D. Cavazza, A. Margotti ,R.N.,
F. Noferini, O. Pinazza
29/10/2026

POLA02 heating test

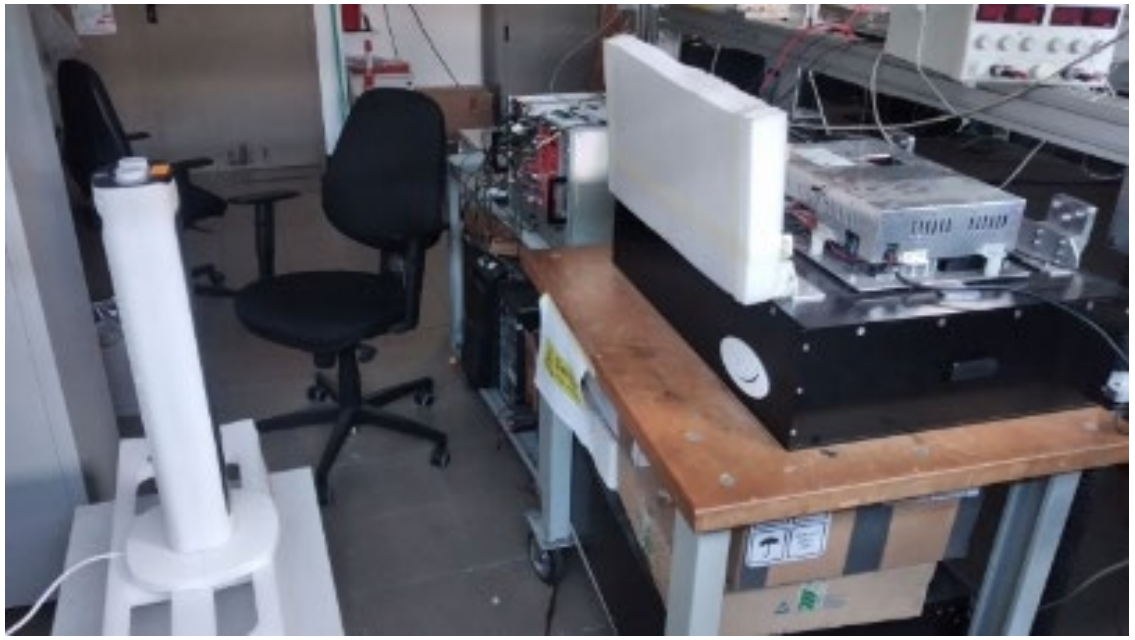
In POLA-R often have been observed variations in rate measurements and pseudo efficiencies, probably related to heating of the box or electronics.

Some attempt to cool electronic from outside has been made during May 2026 mission in Svalbard , by including some ventilation of the electronic (O. Pinazza, M. Panareo)

Few tests have been made in Bologna to better understand the problem and possible solutions.



