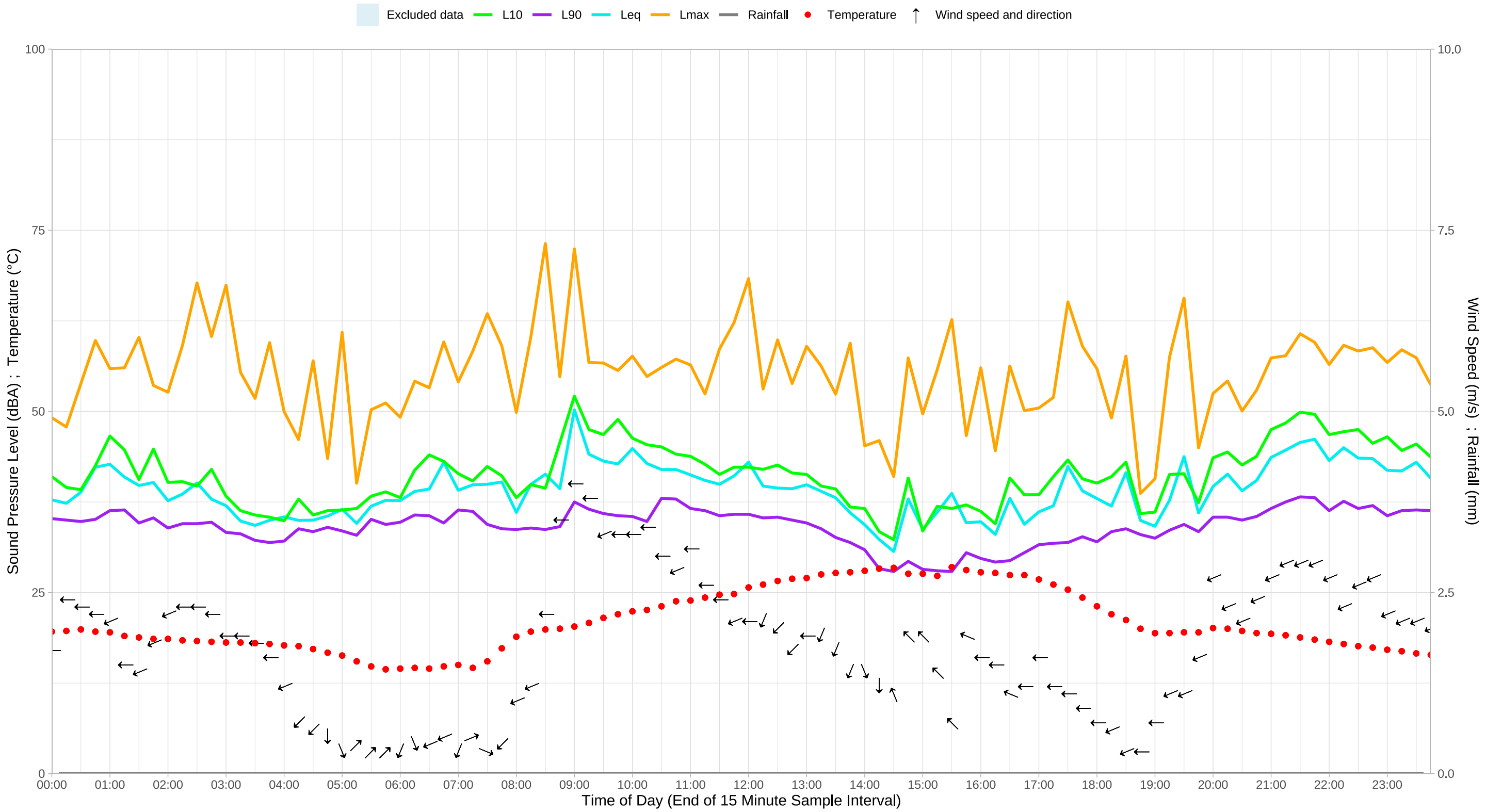
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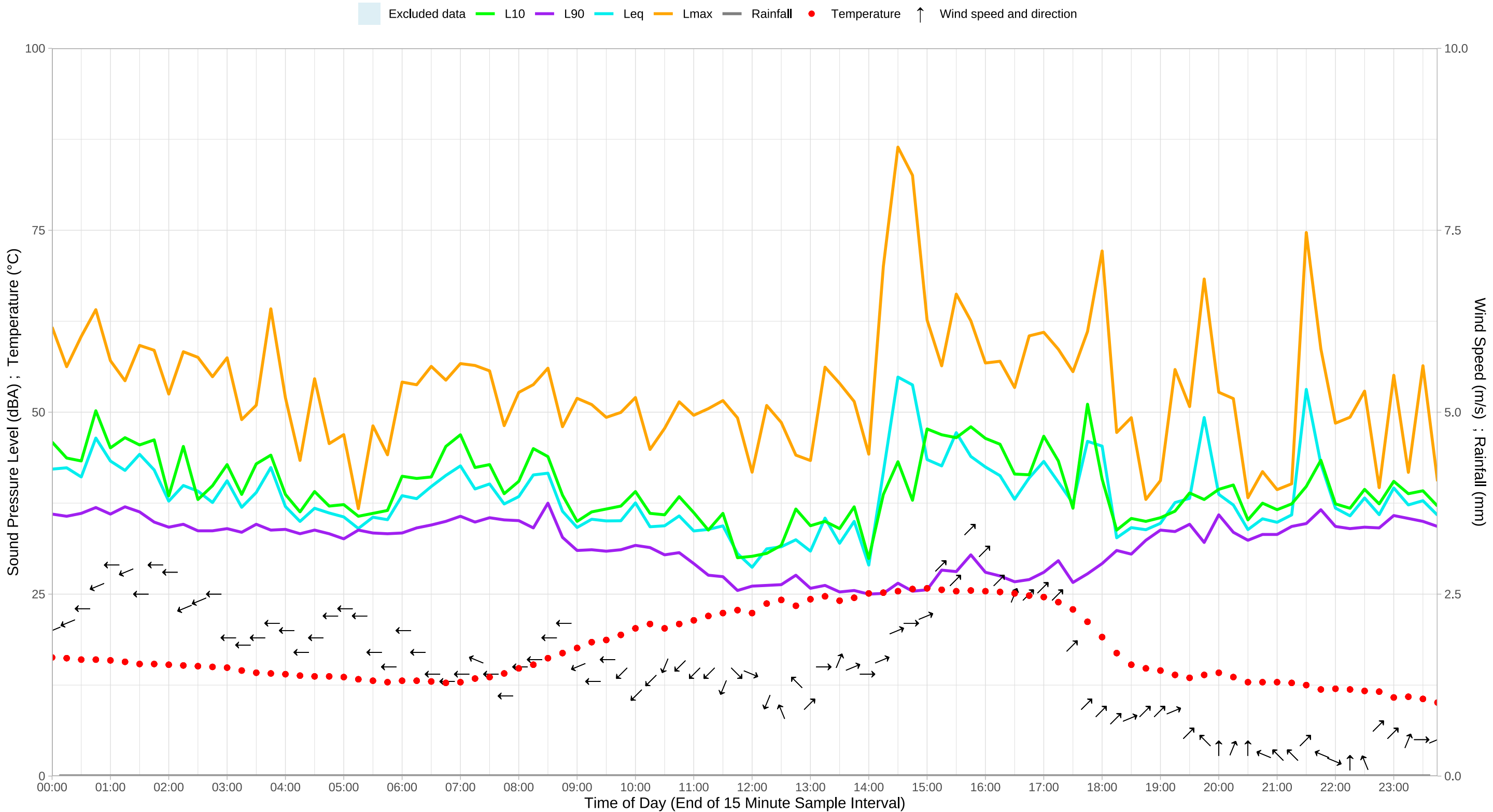
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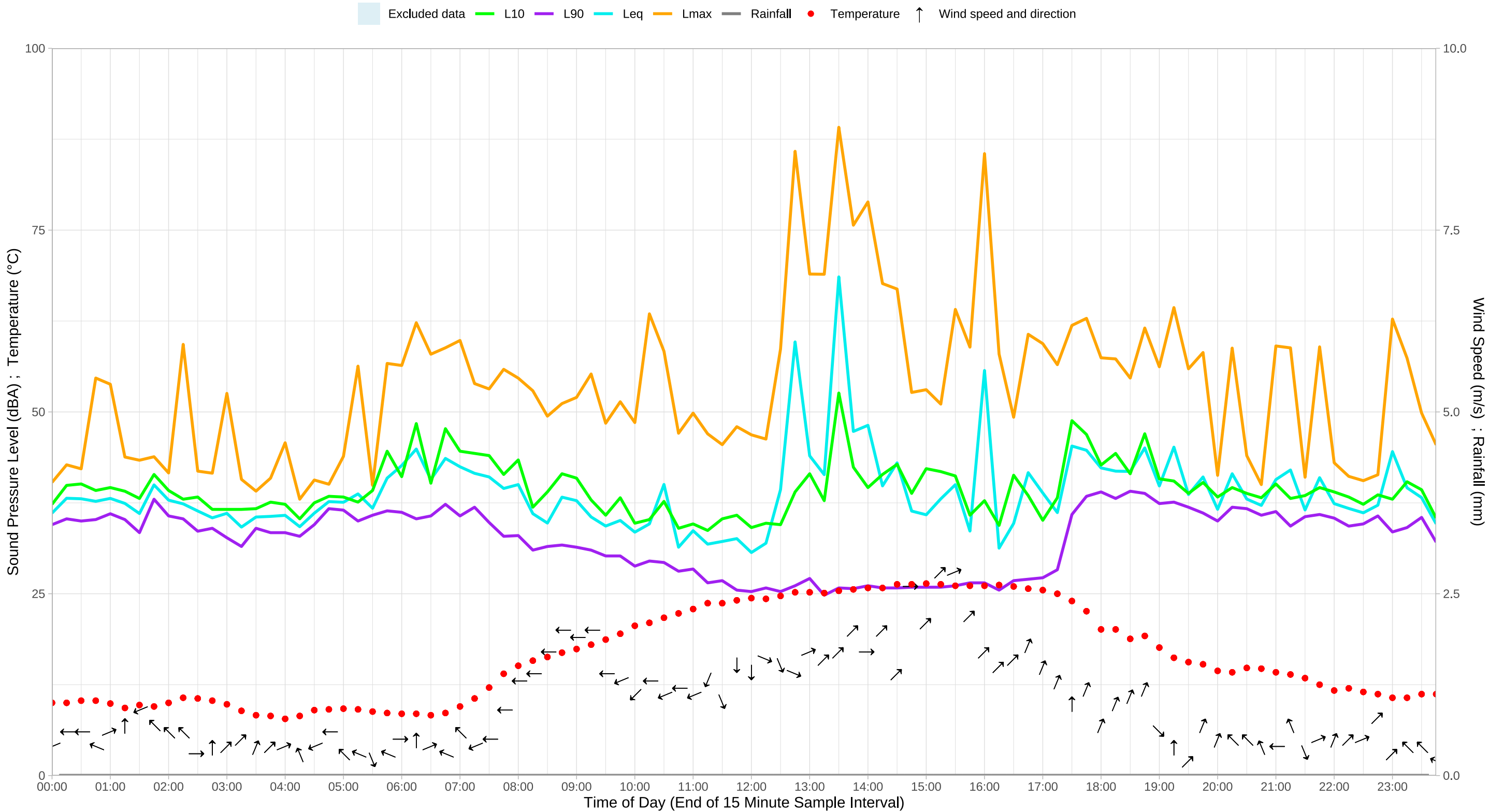
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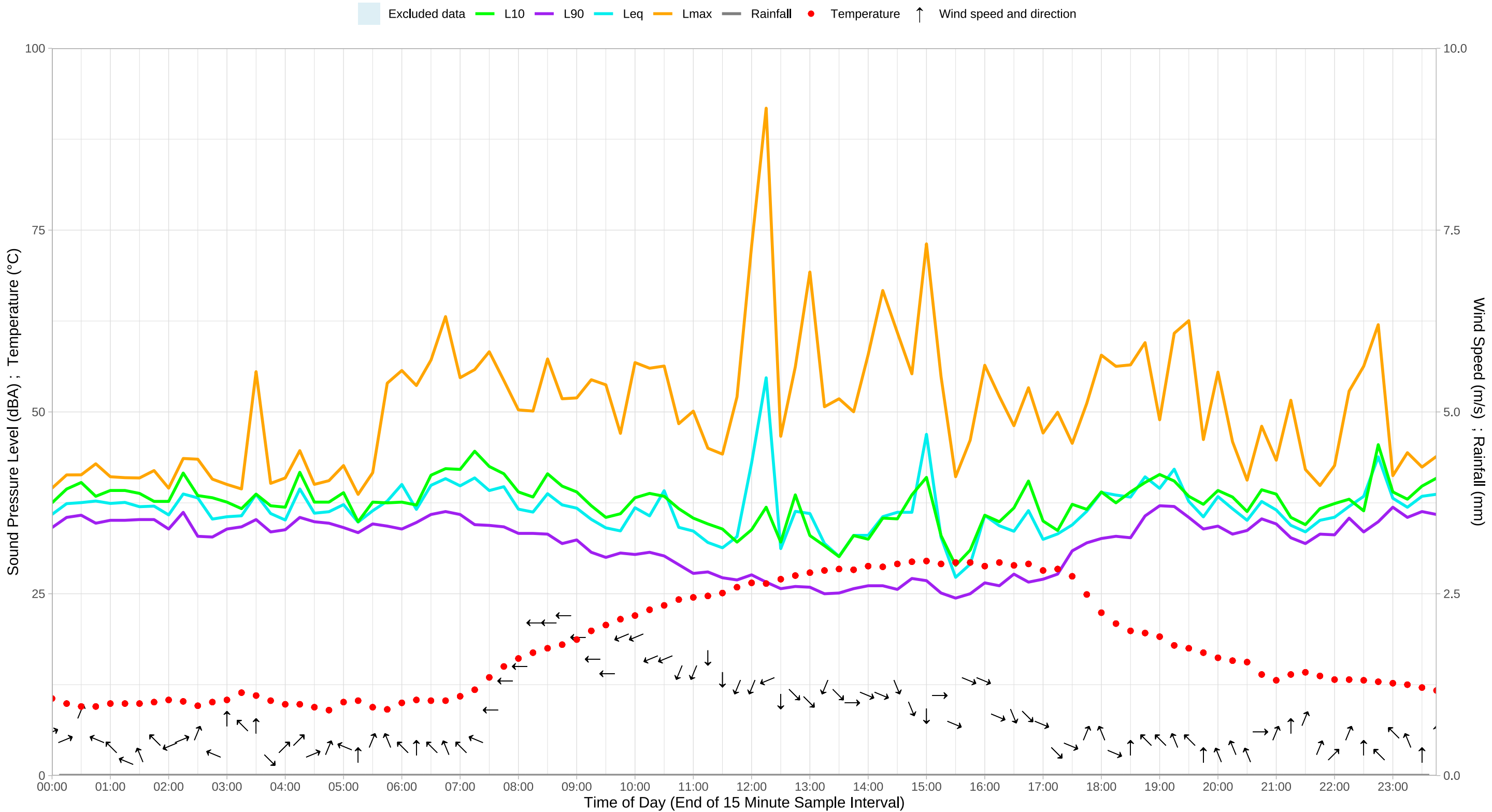
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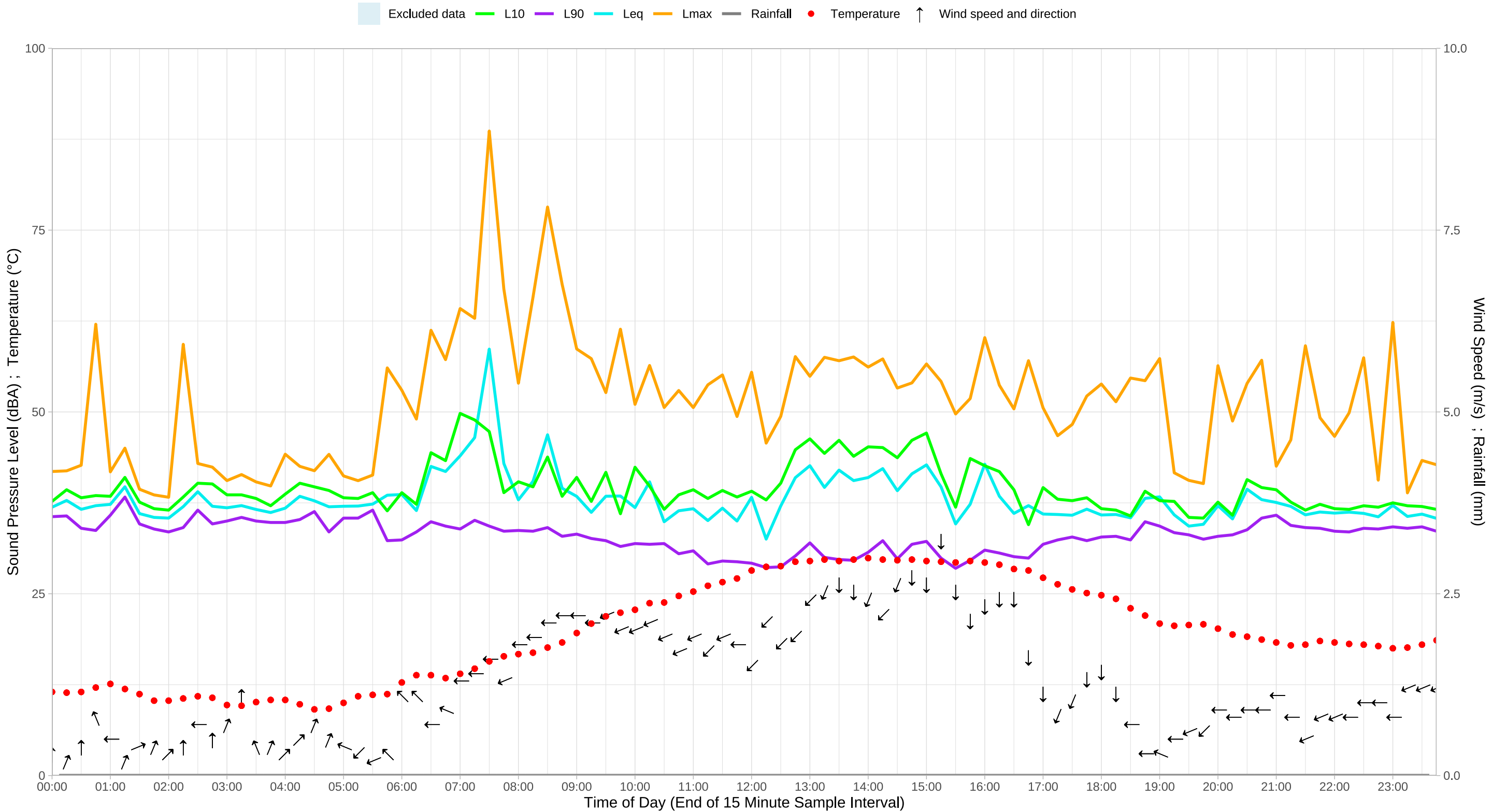
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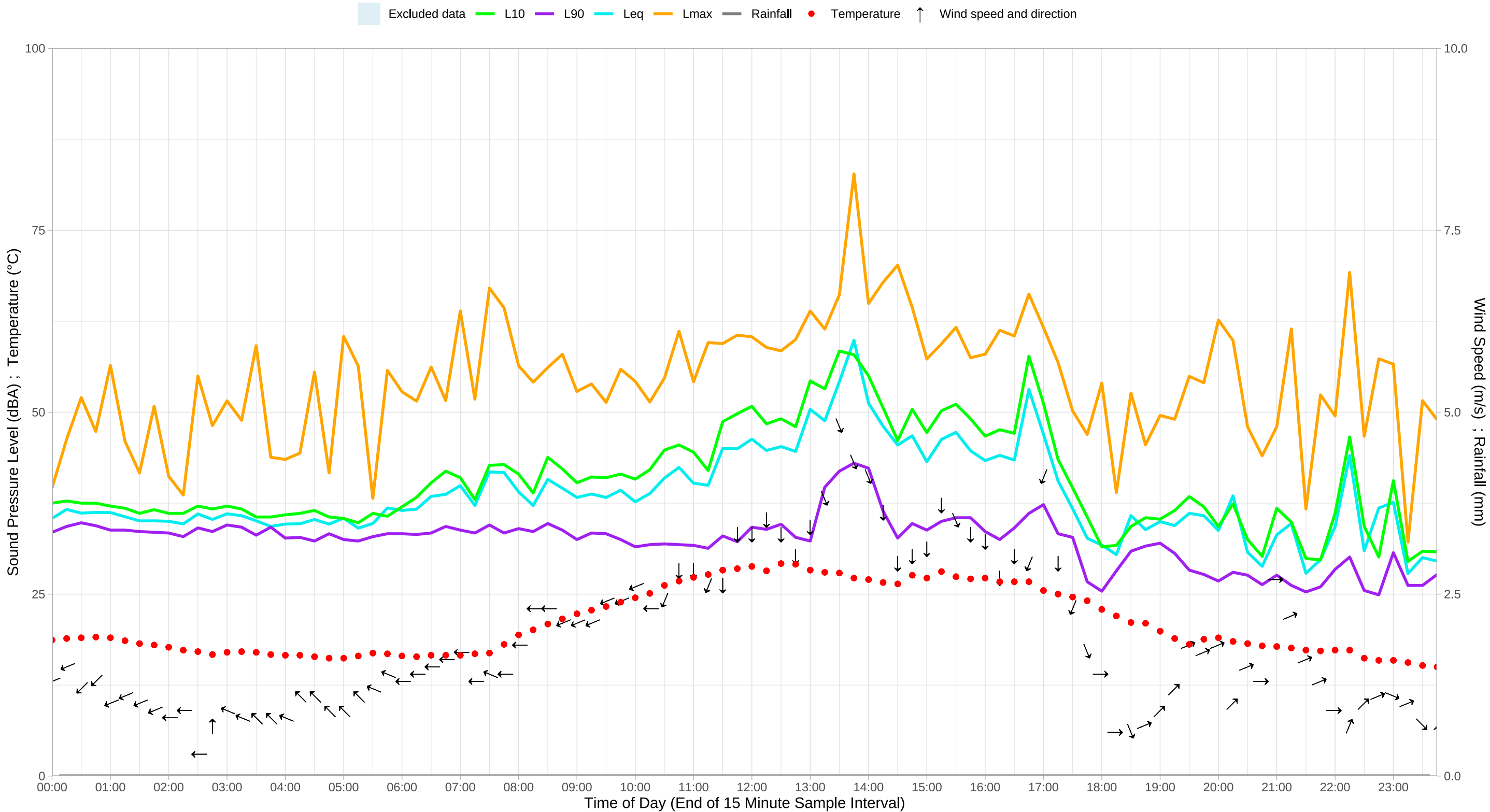
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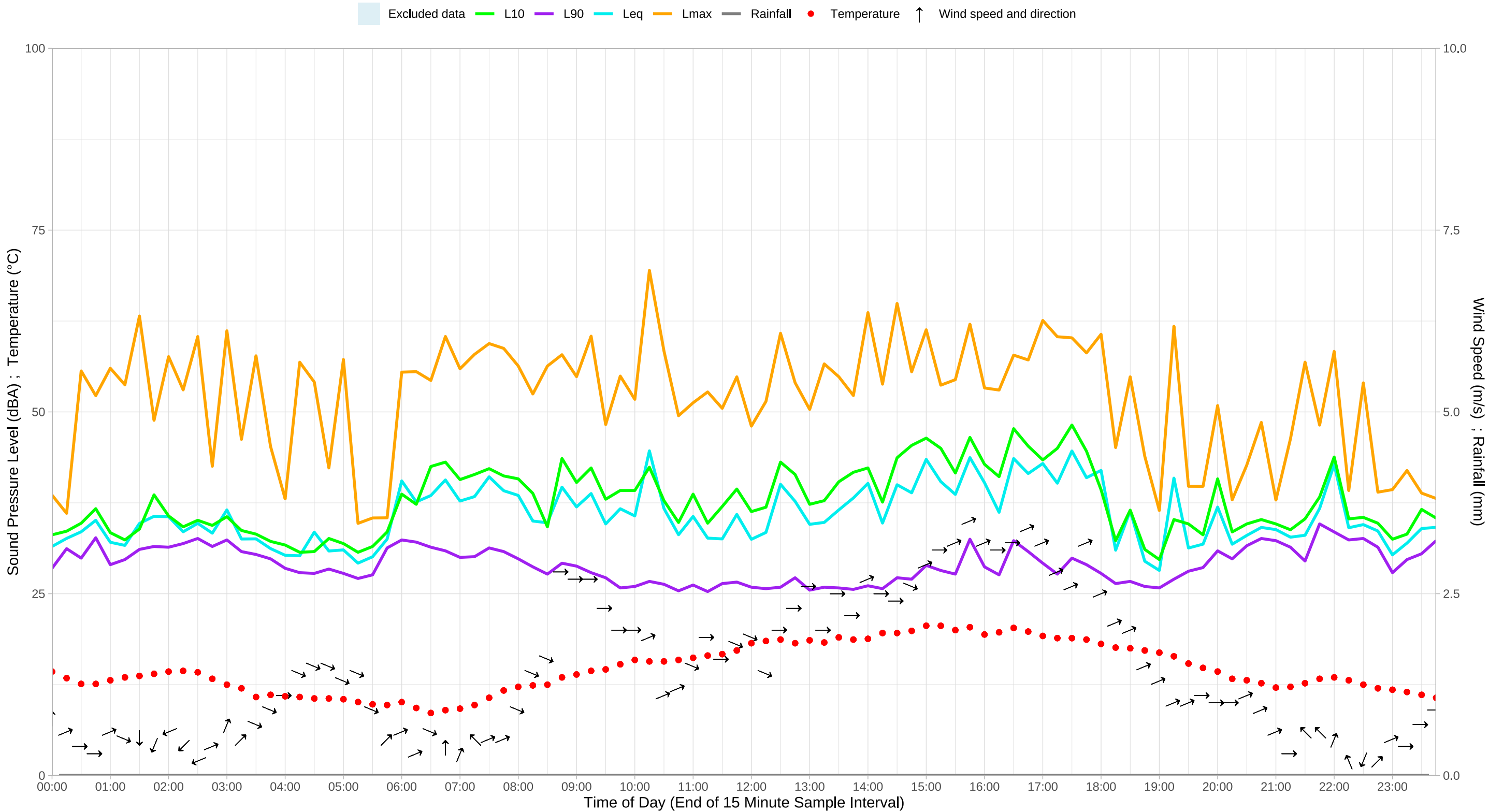
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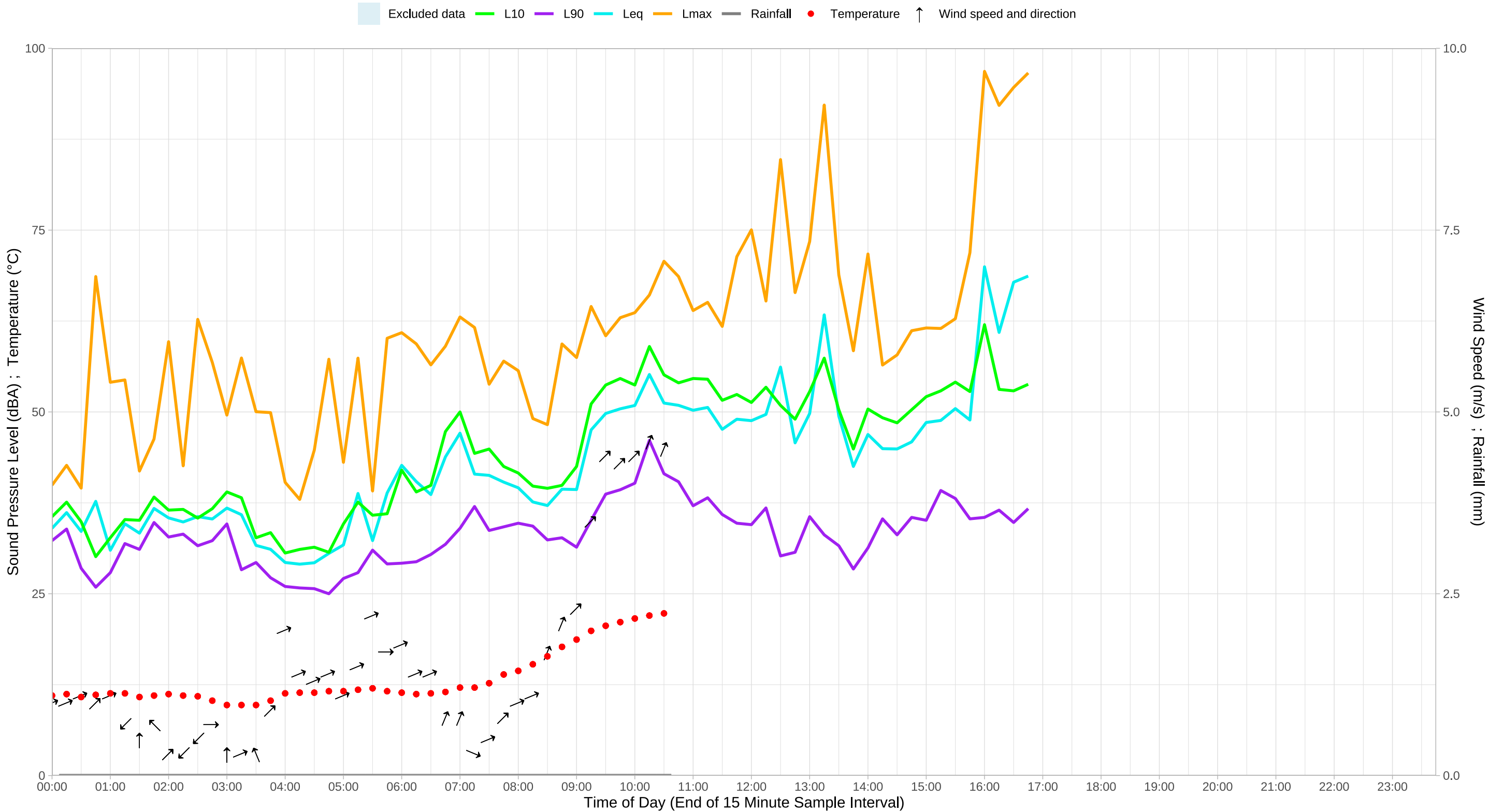
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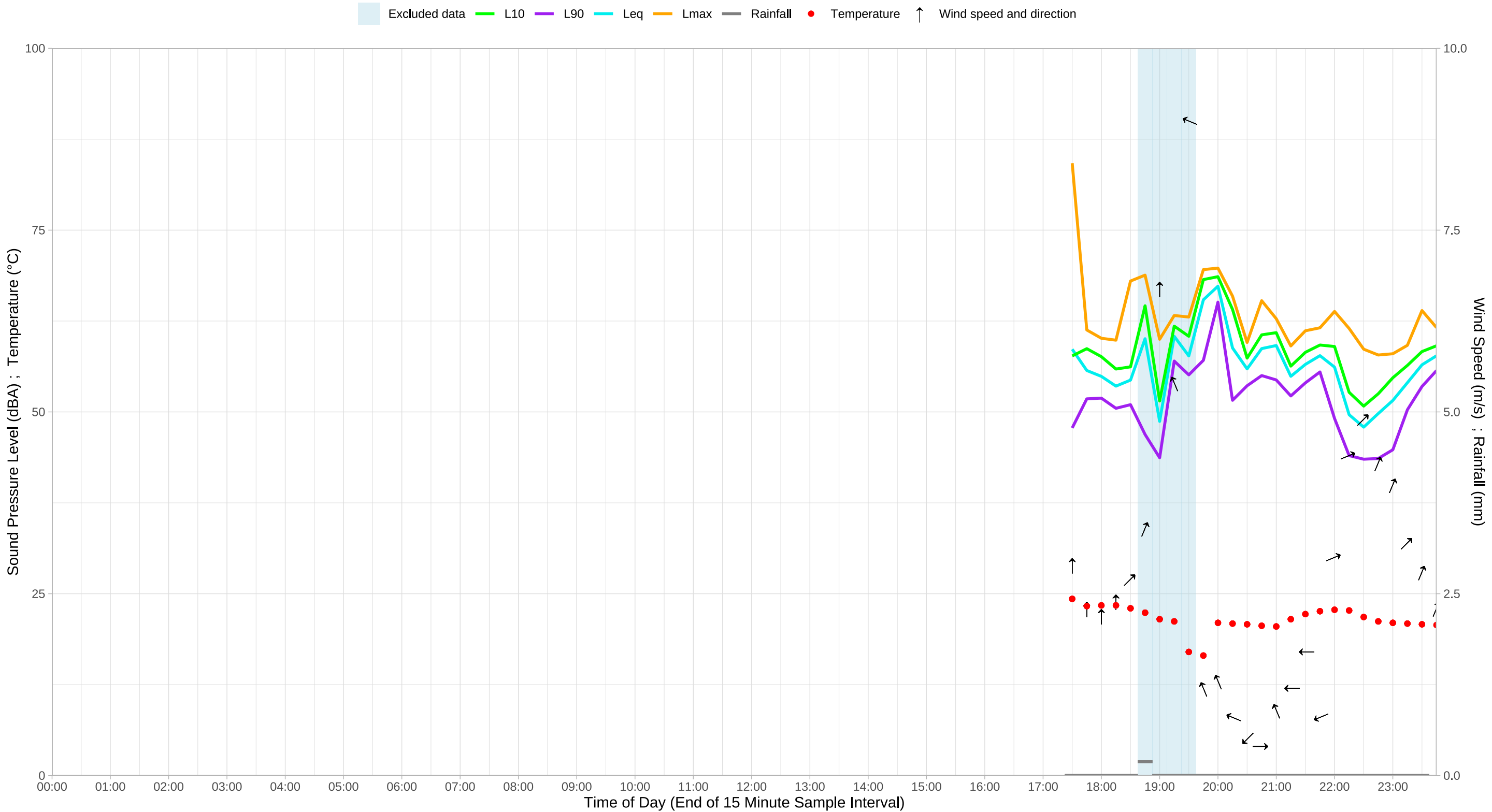
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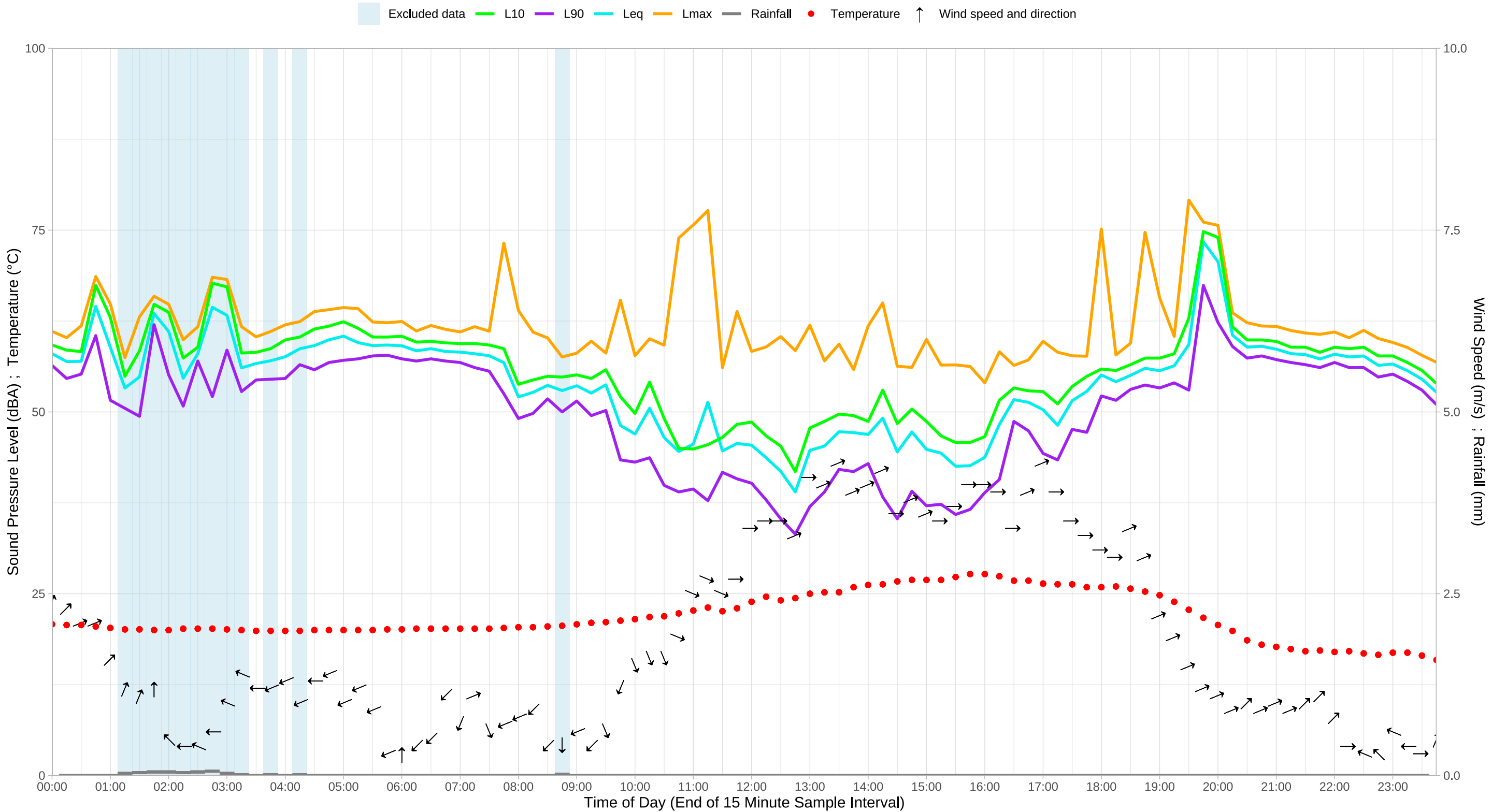
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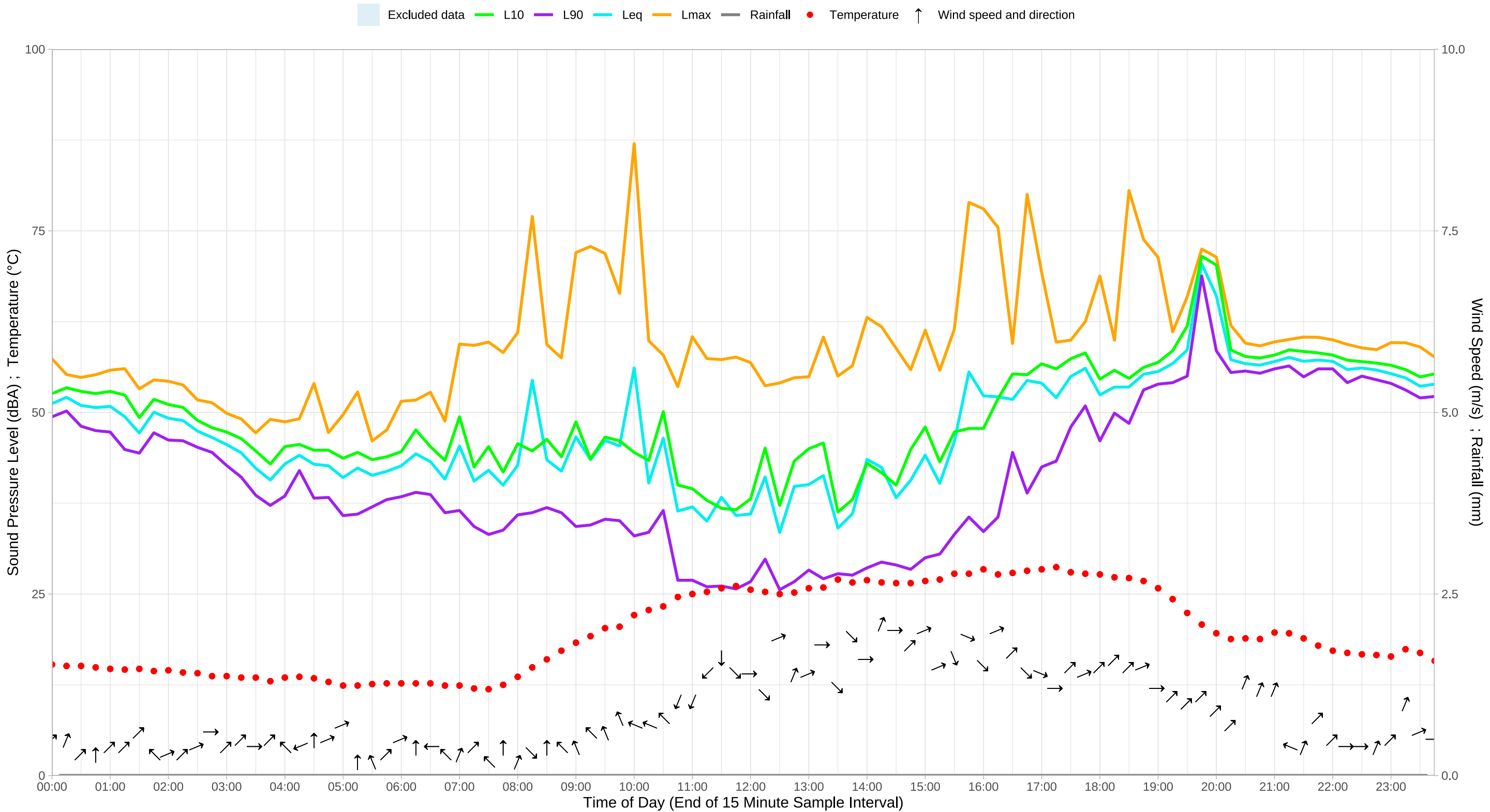
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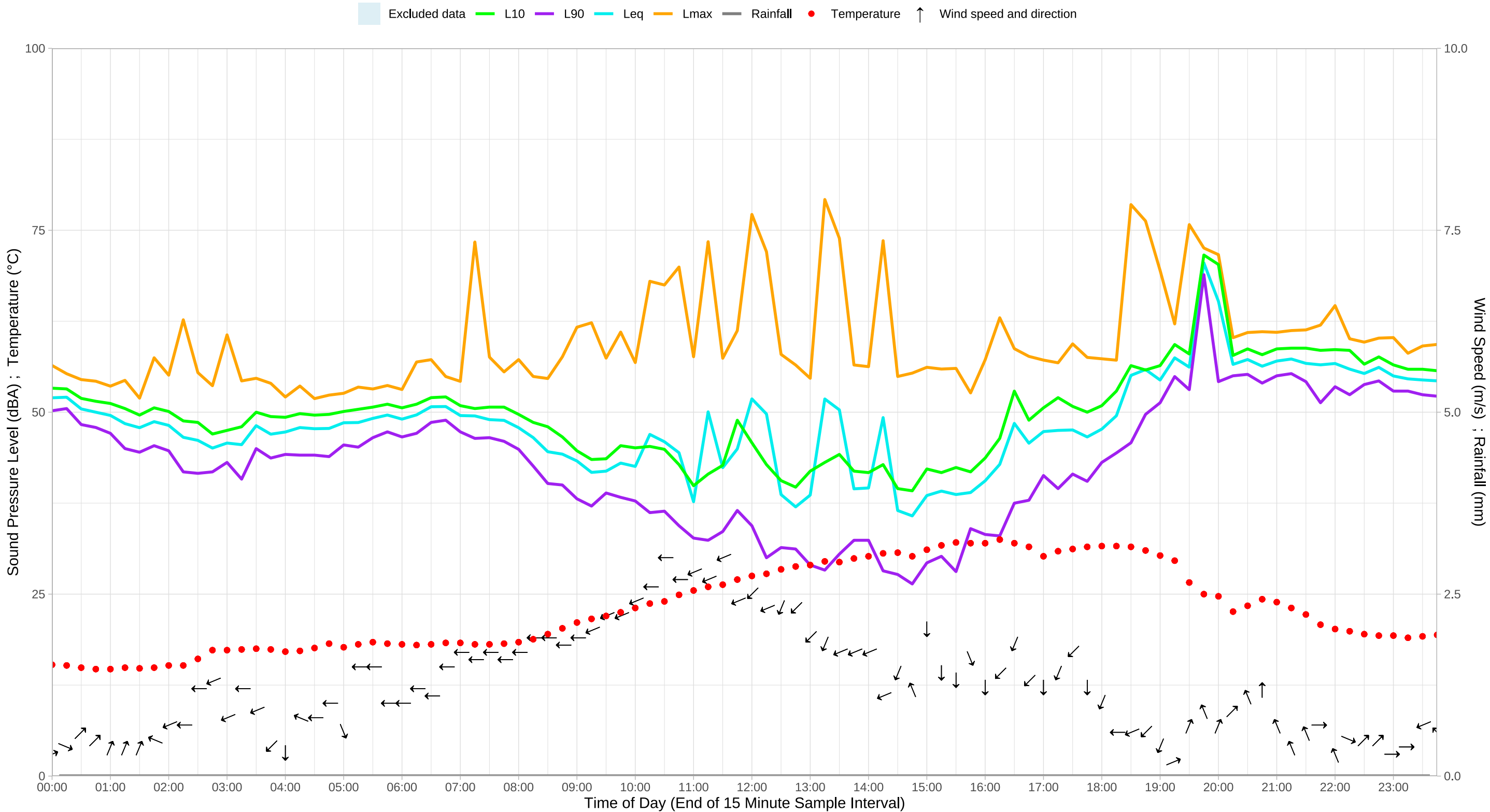
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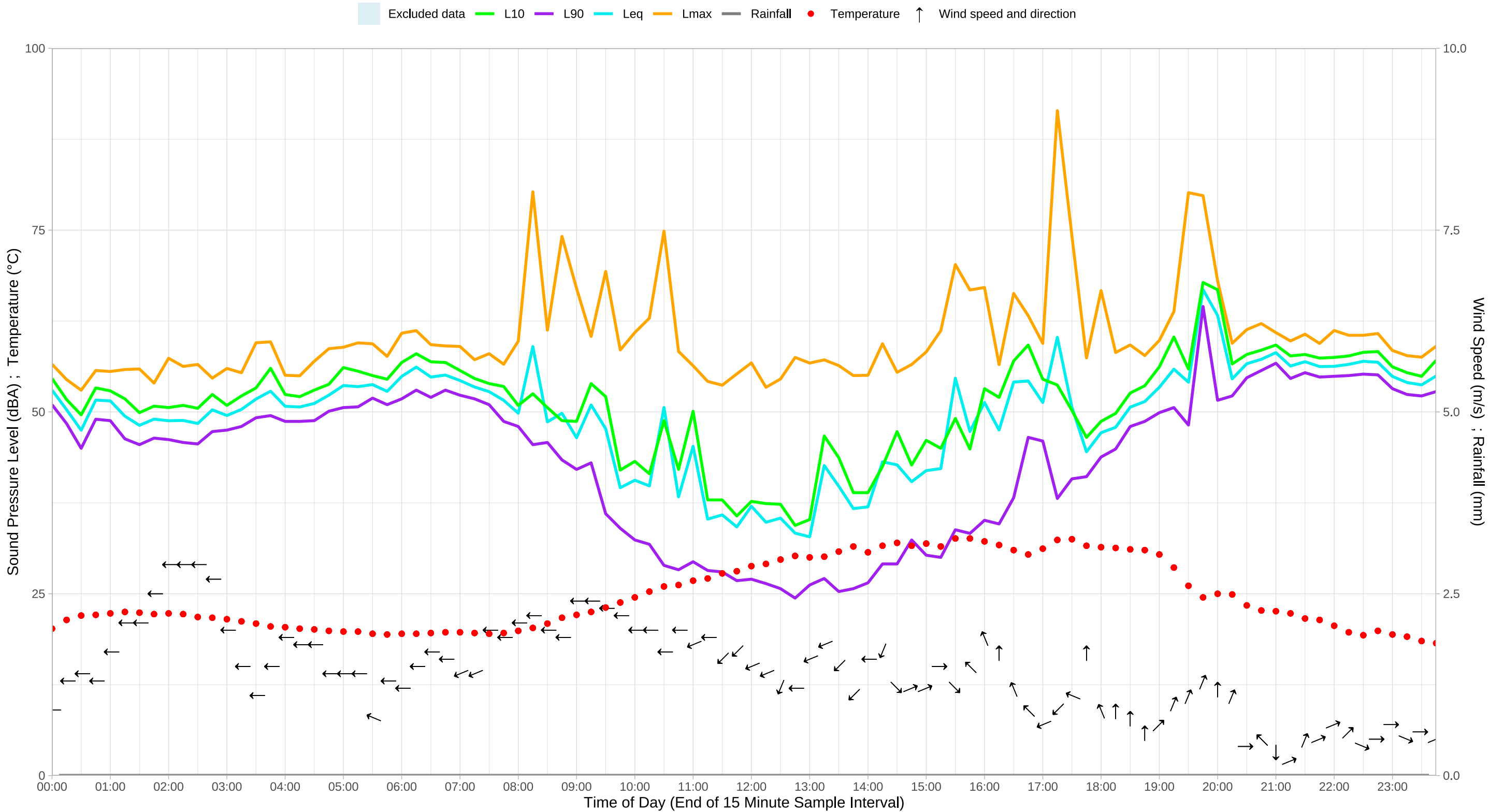
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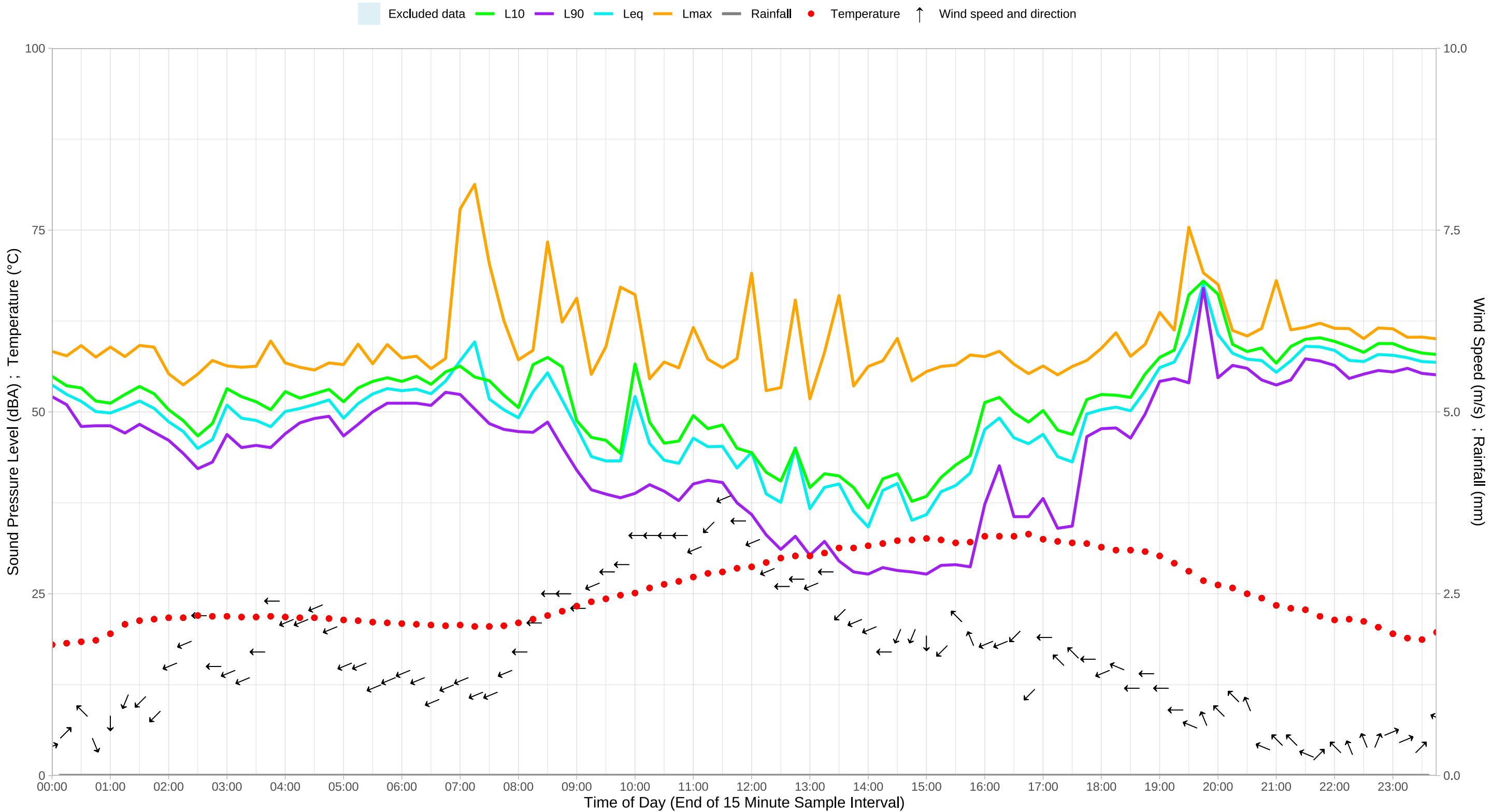
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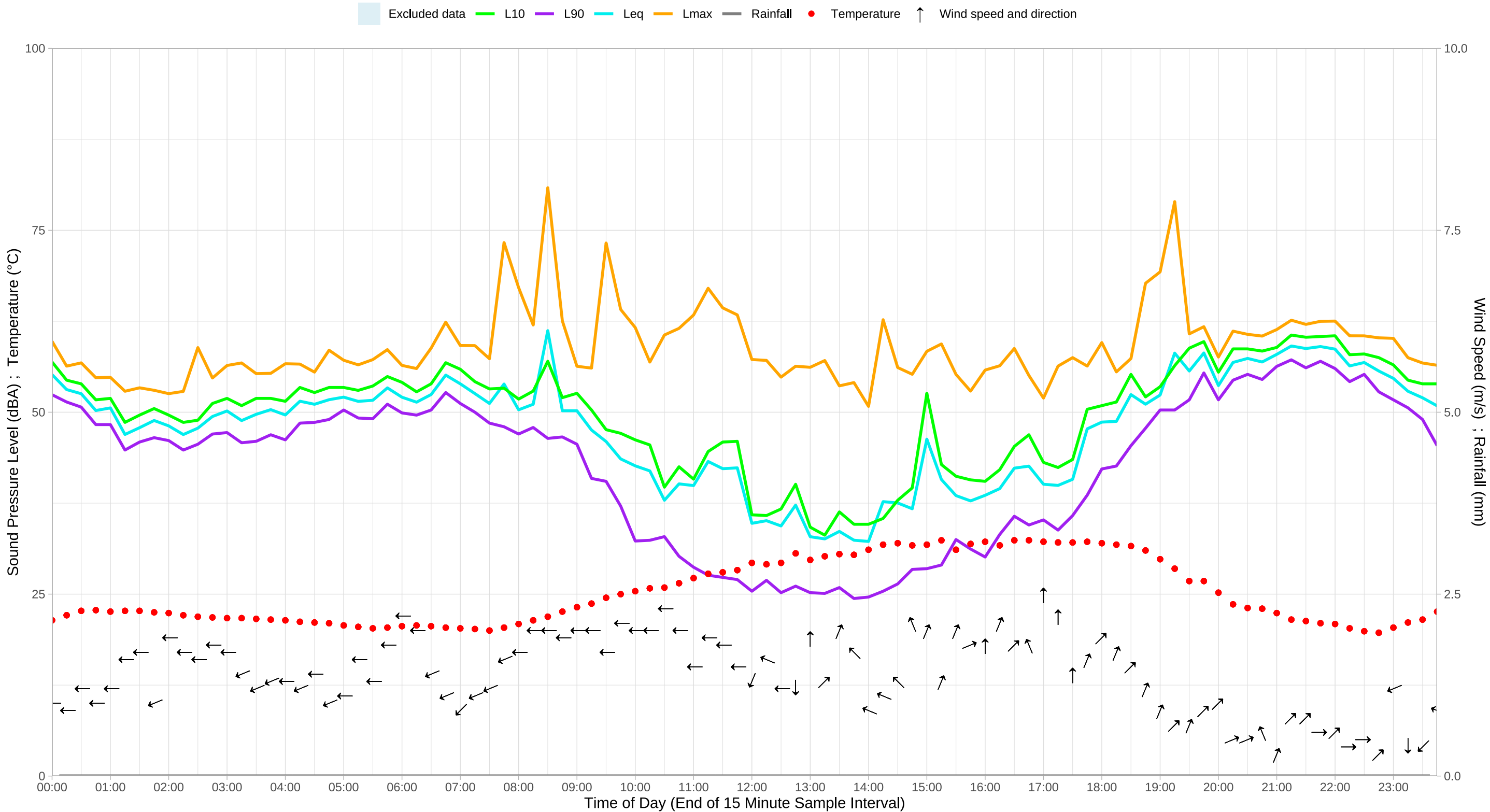
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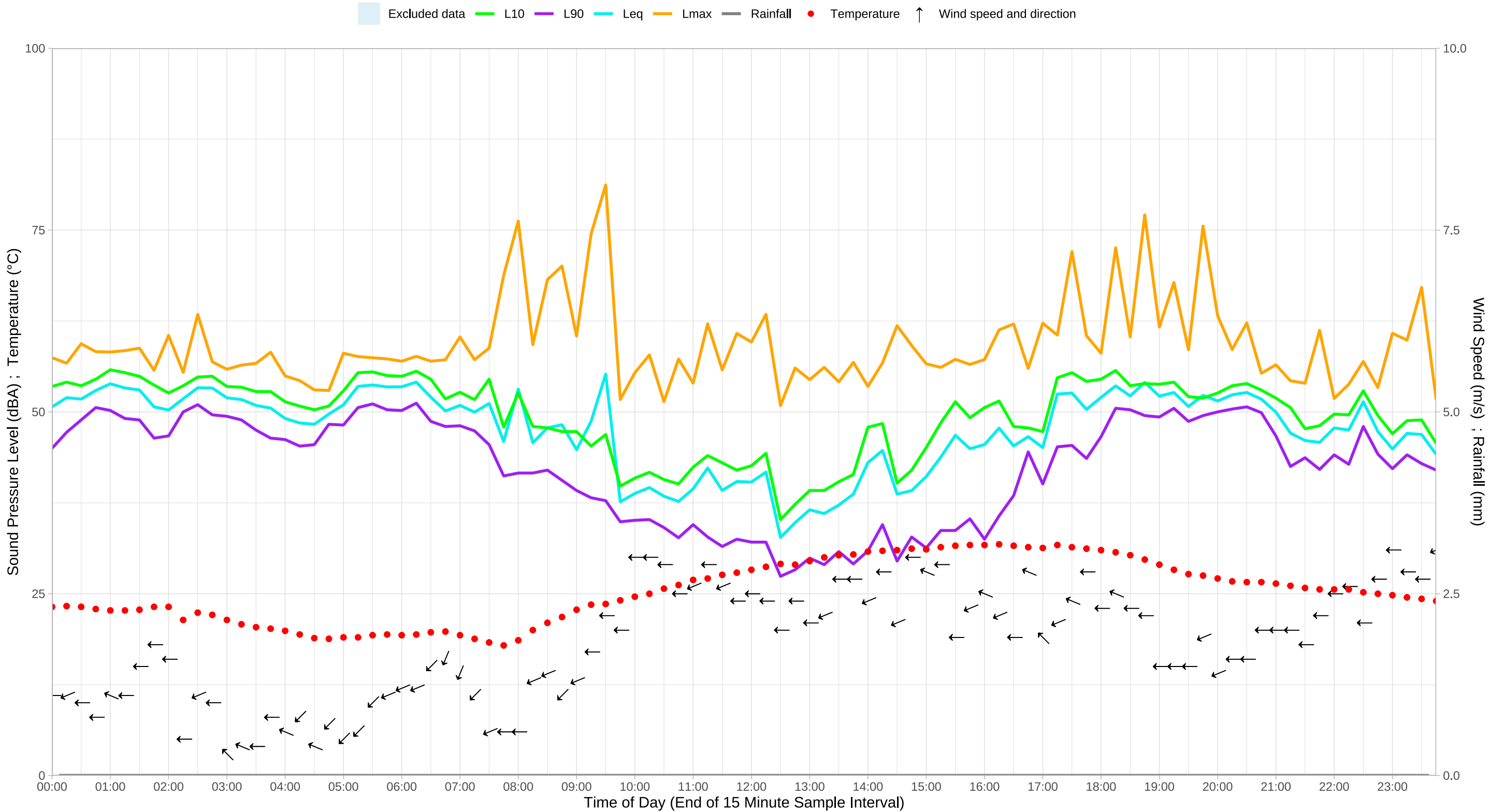
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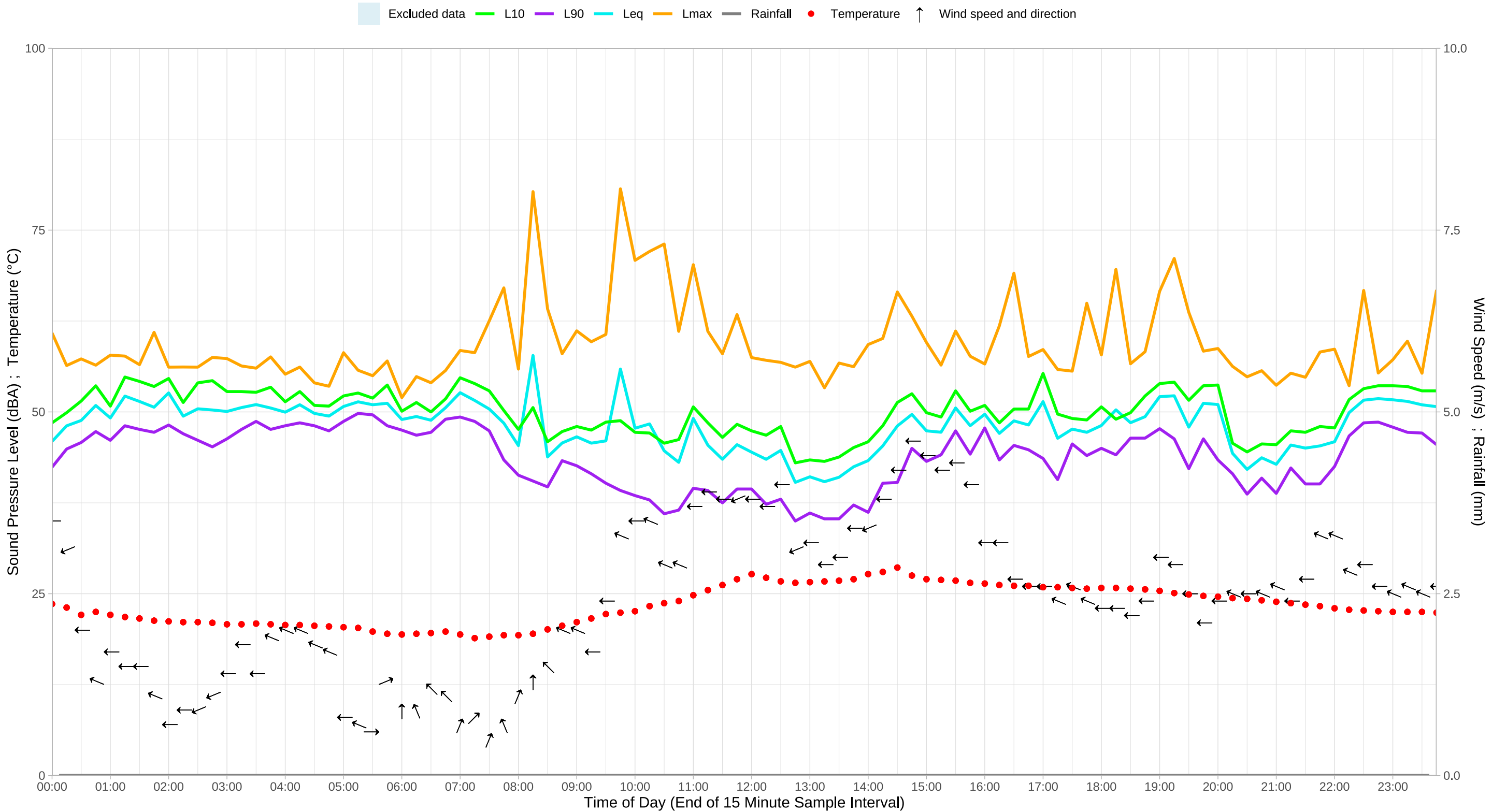
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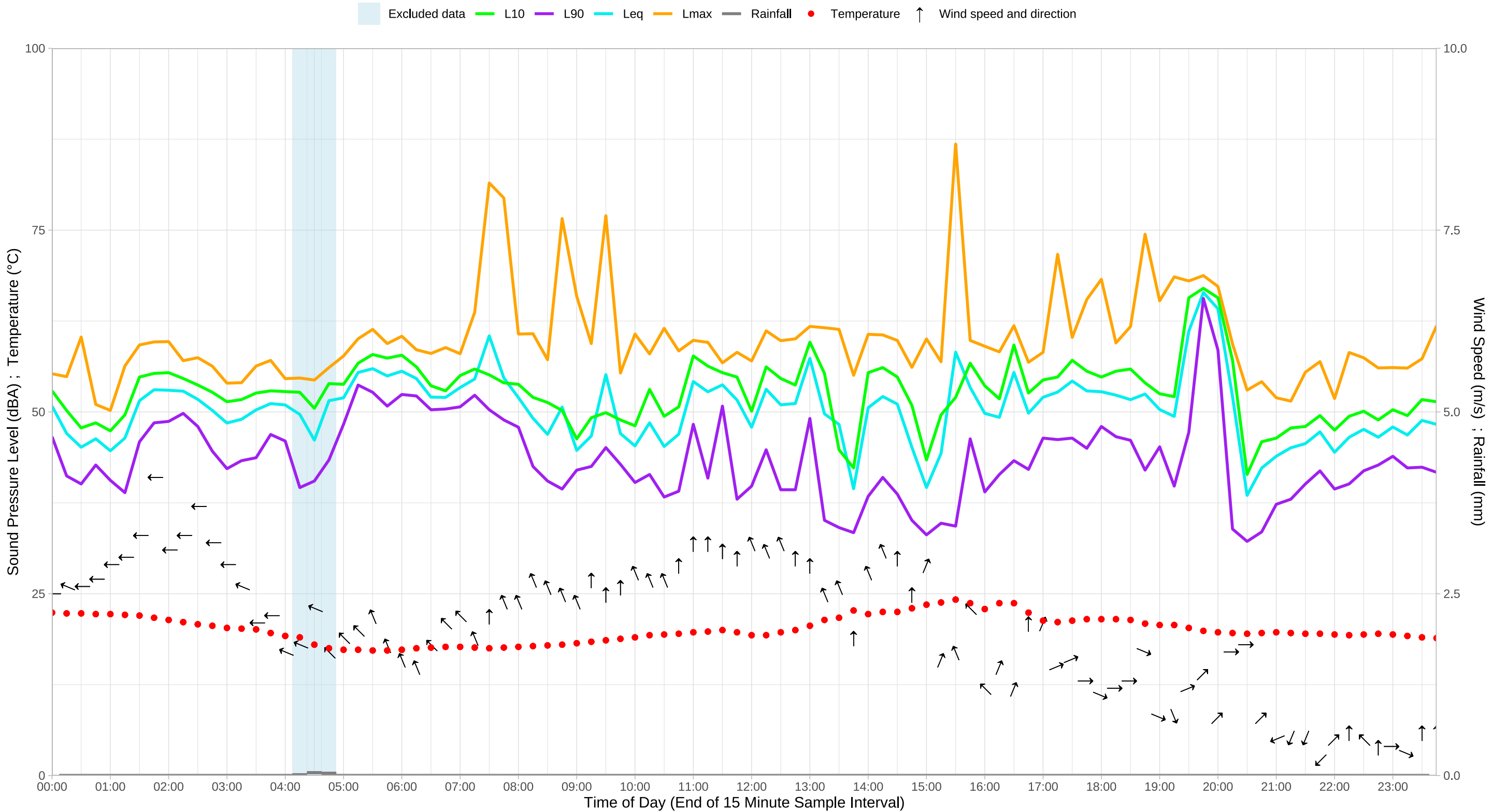
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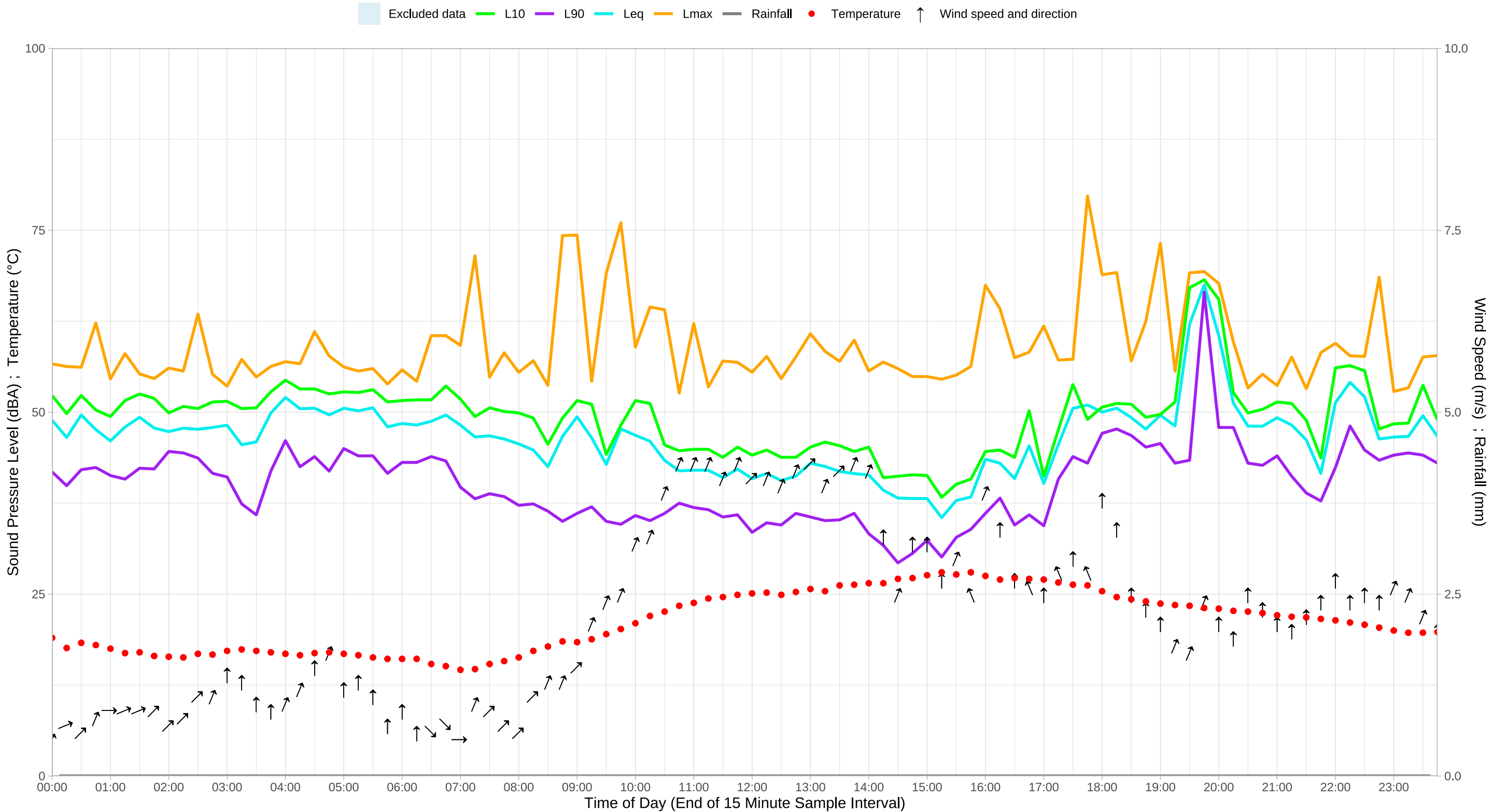
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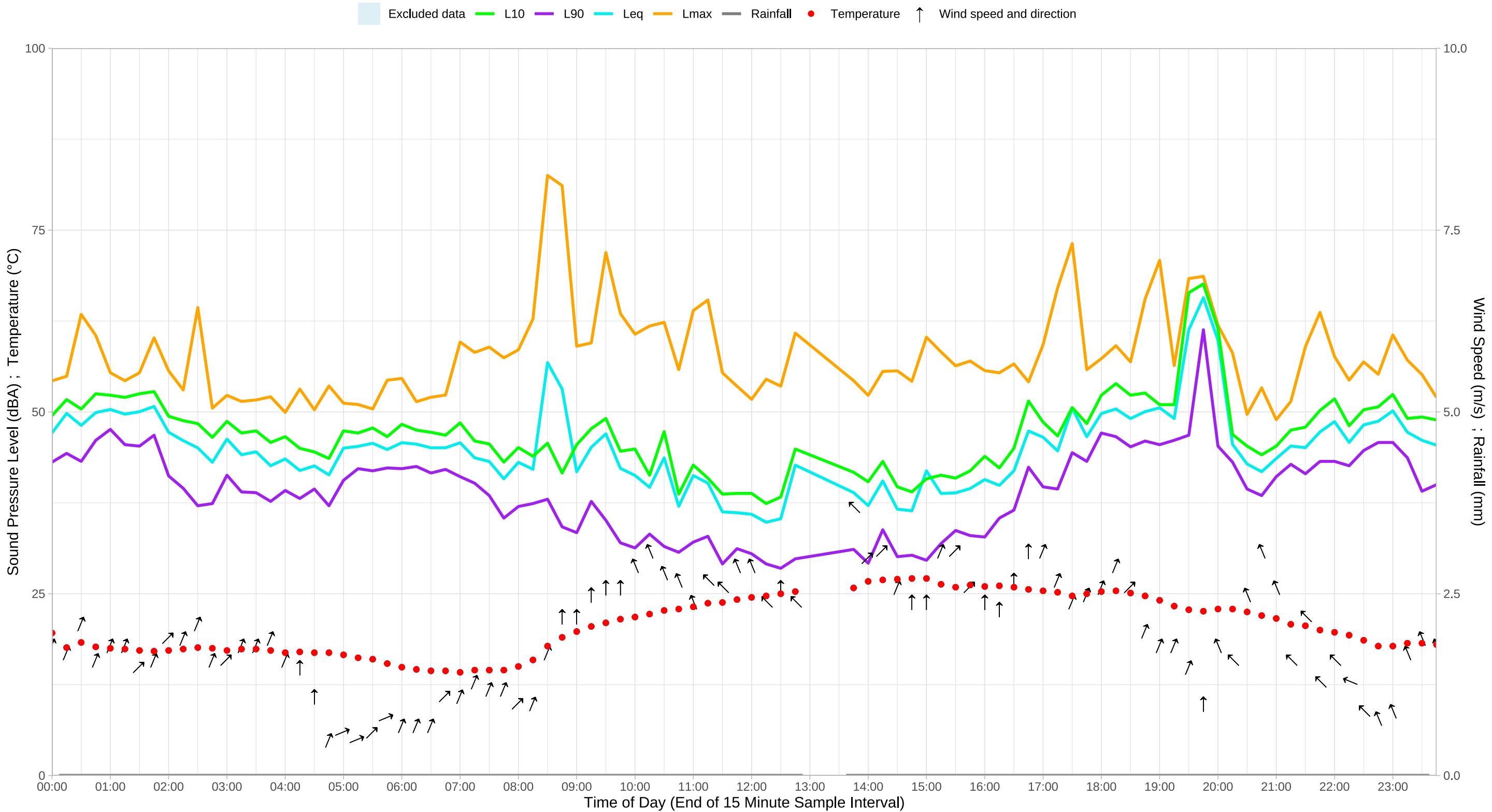
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Location ML2
Saturday 29 March 2025



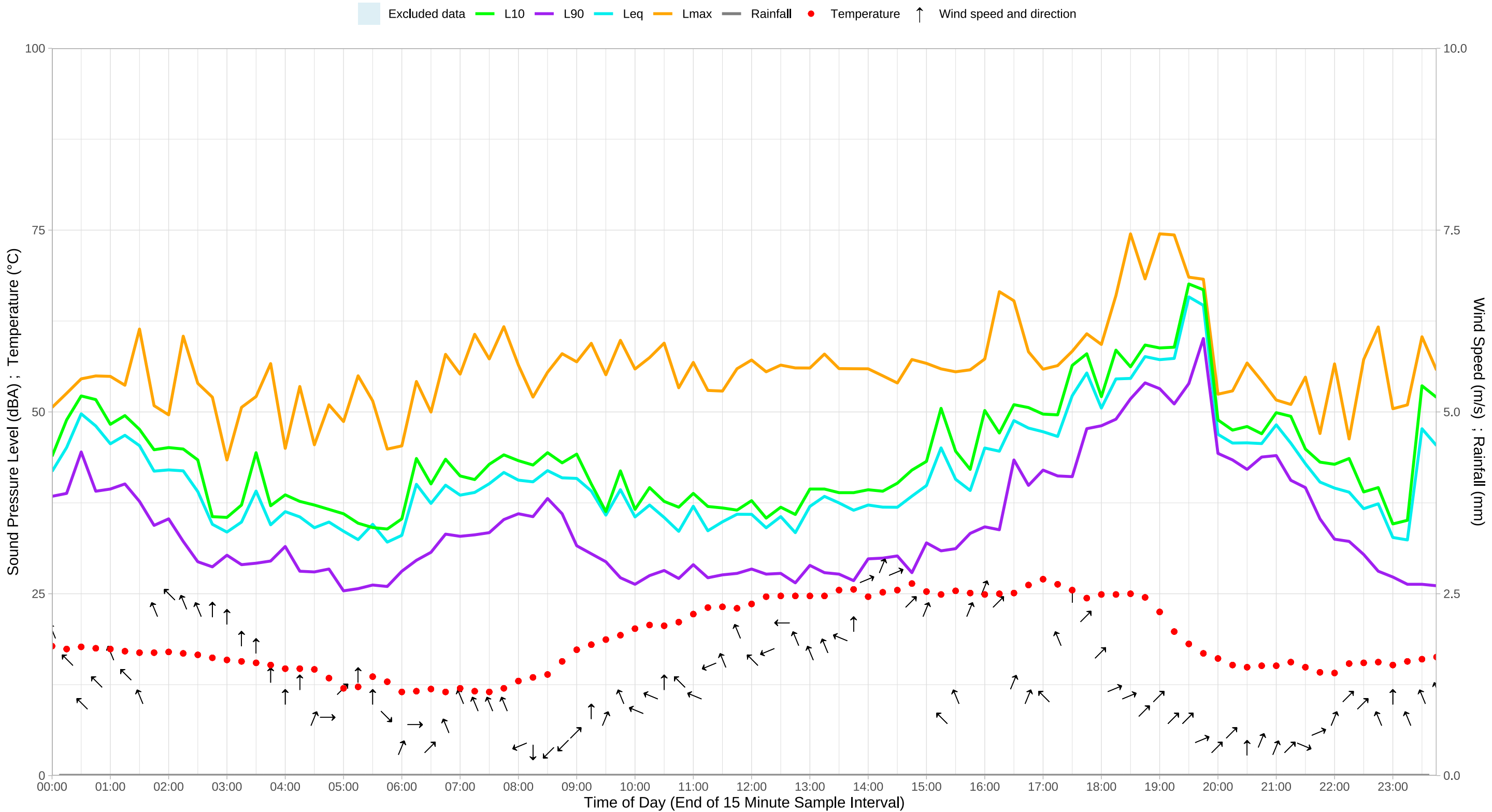
Statistical Ambient Noise Levels
Location ML2
Sunday 30 March 2025



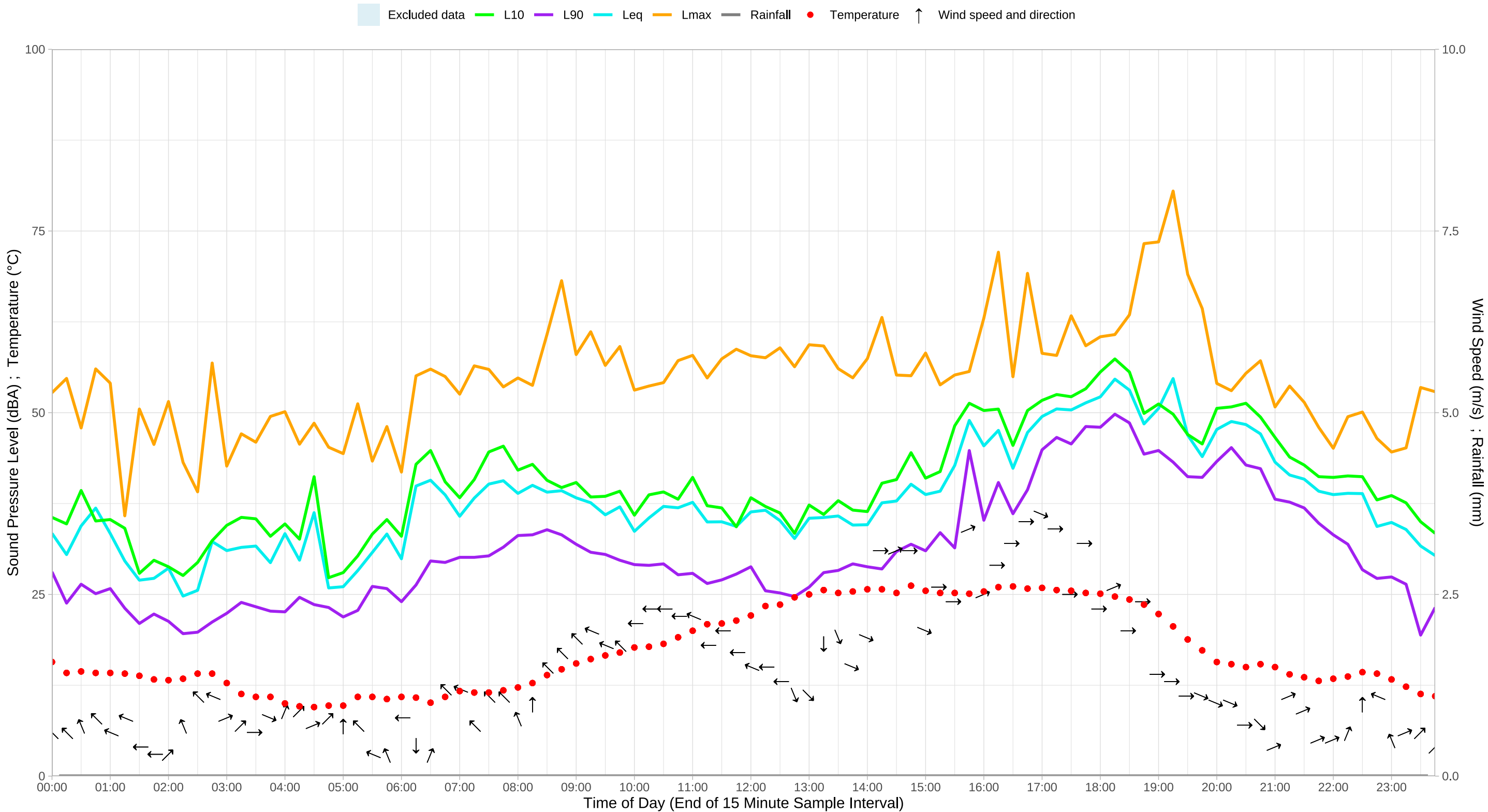
Statistical Ambient Noise Levels
Location ML2
Monday 31 March 2025



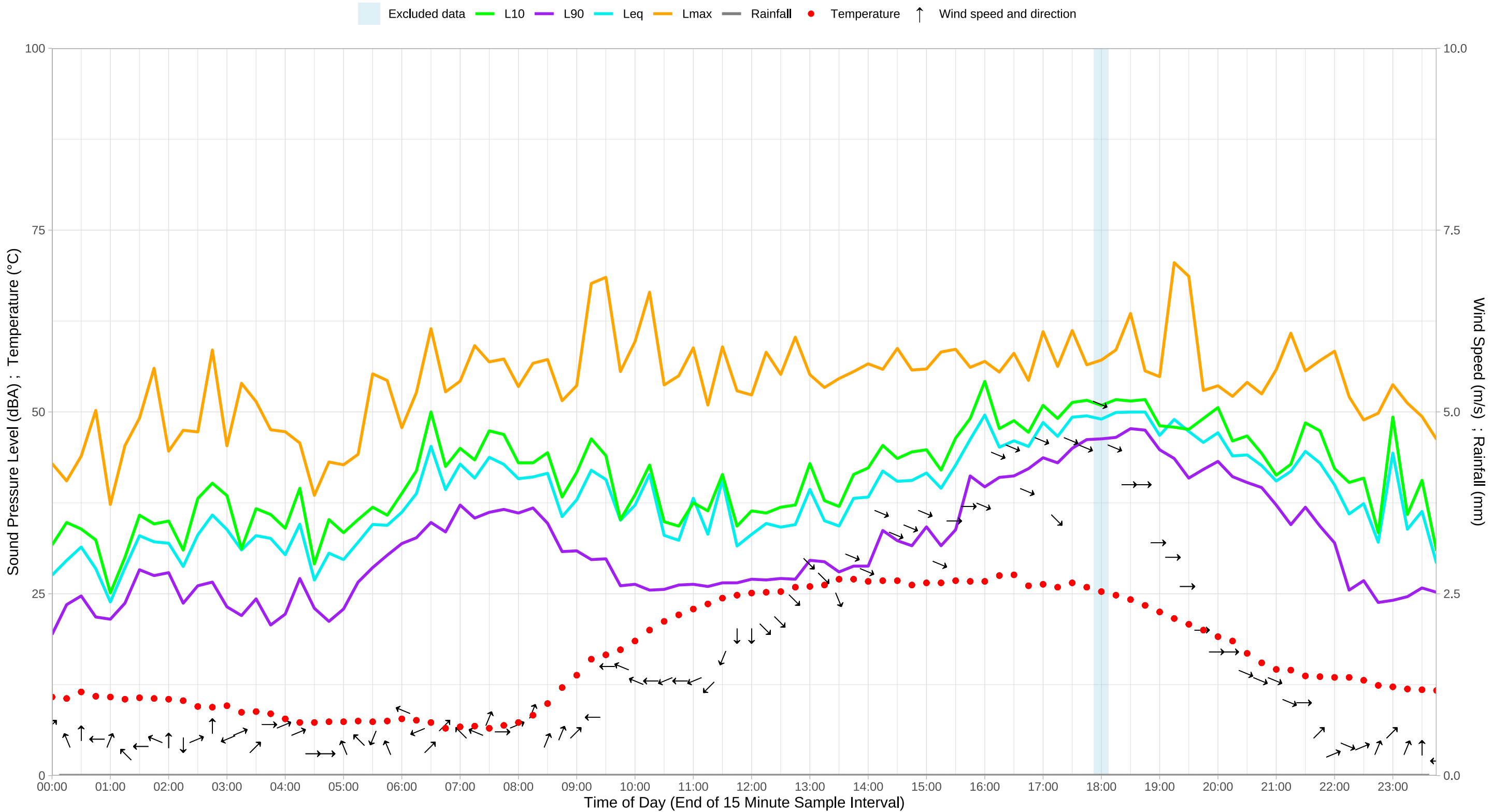
Statistical Ambient Noise Levels
Location ML2
Tuesday 01 April 2025



