



# Status of the network

(Restart/Data Acquisition/Hardware)

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# Overview

- **Network status:** review of the situation of the areas and telescopes and planning for the autumn (comparison with Coll. Meet. July 2024)
- **Eco-Pilot RUN:** Some numbers
- **New Run:** proposed dates
- **Tech. report** Hardware
- **R&D** Recirculation System->Despina next talk

## Status of the network

### Legend:

OK = Telescopes on which activities restarted and data have been acquired; hardware is OK and currently shut down due to a 'summer break' or temporary issues.

~OK = Telescopes on which activities restarted and some data have been acquired, but that have some issues.

~OFF = Restart initiated (bureaucracy and a few other steps underway)

OFF = Restart not yet initiated (but administrative procedures are complete)

In green telescopes with updates wrt 2024



ID	Site	State '24	State '25	Gas	Note
CATA-01	INFN	OFF	OFF	r1234ze+He	VME Electronics damaged by water leak (checks ongoing). Long (and certified) gas lines required
<del>CATA-02</del>	<del>School</del>				Now in Messina
MESS-01	Univ.	OFF	OFF	r1234ze+He	Installation to be completed
LAMP-01	School	OFF	OFF	r1234ze+He	Proposal to be discussed
PATE-01	School	OFF	OFF	r1234ze+He	
TRAP-01	School	OFF	~OFF	r1234ze+He	

**Plans for next months:**

PATE-01, MESS-01

# Sardegna

ID	Site	State '24	State '25	Gas	Note
GAGL-01	School	OK	OK	r1234ze+He	Off due to work in the school
CAGL-02	School	~OK	~OK	r1234ze+He	Now off due to high Temp.
<del>CAGL-03</del>	<del>School</del>				Now CAGL-05
CAGL-04	School	~OFF	~OFF	r1234ze+He	Electronics issues solved
CAGL-05	School	OFF	~OFF	r1234ze+He	Gas is flowing

## Plans for next months:

Completing the restart phase on CAGL-04, CAGL-05



# Calabria

ID	Site	State '24	State '25	Gas	Note
CARI-01	School	~OFF	OK	r1234ze+He	Exchanged with REND-01 in 2025
CATZ-01	School	~OFF	~OK	r1234ze+He	Need to investigate the school's plans
COSE-01	School	OK	OK	r1234ze+He	Propose M.S. as new responsible
RECA-01	School	OFF	~OK	r1234ze+He	Agreement signed late in 2025
REND-01	Univ.	OK	OK	r1234ze+He	Exchanged with CARI-01 in 2025
REND-02	Univ.	OK	OK	r1234ze+He	Quite low tracking efficiency

## Planes for next months:

Complete the telescope setup by adding the BT power supplies for the FEA. Set up the data transfer to the CNAF.

Transfer the REND-01 (formerly CARI-01) telescope to another school in Calabria.  
Dismantle CATZ-01 if the school does not find a new contact.

# Puglia 1 – Bari-BAT

ID	Site	State '24	State '25	Gas	Note
ALTA-01	School	OFF	OK	r1234ze+He	
BARI-02	School	OFF	OK	r1234ze+He	
BITE-01	School	OFF		r1234ze+He	Installation to be completed
TRIN-01	School	OFF	OK	r1234ze+He	Some small problems

## Plans for next months:

BITE-01 (manpower/Responsible)

# Puglia 2 - Lecce

ID	Site	State '24	State '25	Gas	Note
LECC-01	School	OK	OK	r1234ze+He	Changed gas
LECC-02	School	OFF	OFF	r1234ze+He	
<del>LECC-03</del>	<del>School</del>				Moved years ago

## Plans for next months:

LECC-02: provided feedback from the school



# Abruzzo&Campania

ID	Site	State '24	State '25	Gas	Note
LAQU-01	School	OK	OK	r1234ze+He	
LAQU-02	School	OFF	OK	r1234ze+He	Some issues on FEAs and synchning
TERA-01	School	OFF	OK	r1234ze+He	
SALE-01	School	OFF	OK	r1234ze+He	Telescope moved for works in the room and restarted (signal seems ok, but DAQ issues to be solved)
SALE-02	School	OK	OK	r1234ze+He	
SALE-03	Univ.	OK	OK	r1234ze+He	

## Plans for next months:

Fix minor issues to be ready for next run.

ID	Site	State '24	State '25	Gas	Note
FERM-01	CREF	~OFF	OK	r1234ze+He	
FRAS-01	School	OK	OK	r1234ze+He	
FRAS-02	School	~OK	~OFF	r1234ze+He	HV issues->change MRPCs
FRAS-03	School	OFF	OFF	r1234ze+He	To be moved?
ROMA-01	School	~OFF	~OFF	r1234ze+He	Change top MRPC
ROMA-02	School	OFF	OFF	r1234ze+He	To be moved?

## Planes for next months

Fix FRAS-02 and ROMA-01 (maybe use of FRAS-03 and ROMA-02 material)

ID	Site	State '24	State '25	Gas	Note
AREZ-01	School	OK	OK	r1234ze+He	
GROS-01	School	OK	OK	r1234ze+He	
GROS-02	School	OFF	OFF	r1234ze+He	
PISA-01	INFN	OK	OK	r1234ze+He	
SIEN-01	School	OFF	OK	r1234ze+He	
SIEN-02	School	OFF	OK	r1234ze+He	Still stabilizing, then stopped for the summer. Minor issue on one 12V power supply to be changed
VIAR-01	School	OFF	OFF	r1234ze+He	
VIAR-02	School	OFF	OFF	r1234ze+He	Moved to a new site in the school, reinstallation ongoing

## Plans for next months

Restart the missing 3 telescopes (maybe some in parallel)

# Emilia Romagna & Marche

ID	Site	State '24	State '25	Gas	Note
BOLO-01	INFN	OK	OK	r1234ze+He	
BOLO-02	School	OK	OK	r1234ze+He	
BOLO-03	School	OK	OK	r1234ze+He	
BOLO-04	Univ.				Moved
BOLO-05	School	~OK	OK	r1234ze+He	From CO <sub>2</sub> to He
PARM-01	School	OK	OK	r1234ze+He	
REGG-01	School	OFF	OK	r1234ze+He	
ANCO-01	School	OFF	OFF	r1234ze+He	Yet no agreement for new gas

## Planes for next months

If Possible ANCO-01

ID	Site	State '24	State '25	Gas	Note
CARC-01	School	OFF	OFF	r1234ze+He	To be completed
GENO-01	INFN	OFF	~OFF	r1234ze+He	Issues
SAVO-01	School	OFF	OFF	r1234ze+He	
<del>SAVO-02</del>	<del>School</del>				Moved
<del>SAVO-03</del>	<del>School</del>				Moved
LODI-01	School	OFF	OFF	r1234ze+He	
LODI-02	School	OFF	~OFF	r1234ze+He	Close to acquire first data
LODI-03	School	OFF	OFF	r1234ze+He	