Stufetta lato corto

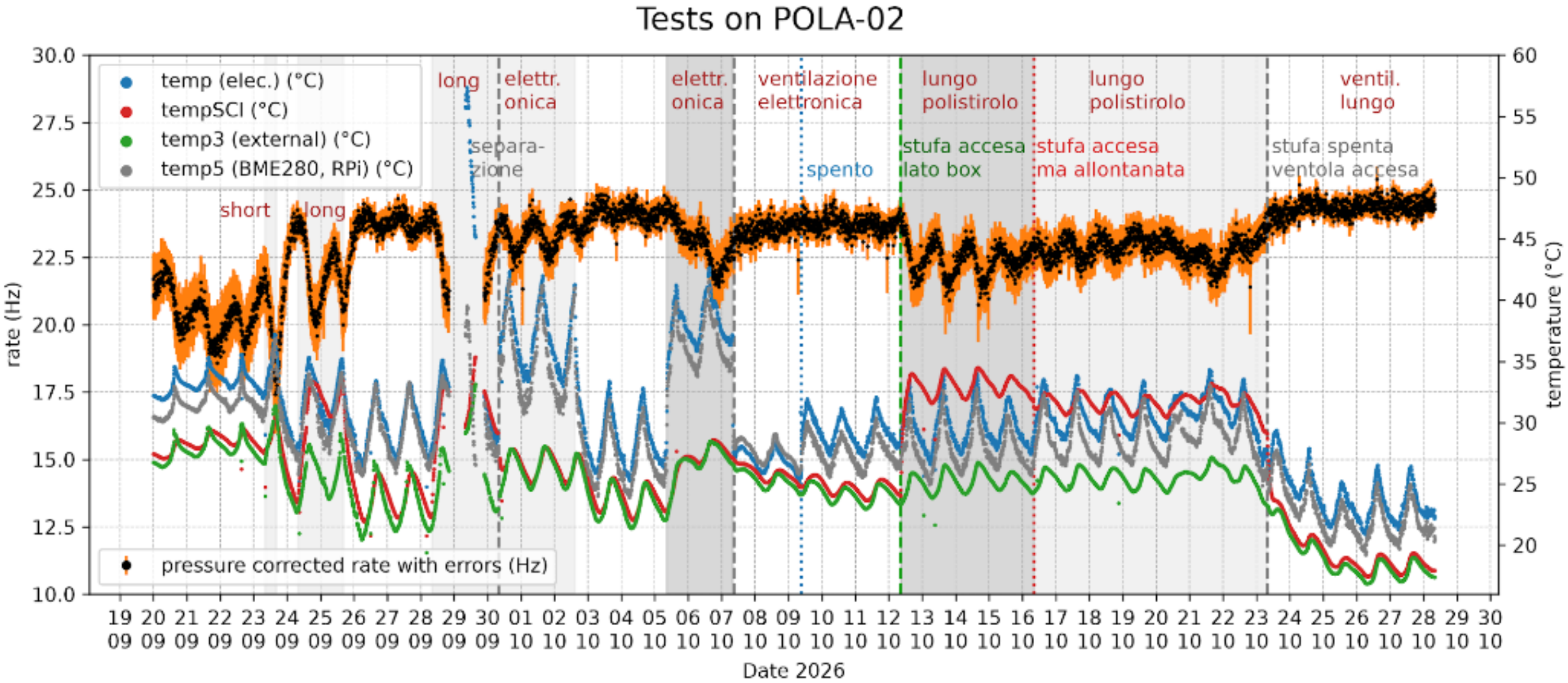


Stufetta lato lungo



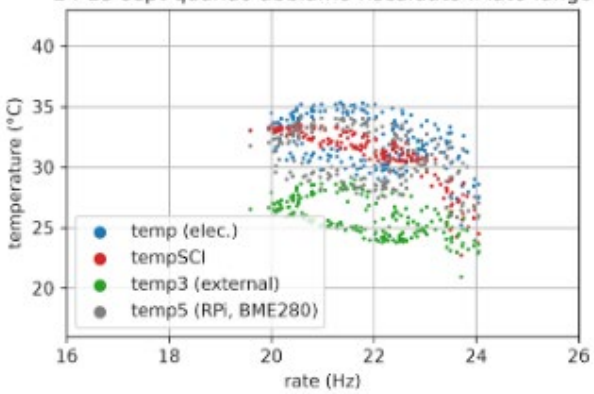
Stufetta elettronica

Quando si riscalda il punto di maggior temperature e’ intorno ai 40 gradi

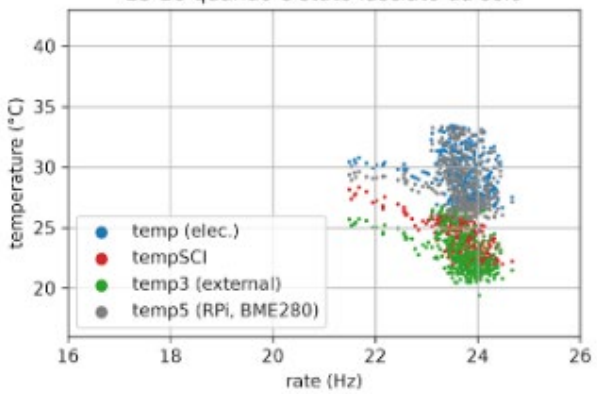

Tests on POLA-02
temp (elec.) (°C)
tempSCI (°C)
temp3 (external) (°C)
temp5 (BME280, RPi) (°C)
pressure corrected rate with errors (Hz)
short
long
long
separa-
zione
elettr.
onica
elettr.
onica
ventilazione
elettronica