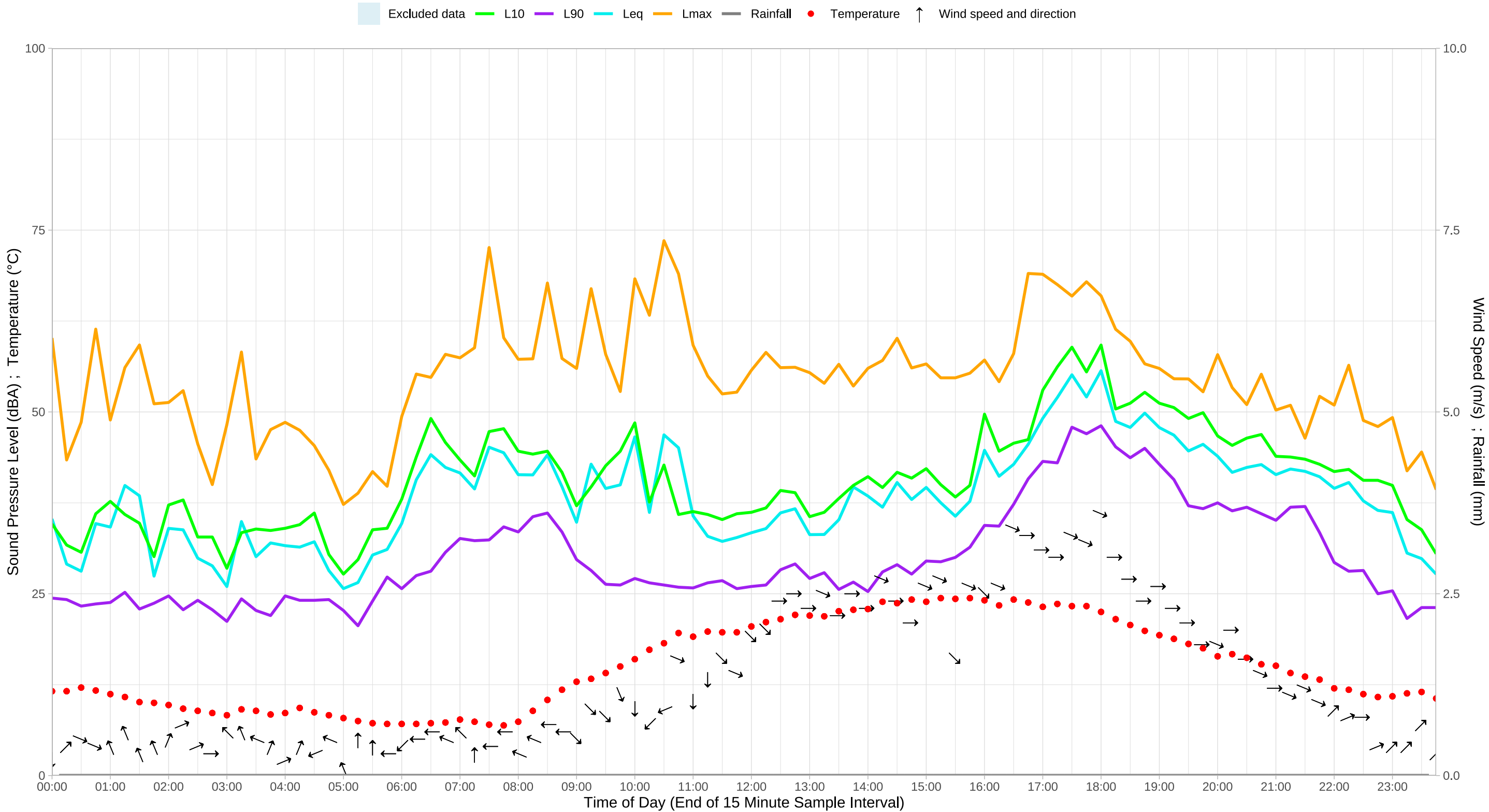
Statistical Ambient Noise Levels
Location ML2
Wednesday 02 April 2025



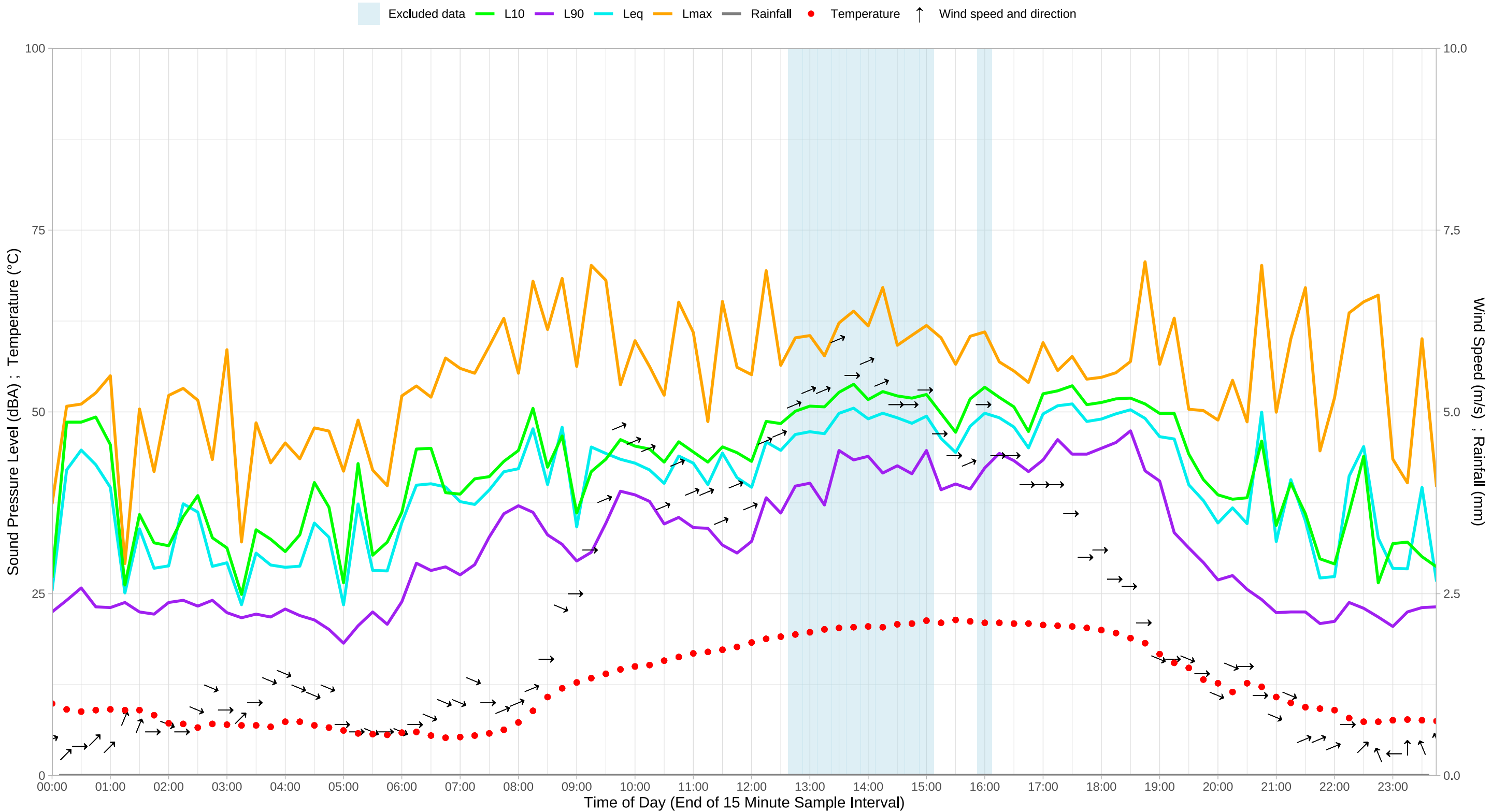
Statistical Ambient Noise Levels
Location ML2
Thursday 03 April 2025



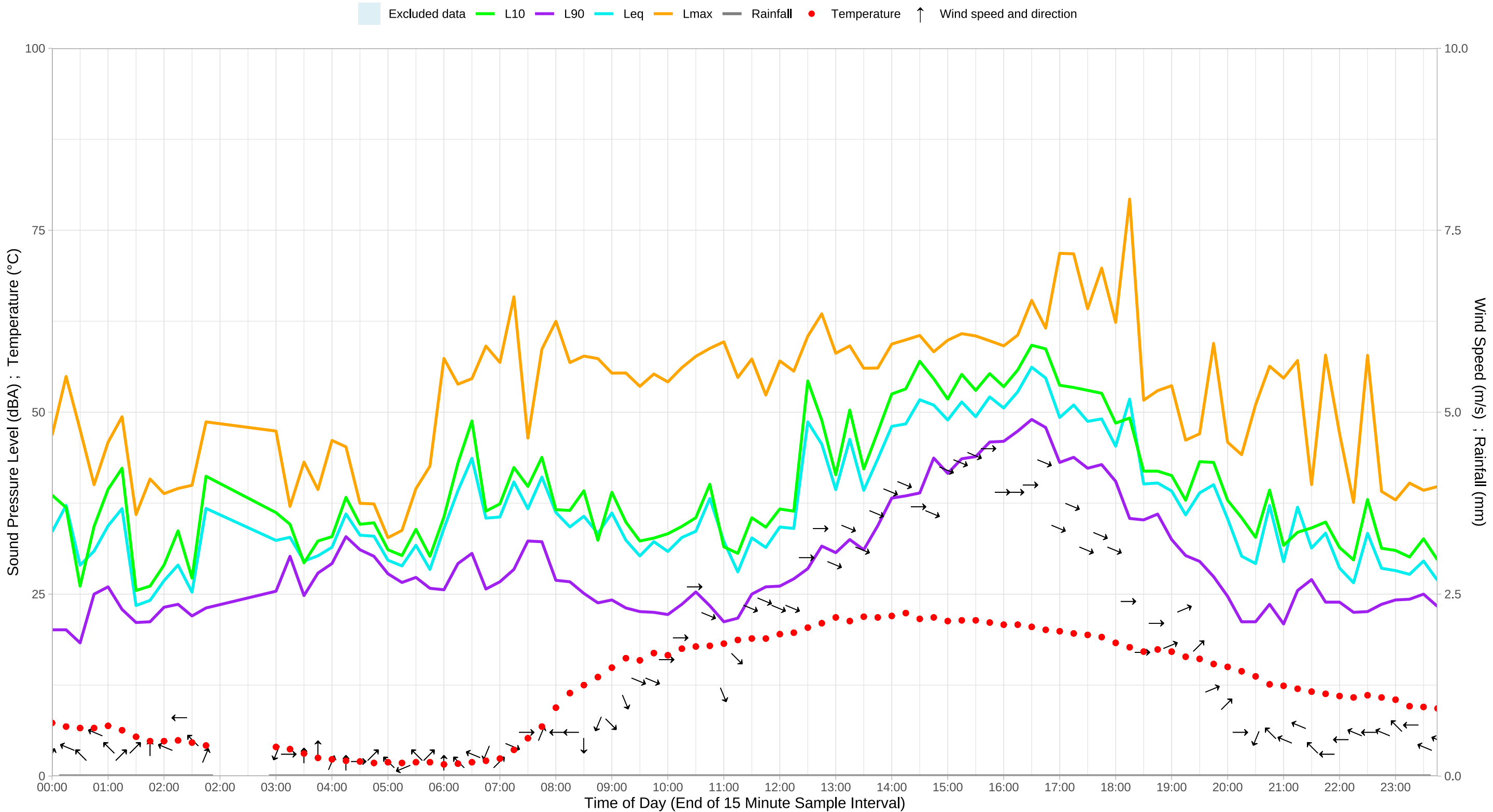
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Location ML2
Friday 04 April 2025



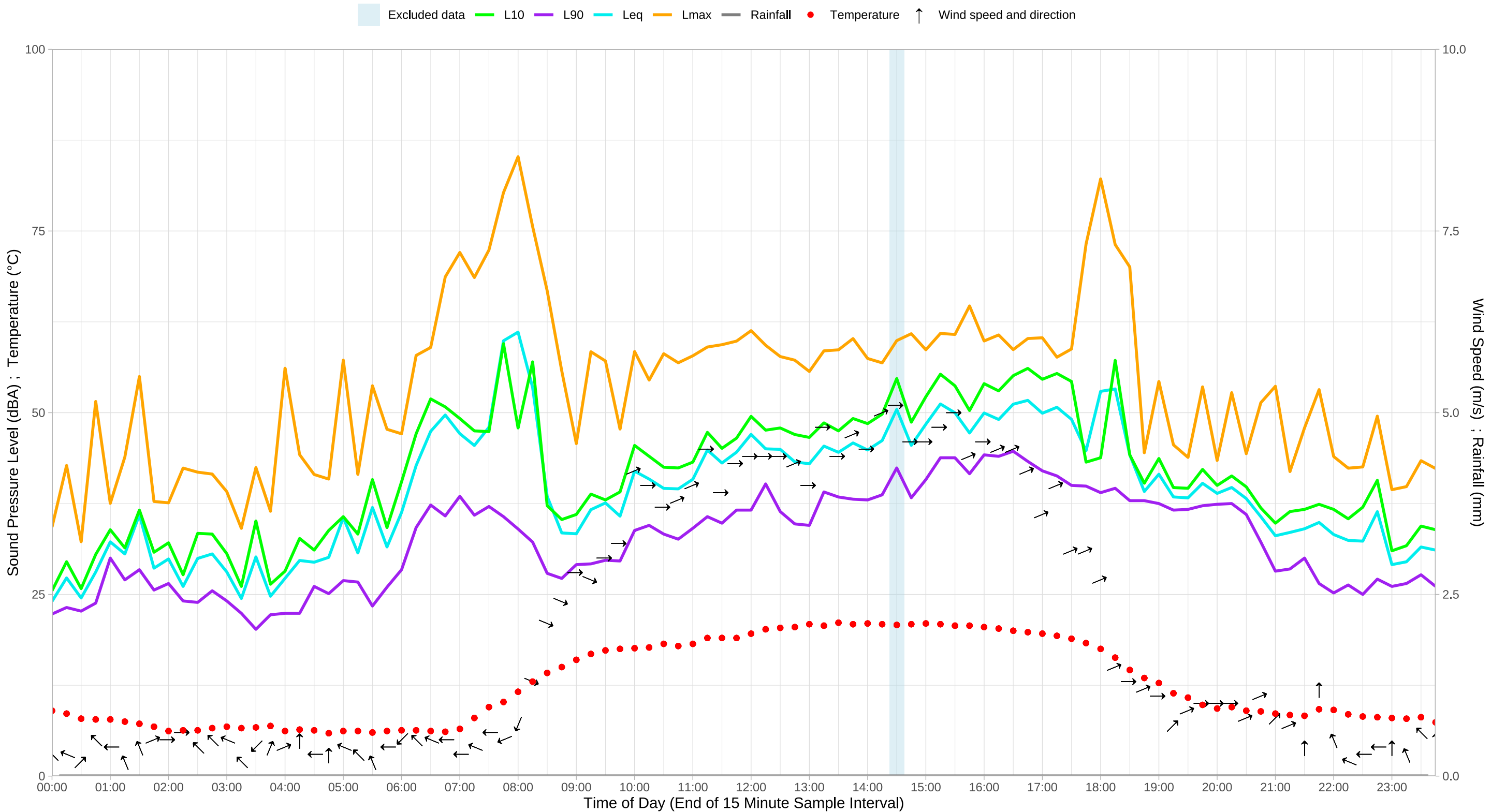
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Location ML2
Saturday 05 April 2025



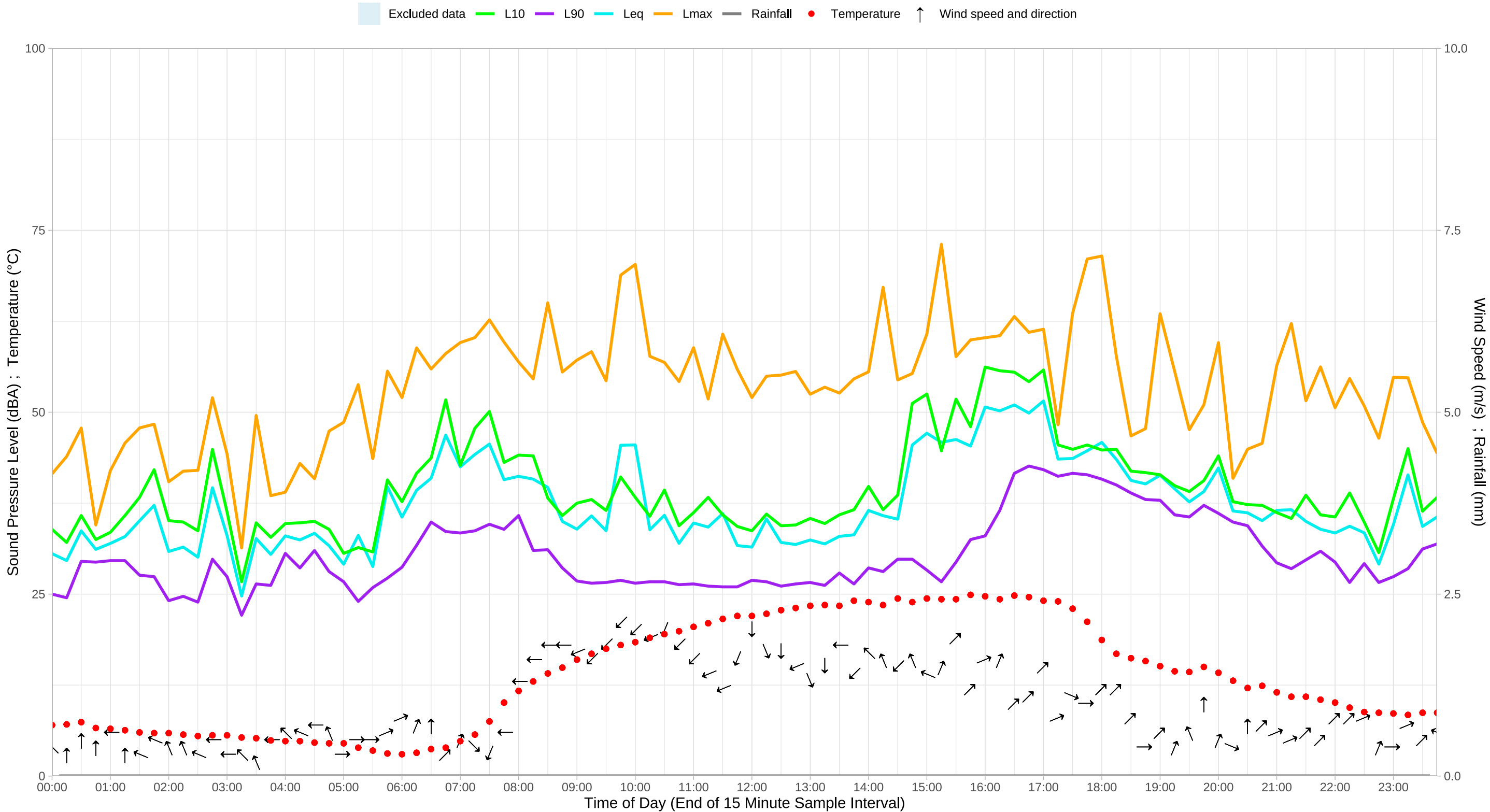
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Location ML2
Sunday 06 April 2025



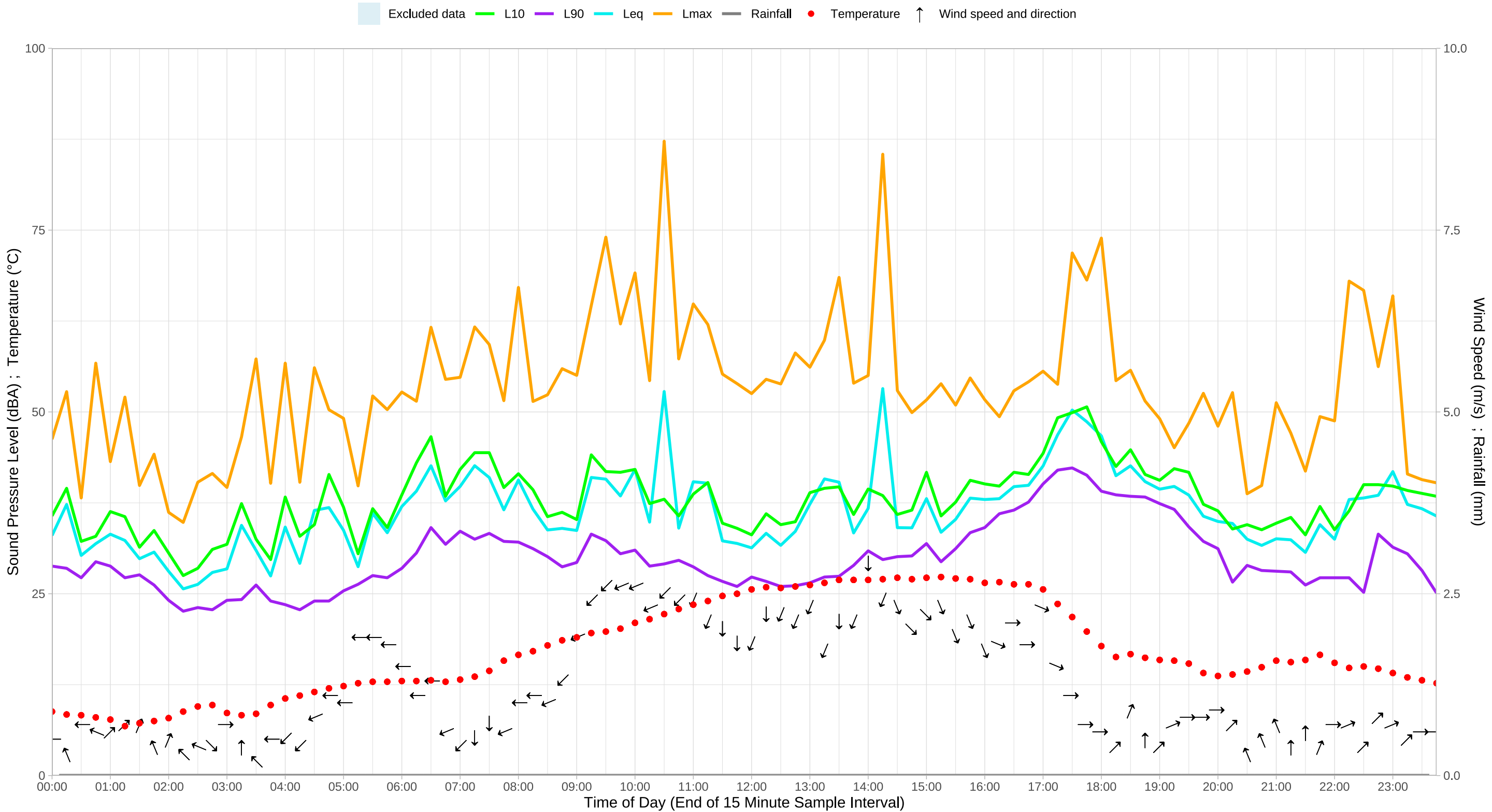
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Location ML2
Monday 07 April 2025



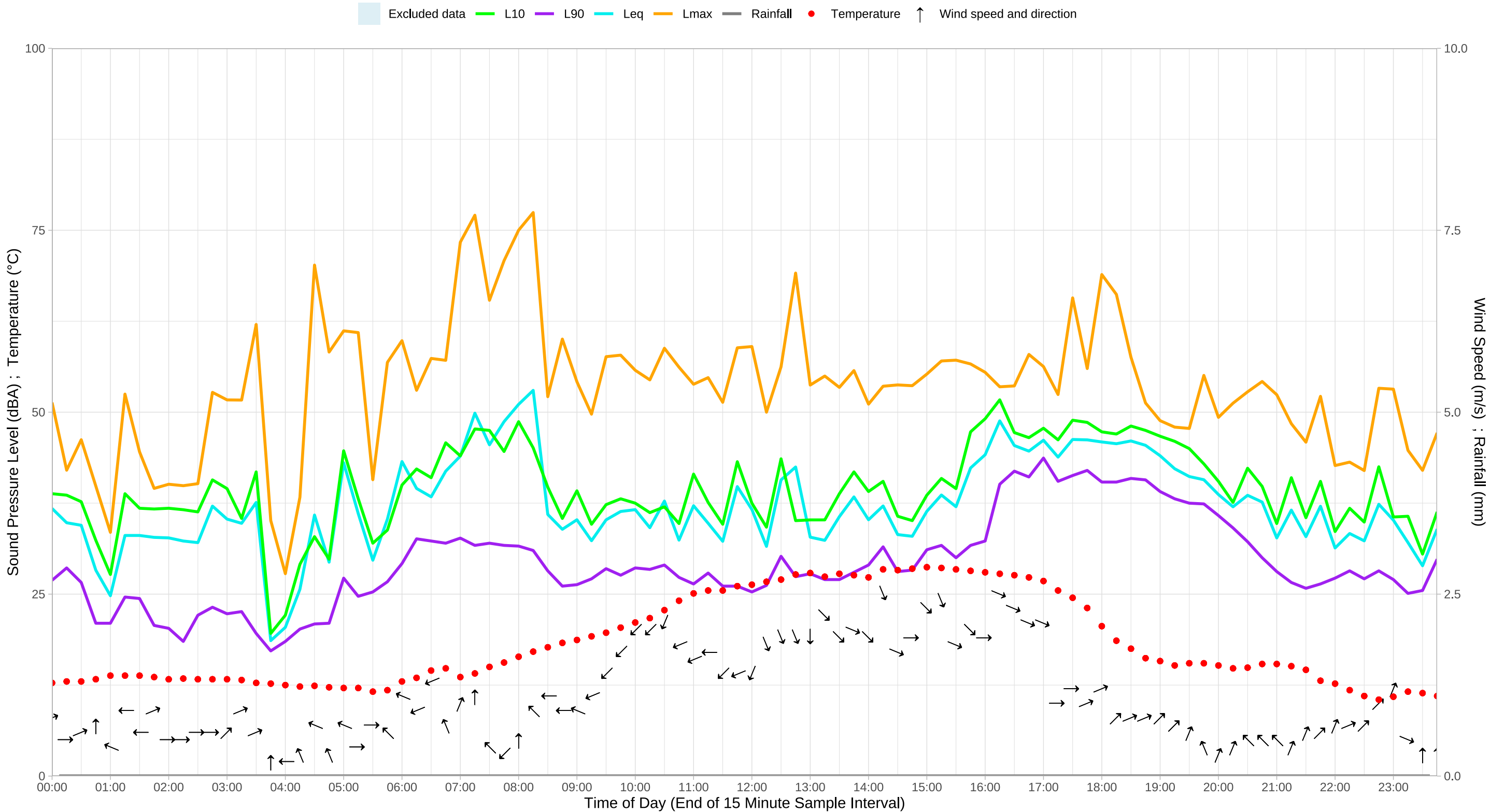
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Location ML2
Tuesday 08 April 2025



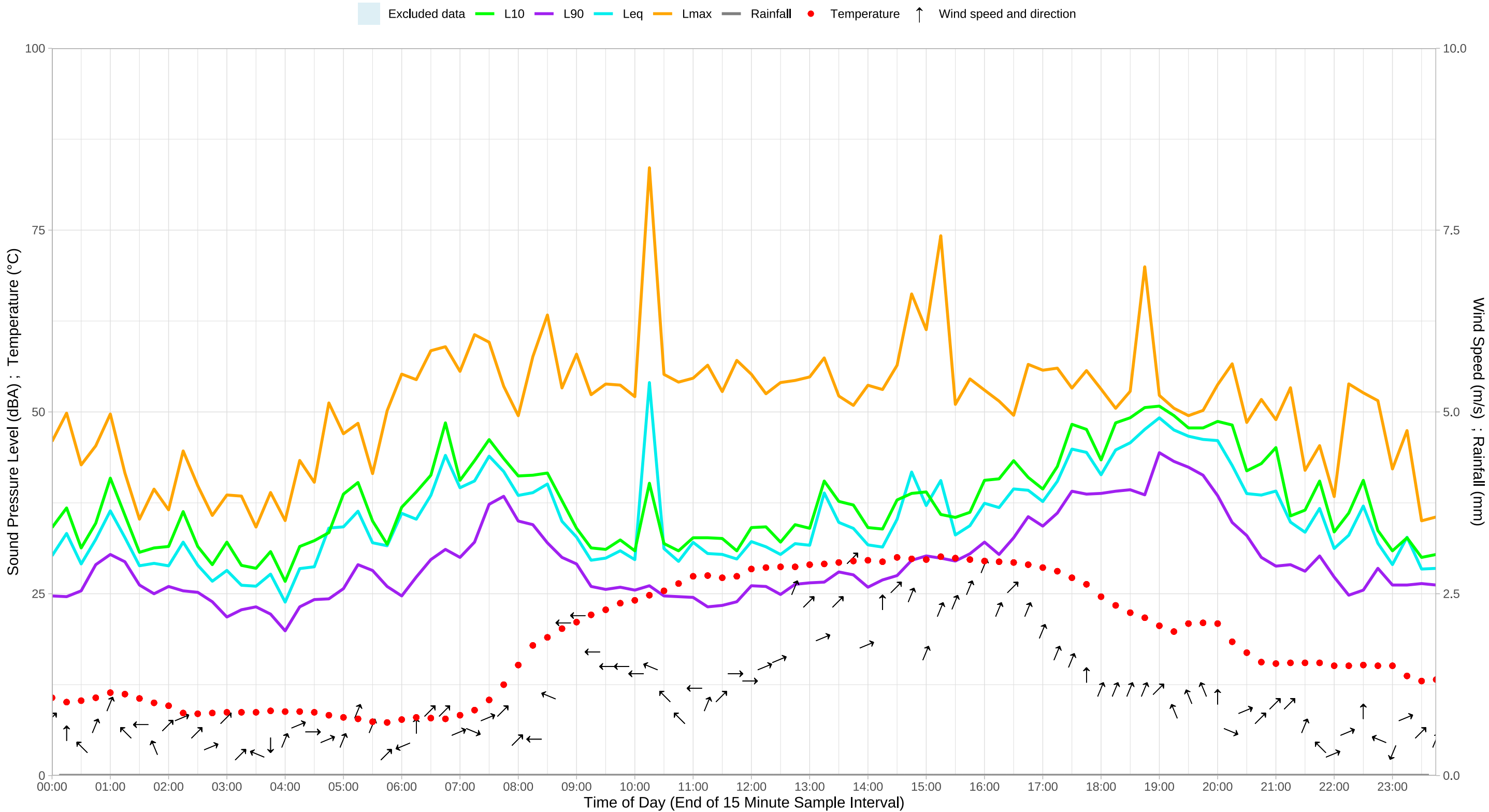
Statistical Ambient Noise Levels
Location ML2
Wednesday 09 April 2025



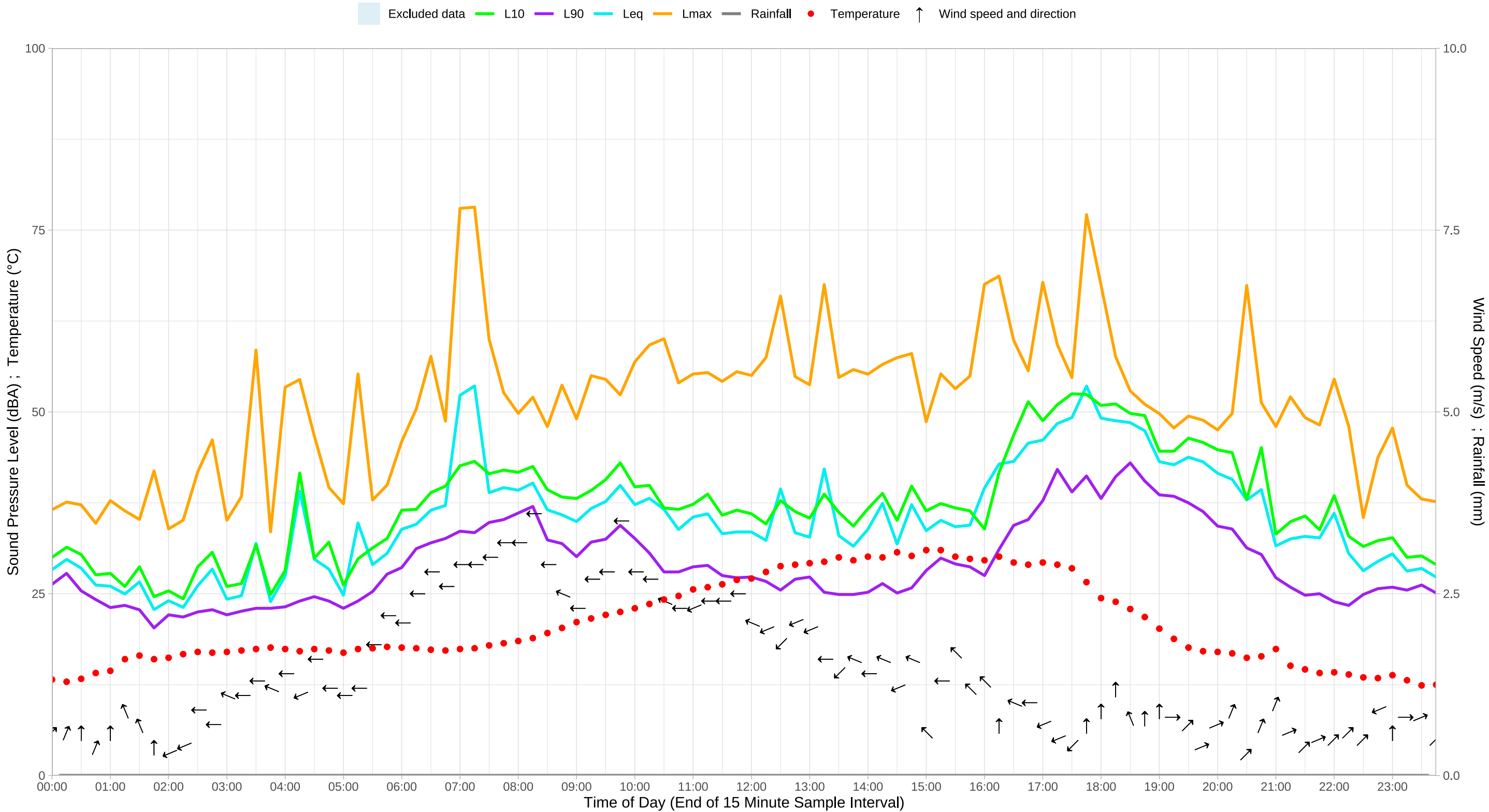
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Location ML2
Thursday 10 April 2025



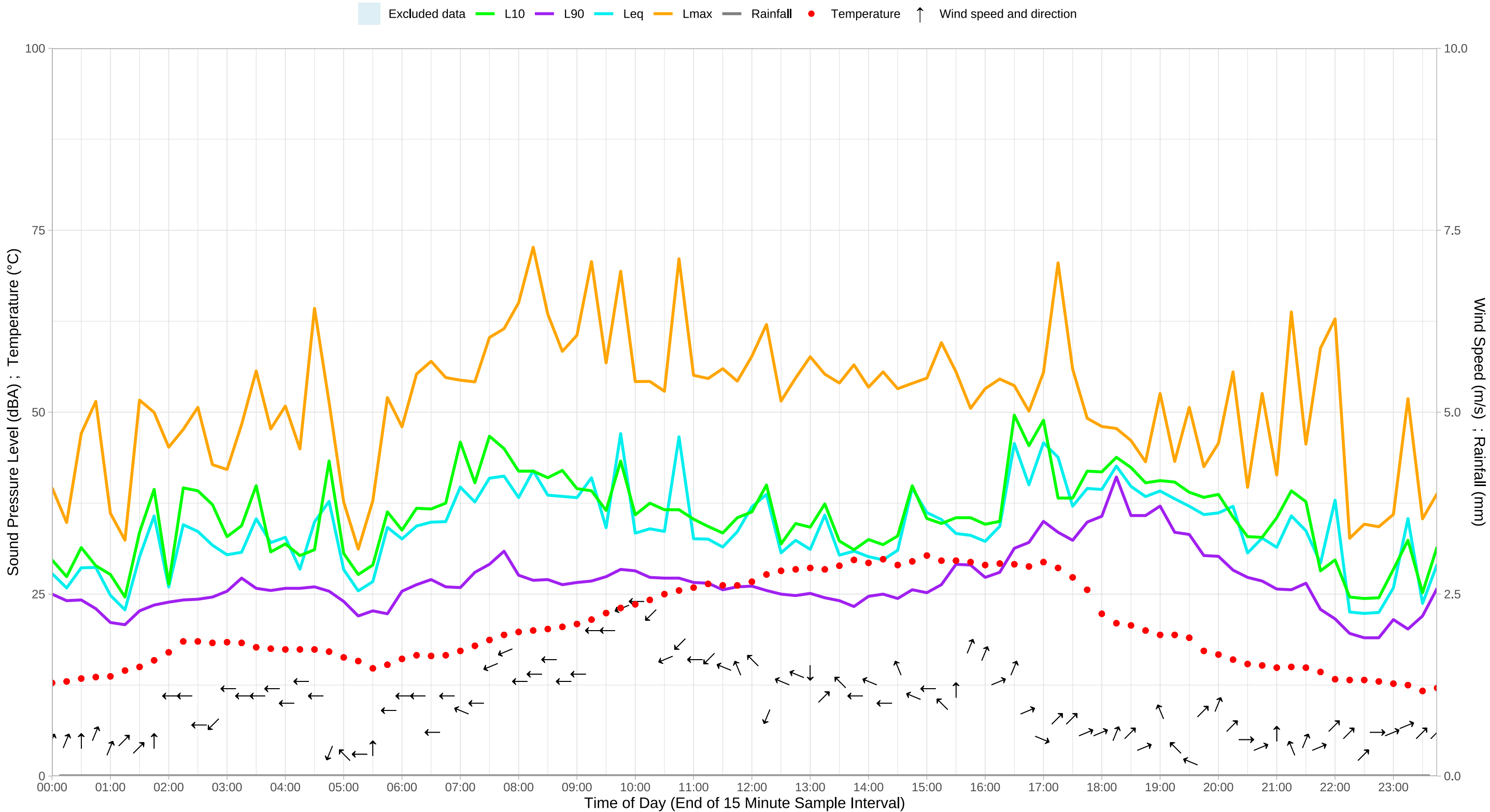
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Location ML2
Friday 11 April 2025



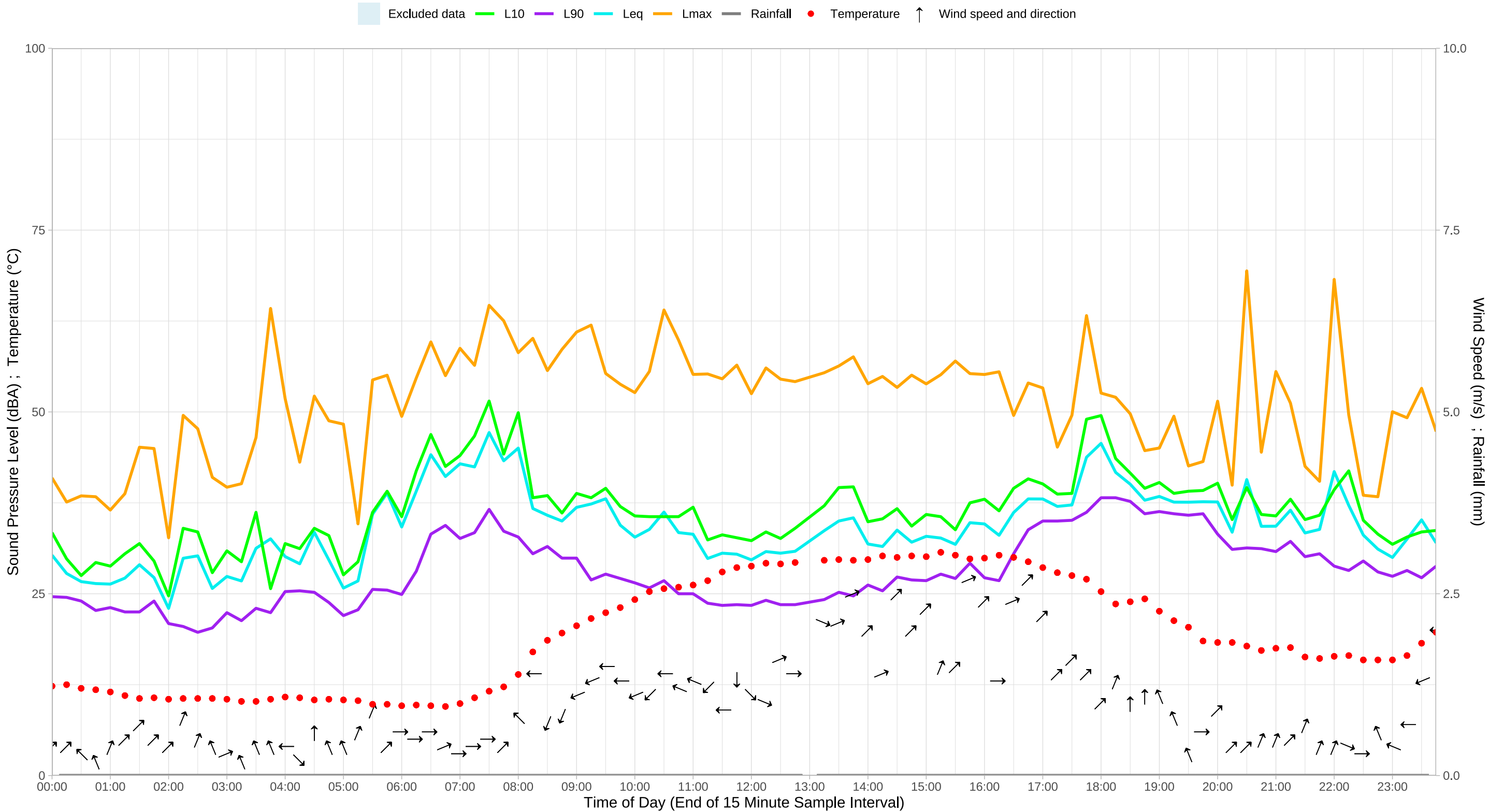
Statistical Ambient Noise Levels
Location ML2
Saturday 12 April 2025



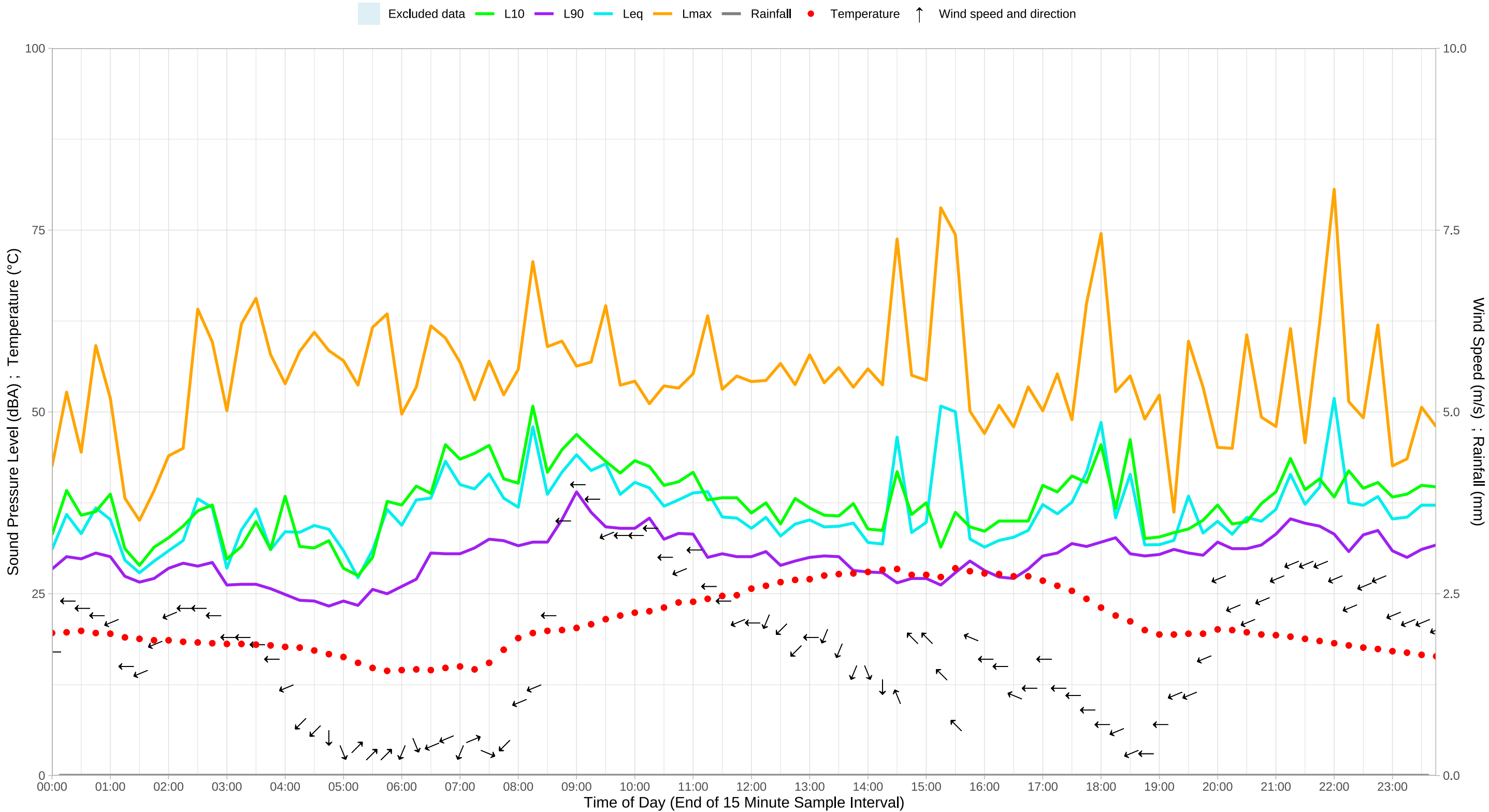
Statistical Ambient Noise Levels
Location ML2
Sunday 13 April 2025



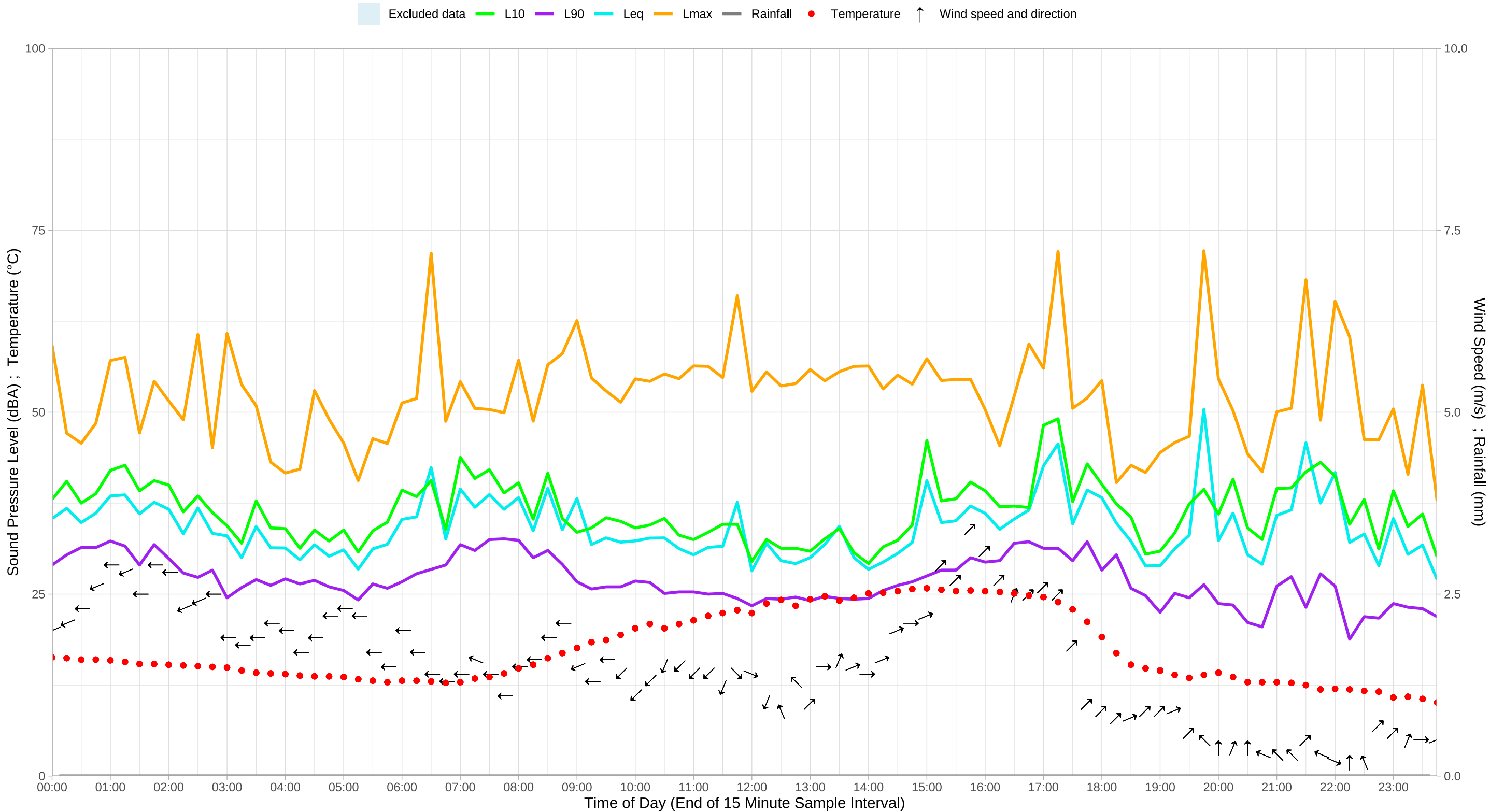
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Location ML2
Monday 14 April 2025



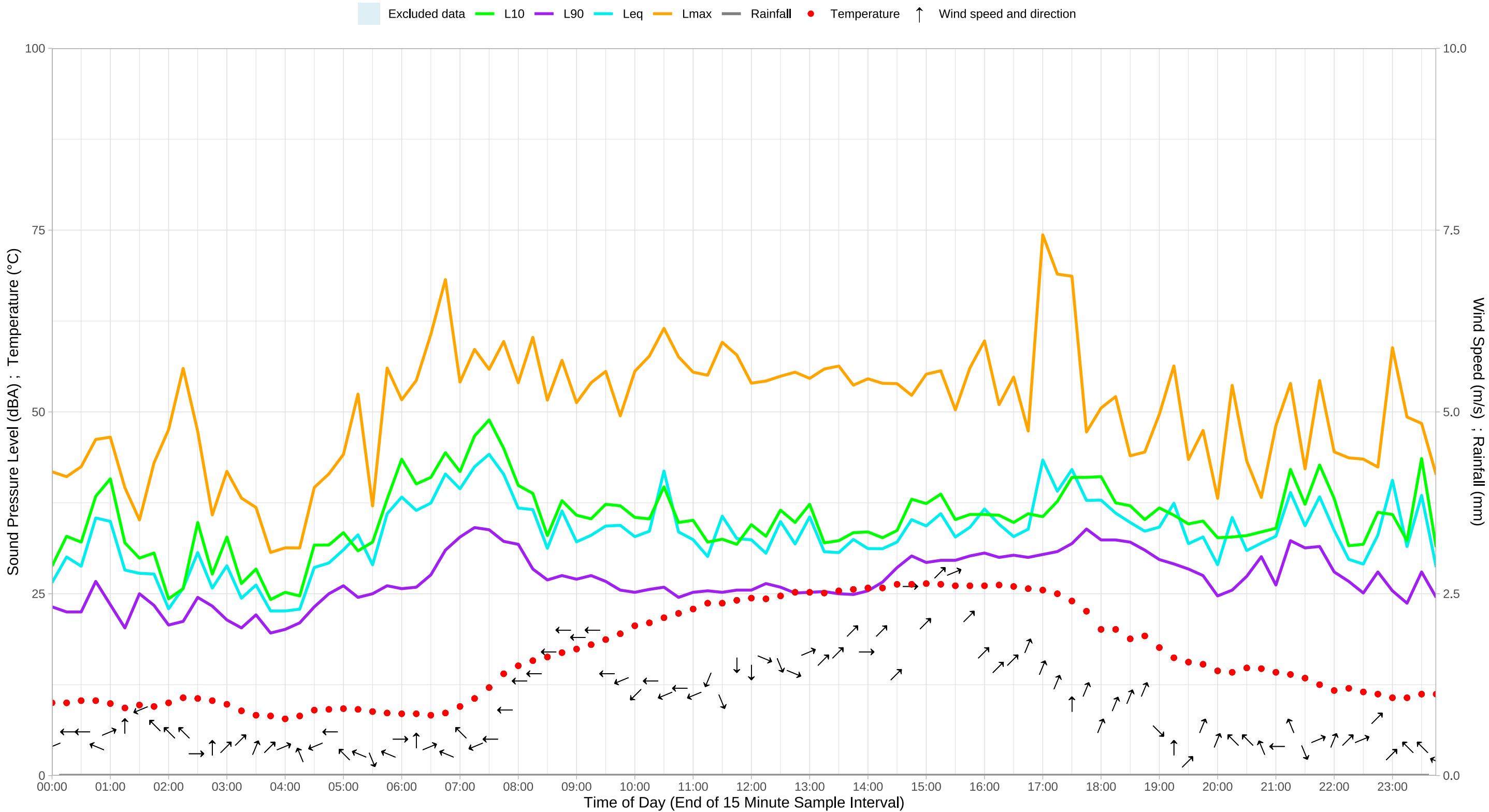
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Location ML2
Tuesday 15 April 2025



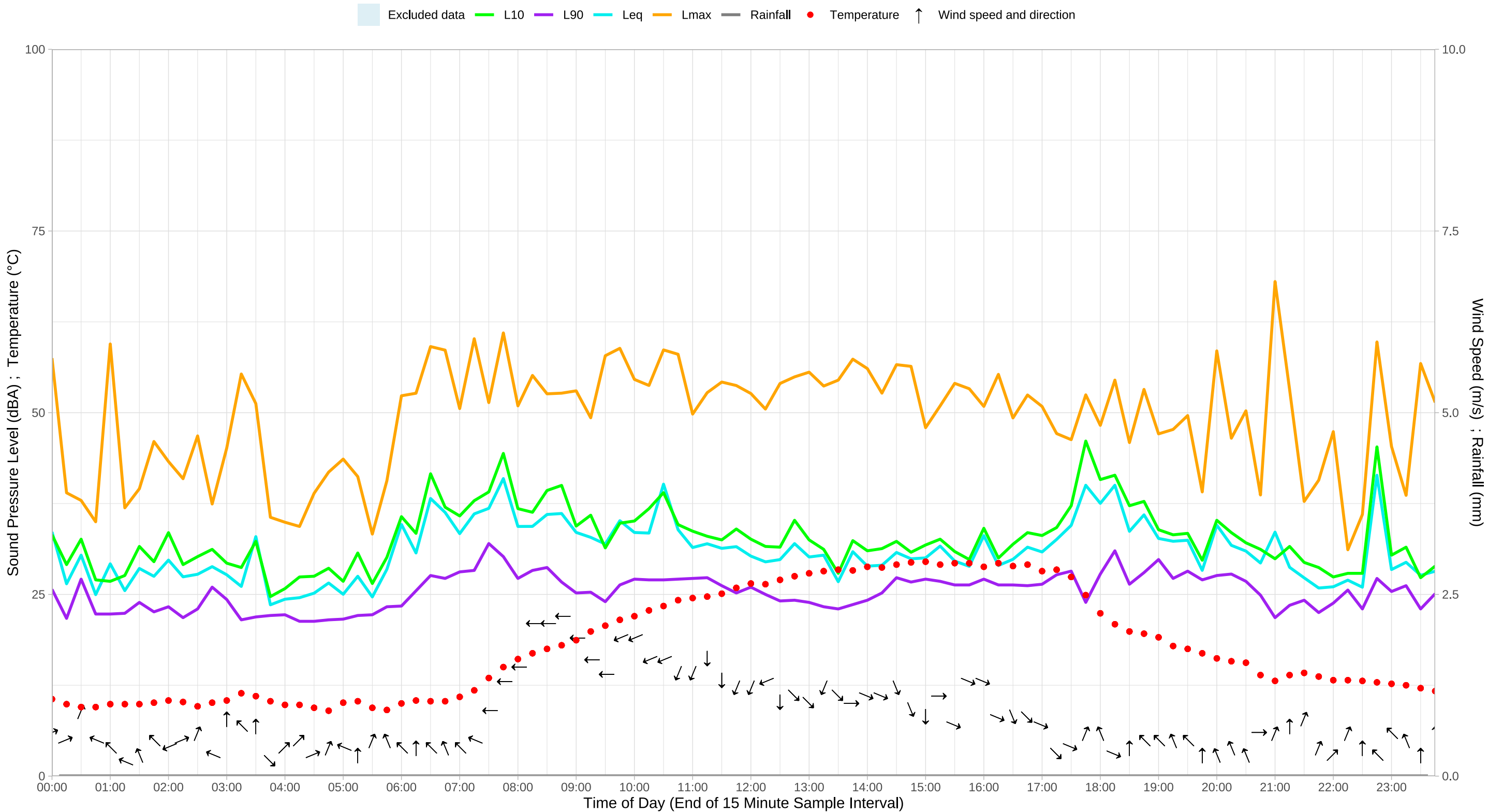
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Wednesday 16 April 2025



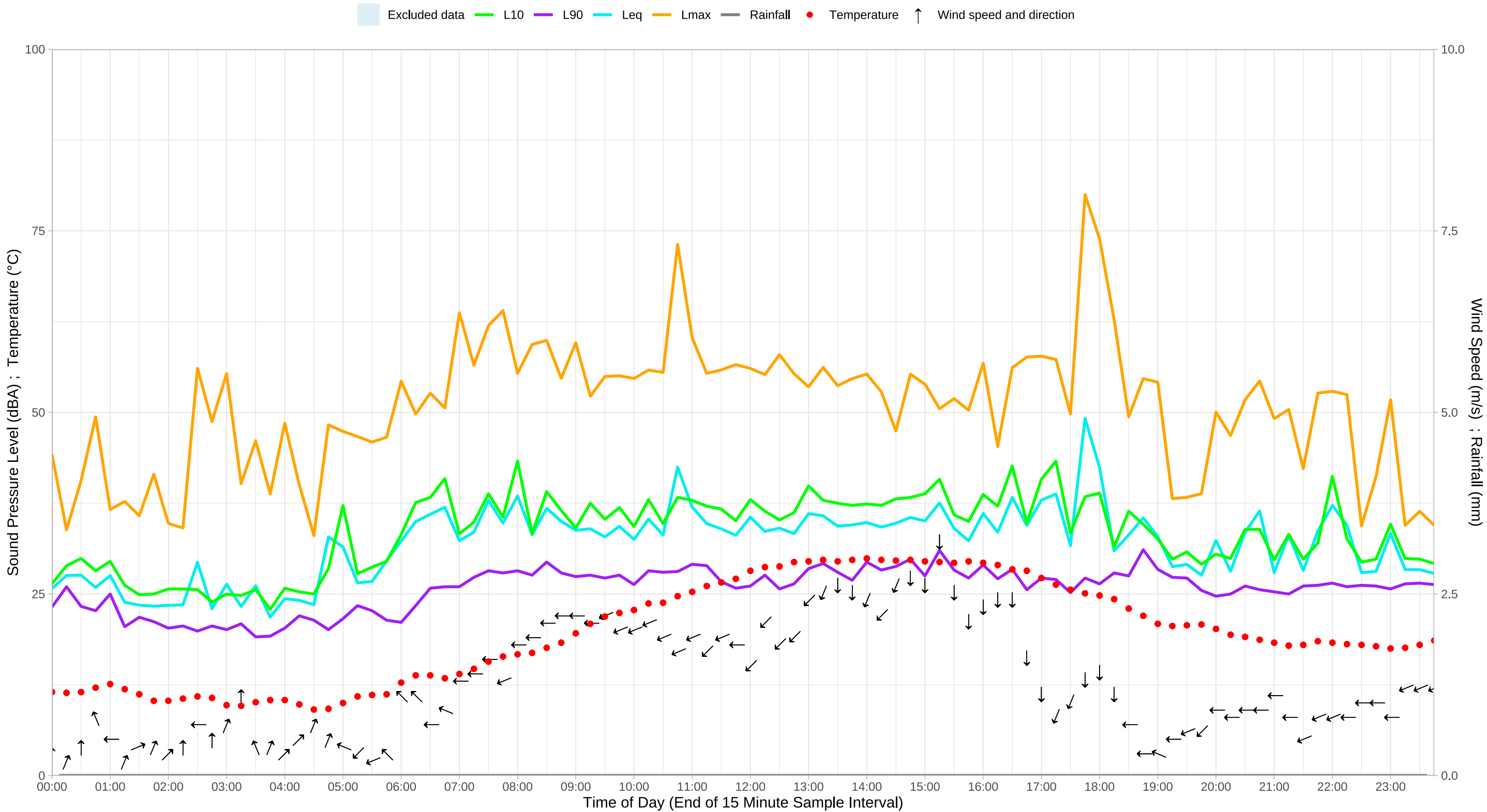
Statistical Ambient Noise Levels
Location ML2
Thursday 17 April 2025



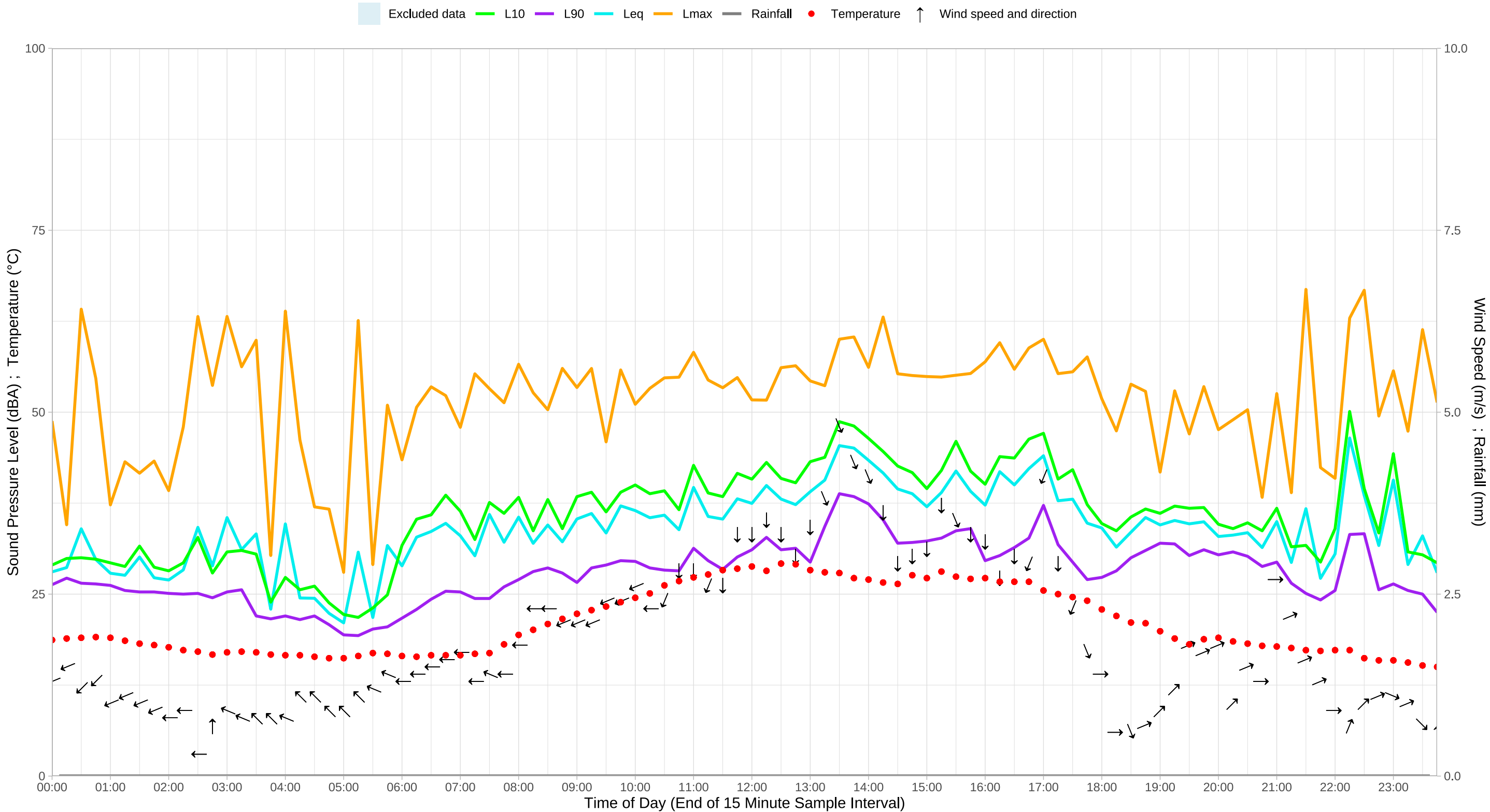
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Location ML2
Friday 18 April 2025



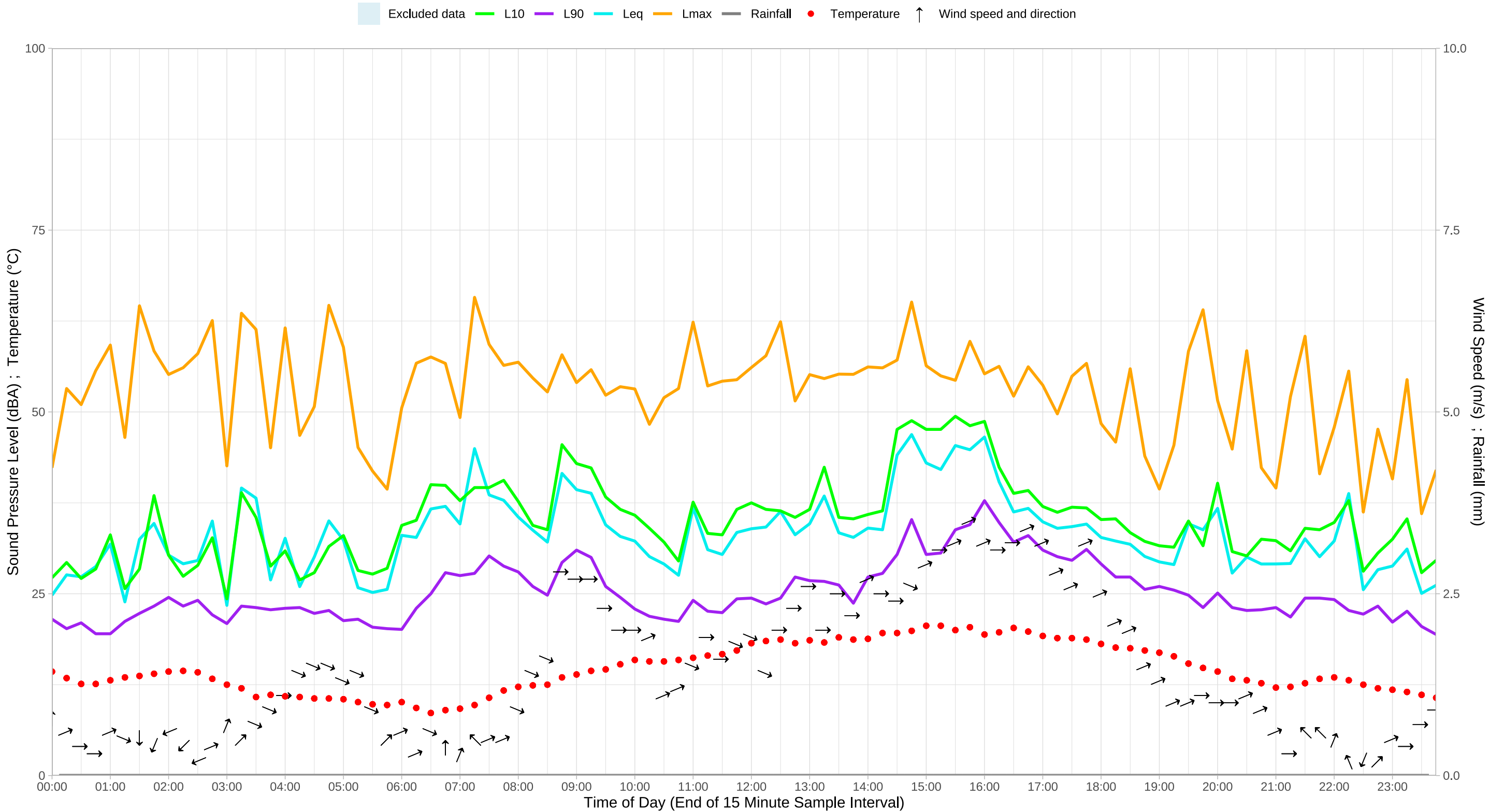
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Location ML2
Saturday 19 April 2025



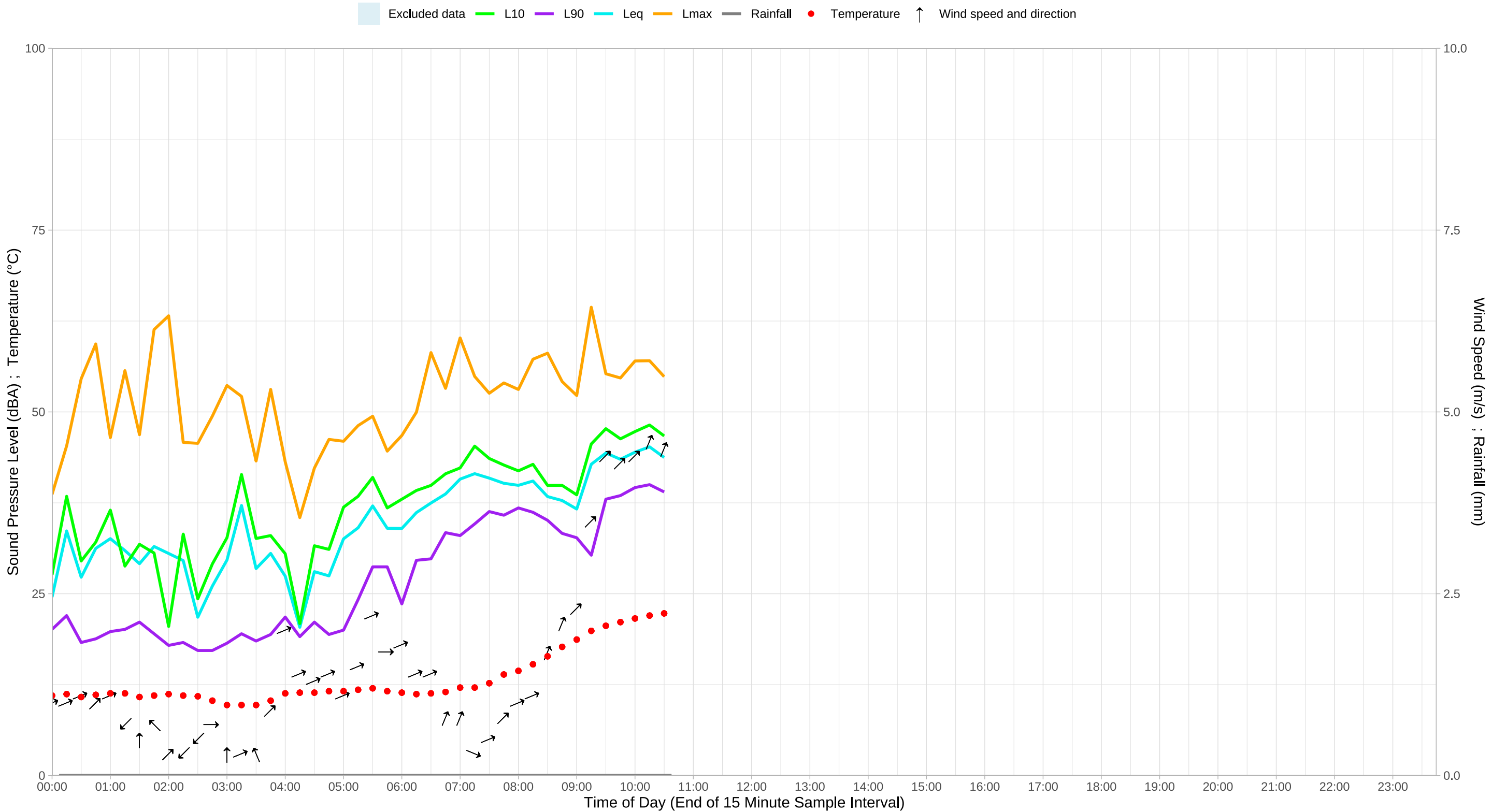
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Location ML2
Sunday 20 April 2025



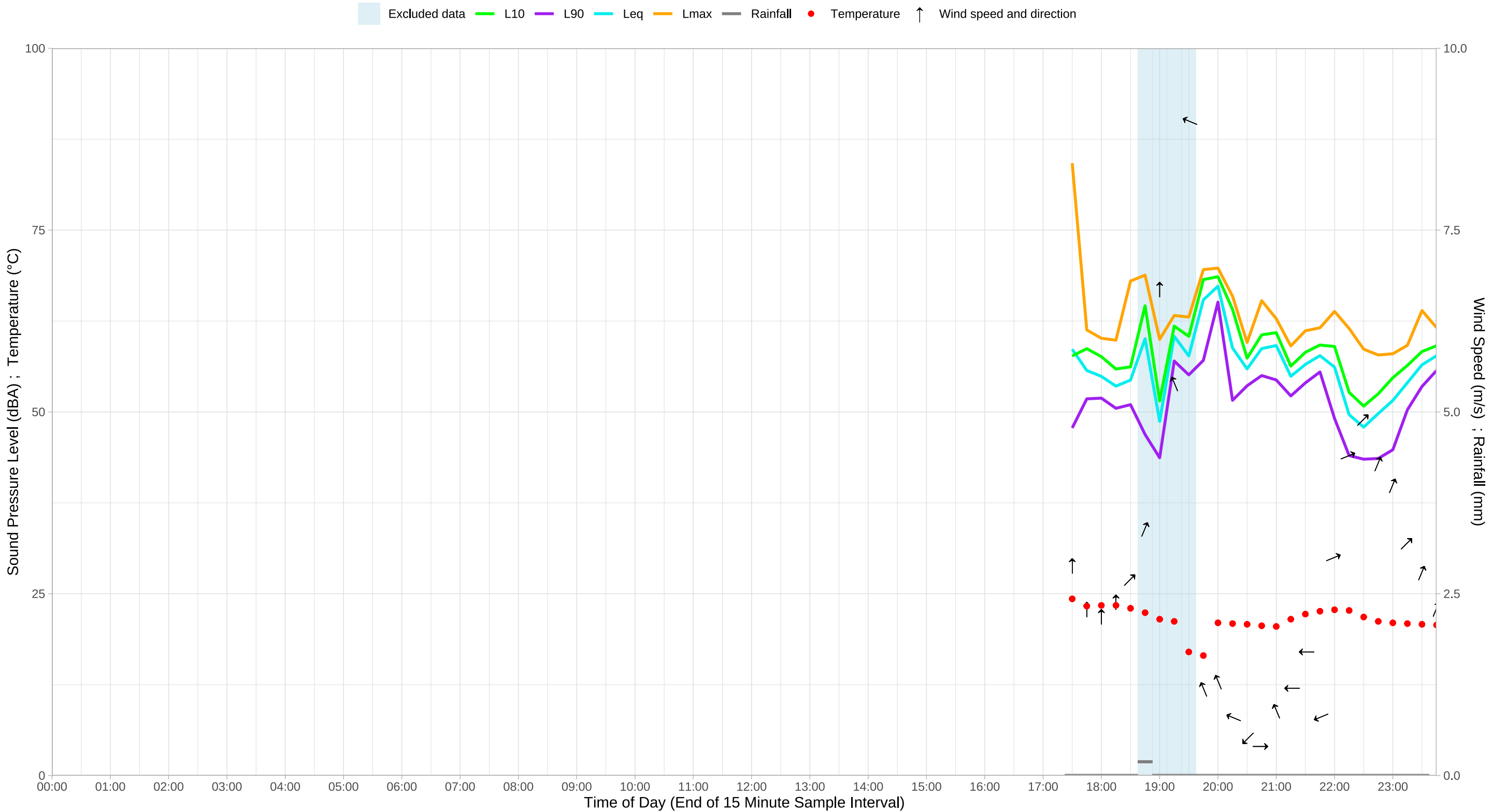
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Location ML2
Monday 21 April 2025



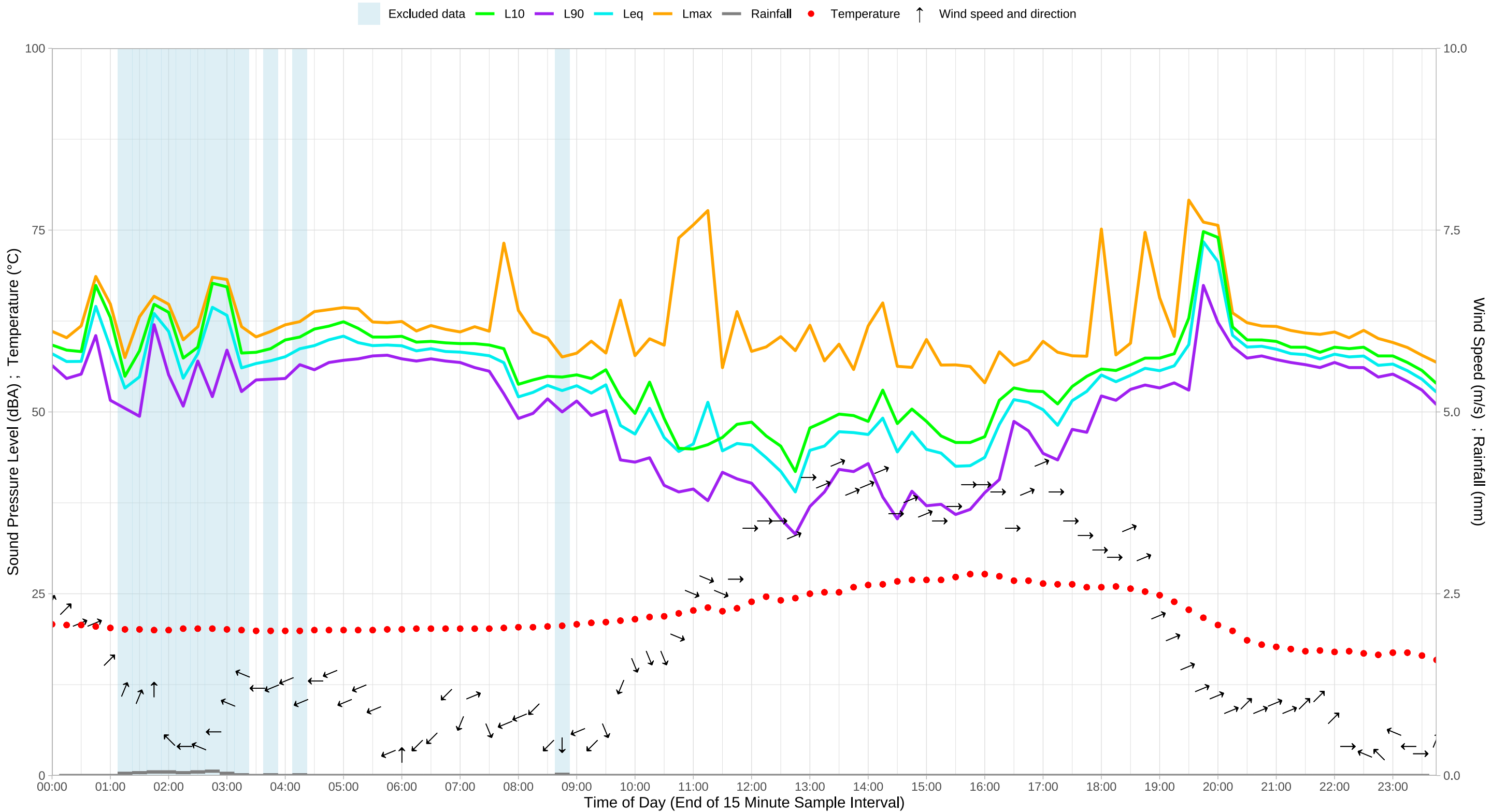
Statistical Ambient Noise Levels
Location ML2
Tuesday 22 April 2025



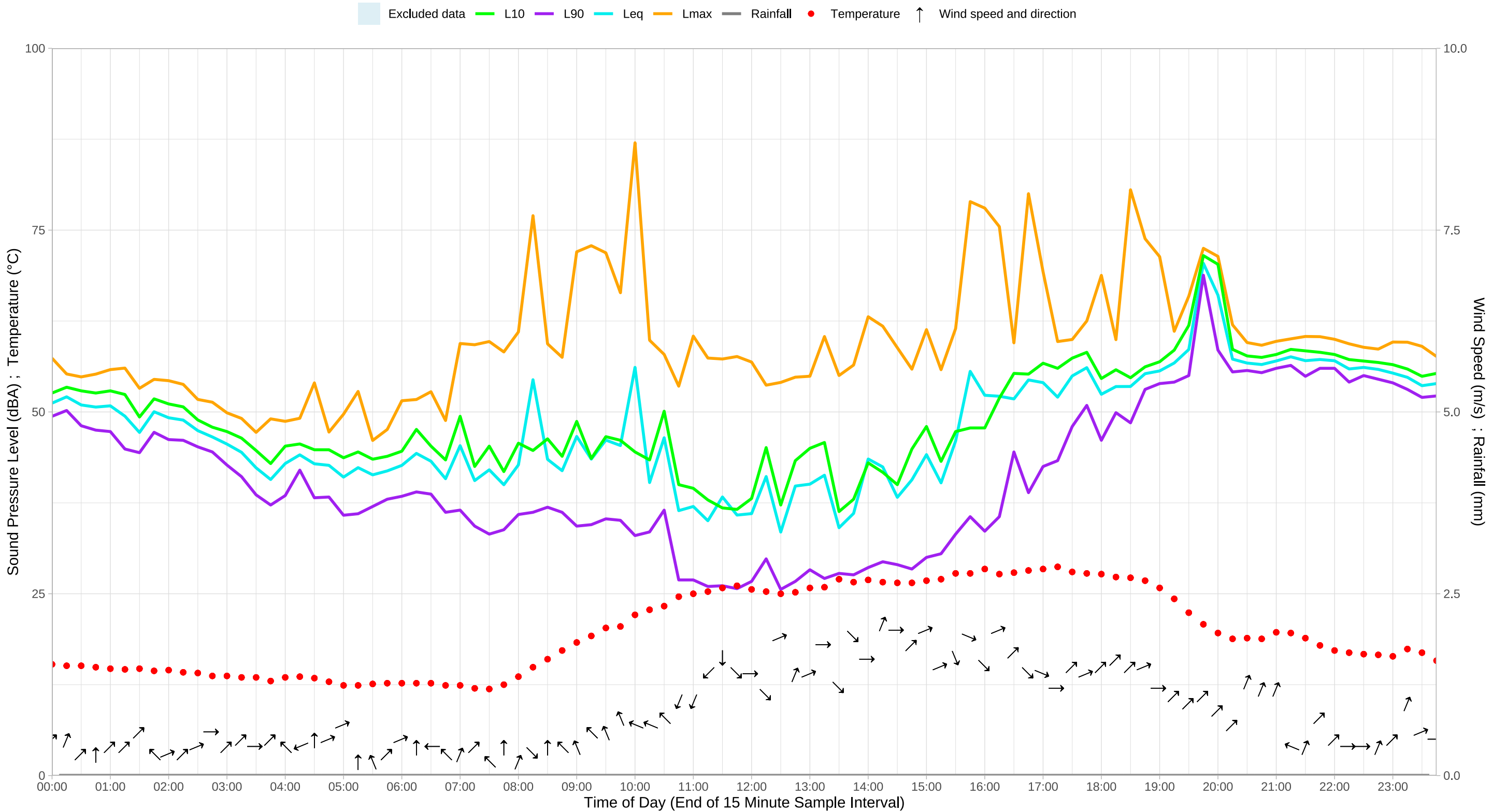
Statistical Ambient Noise Levels
Location ML2
Thursday 20 March 2025



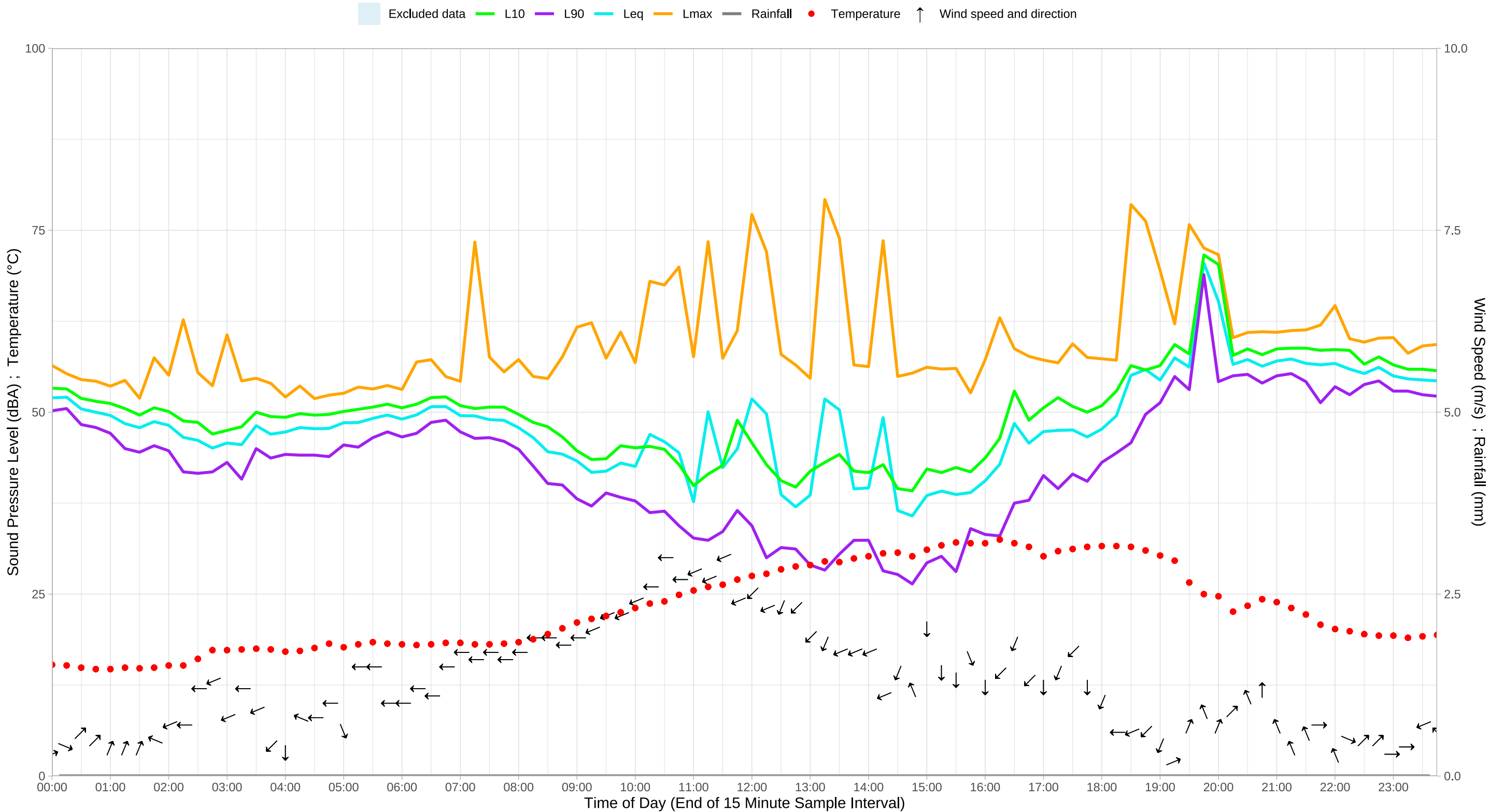
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Location ML2
Friday 21 March 2025



