

Roadmap to Operational Site for Xilinhhot

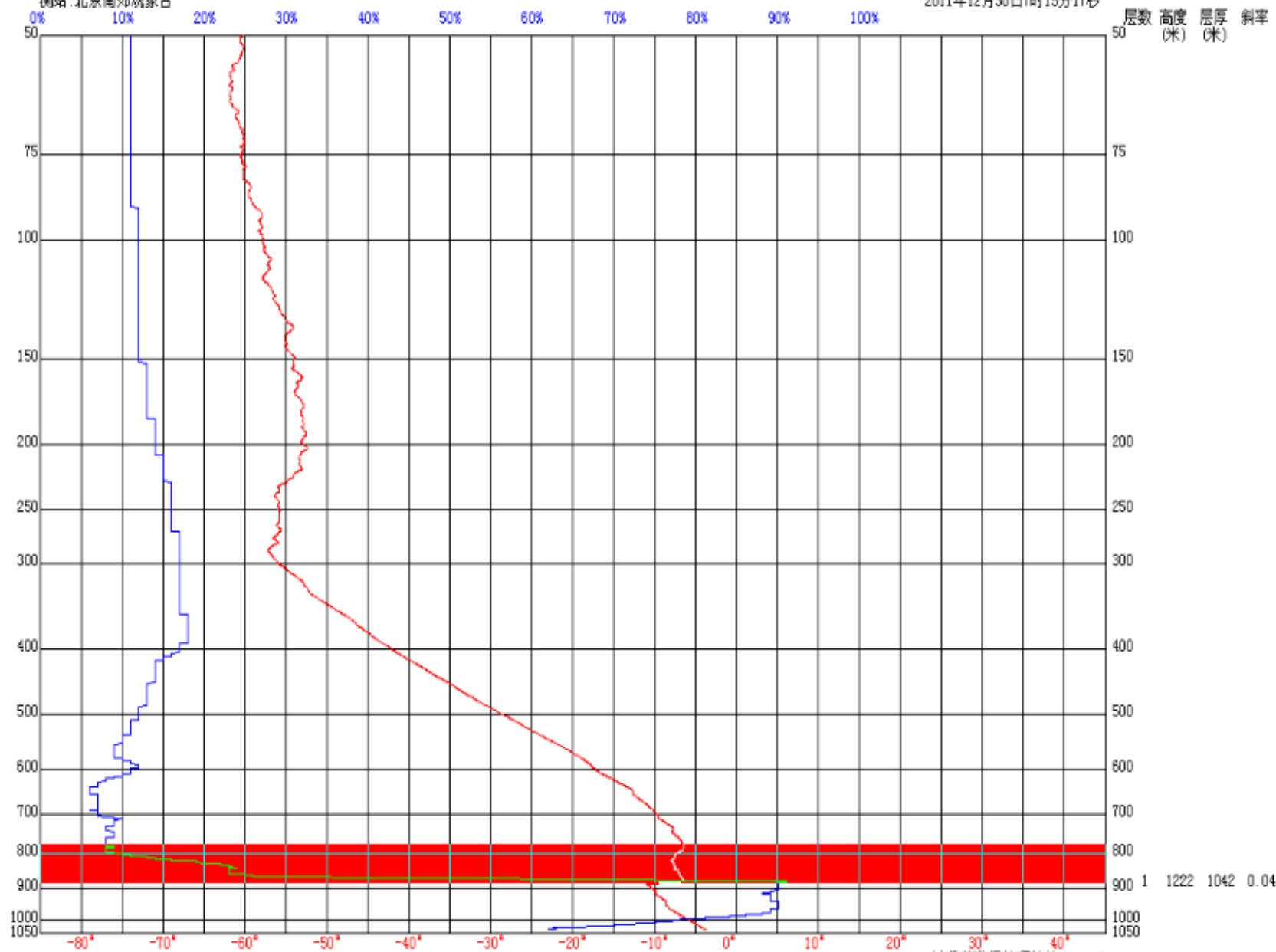
LI Wei

From CMA for ICM4 At Tokyo, Japan

Radiosonde system

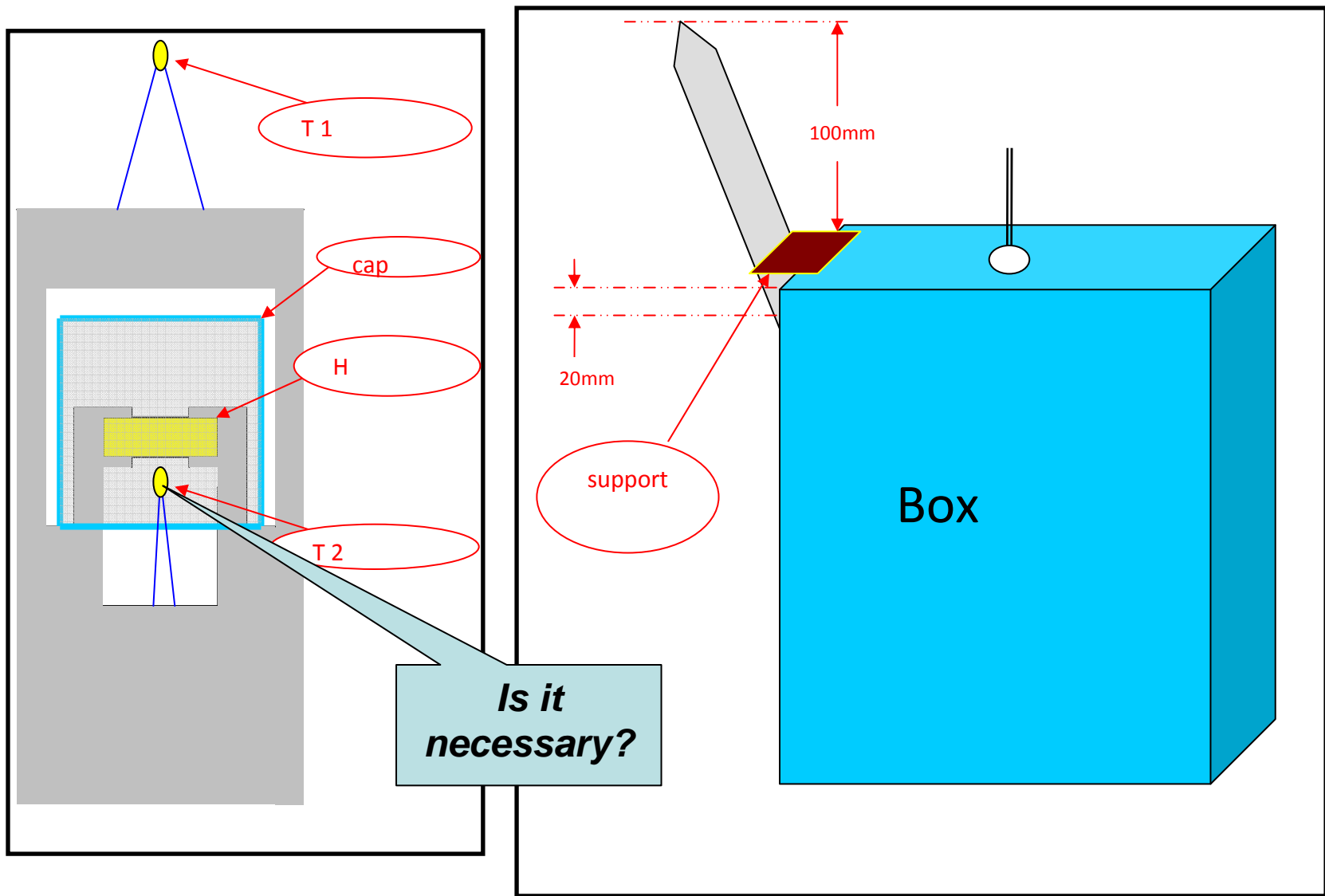
测站:北京南郊观象台

2011年12月30日7时15分17秒



Analysis of sounding system

- Temperature sensor
 - Current: White paint, big cube resistance
 - Future: Aluminized paint, small bead resistance
- Humidity sensor
 - Current: Hygristor, -40 degree unavailable
 - Future: Capacitive sensor, E+E
- Wind
 - Current: Radar
 - Future: Satellite navigation model
- Pressure
 - Current: Pressure sensor
 - Future: Pressure sensor and pressure retrieved by GPS height