spento
lungo
polistirolo
stufa accesa
lato box
lungo
polistirolo
stufa accesa
ma allontanata
ventil.
lungo
stufa spenta
ventola accesa
rate (Hz)
temperature (°C)
Date 2026

Correlation in specific periods

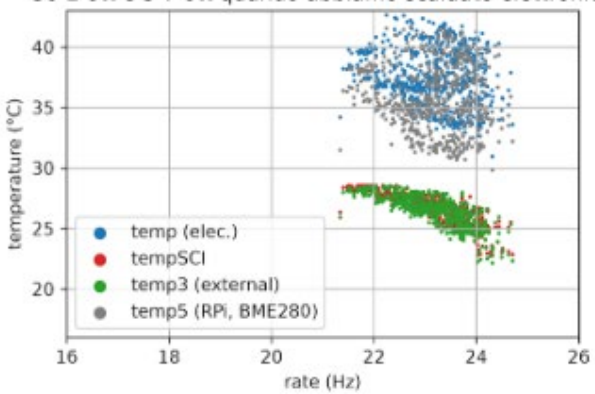
24-25 sept quando abbiamo riscaldato il lato lungo



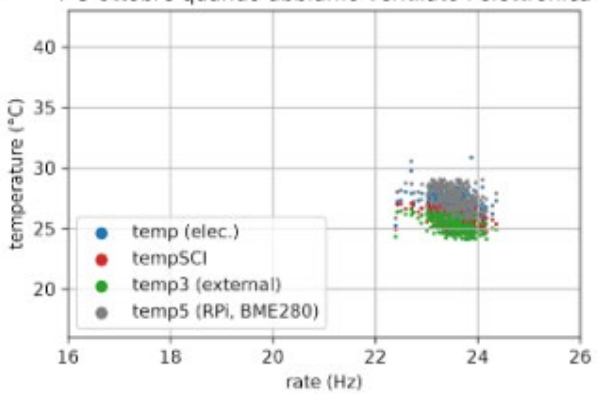
25-28 quando è stato lasciato da solo



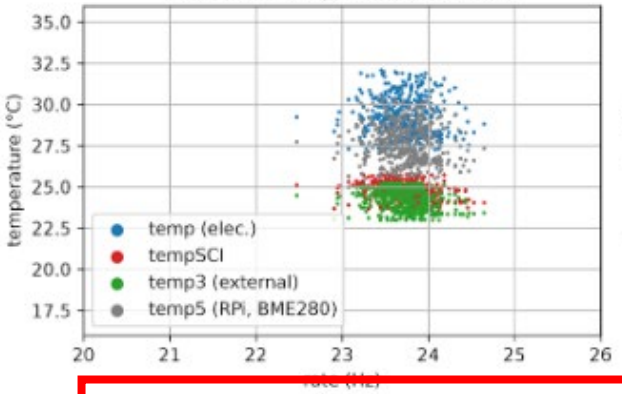
30-2 ott e 5-7 ott quando abbiamo scaldato elettronica