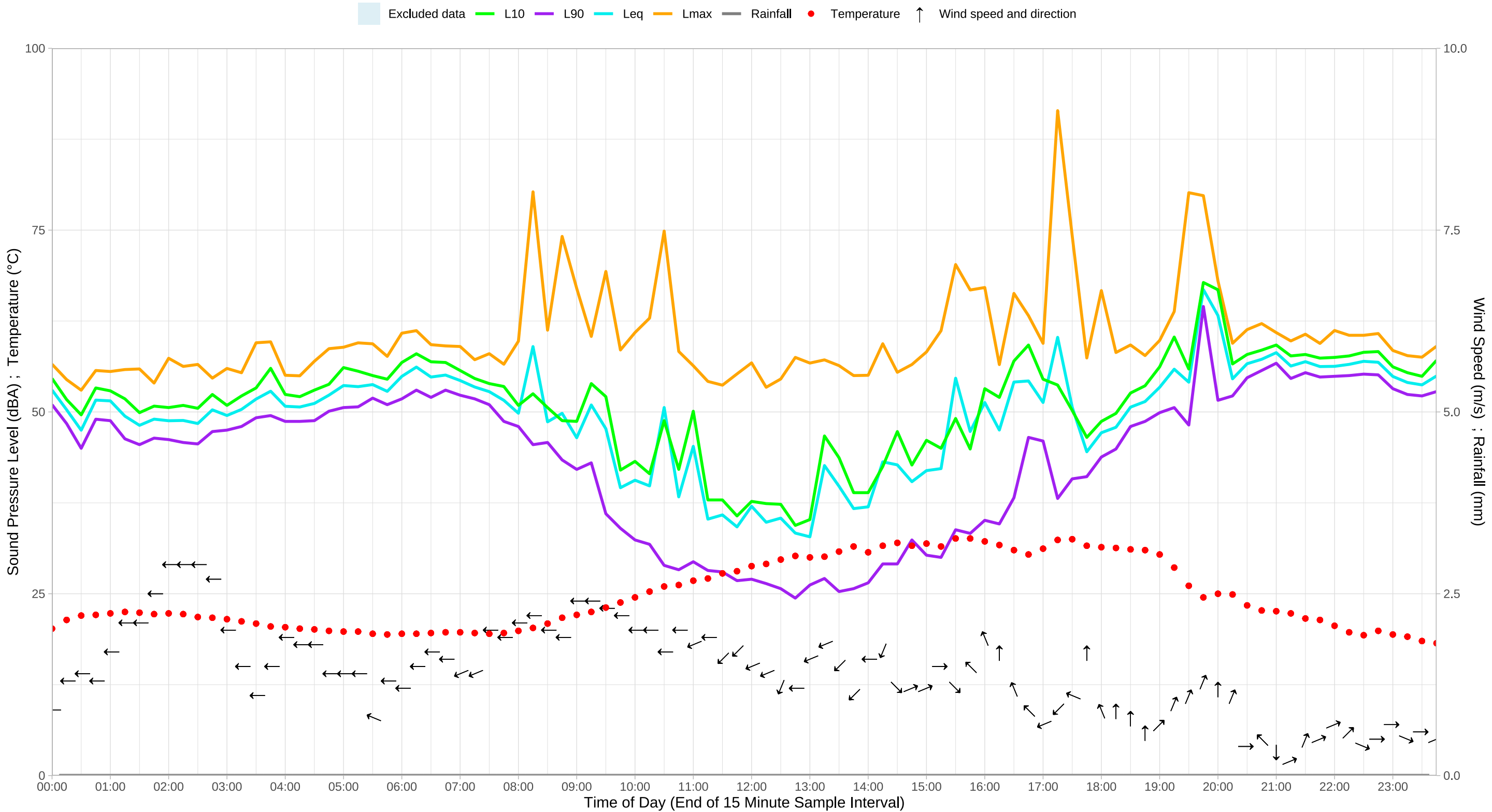
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Location ML2
Saturday 22 March 2025



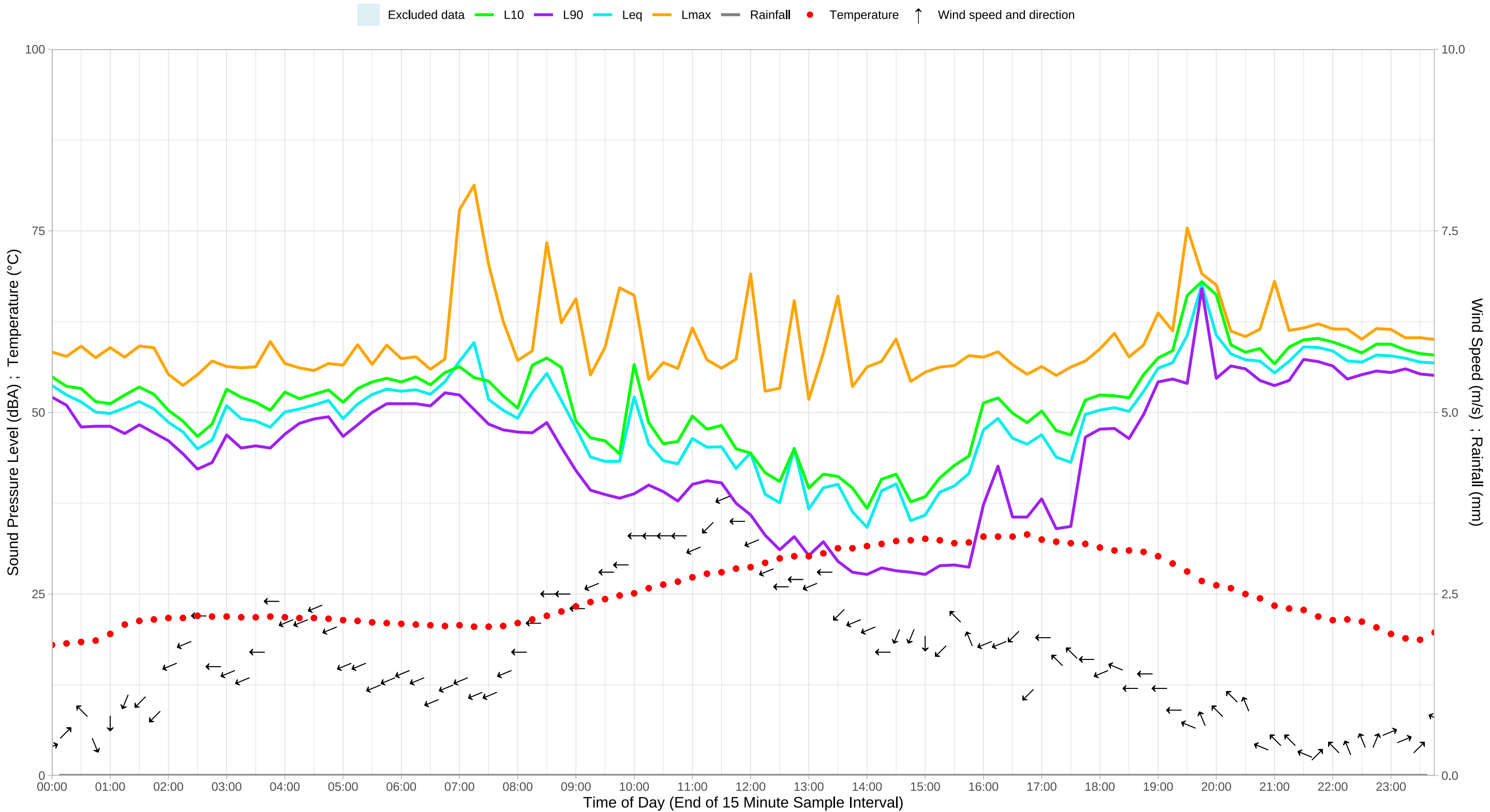
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Location ML2
Sunday 23 March 2025



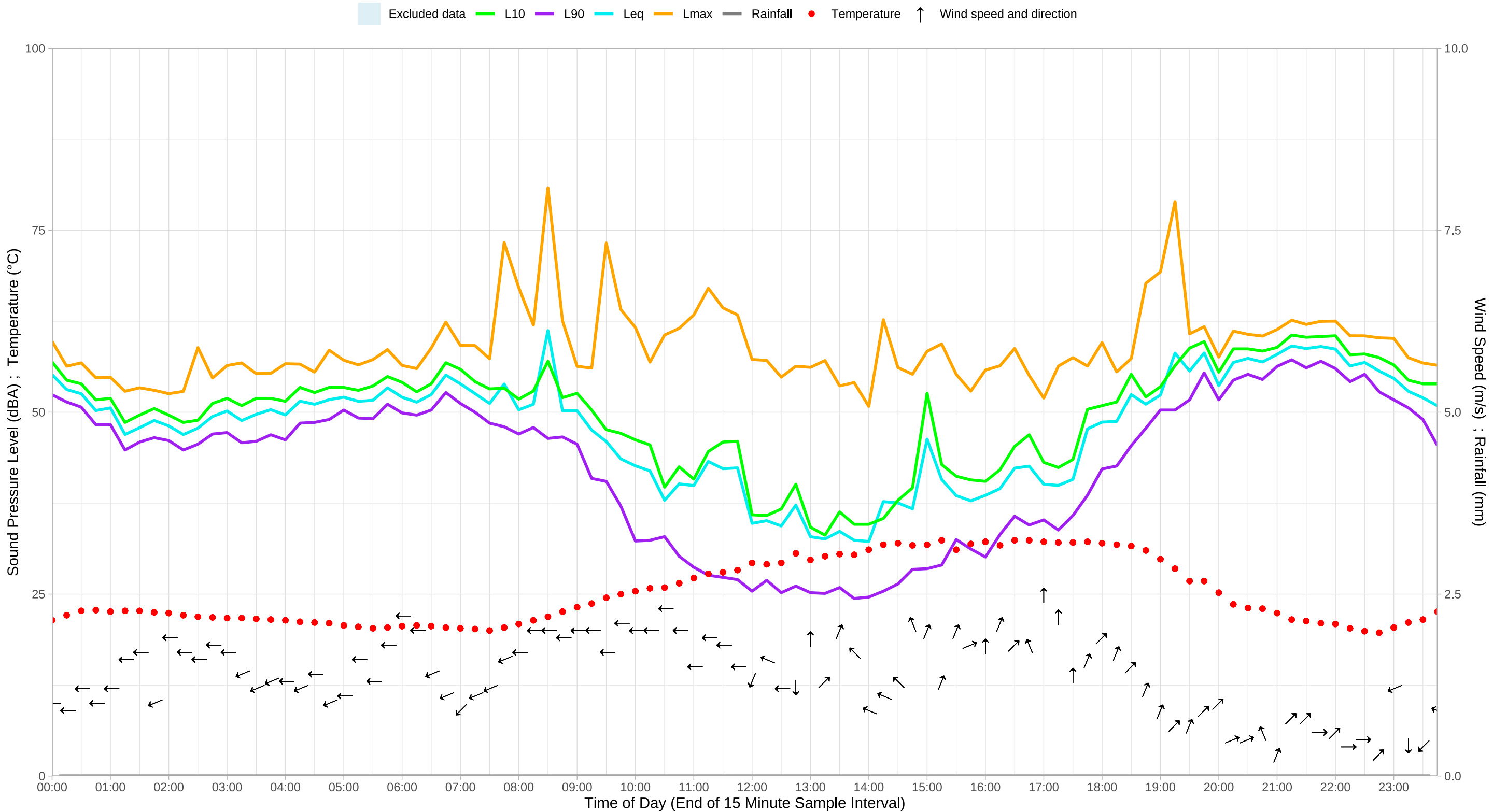
Statistical Ambient Noise Levels
Location ML2
Monday 24 March 2025



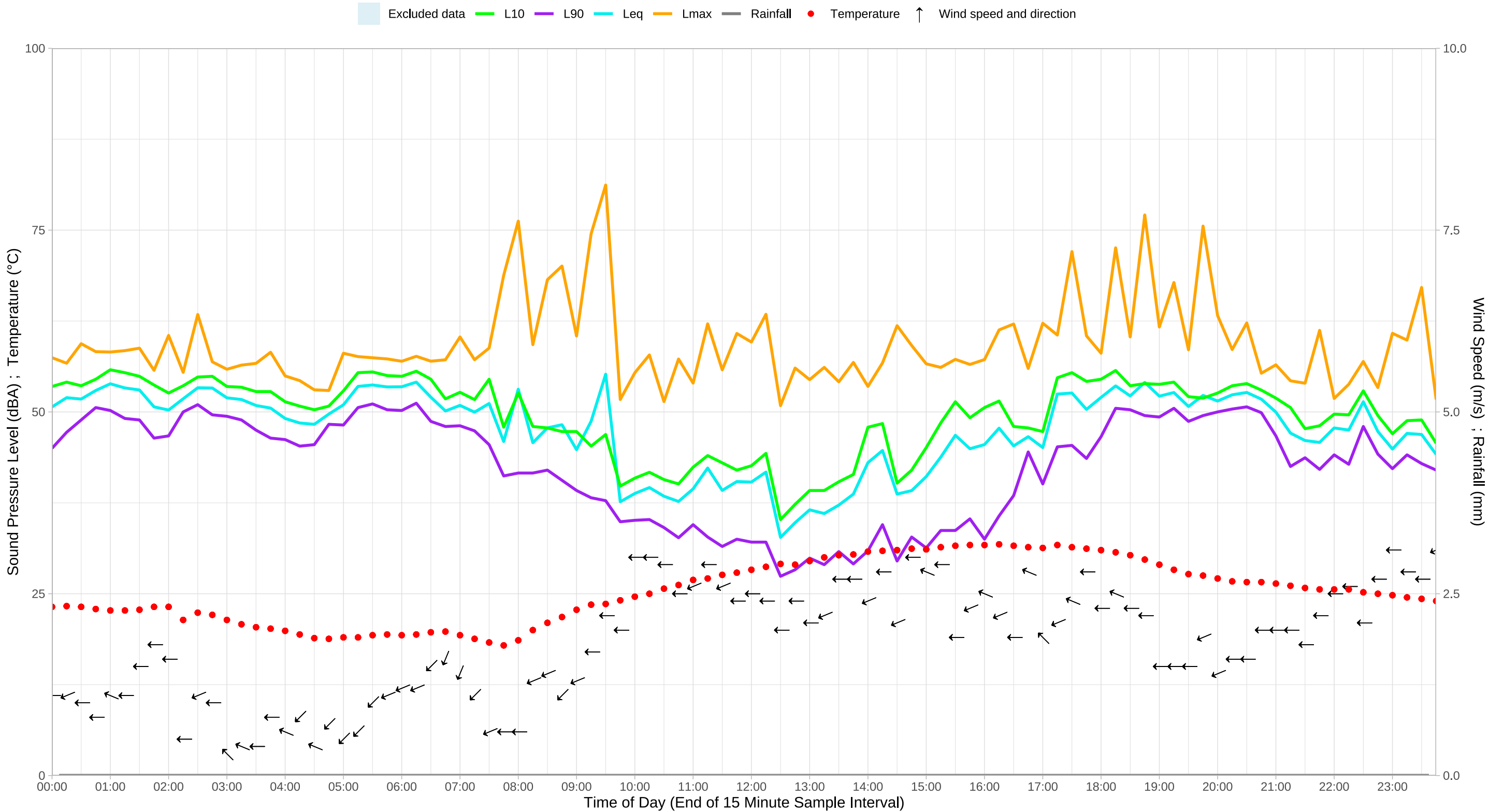
Statistical Ambient Noise Levels
Location ML2
Tuesday 25 March 2025



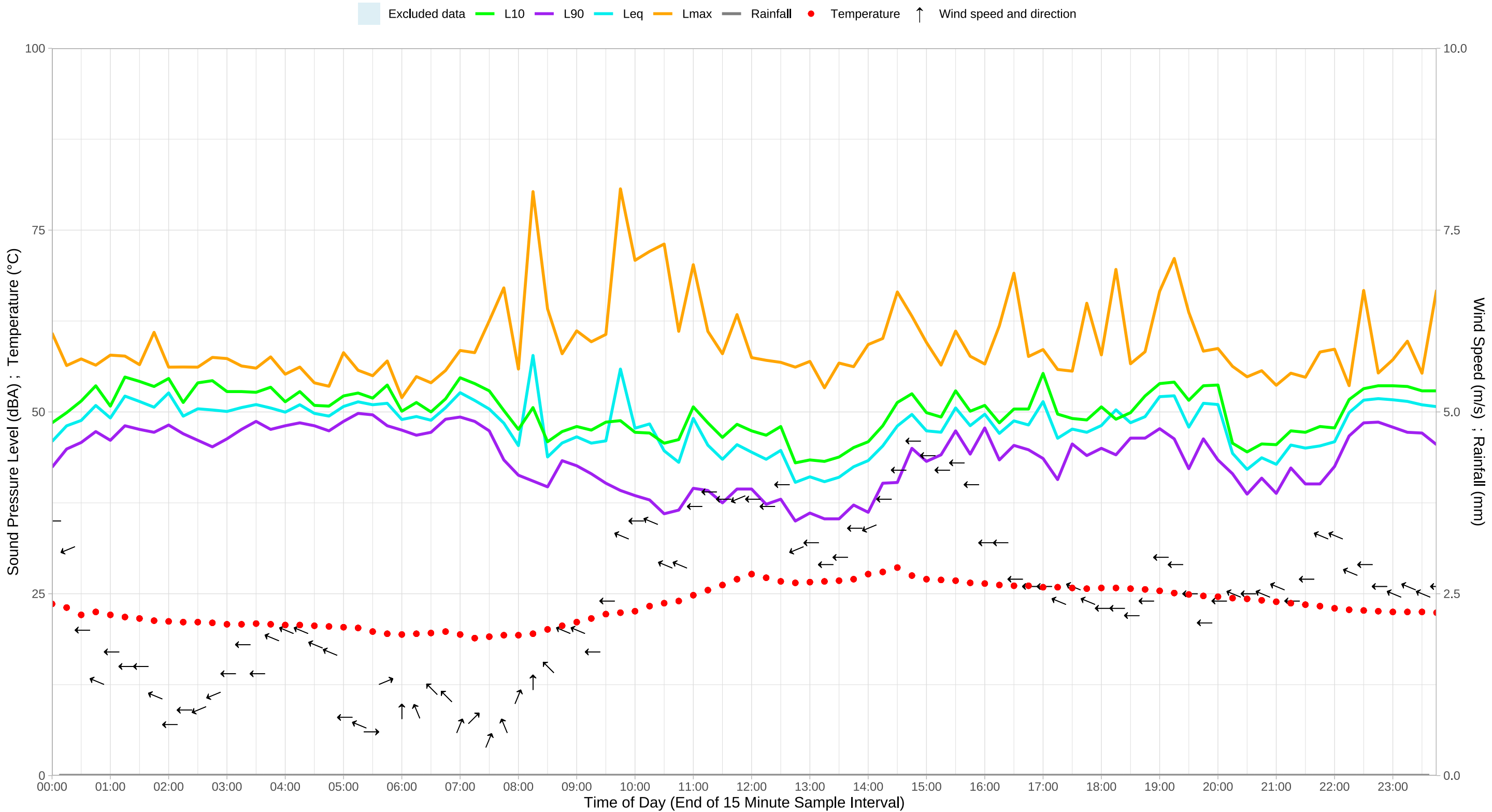
Statistical Ambient Noise Levels
Location ML2
Wednesday 26 March 2025



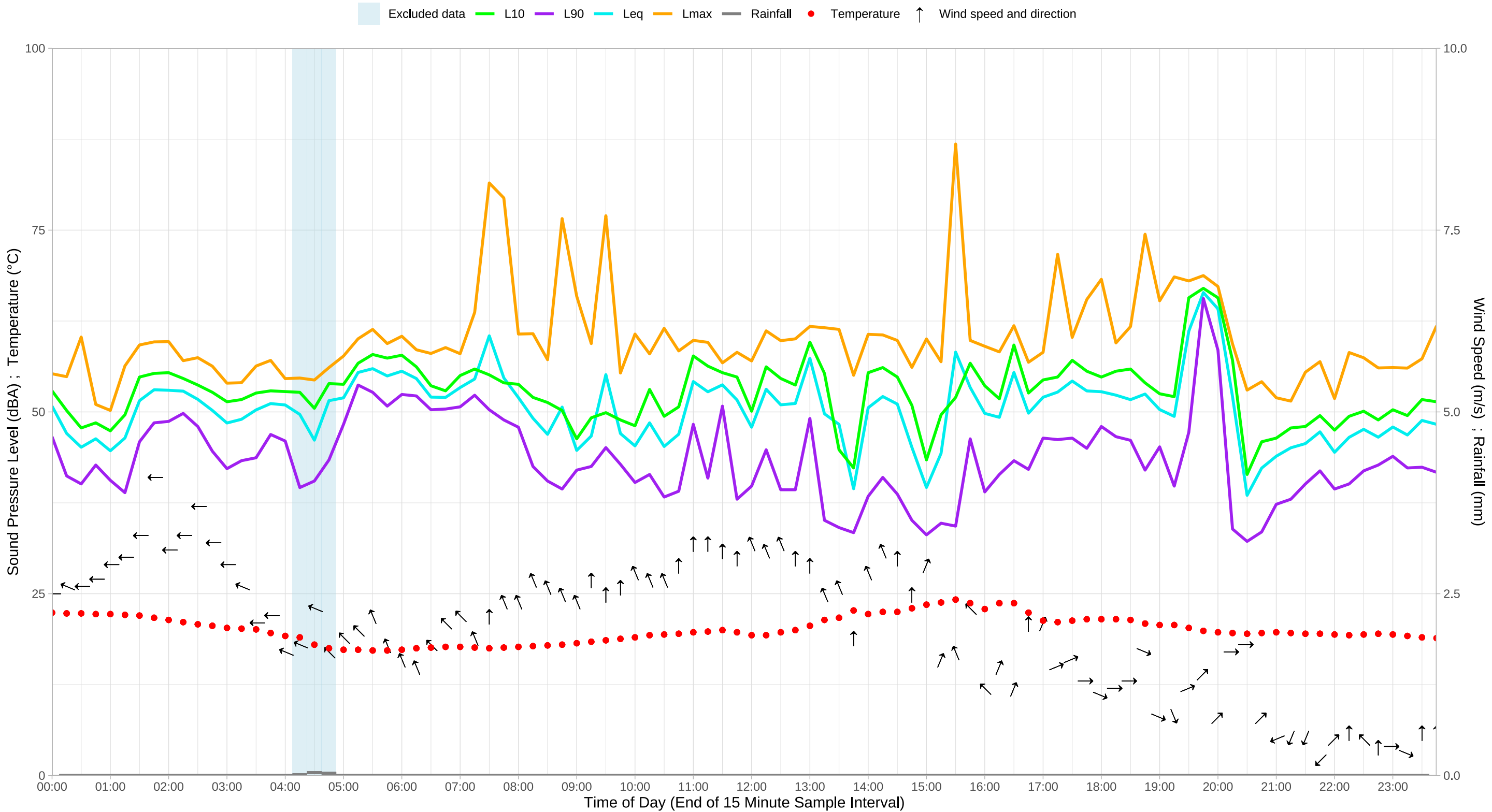
Statistical Ambient Noise Levels
Location ML2
Thursday 27 March 2025



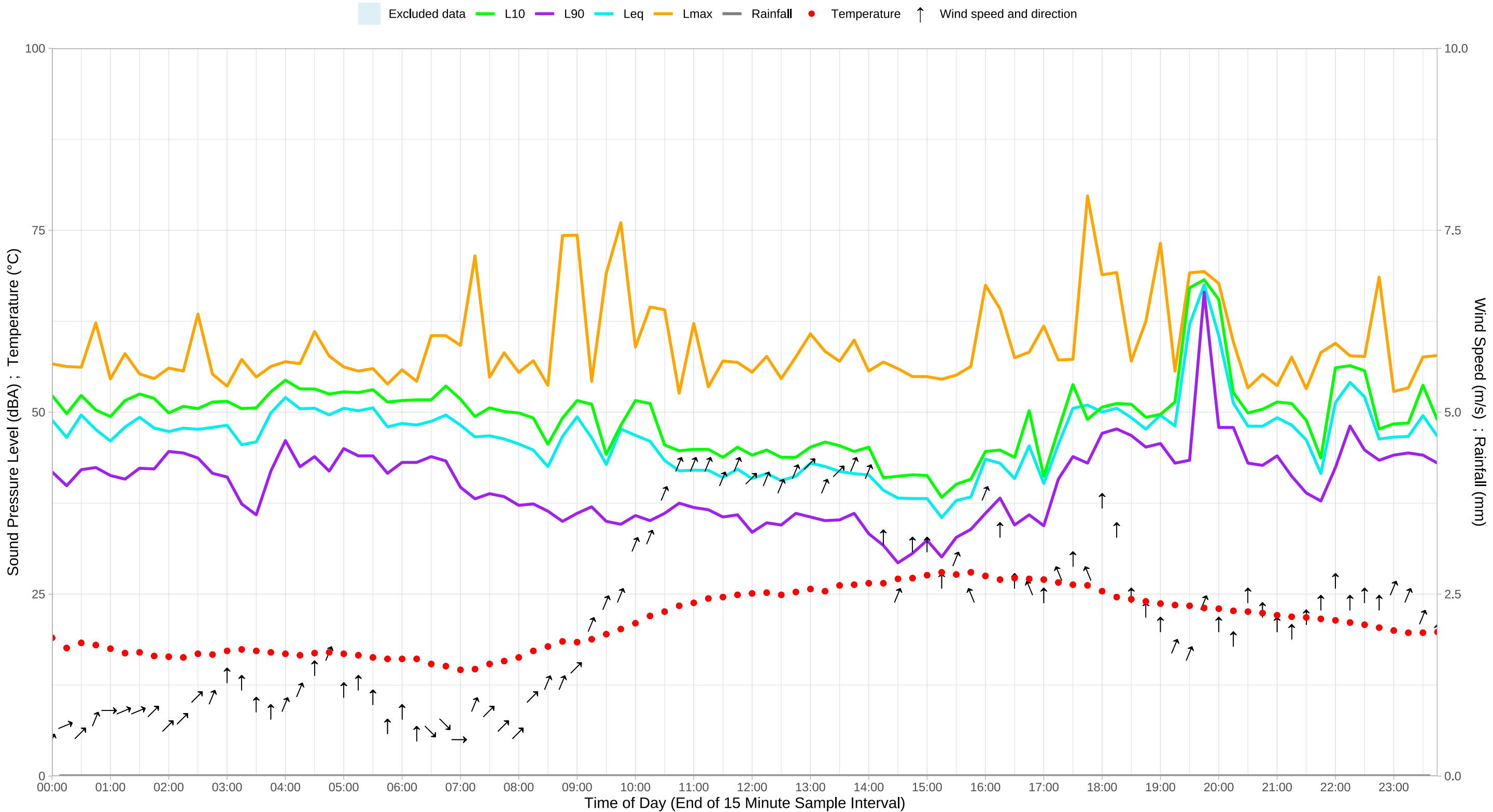
Statistical Ambient Noise Levels
Location ML2
Friday 28 March 2025



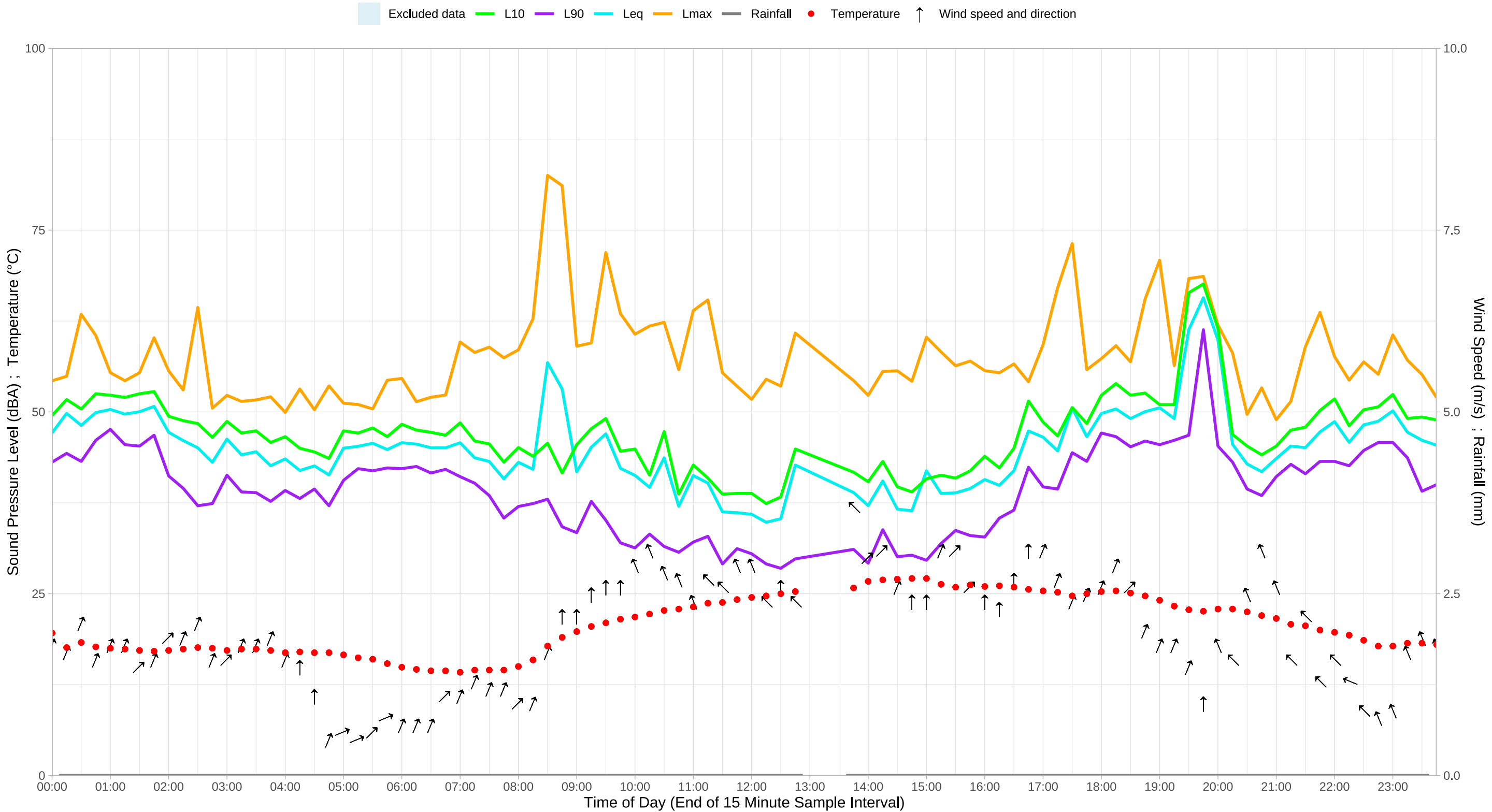
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Location ML2
Saturday 29 March 2025



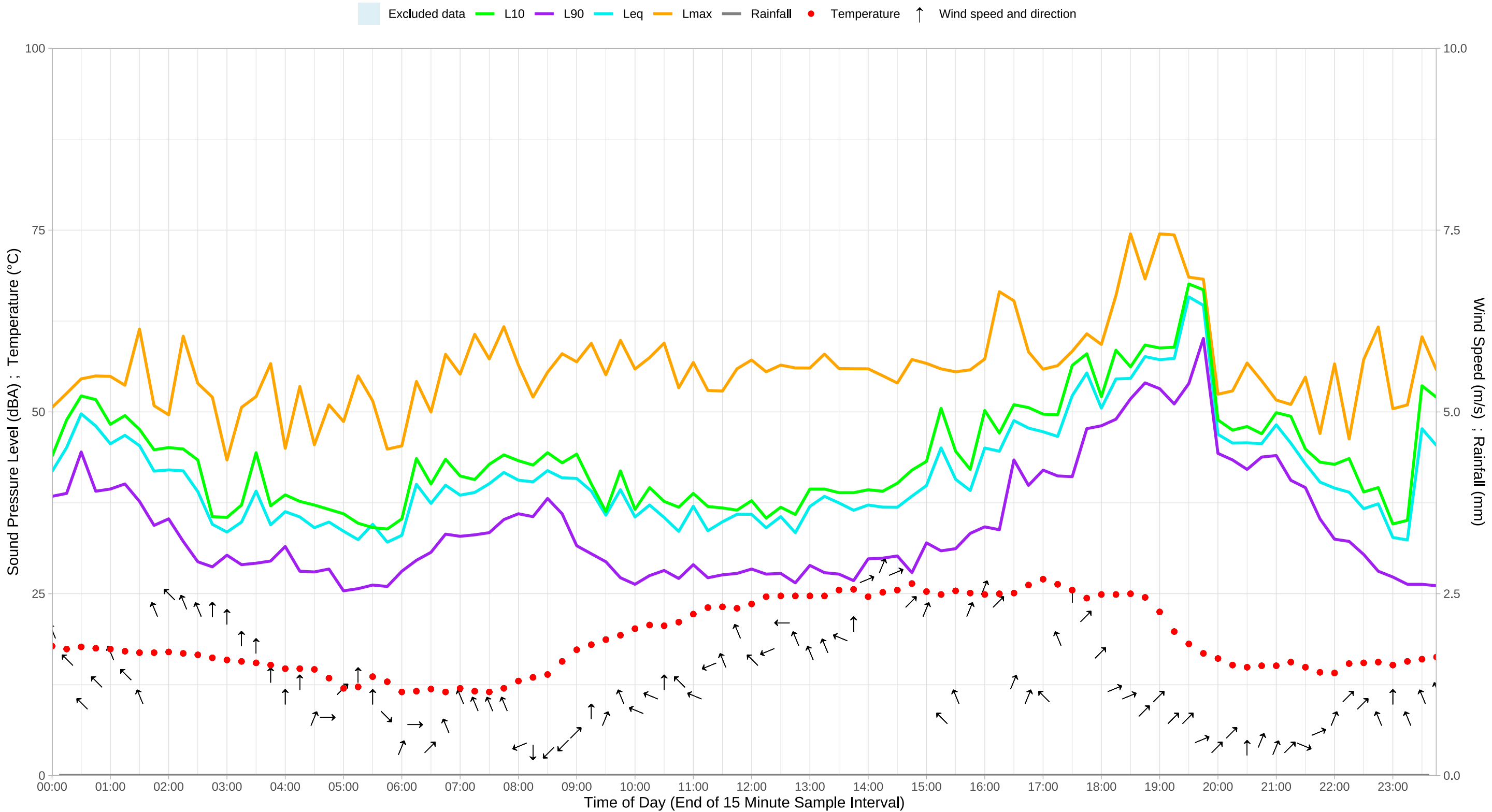
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Location ML2
Sunday 30 March 2025



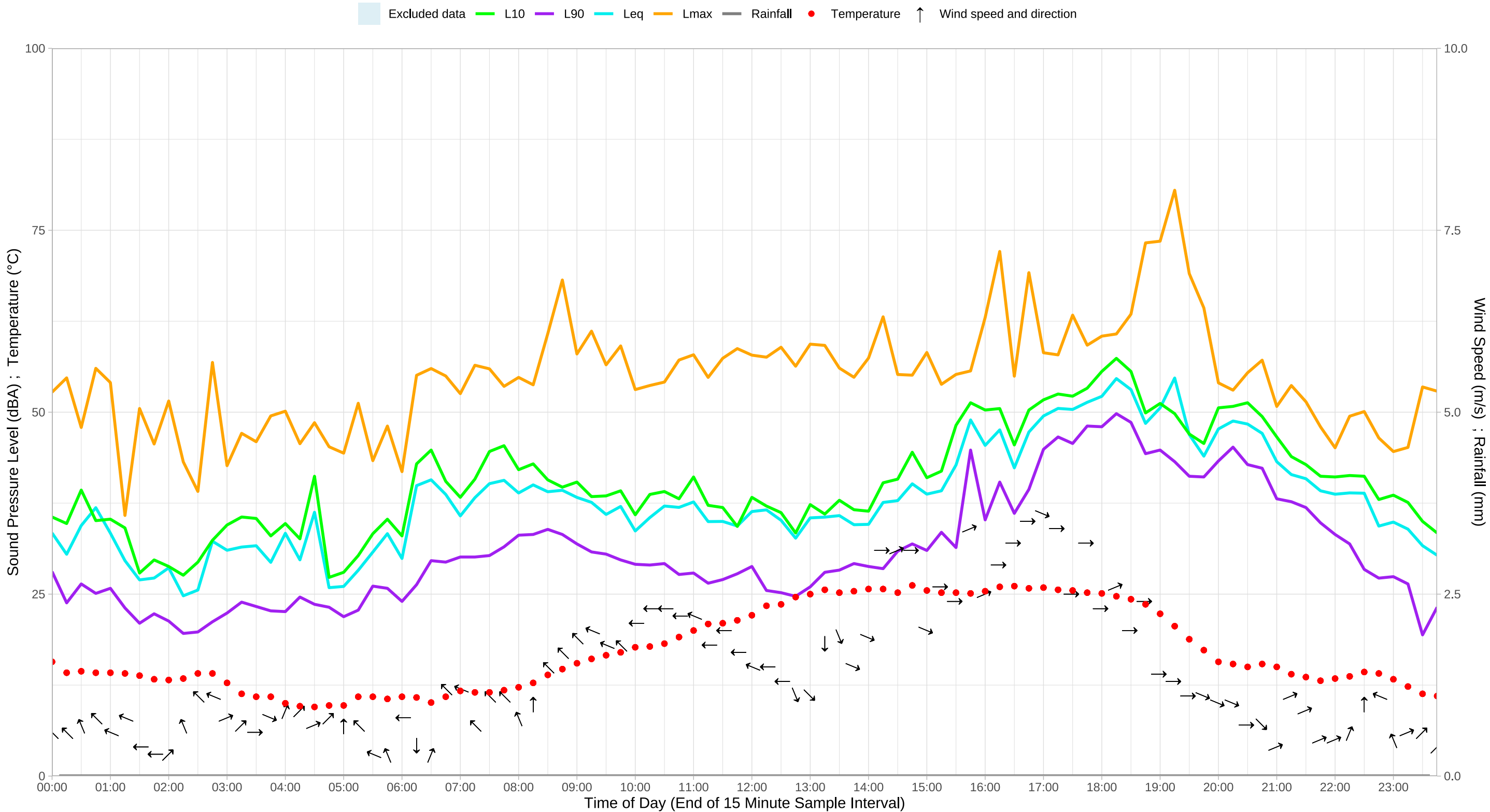
Statistical Ambient Noise Levels
Location ML2
Monday 31 March 2025



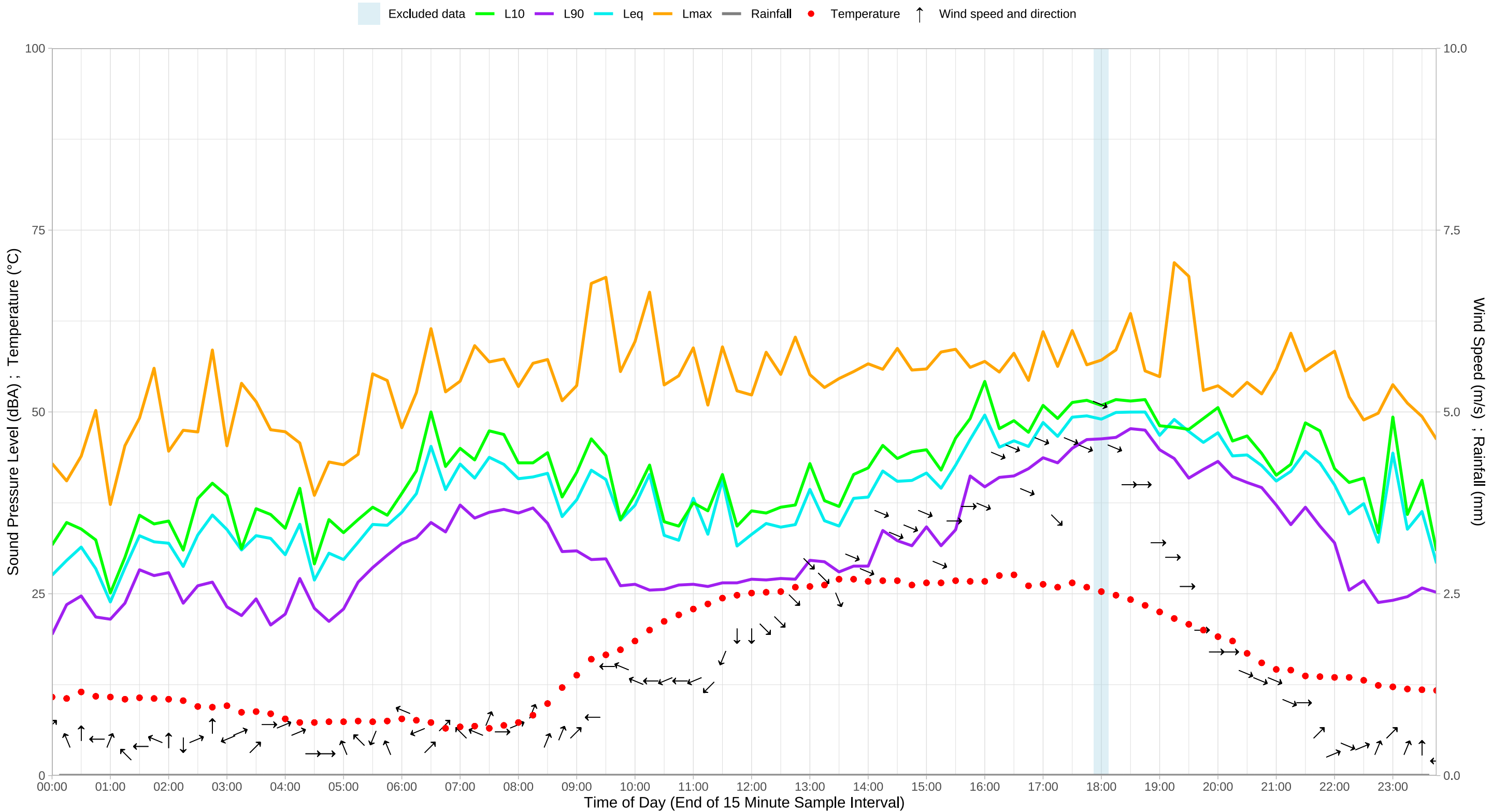
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Location ML2
Tuesday 01 April 2025



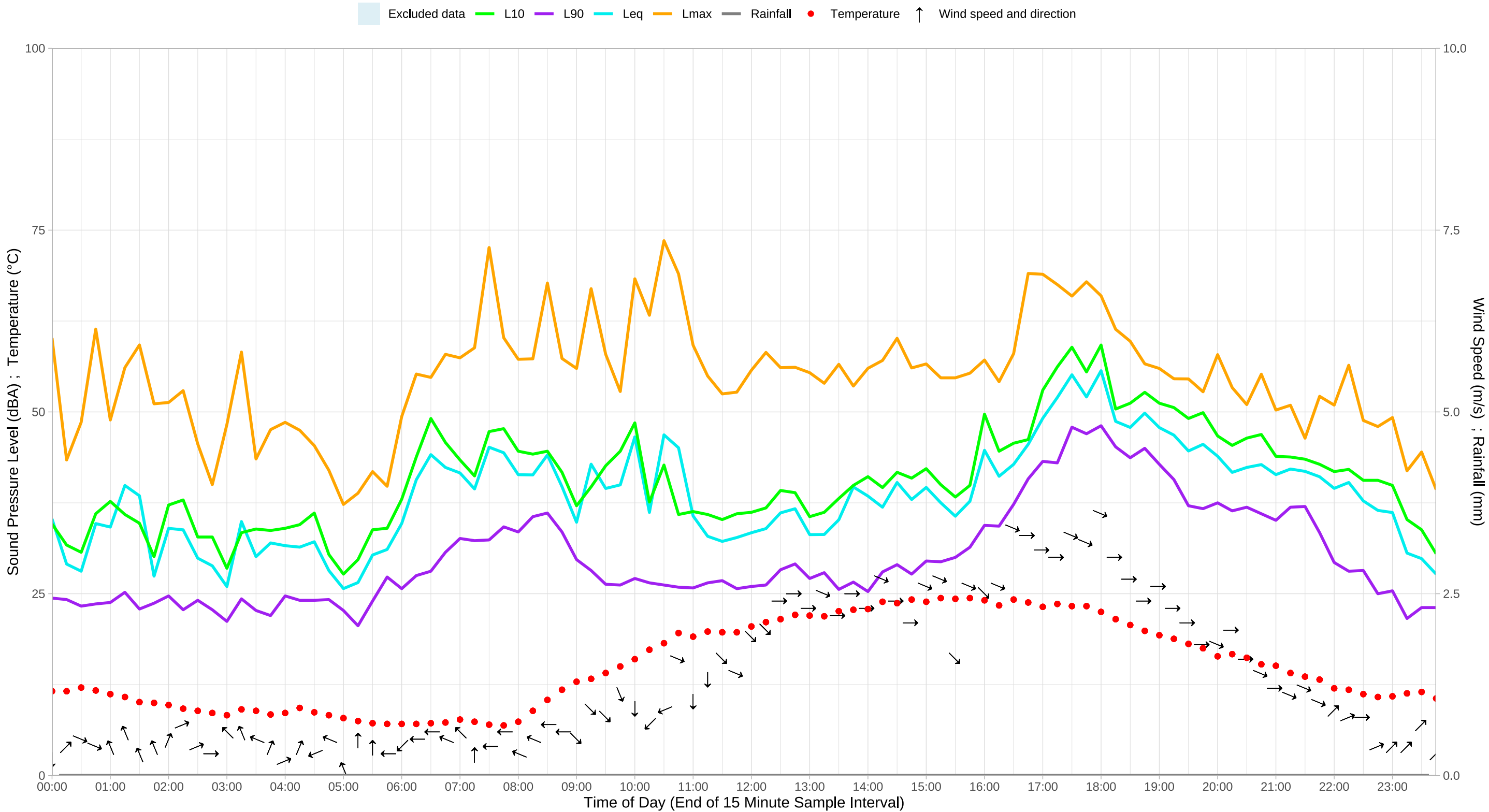
Statistical Ambient Noise Levels
Location ML2
Wednesday 02 April 2025



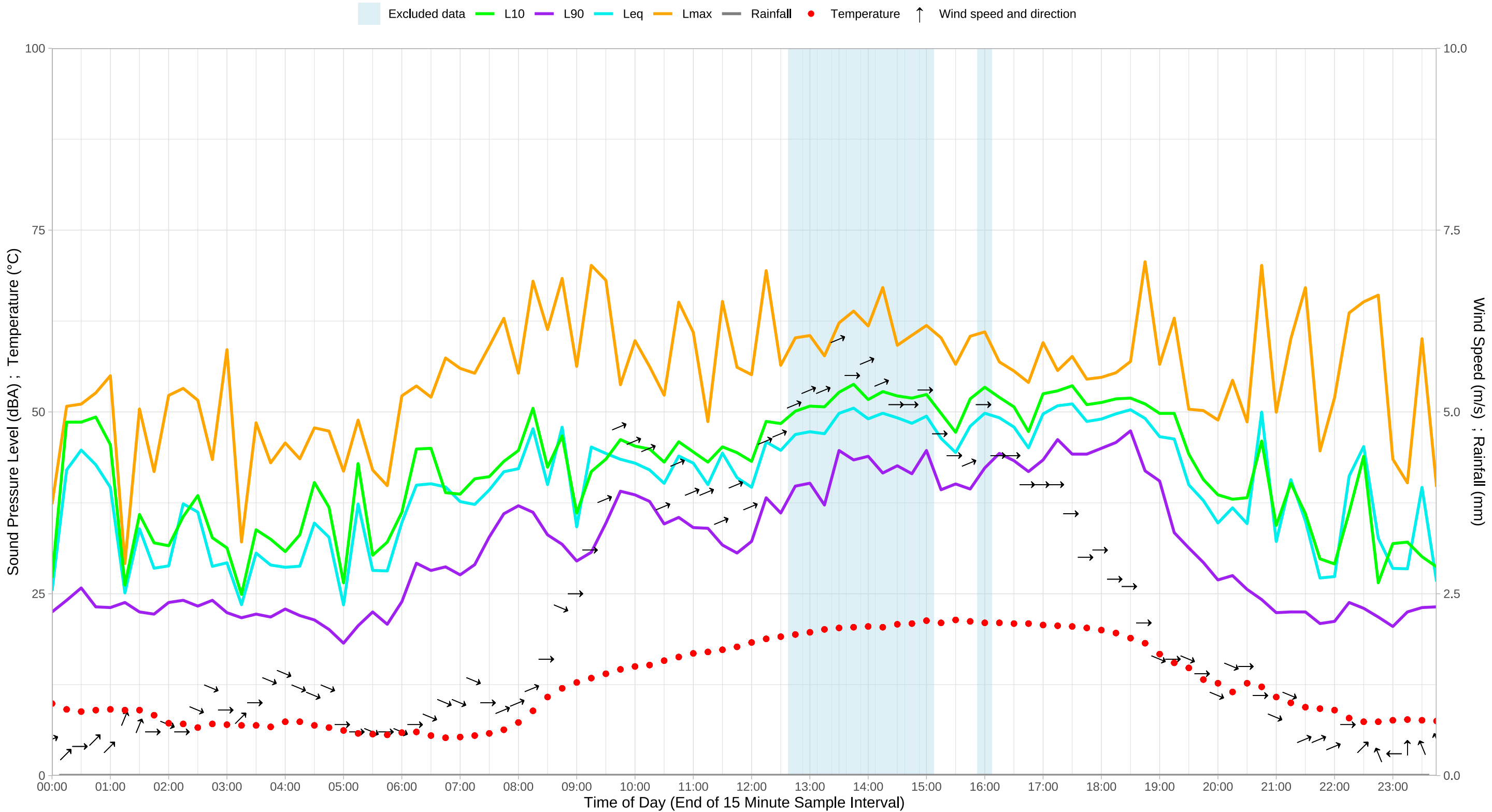
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Thursday 03 April 2025



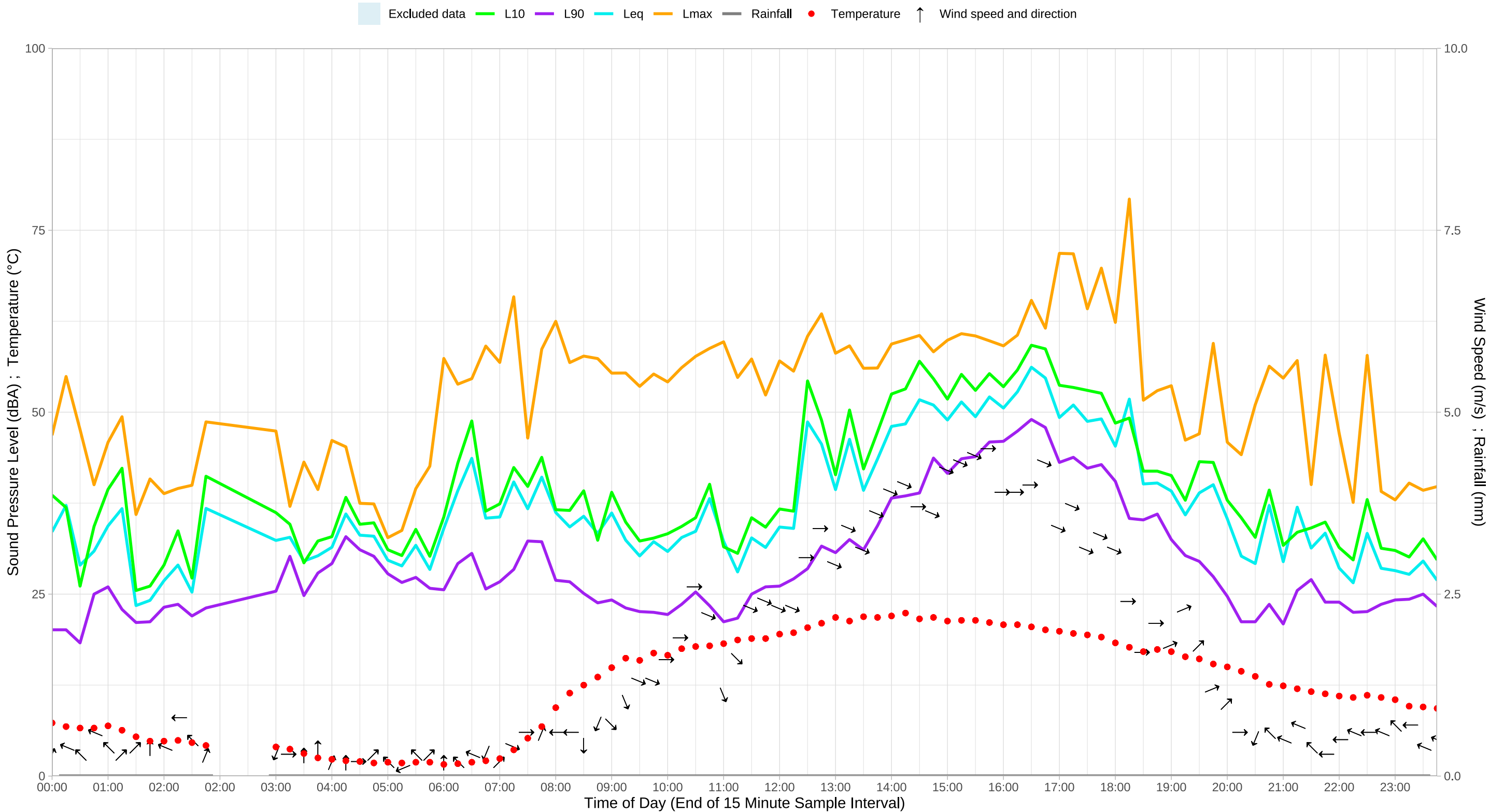
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Location ML2
Friday 04 April 2025



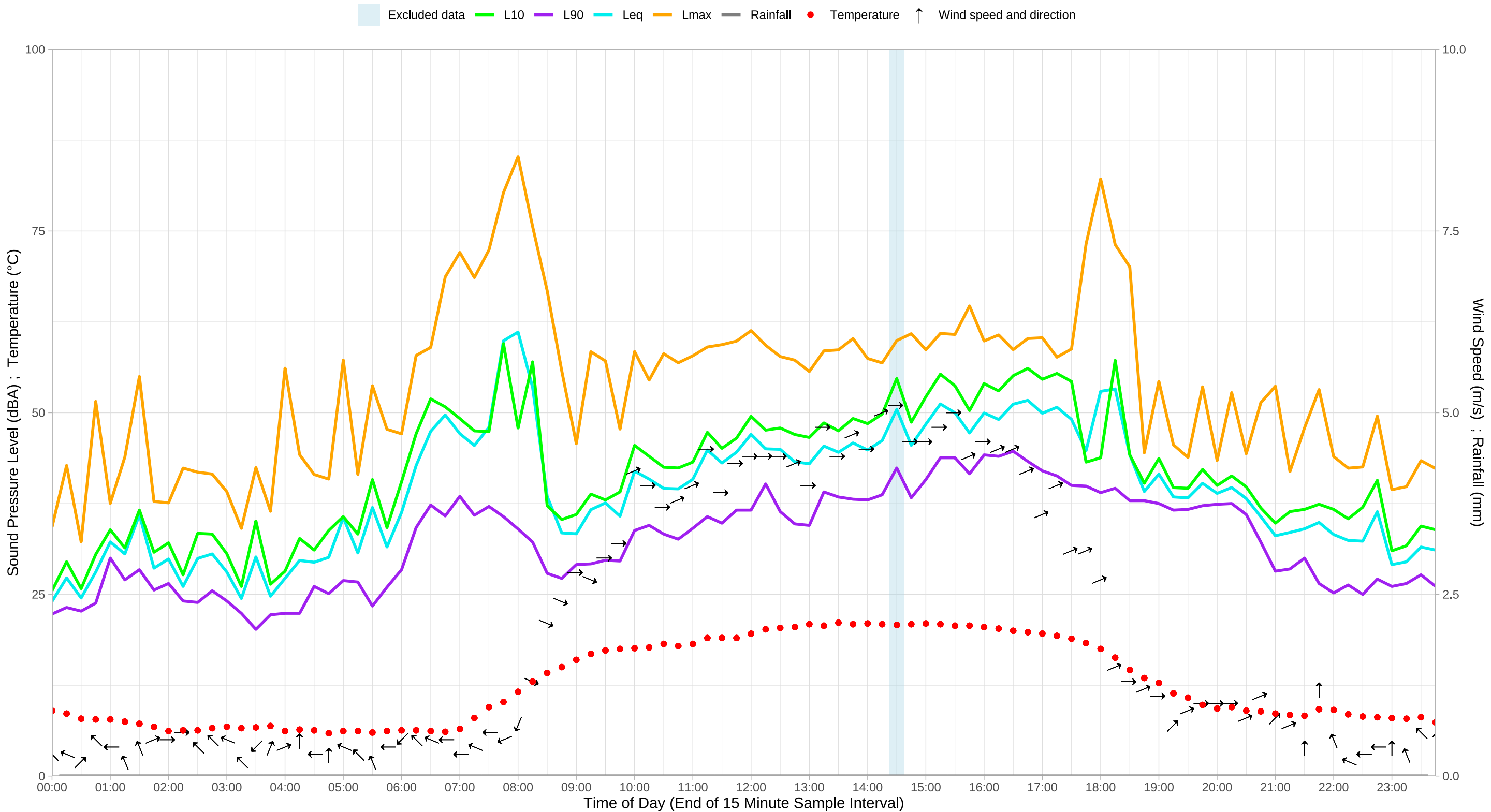
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Saturday 05 April 2025



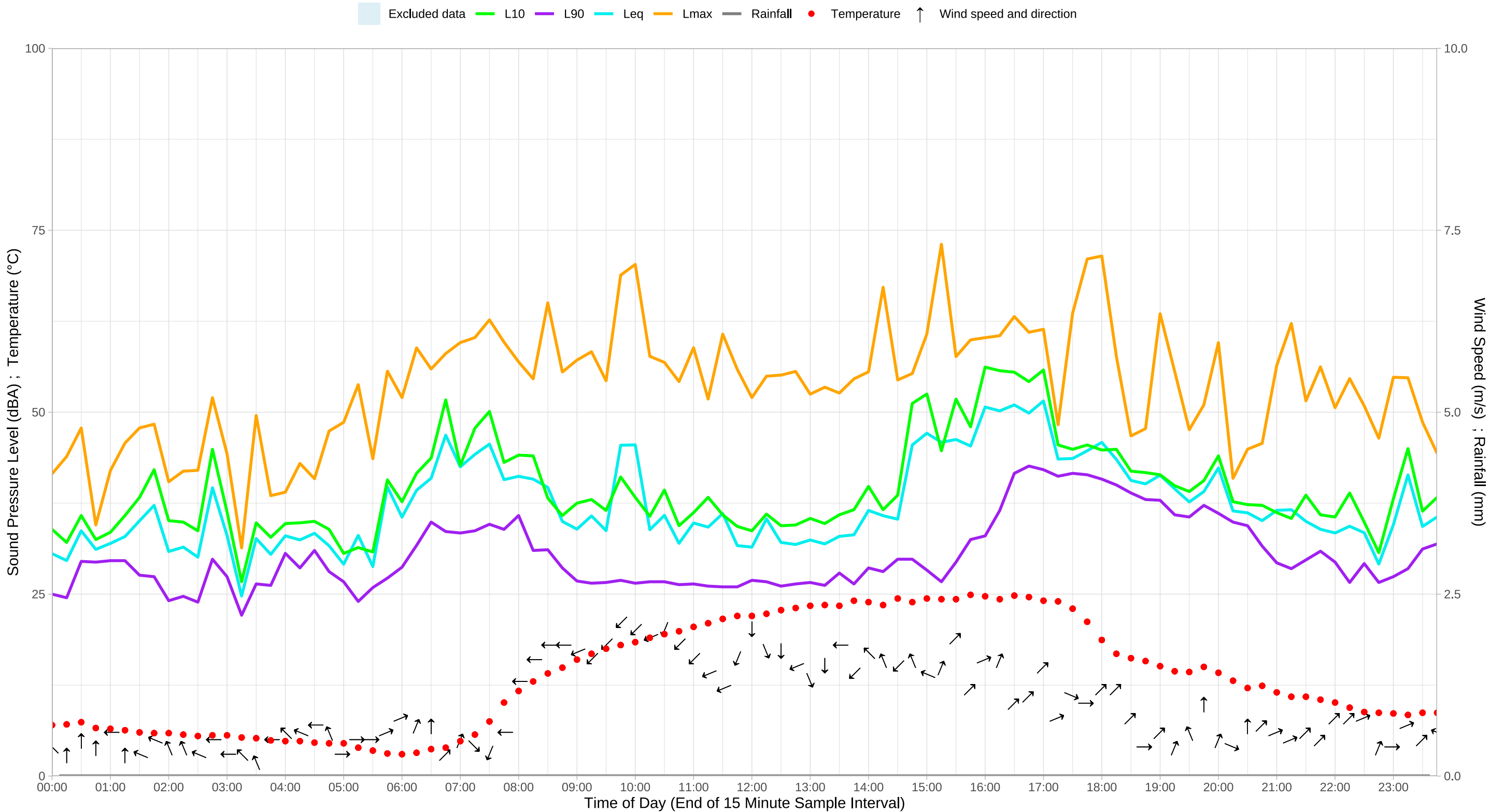
Statistical Ambient Noise Levels
Location ML2
Sunday 06 April 2025



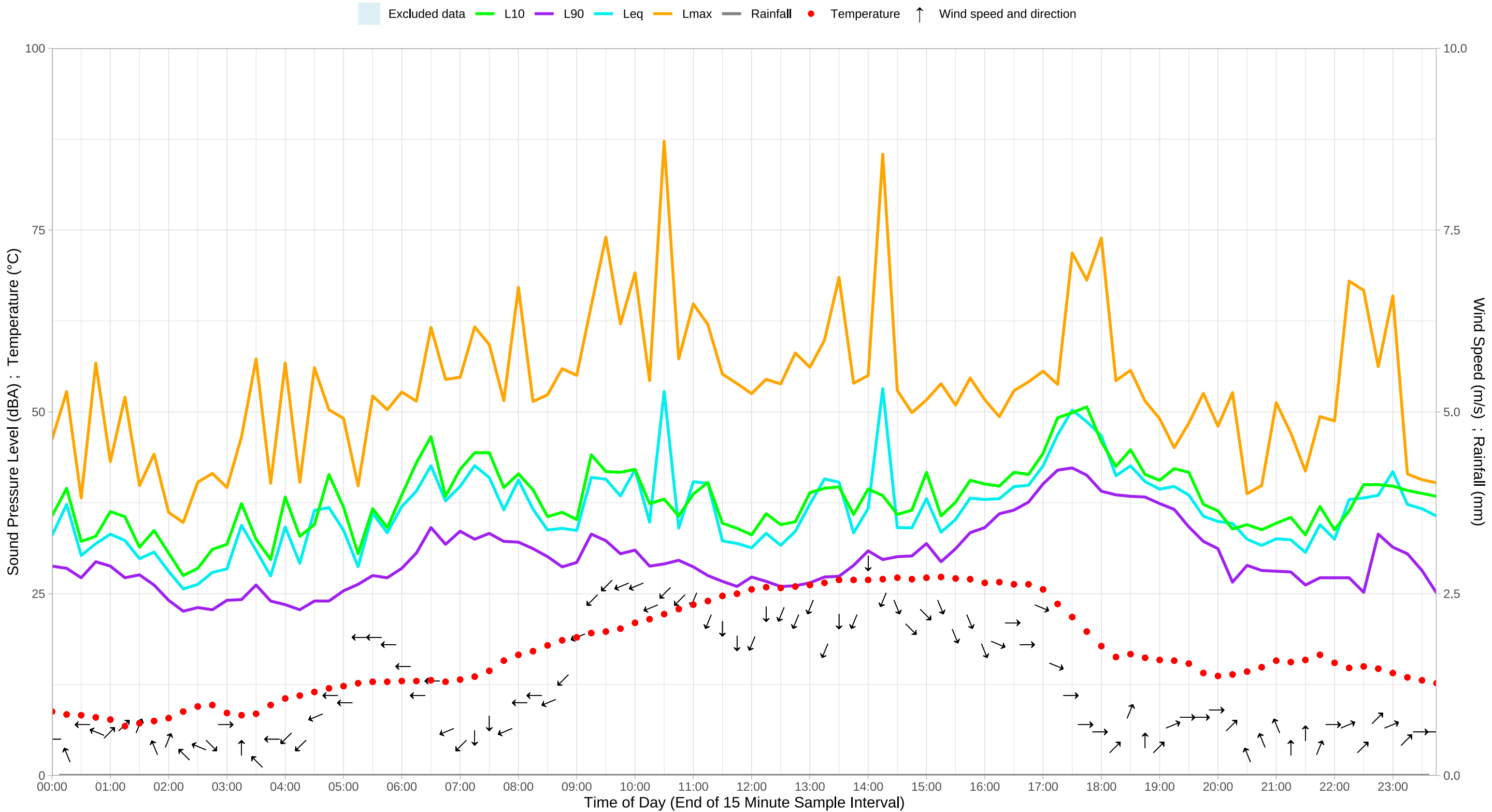
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Location ML2
Monday 07 April 2025



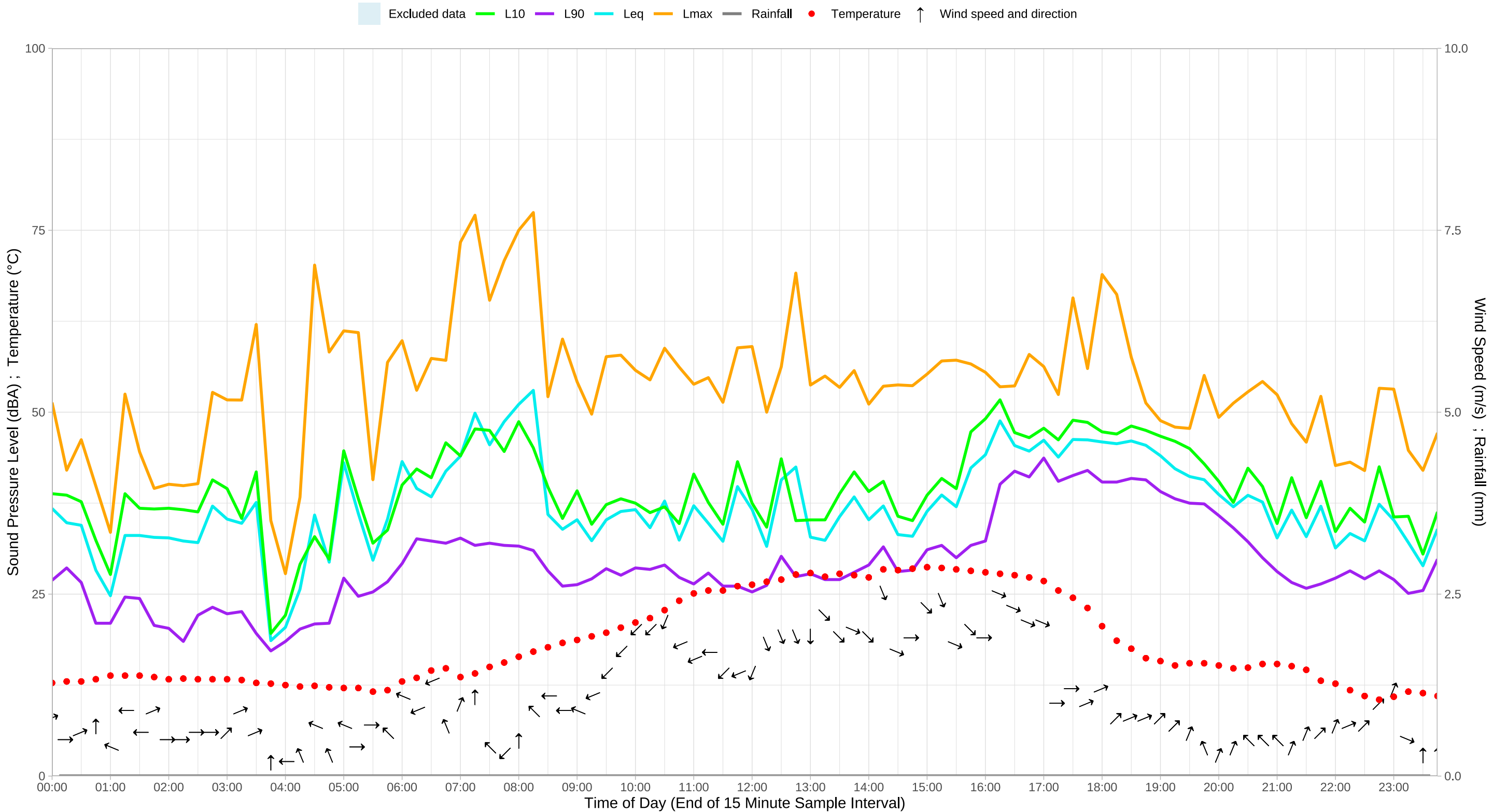
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Location ML2
Tuesday 08 April 2025



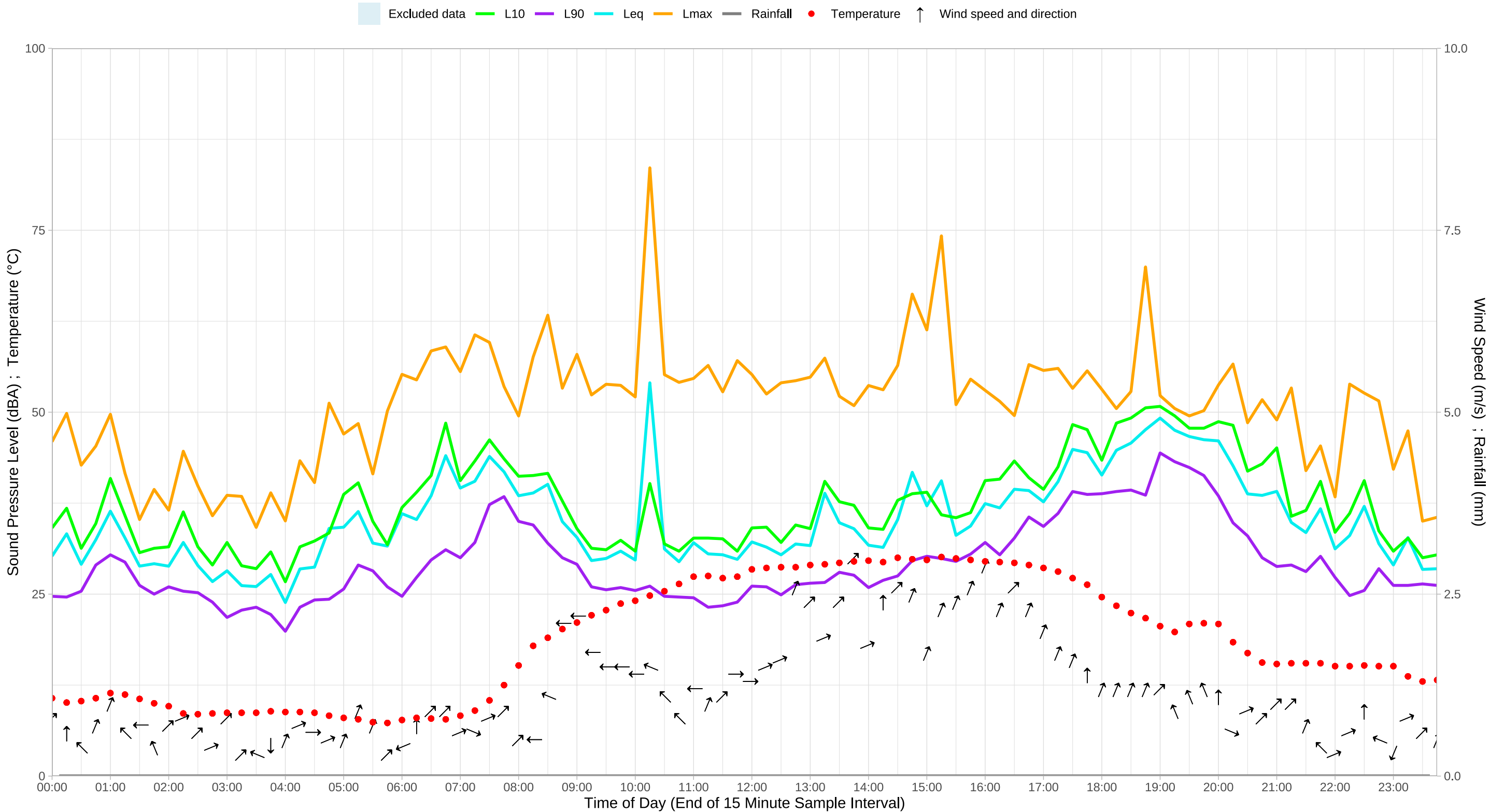
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Location ML2
Wednesday 09 April 2025



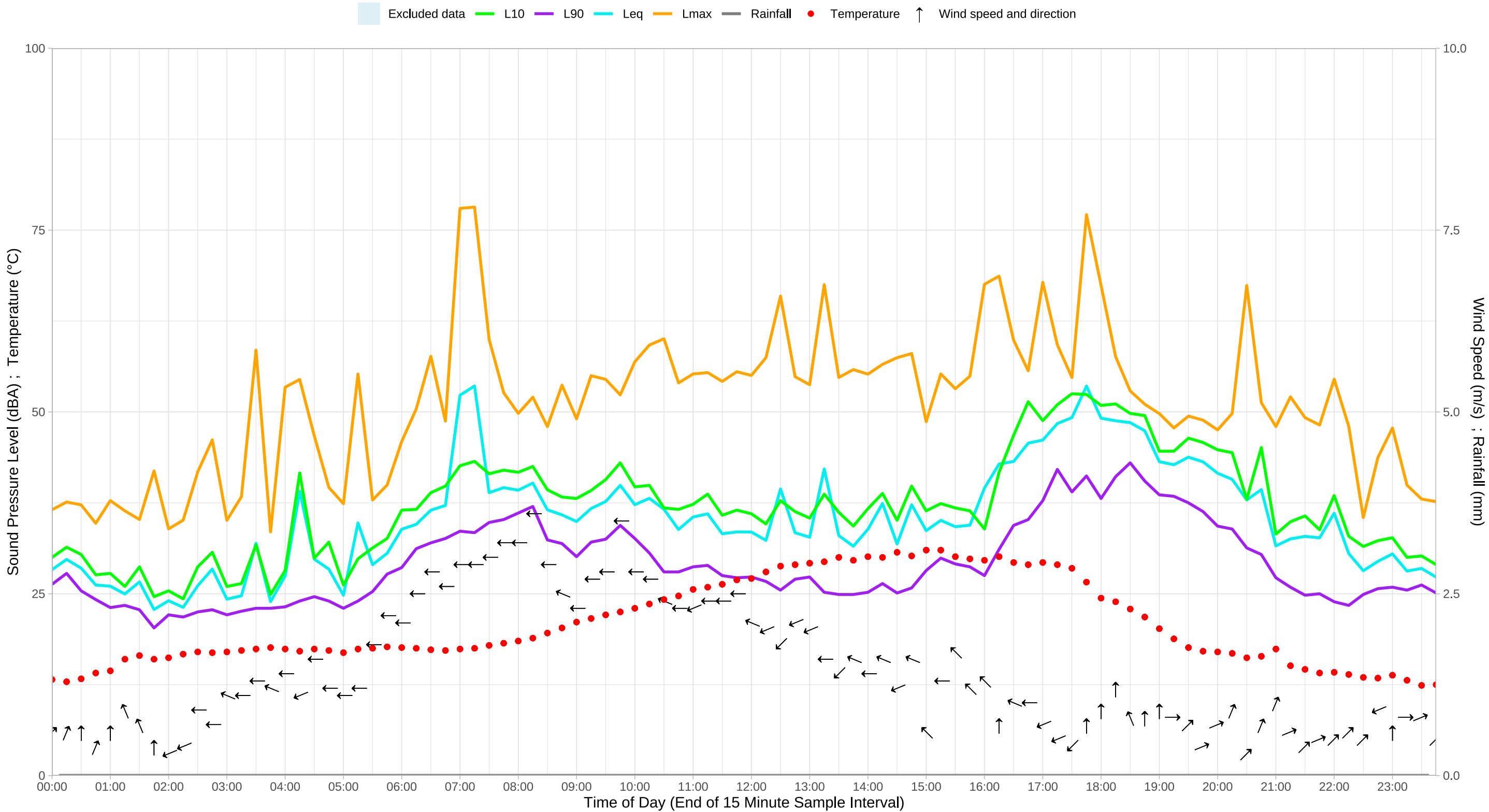
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Location ML2
Thursday 10 April 2025



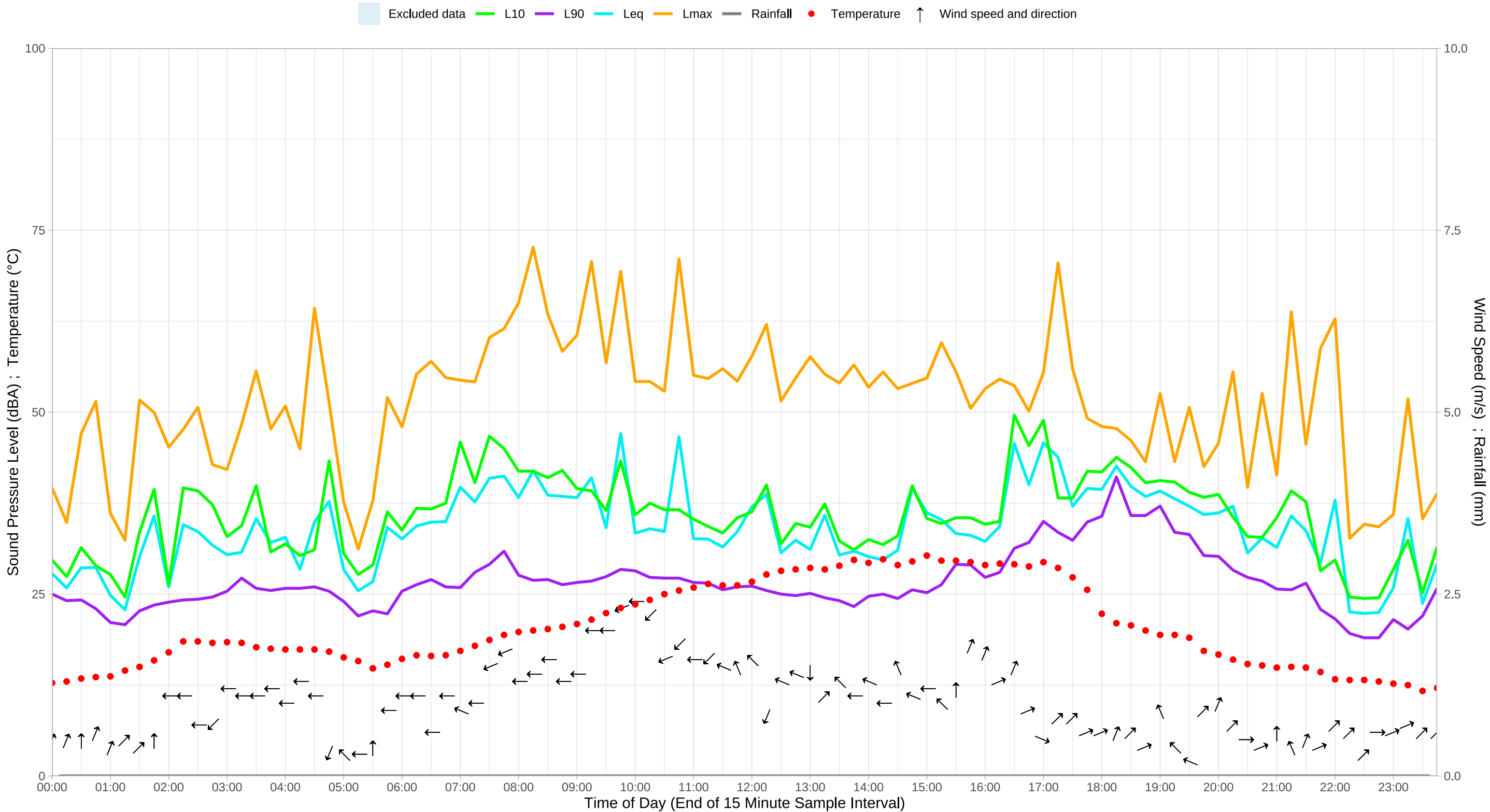
Statistical Ambient Noise Levels
Location ML2
Friday 11 April 2025



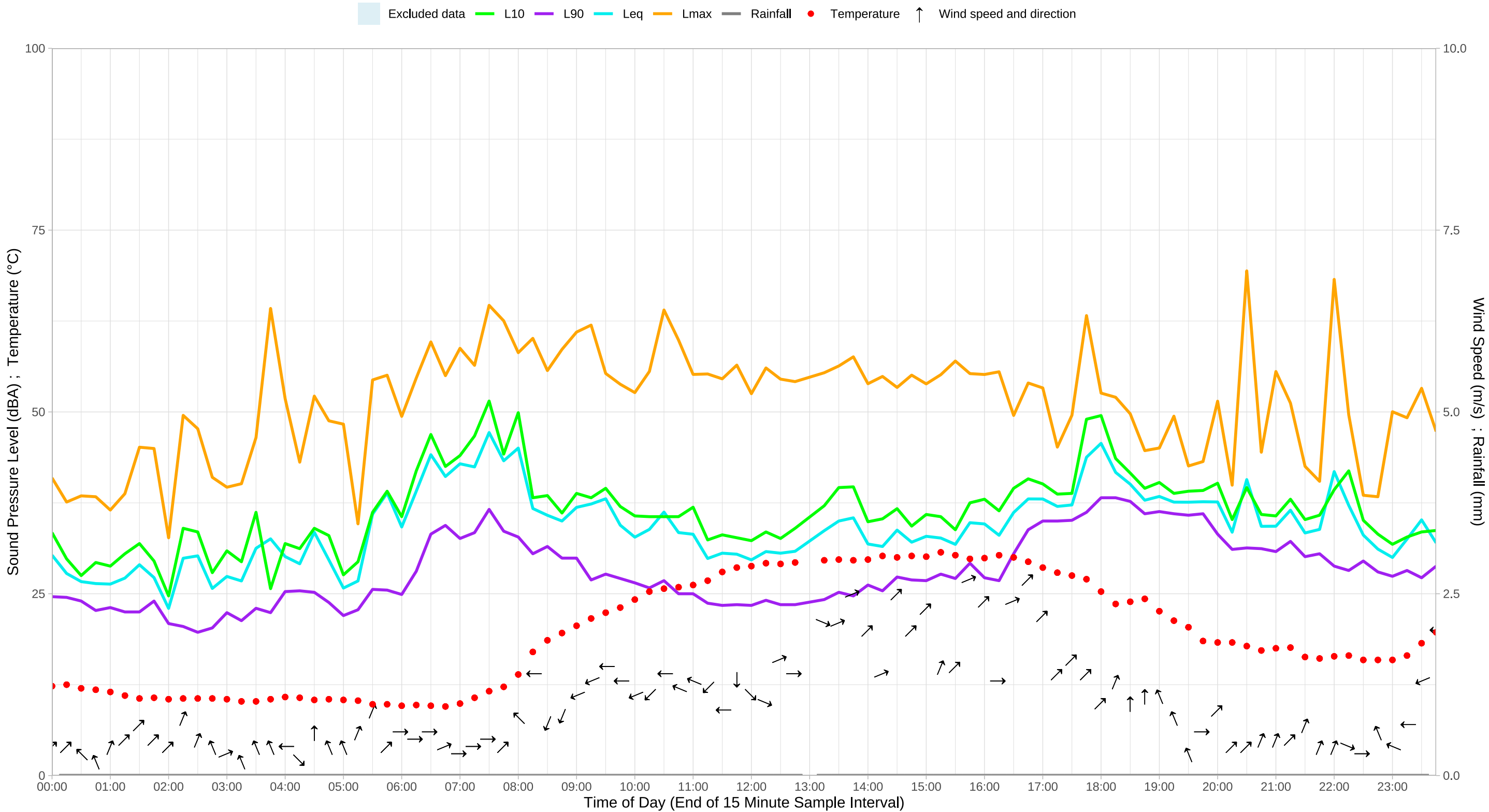
Statistical Ambient Noise Levels
Location ML2
Saturday 12 April 2025



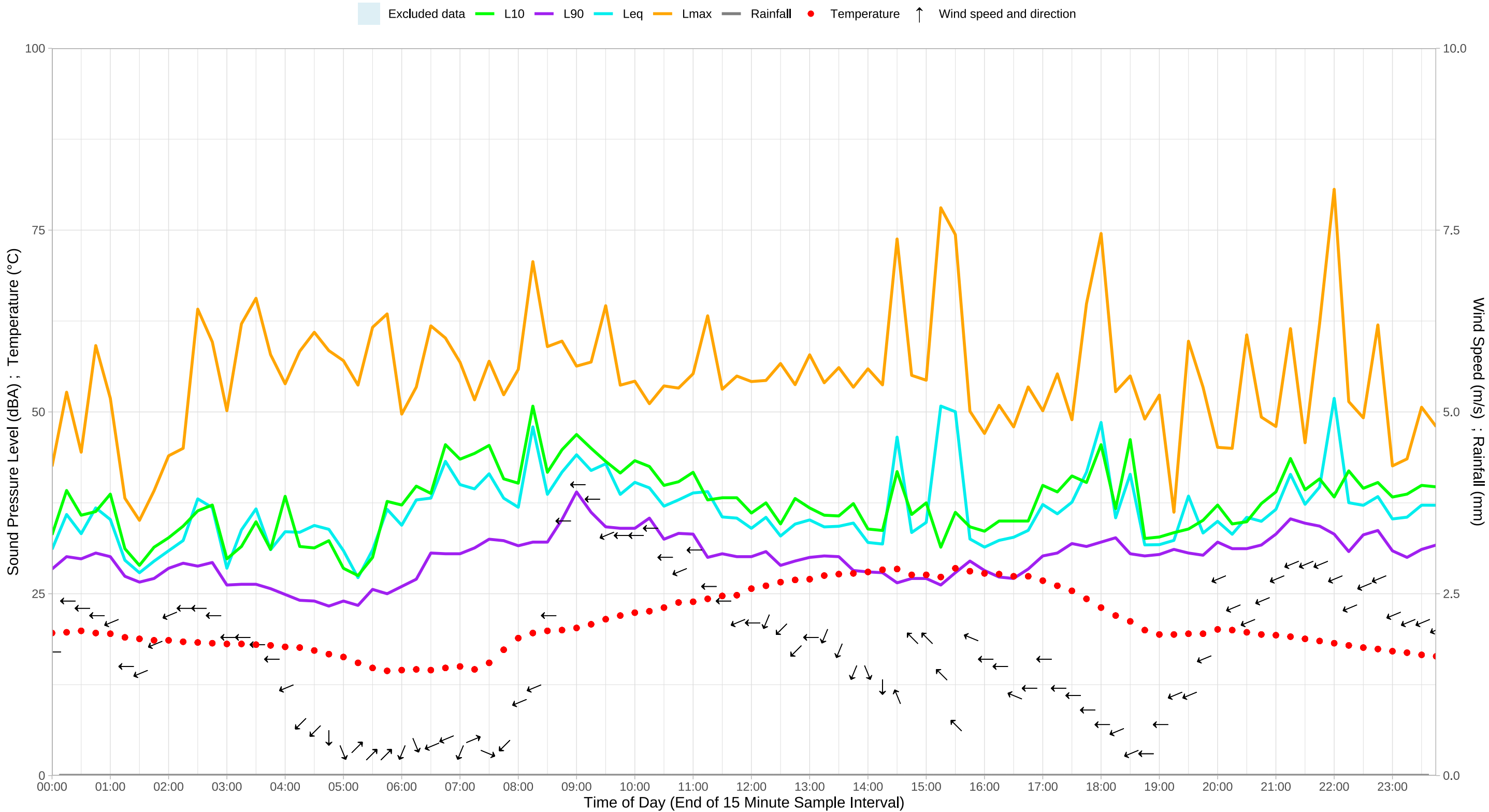
Statistical Ambient Noise Levels
Location ML2
Sunday 13 April 2025