## Plans for next months

Turn on LODI-02 with normal rate and GENO-01  
Material needed for Carcare

# Piemonte

ID	Site	State '24	State '25	Gas	Note
<del>TORI-01</del>	<del>School</del>				Removed
<del>TORI-02</del>	<del>School</del>				Removed
TORI-03	School	OFF	OFF	r1234ze+He	Agreement received
<del>TORI-04</del>	<del>School</del>				Removed

## Plans for next months

Restart TORI-03 (manpower/Responsible)



# Veneto & Friuli

ID	Site	State '24	State '25	Gas	Note
LNLE-01	INFN	OK	OK	r1234ze+He	
VICE-01	School	OK	OK	r1234ze+He	
VICE-02	School	OFF	~OFF	r1234ze+He	New installation, chamber current issues, under investigation
TREV-01	School	OK	OK	r1234ze+He	Minor issues (replacement PC)

## Plans for next months

Complete VICE-02, restart of TREV-01 after the PC replacement.

ID	Site	State '24	State '25	Gas	Note
CERN-01	CERN	OK	OK	Standard	Recirculation system
CERN-02	CERN	OFF	OFF		

## Plans for next months

Complete test and validate the system and then test with new mixture

# Countability

**Telescopes:** not counting incomplete or pending installations, relocations to be done and considering unclear situations as OFF (from 54 to 57 because of installation completed & move completed)

**OFF :** nothing done on this telescopes

**Restarted:** OK or ~OK or ~OFF

Year	Telescopes	OFF	Restrted (OK,~OK,~OFF)
2024	54	31	23
2025	57	14	43

**Good result in terms of “restart” but still quite a lot of work to have telescopes fully operatives**

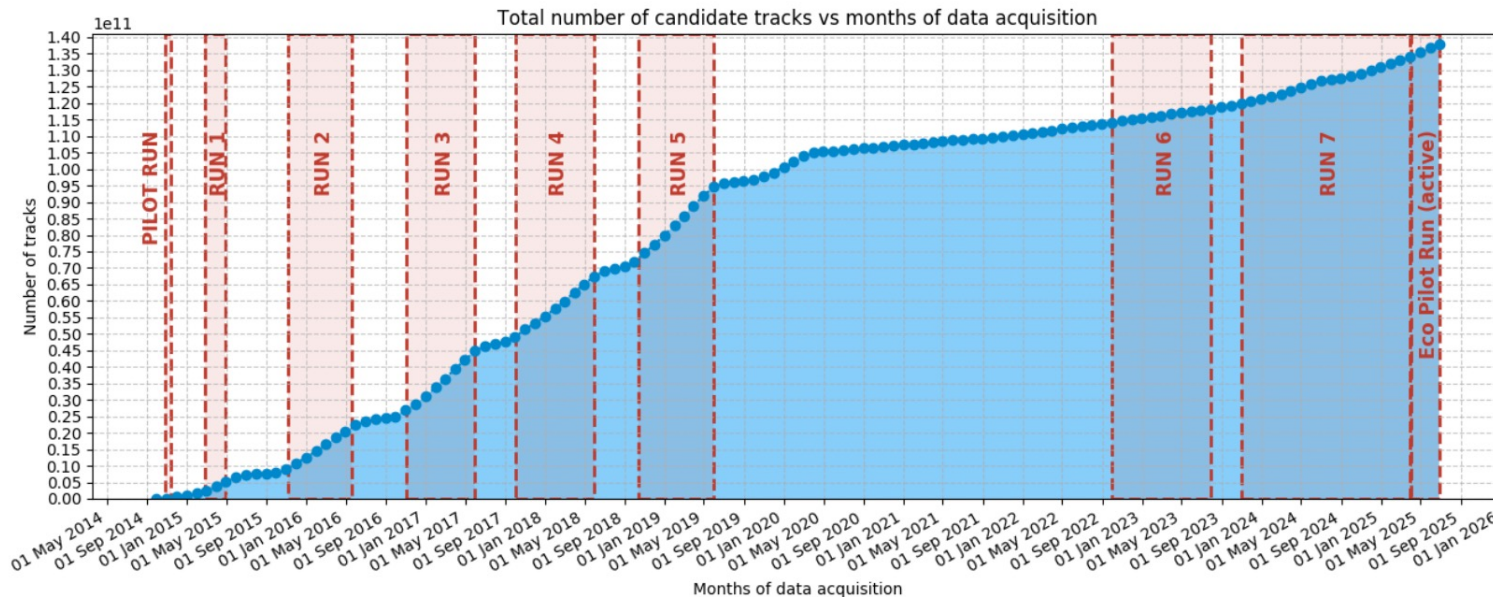
## *Eco Pilot RUN*

# Few numbers

**Start date: 2nd April 2025**

**End date\*: 21st May 2025**

\*: we use this for statistics since it was connected to the logbook filling constest (the data taking is ongoing in some sites)



**Telescopes: 43 (nominal with operation restarted but not yet fully operational) + 4 POLA-R**

**School Telescopes: 35 (nominal) – 20 ready**

**Number of candidate tracks:  $\sim 2 \times 10^9$**

**Good participation from the schools!**

# Duty cycle

Defined as the number of hours during which the telescope acquired data (Rate of Events with good tracks  $>10$  Hz) over the full time period (in hours)

**NB** everything generated by a script that we hope to put soon available online (M.G &R.L.)

Telescope name:

AREZ-01

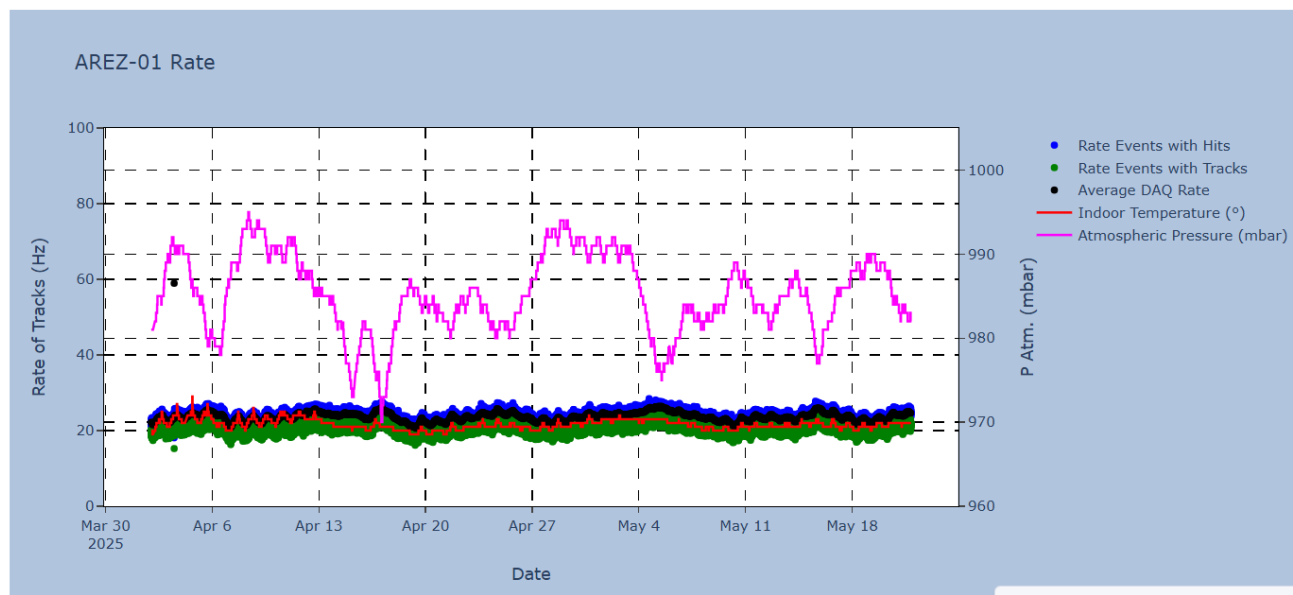
View since:

Please select Start Date

To:

Please select End Date

Duty Cycle threshold (RateTrackEvents  $> x$ ): 10



Duty Cycle: 94.84% (68284 / 72000)

Download CSV

Errors Callbacks

v3.0.4

Dash update available - v3.1.0

Server

In Coll. with R. Liotino



Count	Id	Note	Duty (%)
1	ALTA-01		2.65
2	AREZ-01		94.84
3	BARI-01		79.65
4*	BOLO-01		83.77
5	BOLO-02		90.18
6	BOLO-03		83.40
7	BOLO-05		83.62
8	CAGL-01		-
9	CAGL-02		-
10	CAGL-04		-
11	CAGL-05		-
12	CARI-01		65.89
13	CATZ-01		-
14*	CERN-01		94.56
15	COSE-01		68.48
16*	FERM-01		85.83
17	FRAS-01		64.02
18	FRAS-02		-
19	GENO-01		-
20	GROS-01	START TIME 2025-04-12	74.02
21	LAQU-01	Running	57.15
22	LAQU-02	No data in May	0.1
23	LECC-01	Period 10-27 June	26.56
24*	LNLE-01	END TIME 2025-05-26	3.97

Count	Id	Note	Duty* (%)
25	LODI-02	No data in 2025	-
26	PARM-01		53.83
27*	PISA-01		15.07
28	RECA-01		-
29	REGG-01	END TIME 2025-05-23	48.53
30*	REND-01	START TIME 2025-04-27	71.60
31*	REND-02	NO DATA	-
32	ROMA-01	NO DATA	-
33	SALE-01	NO DATA	-
34	SALE-02		77.91
35*	SALE-03		13.00
36	SIEN-01		89.17
37	SIEN-02		0
38	TERA-01	START TIME 2025-05-10	28.70
39	TRAP-01	NO DATA	-
40	TREV-01	NO DATA	-
41	TRIN-01		10.46
42	VICE-01		78.43
43	VICE-02		-
44	POLA-01		76.20
45	POLA-02		94.61
46	POLA-03		92.71
47	POLA-04		93.97



***RUN 8***

## *New coordinated RUN*

- All the telescopes that have already restarted operations for Eco-Pilot RUN should be fully operational by the end of September or the first week of October!
- Plan an efficiency measurement on the telescope running smoothly since some time!
- New RUN start date → How about **November 13th**, in parallel with the 2025 edition of the International Cosmic Day?

**We need anyway to start operations in other telescopes by the end of the year and complete some installations**

## *Status of Hardware*

## *Please note that:*

- Some telescopes have been or will be uninstalled, and therefore there is a possibility of spare material
- A new inventory check will start in September: we kindly ask you to take a little time to check and list what is present at each telescope. We need to keep the inventory constantly updated, also to optimize the use of available materials: communications will follow
- We kindly ask you to dedicate some time to respond to any requests regarding the materials available at the various sites
- To optimize the delivery process we will consolidate the shipments: ask in advance in case you know you need material for a telescope

## -HV Boxes

At Centro Fermi:

-5 OK (3N,2P), ~ OK 15, KO 8 NB: 9 OK

**-inventory in other sites TO BE DONE**

**-Gas** 9 r1234ze + 14 He) still on 2024 order + 25 rr1234ze + 25 He 2025

**-Pressure Reducers** for He : 3+6 in Bologna, 3 in Pisa, 3 in Genova

**- Mixer** (2 available + **inventory of broken in other sites TO BE DONE**)

**-Electronics** at Centro Fermi: ~7 Bridge, ~5 TDC 128 Ch, ~6 TDC 64 Ch , ~9 mini-crate

**- inventory of broken in other sites TO BE DONE**

**-Gas Systems** 4 (3 complete 1 incomplete + 1 cabinet)

**-Bari-Lecce Trigger Board** : 5 remaining

**-New FEA: 100 on 160 at CREF (90 ok 10 no) ->Critical**

**Power Supply:** custom power supplies (Lecce) no longer available and some have to be repaired ->  
**group the PS to be repaired and send to Lecce**

**-Cables for new FEA:** ~150 connectors available– some Cables have been produced -> we need more.

**-FEAs : NINO out of production-> no new available FEAs**

**-MRPCs:** use uninstalled telescopes for spare -> no more available at CERN



# Purchase planning

- GAS:

1. Gas by the end of July the amount for 2025 will be acquired
2. New order in 2026

- DC/DC Converters:

we are evaluating the possibility to buy a certain number of DC/DC converters to repair some HV boxes