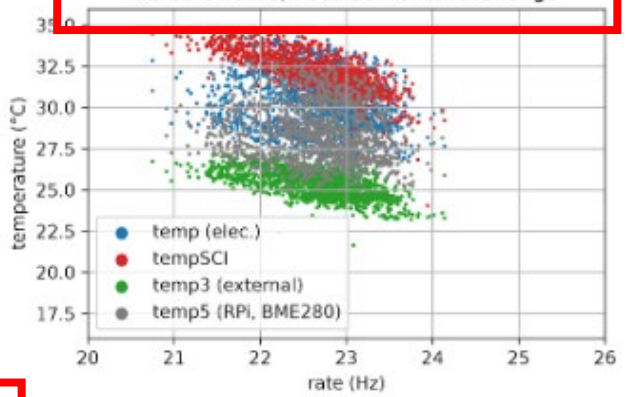
7-9 ottobre quando abbiamo ventilato l'elettronica



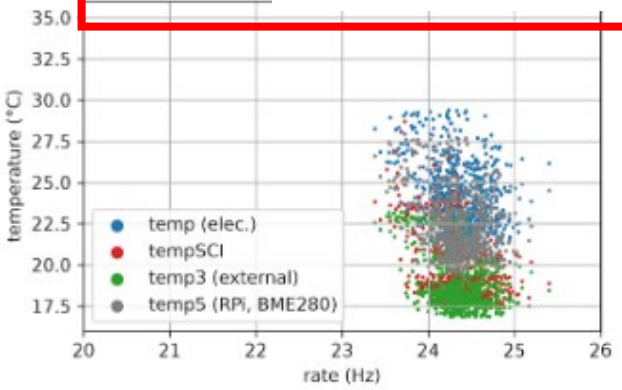
9-12 ottobre, spenta ventilazione



12-23 ottobre, riscaldamento lato lungo

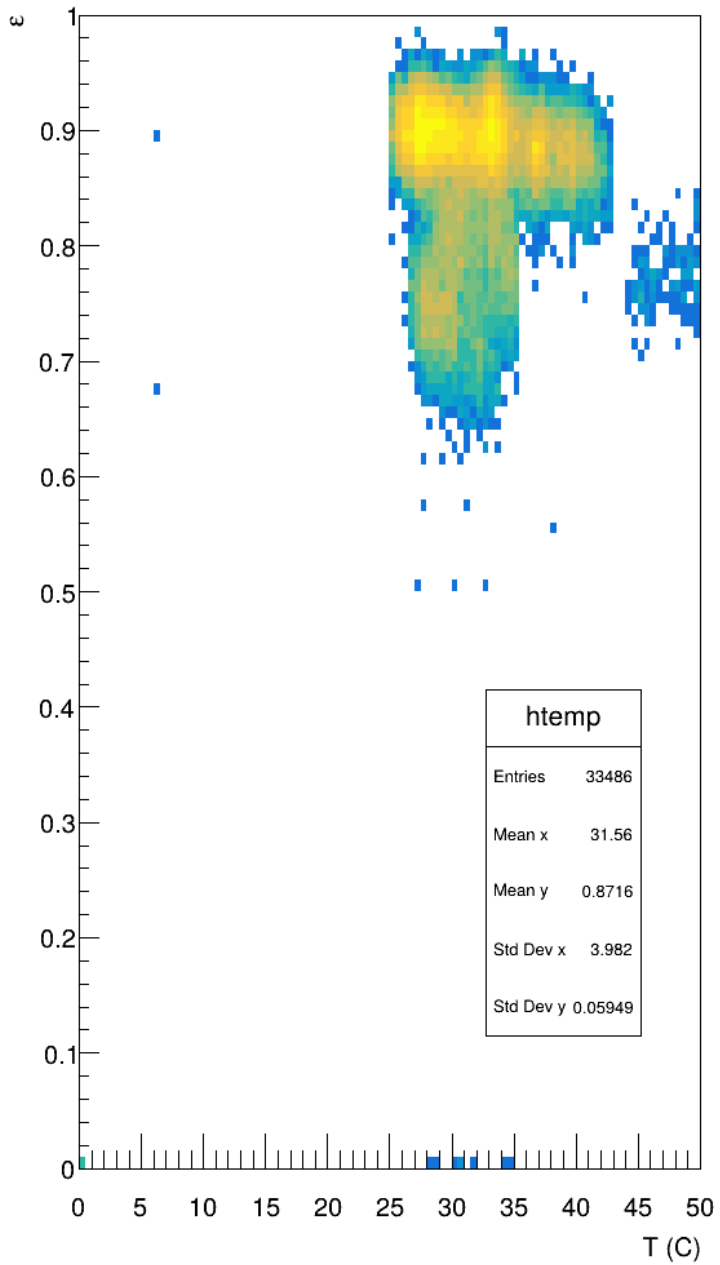


23-28 ottobre Raffreddamento lato lungo

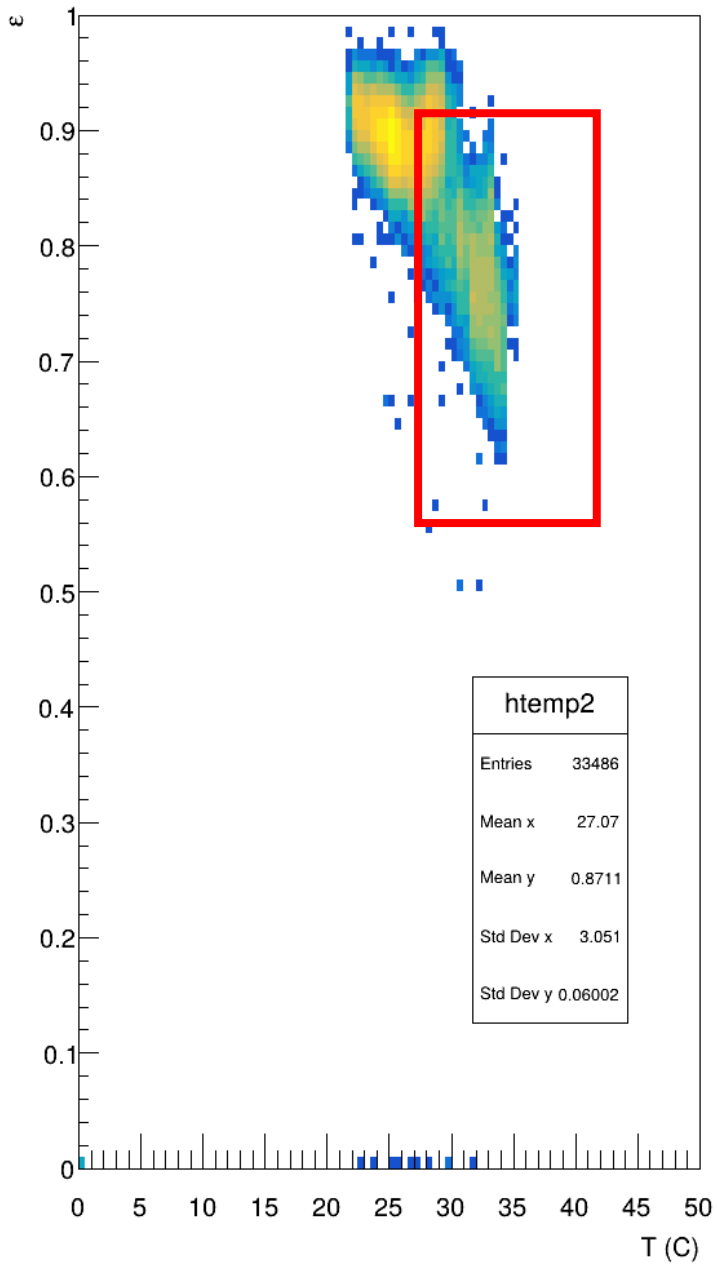


Pseudo efficienza

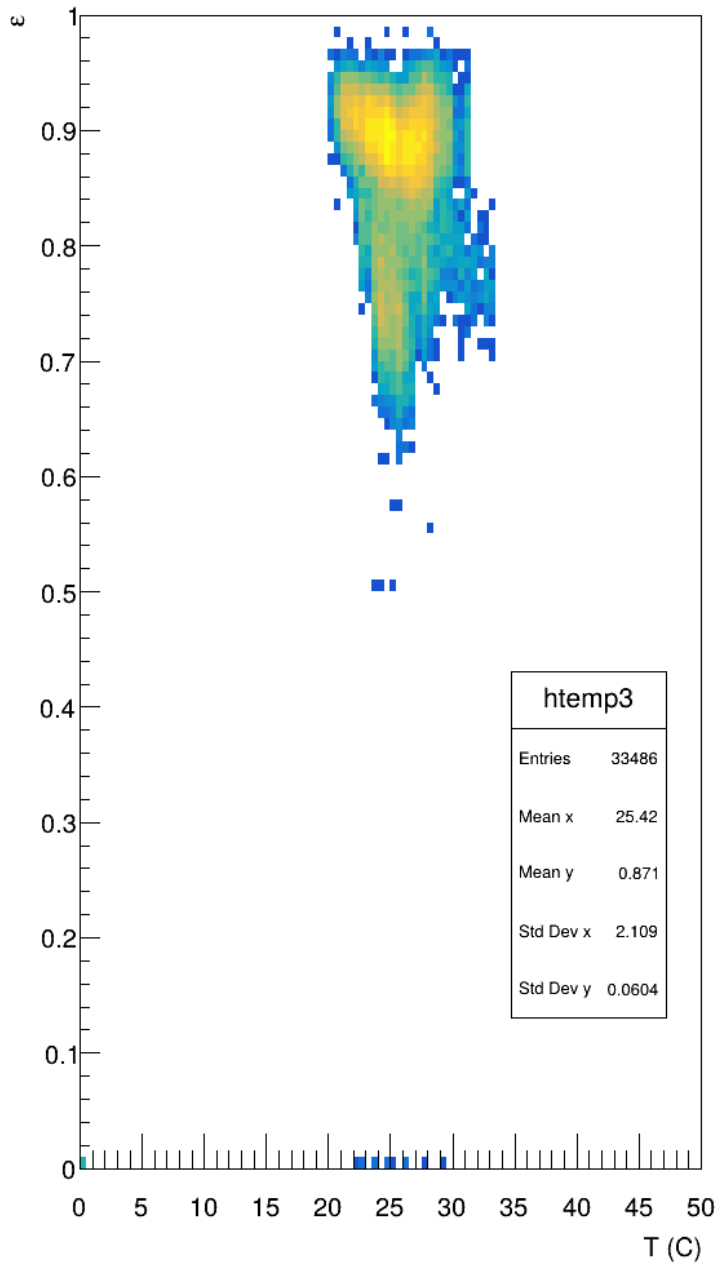
elettronica



scintillatore



ambiente



Next steps

- Decide to produces holes in the box and a ventilation system for the electronics
- Try to understand possible correlation with specific SiPMs in specific positions to decide where to drill the hole.
- Perform this work early in December (need Anselmo, Daniele, Marco?)
- Repeat few measurements on long term to evaluate the new situation.

TTT R&D

- Al CF
  - ✓ tests in Corso su una sbarra prototipo e CAEN FERS 5202 (250 ps).
  - ✓ Ordinato nuovo FERS 5204 con 50 ps time resolution (ma CAEN dice di stare attenti per possibili problemi di noise legati a lunghezze eccessive dei cavi segnale)

- A Bologna
  - ✓ Ordinato materiale per un prototipo completo (scintillatori e SiPM FBK MT).
  - ✓ Ordinato un FERS 5202 per inizio studio readout integrato con sensori ambientali e di posizione
  - ✓ Ordinato Oscilloscopio per tests sulle sbarre , sia per R&D (anche con telescopio EEE) che per sviluppo criteri per controllo produzione.
- A Lecce
  - ✓ Scheda interfaccia per GPS e FERS 5202 in progettazione (soluzione discussa con CAEN)