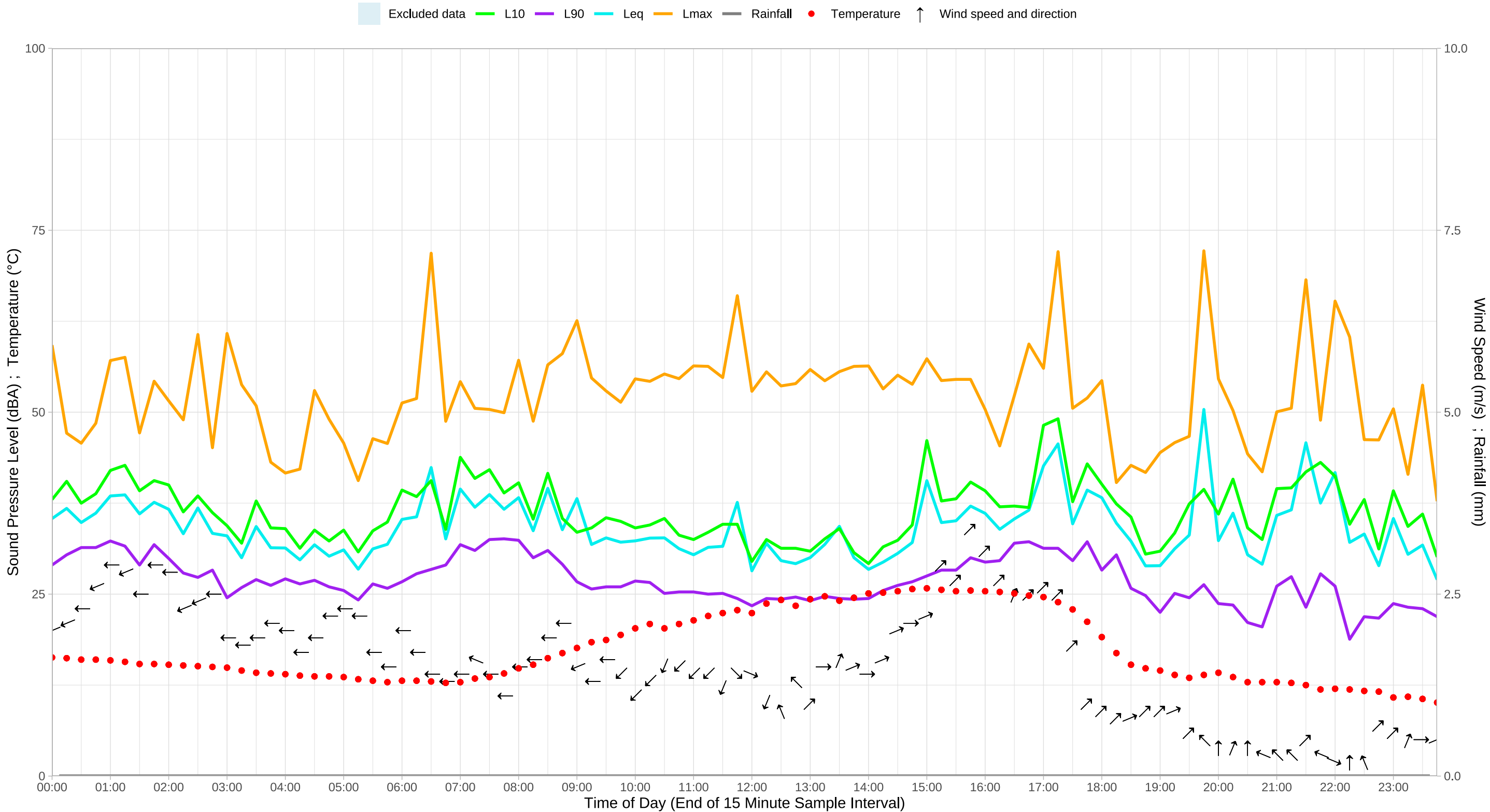
Statistical Ambient Noise Levels
Location ML2
Monday 14 April 2025



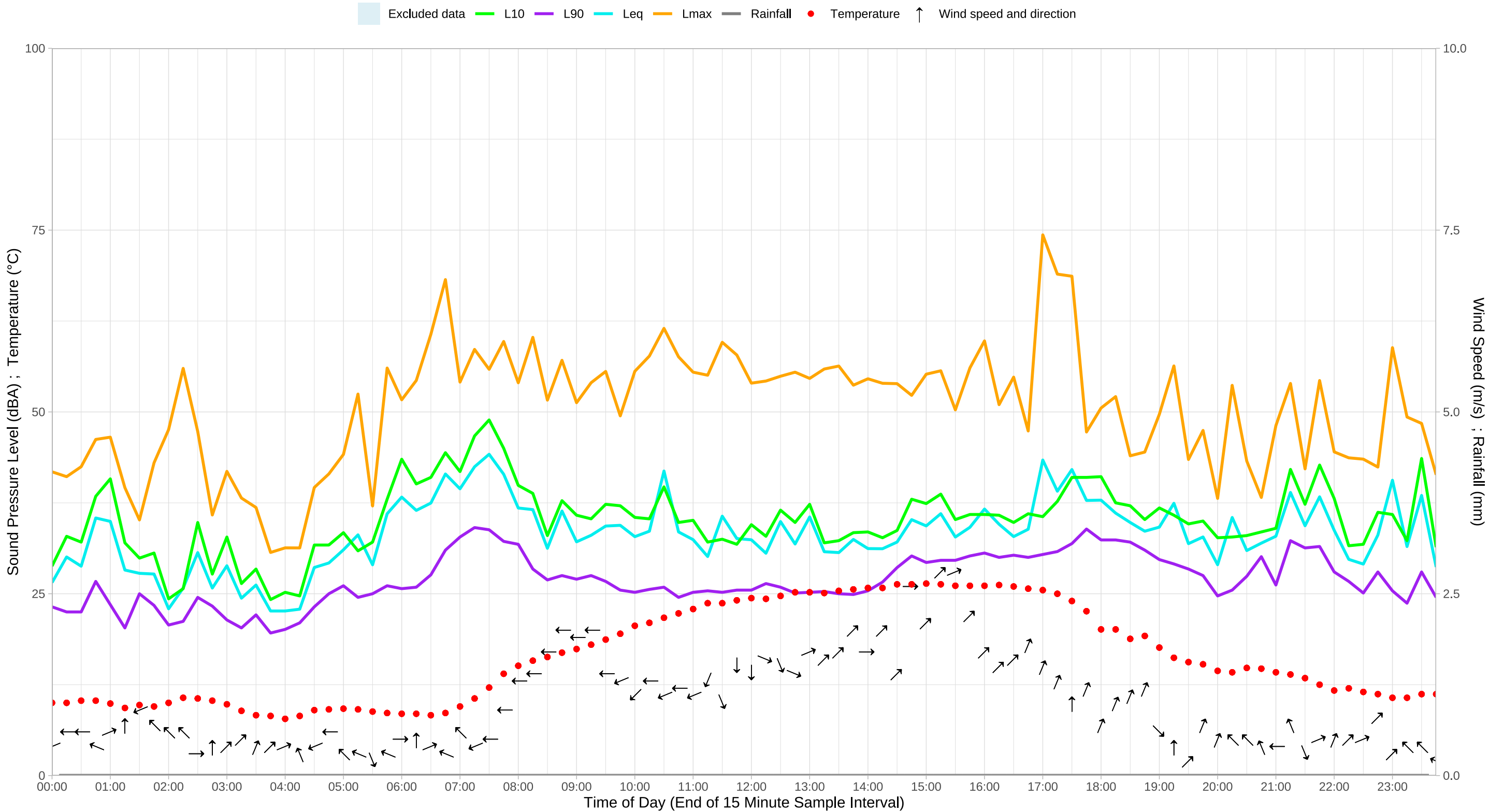
Statistical Ambient Noise Levels
Location ML2
Tuesday 15 April 2025



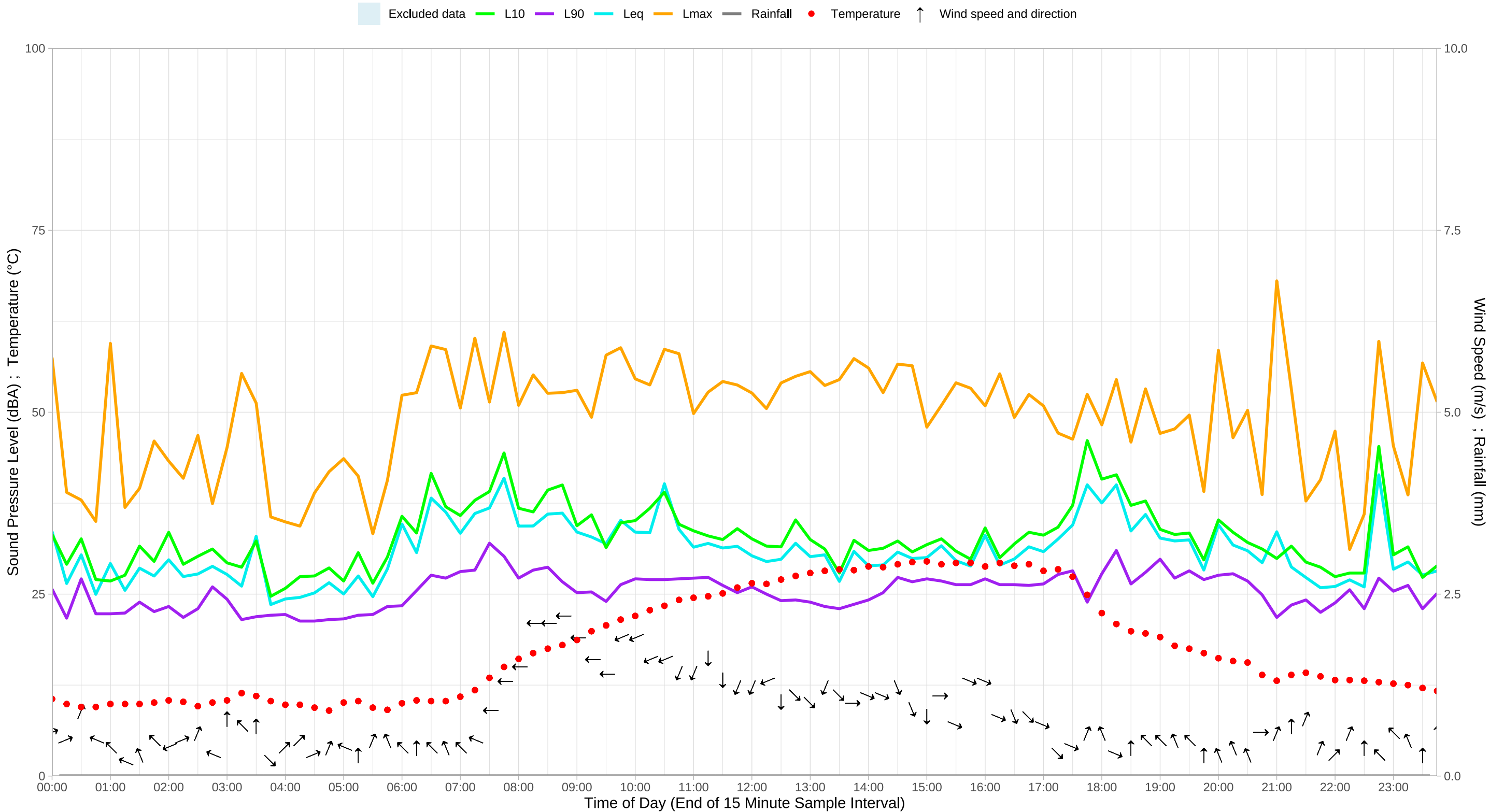
Statistical Ambient Noise Levels
Location ML2
Wednesday 16 April 2025



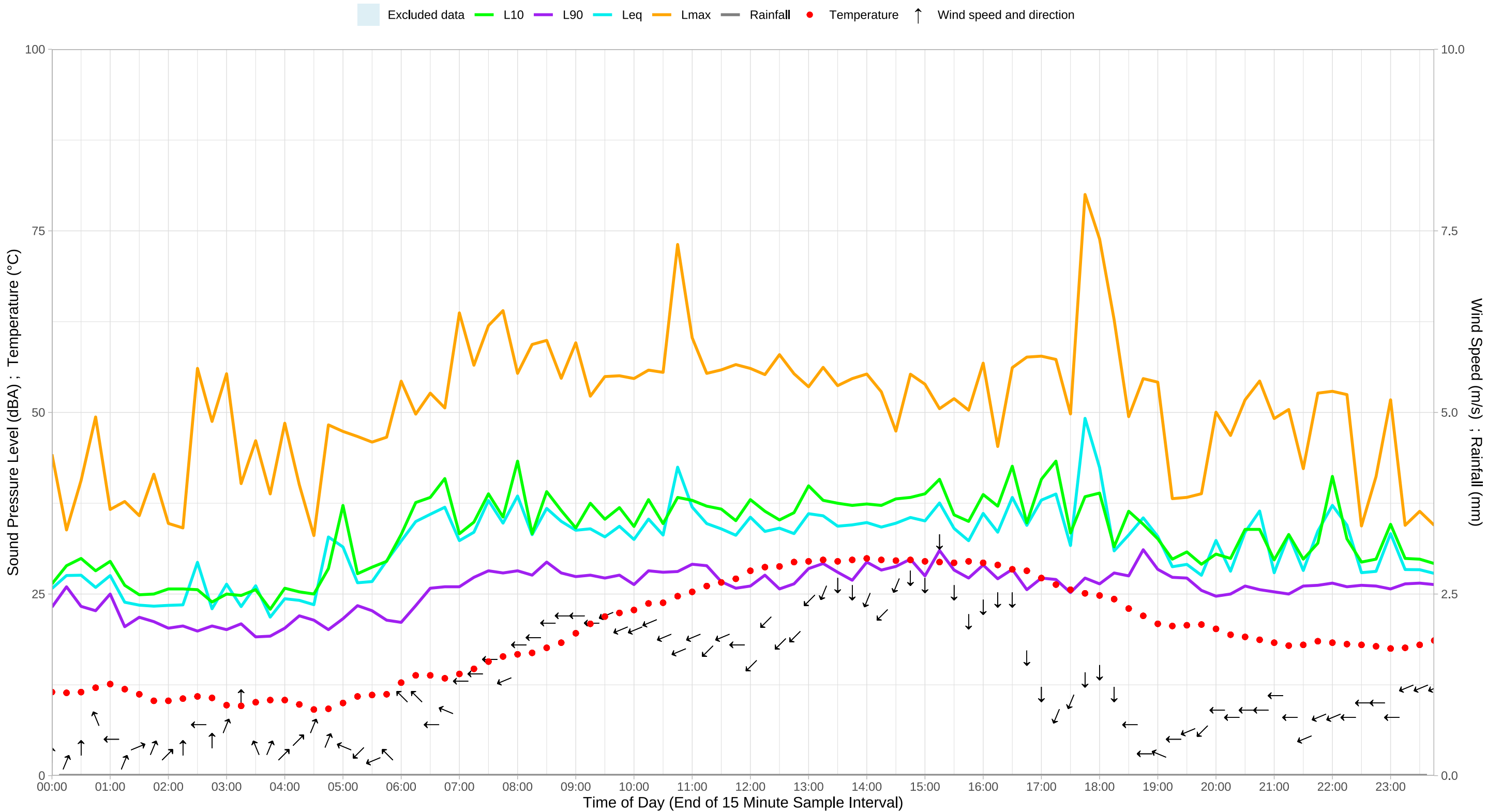
Statistical Ambient Noise Levels
Location ML2
Thursday 17 April 2025



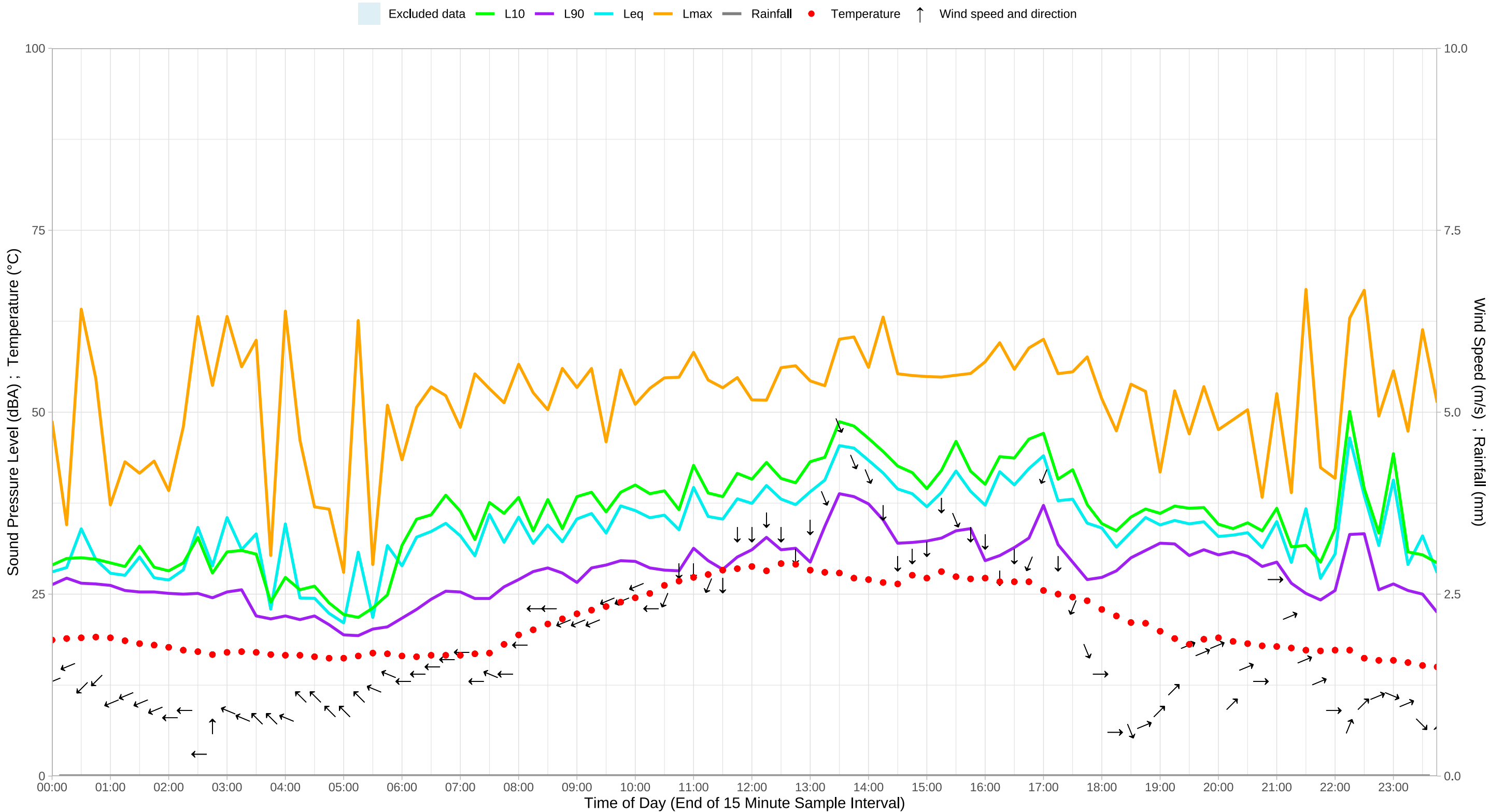
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Location ML2
Friday 18 April 2025



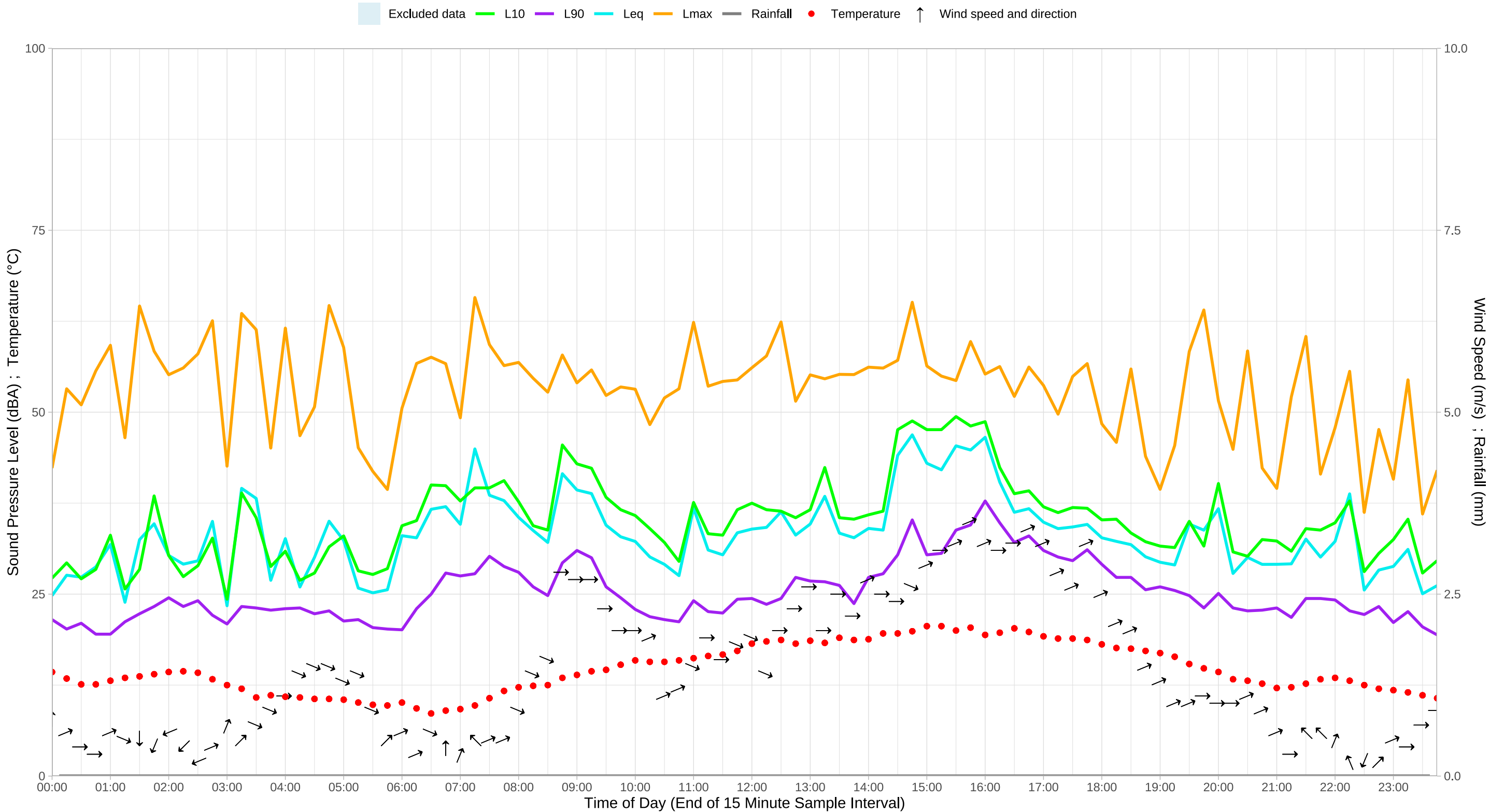
Statistical Ambient Noise Levels
Location ML2
Saturday 19 April 2025



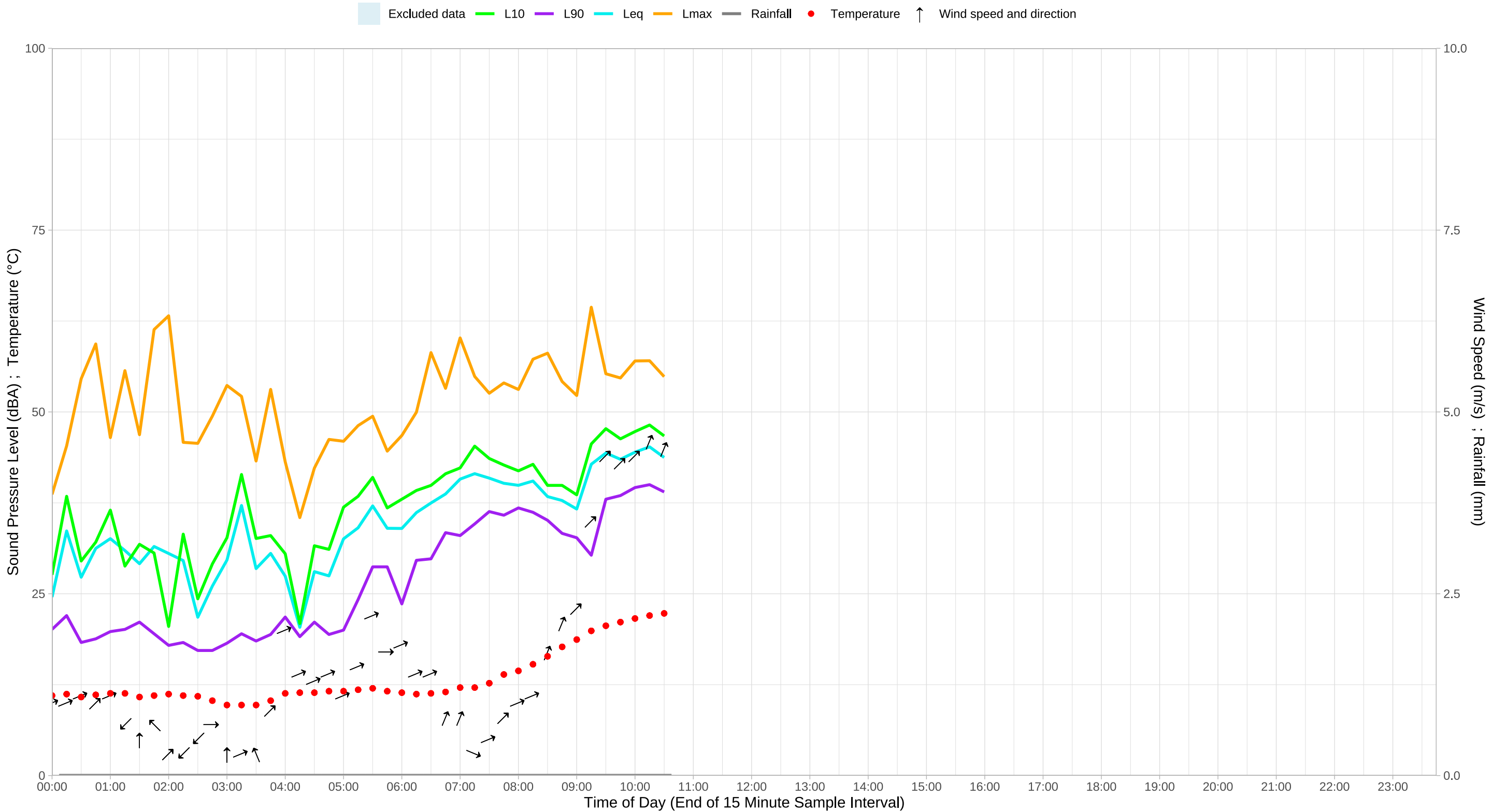
Statistical Ambient Noise Levels
Location ML2
Sunday 20 April 2025



Statistical Ambient Noise Levels
Location ML2
Monday 21 April 2025



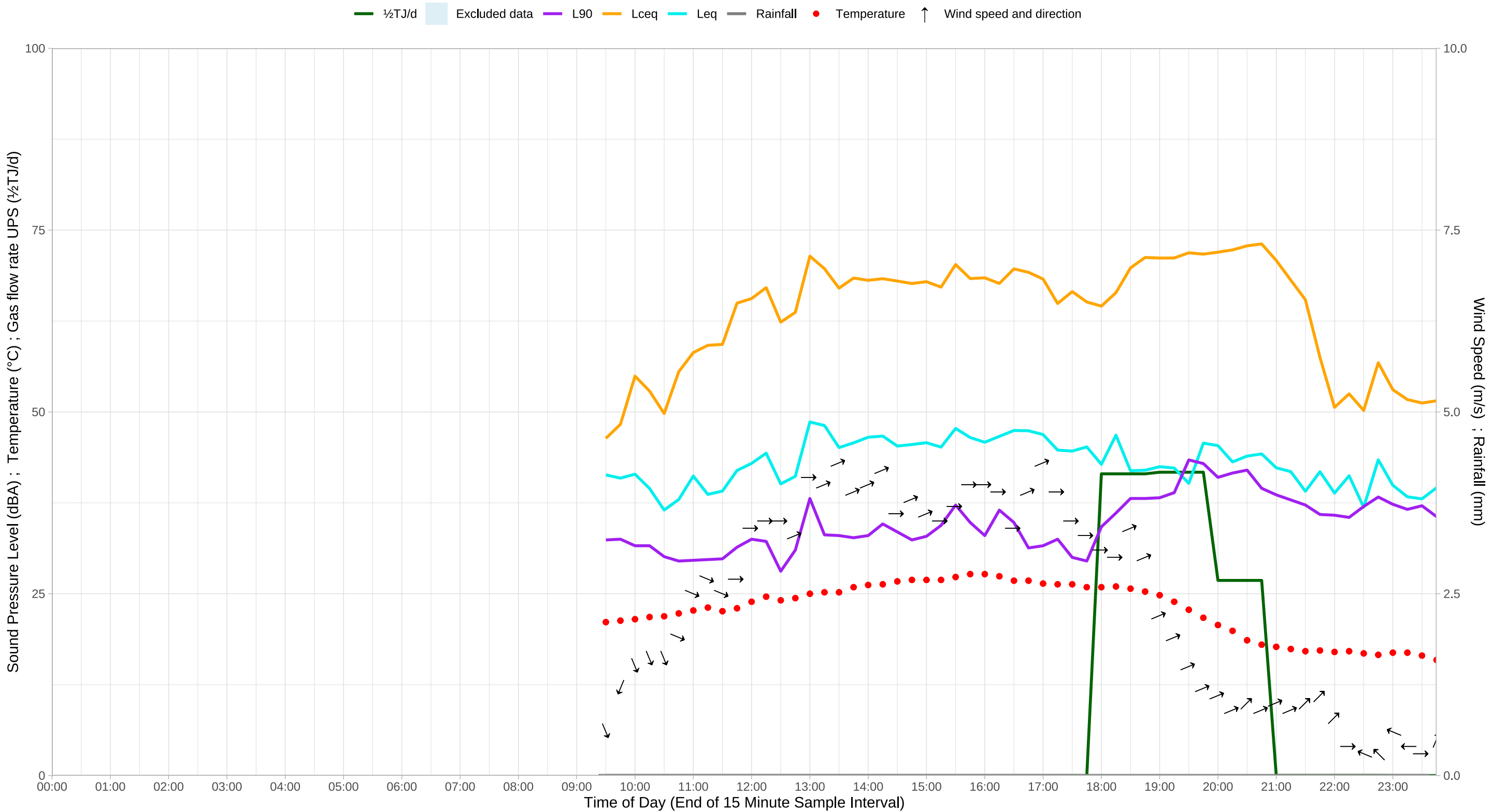
Statistical Ambient Noise Levels
Location ML2
Tuesday 22 April 2025



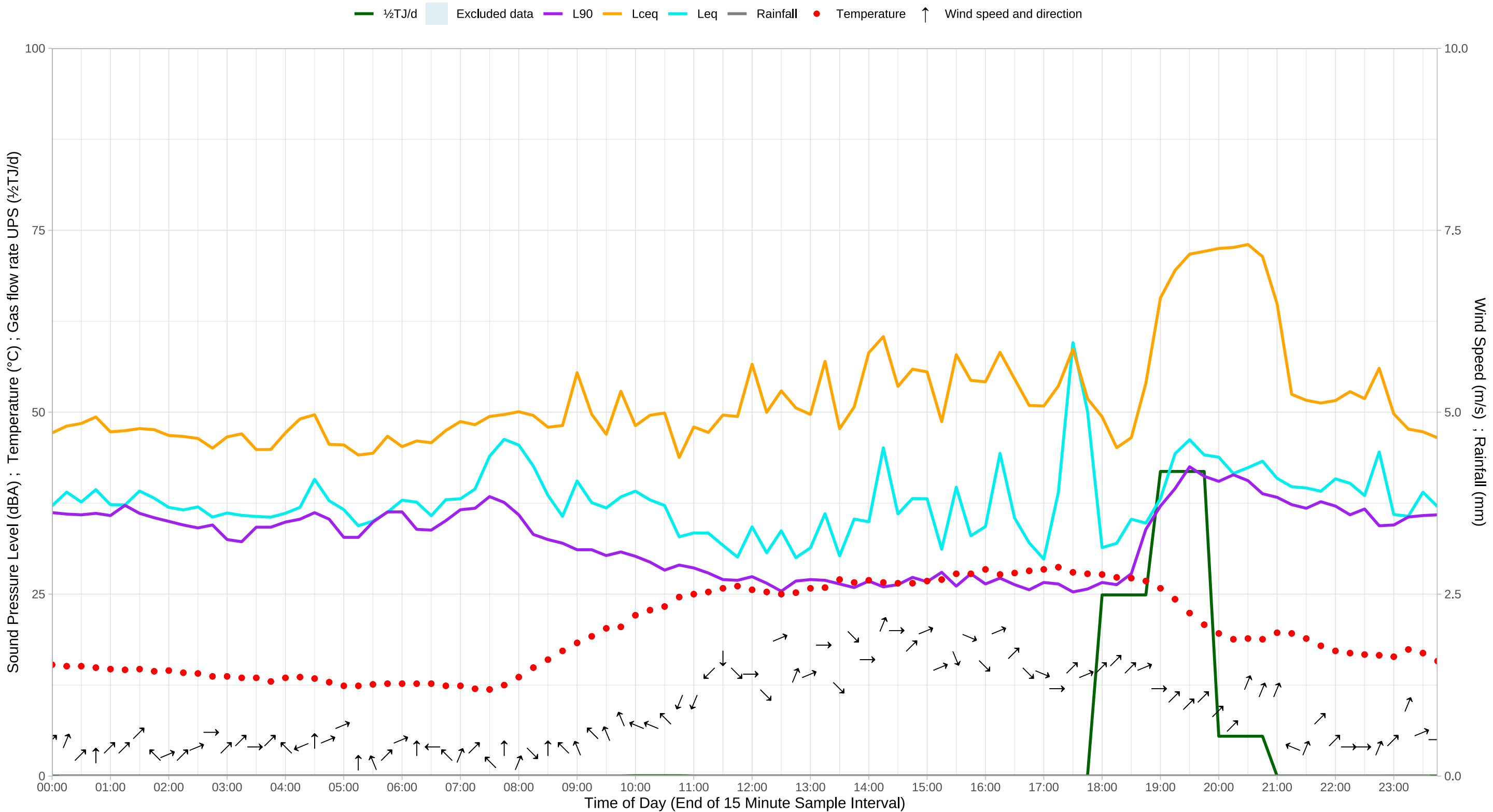
Appendix B

**Noise levels during operation of the
Uranquinty Power Station**

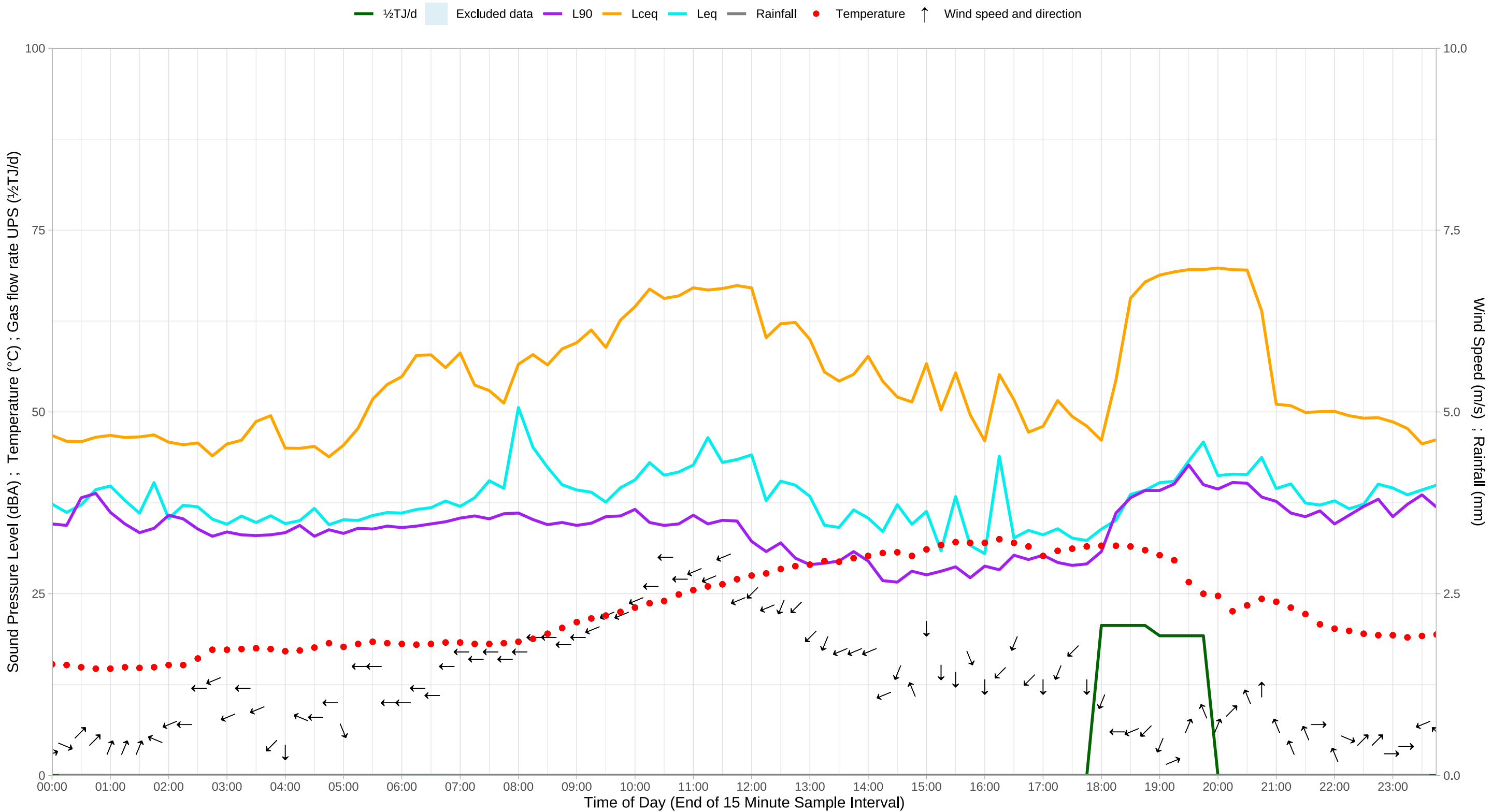
Statistical Ambient Noise Levels
Location ML1
Friday 21 March 2025



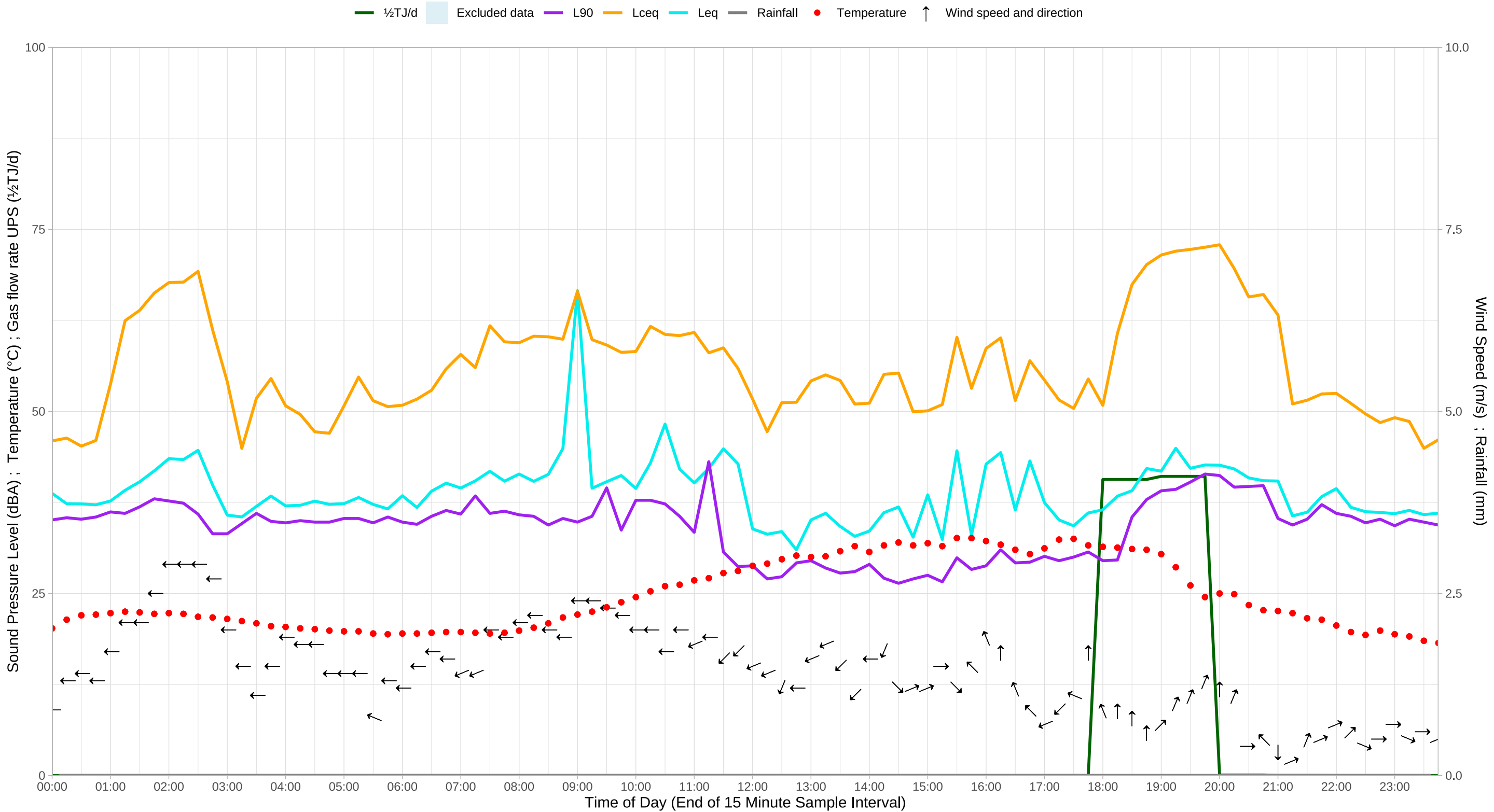
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Location ML1
Saturday 22 March 2025



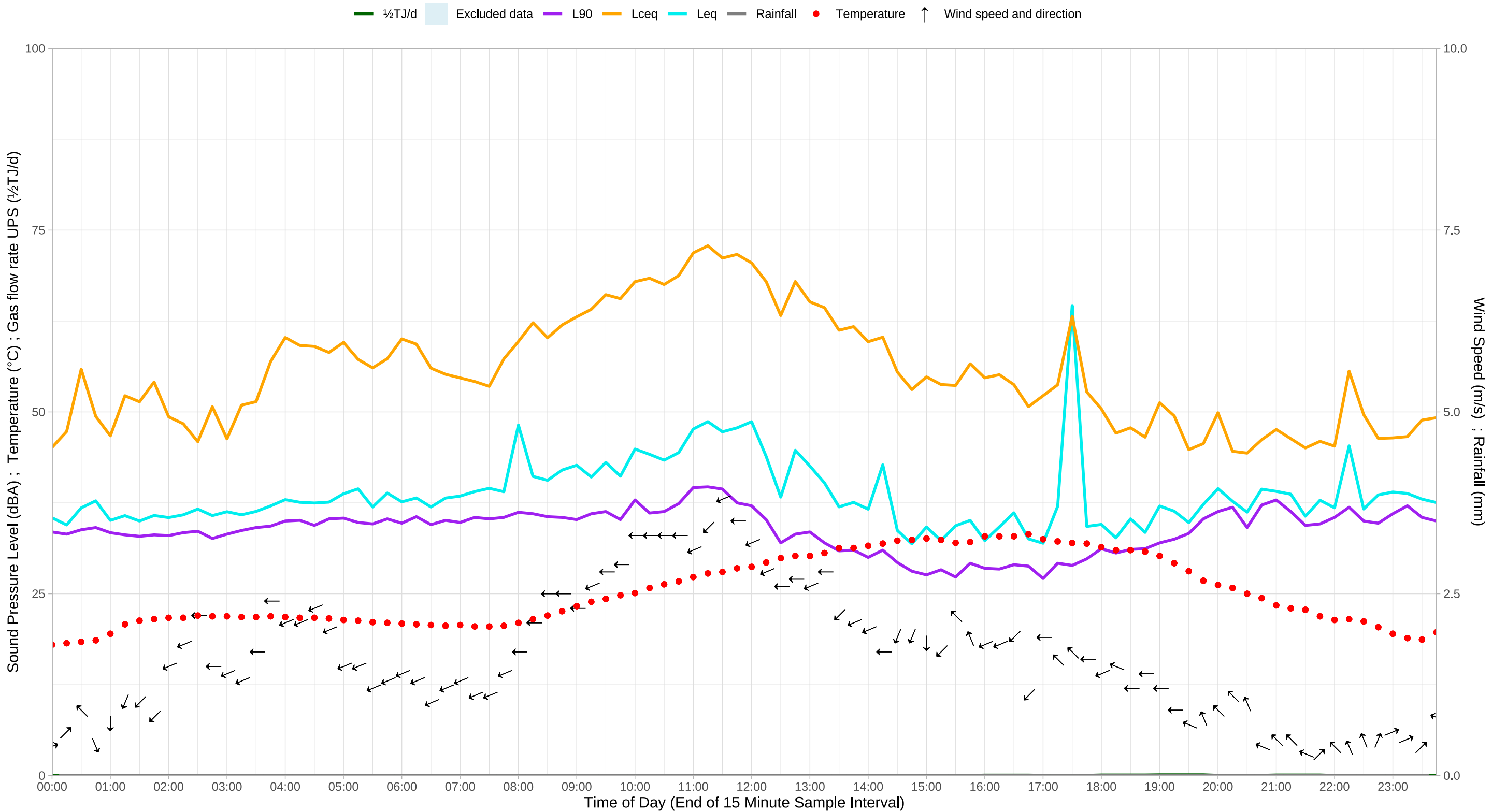
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Location ML1
Sunday 23 March 2025



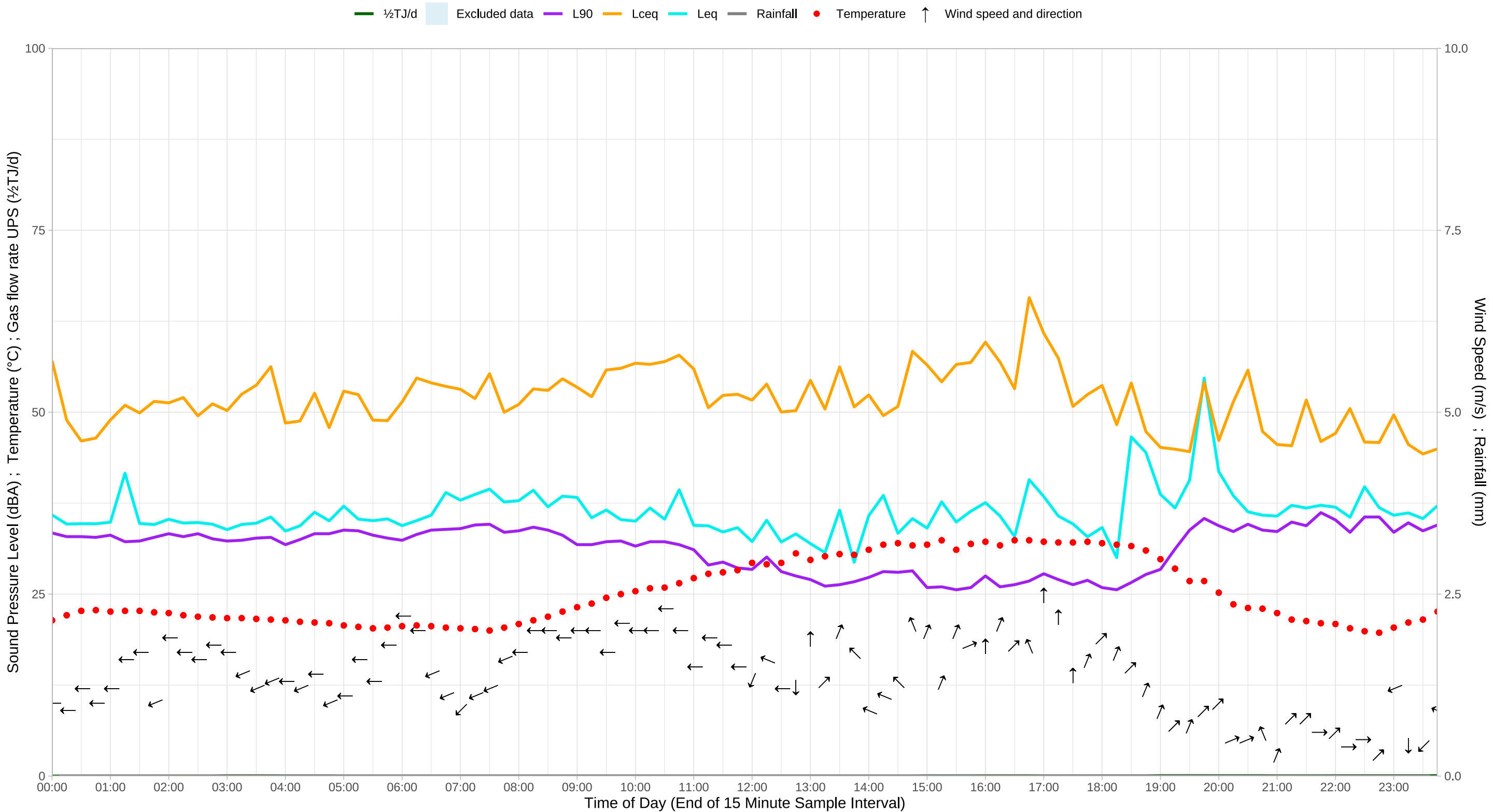
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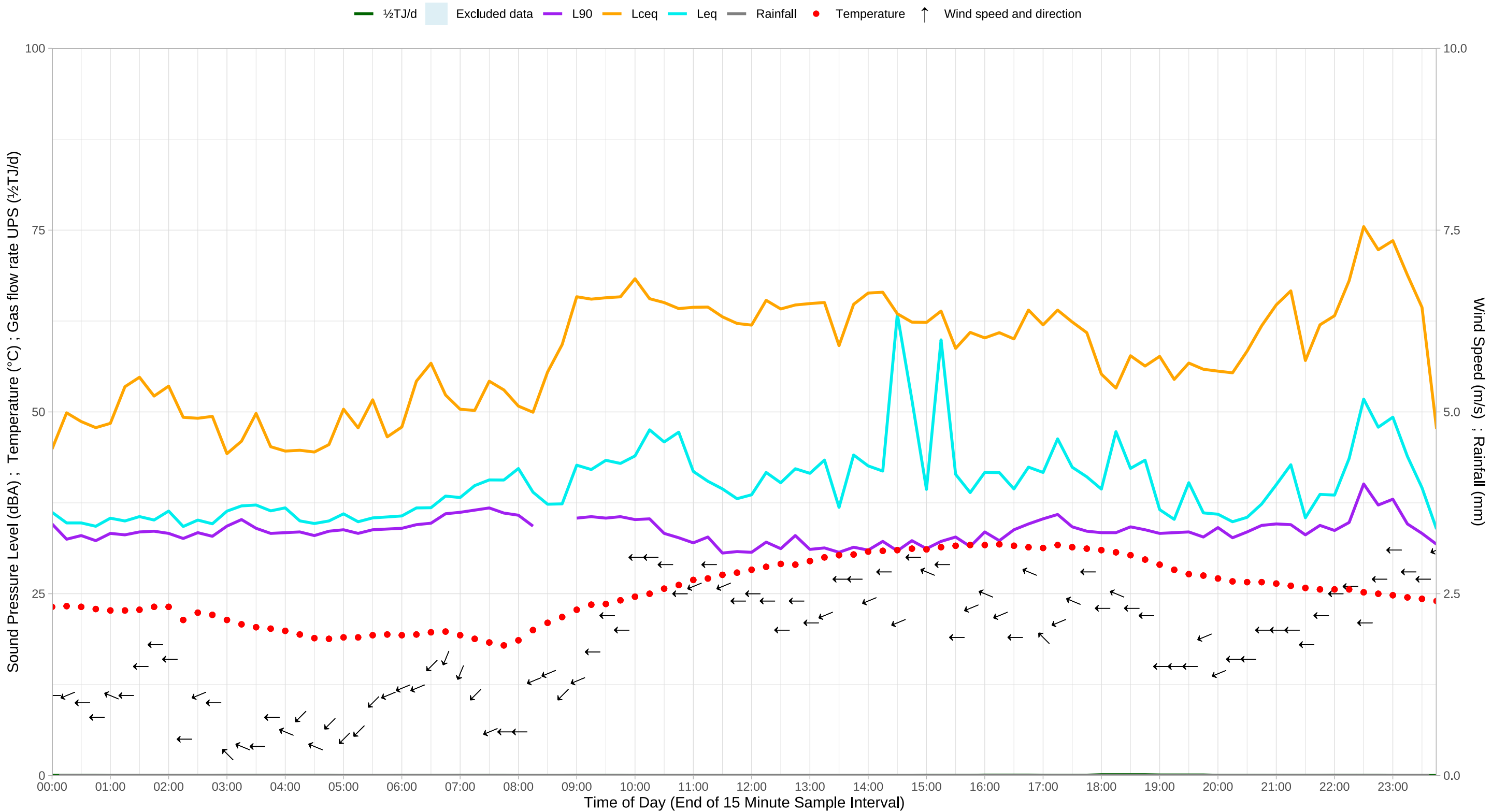
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Tuesday 25 March 2025



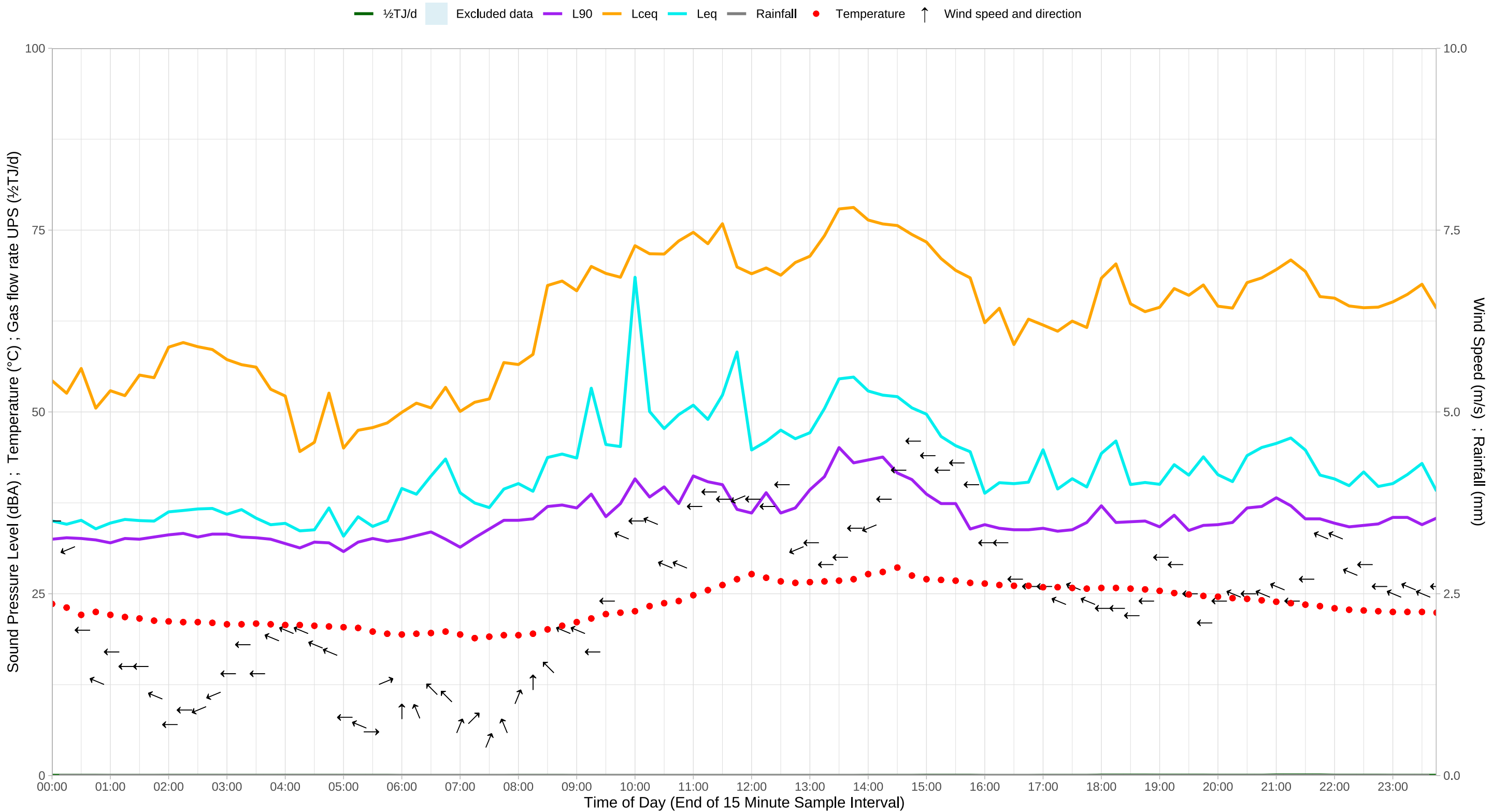
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Location ML1
Wednesday 26 March 2025



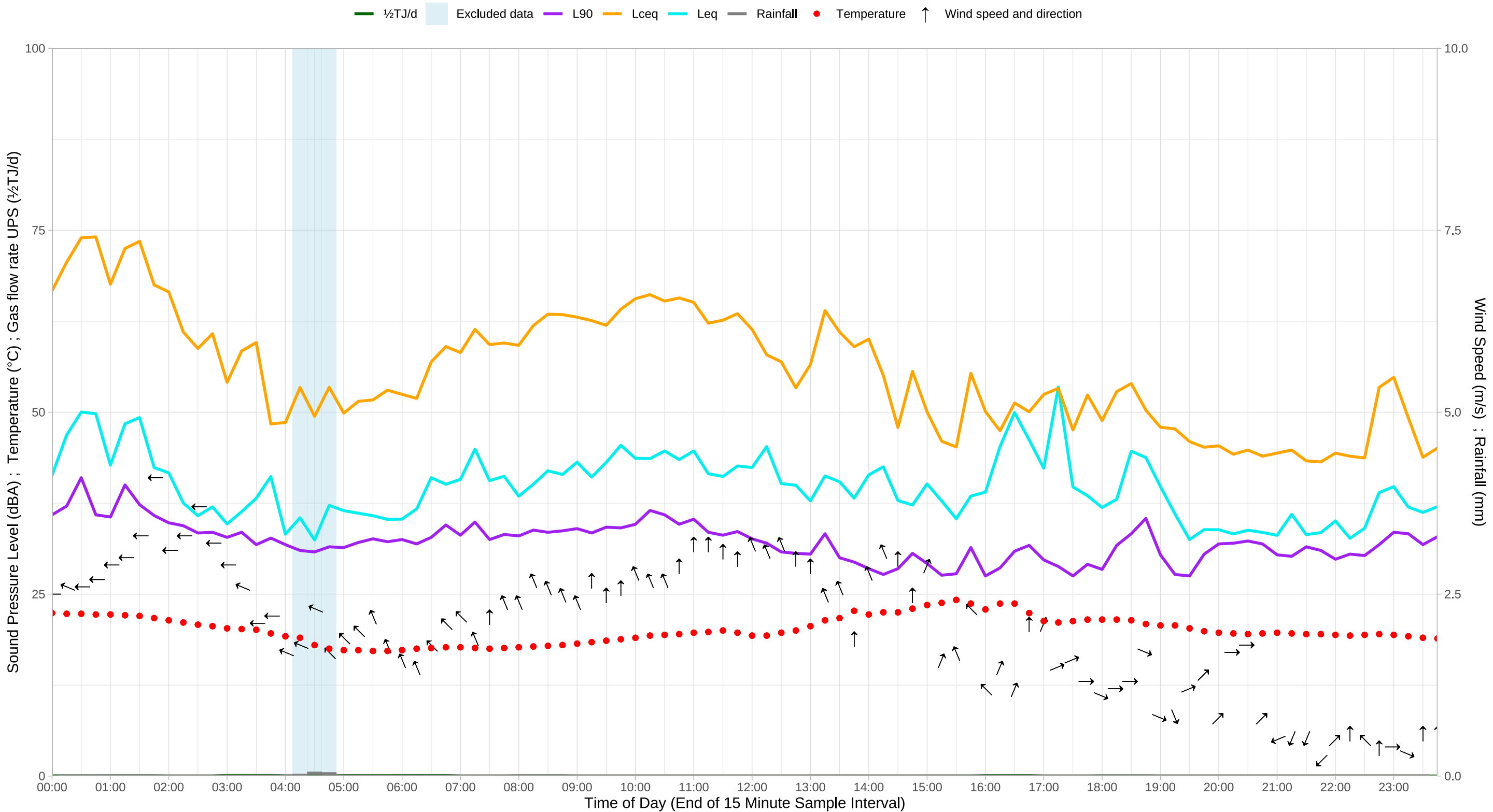
Statistical Ambient Noise Levels
Location ML1
Thursday 27 March 2025



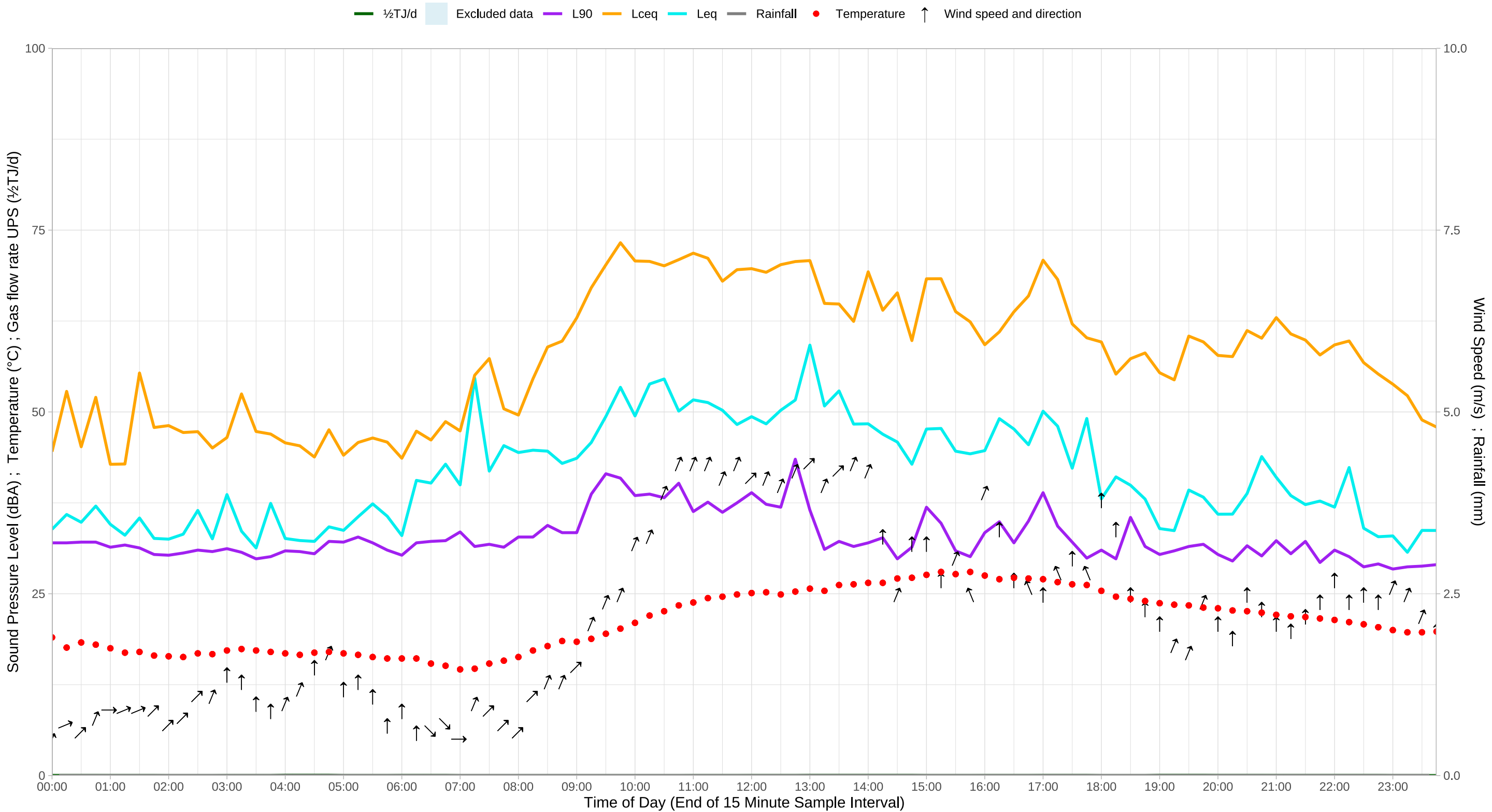
Statistical Ambient Noise Levels
Location ML1
Friday 28 March 2025



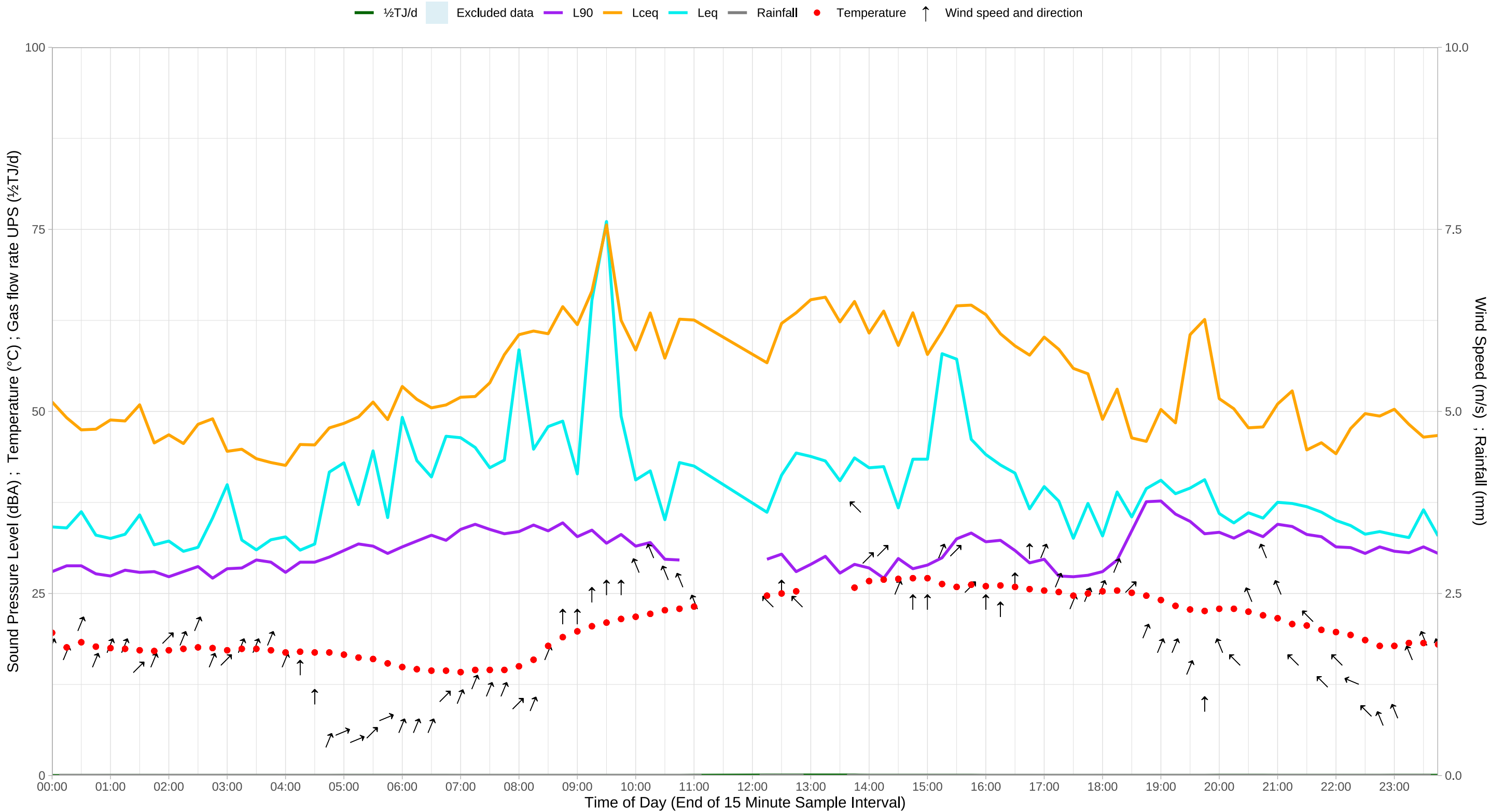
Statistical Ambient Noise Levels
Location ML1
Saturday 29 March 2025



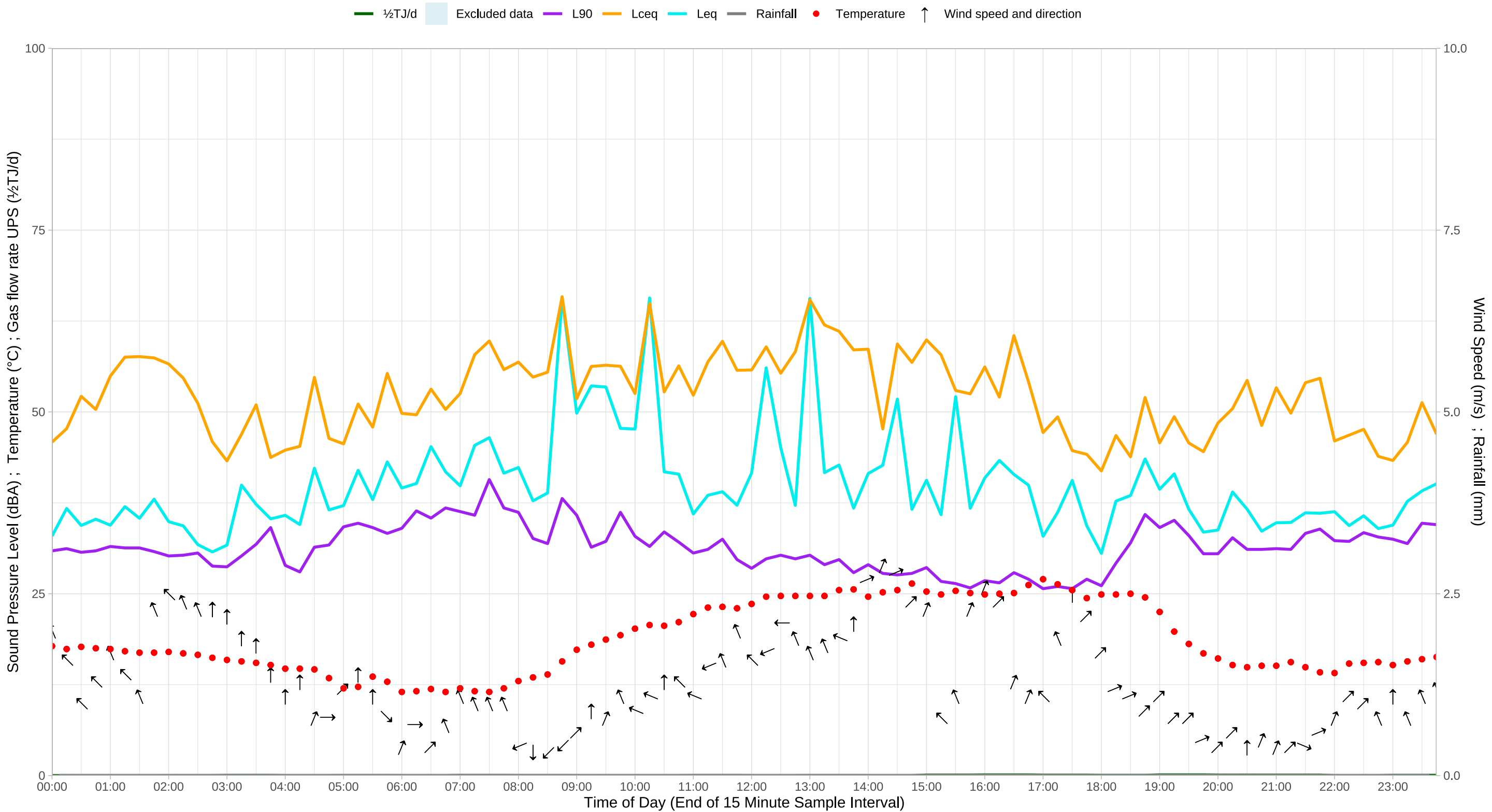
Statistical Ambient Noise Levels
Location ML1
Sunday 30 March 2025



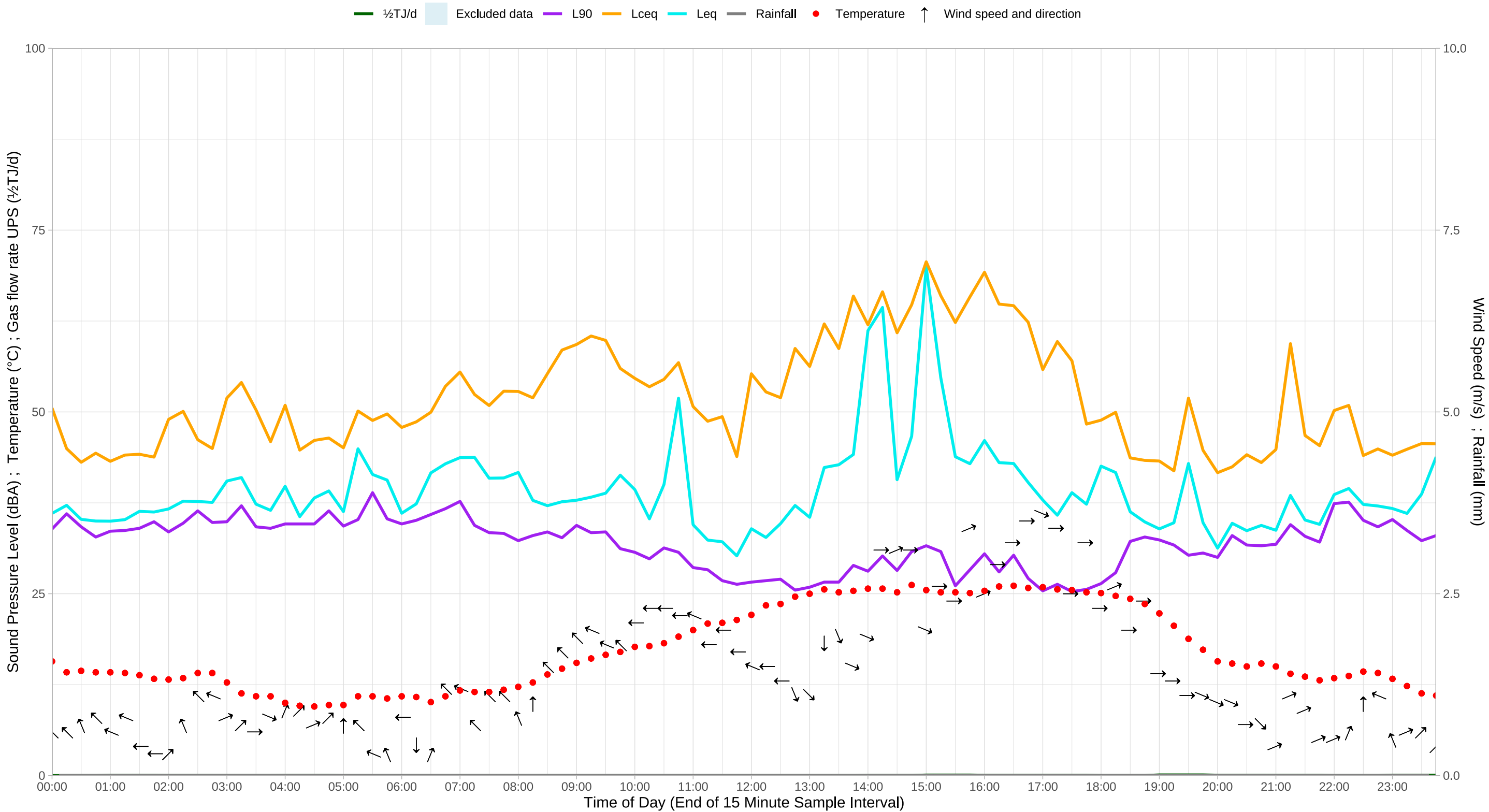
Statistical Ambient Noise Levels
Location ML1
Monday 31 March 2025



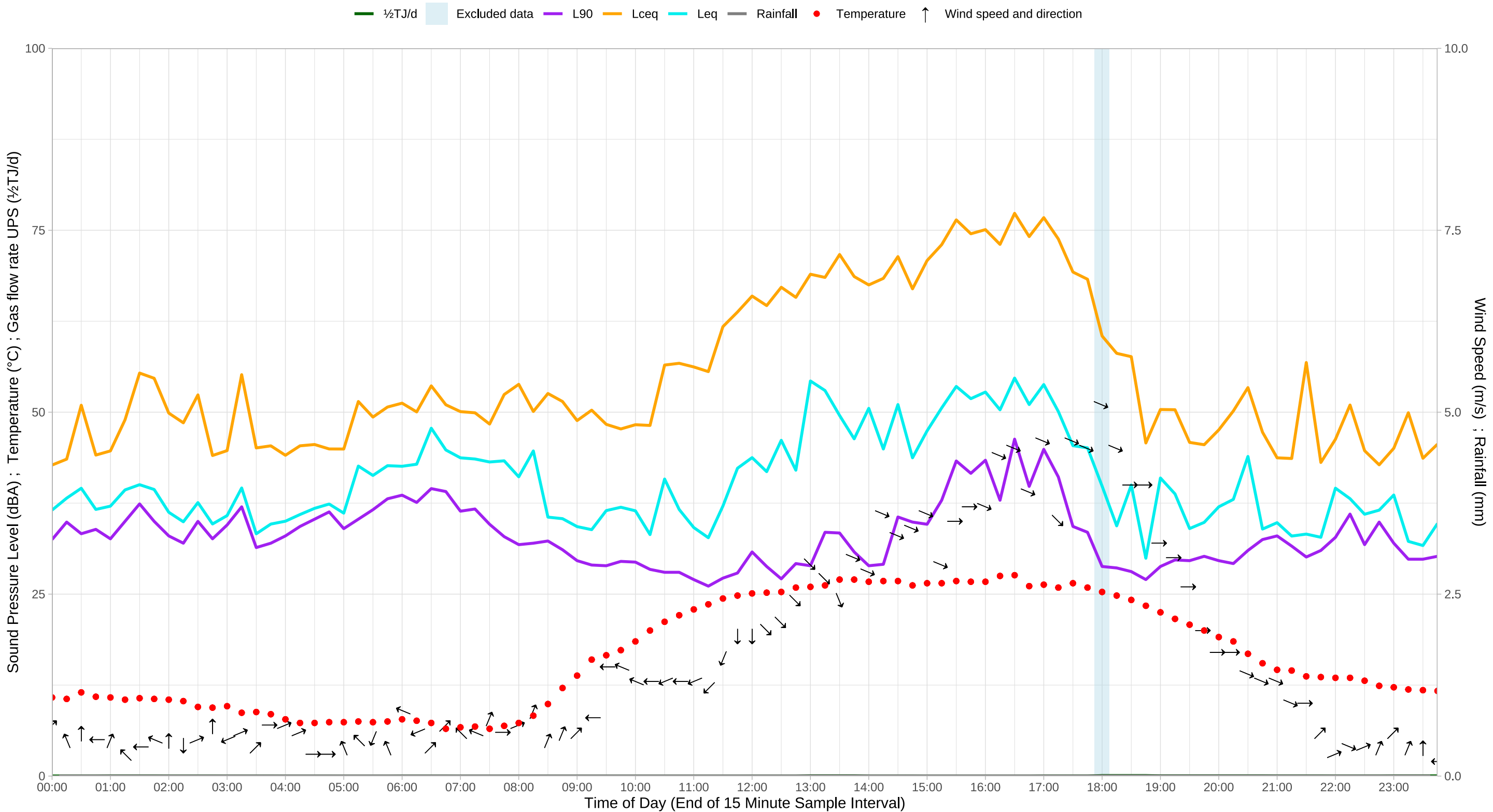
Statistical Ambient Noise Levels
Location ML1
Tuesday 01 April 2025



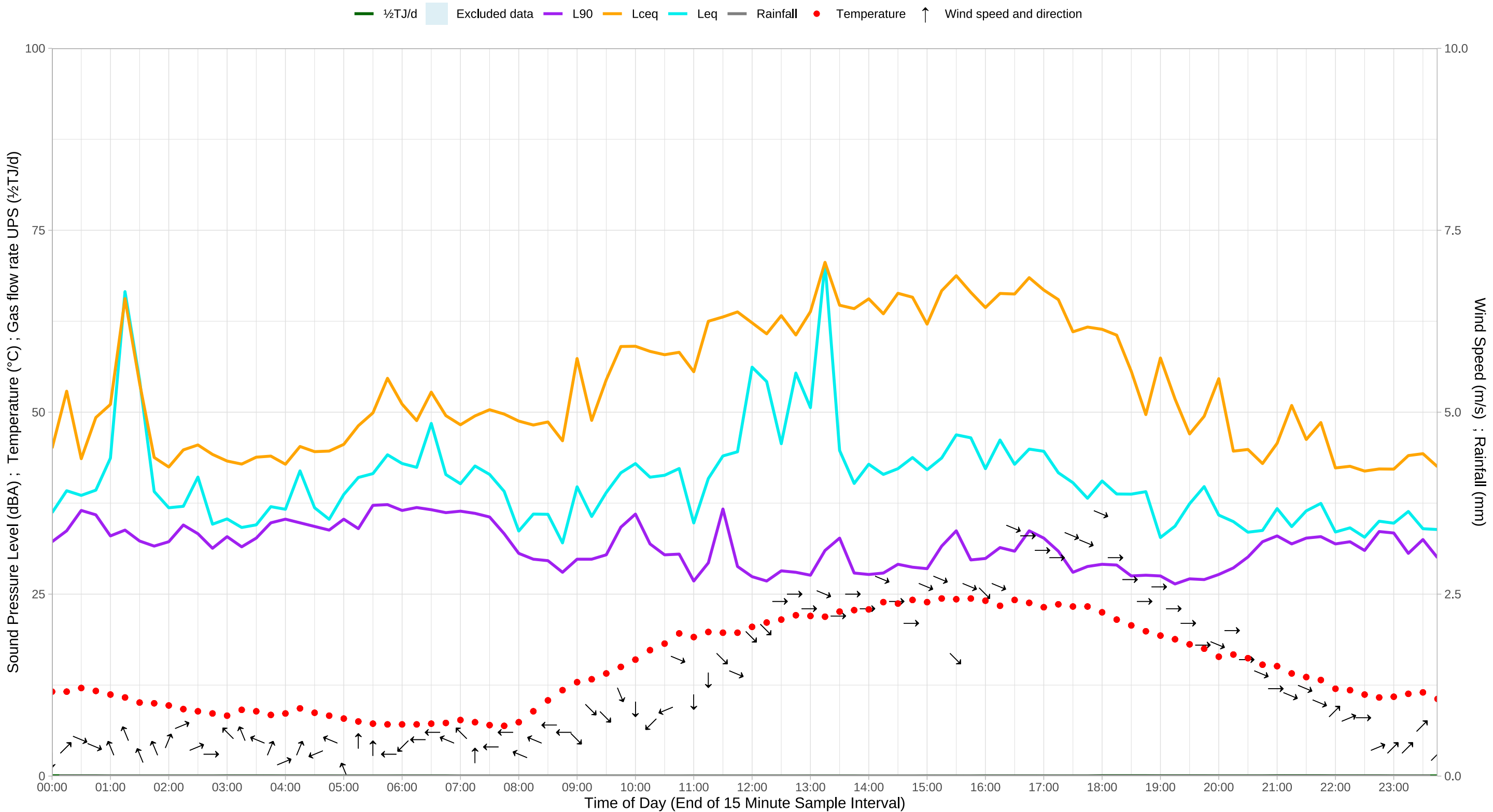
Statistical Ambient Noise Levels
Location ML1
Wednesday 02 April 2025



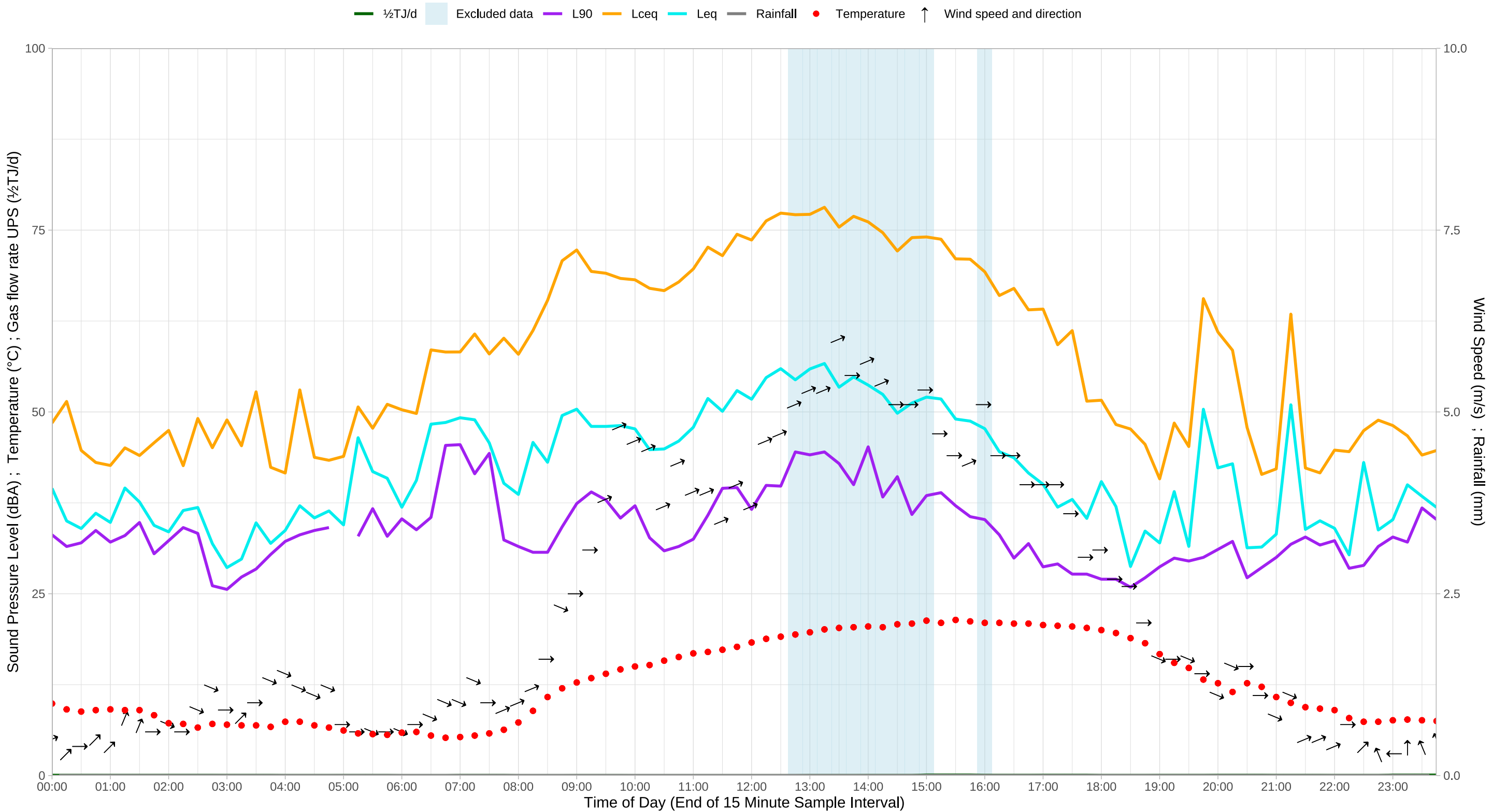
Statistical Ambient Noise Levels
Location ML1
Thursday 03 April 2025