- Power supply

1. Repair some Lecce Power supply
2. Consider buying 1 or 2 sets HV caen

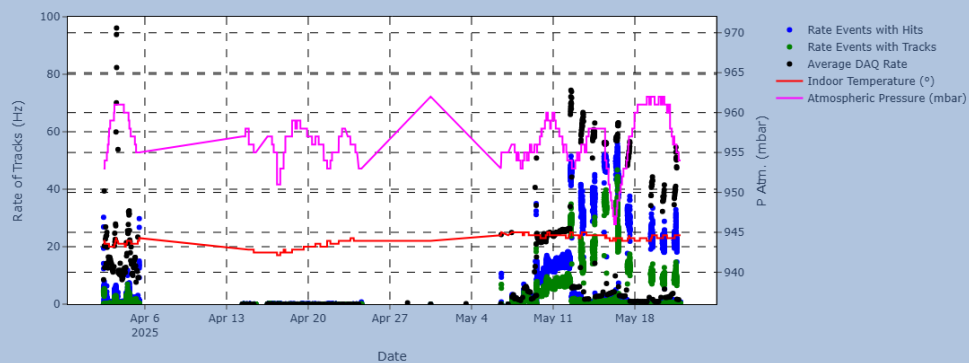
# Conclusions

- The number of telescopes where we restarted the activities increased in the last year. We have a certain number of sites where we have at least the new gases: some work to do to bring them up, but we are on the good path.
- Gas available and at the same price ! We can continue to turn on telescopes on.
- We have most of the necessary hardware and with an optimization of resources and purchase of some elements it is possible to cover the possible needs of 2025. **But we need to discuss the strategy for the next future!**
- The situation of manpower is still critical, even if we have some new entries