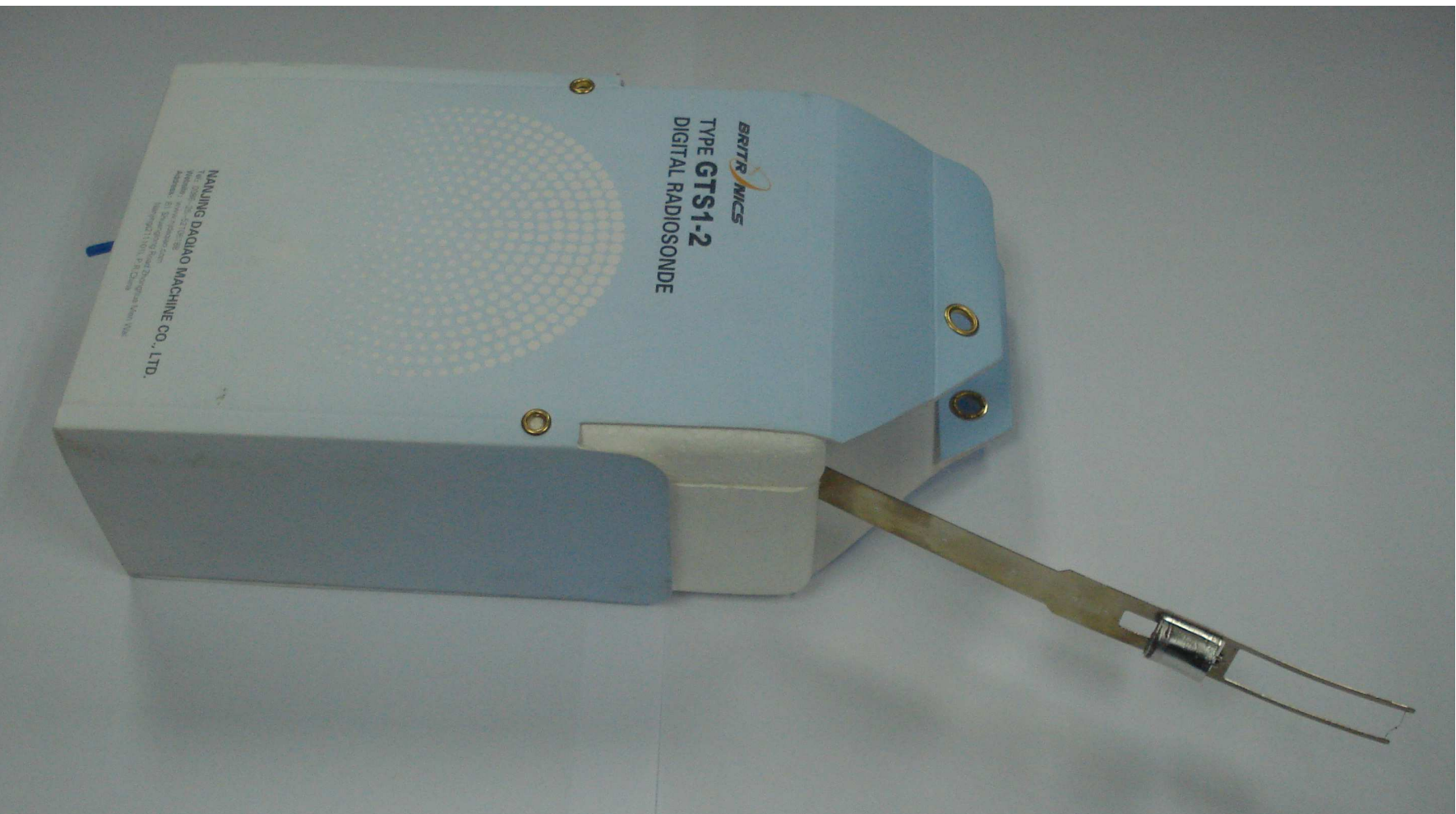


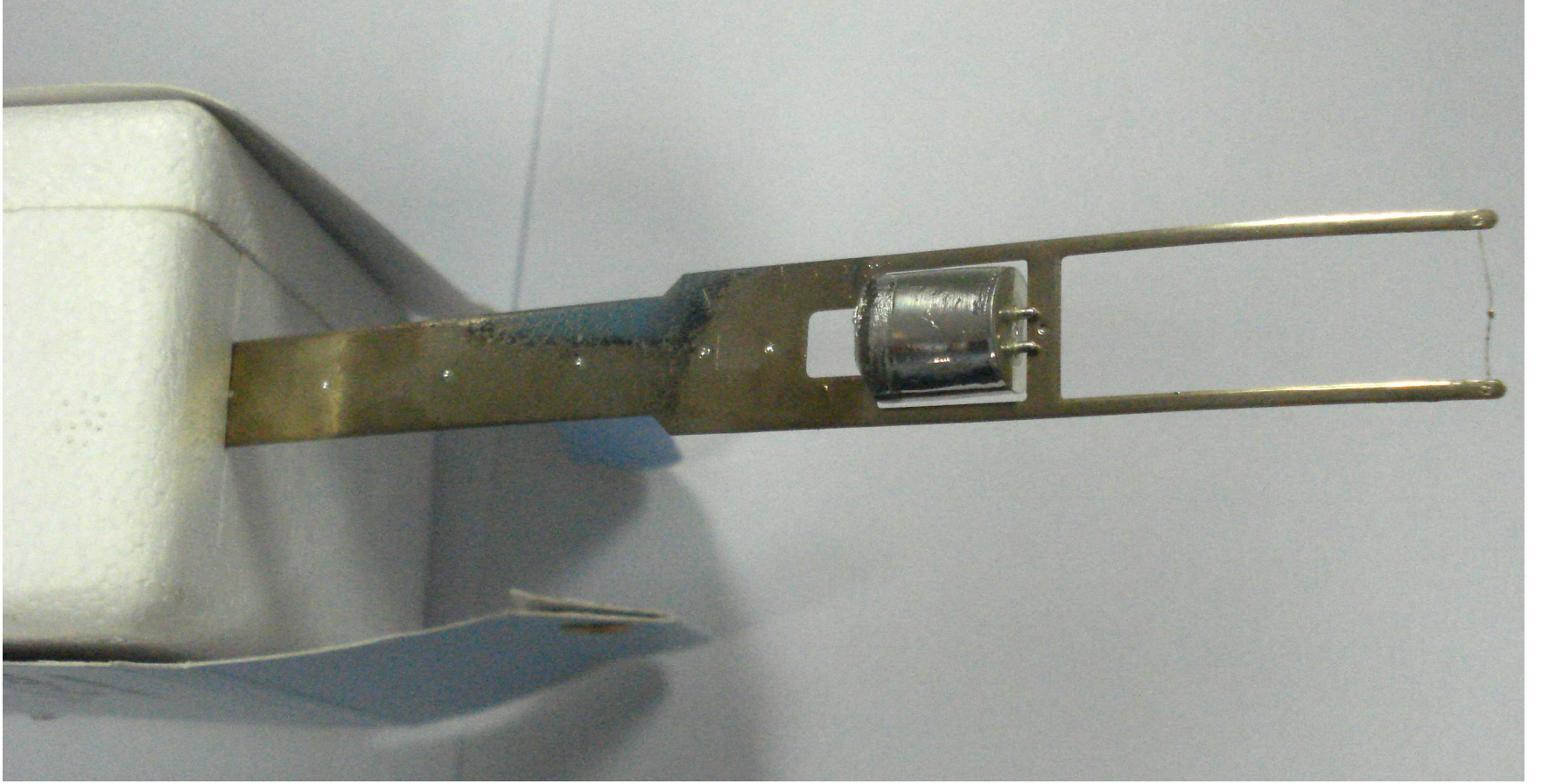
Schematic diagram for future
GRUAN radiosonde in China