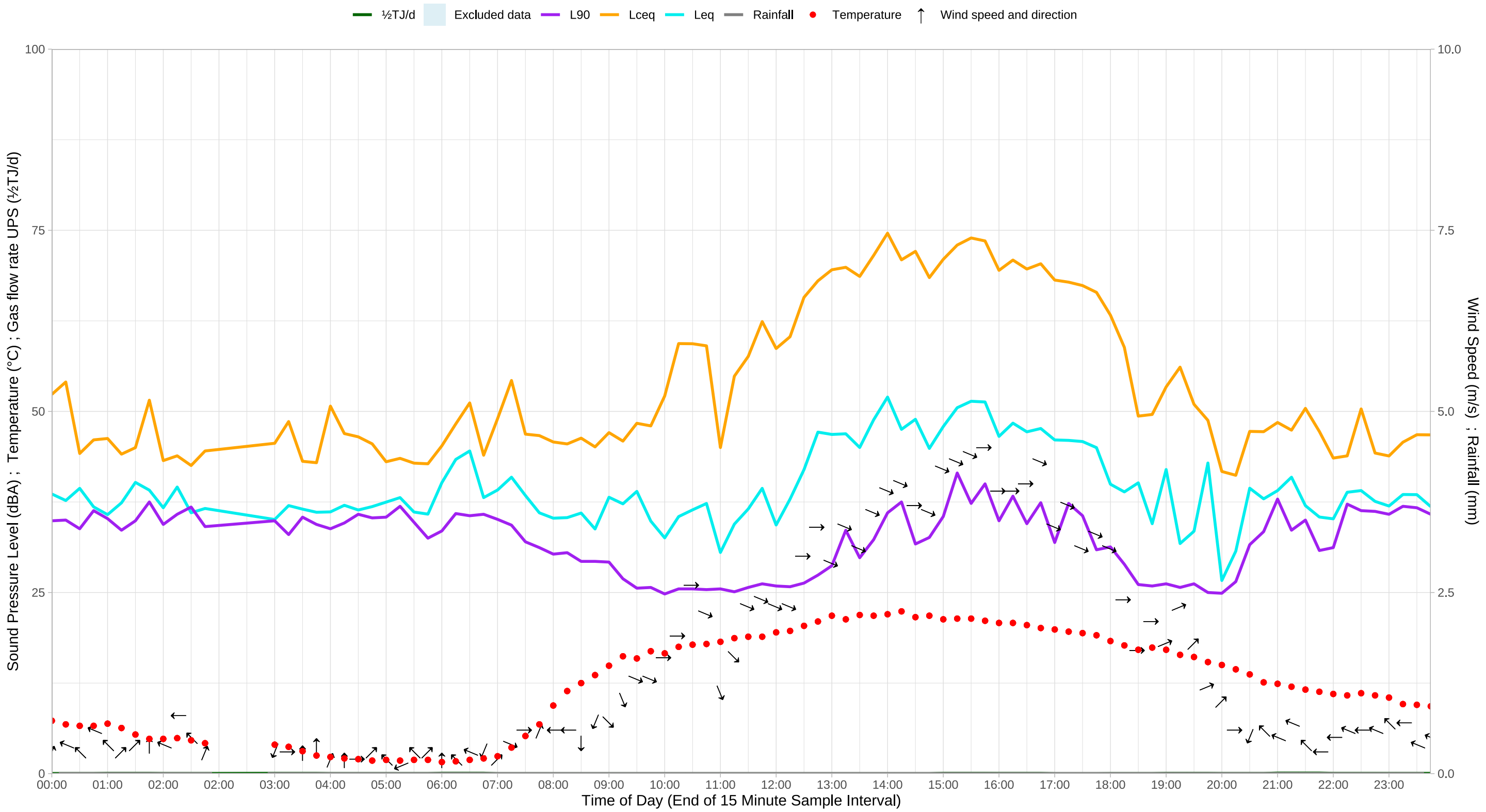
Statistical Ambient Noise Levels
Location ML1
Friday 04 April 2025



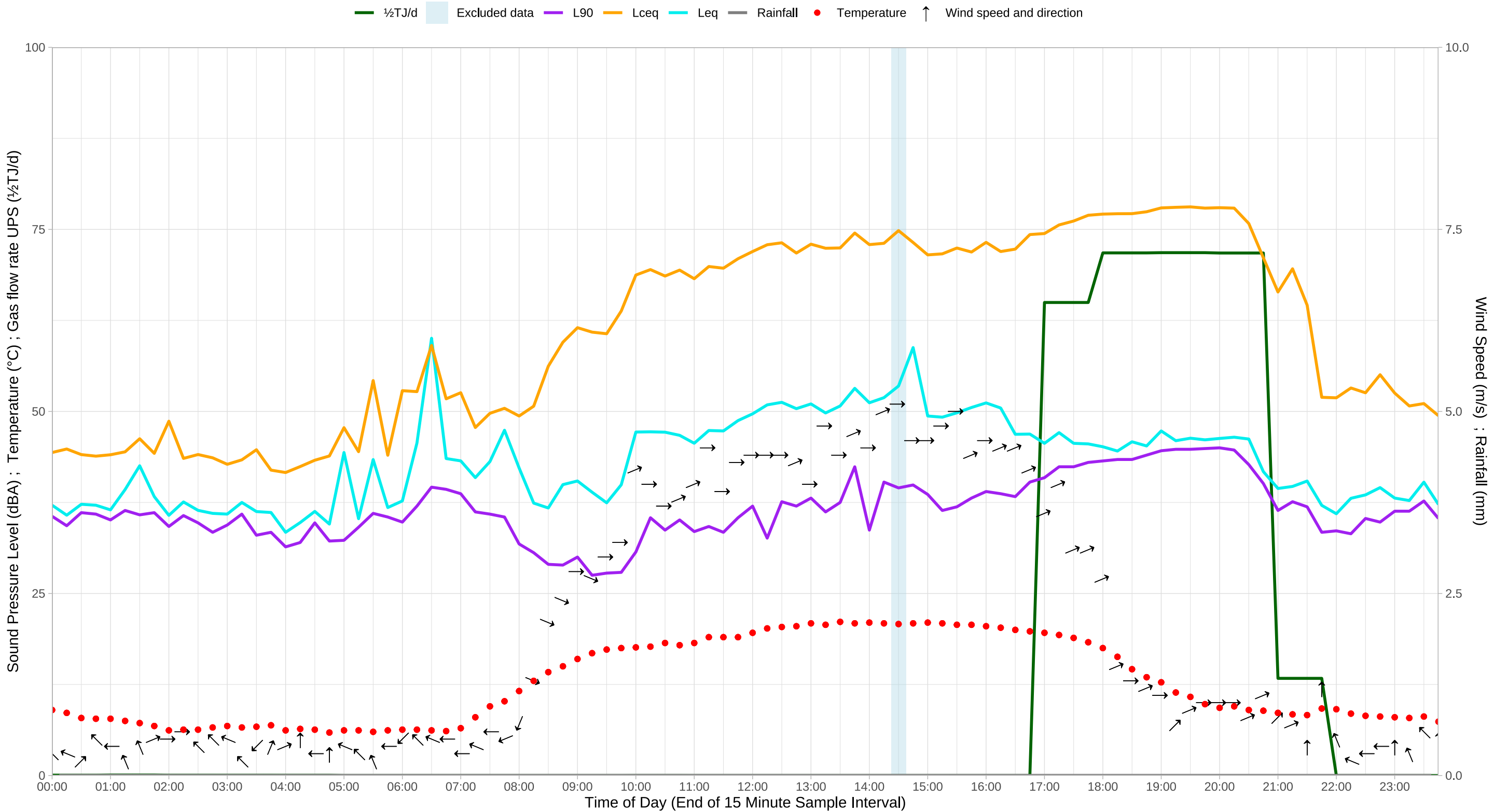
Statistical Ambient Noise Levels
Location ML1
Saturday 05 April 2025



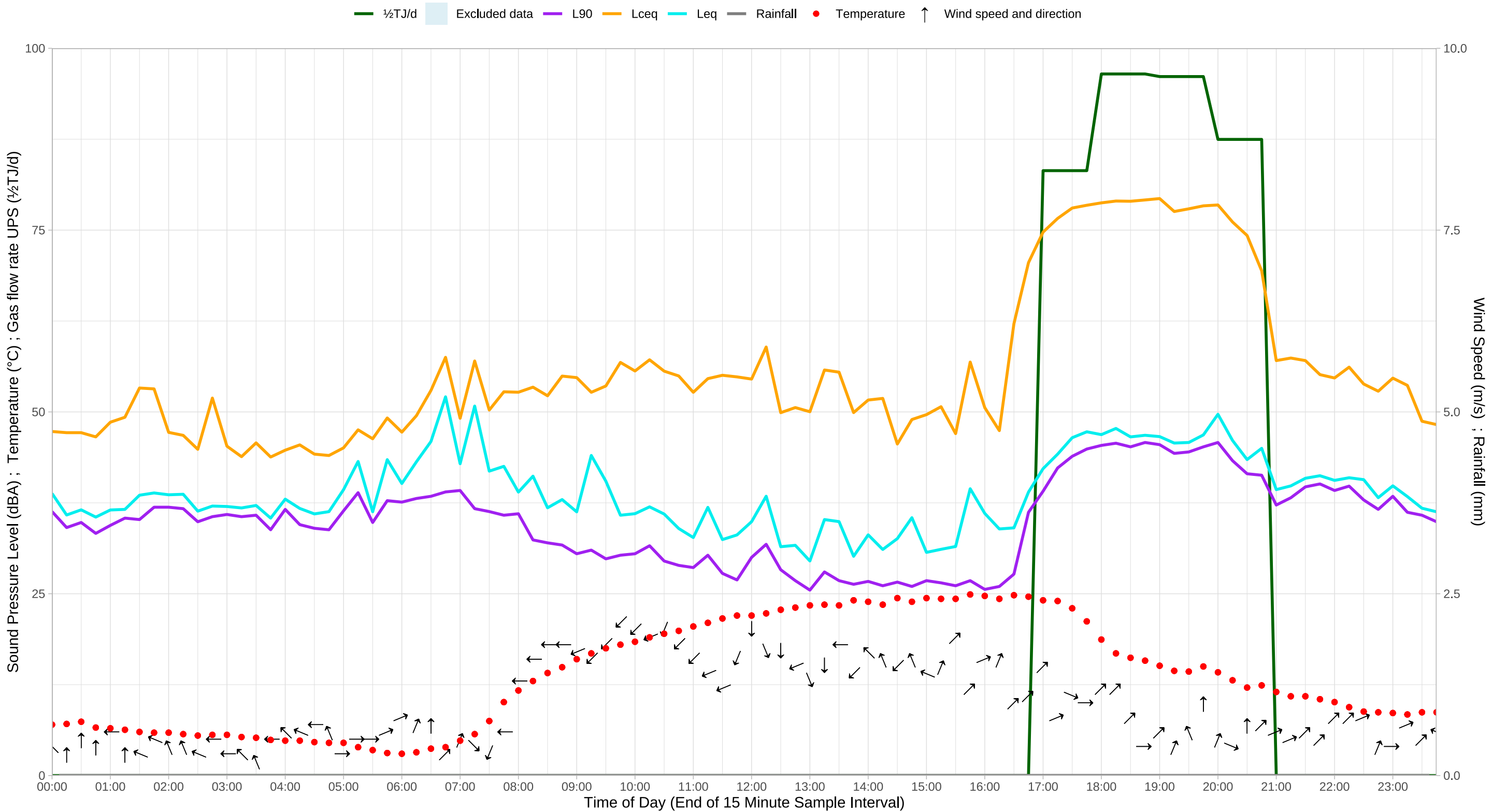
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Location ML1
Sunday 06 April 2025



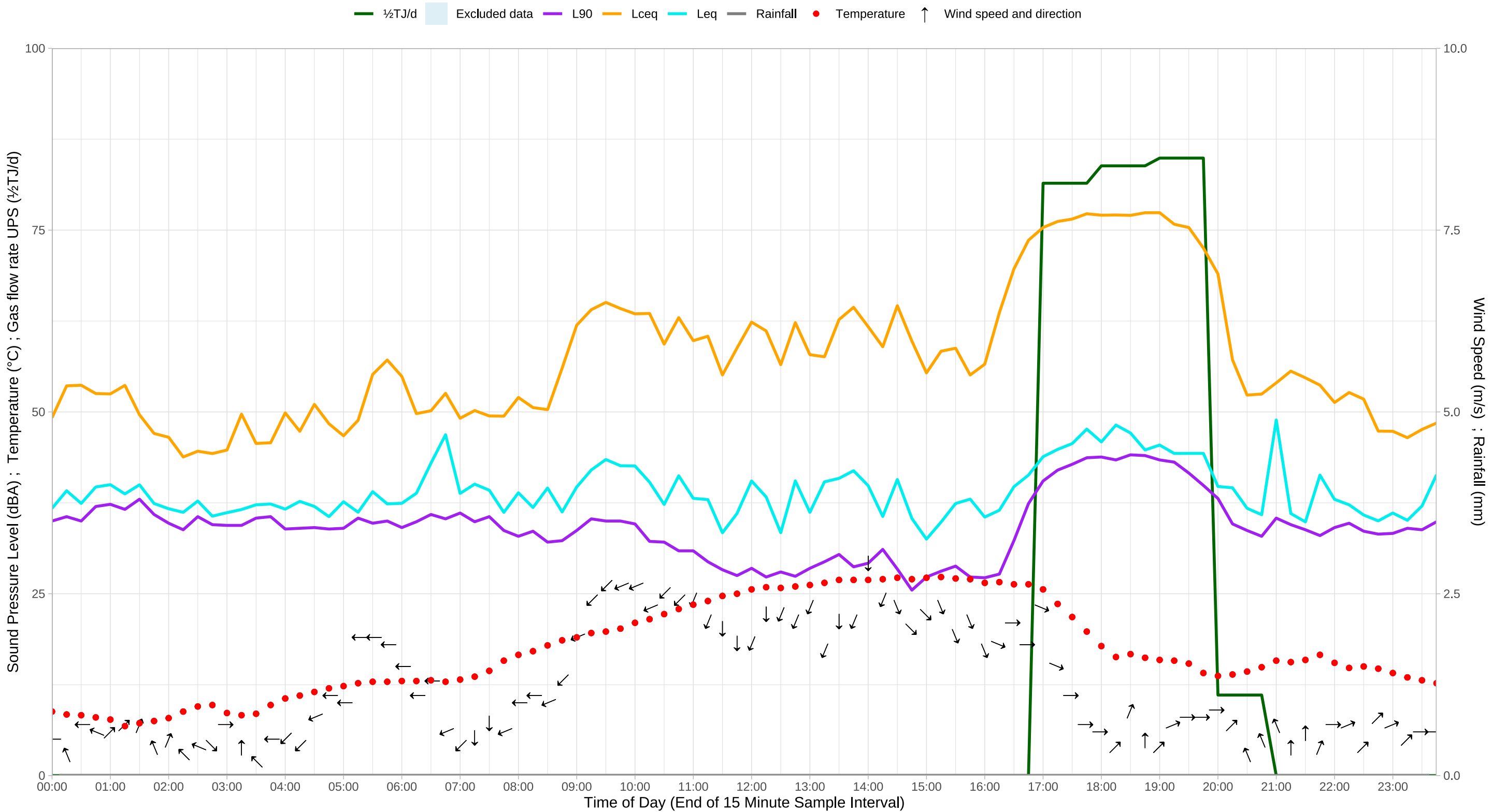
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Location ML1
Monday 07 April 2025



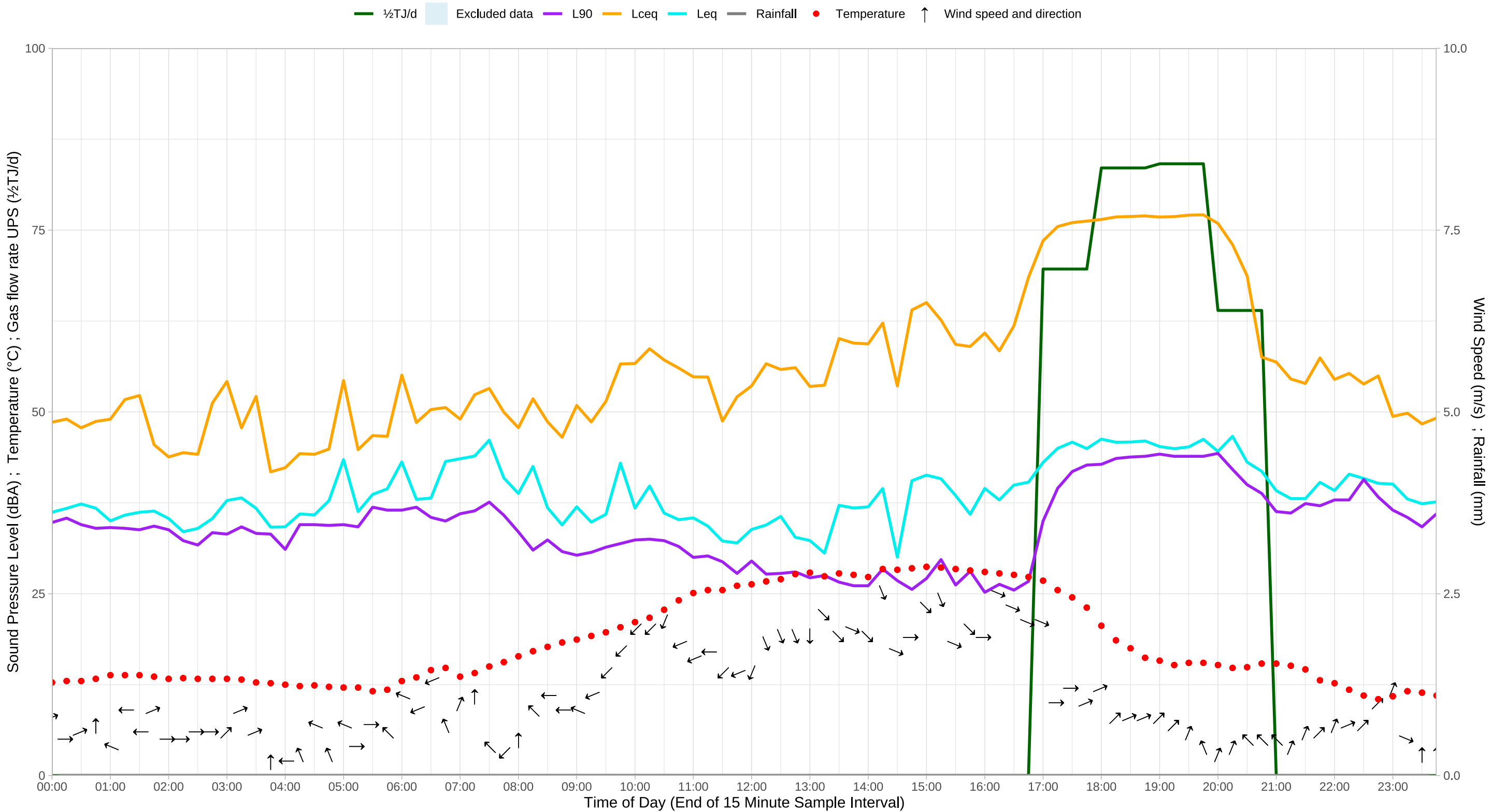
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Location ML1
Tuesday 08 April 2025



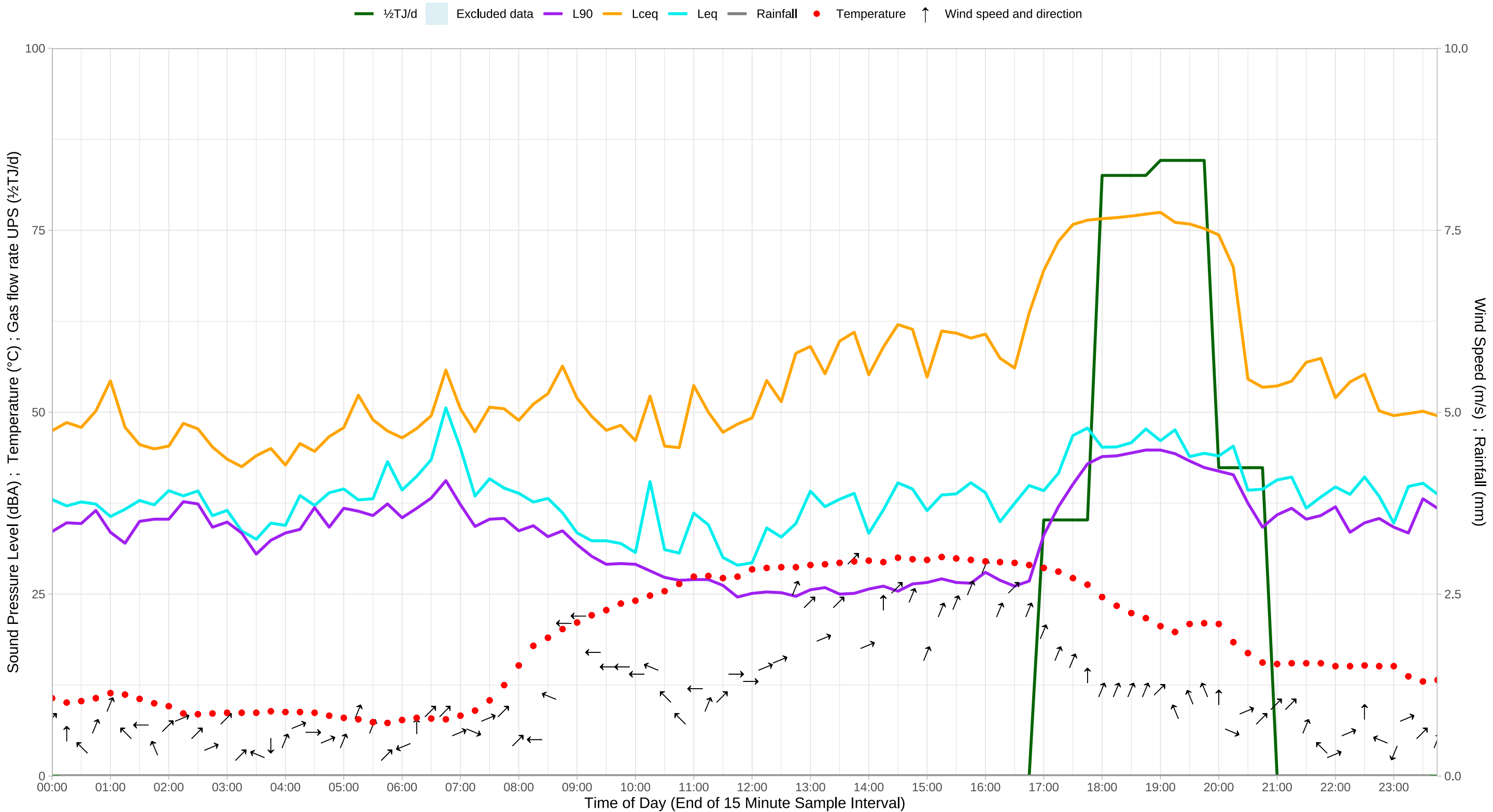
Statistical Ambient Noise Levels
Location ML1
Wednesday 09 April 2025



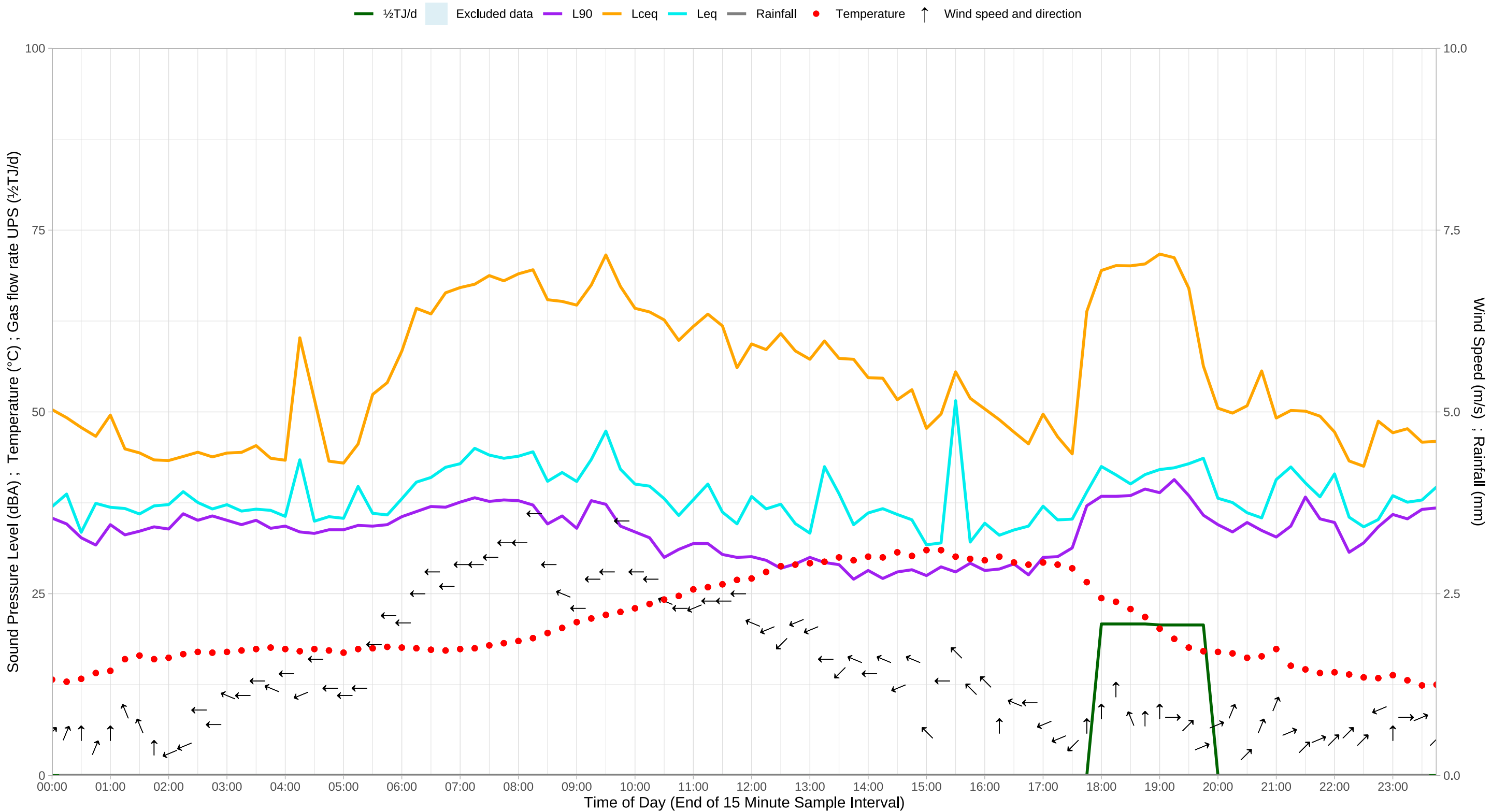
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Thursday 10 April 2025



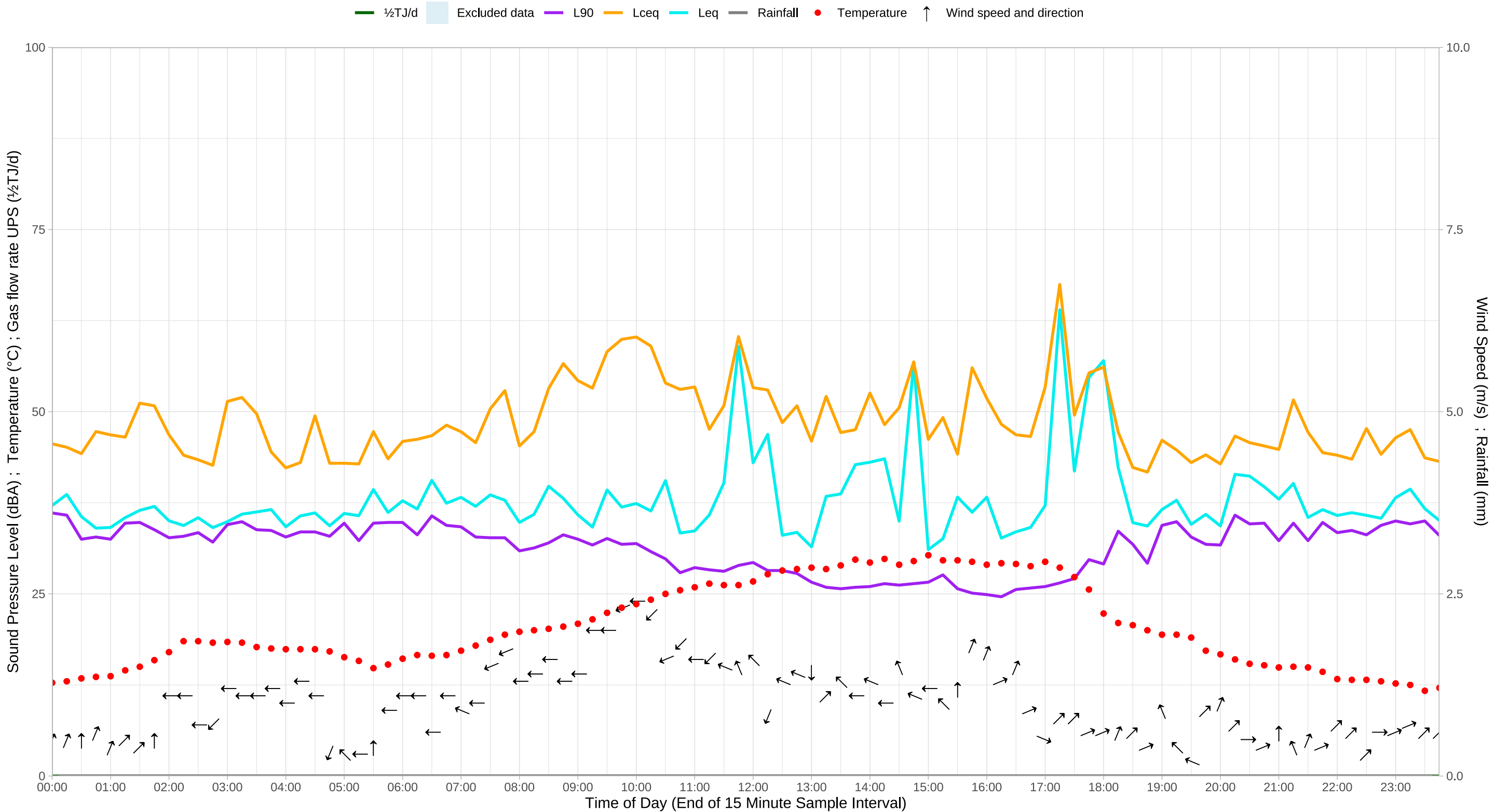
Statistical Ambient Noise Levels
Location ML1
Friday 11 April 2025



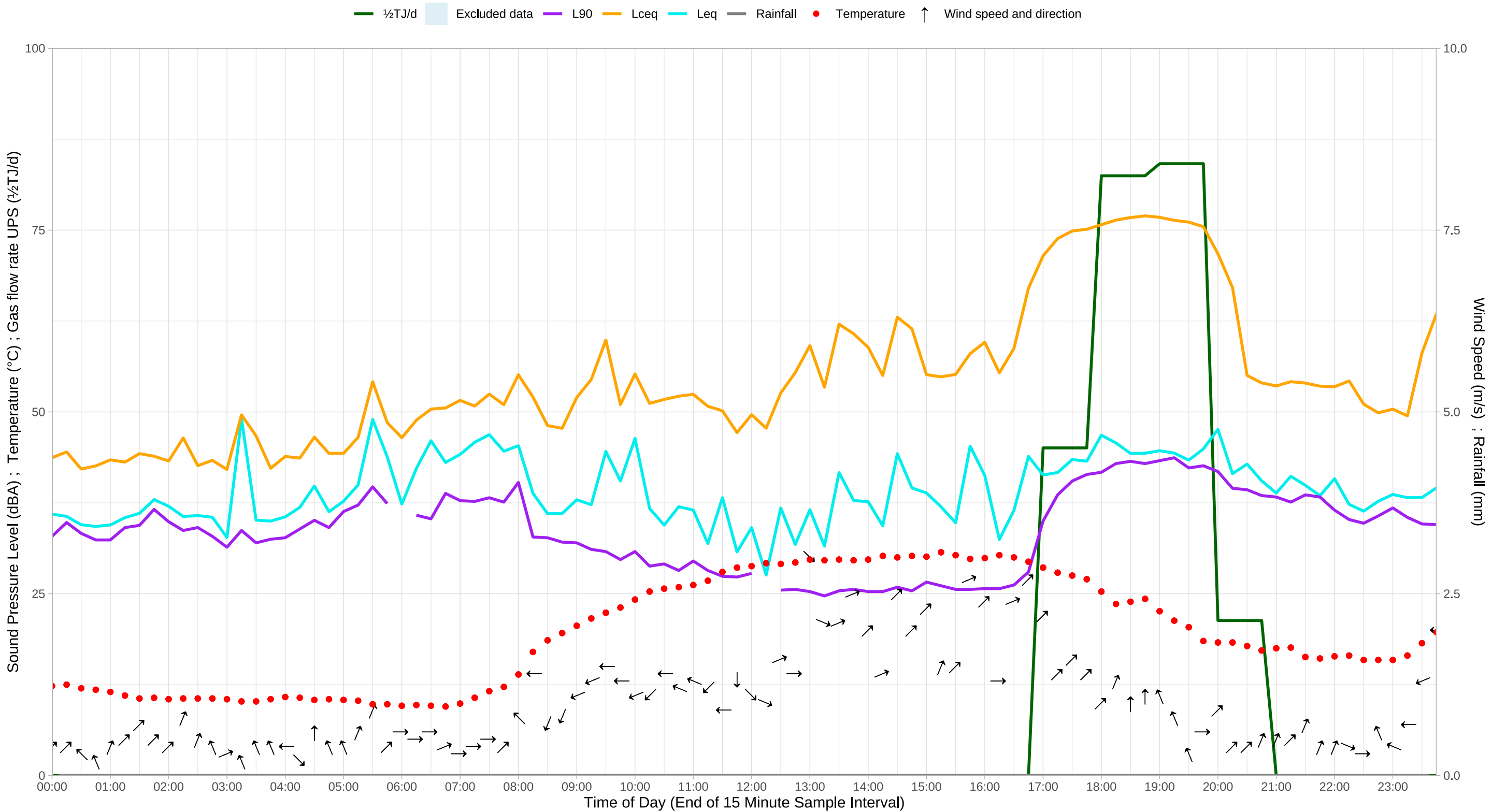
Statistical Ambient Noise Levels
Location ML1
Saturday 12 April 2025



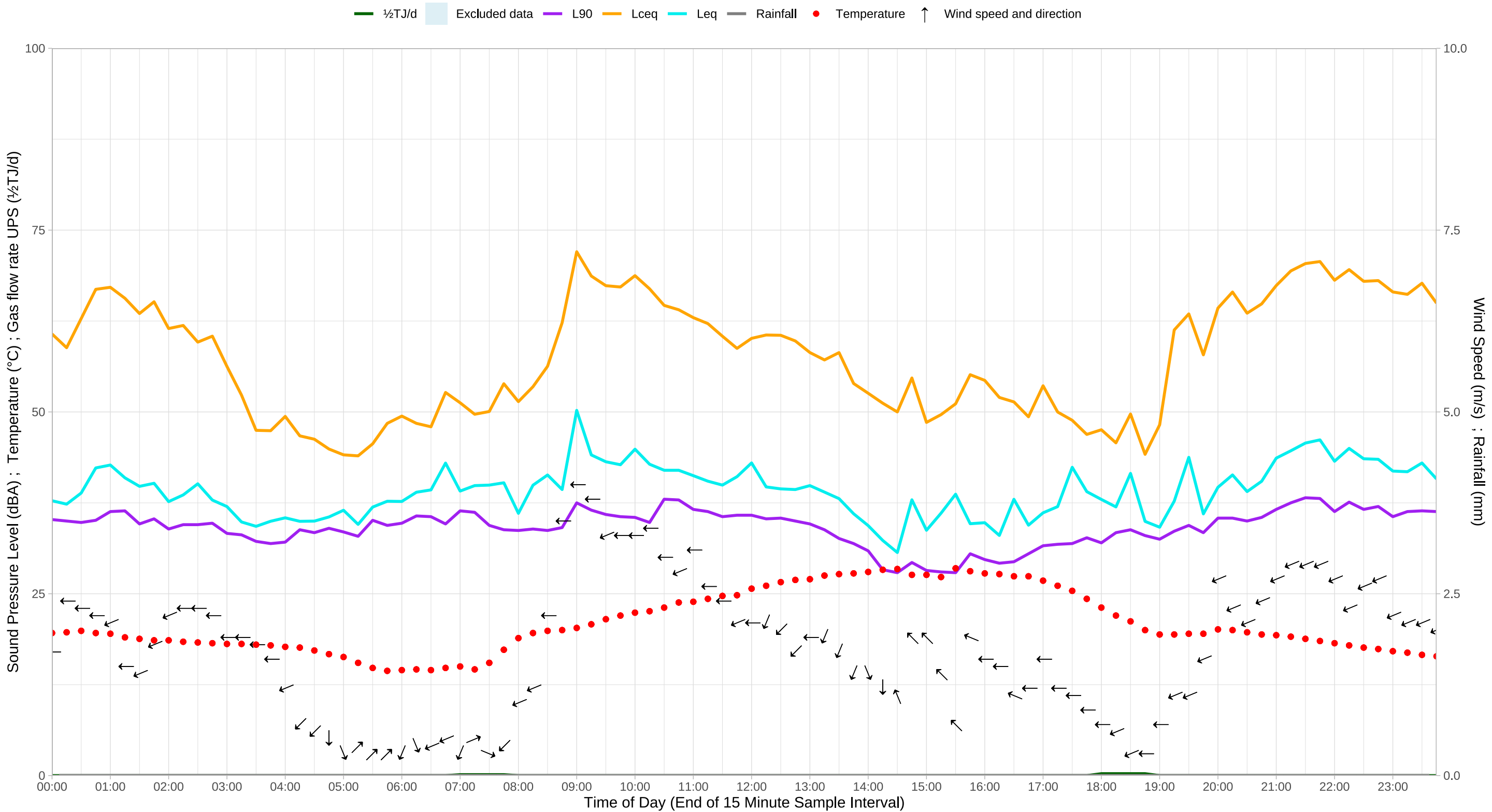
Statistical Ambient Noise Levels
Location ML1
Sunday 13 April 2025



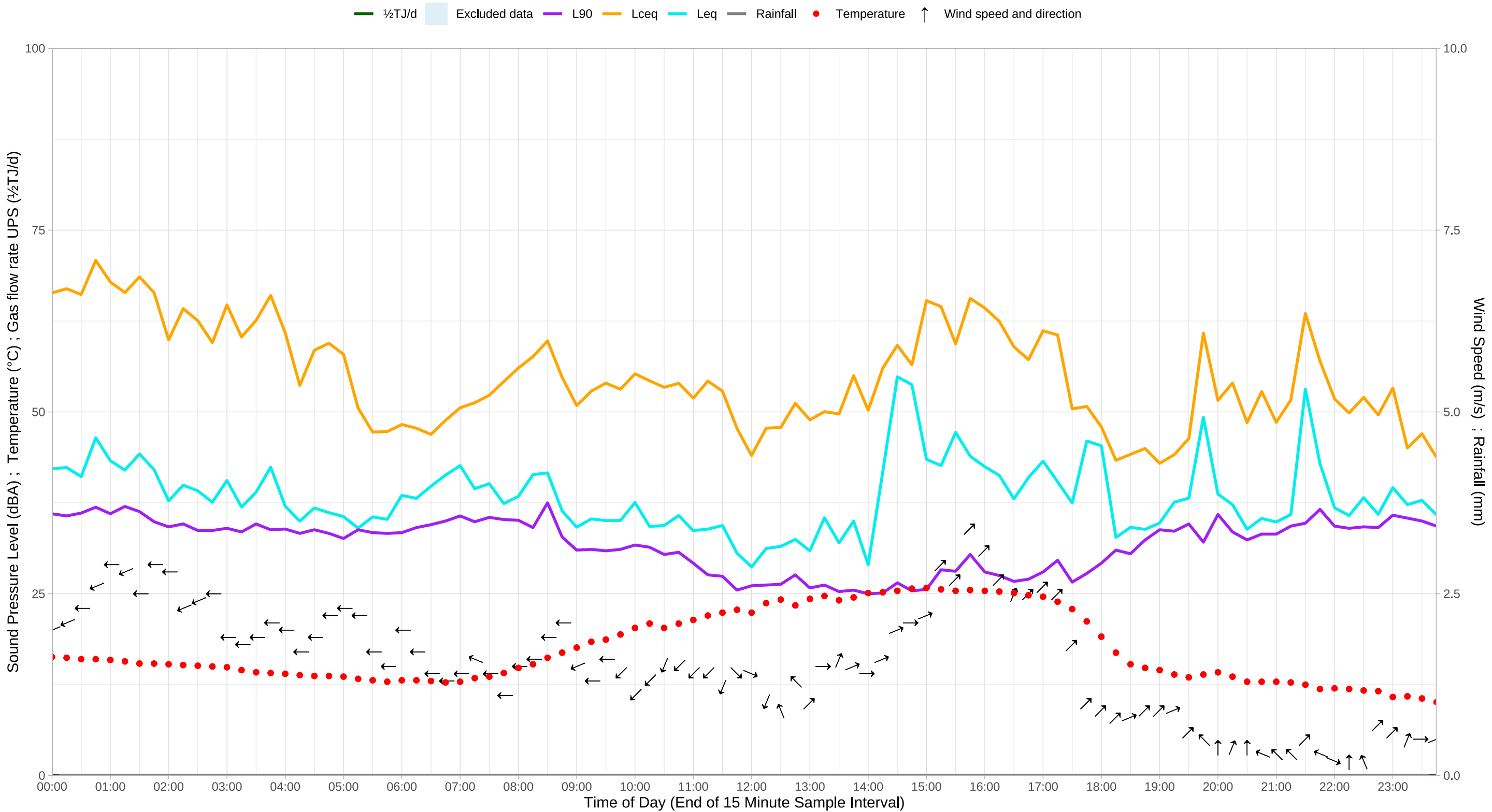
Statistical Ambient Noise Levels
Location ML1
Monday 14 April 2025



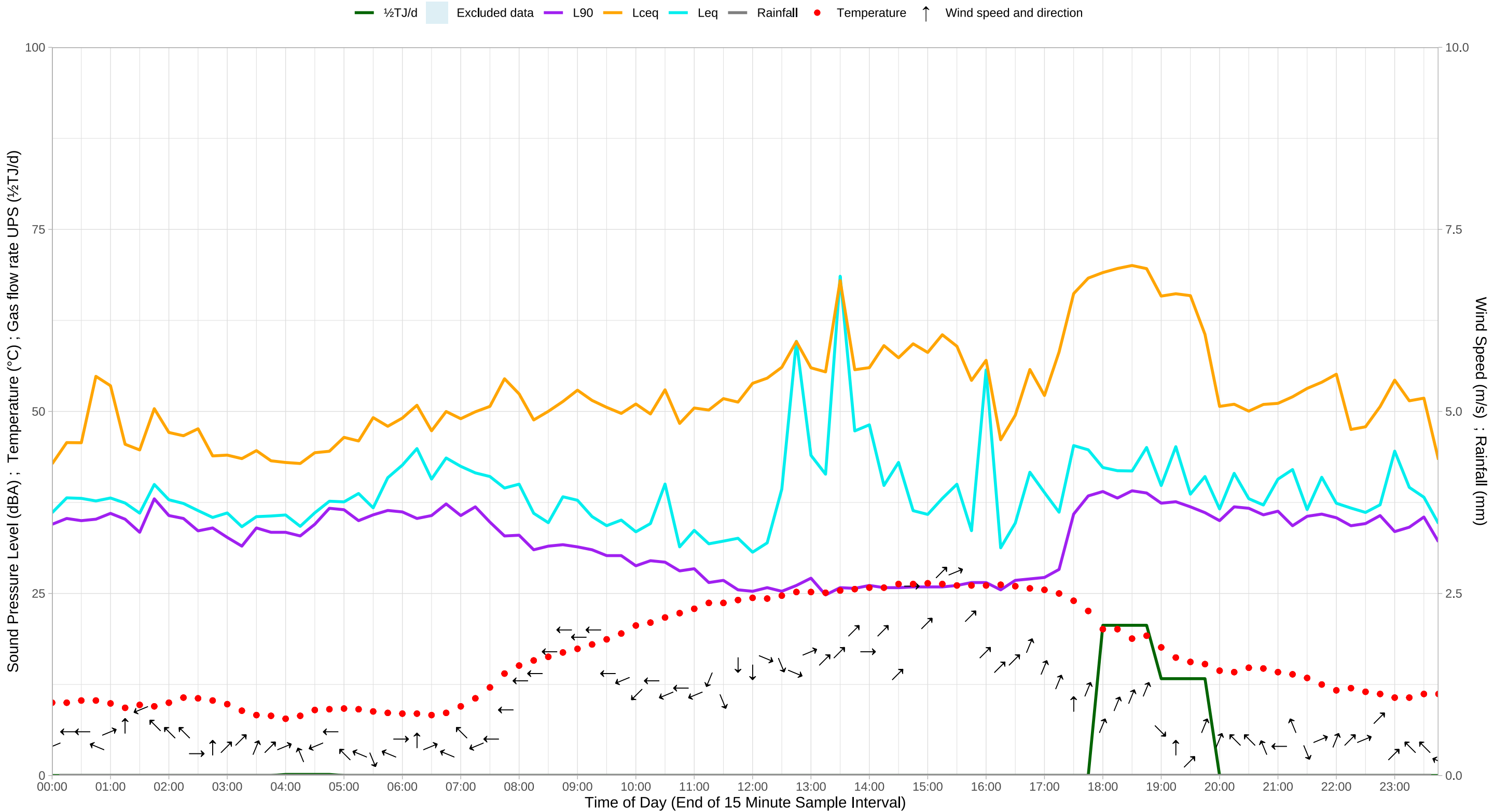
Statistical Ambient Noise Levels
Location ML1
Tuesday 15 April 2025



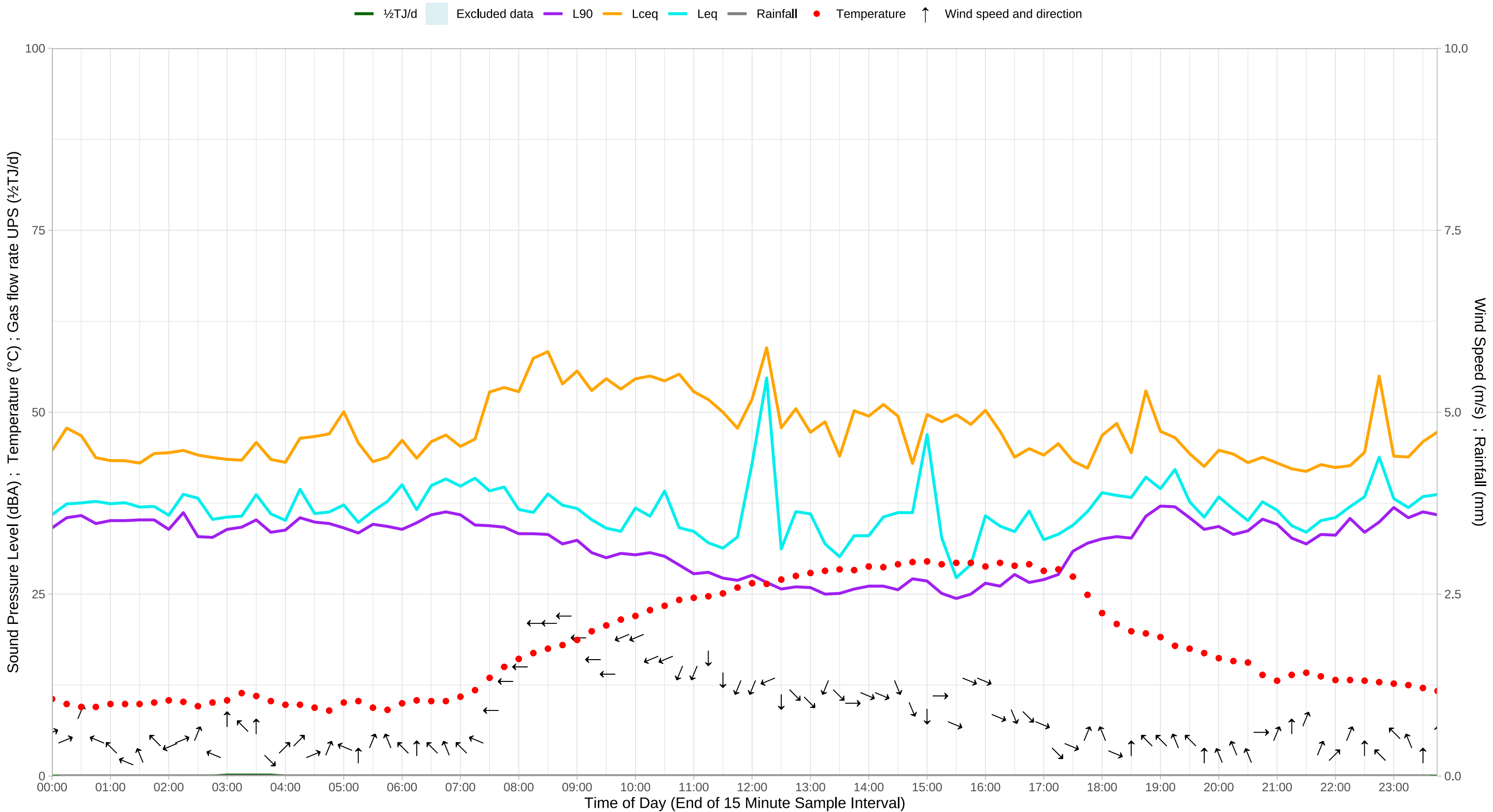
Statistical Ambient Noise Levels
Location ML1
Wednesday 16 April 2025



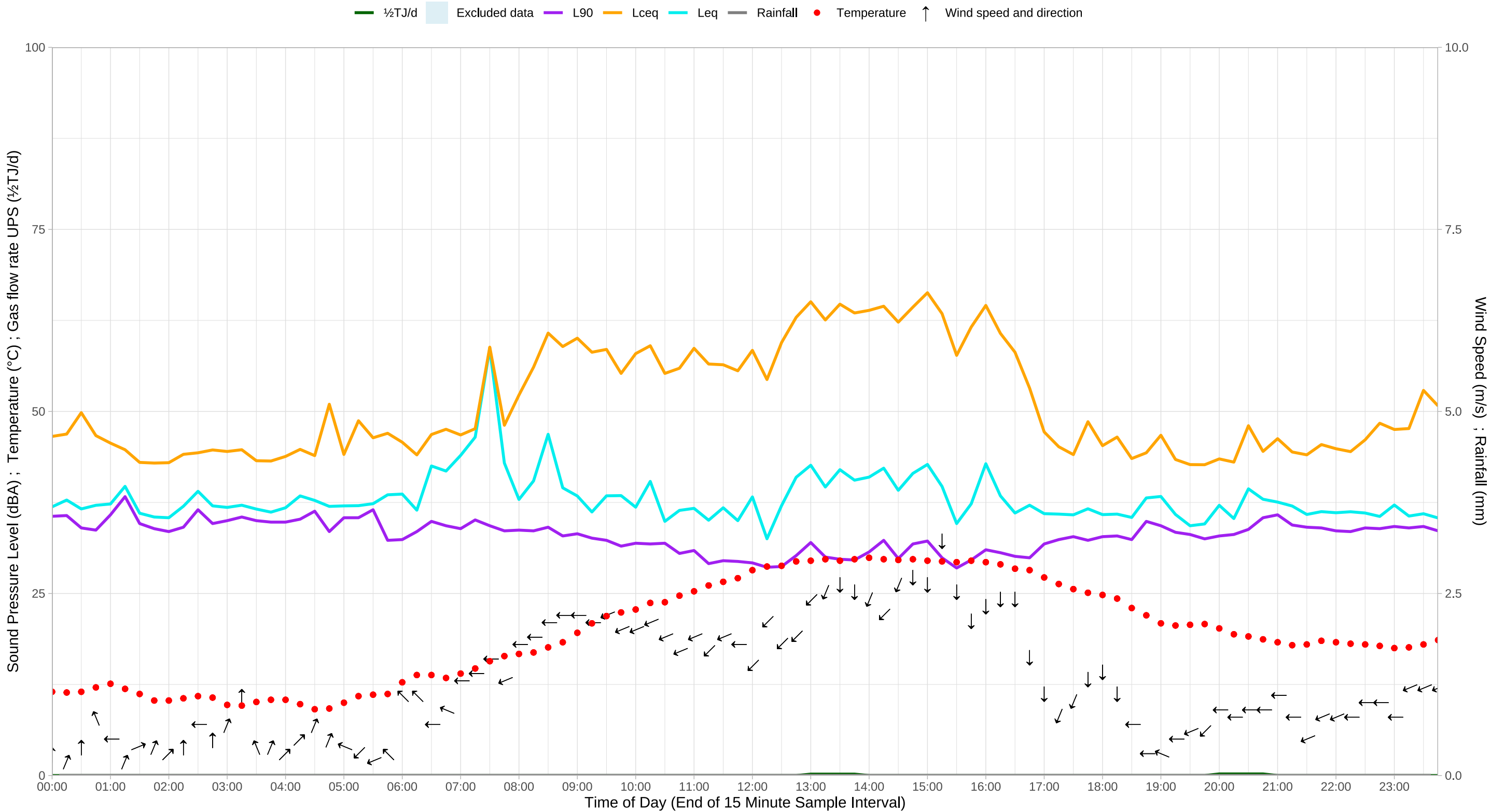
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Location ML1
Thursday 17 April 2025



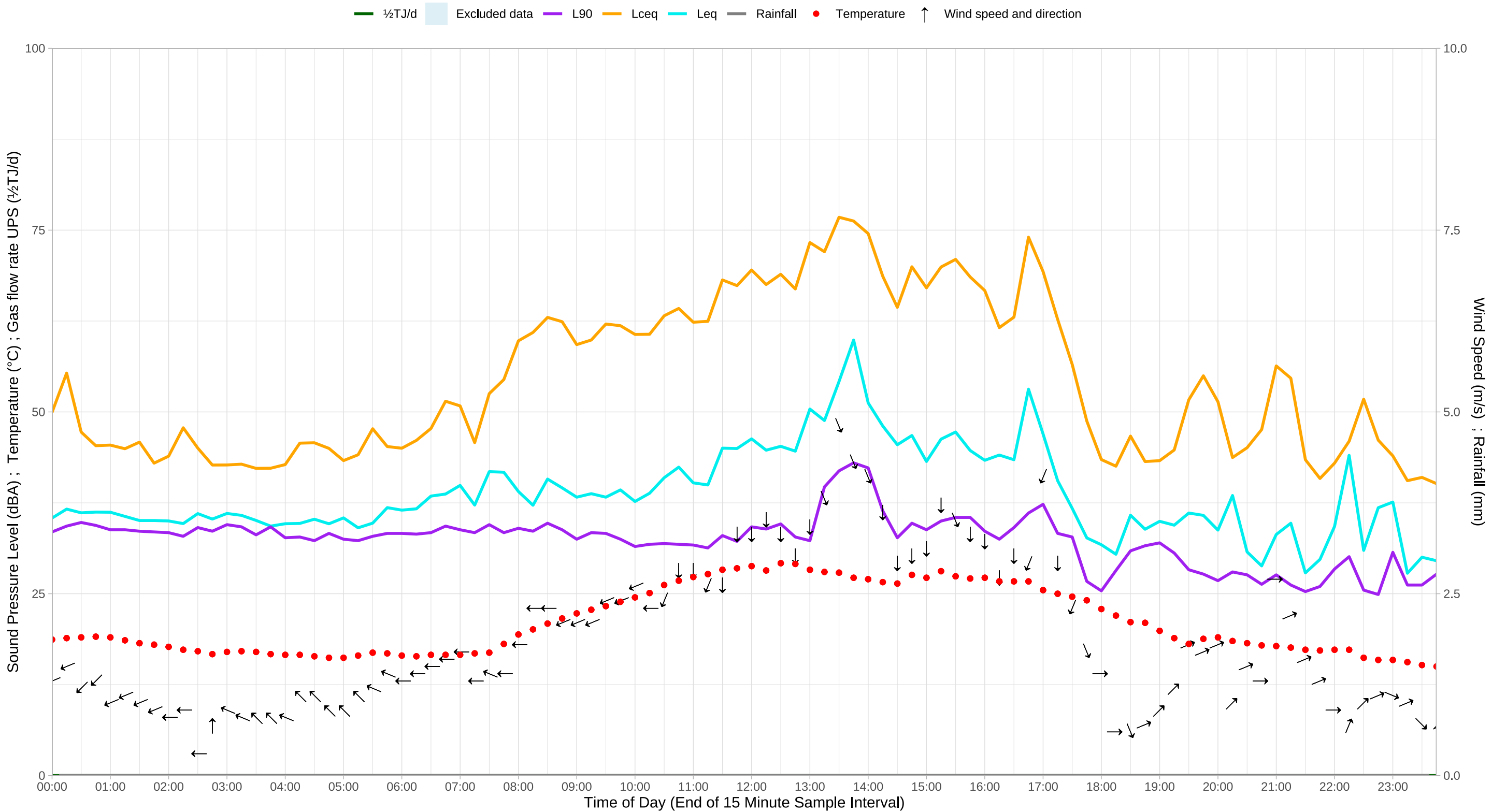
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Location ML1
Friday 18 April 2025



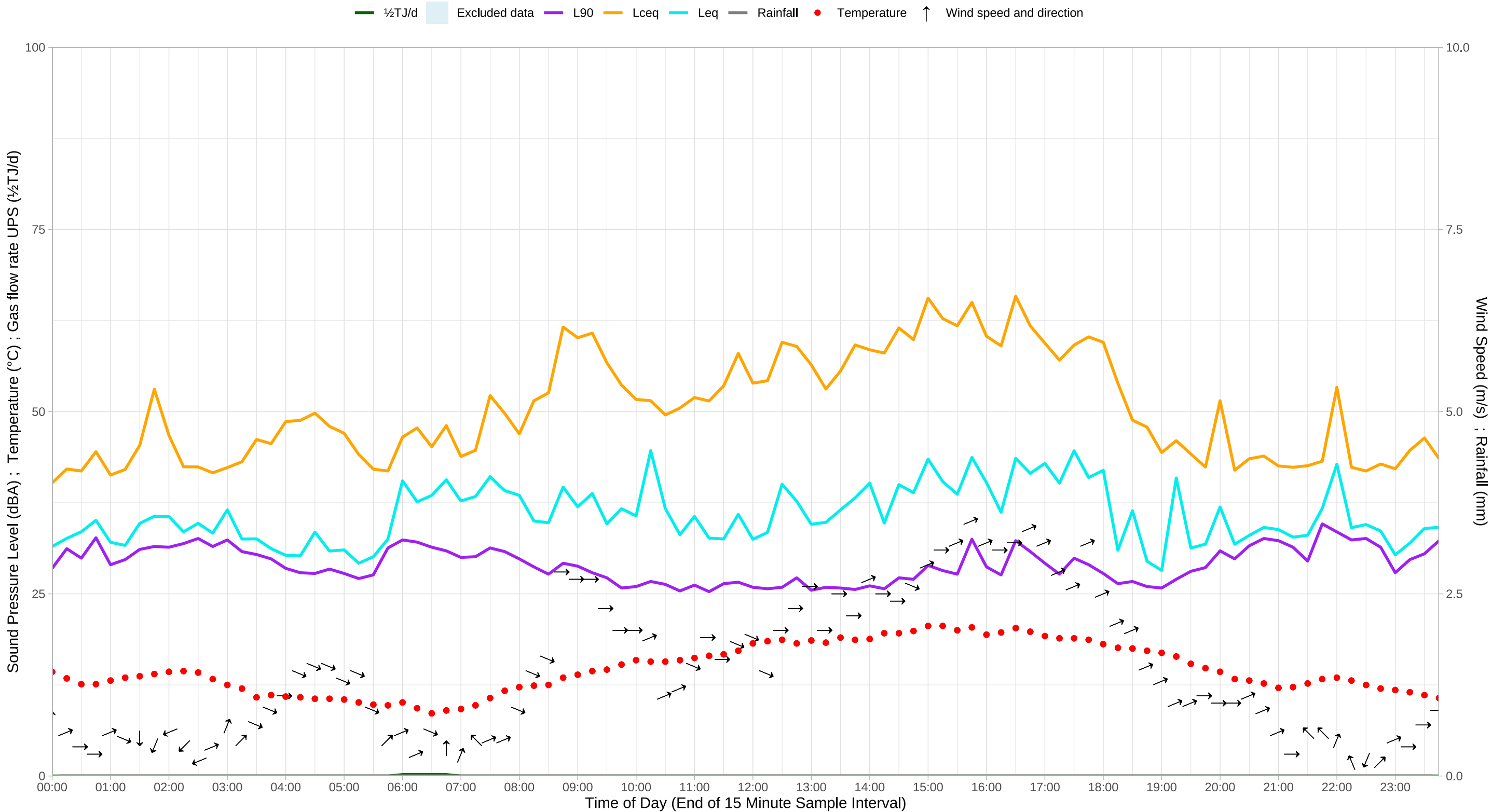
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Saturday 19 April 2025



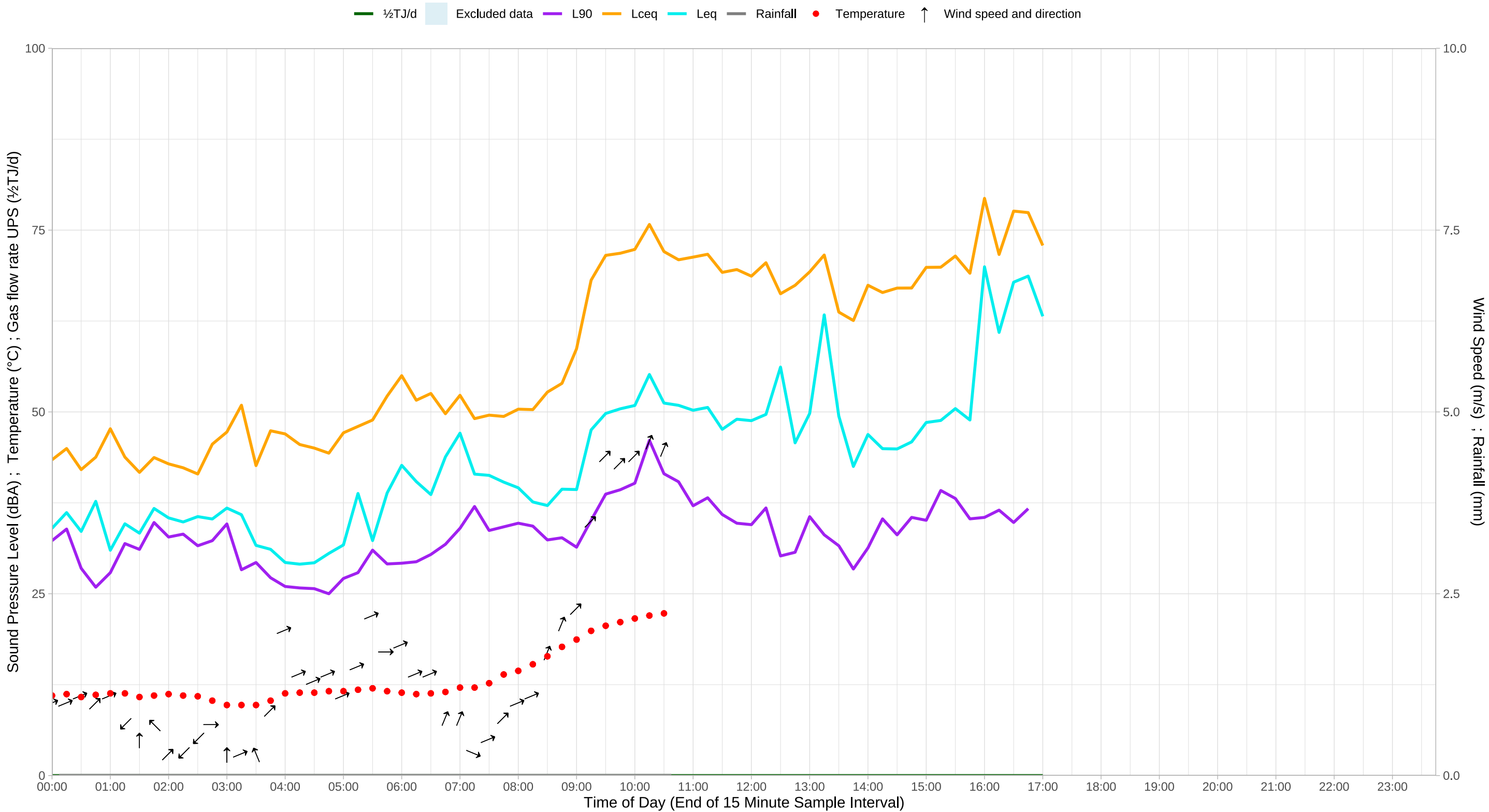
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Location ML1
Sunday 20 April 2025



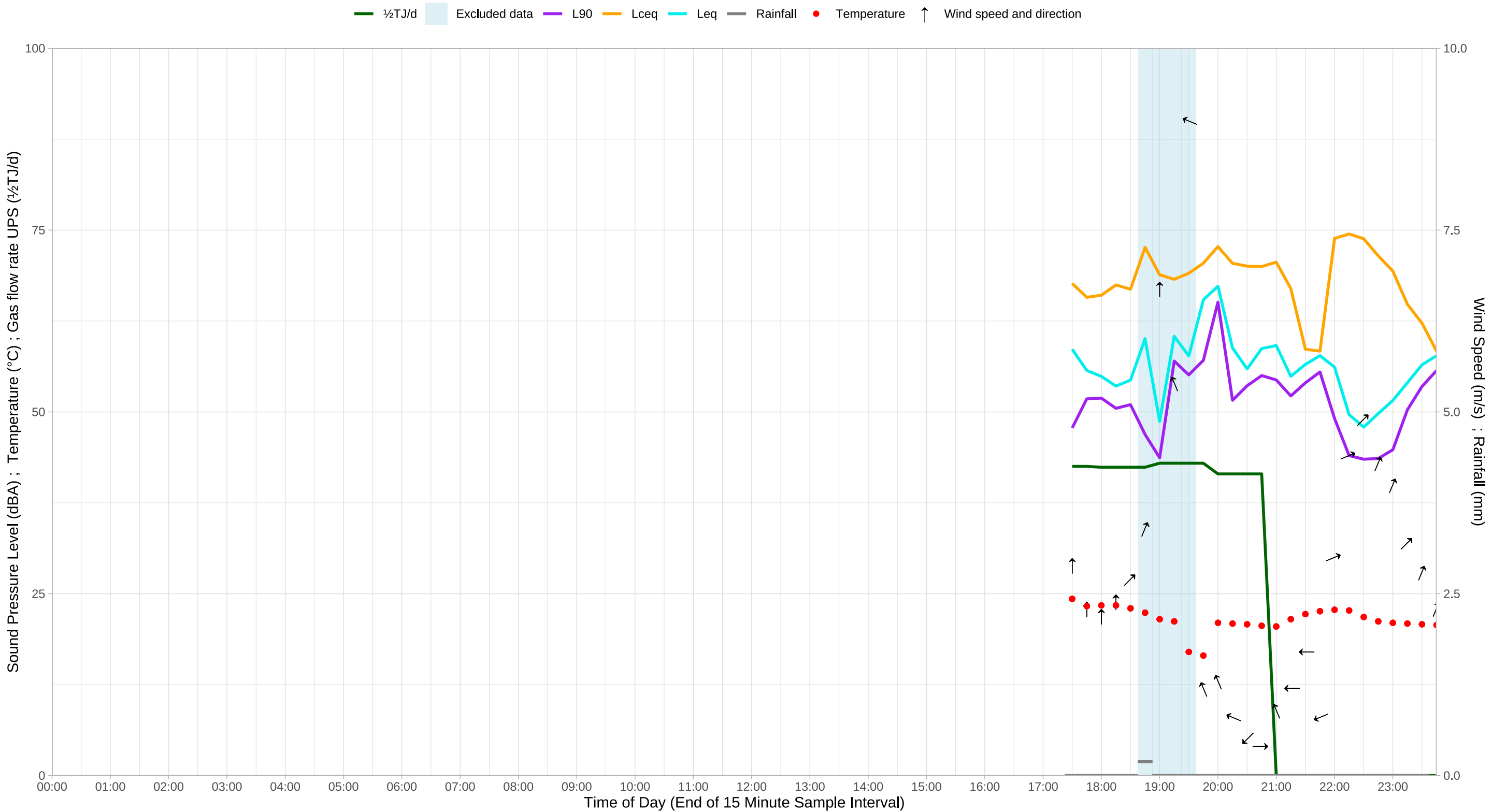
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Location ML1
Monday 21 April 2025



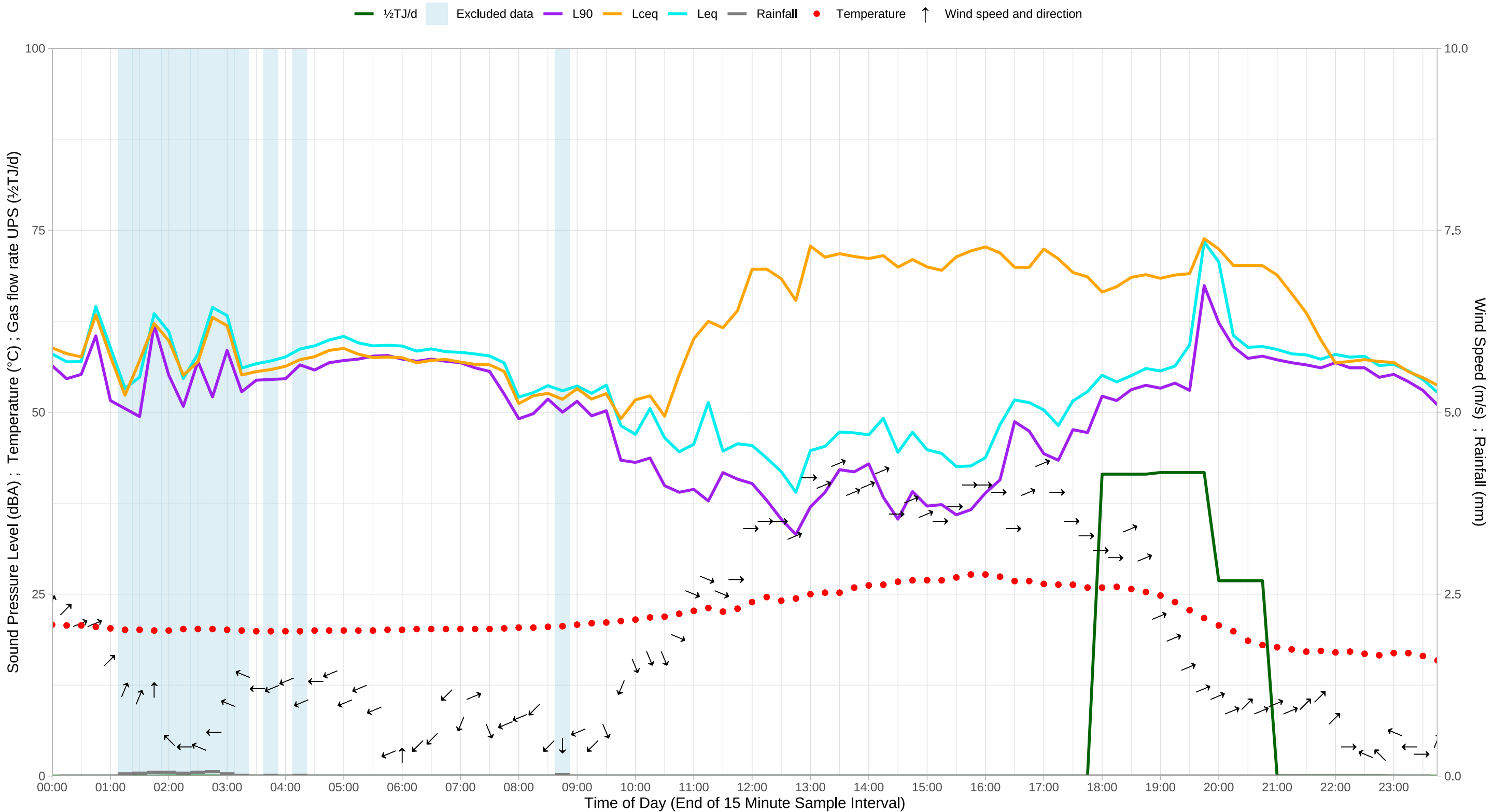
Statistical Ambient Noise Levels
Location ML1
Tuesday 22 April 2025



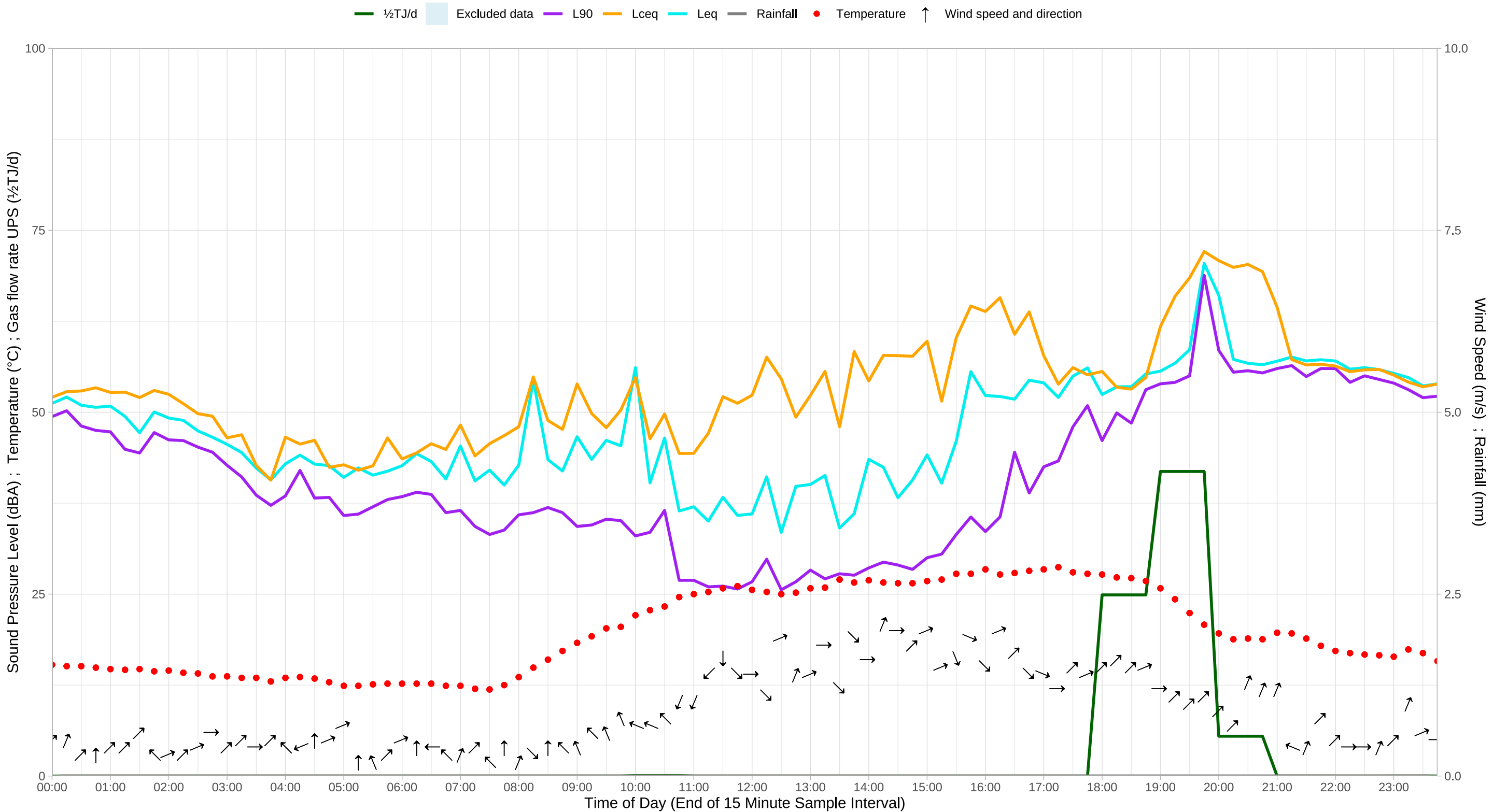
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Thursday 20 March 2025



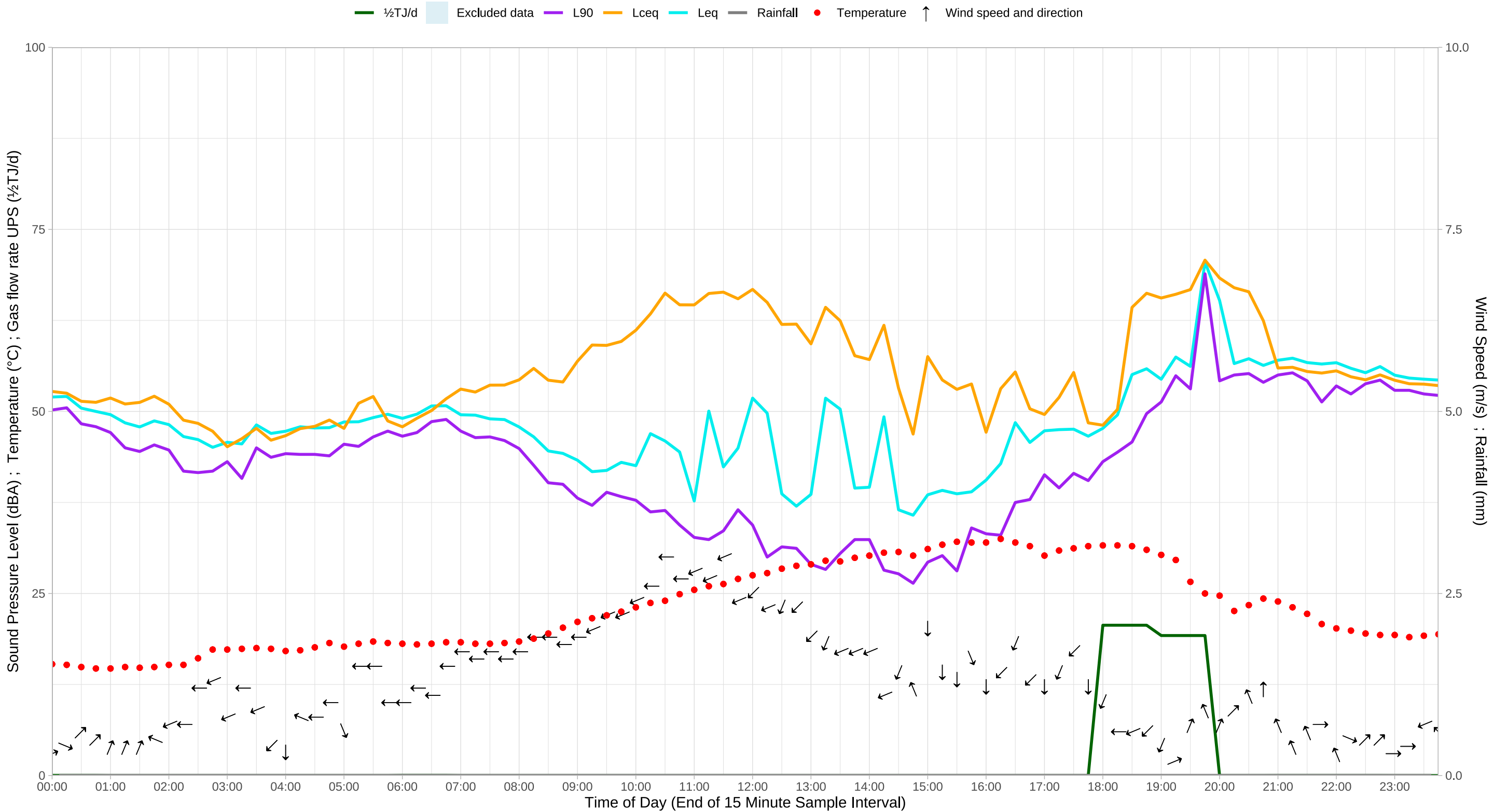
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Friday 21 March 2025



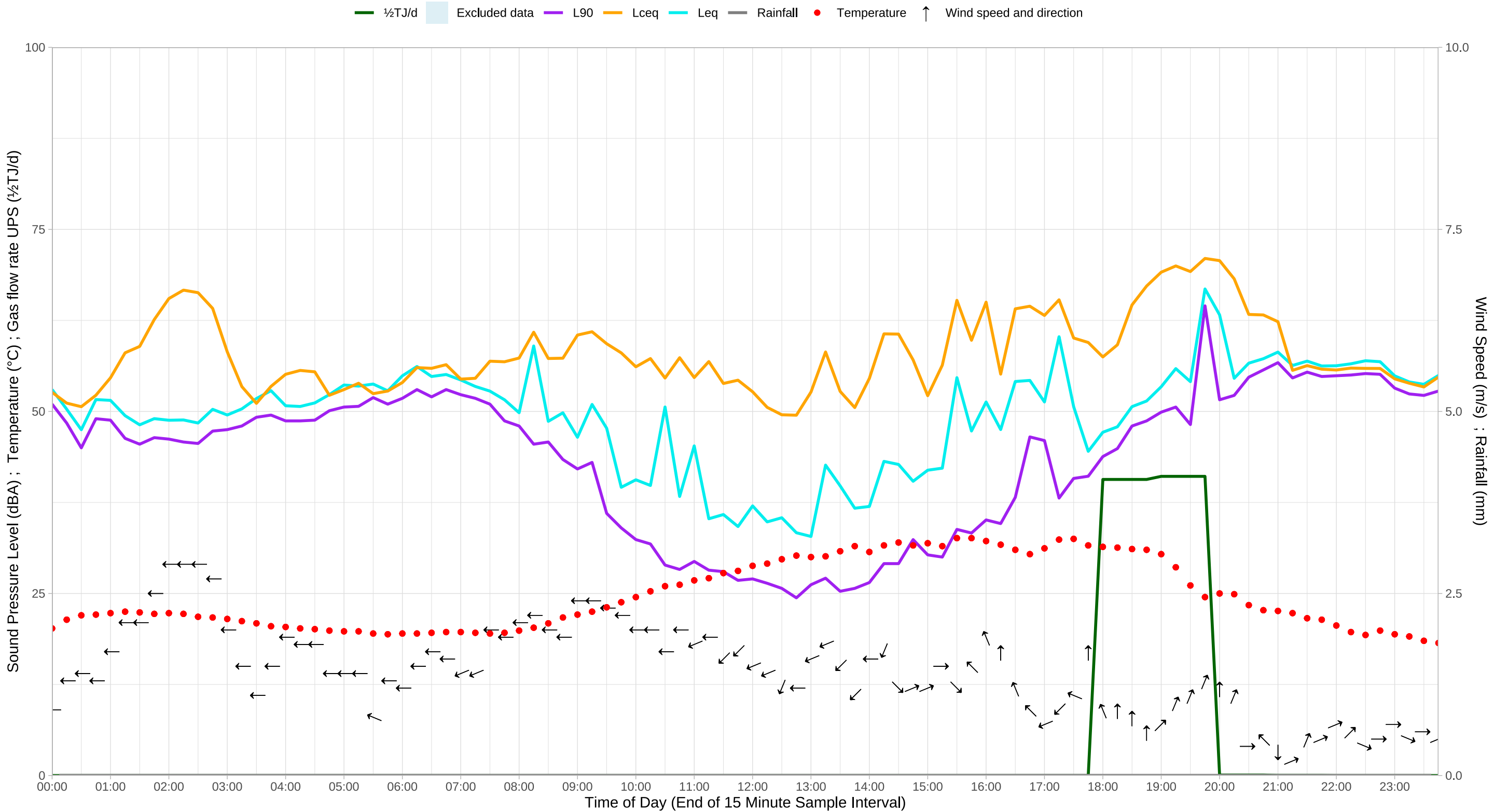
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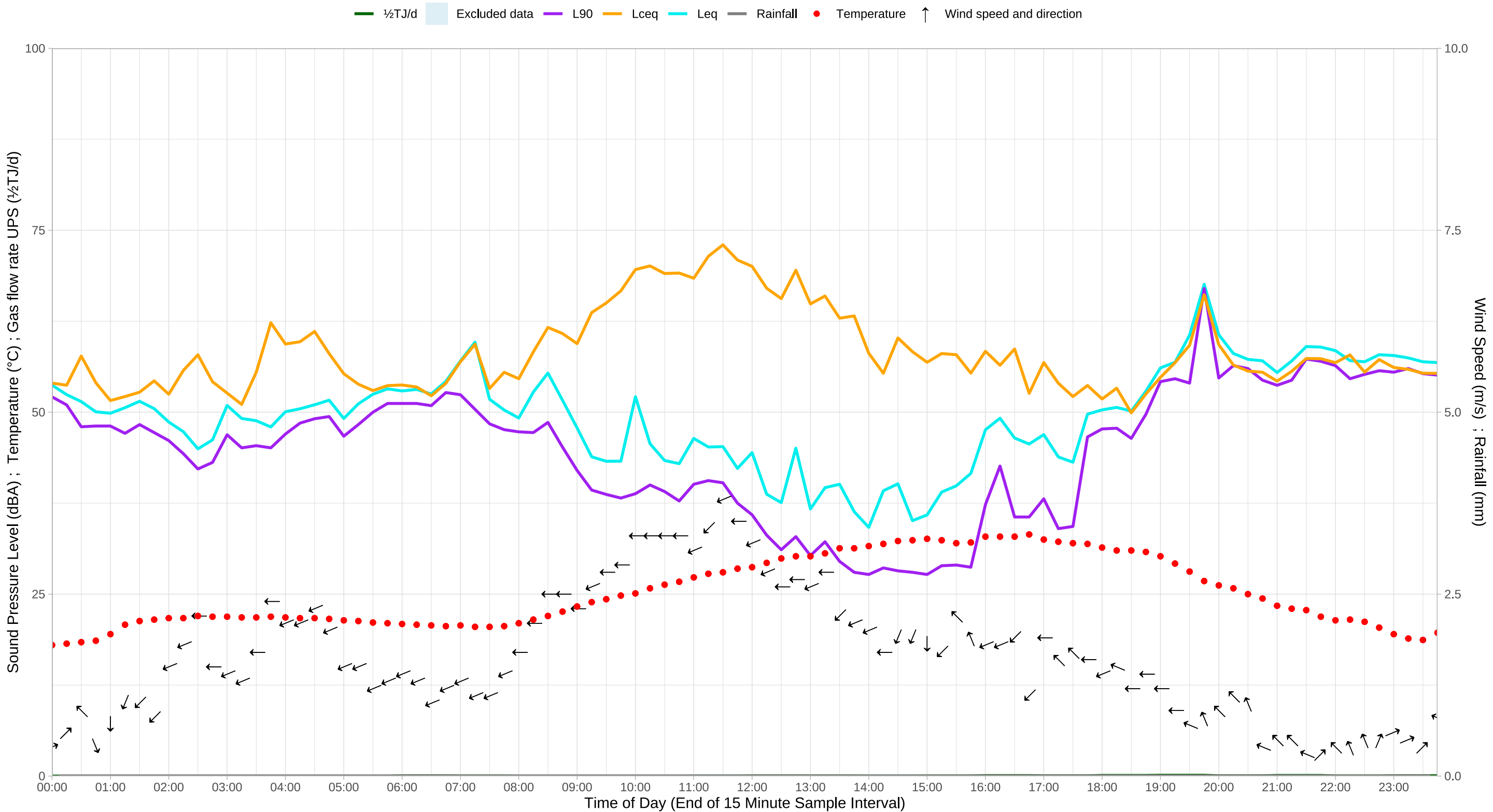
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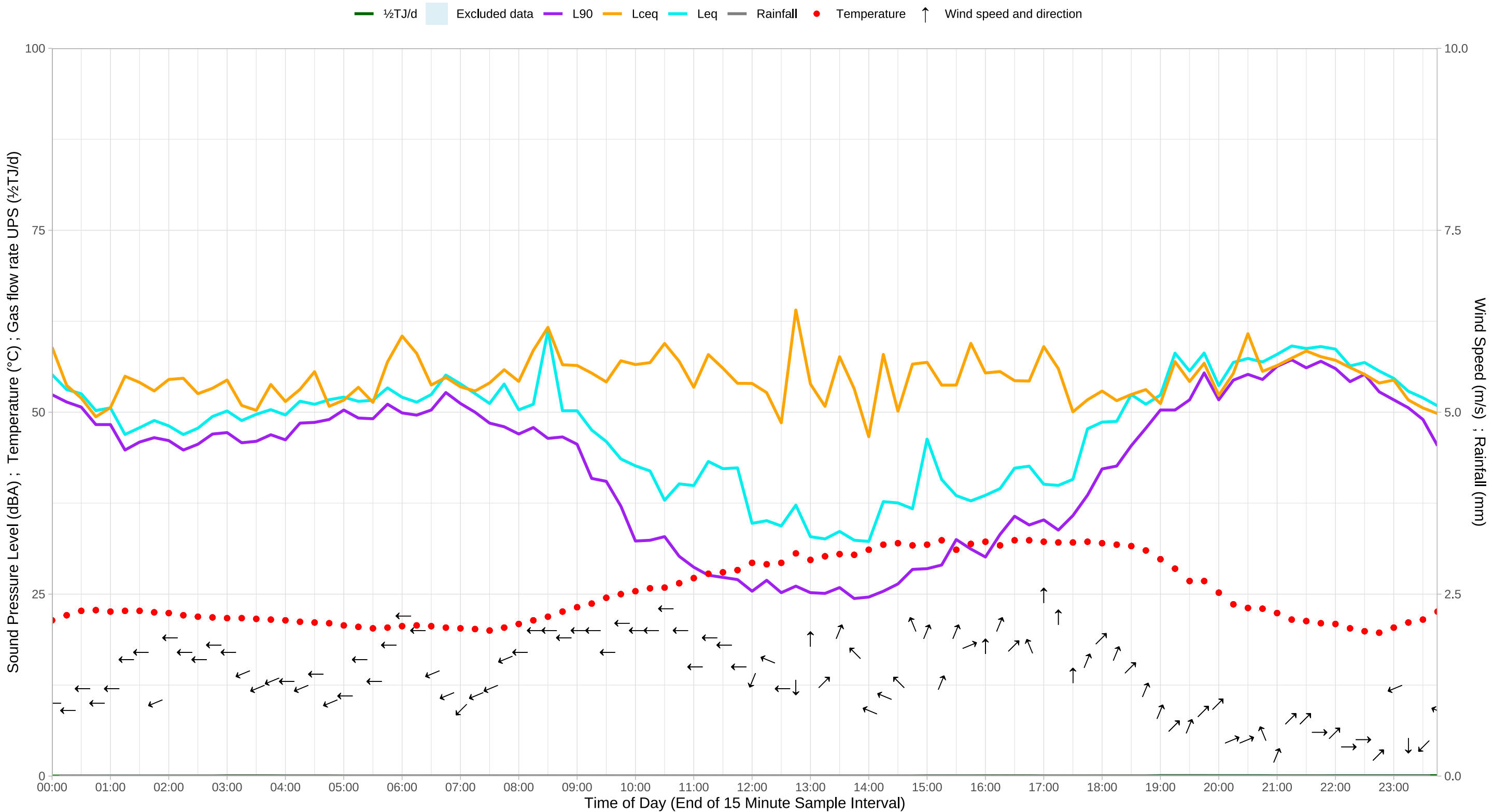
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Location ML2
Monday 24 March 2025