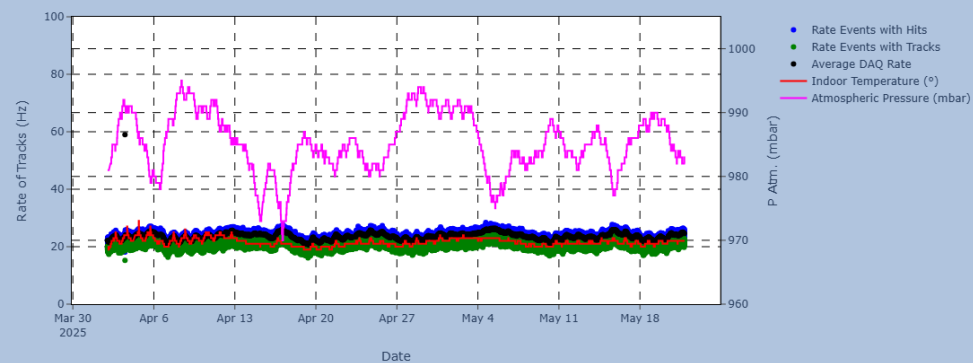


***EXTRA***

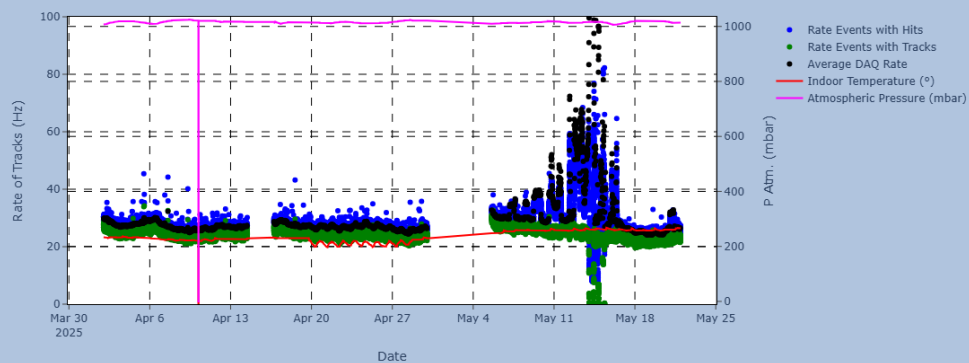
ALTA-01 Rate



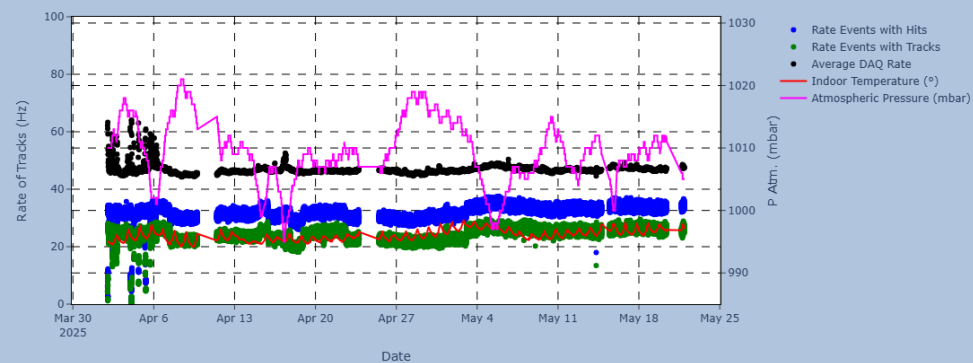
AREZ-01 Rate



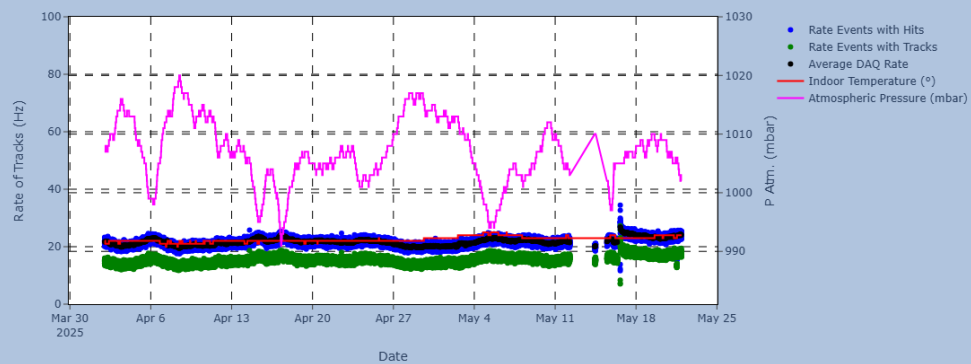
BARI-01 Rate



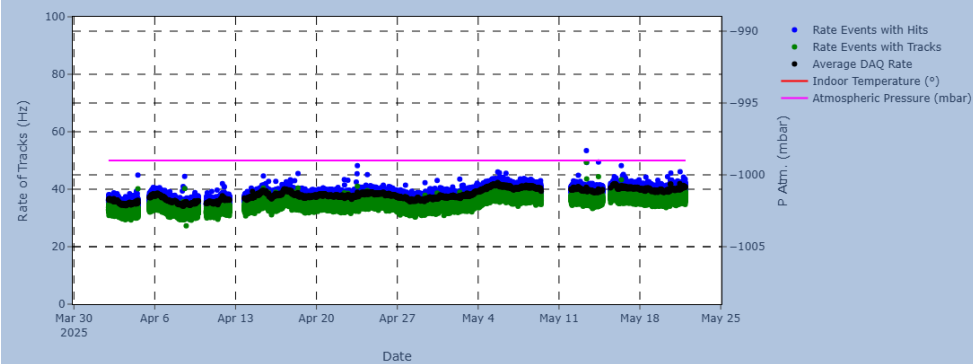
BOLO-01 Rate



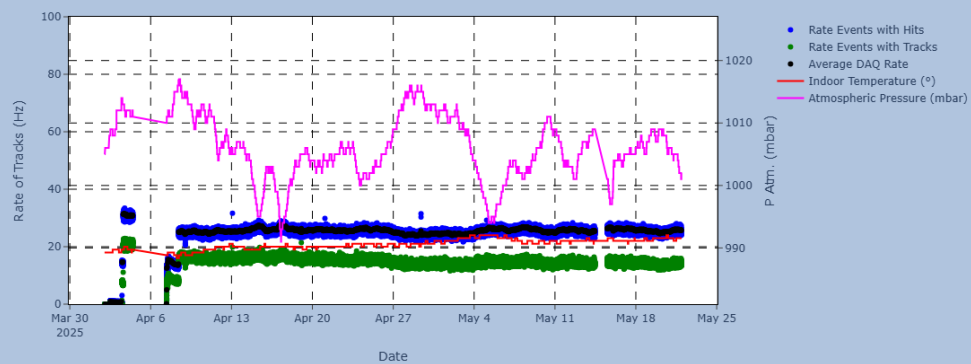
BOLO-02 Rate



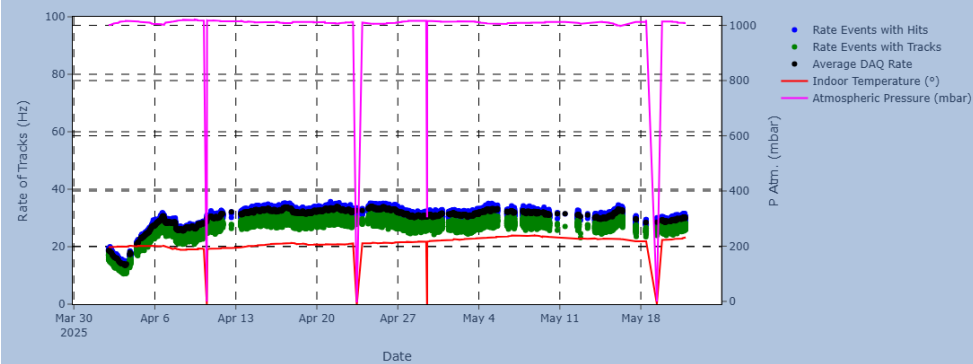
BOLO-03 Rate