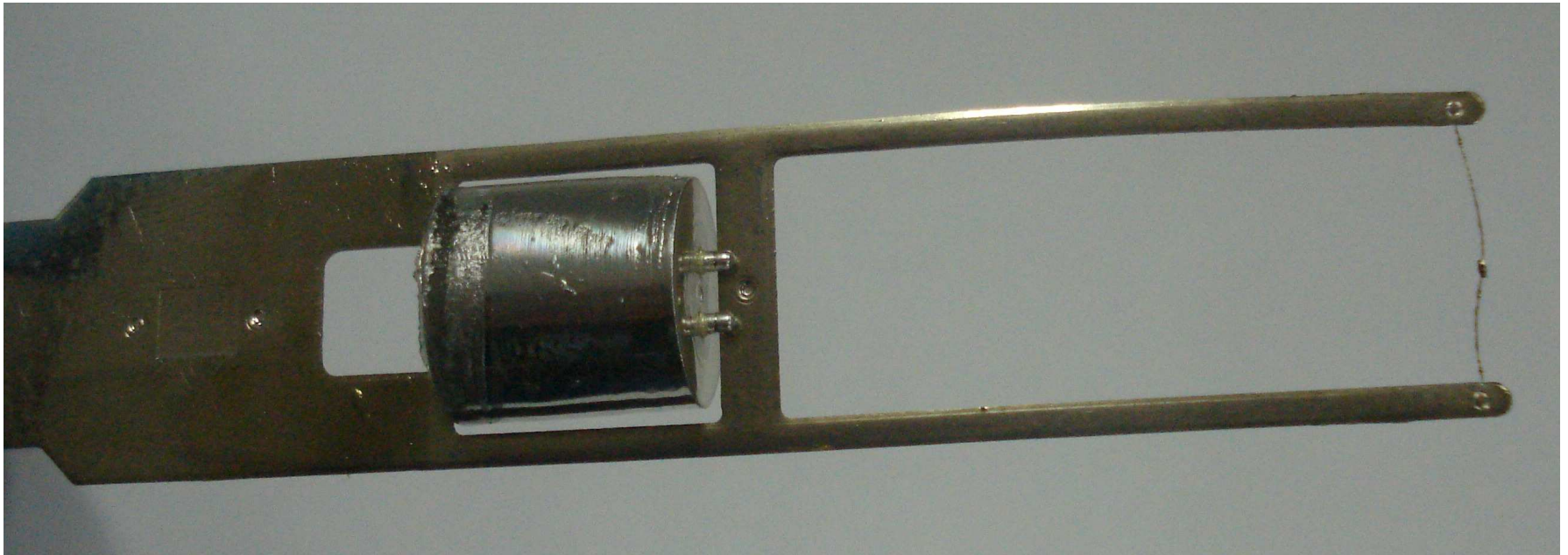
Structure

- Support frame stretches up out of box 140mm









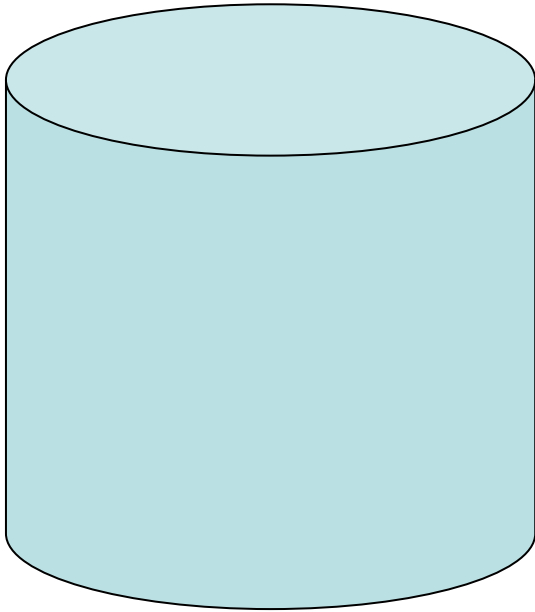
T: Aluminum Paint Bead resistance

U: From E+E company, capacitive

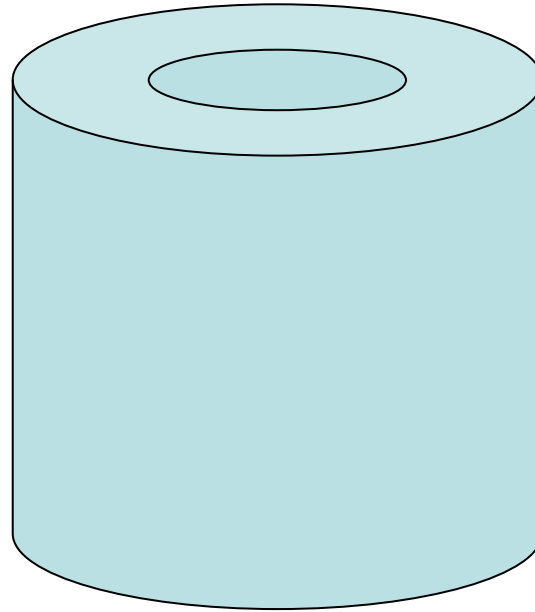
Support Frame: Aluminum Paint