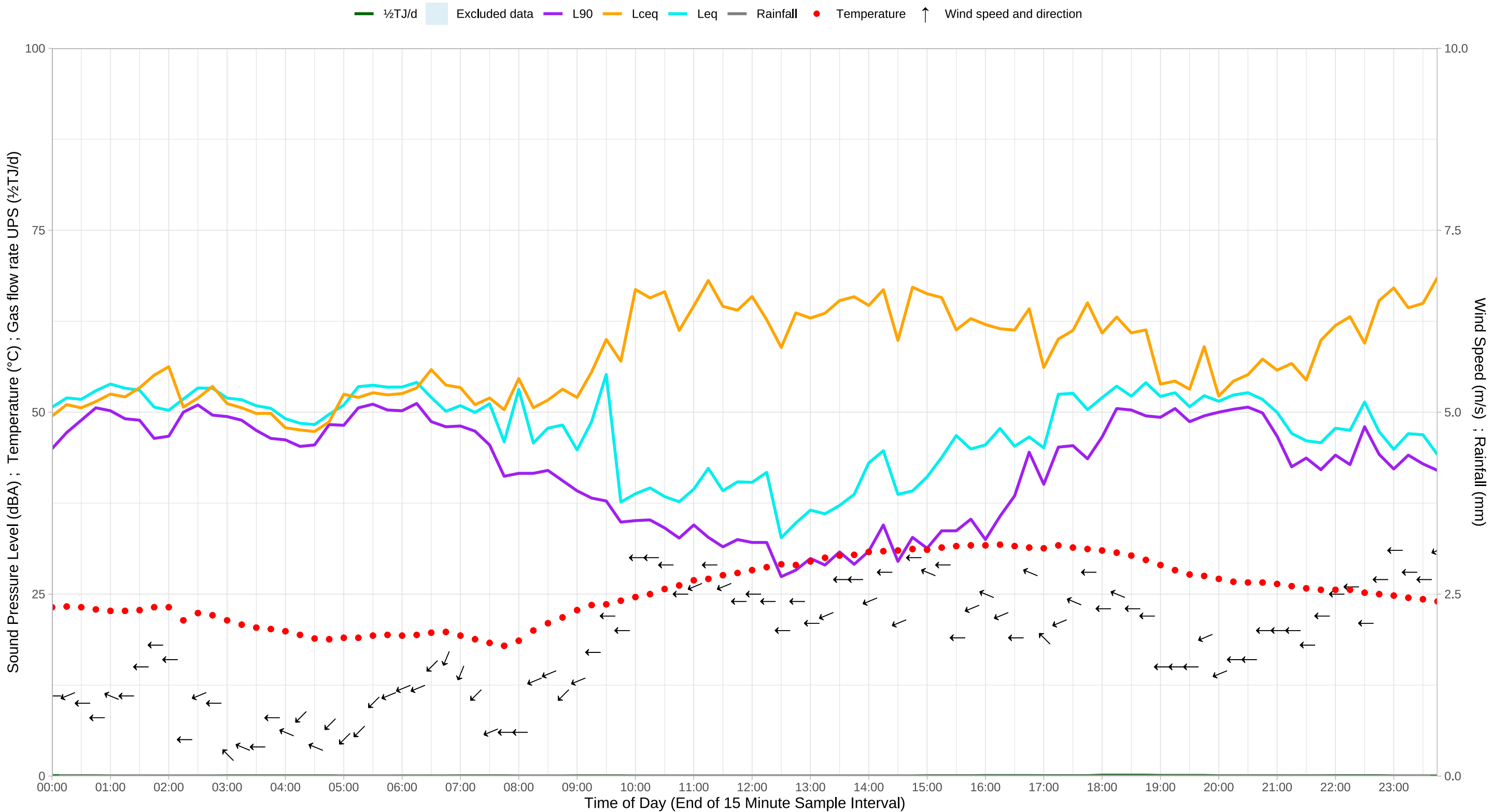
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Location ML2
Tuesday 25 March 2025



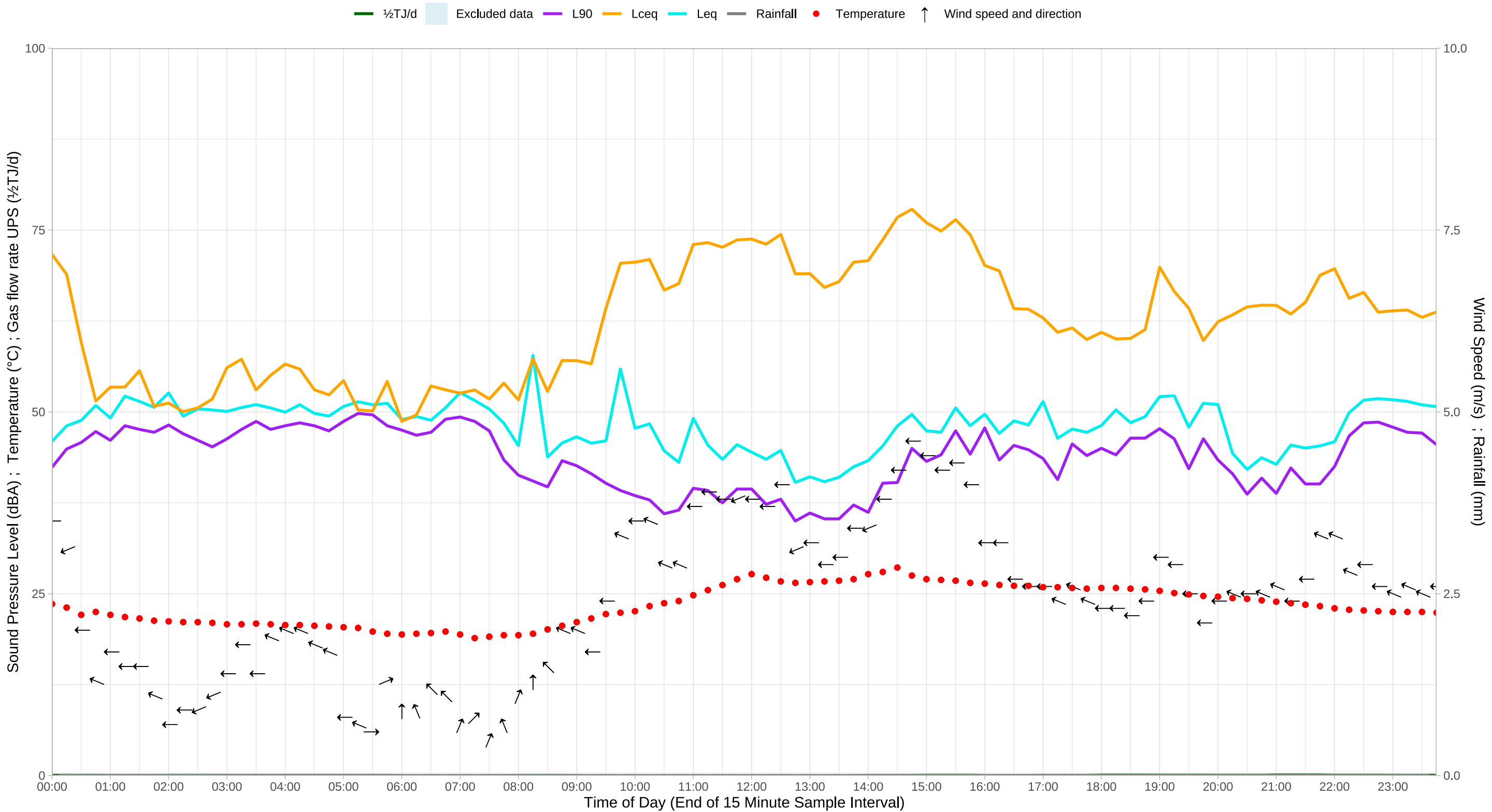
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Location ML2
Wednesday 26 March 2025



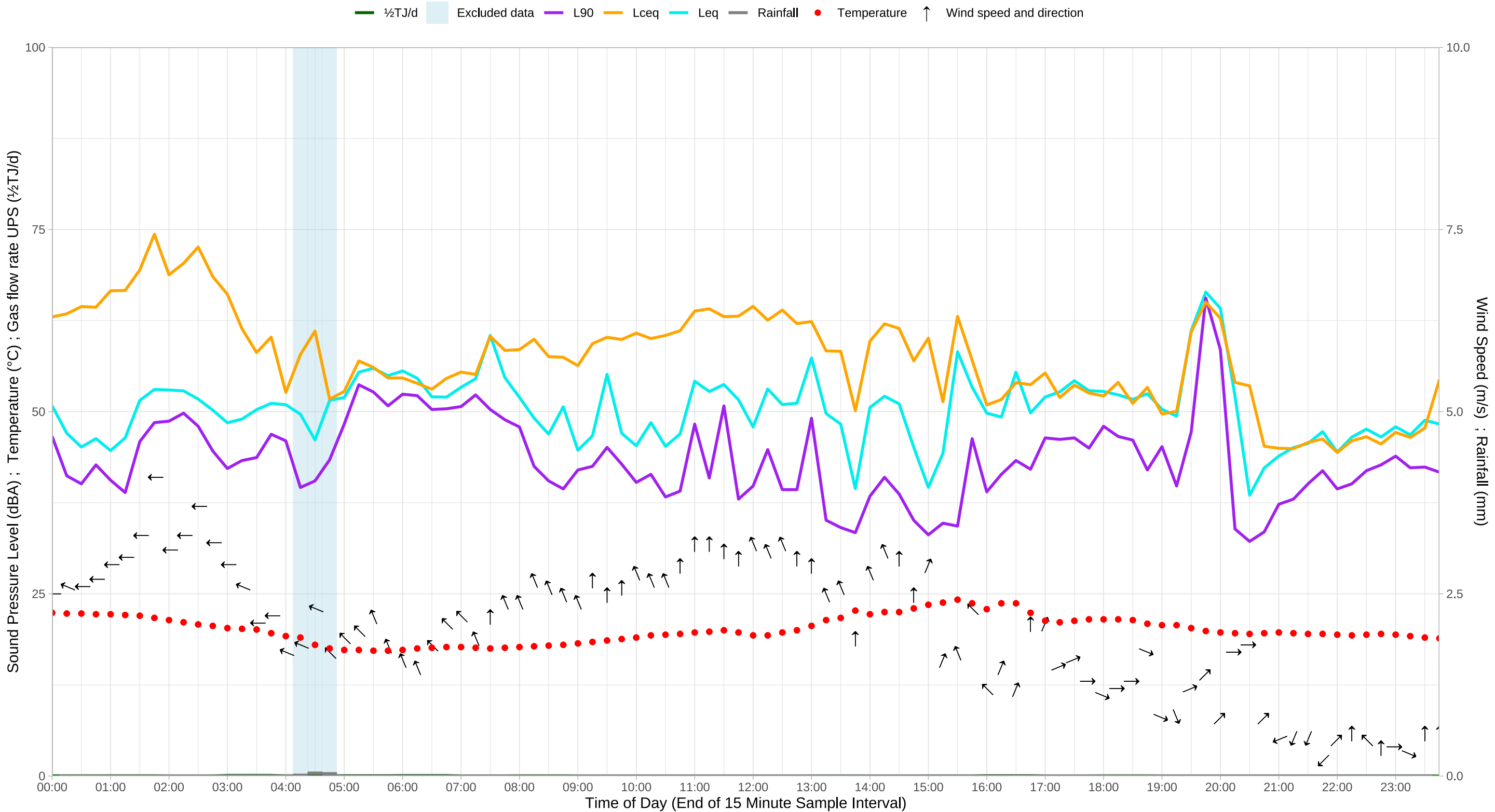
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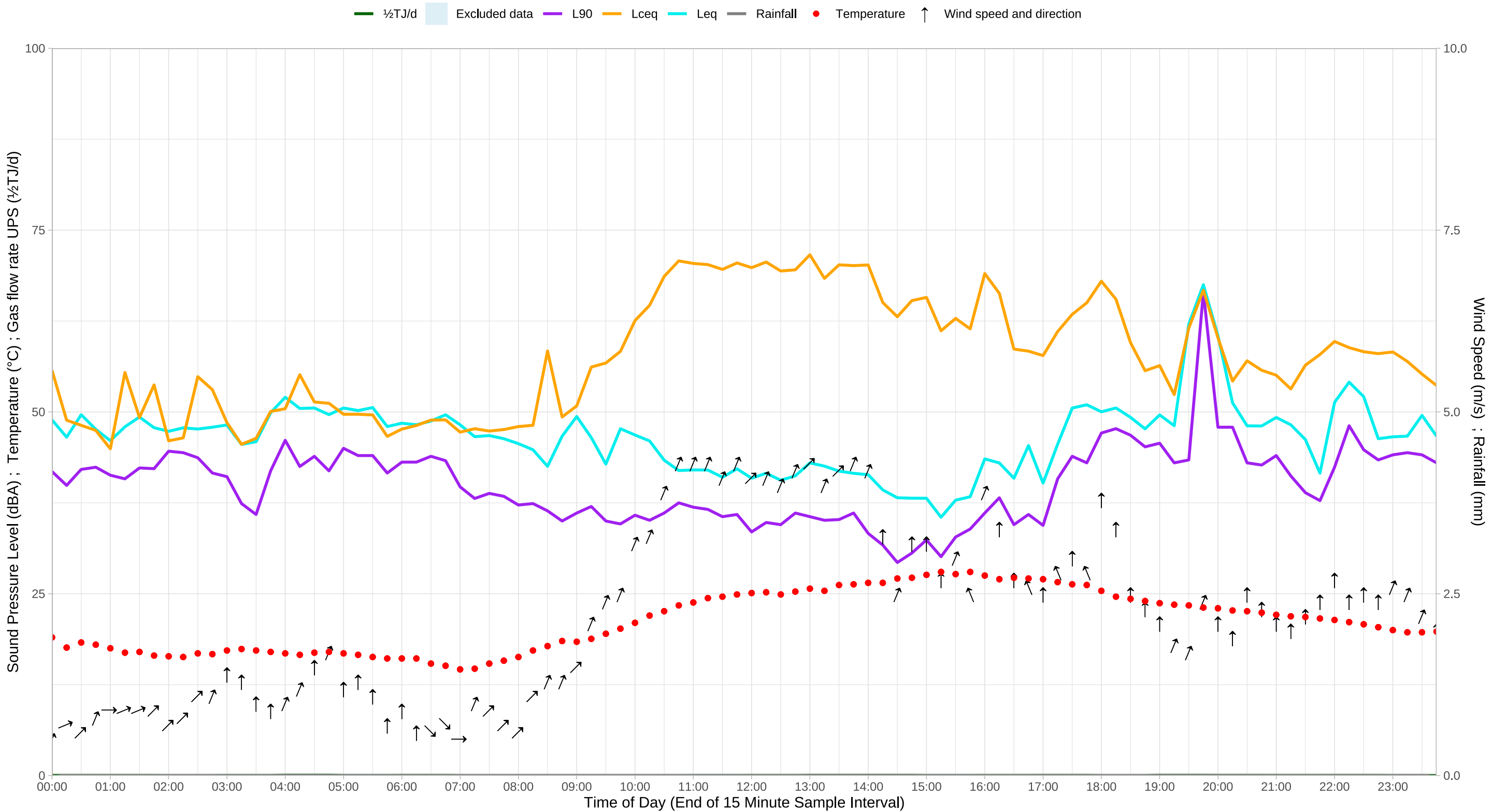
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Friday 28 March 2025



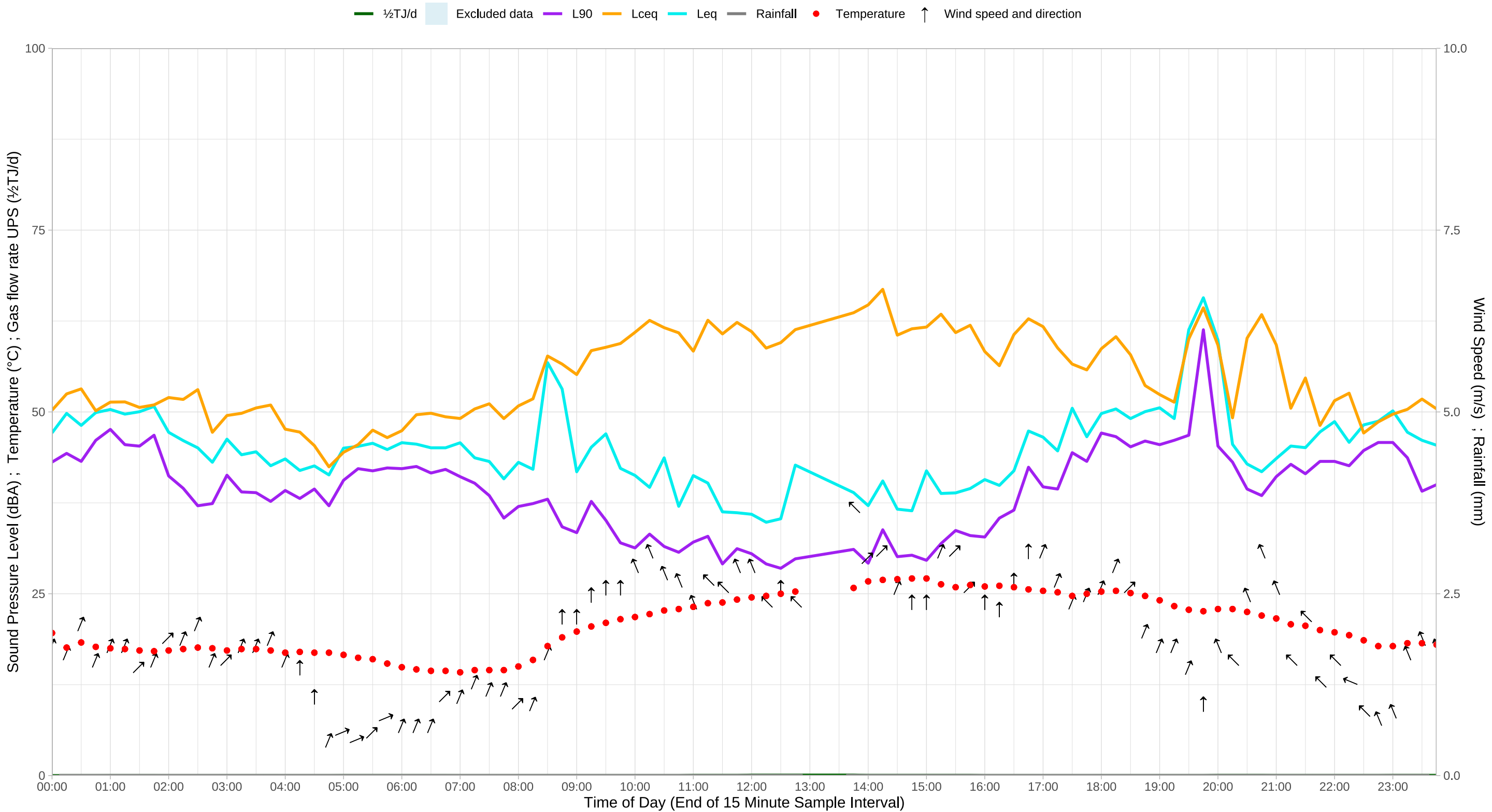
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Location ML2
Saturday 29 March 2025



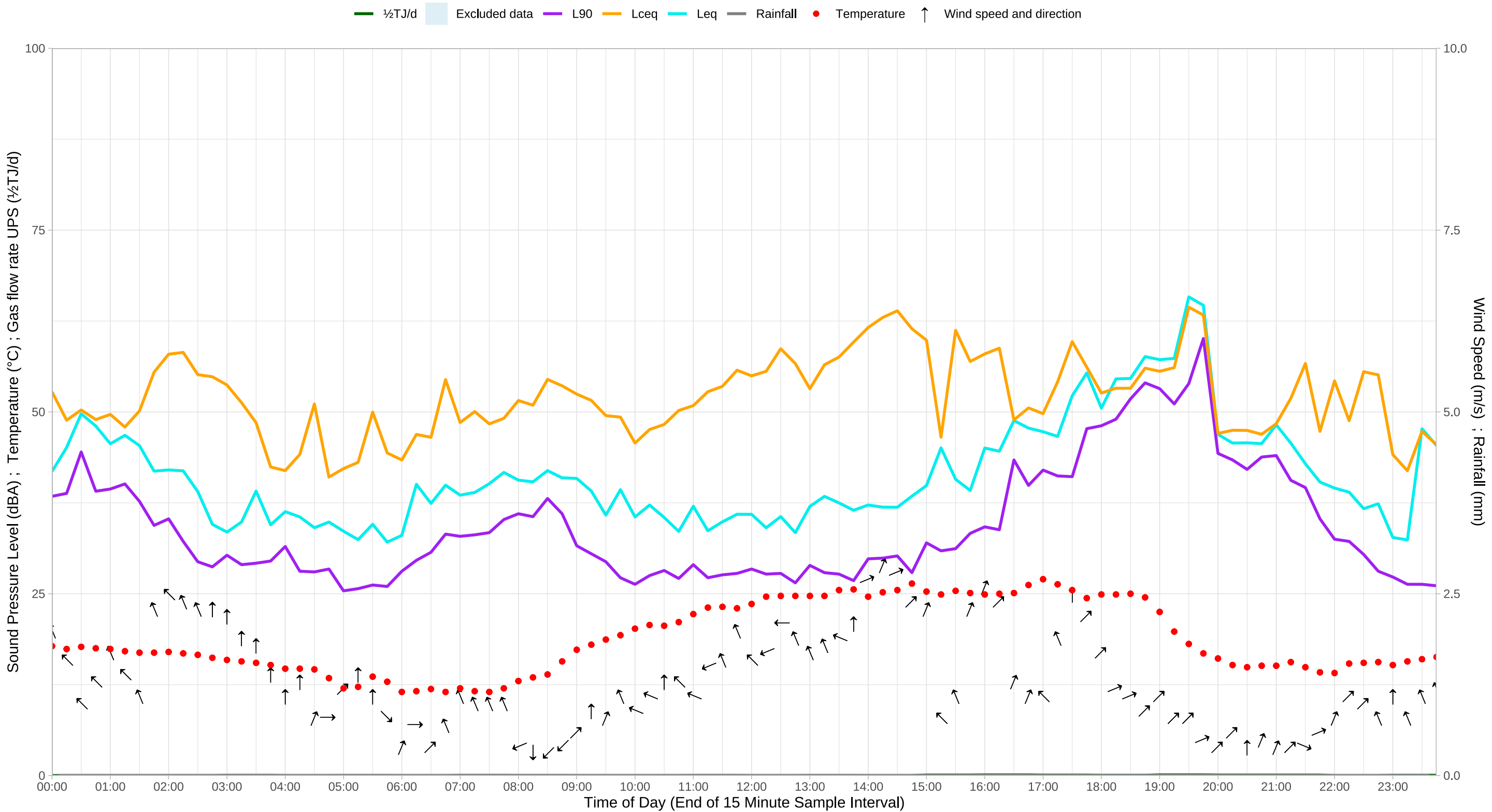
Statistical Ambient Noise Levels
Location ML2
Sunday 30 March 2025



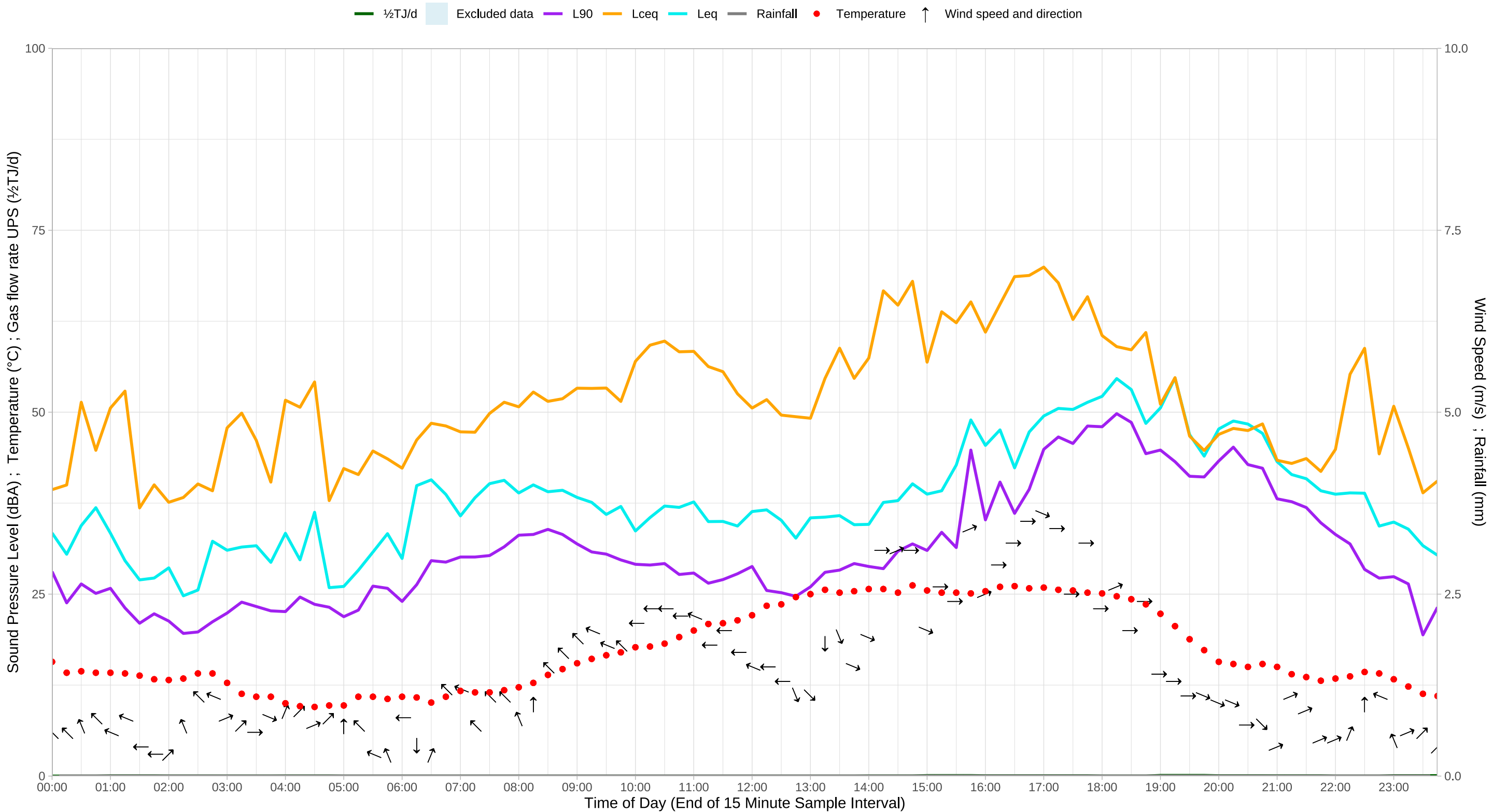
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Location ML2
Monday 31 March 2025



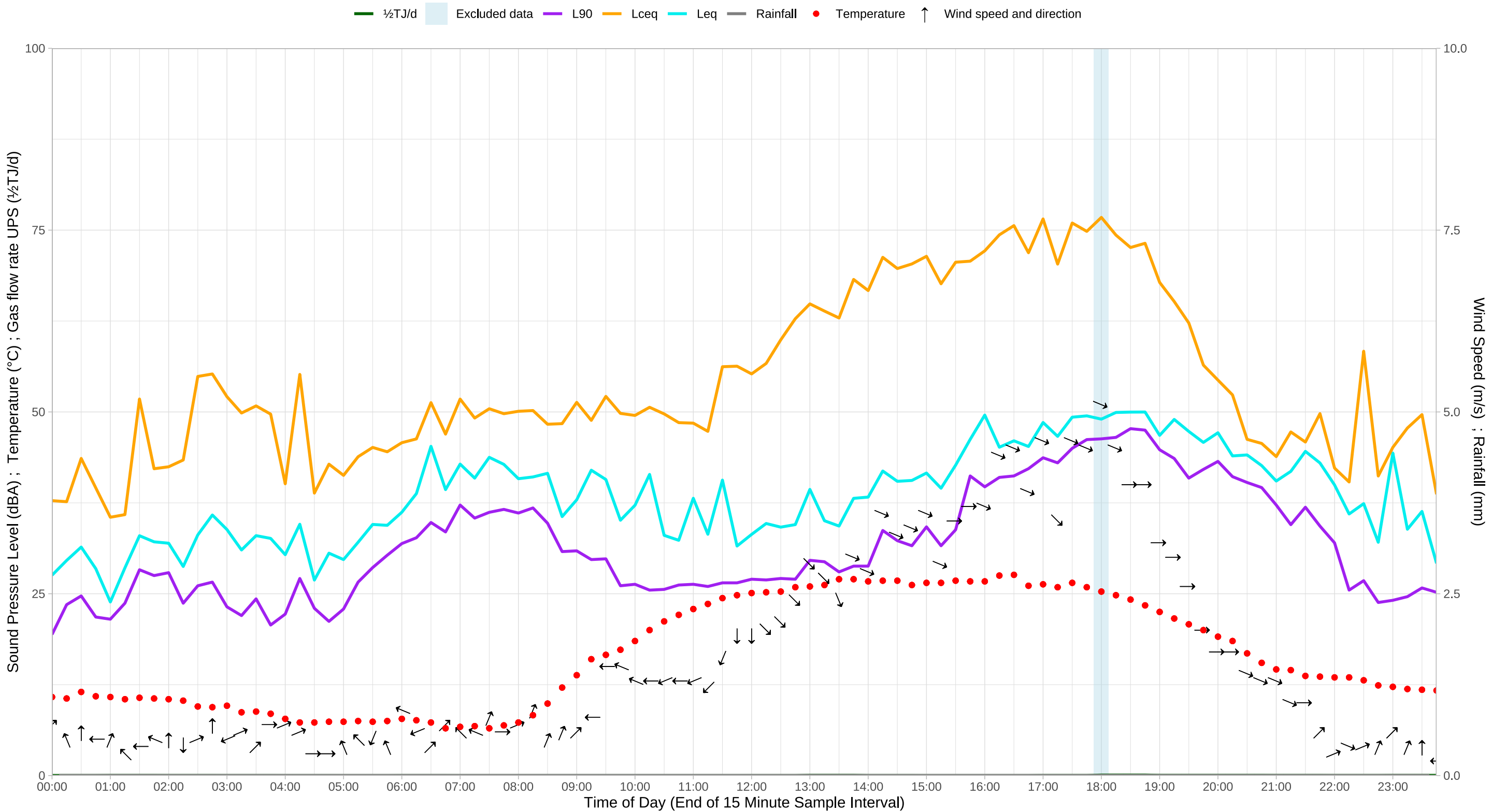
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Location ML2
Tuesday 01 April 2025



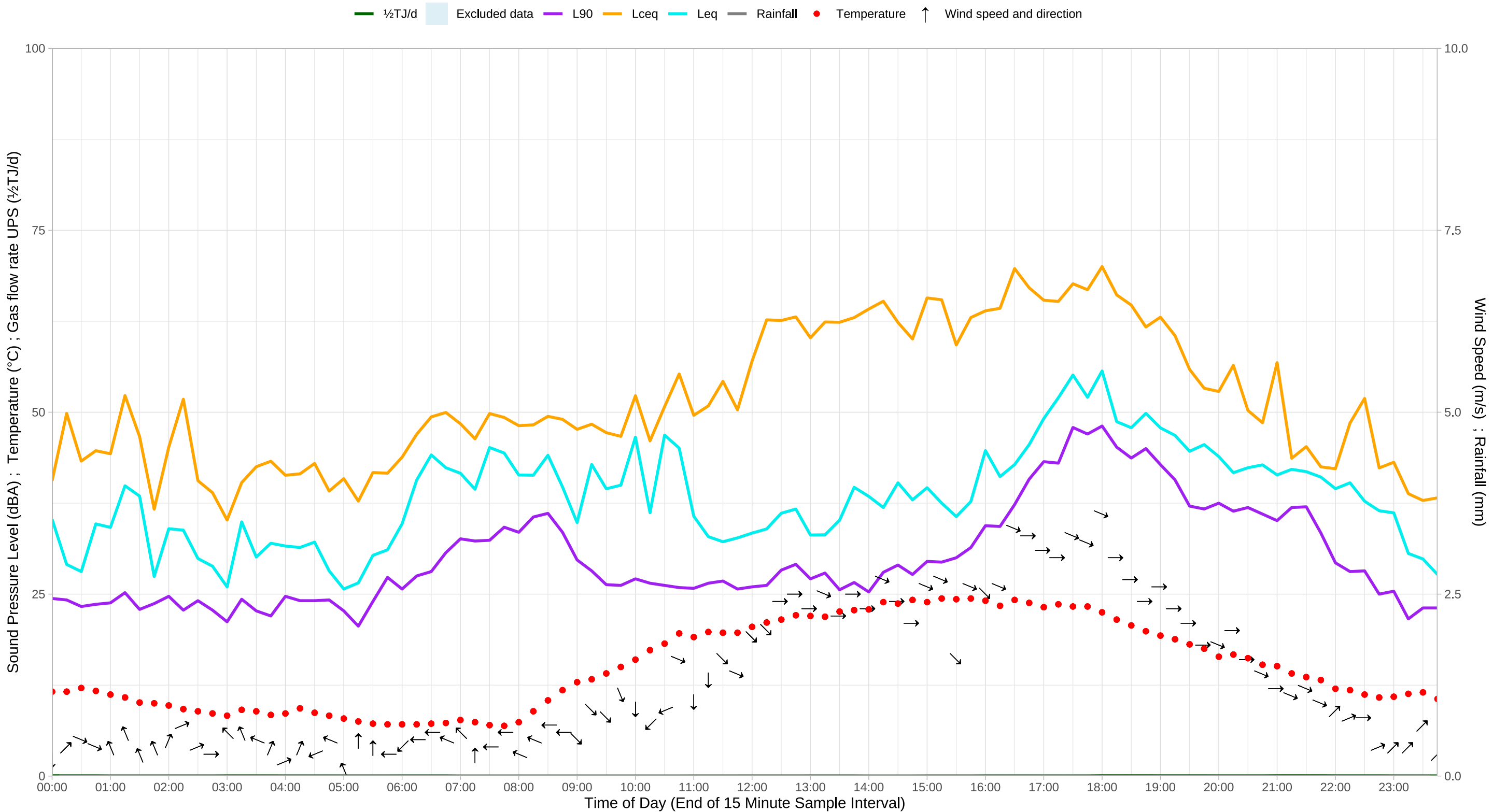
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Wednesday 02 April 2025



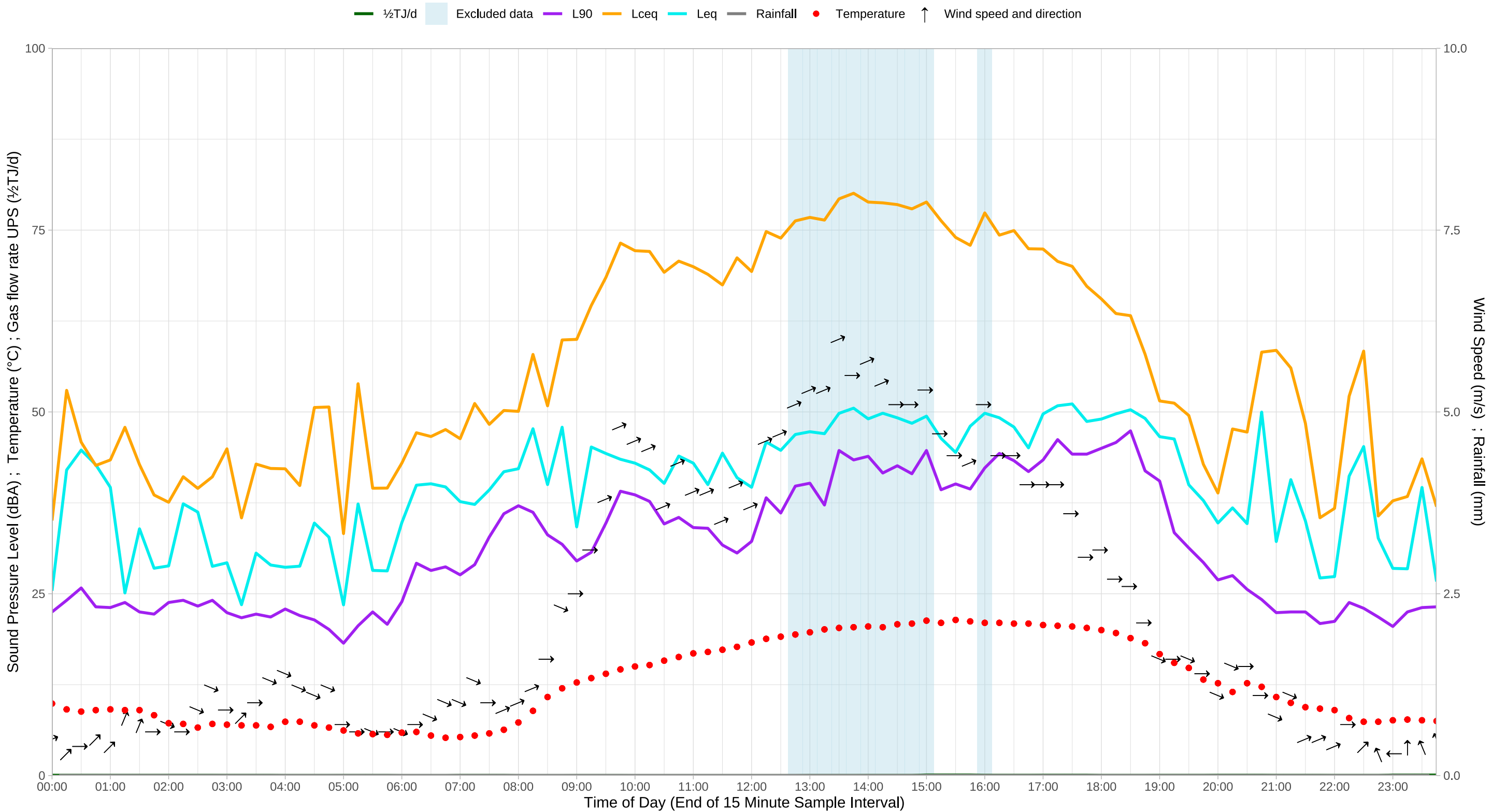
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Thursday 03 April 2025



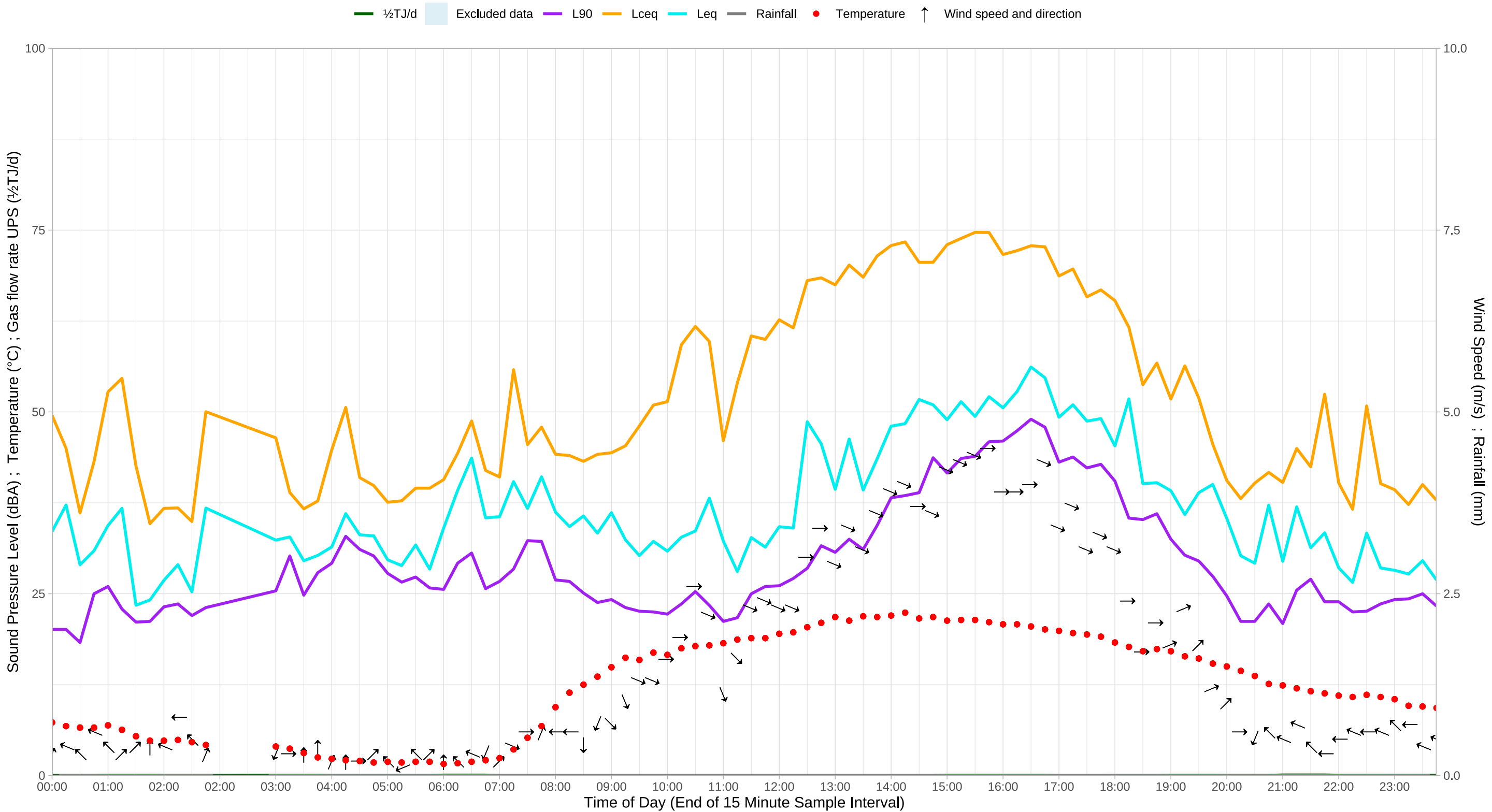
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Friday 04 April 2025



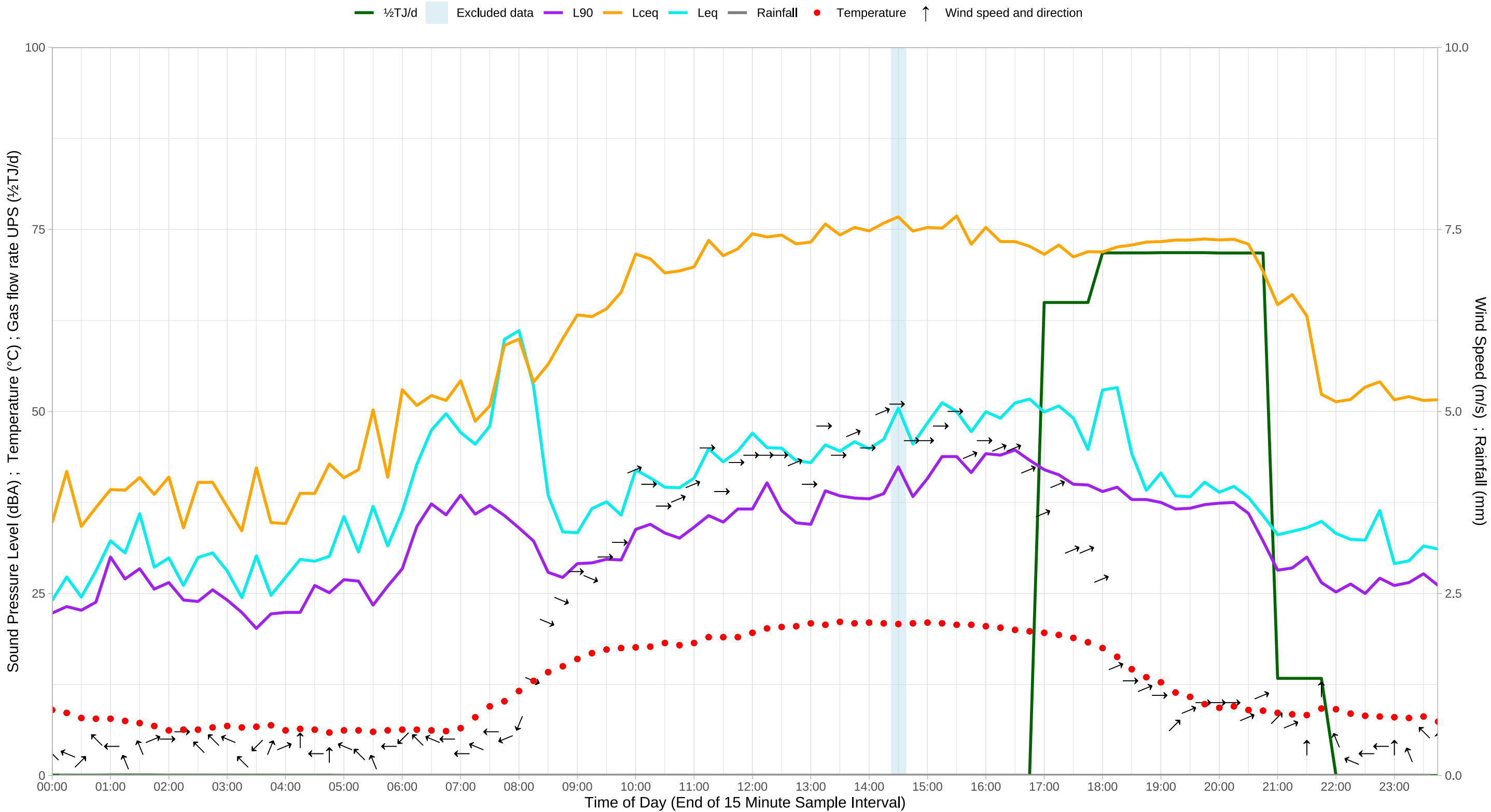
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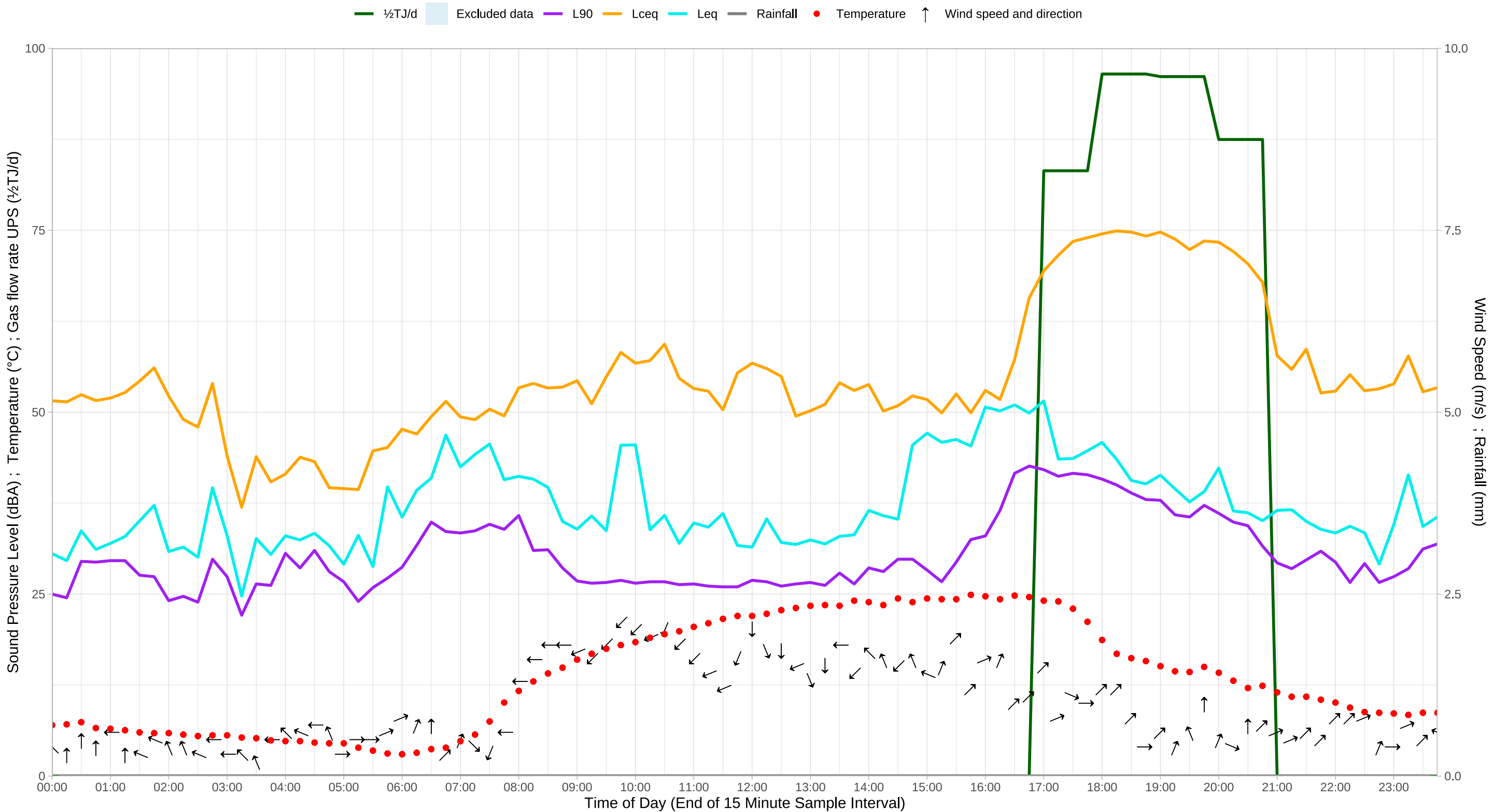
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Location ML2
Sunday 06 April 2025



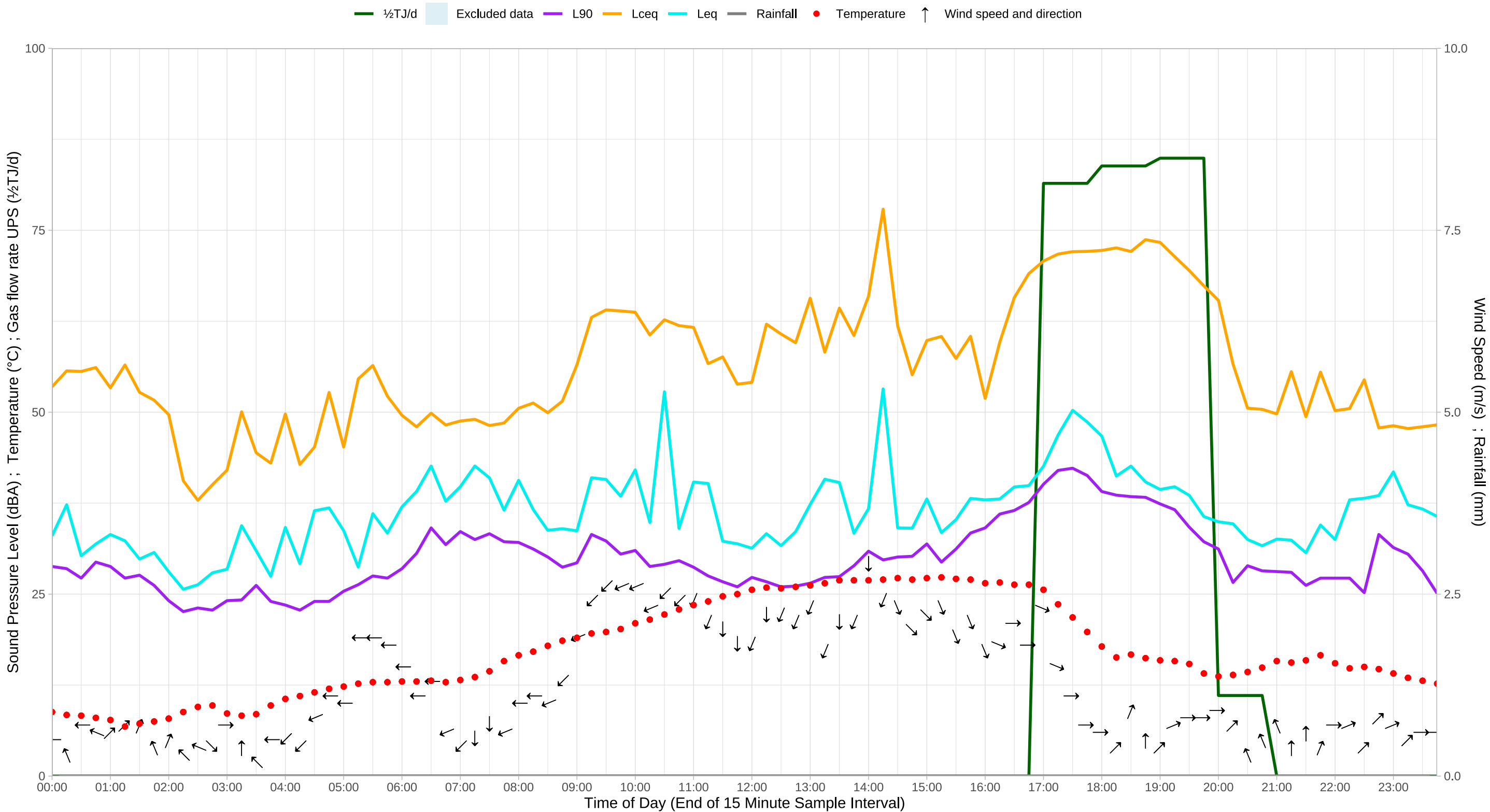
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Location ML2
Monday 07 April 2025



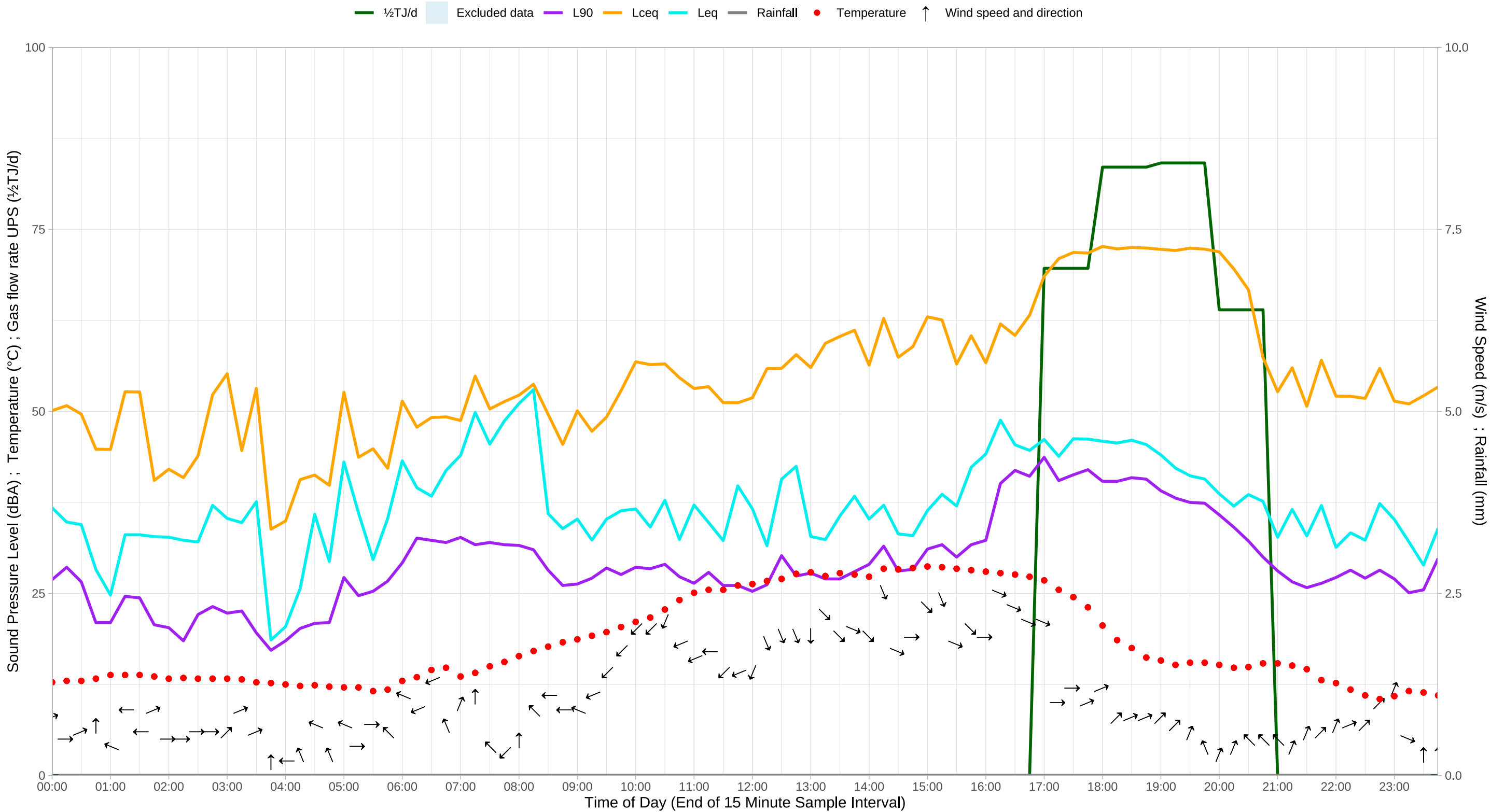
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Location ML2
Tuesday 08 April 2025



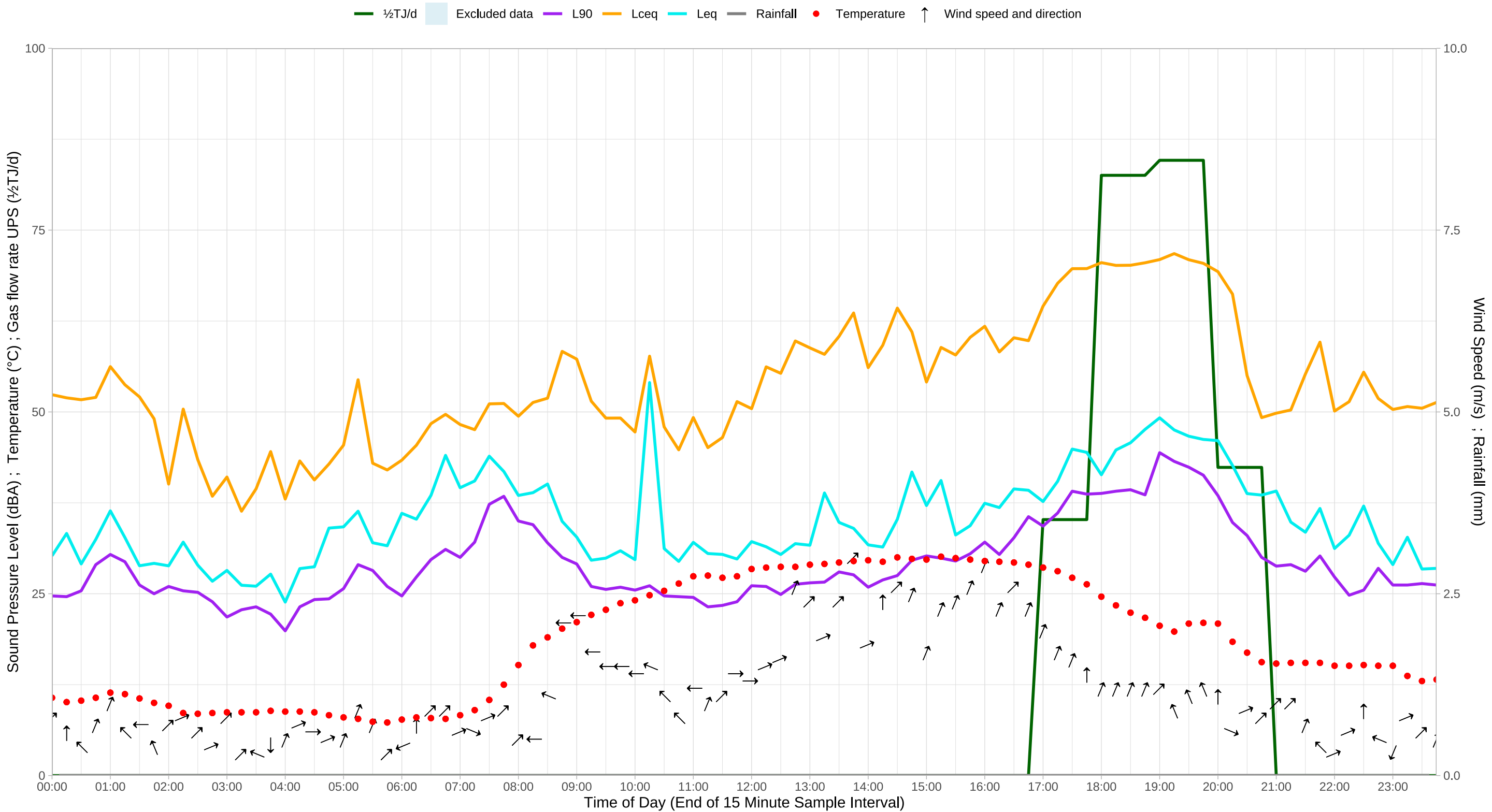
Statistical Ambient Noise Levels
Location ML2
Wednesday 09 April 2025



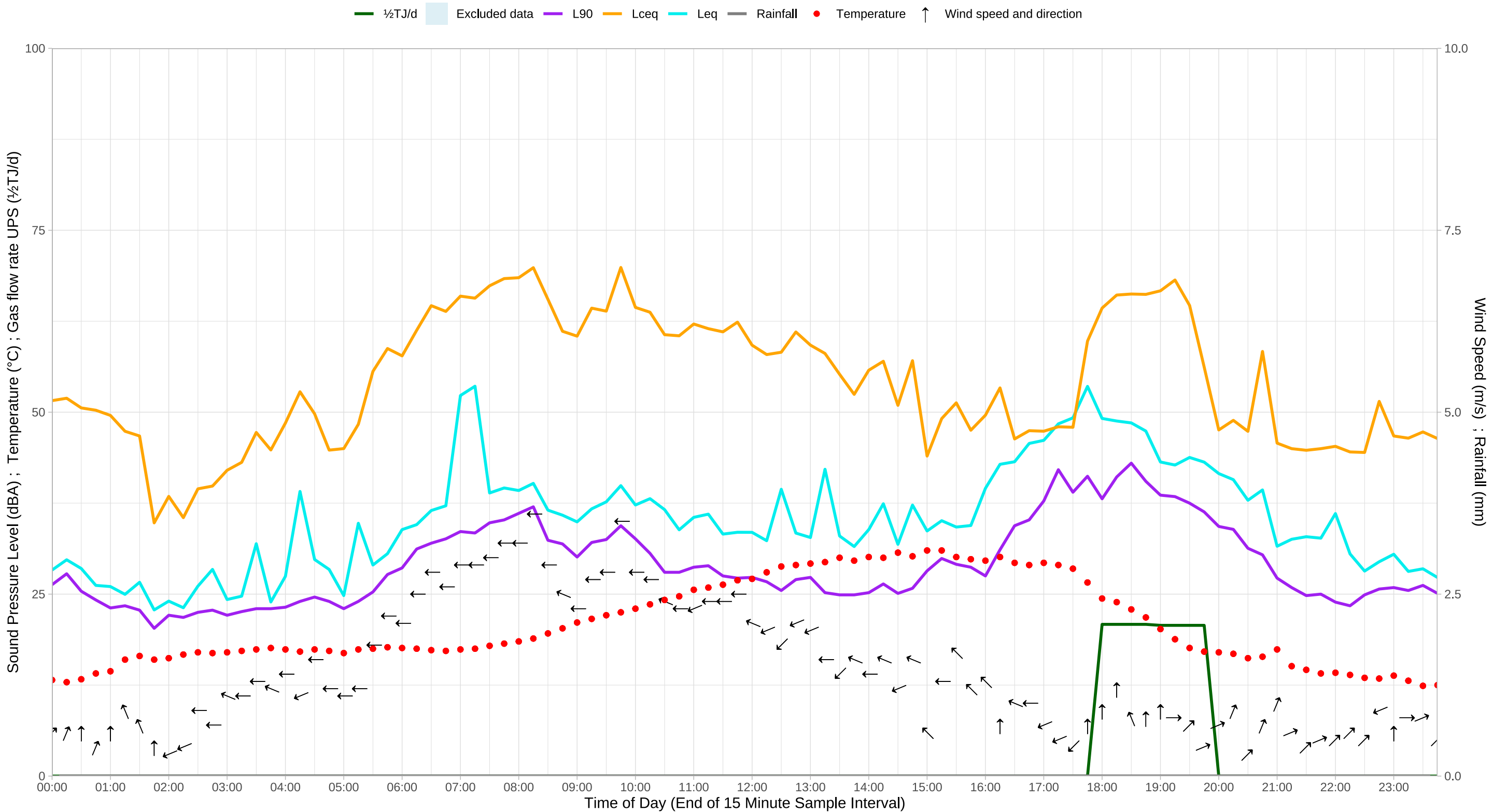
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Location ML2
Thursday 10 April 2025



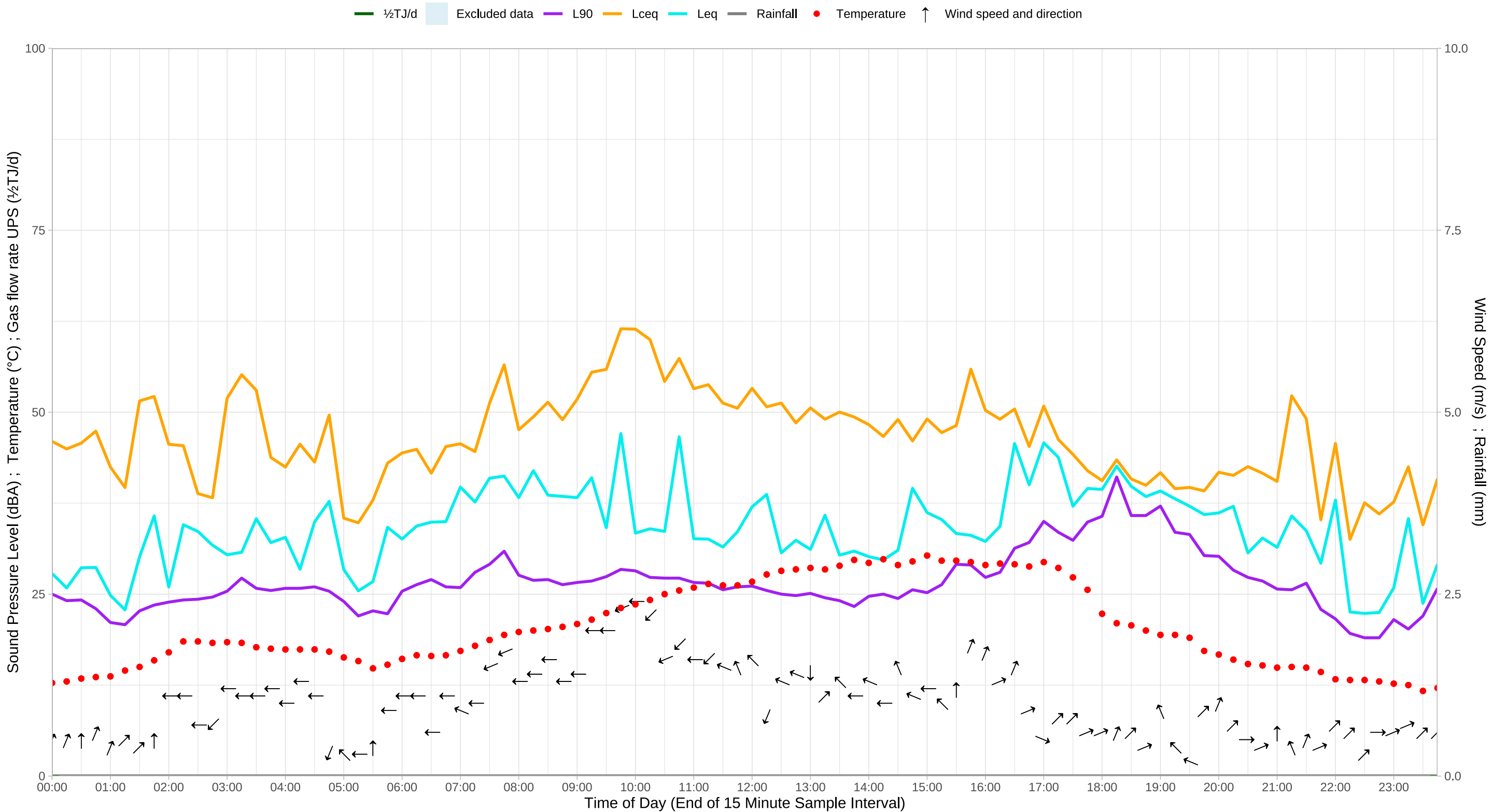
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Location ML2
Friday 11 April 2025



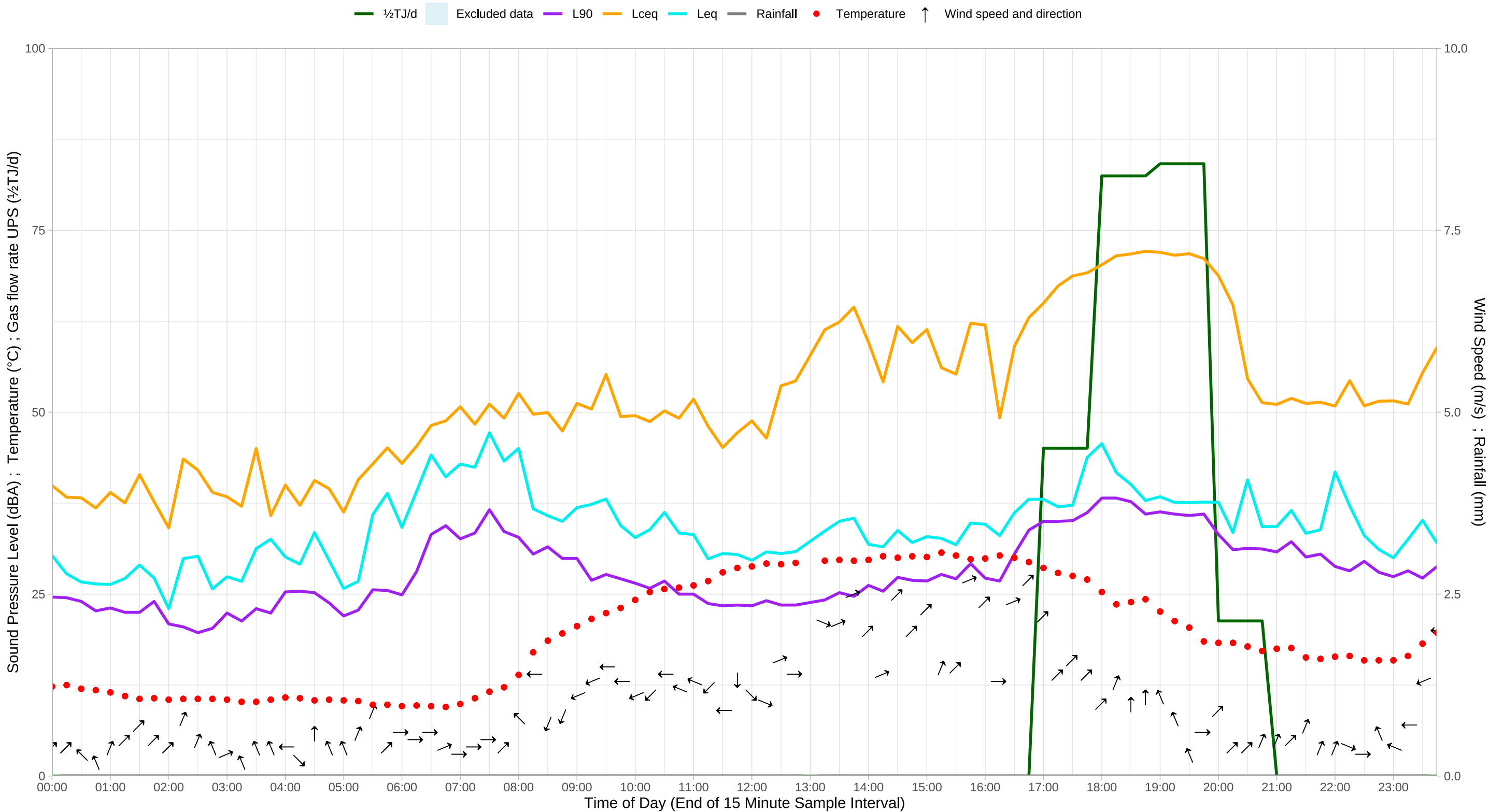
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Location ML2
Saturday 12 April 2025



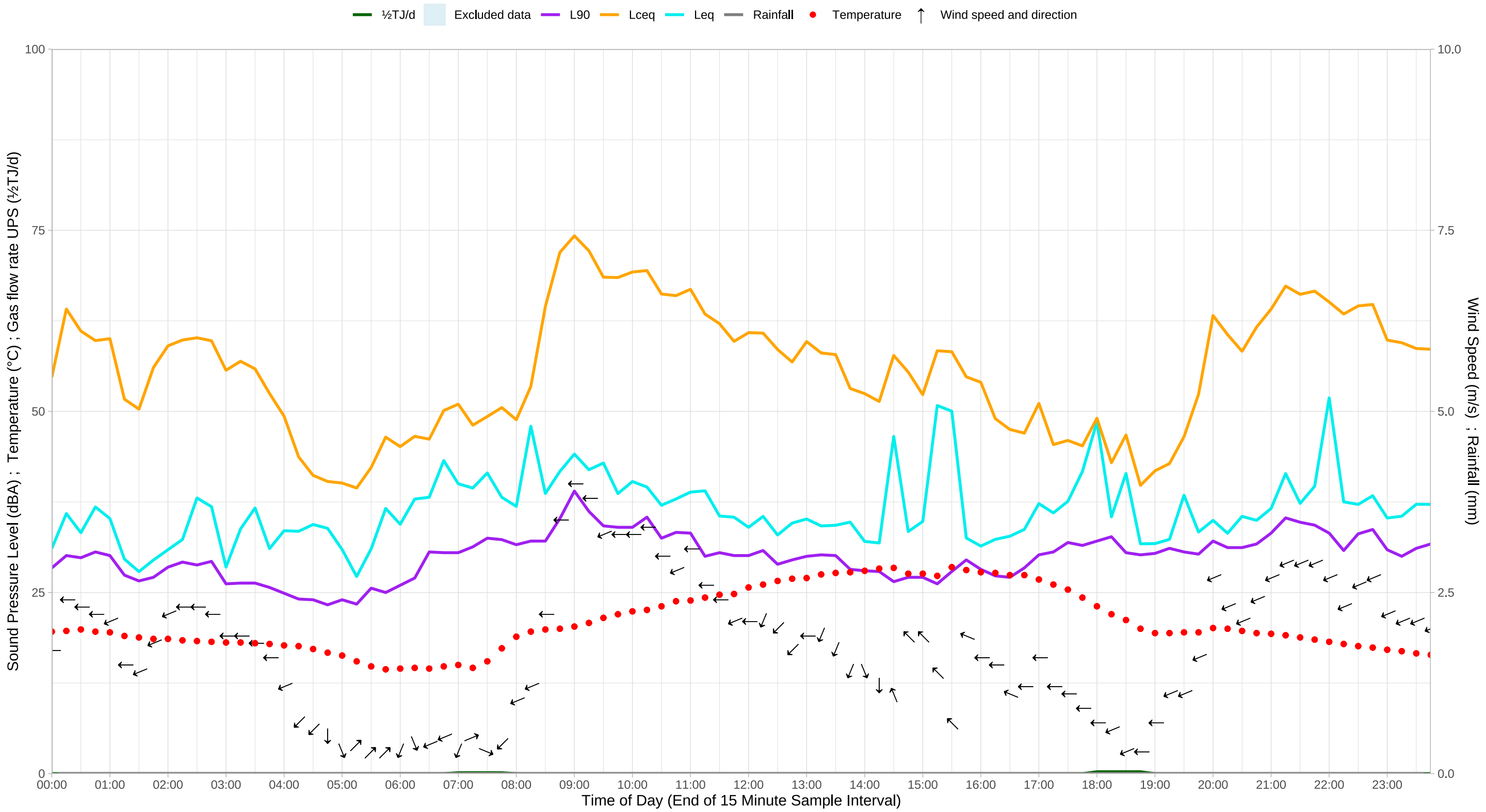
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Location ML2
Sunday 13 April 2025



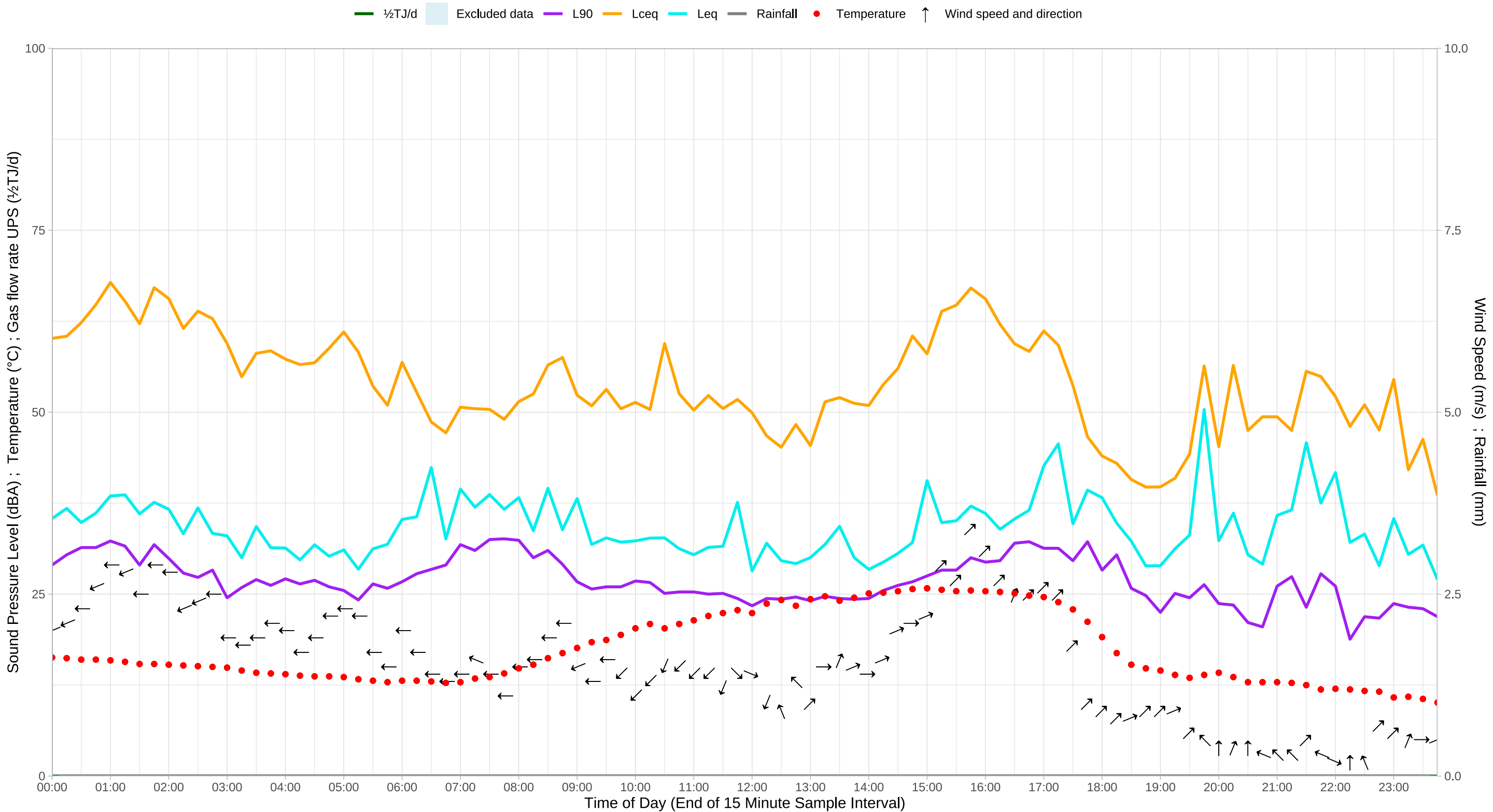
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Monday 14 April 2025



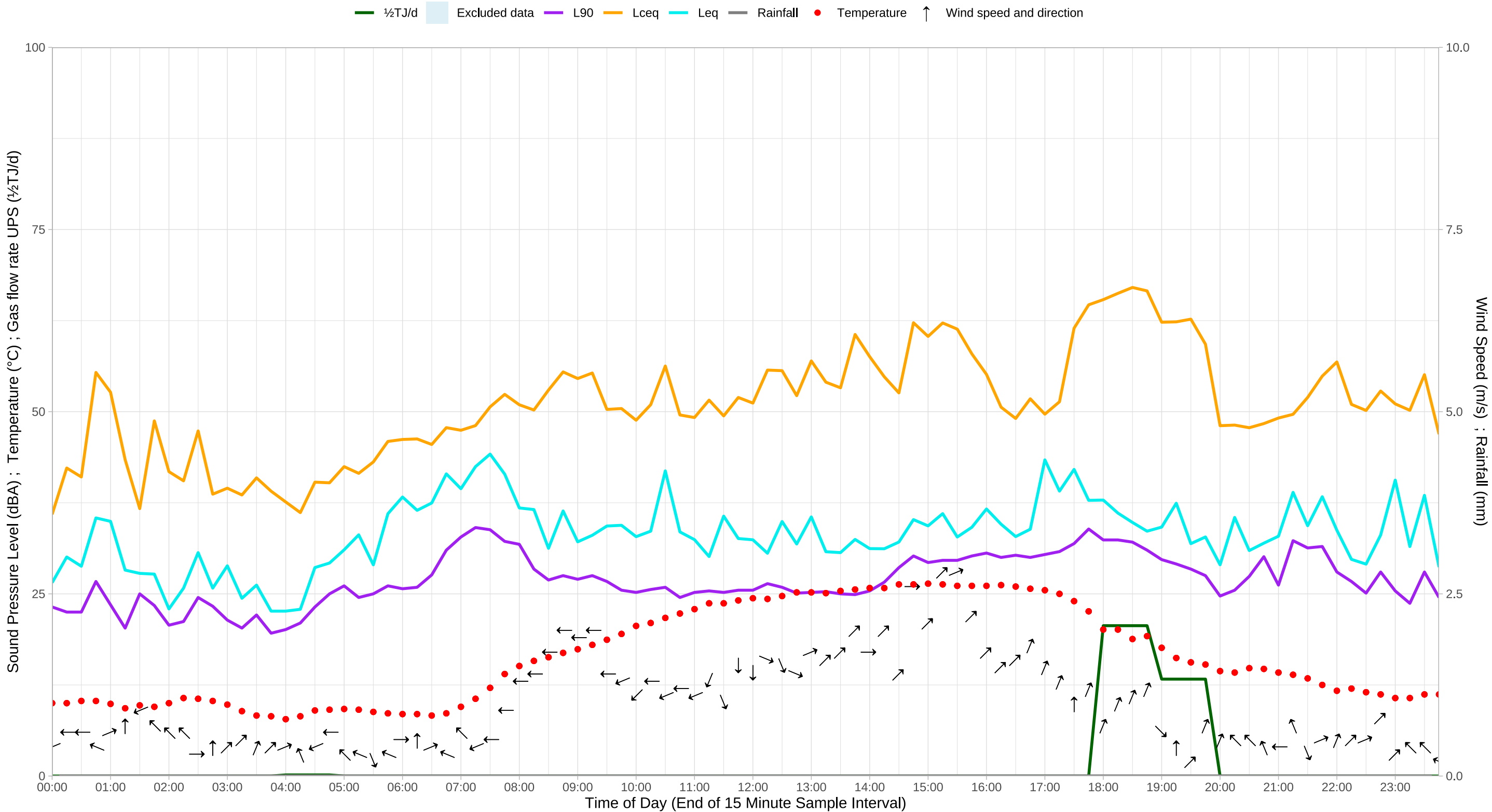
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Location ML2
Tuesday 15 April 2025