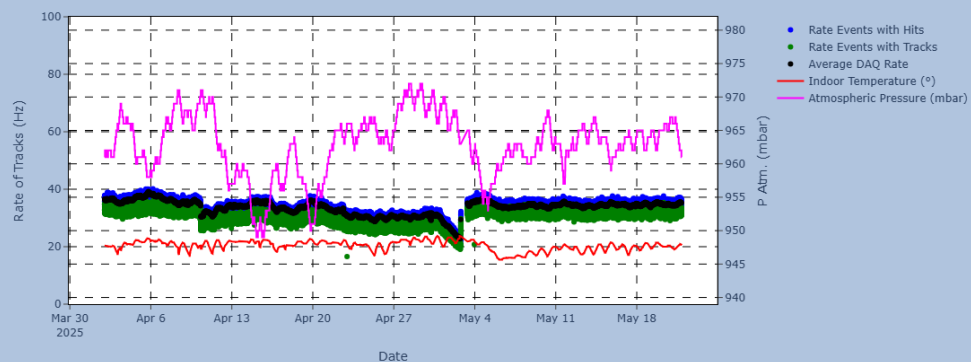
BOLO-05 Rate



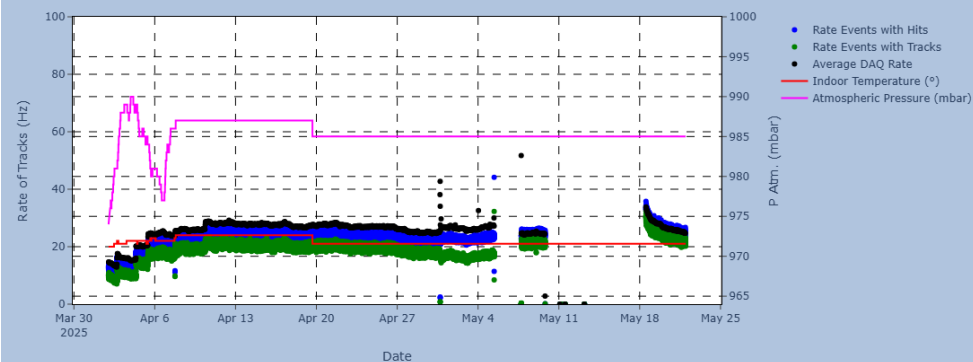
CARI-01 Rate



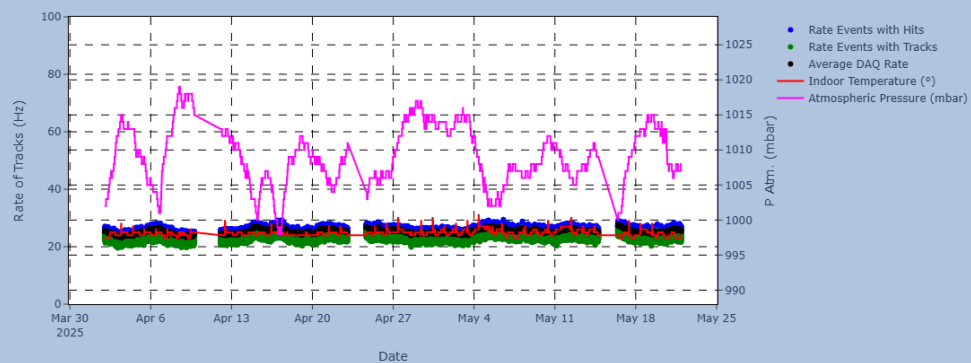
CERN-01 Rate



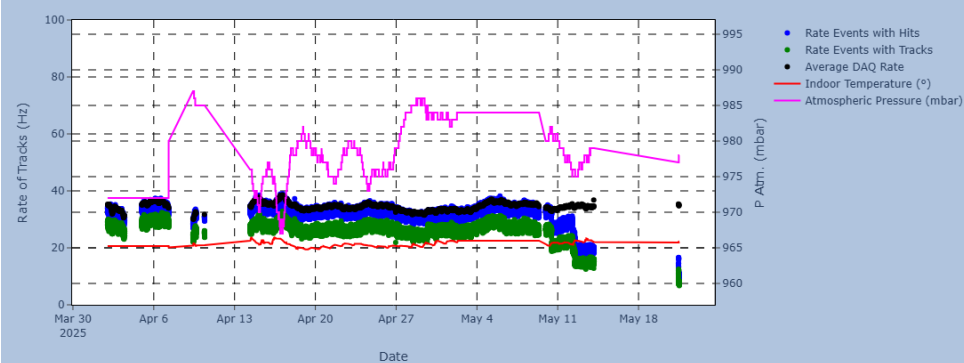
COSE-01 Rate



FERM-01 Rate

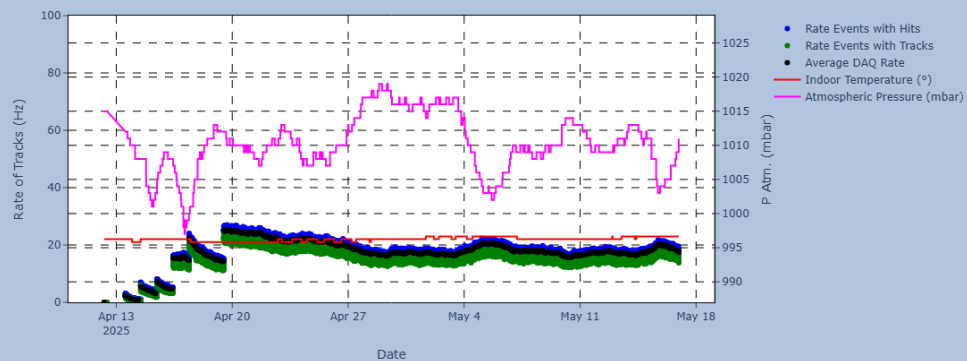


FRAS-01 Rate

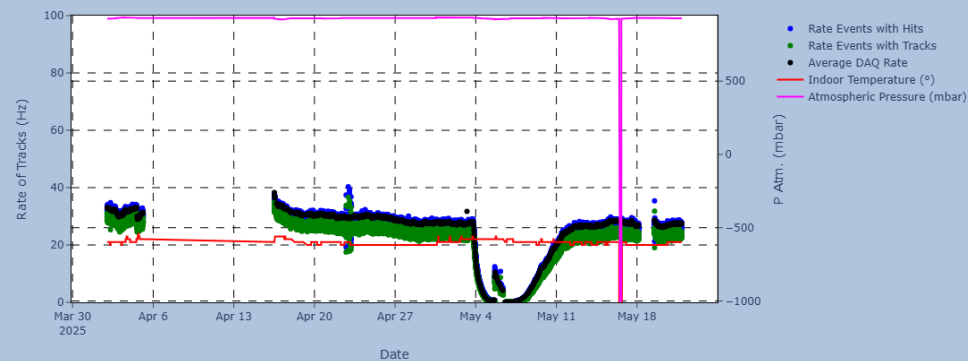




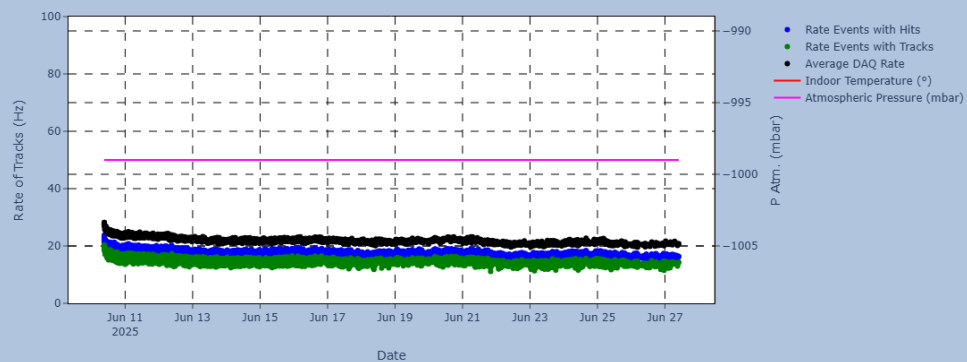
GROS-01 Rate



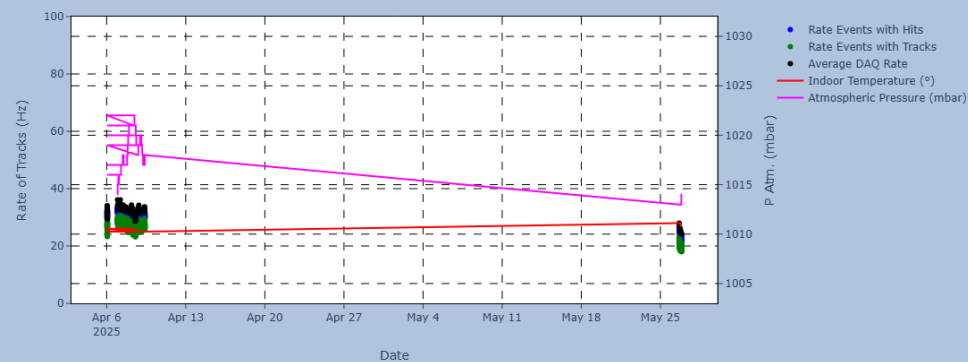
LAQU-01 Rate



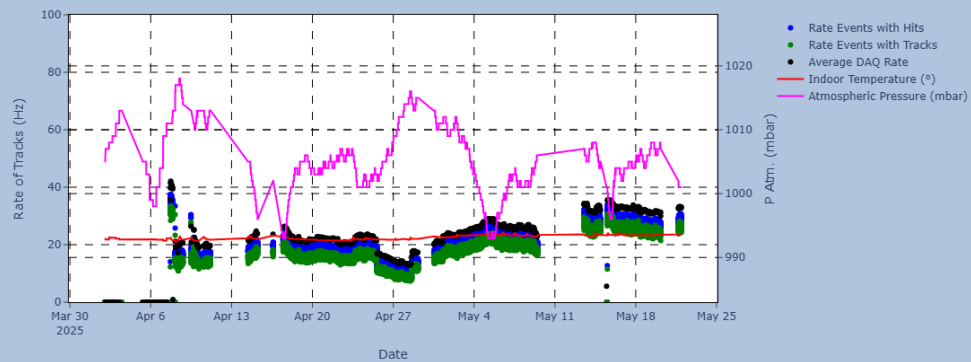
LECC-01 Rate



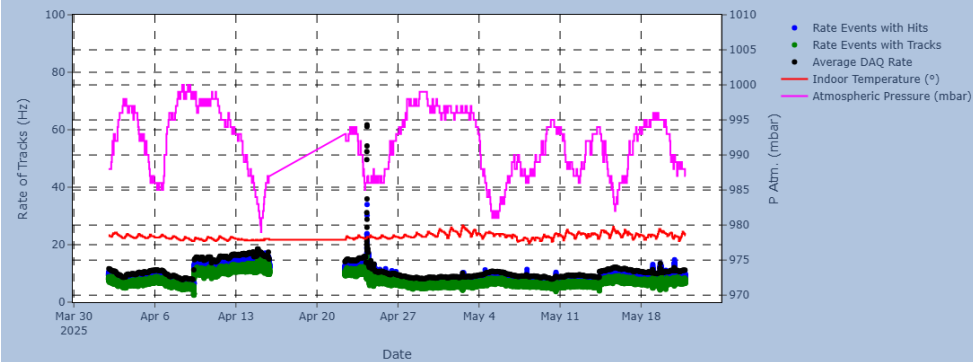
LNLE-01 Rate



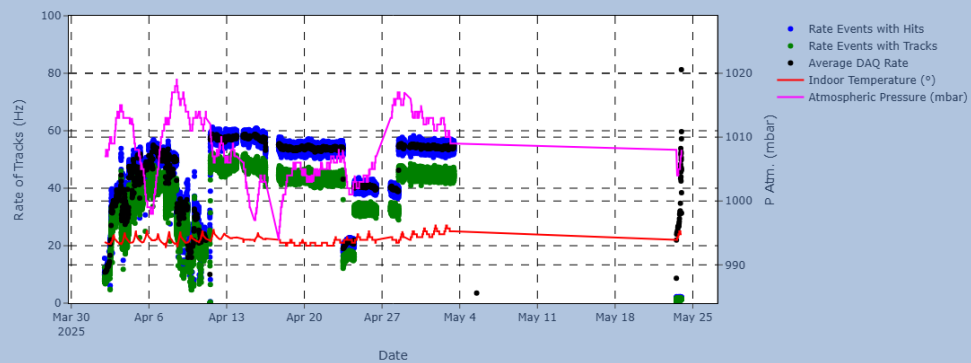
PARM-01 Rate



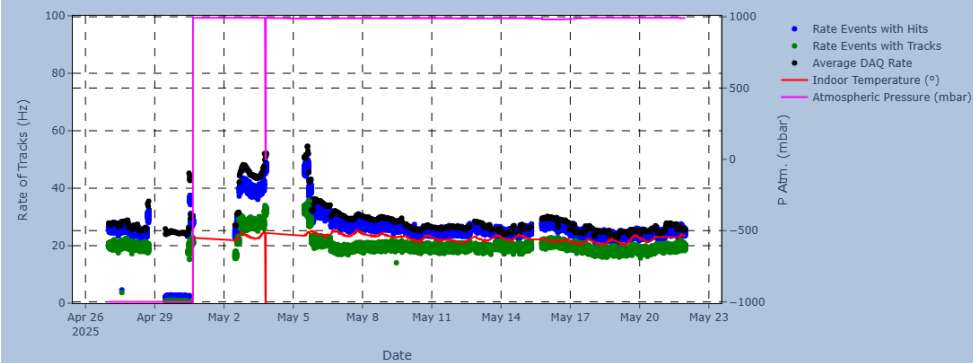
PISA-01 Rate



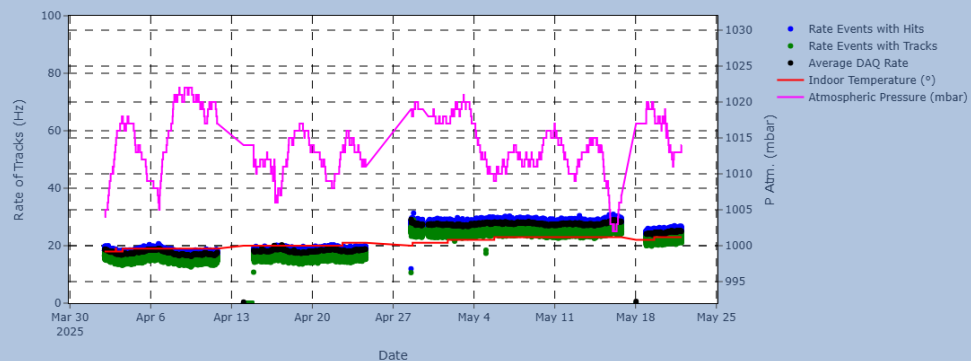
REGG-01 Rate



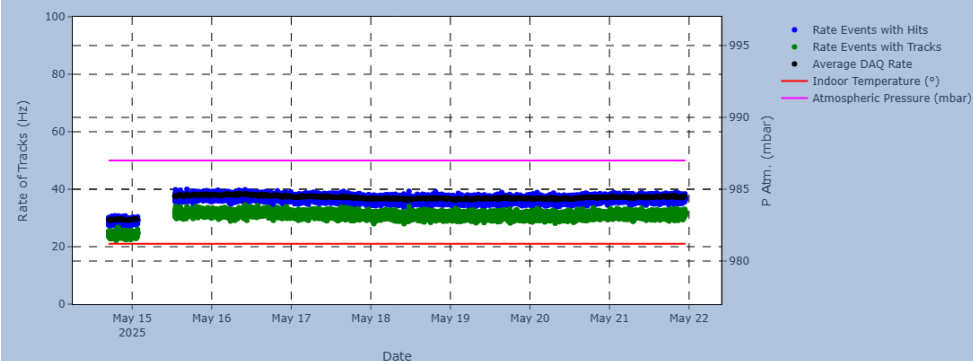
REND-01 Rate



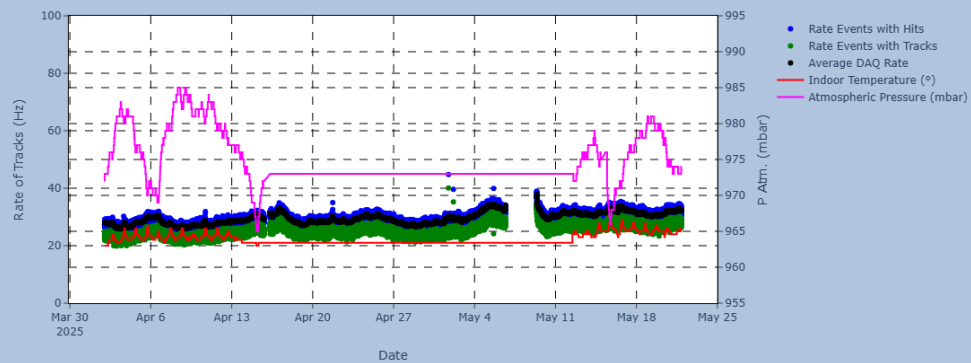