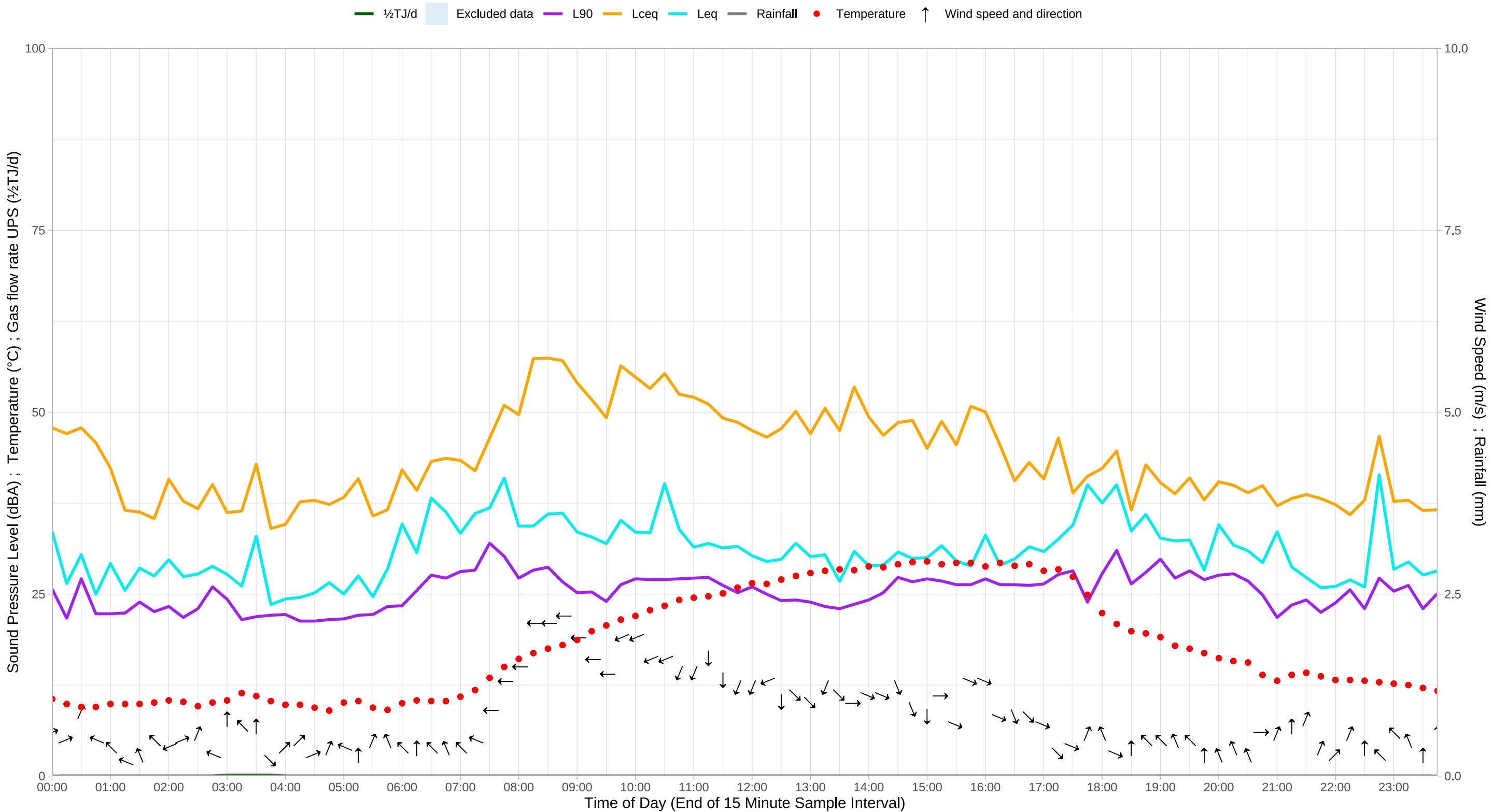
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Wednesday 16 April 2025



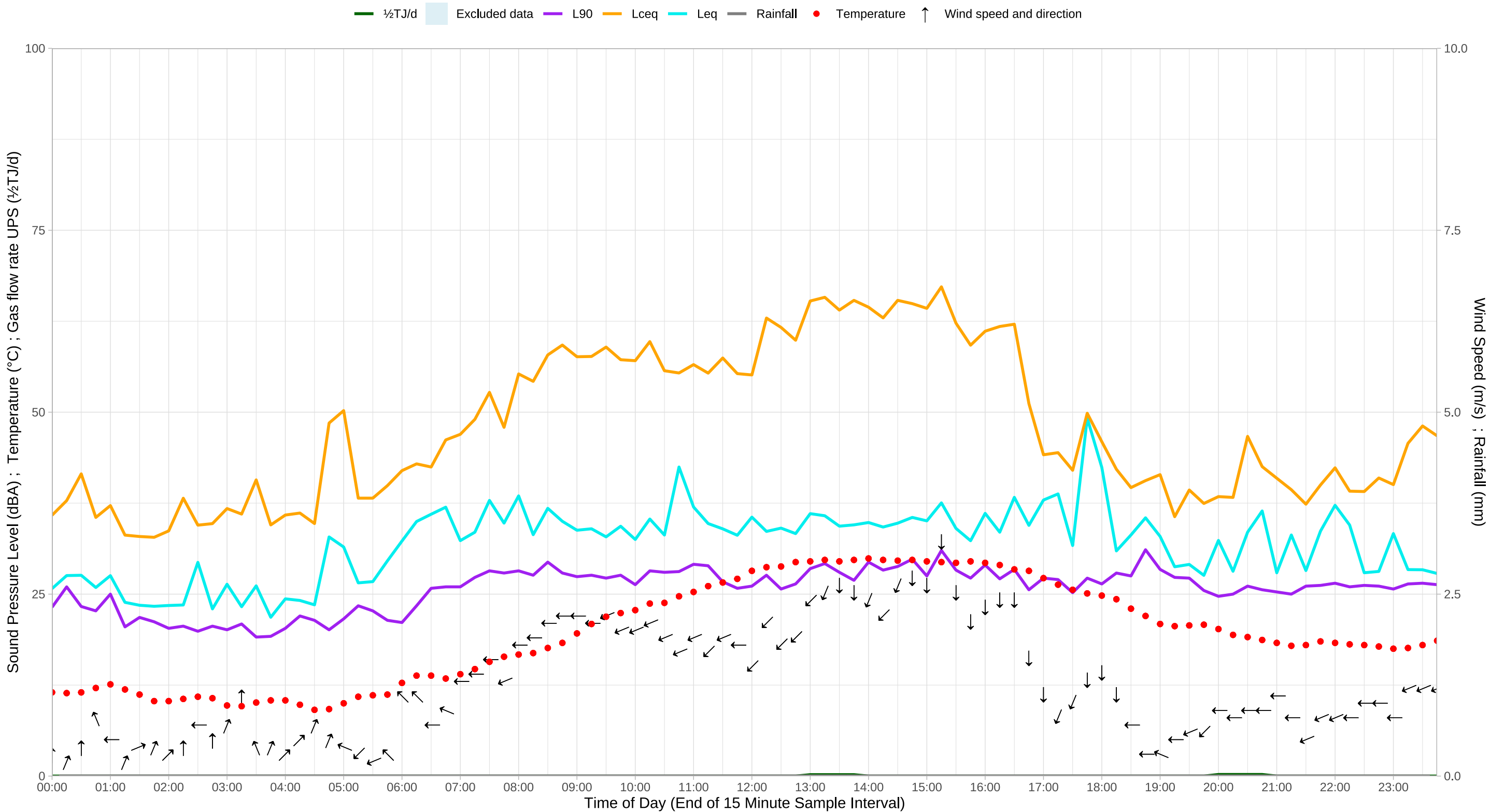
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Thursday 17 April 2025



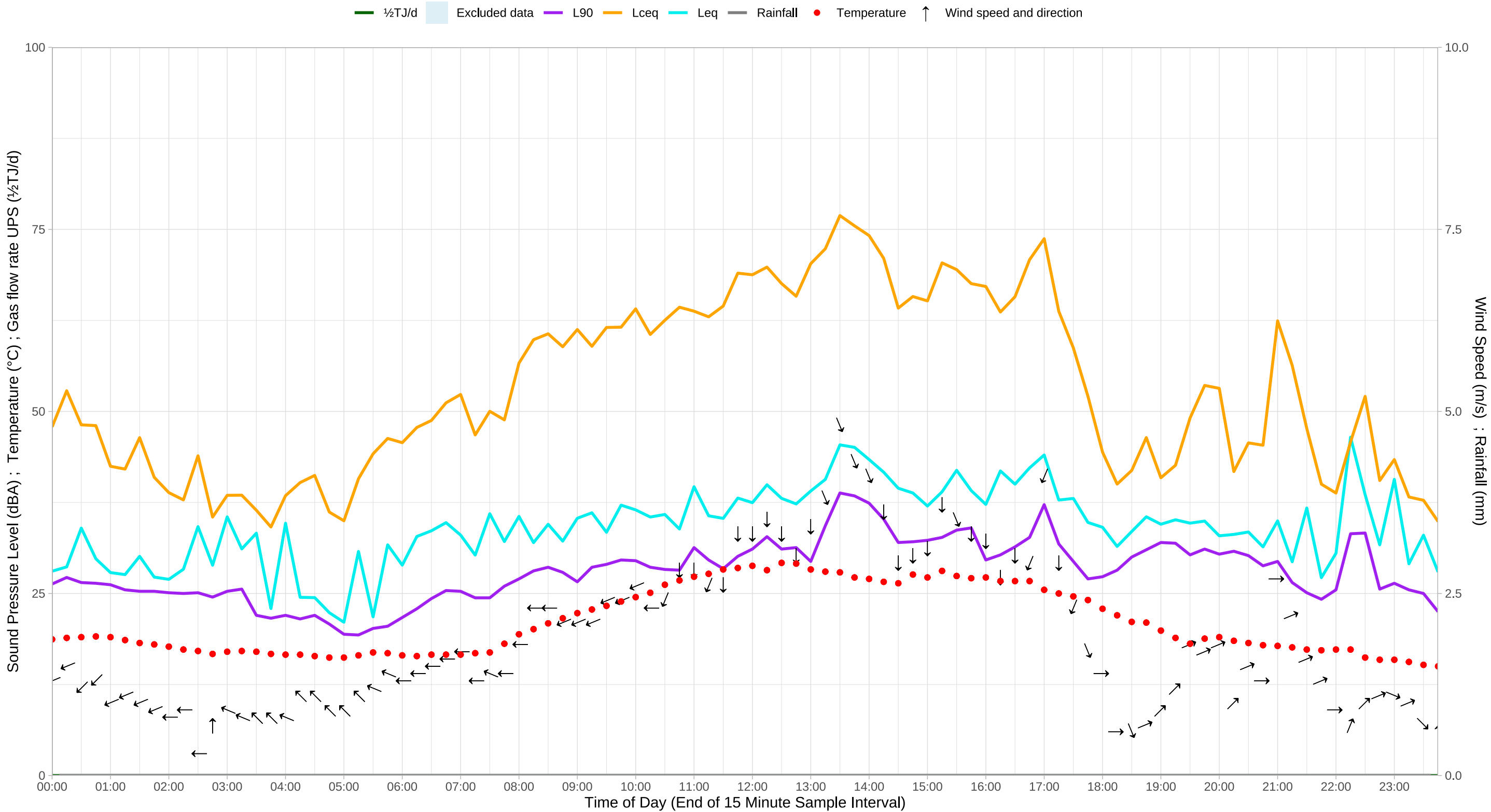
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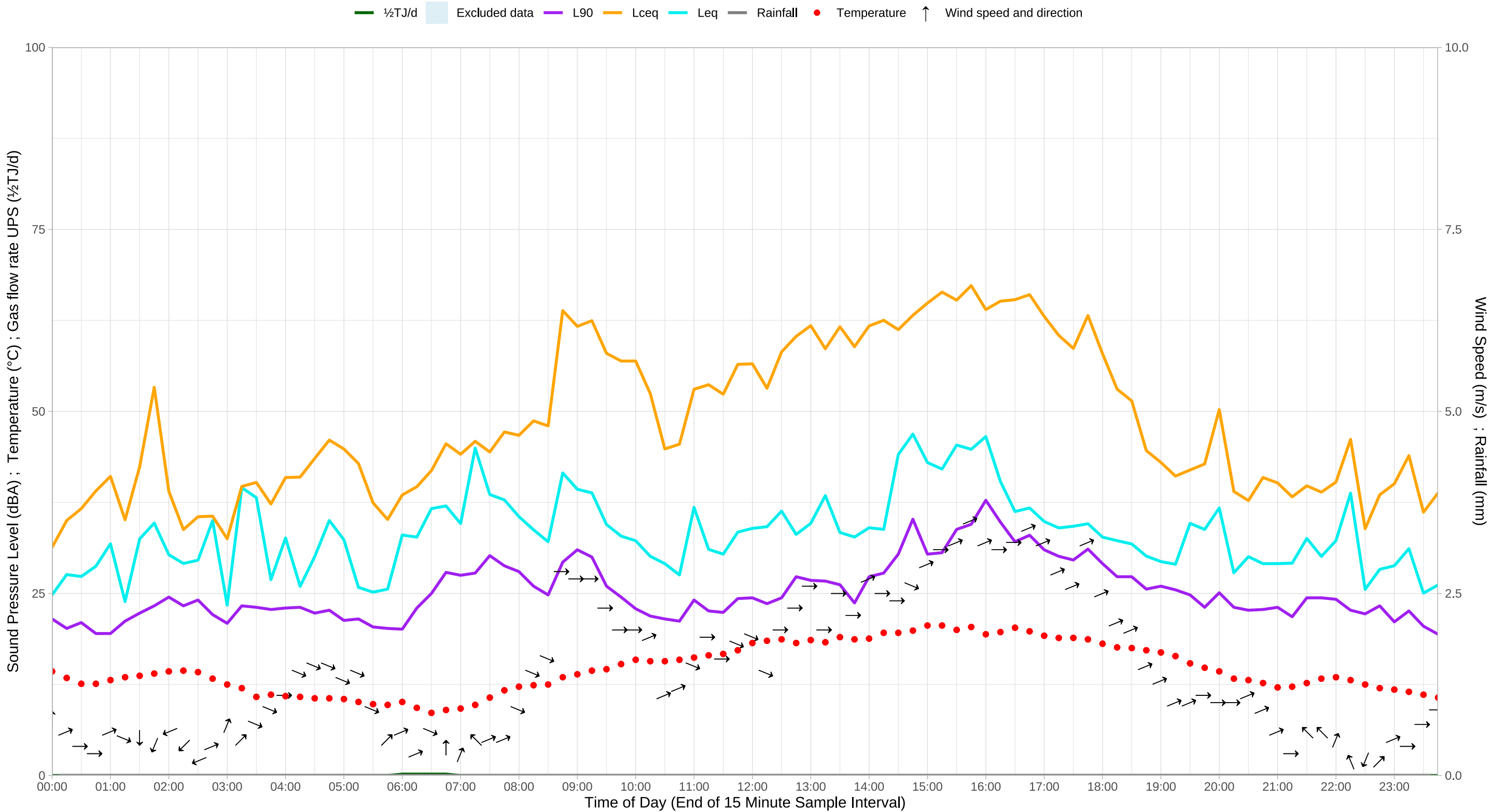
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Saturday 19 April 2025



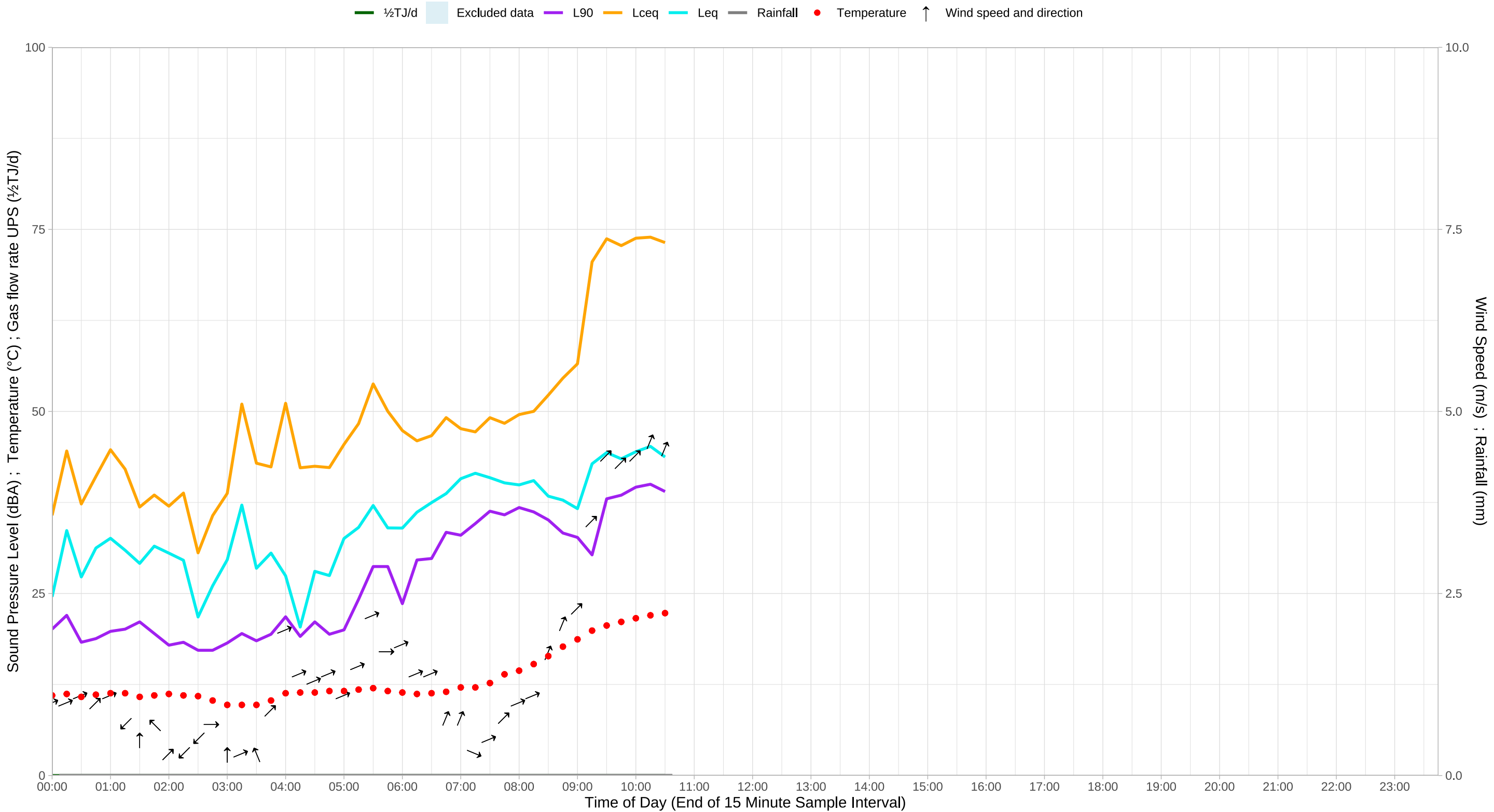
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Location ML2
Sunday 20 April 2025



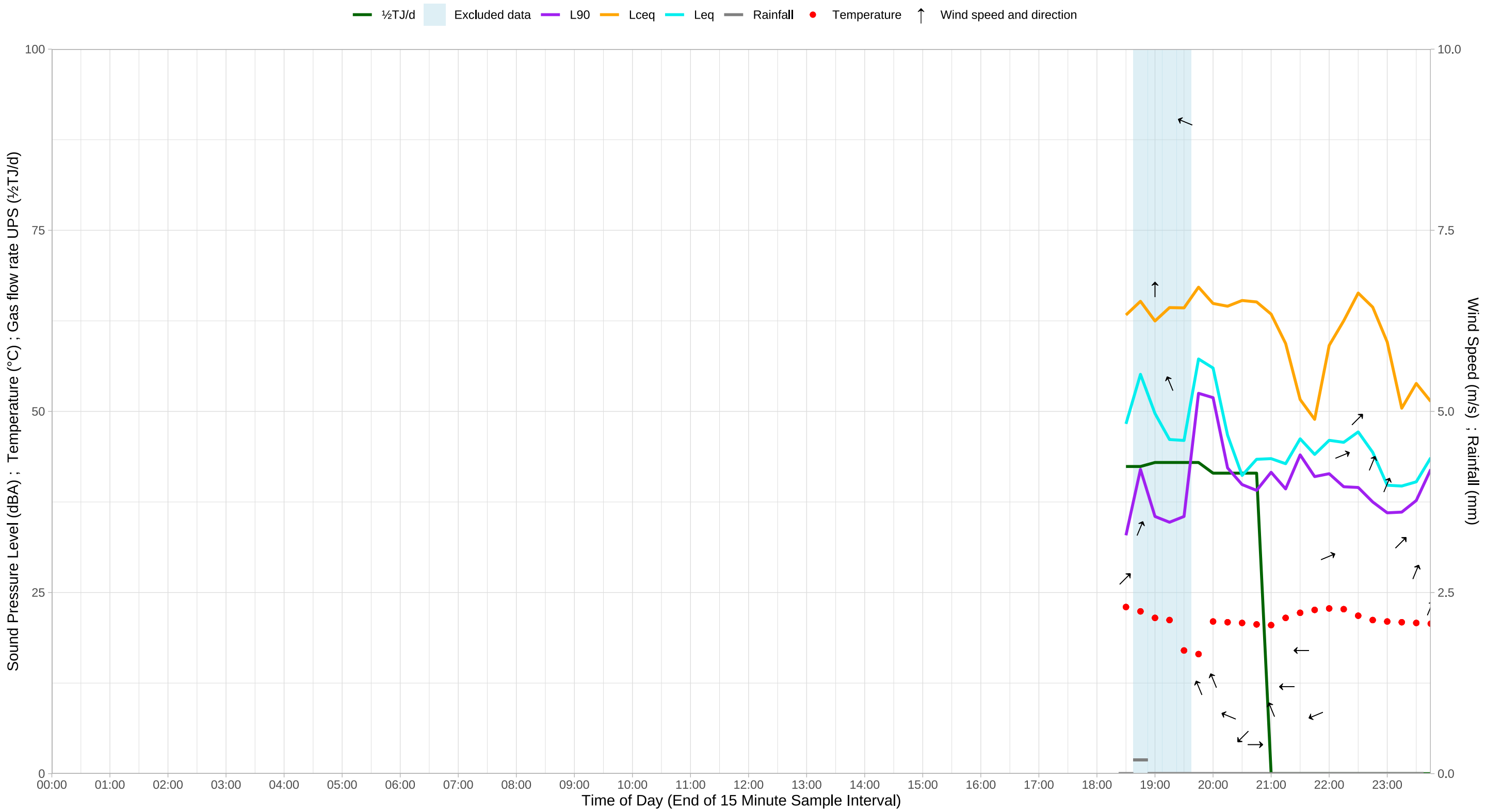
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Location ML2
Monday 21 April 2025



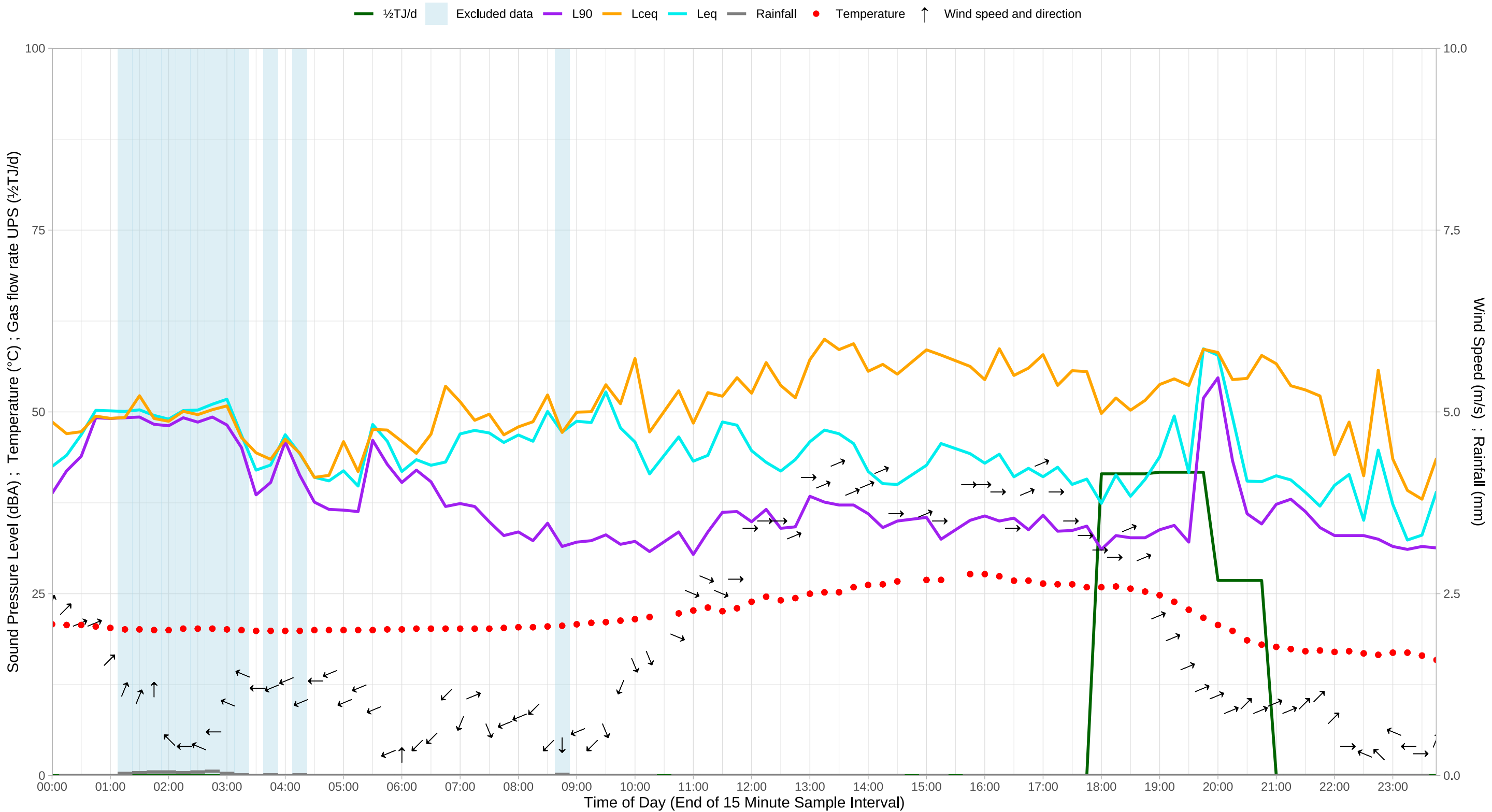
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Location ML2
Tuesday 22 April 2025



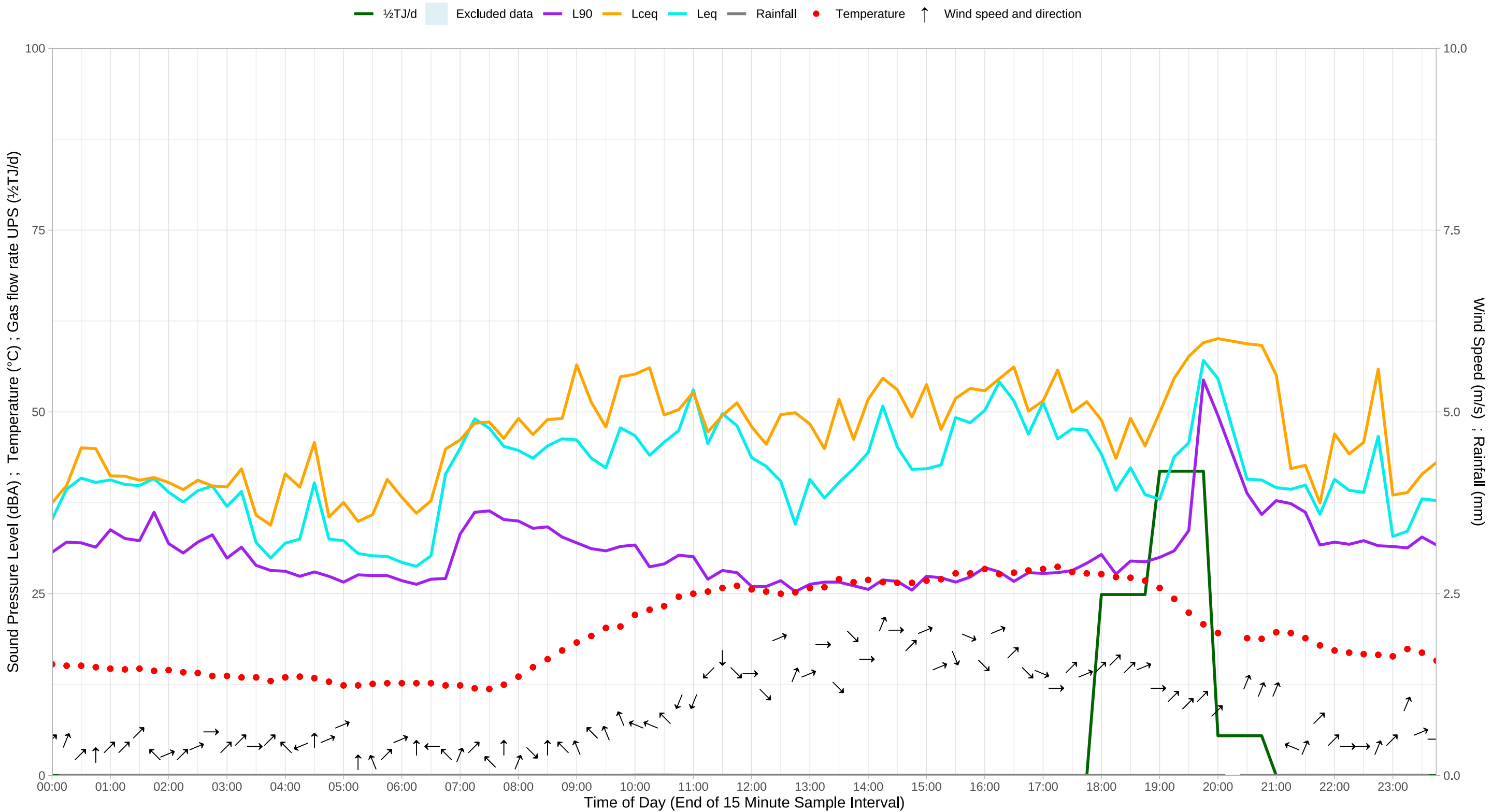
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Thursday 20 March 2025



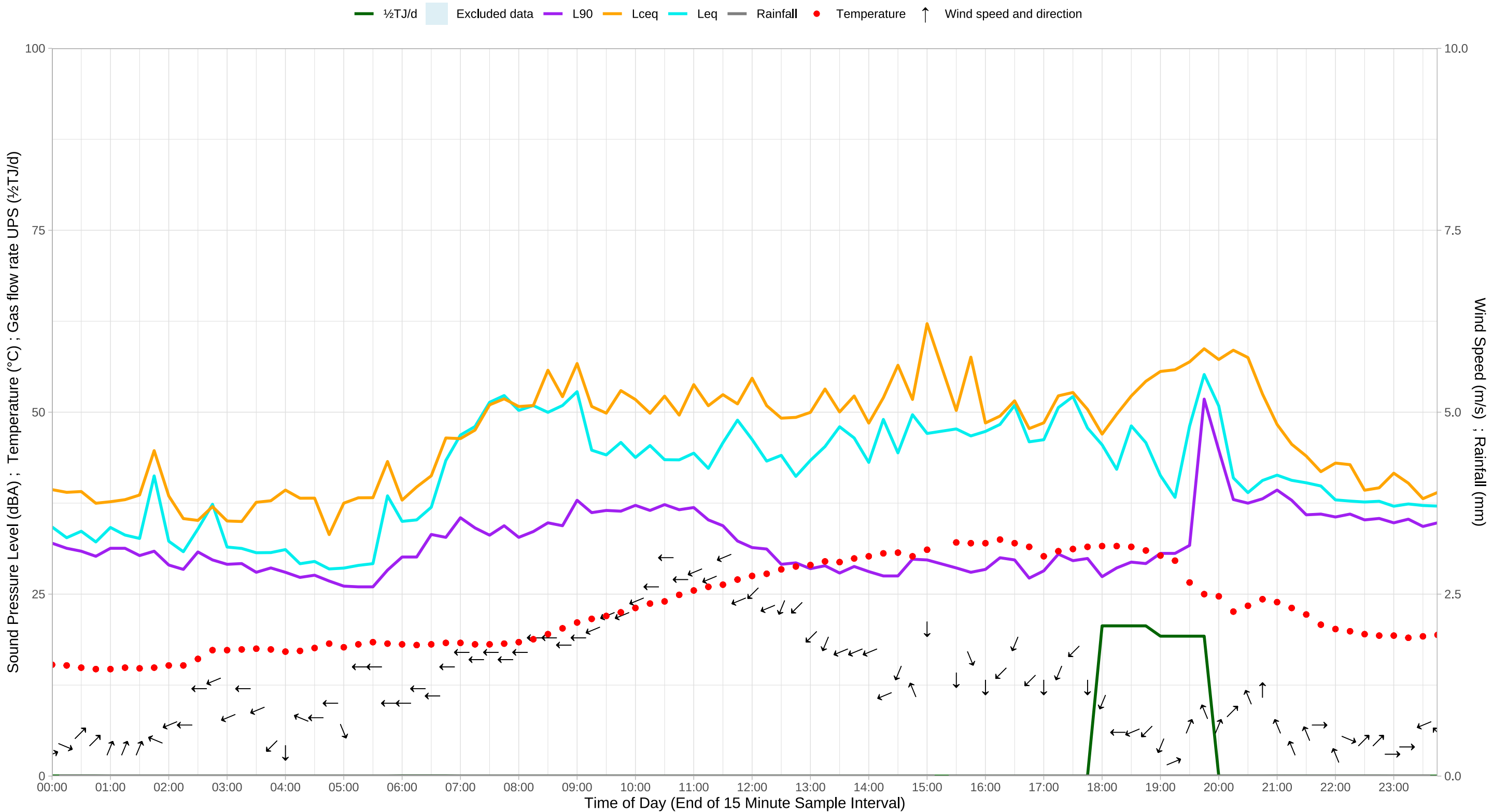
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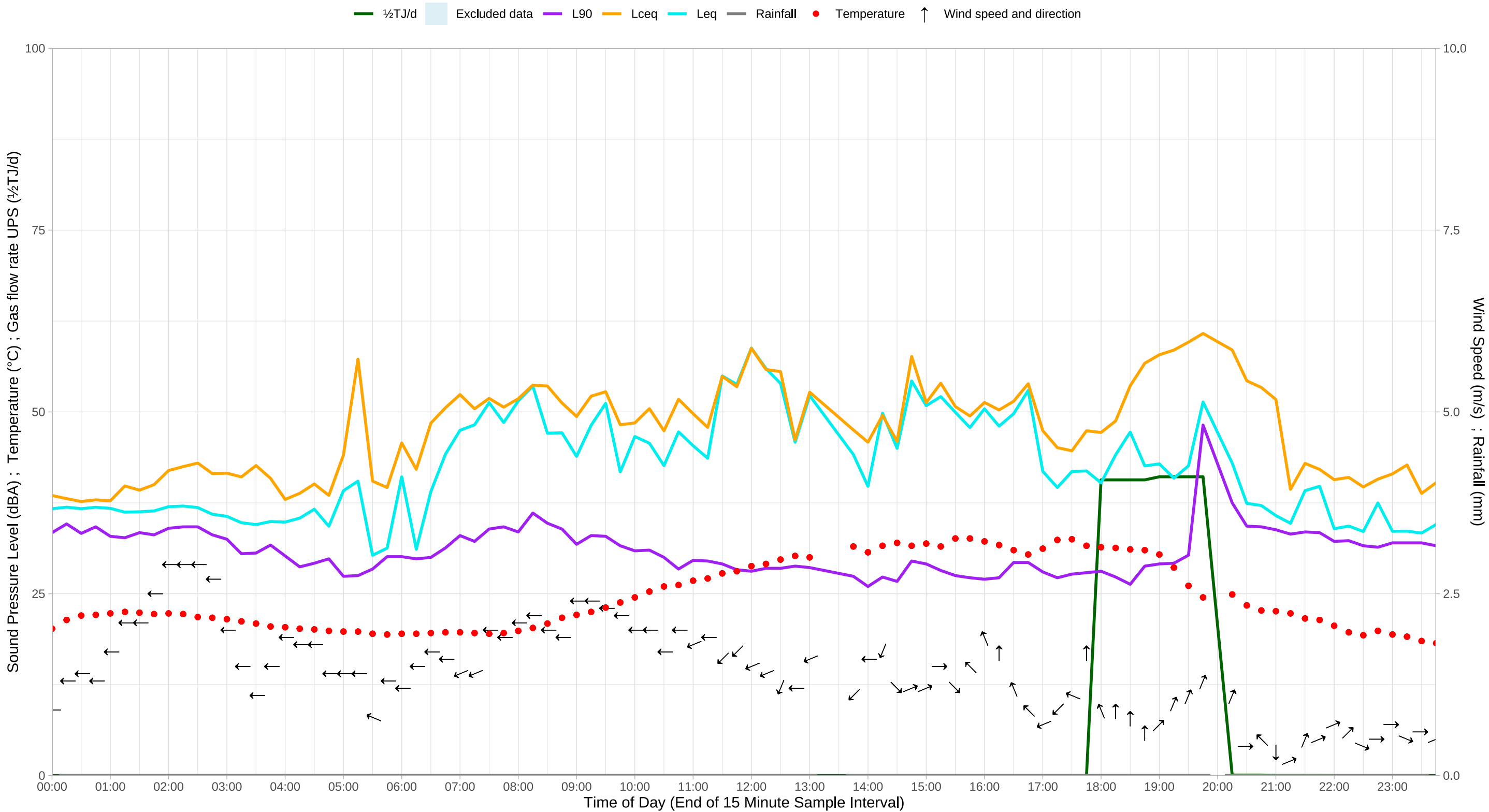
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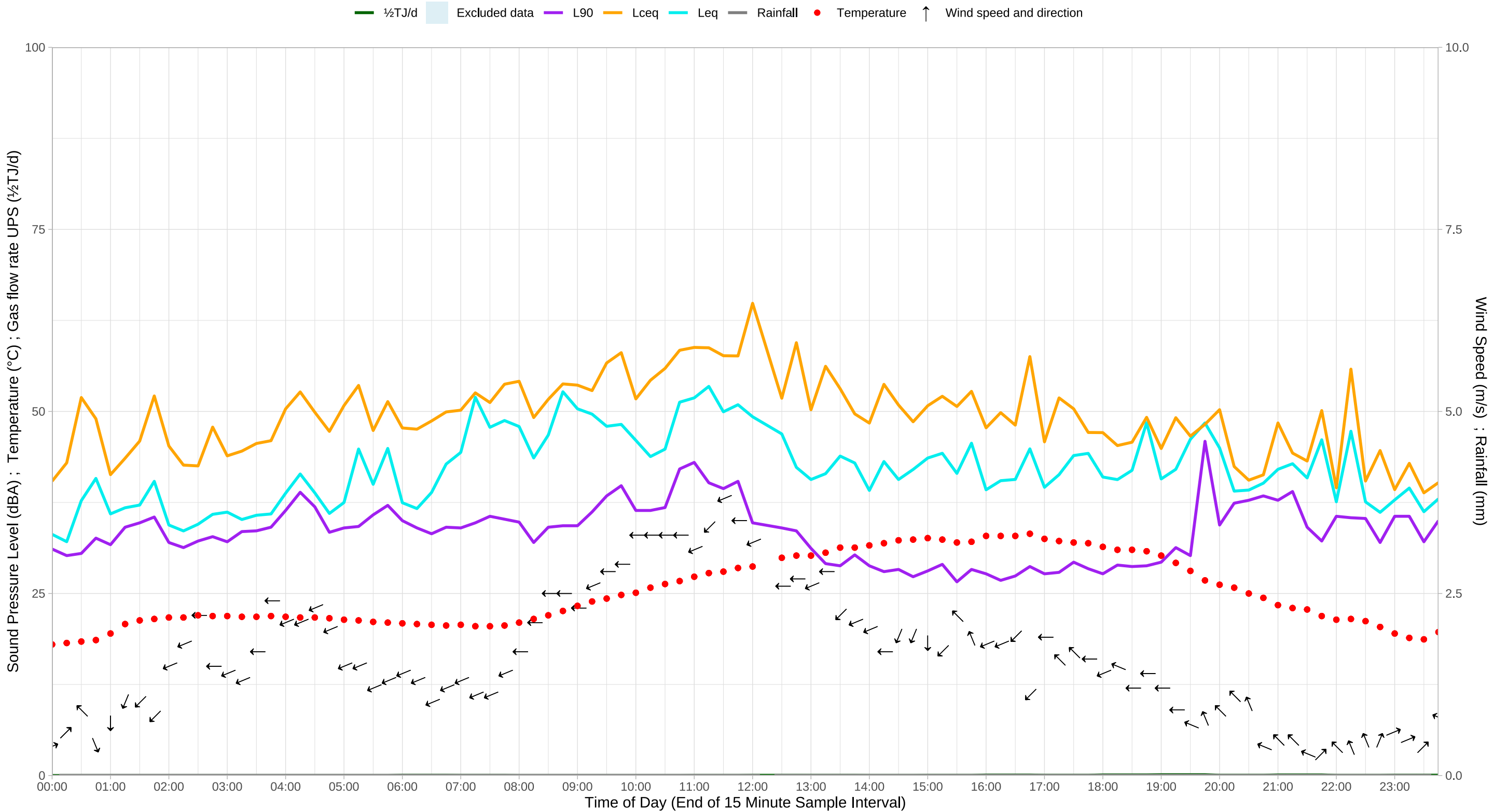
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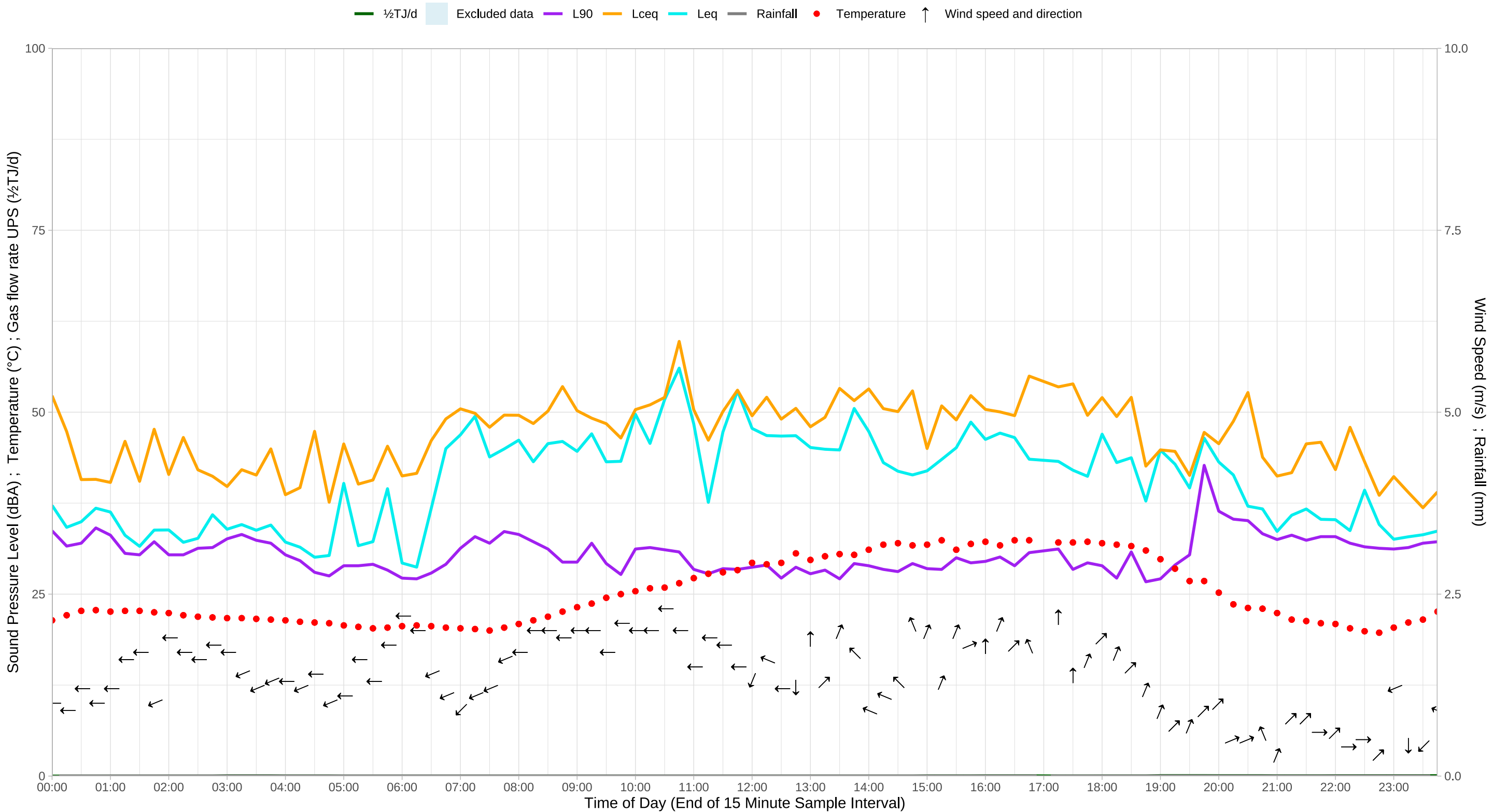
Statistical Ambient Noise Levels
Location ML3
Monday 24 March 2025



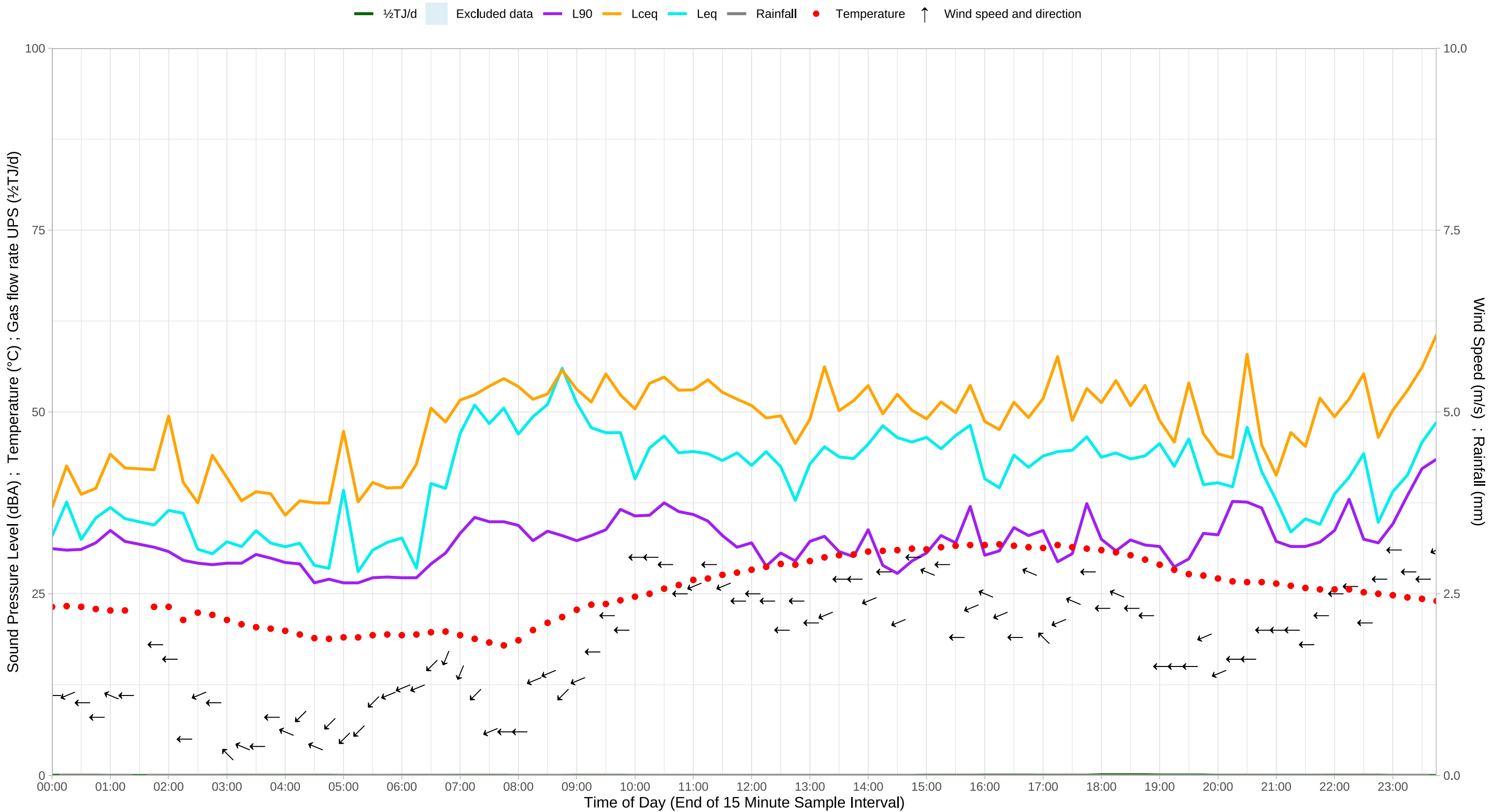
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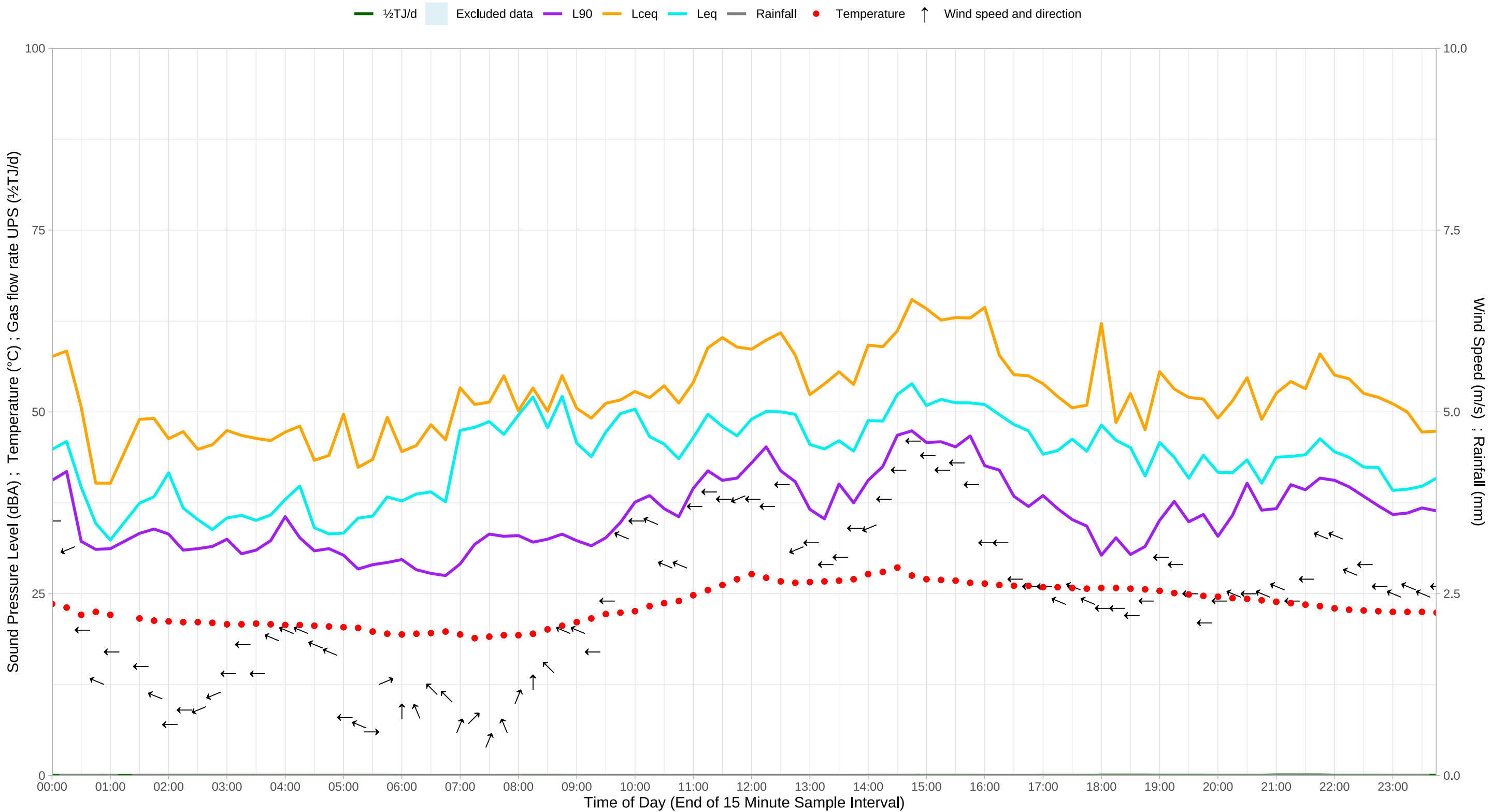
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Location ML3
Wednesday 26 March 2025



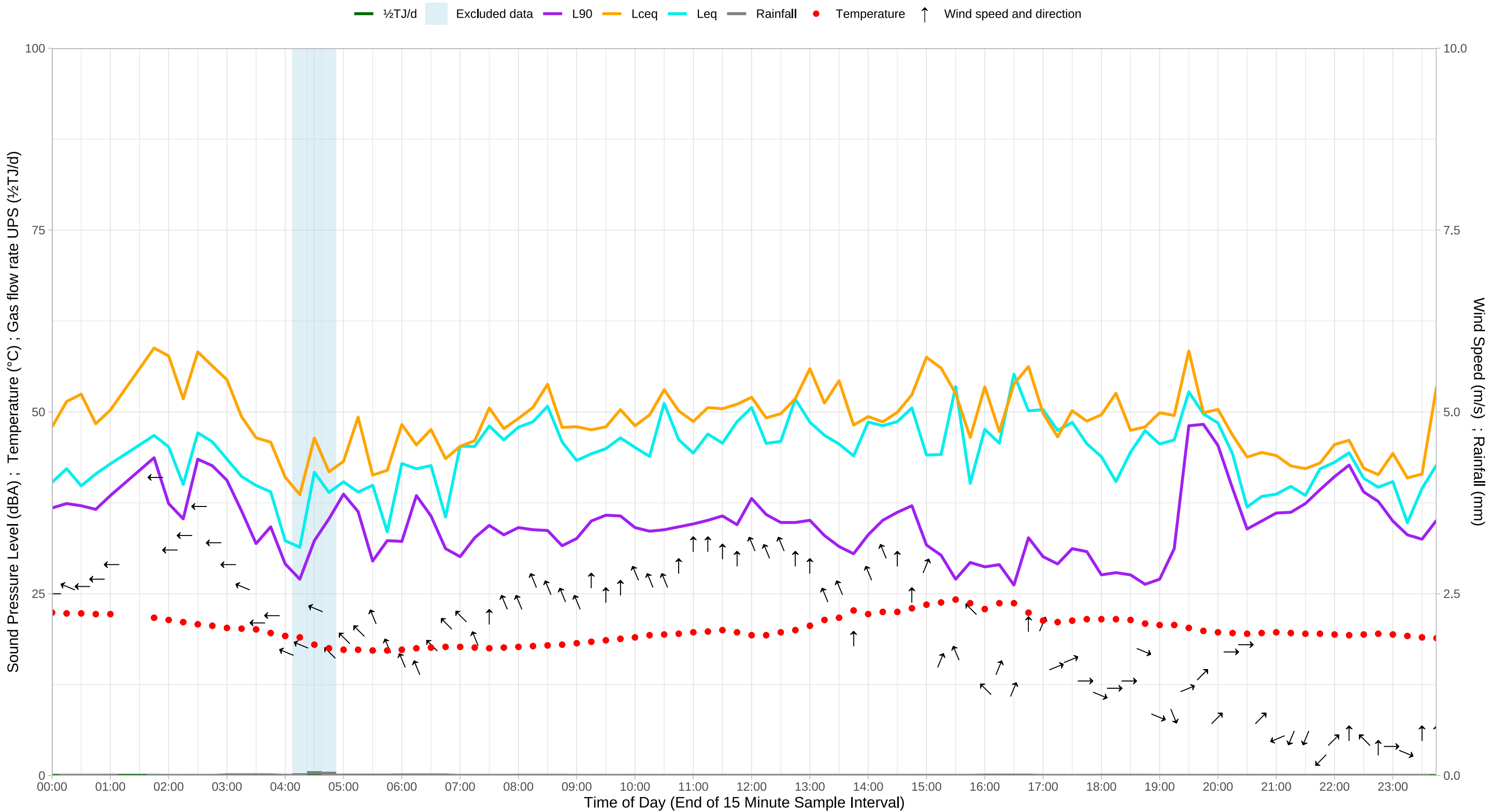
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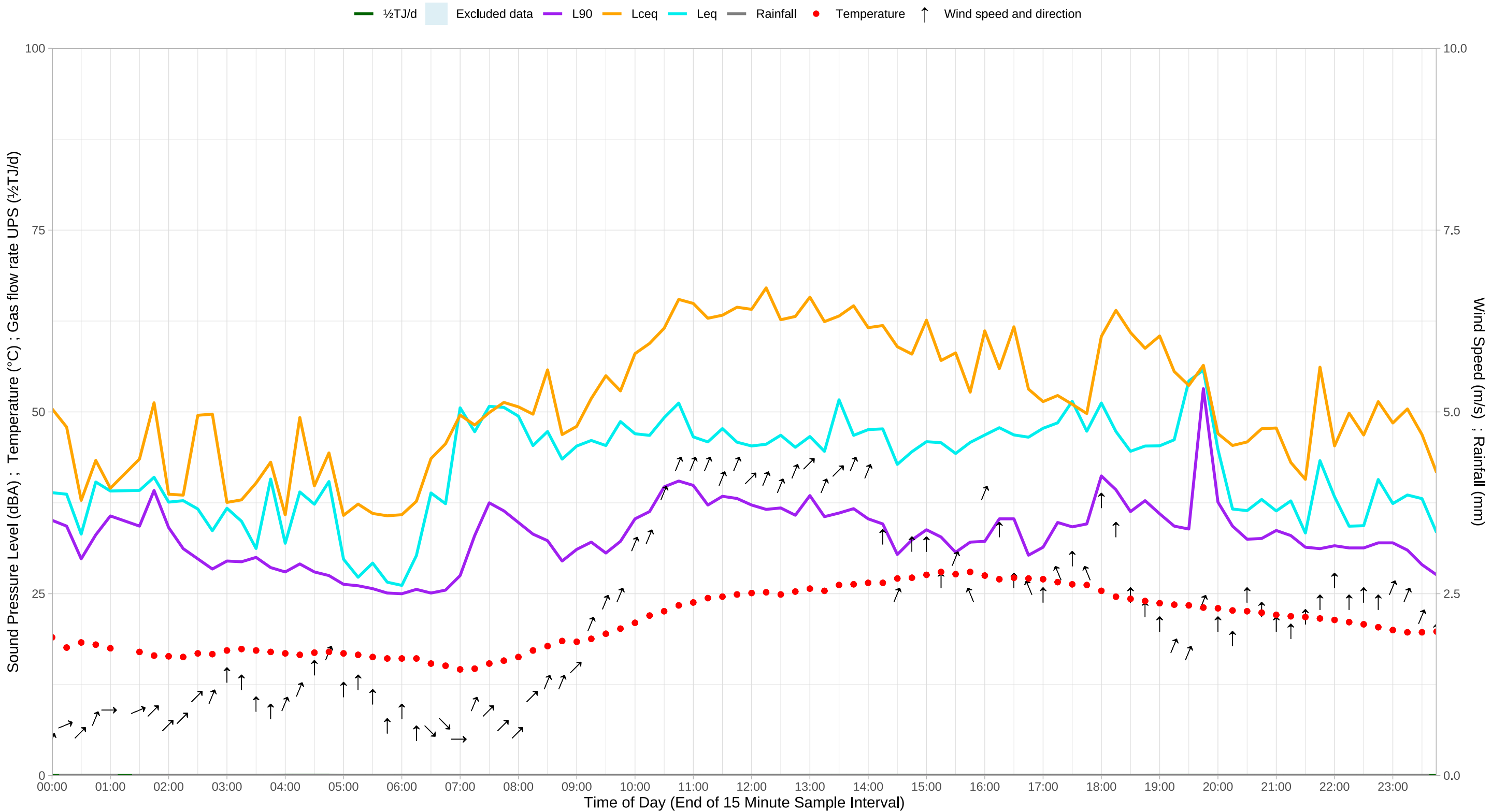
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Friday 28 March 2025



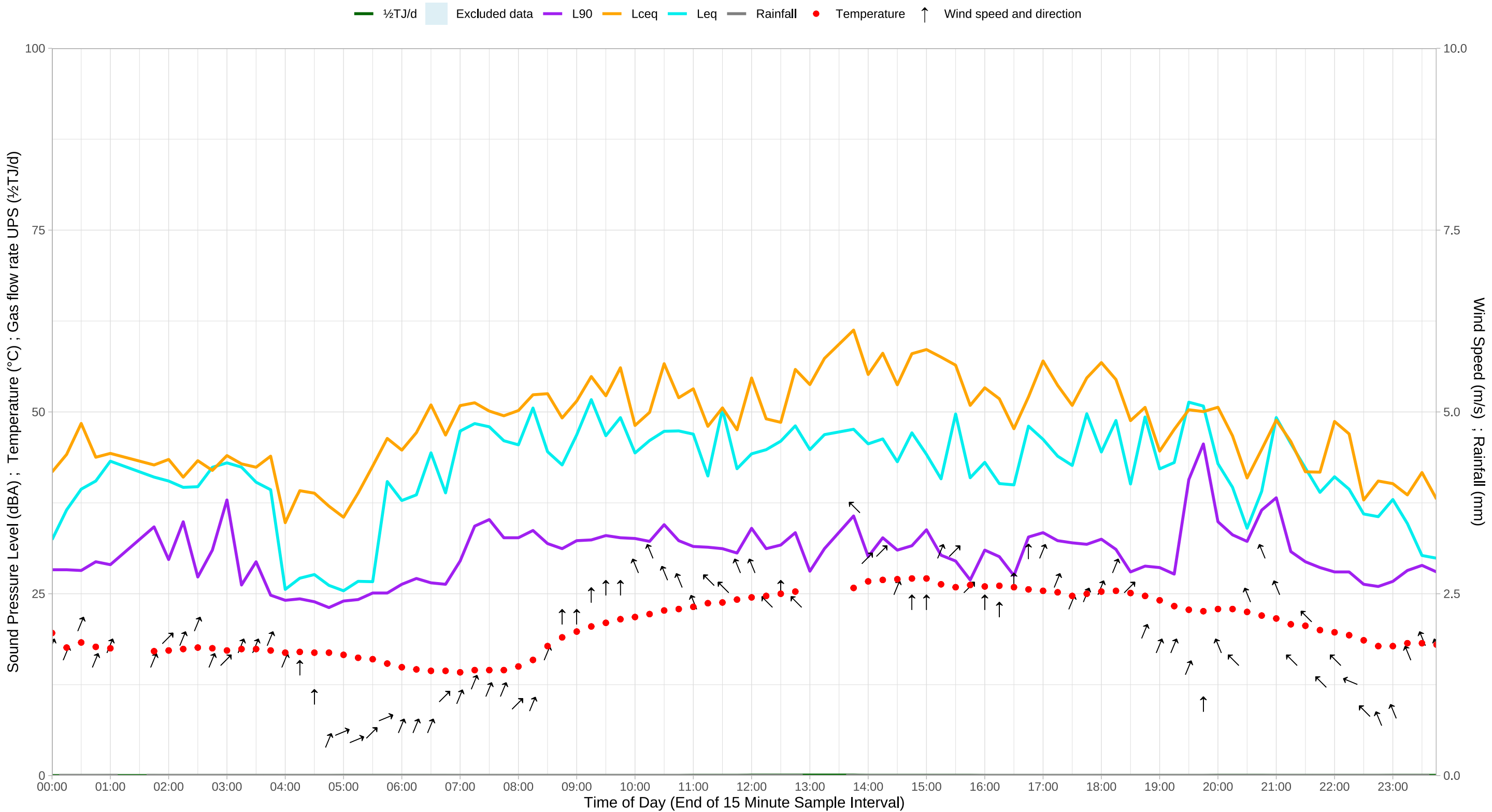
Statistical Ambient Noise Levels
Location ML3
Saturday 29 March 2025



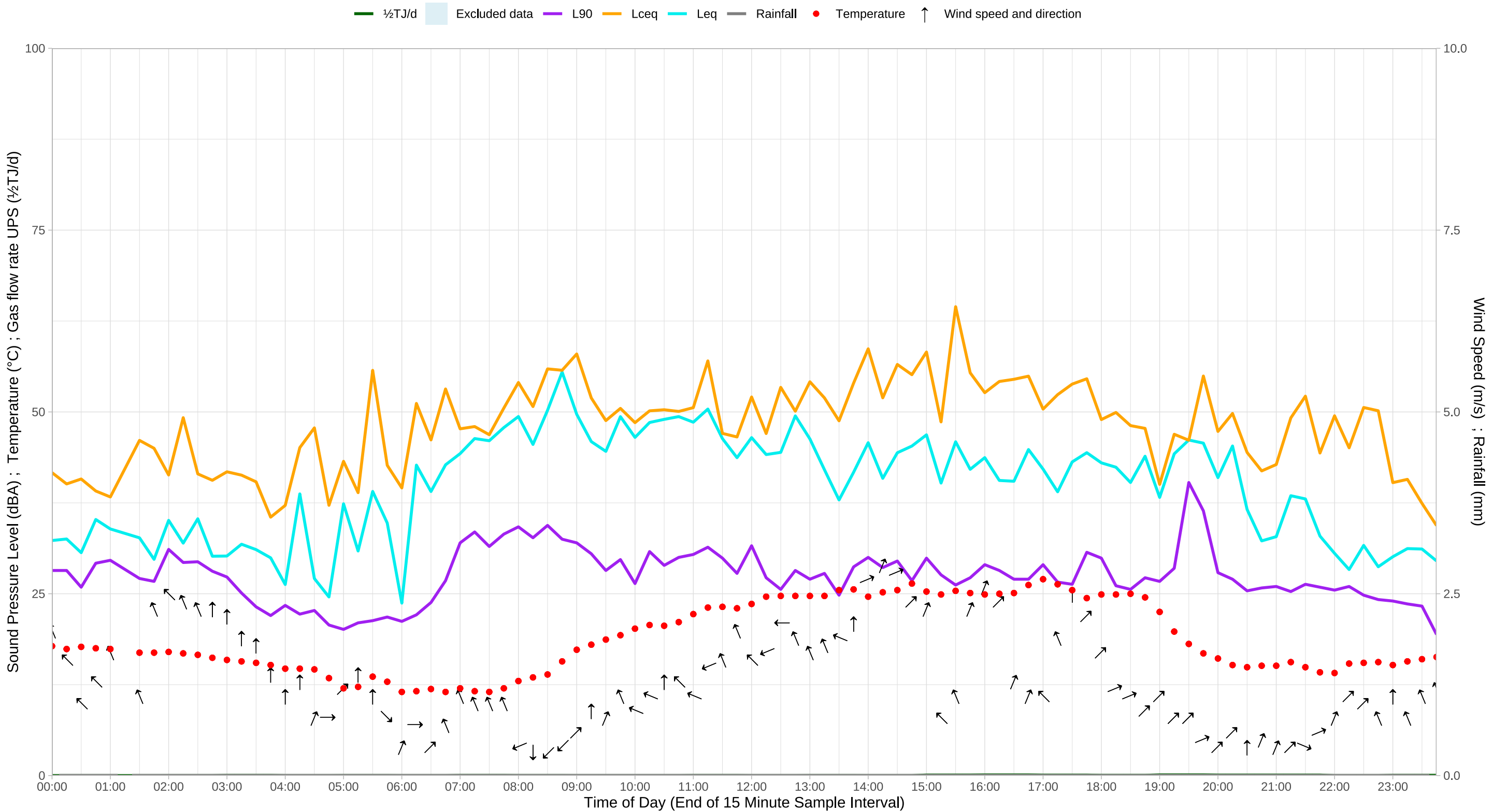
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Sunday 30 March 2025



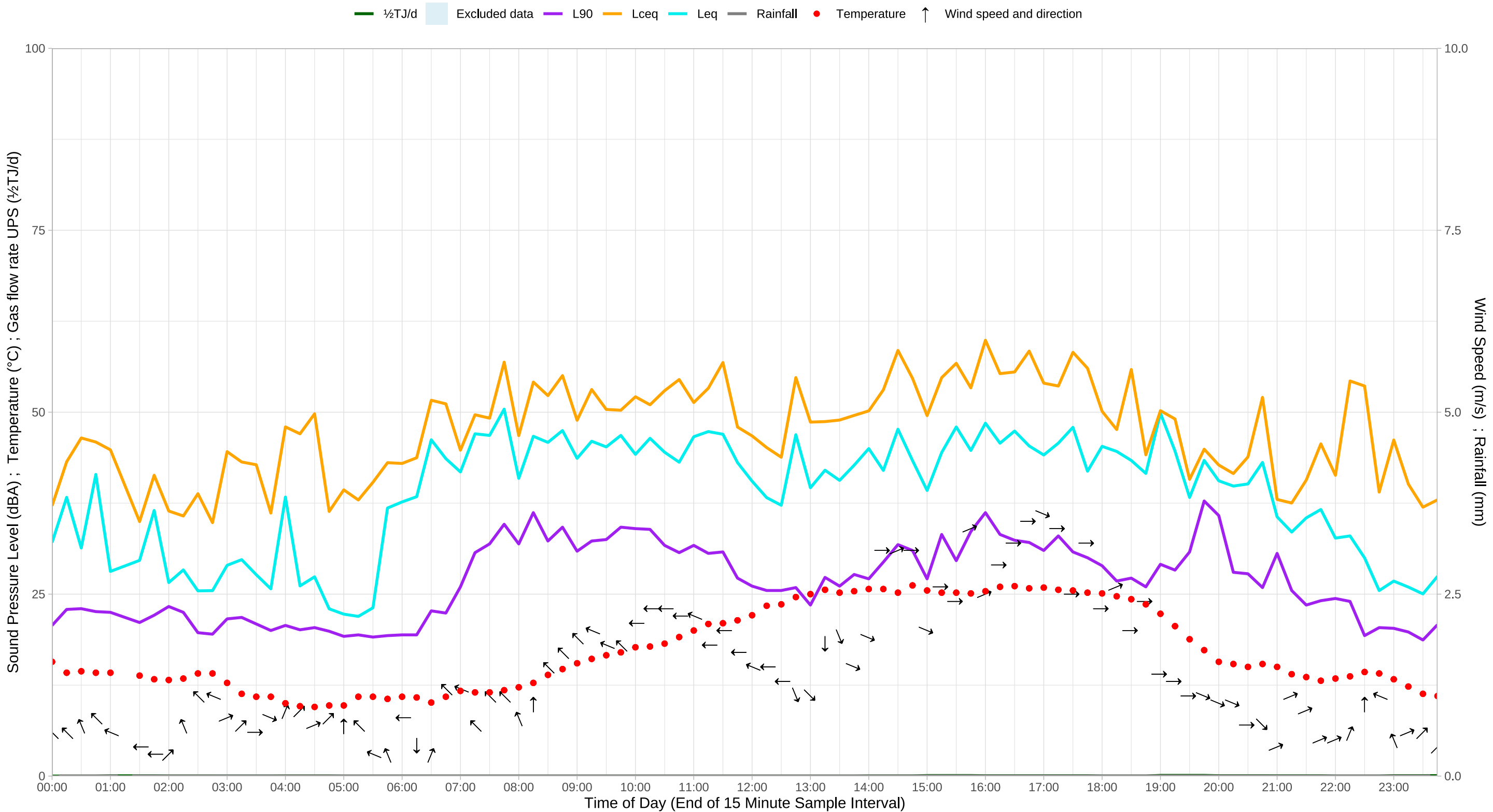
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Monday 31 March 2025



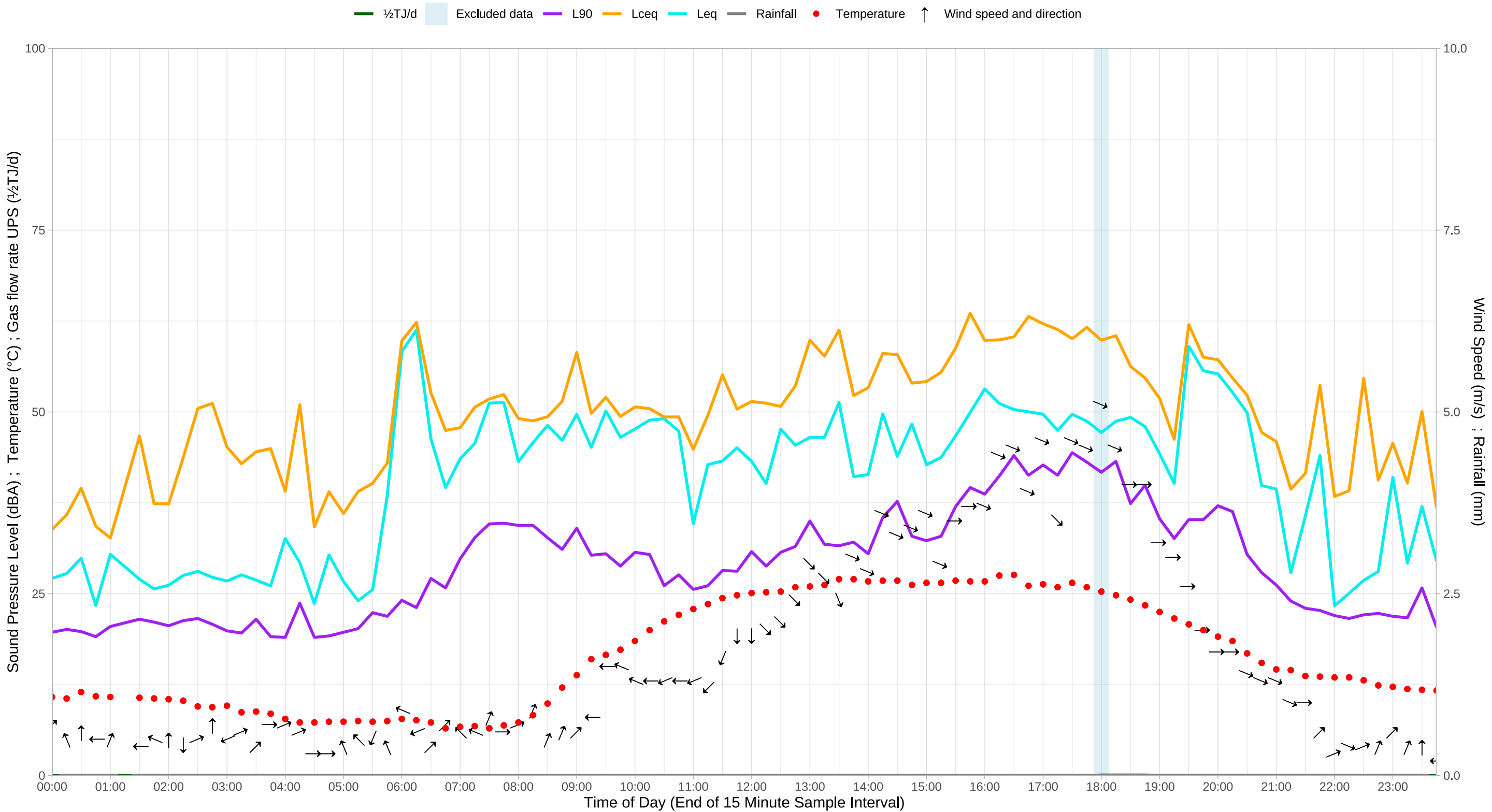
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Location ML3
Tuesday 01 April 2025



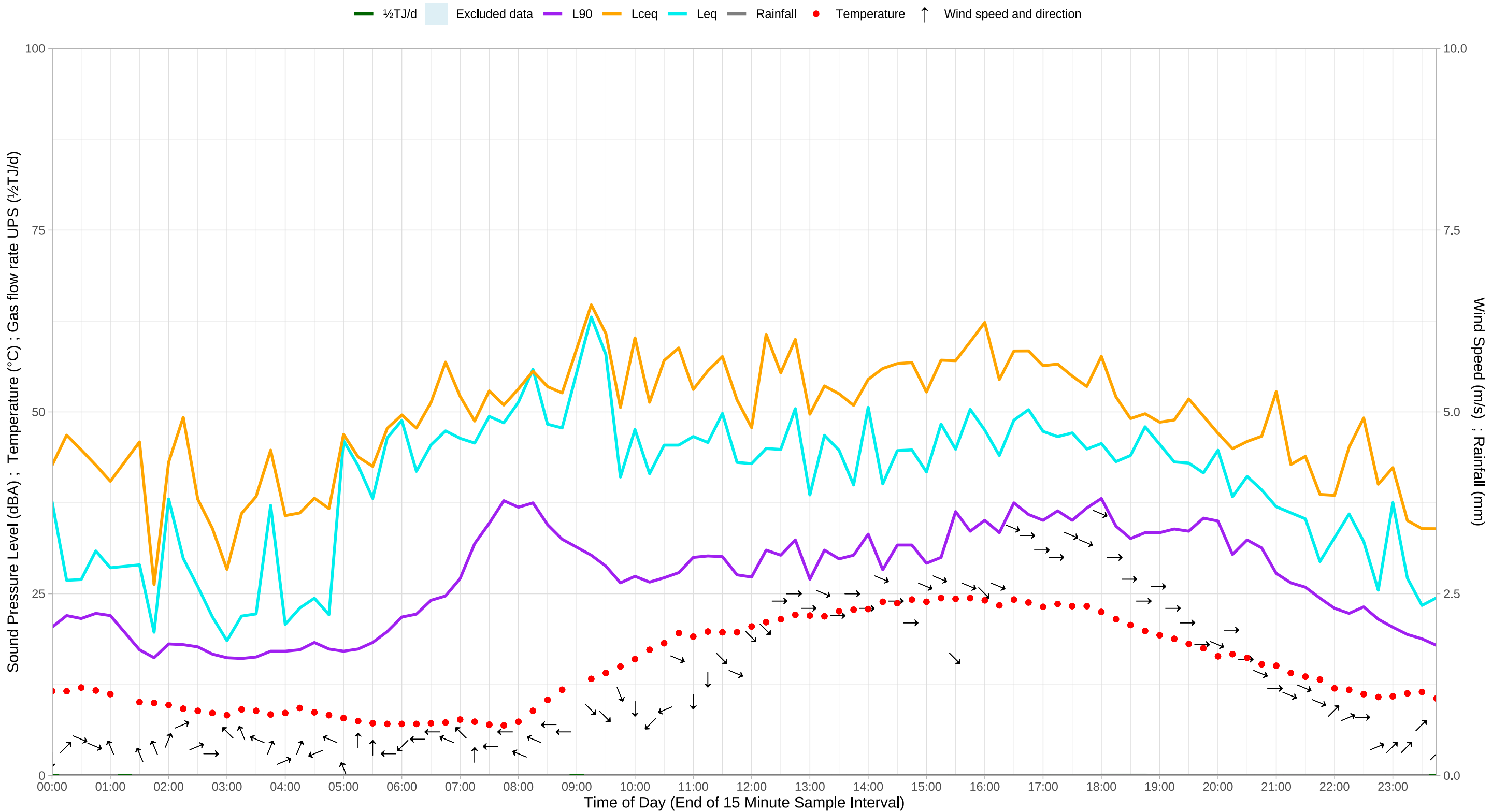
Statistical Ambient Noise Levels
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Wednesday 02 April 2025



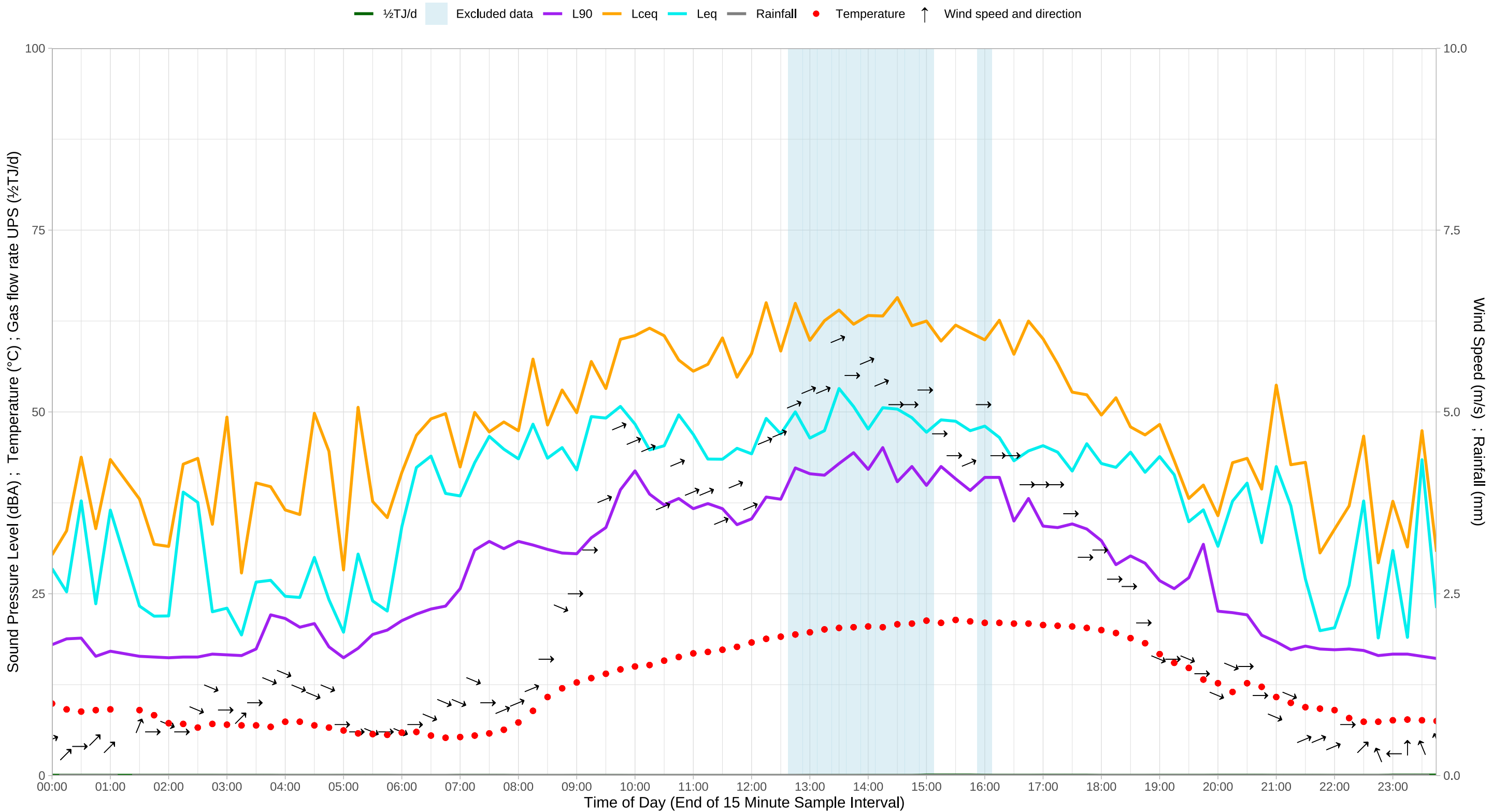
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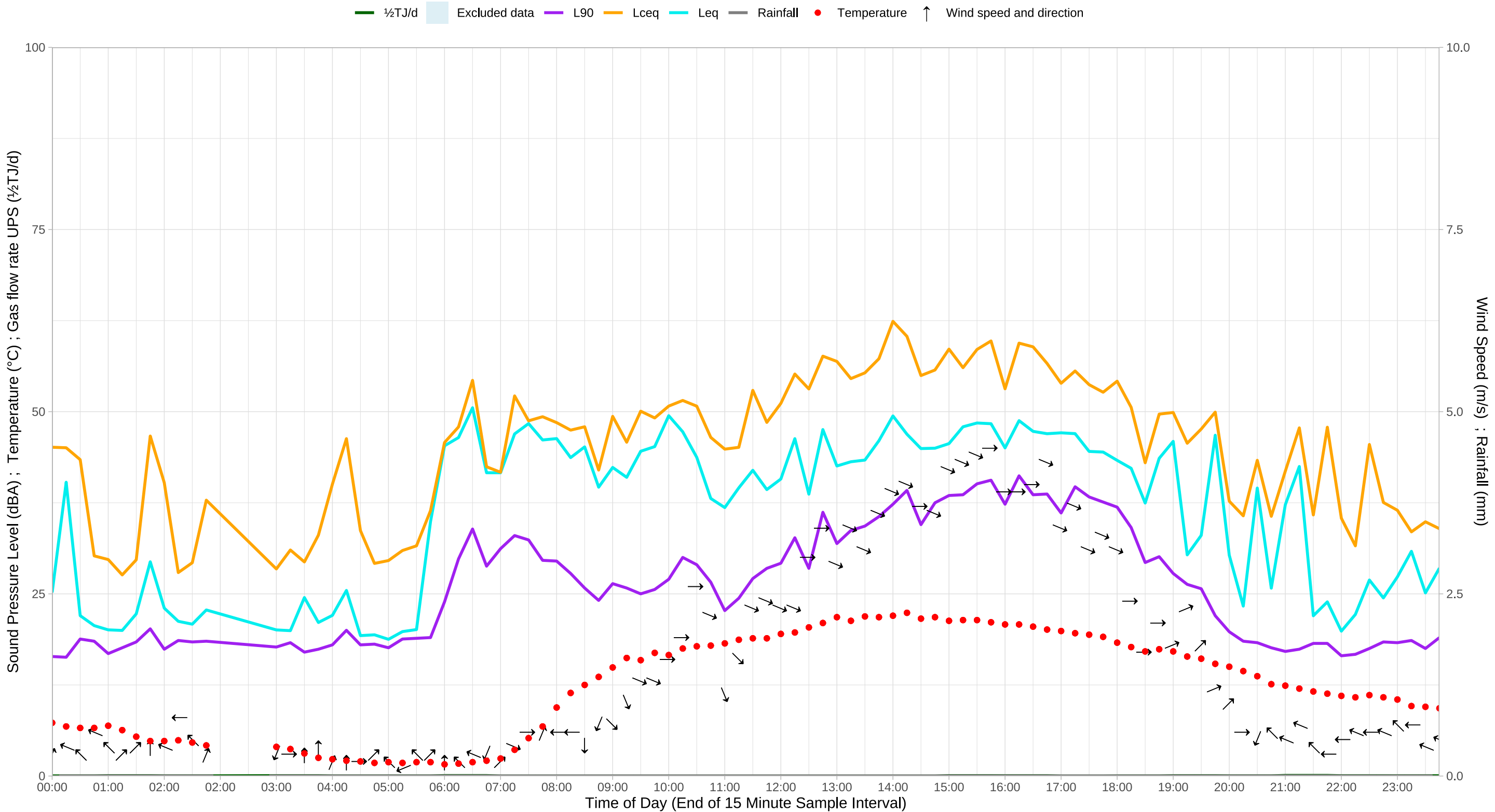
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Friday 04 April 2025



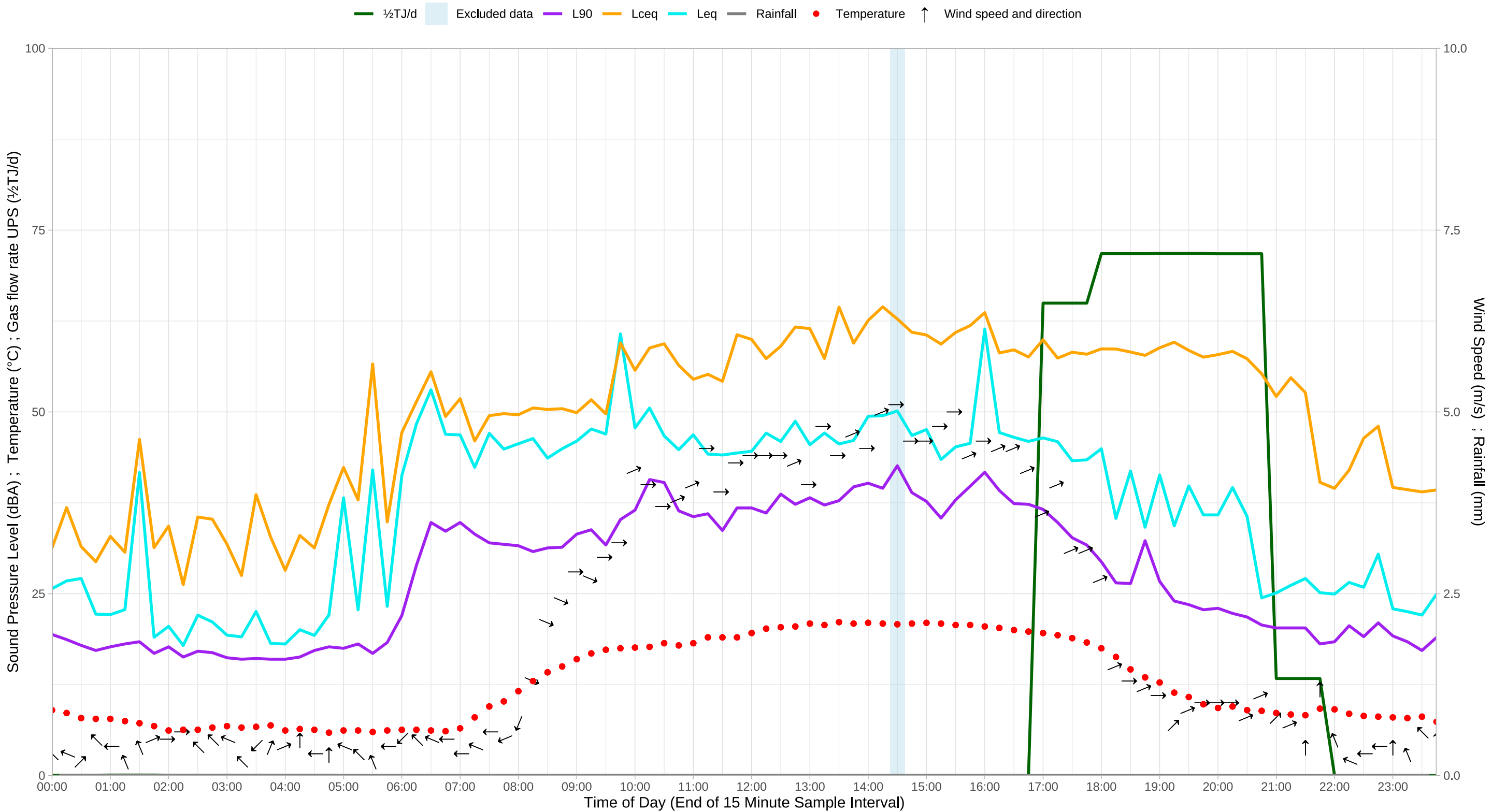
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Location ML3
Saturday 05 April 2025



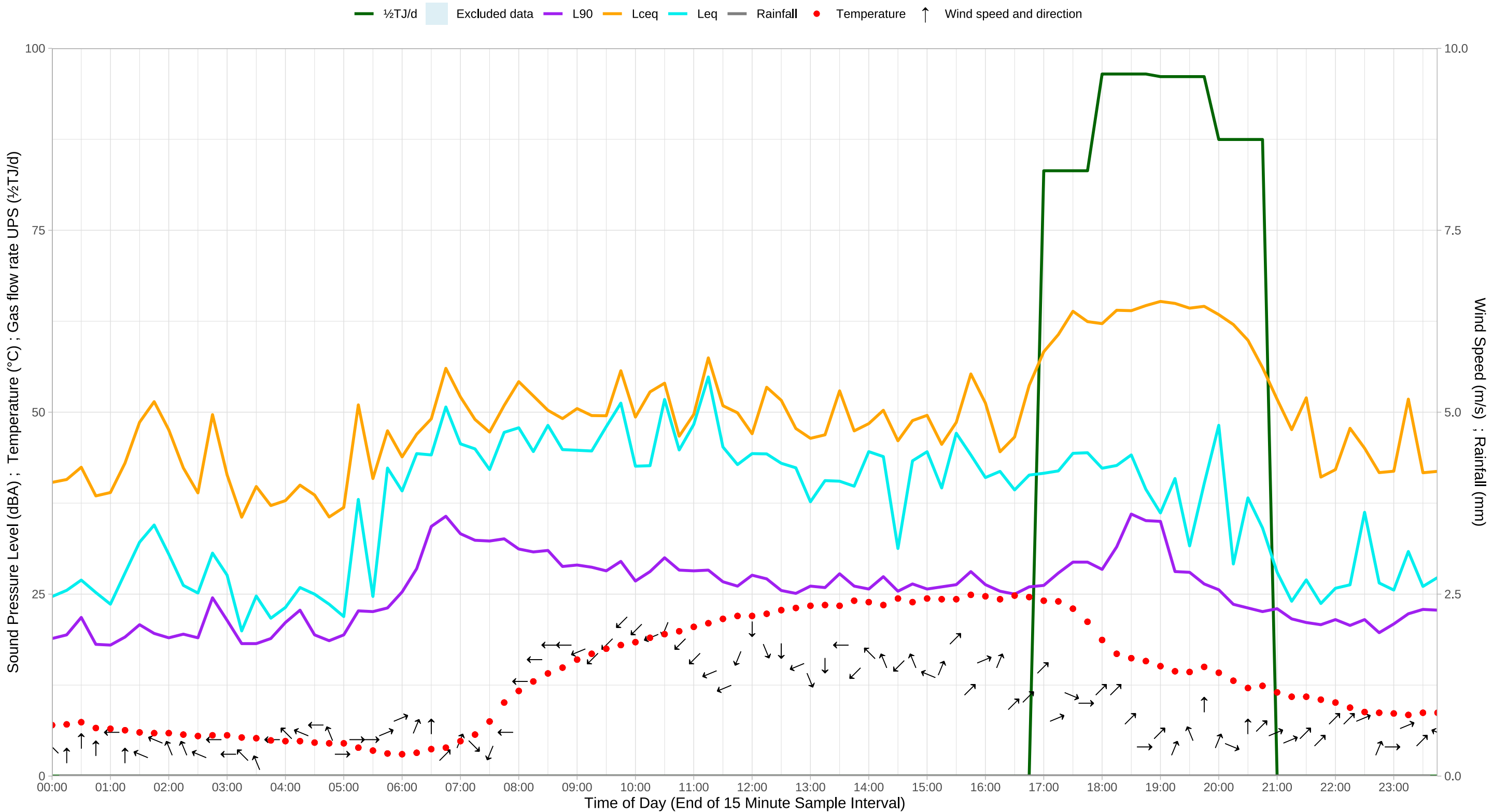
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Location ML3
Sunday 06 April 2025



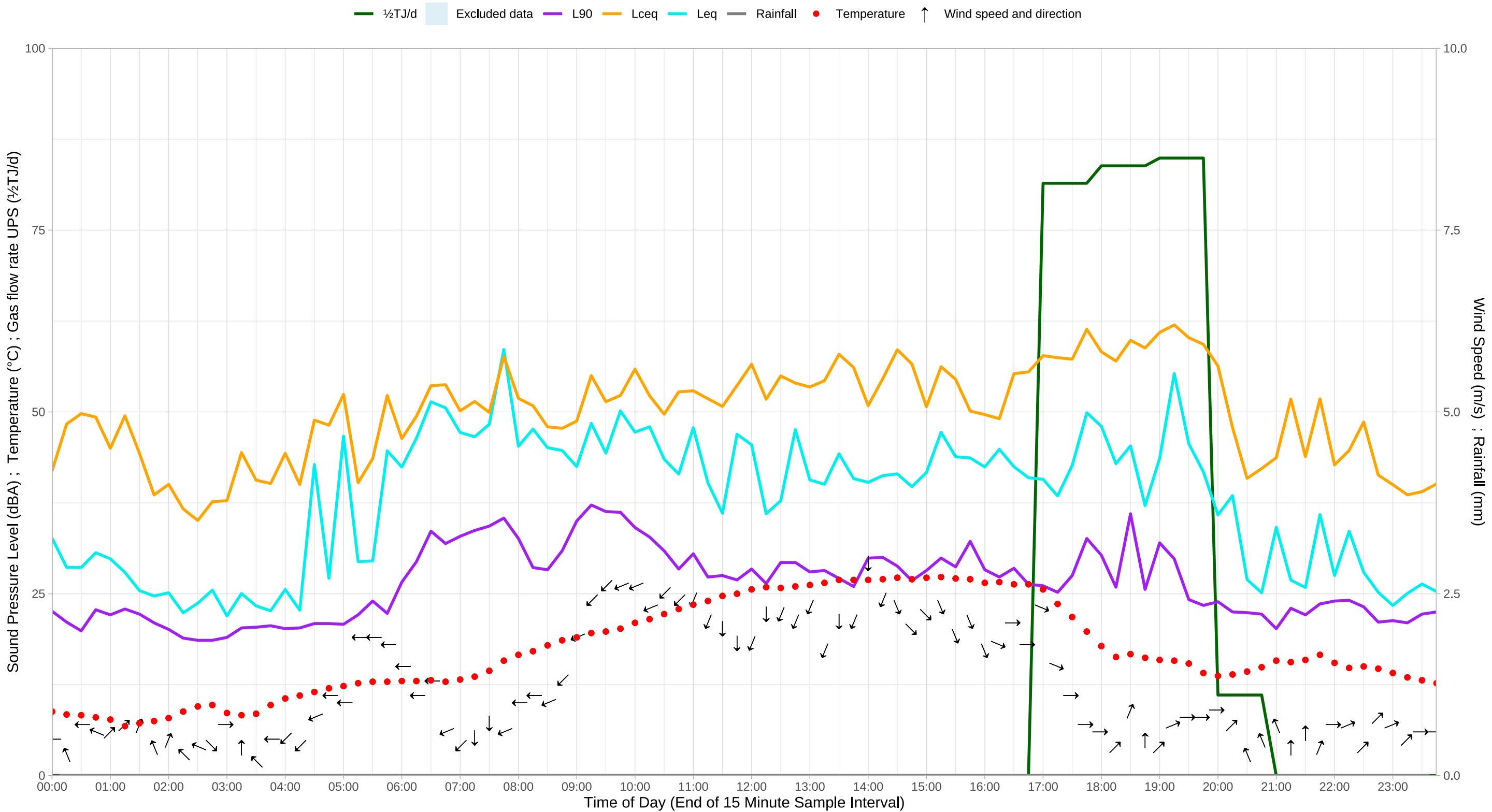
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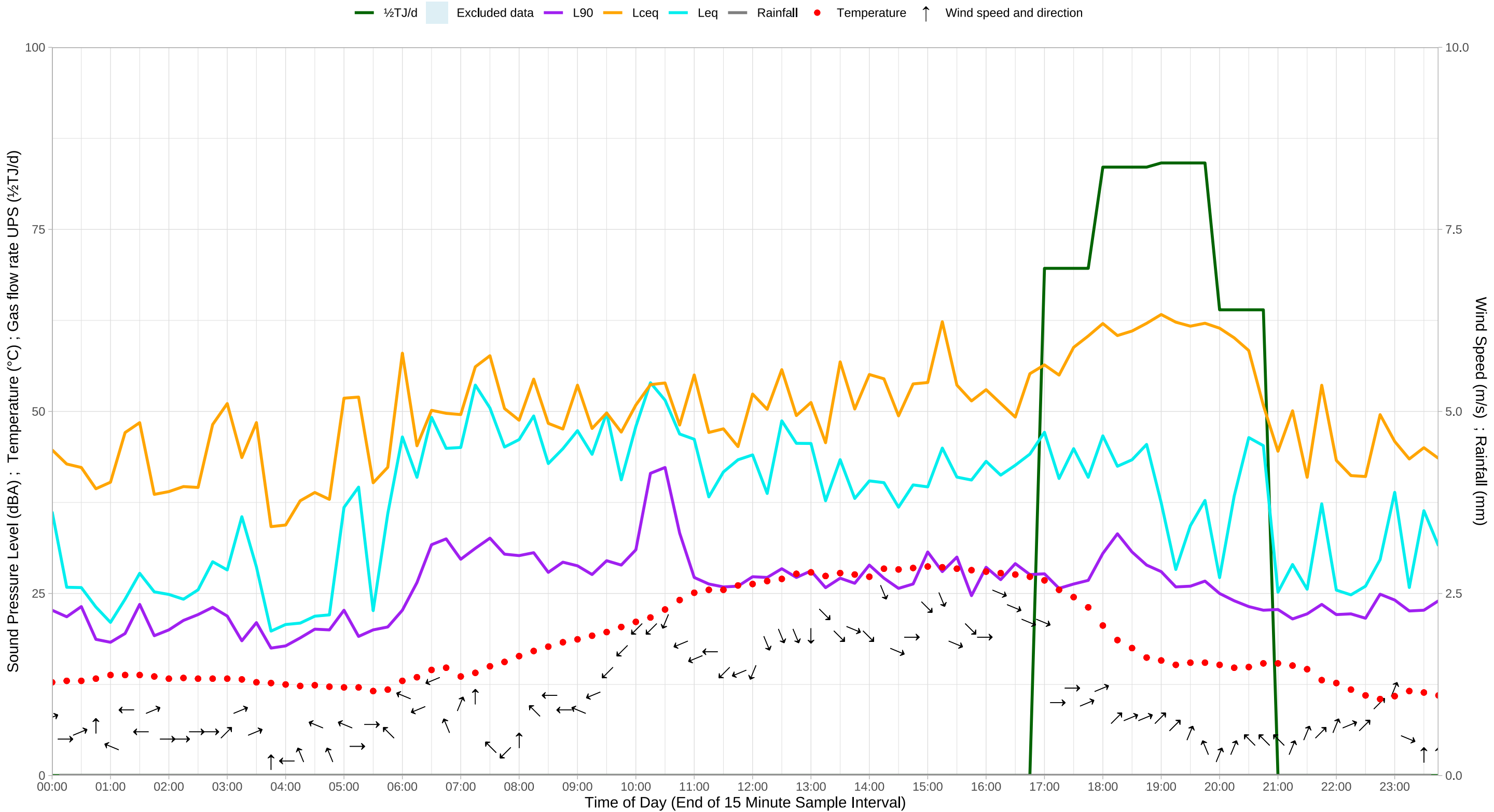
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Tuesday 08 April 2025



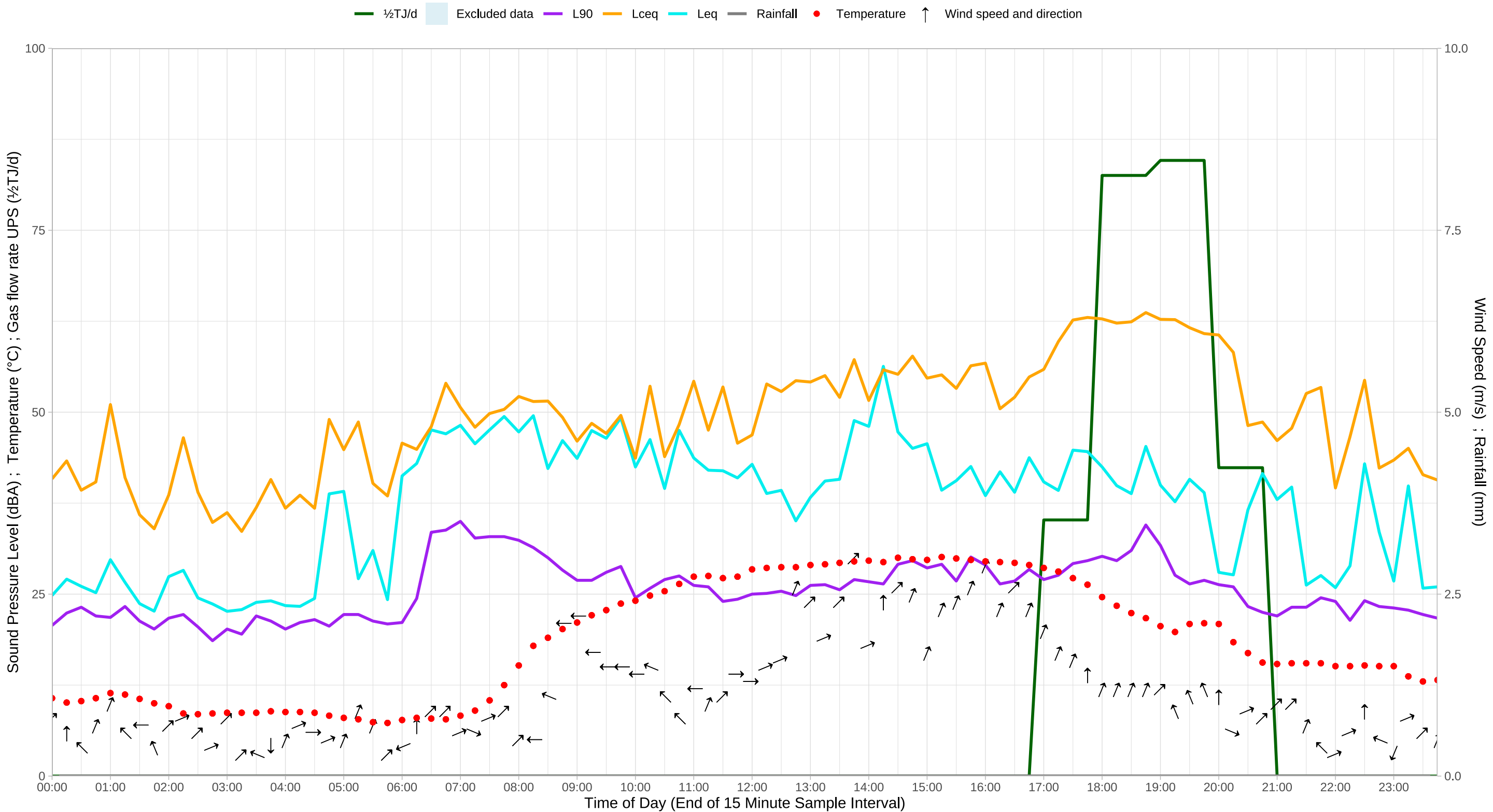
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Wednesday 09 April 2025



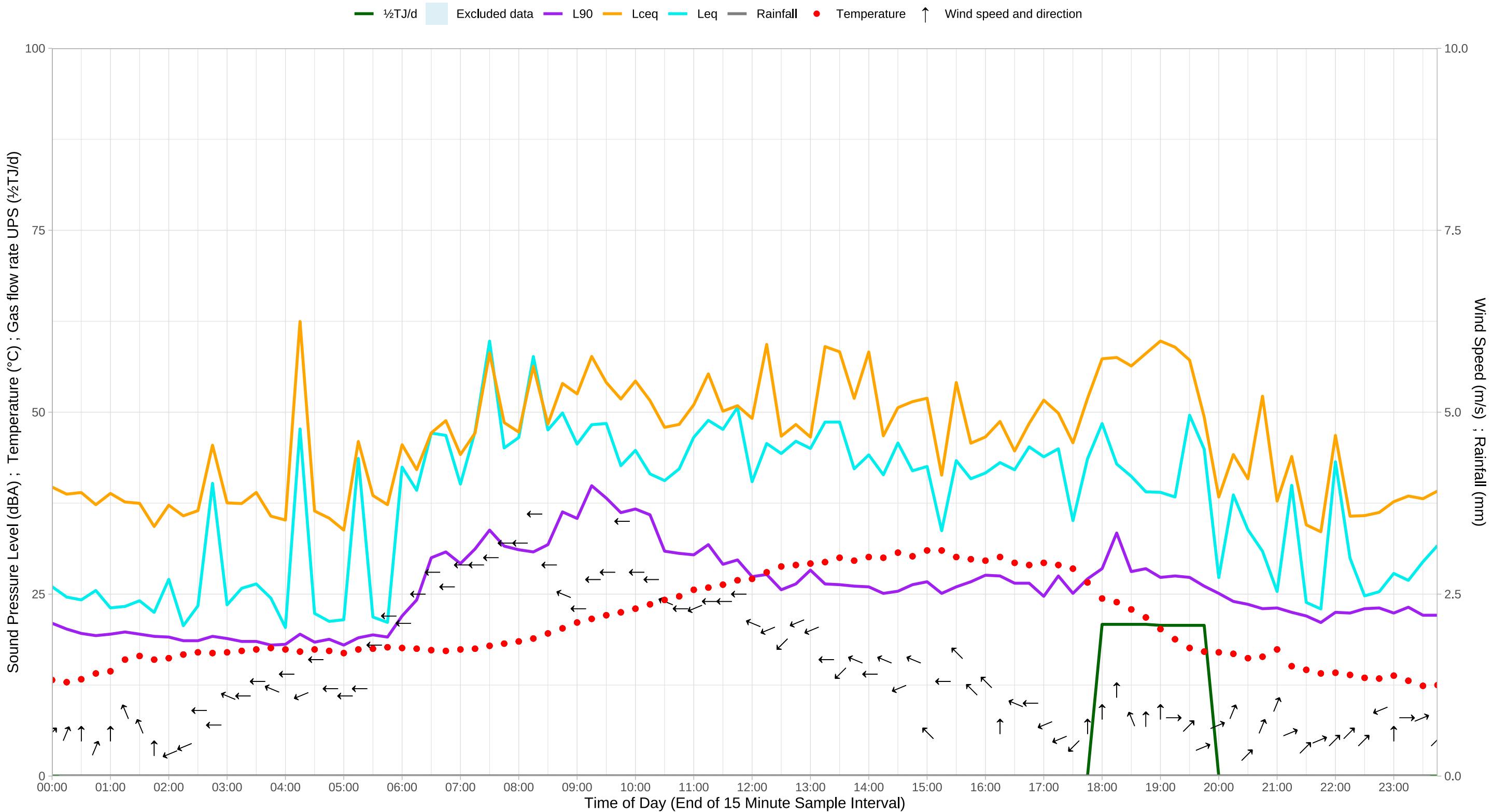
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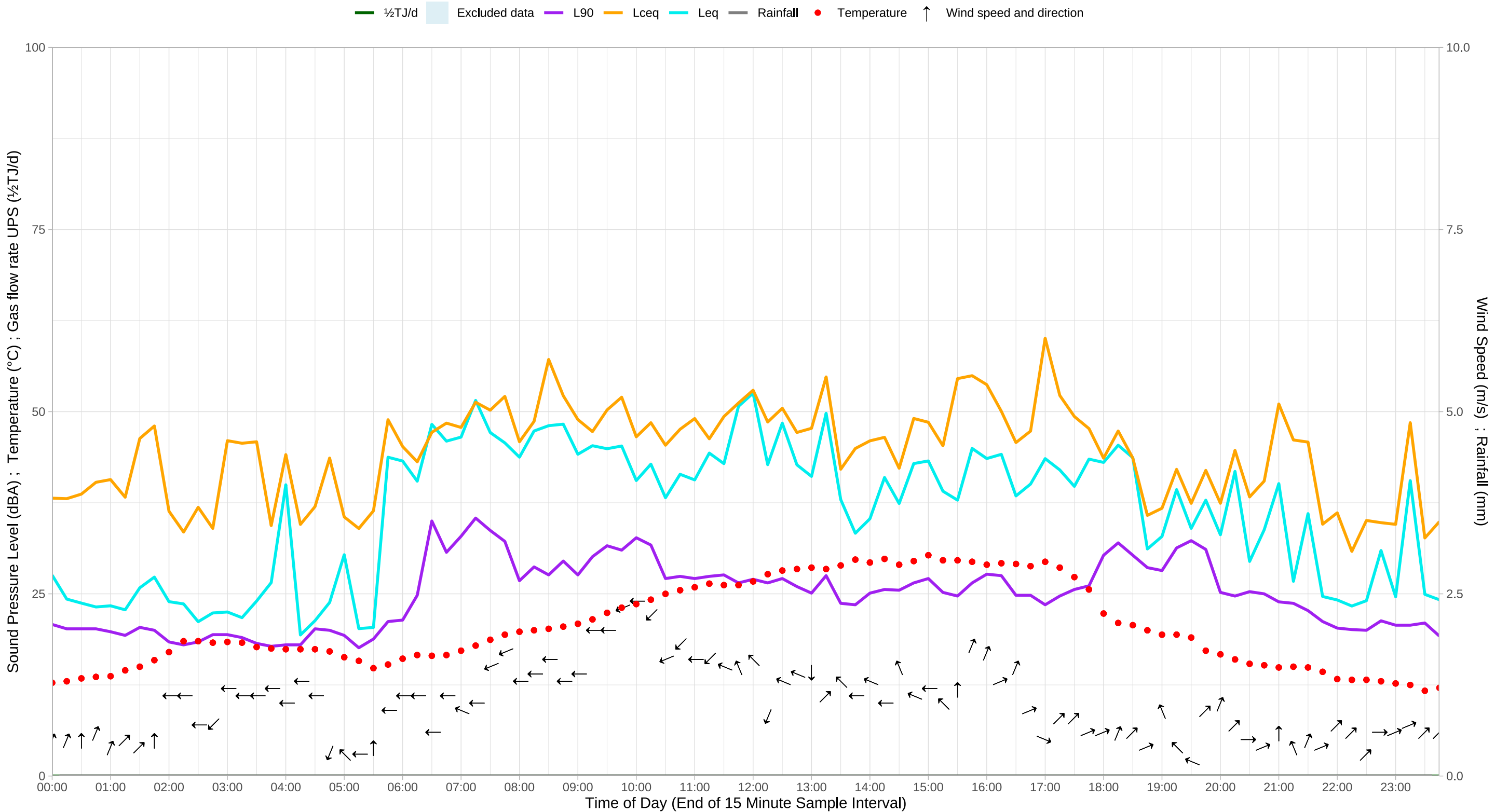
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Friday 11 April 2025



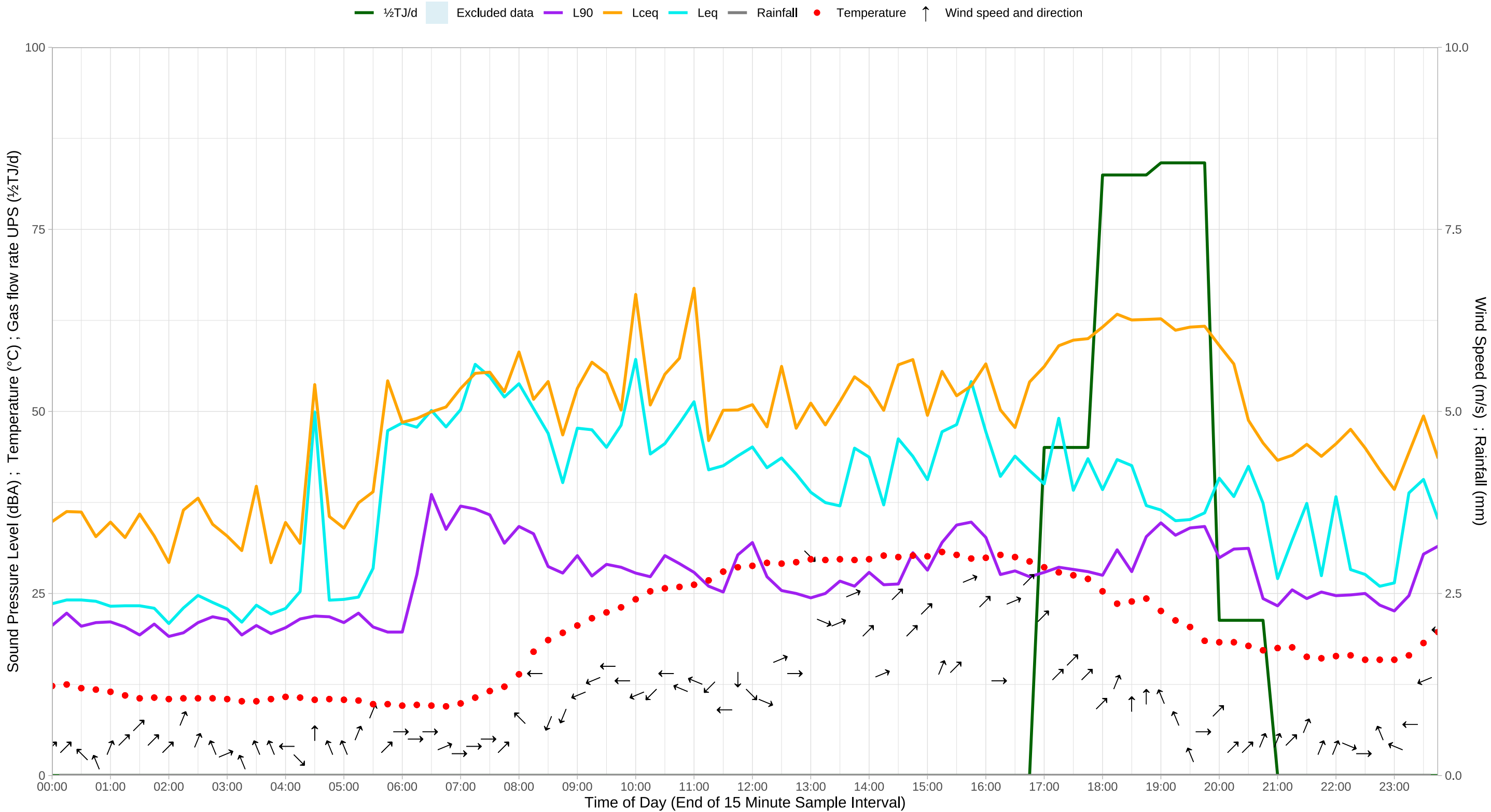
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Saturday 12 April 2025



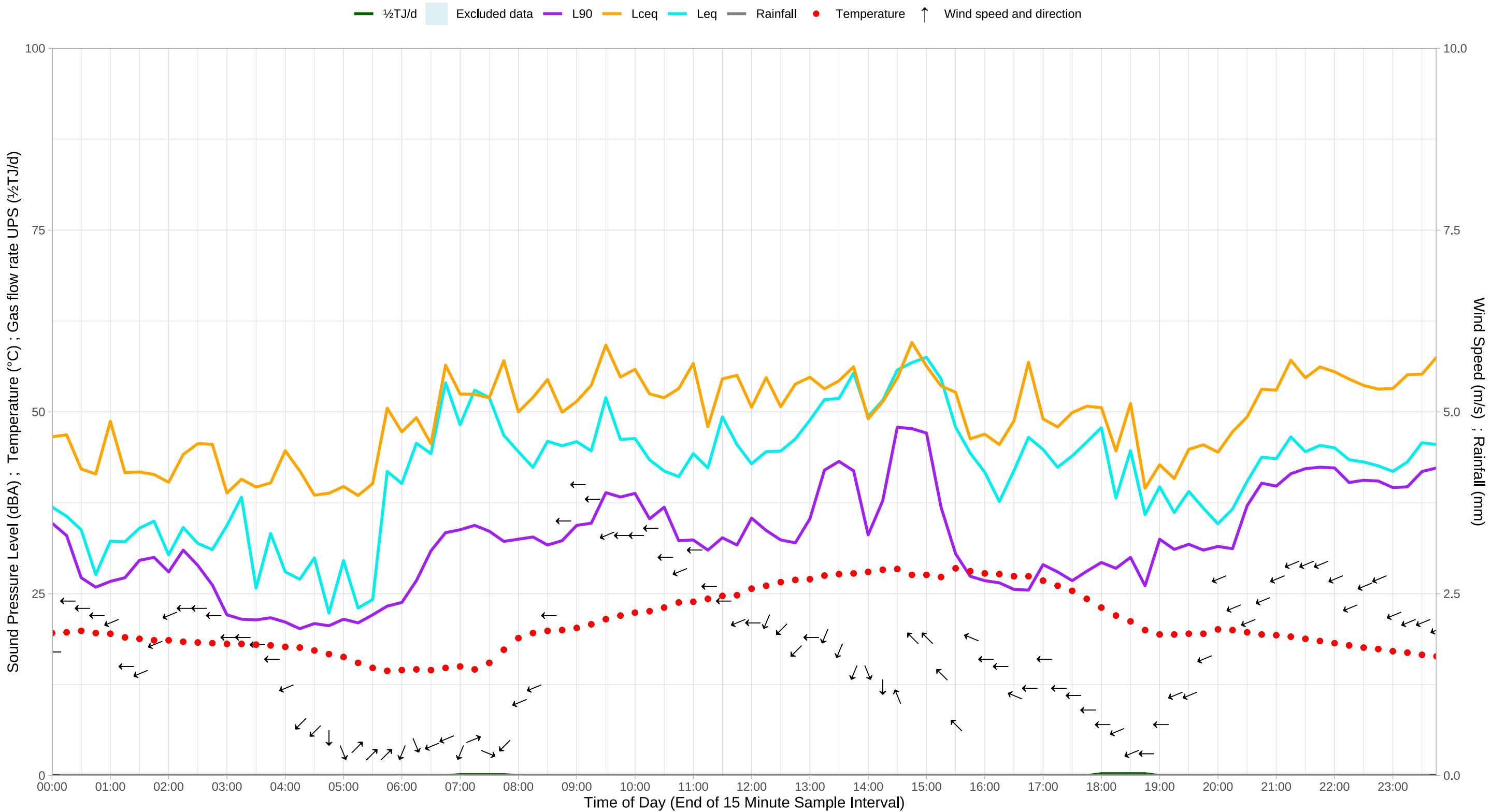
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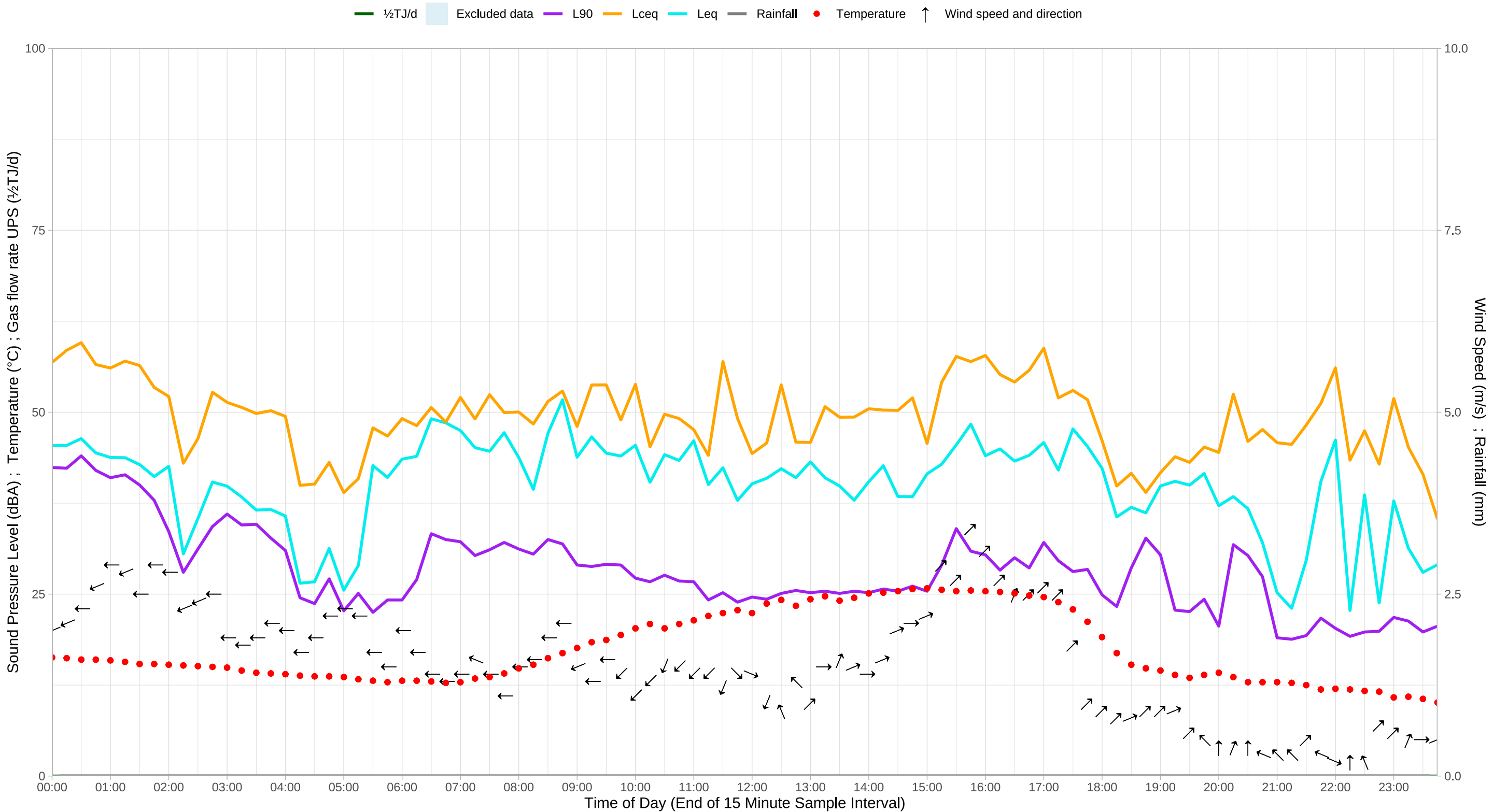
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Monday 14 April 2025



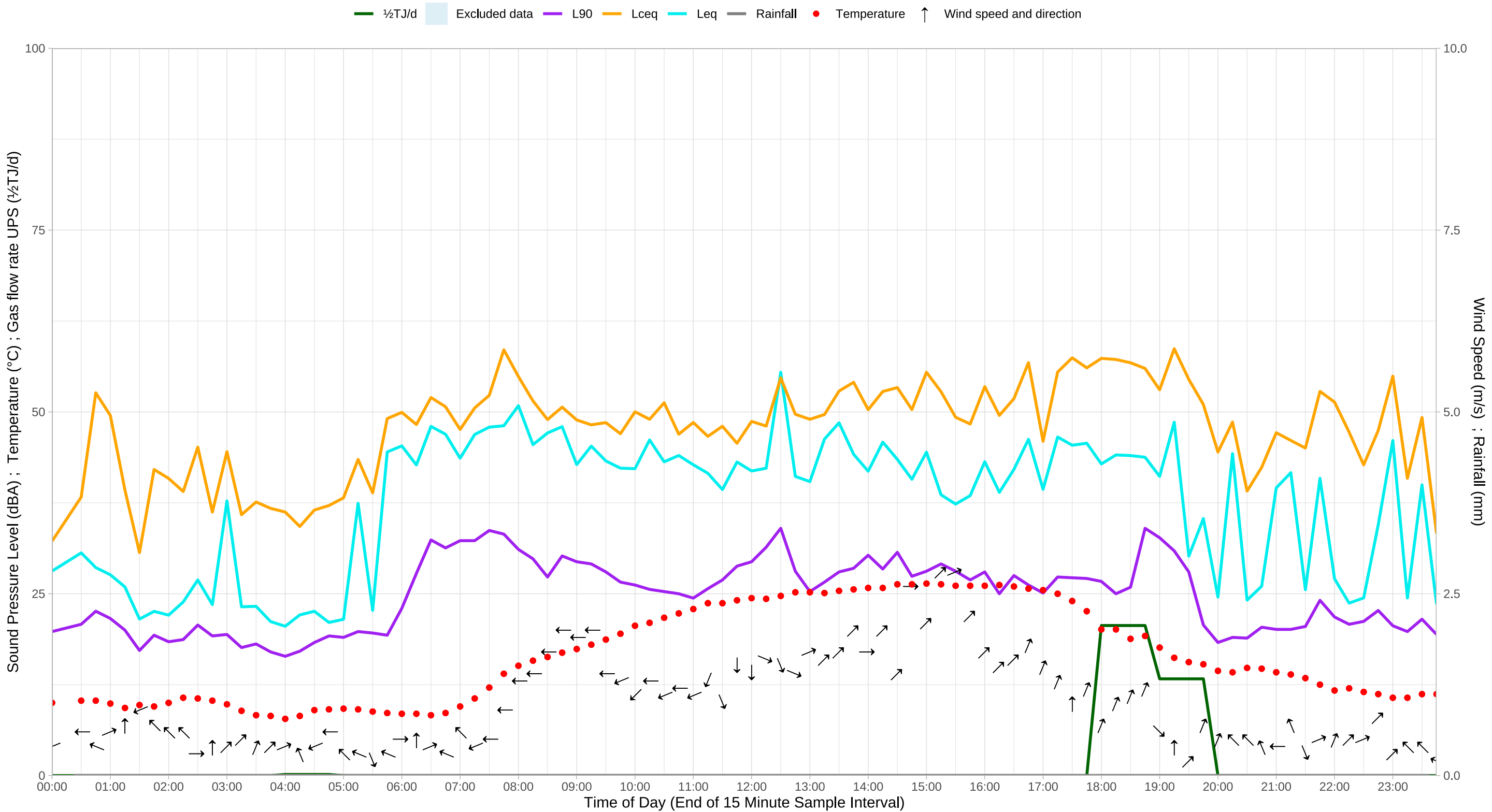
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Location ML3
Tuesday 15 April 2025



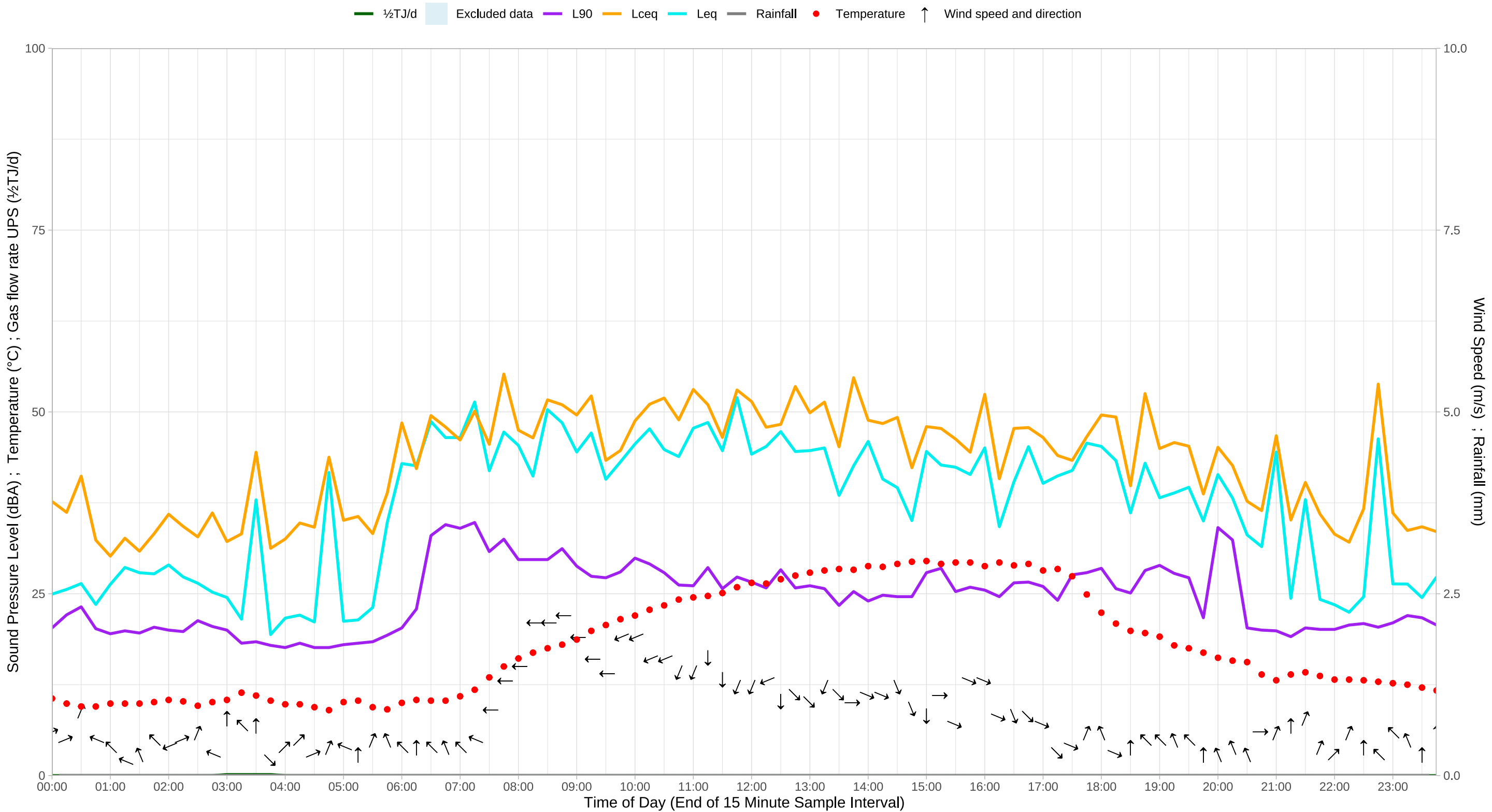
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Location ML3
Wednesday 16 April 2025



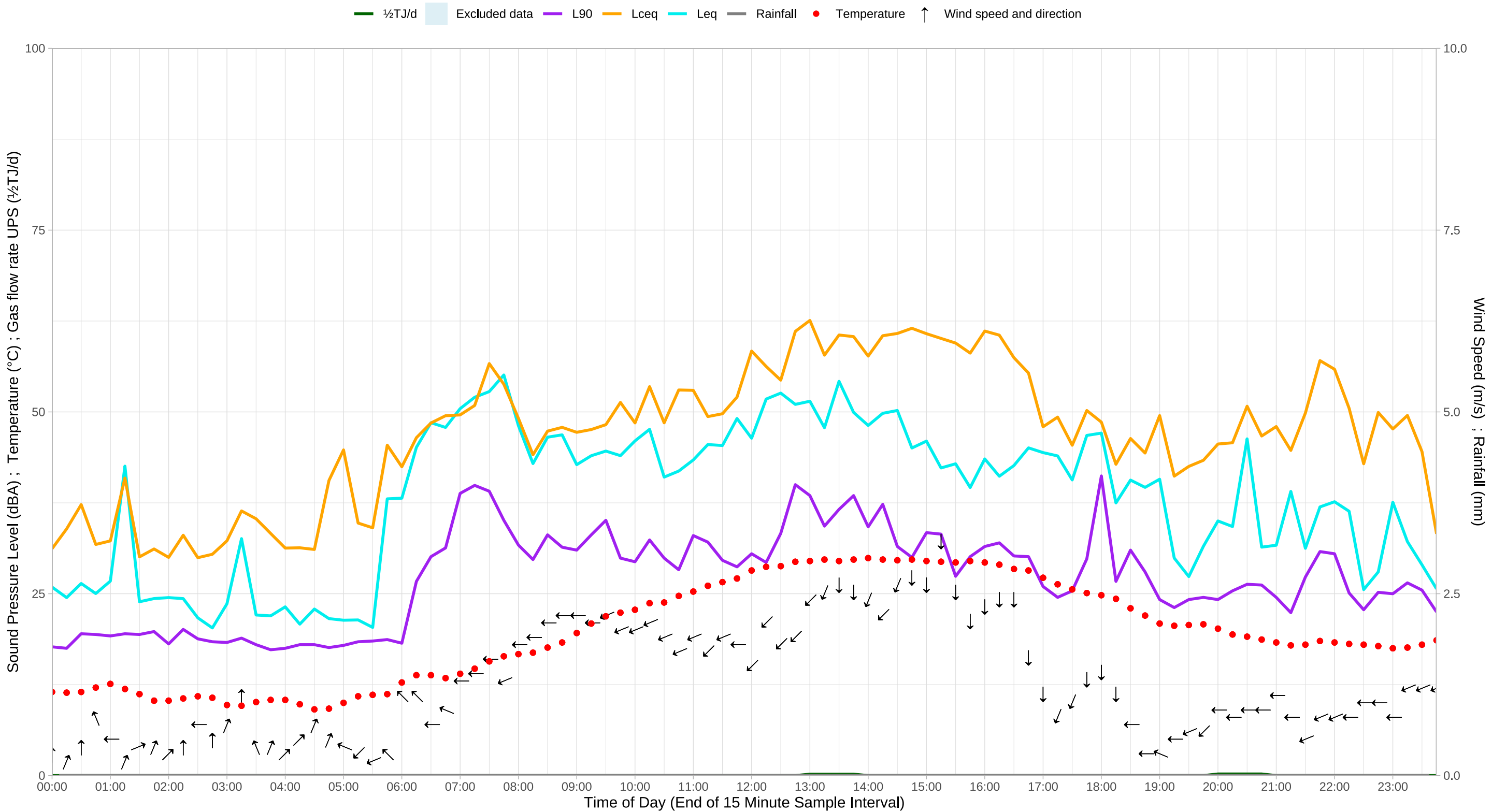
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Thursday 17 April 2025



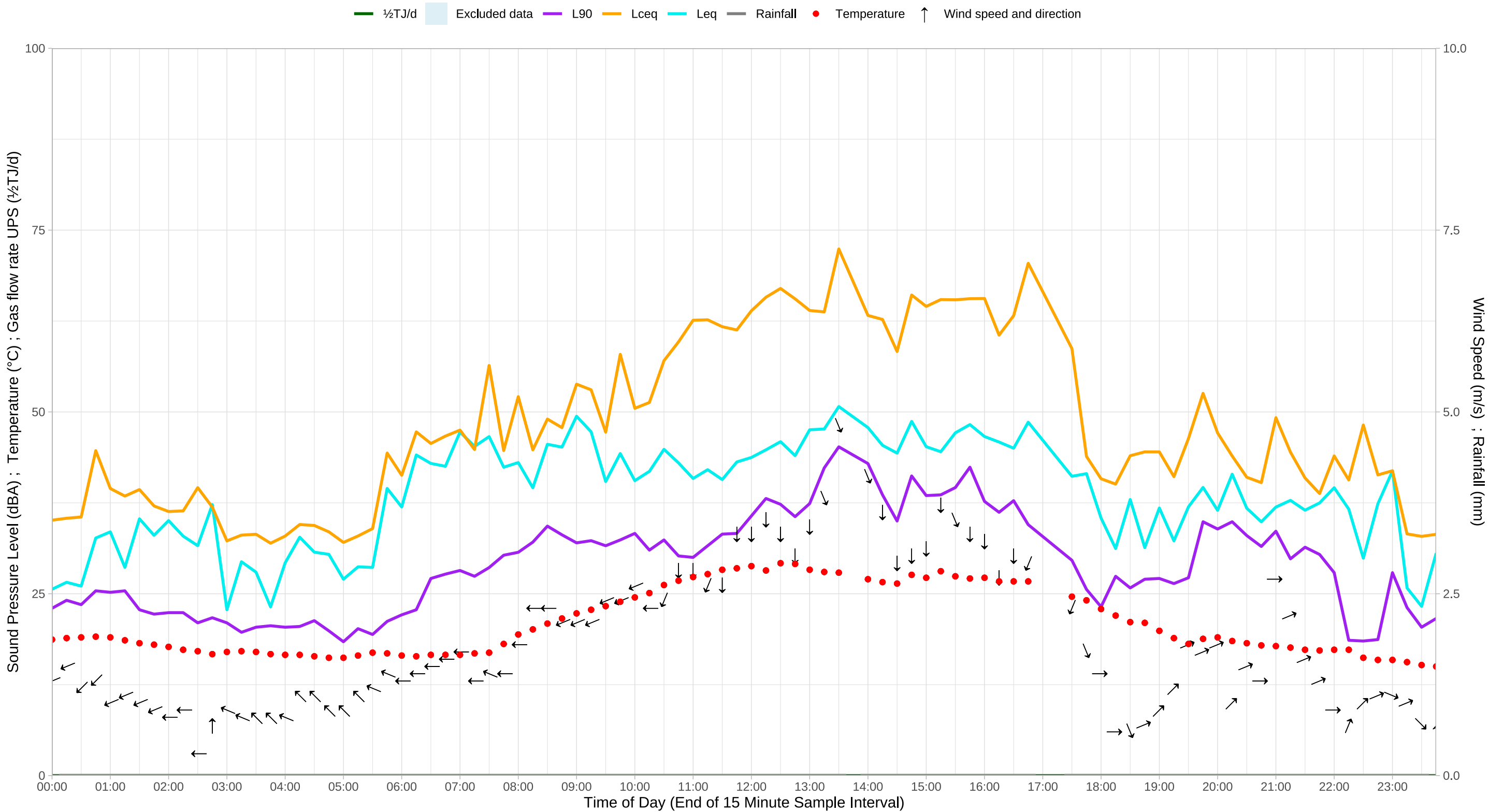
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Location ML3
Friday 18 April 2025



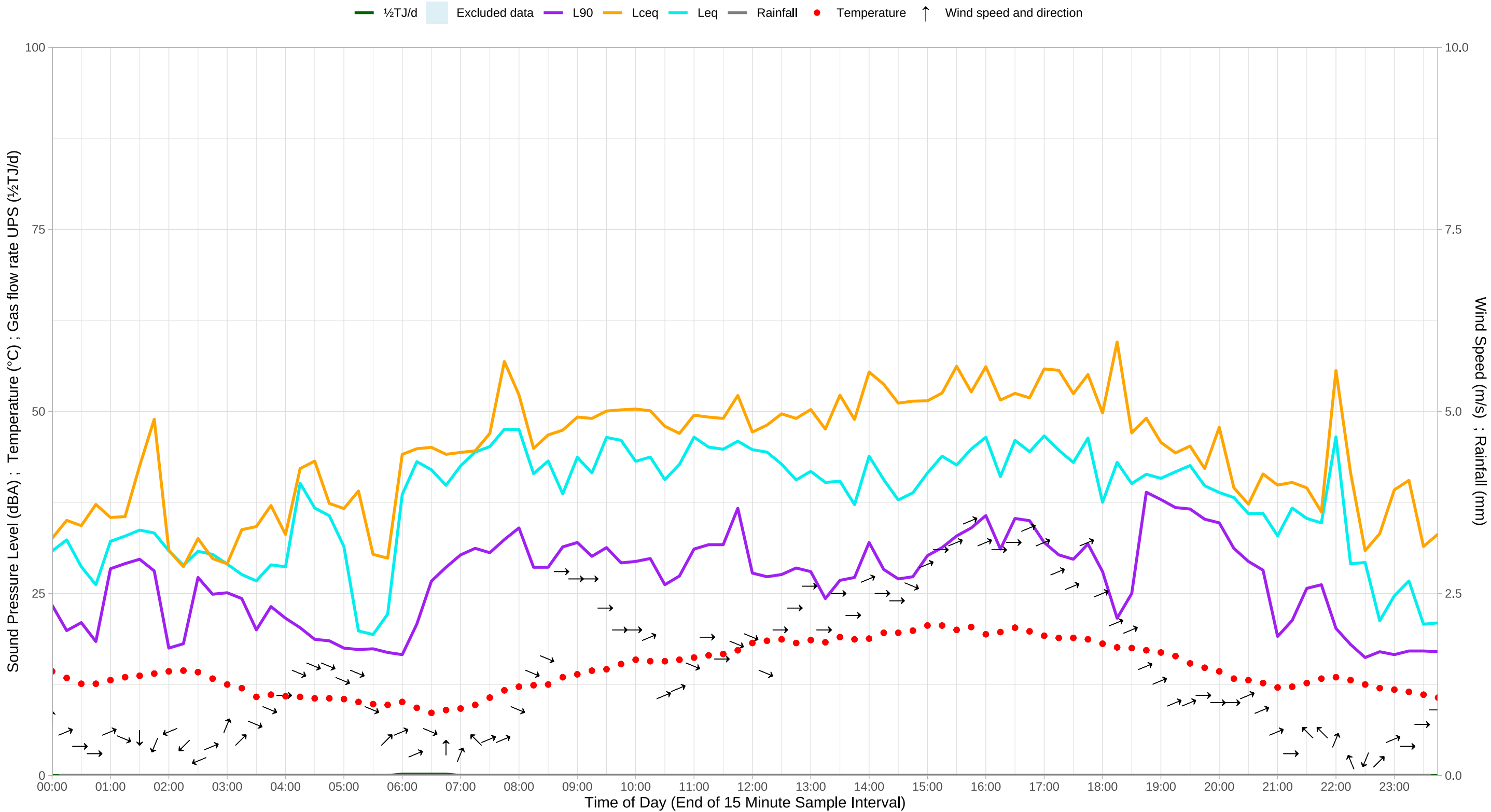
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Location ML3
Saturday 19 April 2025



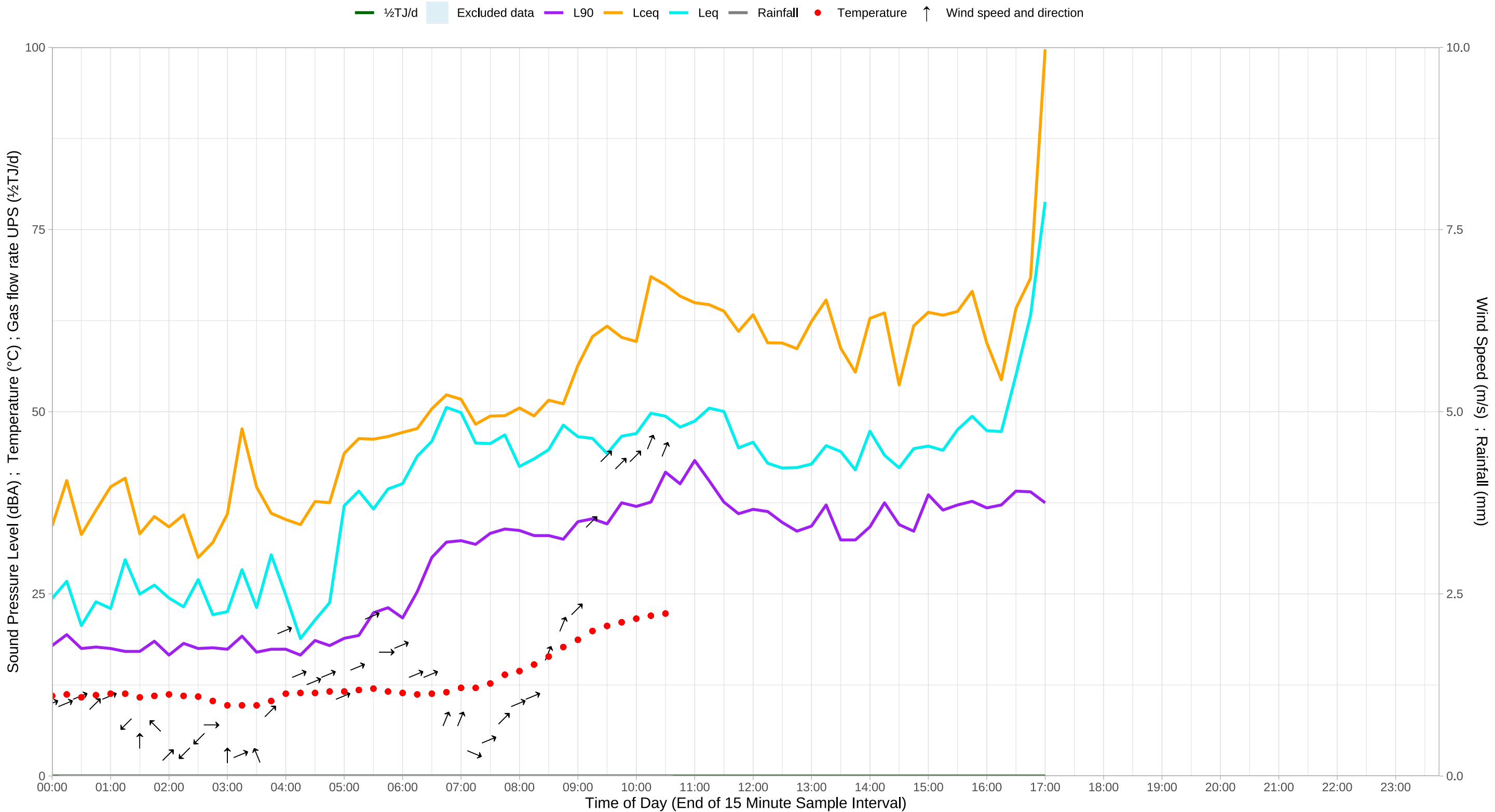
Statistical Ambient Noise Levels
Location ML3
Sunday 20 April 2025



Statistical Ambient Noise Levels
Location ML3
Monday 21 April 2025



Statistical Ambient Noise Levels
Location ML3
Tuesday 22 April 2025



Appendix C

Predicted construction noise levels

RID	Land Use	Address	Noise Management Level LAeq,15min (dBA)			Construction noise level LAeq,15min (dBA)			Achieves the NML?			CS3 (construction of compressor station)		
			Standard construction hours	Outside of standard construction hours		CS1 (site preparation)	CS2 (Piling works)	CS3 (construction of compressor station)	CS1 (site preparation)		CS2 (Piling works)	CS3 (construction of compressor station)		
				Daytime	Early morning				Standard construction hours	Outside of standard construction hours		Standard construction hours	Outside of standard construction hours	
R1	Residential	70 HANGING ROCK RD, URANQUINTY NSW 2652	45	40	35	46	52	43	Exceeds by 1 dB			Exceeds by 7 dB	Yes	
R3	Residential	45 HANGING ROCK RD, URANQUINTY NSW 2652	45	40	35	44	50	41	Yes	Exceeds by 6 dB	Exceeds by 11 dB	Exceeds by 5 dB	Yes	Exceeds by 3 dB
R4	Residential	449 URANQUINTY CROSS RD, URANQUINTY NSW 2652	45	40	35	42	48	39	Yes	Exceeds by 2 dB	Exceeds by 9 dB	Exceeds by 3 dB	Yes	Exceeds by 6 dB
R5	Residential	56 URANQUINTY CROSS RD, URANQUINTY NSW 2652	45	40	35	38	44	35	Yes	Yes	Exceeds by 3 dB	Yes	Yes	Yes
R6	Residential	478 URANQUINTY CROSS RD, URANQUINTY NSW 2652	45	40	35	44	50	41	Yes	Exceeds by 4 dB	Exceeds by 9 dB	Exceeds by 5 dB	Yes	Exceeds by 1 dB
R7	Residential	176 JACKS ROAD URANQUINTY	45	40	35	38	44	35	Yes	Yes	Exceeds by 3 dB	Yes	Yes	Yes
R8	Commercial	88 HANGING ROCK RD, URANQUINTY NSW 2652	70	70	70	40	46	37	Yes	Yes	Yes	Yes	Yes	Yes
R9	Residential	336 HANGING ROCK RD, URANQUINTY NSW 2652	45	40	35	37	43	34	Yes	Yes	Exceeds by 2 dB	Yes	Yes	Yes
R10	Residential	389 URANQUINTY CROSS RD, URANQUINTY NSW 2652	45	40	35	40	46	37	Yes	Yes	Exceeds by 5 dB	Exceeds by 1 dB	Yes	Exceeds by 2 dB
R11	Residential	88 HANGING ROCK RD, URANQUINTY NSW 2652	45	40	35	37	43	34	Yes	Yes	Exceeds by 2 dB	Yes	Yes	Yes
R12	Residential	418 HANGING ROCK RD, URANQUINTY NSW 2652	45	40	35	37	43	34	Yes	Yes	Exceeds by 2 dB	Yes	Yes	Yes
R13	Residential	478 URANQUINTY CROSS RD, URANQUINTY NSW 2652	45	40	35	45	51	42	Yes	Exceeds by 5 dB	Exceeds by 10 dB	Exceeds by 6 dB	Yes	Exceeds by 2 dB
R14	Residential	482 URANQUINTY CROSS RD, URANQUINTY NSW 2652	45	40	35	38	44	35	Yes	Yes	Exceeds by 3 dB	Yes	Yes	Yes
R15	Residential	153 RODHAMS RD, URANQUINTY NSW 2652	45	40	35	37	43	34	Yes	Yes	Exceeds by 2 dB	Yes	Yes	Yes
R16	Residential	304 HANGING ROCK RD, URANQUINTY NSW 2652	45	40	35	35	41	32	Yes	Yes	Yes	Yes	Yes	Yes
R17	Residential	336 HANGING ROCK RD, URANQUINTY NSW 2652	45	40	35	35	41	32	Yes	Yes	Yes	Yes	Yes	Yes
R20	Residential	88 HANGING ROCK RD, URANQUINTY NSW 2652	45	40	35	38	44	35	Yes	Yes	Exceeds by 3 dB	Yes	Yes	Yes
R21	Residential	418 HANGING ROCK RD, URANQUINTY NSW 2652	45	40	35	37	43	34	Yes	Yes	Exceeds by 2 dB	Yes	Yes	Yes
R23	Residential	2-8 BAKER ST, URANQUINTY NSW 2652	45	40	35	34	40	31	Yes	Yes	Yes	Yes	Yes	Yes
R24	Residential	2 BEST ST, URANQUINTY NSW 2652	45	40	35	34	40	31	Yes	Yes	Yes	Yes	Yes	Yes
R27	Residential	28 BEST ST, URANQUINTY NSW 2652	45	40	35	33	39	30	Yes	Yes	Yes	Yes	Yes	Yes
R28	Residential	6 BEST ST, URANQUINTY NSW 2652	45	40	35	34	40	31	Yes	Yes	Yes	Yes	Yes	Yes
R29	Residential	6066 OLYMPIC HWY, URANQUINTY NSW 2652	45	40	35	34	40	31	Yes	Yes	Yes	Yes	Yes	Yes
R30	Residential	1040 OLD STATION RD, URANQUINTY NSW 2652	45	40	35	34	40	31	Yes	Yes	Yes	Yes	Yes	Yes
R31	Residential	8 MORGAN ST, URANQUINTY NSW 2652	45	40	35	33	39	30	Yes	Yes	Yes	Yes	Yes	Yes
R32	Residential	18 BEST ST, URANQUINTY NSW 2652	45	40	35	33	39	30	Yes	Yes	Yes	Yes	Yes	Yes
R33	Residential	23-25 PEARSON ST, URANQUINTY NSW 2652	45	40	35	33	39	30	Yes	Yes	Yes	Yes	Yes	Yes
R34	Residential	22-24 BAKER ST, URANQUINTY NSW 2652	45	40	35	34	40	31	Yes	Yes	Yes	Yes	Yes	Yes
R35	Residential	25 BAKER ST, URANQUINTY NSW 2652	45	40	35	35	41	32	Yes	Yes	Yes	Yes	Yes	Yes
R36	Residential	6-8 KING ST, URANQUINTY NSW 2652	45	40	35	34	40	31	Yes	Yes	Yes	Yes	Yes	Yes
R37	Residential	26 BEST ST, URANQUINTY NSW 2652	45	40	35	33	39	30	Yes	Yes	Yes	Yes	Yes	Yes
R38	Residential	5-7 KING ST, URANQUINTY NSW 2652	45	40	35	34	40	31	Yes	Yes	Yes	Yes	Yes	Yes
R39	Residential	10 KING ST, URANQUINTY NSW 2652	45	40	35	34	40	31	Yes	Yes	Yes	Yes	Yes	Yes
R40	Residential	5888 OLYMPIC HWY, URANQUINTY NSW 2652	45	40	35	32	38	29	Yes	Yes	Yes	Yes	Yes	Yes
R41	Residential	32 BEST ST, URANQUINTY NSW 2652	45	40	35	33	39	30	Yes	Yes	Yes	Yes	Yes	Yes
R42	Residential	7 PEARSON ST, URANQUINTY NSW 2652	45	40	35	33	39	30	Yes	Yes	Yes	Yes	Yes	Yes
R43	Residential	13 PEARSON ST, URANQUINTY NSW 2652	45	40	35	35	41	32	Yes	Yes	Yes	Yes	Yes	Yes
R44	Residential	25-27 KING ST, URANQUINTY NSW 2652	45	40	35	33	39	30	Yes	Yes	Yes	Yes	Yes	Yes
R45	Residential	5 CHURCHES PLAIN RD, URANQUINTY NSW 2652	45	40	35	34	40	31	Yes	Yes	Yes	Yes	Yes	Yes
R46	Place of Worship	15 PEARSON ST, URANQUINTY NSW 2652	55	55	55	33	39	30	Yes	Yes	Yes	Yes	Yes	Yes
R47	Residential	18-20 BAKER ST, URANQUINTY NSW 2652	45	40	35	34	40	31	Yes	Yes	Yes	Yes	Yes	Yes
R48	Residential	4 BEST ST, URANQUINTY NSW 2652	45	40	35	34	40	31	Yes	Yes	Yes	Yes	Yes	Yes
R49	Residential	19 PEARSON ST, URANQUINTY NSW 2652	45	40	35	33	39	30	Yes	Yes	Yes	Yes	Yes	Yes
R50	Residential	29 BAKER ST, URANQUINTY NSW 2652	45	40	35	34	40	31	Yes	Yes	Yes	Yes	Yes	Yes
R51	Residential	34 BEST ST, URANQUINTY NSW 2652	45	40	35	33	39	30	Yes	Yes	Yes	Yes	Yes	Yes
R52	Residential	7 BEST ST, URANQUINTY NSW 2652	45	40	35	33	39	30	Yes	Yes	Yes	Yes	Yes	Yes
R53	Residential	10 BEST ST, URANQUINTY NSW 2652	45	40	35	33	39	30	Yes	Yes	Yes	Yes	Yes	Yes
R54	Residential	5 BEST ST, URANQUINTY NSW 2652	45	40	35	33	39	30	Yes	Yes	Yes	Yes	Yes	Yes
R55	Residential	2 MORGAN ST, URANQUINTY NSW 2652	45	40	35	35	41	32	Yes	Yes	Yes	Yes	Yes	Yes
R56	Residential	18 YARRAGUNDY ST, URANQUINTY NSW 2652	45	40	35	34	40	31	Yes	Yes	Yes	Yes	Yes	Yes
R57	Residential	12 MORGAN ST, URANQUINTY NSW 2652	45	40	35	33	39	30	Yes	Yes	Yes	Yes	Yes	Yes
R58	Residential	21 PEARSON ST, URANQUINTY NSW 2652	45	40	35	33	39	30	Yes	Yes	Yes	Yes	Yes	Yes
R59	Residential	8 BEST ST, URANQUINTY NSW 2652	45	40	35	34	40	31	Yes	Yes	Yes	Yes	Yes	Yes
R60	Residential	10-16 BAKER ST, URANQUINTY NSW 2652	45	40	35	36	42	33	Yes	Yes	Exceeds by 1 dB	Yes	Yes	Yes
R61	Place of Worship	18-20 KING ST, URANQUINTY NSW 2652	55	55	55	33	39	30	Yes	Yes	Yes	Yes	Yes	Yes
R62	Residential	16 YARRAGUNDY ST, URANQUINTY NSW 2652	45	40	35	33	39	30	Yes	Yes	Yes	Yes	Yes	Yes
R63	Residential	34-36 BAKER ST, URANQUINTY NSW 2652	45	40	35	33	39	30	Yes	Yes	Yes	Yes	Yes	Yes
R64	Passive Recreation	URANQUINTY HALL 55 URANQUINTY ST, URANQUINTY NSW 2652	60	60	60	33	39	30	Yes	Yes	Yes	Yes	Yes	Yes
R65	Residential	30-32 BAKER ST, URANQUINTY NSW 2652	45	40	35	33	39	30	Yes	Yes	Yes	Yes	Yes	Yes
R66	Residential	27 PEARSON ST, URANQUINTY NSW 2652	45	40	35	33	39	30	Yes	Yes	Yes	Yes	Yes	Yes
R67	Residential	14-16 KING ST, URANQUINTY NSW 2652	45	40	35	34	40	31	Yes	Yes	Yes	Yes	Yes	Yes
R68	Residential	17-19 KING ST, URANQUINTY NSW 2652	45	40	35	34	40	31	Yes	Yes	Yes	Yes	Yes	Yes
R69	Residential	13-15 KING ST, URANQUINTY NSW 2652	45	40	35	34	40	31	Yes	Yes	Yes	Yes	Yes	Yes
R70	Residential	22-24 BEST ST, URANQUINTY NSW 2652	45	40	35	34	40	31	Yes	Yes	Yes	Yes	Yes	Yes
R71	Residential	1-3 BEST ST, URANQUINTY NSW 2652	45	40	35	34	40	31	Yes	Yes	Yes	Yes	Yes	Yes
R72	Residential	28 BEST ST, URANQUINTY NSW 2652	45	40	35	33	39	30	Yes	Yes	Yes	Yes	Yes	Yes
R73	Residential	10 MORGAN ST, URANQUINTY NSW 2652	45	40	35	33	39	30	Yes	Yes	Yes	Yes	Yes	Yes
R74	Residential	12 BEST ST, URANQUINTY NSW 2652	45	40	35	34	40	31	Yes	Yes	Yes	Yes	Yes	Yes
R75	Residential	26-28 BAKER ST, URANQUINTY NSW 2652	45	40	35	34	40	31	Yes	Yes	Yes	Yes	Yes	Yes
R76	Residential	29 KING ST, URANQUINTY NSW 2652	45	40	35	34	40	31	Yes	Yes	Yes	Yes	Yes	Yes
R77	Residential	36 BEST ST, URANQUINTY NSW 2652	45	40	35	33	39	30	Yes	Yes	Yes	Yes	Yes	Yes
R78	Residential	1 PEARSON ST, URANQUINTY NSW 2652	45	40	35	34	40	31	Yes	Yes	Yes	Yes	Yes	Yes
R79	Residential	21 BAKER ST, URANQUINTY NSW 2652	45	40	35	35	41	32	Yes	Yes	Yes	Yes	Yes	Yes
R80	Residential	30 BEST ST, URANQUINTY NSW 2652	45	40	35	33	39	30	Yes	Yes	Yes	Yes	Yes	Yes
R81	Residential	15 BEST ST, URANQUINTY NSW 2652	45	40	35	32	38	29	Yes	Yes	Yes	Yes	Yes	Yes
R82	Residential	9 BEST ST, URANQUINTY NSW 2652	45	40	35	35	41	32	Yes	Yes	Yes	Yes	Yes	Yes
R83	Residential	23 KING ST, URANQUINTY NSW 2652	45	40	35	33	39	30	Yes	Yes	Yes	Yes	Yes	Yes

RID	Land Use	Address	Noise Management Level LAeq,15min (dBA)			Construction noise level LAeq,15min (dBA)			Achieves the NML?			CS3 (construction of compressor station)			
			Standard construction hours	Outside of standard construction hours		CS1 (site preparation)	CS2 (Piling works)	CS3 (construction of compressor station)	CS1 (site preparation)			CS2 (Piling works)	CS3 (construction of compressor station)		
				Daytime	Early morning				Standard construction hours	Daytime	Early morning		Standard construction hours	Daytime	Early morning
R84	Residential	17 PEARSON ST, URANQUINTY NSW 2652	45	40	35	33	39	30	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R85	Residential	16 URANQUINTRY ST, URANQUINTY NSW 2652	45	40	35	33	39	30	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R86	Residential	2-4 KING ST, URANQUINTY NSW 2652	45	40	35	36	42	33	Yes	Yes	Exceeds by 1 dB	Yes	Yes	Yes	Yes
R87	Residential	13 BEST ST, URANQUINTY NSW 2652	45	40	35	34	40	31	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R88	Residential	14-16 BEST ST, URANQUINTY NSW 2652	45	40	35	33	39	30	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R89	Residential	11 BEST ST, URANQUINTY NSW 2652	45	40	35	33	39	30	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R90	Residential	3-5 PEARSON ST, URANQUINTY NSW 2652	45	40	35	33	39	30	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R91	Residential	31 KING ST, URANQUINTY NSW 2652	45	40	35	33	39	30	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R92	Residential	29 BAKER ST, URANQUINTY NSW 2652	45	40	35	33	39	30	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R93	Residential	9-11 KING ST, URANQUINTY NSW 2652	45	40	35	35	41	32	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R94	Residential	14-16 BEST ST, URANQUINTY NSW 2652	45	40	35	33	39	30	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R95	Residential	14 YARRAGUNDRY ST, URANQUINTY NSW 2652	45	40	35	33	39	30	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R96	Residential	29 BAKER ST, URANQUINTY NSW 2652	45	40	35	34	40	31	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R97	Residential	6 MORGAN ST, URANQUINTY NSW 2652	45	40	35	33	39	30	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R98	Residential	4 MORGAN ST, URANQUINTY NSW 2652	45	40	35	33	39	30	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R99	Residential	1-3 KING ST, URANQUINTY NSW 2652	45	40	35	34	40	31	Yes	Yes	Yes	Yes	Yes	Yes	Yes

Appendix D

Predicted operational noise levels

RID	Land Use	Address	Project noise trigger level			Operational noise level LAeq,15min (dBA)	LFN penalty applicable?	Operational noise level LAeq,15min (dBA)
			Day	Evening	Night			
R1	Residential	70 HANGING ROCK RD, URANQUINTY NSW 2652	40	35	35	31	No	31
R3	Residential	45 HANGING ROCK RD, URANQUINTY NSW 2652	40	35	35	28	No	28
R4	Residential	449 URANQUINTY CROSS RD, URANQUINTY NSW 2652	40	35	35	26	Yes	31 (26 + 5)
R5	Residential	56 URANQUINTY CROSS RD, URANQUINTY NSW 2652	40	35	35	21	No	21
R6	Residential	478 URANQUINTY CROSS RD, URANQUINTY NSW 2652	40	35	35	27	No	27
R7	Residential	176 JACKS ROAD URANQUINTY	40	35	35	22	No	22
R8	Commercial	88 HANGING ROCK RD, URANQUINTY NSW 2652	63	63	63	24	No	24
R9	Residential	336 HANGING ROCK RD, URANQUINTY NSW 2652	40	35	35	22	No	22
R10	Residential	389 URANQUINTY CROSS RD, URANQUINTY NSW 2652	40	35	35	25	No	25
R11	Residential	88 HANGING ROCK RD, URANQUINTY NSW 2652	40	35	35	21	No	21
R12	Residential	418 HANGING ROCK RD, URANQUINTY NSW 2652	40	35	35	22	No	22
R13	Residential	478 URANQUINTY CROSS RD, URANQUINTY NSW 2652	40	35	35	29	No	29
R14	Residential	482 URANQUINTY CROSS RD, URANQUINTY NSW 2652	40	35	35	22	No	22
R15	Residential	153 RODHAMS RD, URANQUINTY NSW 2652	40	35	35	18	Yes	23 (18 + 5)
R16	Residential	304 HANGING ROCK RD, URANQUINTY NSW 2652	40	35	35	19	Yes	24 (19 + 5)
R17	Residential	336 HANGING ROCK RD, URANQUINTY NSW 2652	40	35	35	19	Yes	24 (19 + 5)
R20	Residential	88 HANGING ROCK RD, URANQUINTY NSW 2652	40	35	35	22	No	22
R21	Residential	418 HANGING ROCK RD, URANQUINTY NSW 2652	40	35	35	21	No	21
R23	Residential	2-8 BAKER ST, URANQUINTY NSW 2652	40	35	35	17	Yes	22 (17 + 5)
R24	Residential	2 BEST ST, URANQUINTY NSW 2652	40	35	35	16	Yes	21 (16 + 5)
R27	Residential	28 BEST ST, URANQUINTY NSW 2652	40	35	35	16	Yes	21 (16 + 5)
R28	Residential	6 BEST ST, URANQUINTY NSW 2652	40	35	35	16	Yes	21 (16 + 5)
R29	Residential	6066 OLYMPIC HWY, URANQUINTY NSW 2652	40	35	35	16	Yes	21 (16 + 5)
R30	Residential	1040 OLD STATION RD, URANQUINTY NSW 2652	40	35	35	16	Yes	21 (16 + 5)
R31	Residential	8 MORGAN ST, URANQUINTY NSW 2652	40	35	35	15	Yes	20 (15 + 5)
R32	Residential	18 BEST ST, URANQUINTY NSW 2652	40	35	35	16	Yes	21 (16 + 5)
R33	Residential	23-25 PEARSON ST, URANQUINTY NSW 2652	40	35	35	15	Yes	20 (15 + 5)
R34	Residential	22-24 BAKER ST, URANQUINTY NSW 2652	40	35	35	16	Yes	21 (16 + 5)
R35	Residential	25 BAKER ST, URANQUINTY NSW 2652	40	35	35	18	No	18
R36	Residential	6-8 KING ST, URANQUINTY NSW 2652	40	35	35	16	Yes	21 (16 + 5)
R37	Residential	26 BEST ST, URANQUINTY NSW 2652	40	35	35	16	Yes	21 (16 + 5)
R38	Residential	5-7 KING ST, URANQUINTY NSW 2652	40	35	35	16	Yes	21 (16 + 5)
R39	Residential	10 KING ST, URANQUINTY NSW 2652	40	35	35	17	Yes	22 (17 + 5)
R40	Residential	5888 OLYMPIC HWY, URANQUINTY NSW 2652	40	35	35	15	Yes	20 (15 + 5)
R41	Residential	32 BEST ST, URANQUINTY NSW 2652	40	35	35	16	Yes	21 (16 + 5)
R42	Residential	7 PEARSON ST, URANQUINTY NSW 2652	40	35	35	16	Yes	21 (16 + 5)
R43	Residential	13 PEARSON ST, URANQUINTY NSW 2652	40	35	35	18	No	18
R44	Residential	25-27 KING ST, URANQUINTY NSW 2652	40	35	35	16	Yes	21 (16 + 5)
R45	Residential	5 CHURCHES PLAIN RD, URANQUINTY NSW 2652	40	35	35	17	Yes	22 (17 + 5)
R46	Place of Worship	15 PEARSON ST, URANQUINTY NSW 2652	38	38	38	16	Yes	21 (16 + 5)
R47	Residential	18-20 BAKER ST, URANQUINTY NSW 2652	40	35	35	16	Yes	21 (16 + 5)
R48	Residential	4 BEST ST, URANQUINTY NSW 2652	40	35	35	16	Yes	21 (16 + 5)
R49	Residential	19 PEARSON ST, URANQUINTY NSW 2652	40	35	35	16	Yes	21 (16 + 5)
R50	Residential	29 BAKER ST, URANQUINTY NSW 2652	40	35	35	16	Yes	21 (16 + 5)
R51	Residential	34 BEST ST, URANQUINTY NSW 2652	40	35	35	15	Yes	20 (15 + 5)
R52	Residential	7 BEST ST, URANQUINTY NSW 2652	40	35	35	16	Yes	21 (16 + 5)
R53	Residential	10 BEST ST, URANQUINTY NSW 2652	40	35	35	16	Yes	21 (16 + 5)
R54	Residential	5 BEST ST, URANQUINTY NSW 2652	40	35	35	16	Yes	21 (16 + 5)
R55	Residential	2 MORGAN ST, URANQUINTY NSW 2652	40	35	35	18	No	18
R56	Residential	18 YARRAGUNDRY ST, URANQUINTY NSW 2652	40	35	35	16	Yes	21 (16 + 5)
R57	Residential	12 MORGAN ST, URANQUINTY NSW 2652	40	35	35	15	Yes	20 (15 + 5)
R58	Residential	21 PEARSON ST, URANQUINTY NSW 2652	40	35	35	16	Yes	21 (16 + 5)
R59	Residential	8 BEST ST, URANQUINTY NSW 2652	40	35	35	16	Yes	21 (16 + 5)
R60	Residential	10-16 BAKER ST, URANQUINTY NSW 2652	40	35	35	19	No	19
R61	Place of Worship	18-20 KING ST, URANQUINTY NSW 2652	38	38	38	16	Yes	21 (16 + 5)
R62	Residential	16 YARRAGUNDRY ST, URANQUINTY NSW 2652	40	35	35	17	No	17
R63	Residential	34-36 BAKER ST, URANQUINTY NSW 2652	40	35	35	16	Yes	21 (16 + 5)
R64	Passive Recreation	URANQUINTY HALL 55 URANQUINTRY ST, URANQUINTY NSW 2652	48	48	48	16	Yes	21 (16 + 5)
R65	Residential	30-32 BAKER ST, URANQUINTY NSW 2652	40	35	35	16	Yes	21 (16 + 5)
R66	Residential	27 PEARSON ST, URANQUINTY NSW 2652	40	35	35	15	Yes	20 (15 + 5)
R67	Residential	14-16 KING ST, URANQUINTY NSW 2652	40	35	35	16	Yes	21 (16 + 5)
R68	Residential	17-19 KING ST, URANQUINTY NSW 2652	40	35	35	16	Yes	21 (16 + 5)
R69	Residential	13-15 KING ST, URANQUINTY NSW 2652	40	35	35	16	Yes	21 (16 + 5)
R70	Residential	22-24 BEST ST, URANQUINTY NSW 2652	40	35	35	17	No	17
R71	Residential	1-3 BEST ST, URANQUINTY NSW 2652	40	35	35	16	Yes	21 (16 + 5)
R72	Residential	28 BEST ST, URANQUINTY NSW 2652	40	35	35	16	Yes	21 (16 + 5)
R73	Residential	10 MORGAN ST, URANQUINTY NSW 2652	40	35	35	15	Yes	20 (15 + 5)
R74	Residential	12 BEST ST, URANQUINTY NSW 2652	40	35	35	17	Yes	22 (17 + 5)
R75	Residential	26-28 BAKER ST, URANQUINTY NSW 2652	40	35	35	16	Yes	21 (16 + 5)
R76	Residential	29 KING ST, URANQUINTY NSW 2652	40	35	35	17	No	17
R77	Residential	36 BEST ST, URANQUINTY NSW 2652	40	35	35	15	Yes	20 (15 + 5)
R78	Residential	1 PEARSON ST, URANQUINTY NSW 2652	40	35	35	16	Yes	21 (16 + 5)
R79	Residential	21 BAKER ST, URANQUINTY NSW 2652	40	35	35	18	No	18
R80	Residential	30 BEST ST, URANQUINTY NSW 2652	40	35	35	16	Yes	21 (16 + 5)
R81	Residential	15 BEST ST, URANQUINTY NSW 2652	40	35	35	16	Yes	21 (16 + 5)
R82	Residential	9 BEST ST, URANQUINTY NSW 2652	40	35	35	18	No	18
R83	Residential	23 KING ST, URANQUINTY NSW 2652	40	35	35	16	Yes	21 (16 + 5)
R84	Residential	17 PEARSON ST, URANQUINTY NSW 2652	40	35	35	16	Yes	21 (16 + 5)
R85	Residential	16 URANQUINTRY ST, URANQUINTY NSW 2652	40	35	35	15	Yes	20 (15 + 5)
R86	Residential	2-4 KING ST, URANQUINTY NSW 2652	40	35	35	19	No	19
R87	Residential	13 BEST ST, URANQUINTY NSW 2652	40	35	35	17	No	17
R88	Residential	14-16 BEST ST, URANQUINTY NSW 2652	40	35	35	16	Yes	21 (16 + 5)
R89	Residential	11 BEST ST, URANQUINTY NSW 2652	40	35	35	16	Yes	21 (16 + 5)
R90	Residential	3-5 PEARSON ST, URANQUINTY NSW 2652	40	35	35	16	Yes	21 (16 + 5)
R91	Residential	31 KING ST, URANQUINTY NSW 2652	40	35	35	16	Yes	21 (16 + 5)
R92	Residential	29 BAKER ST, URANQUINTY NSW 2652	40	35	35	16	Yes	21 (16 + 5)
R93	Residential	9-11 KING ST, URANQUINTY NSW 2652	40	35	35	18	No	18
R94	Residential	14-16 BEST ST, URANQUINTY NSW 2652	40	35	35	16	Yes	21 (16 + 5)
R95	Residential	14 YARRAGUNDRY ST, URANQUINTY NSW 2652	40	35	35	15	Yes	20 (15 + 5)
R96	Residential	29 BAKER ST, URANQUINTY NSW 2652	40	35	35	17	Yes	22 (17 + 5)
R97	Residential	6 MORGAN ST, URANQUINTY NSW 2652	40	35	35	15	Yes	20 (15 + 5)
R98	Residential	4 MORGAN ST, URANQUINTY NSW 2652	40	35	35	15	Yes	20 (15 + 5)
R99	Residential	1-3 KING ST, URANQUINTY NSW 2652	40	35	35	16	Yes	21 (16 + 5)



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