SALE-02 Rate



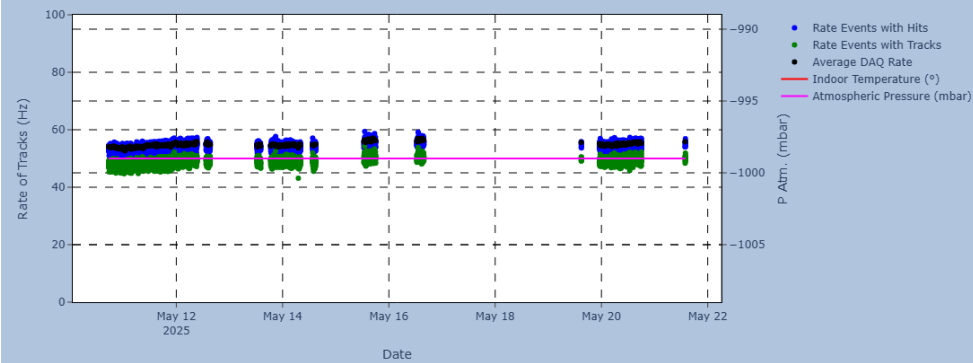
SALE-03 Rate



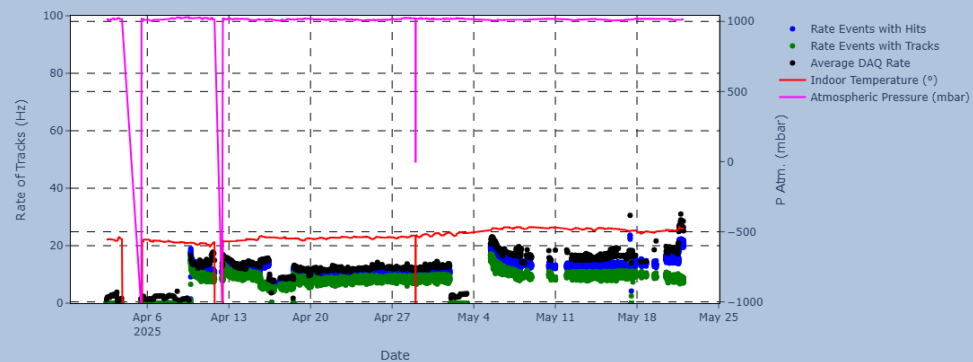
SIEN-01 Rate



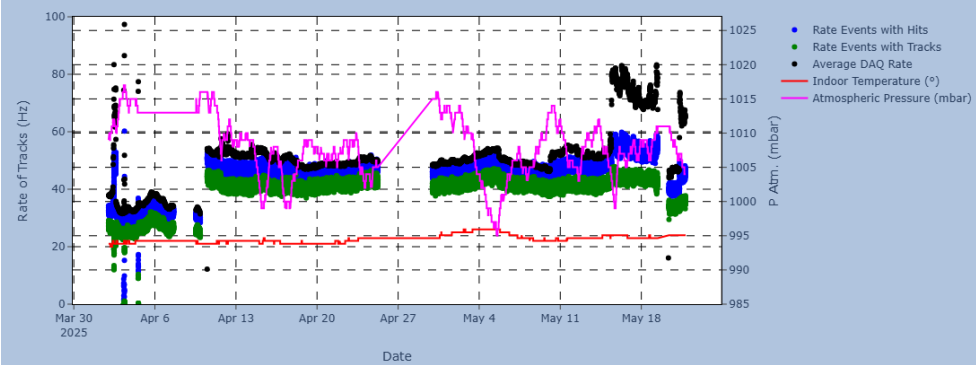
TERA-01 Rate



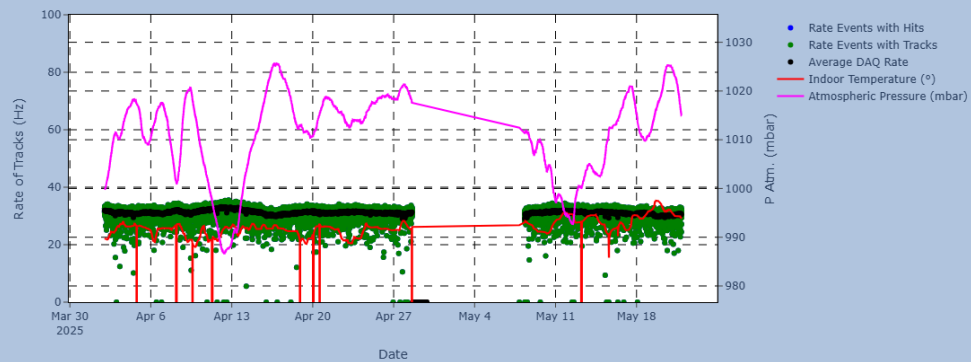
TRIN-01 Rate



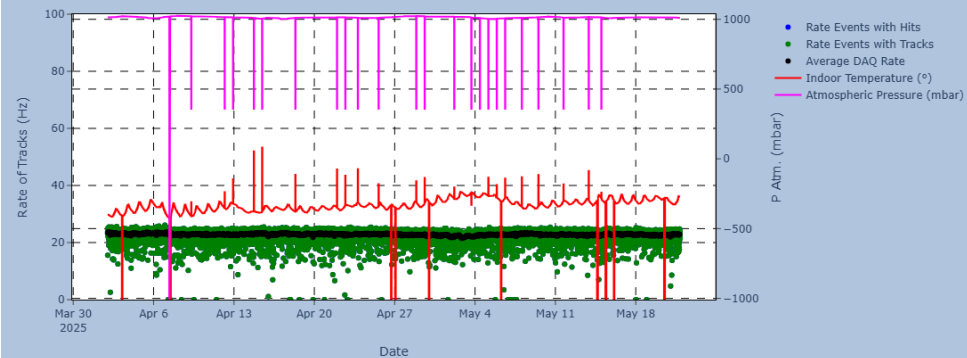
VICE-01 Rate



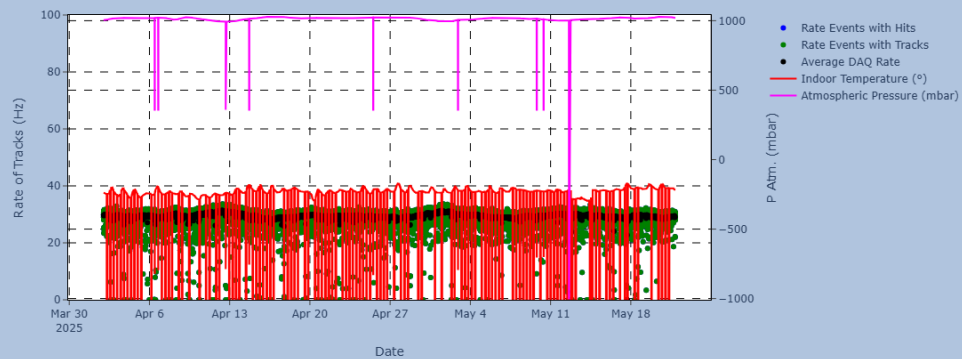
POLA-01 Rate



POLA-02 Rate



POLA-03 Rate



POLA-04 Rate