Humidity Cap

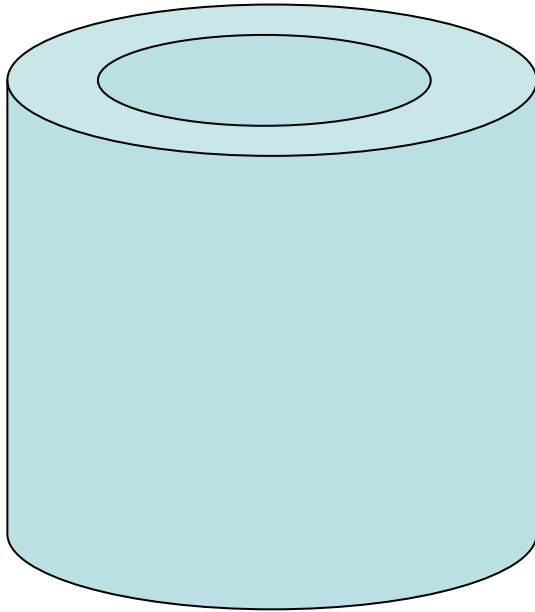
- Diameter: 11mm
- 4 Choice: (1) no top hole (2) top hole for $\varnothing 3\text{mm}$ (3) top hole $\varnothing 5\text{mm}$ (4) open for top



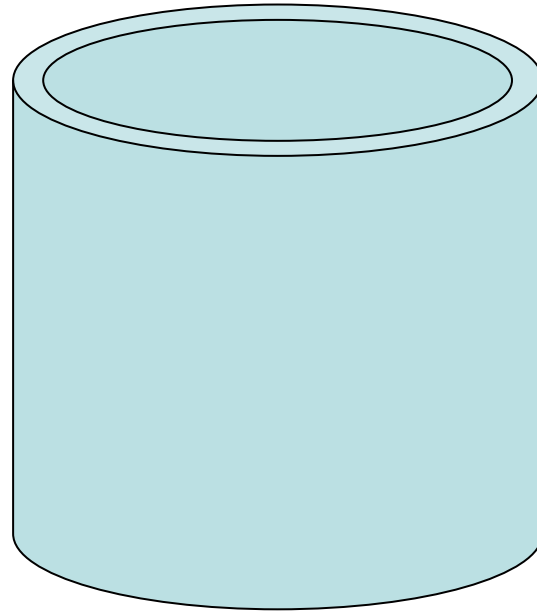
No hole



$\varnothing 3\text{mm}$

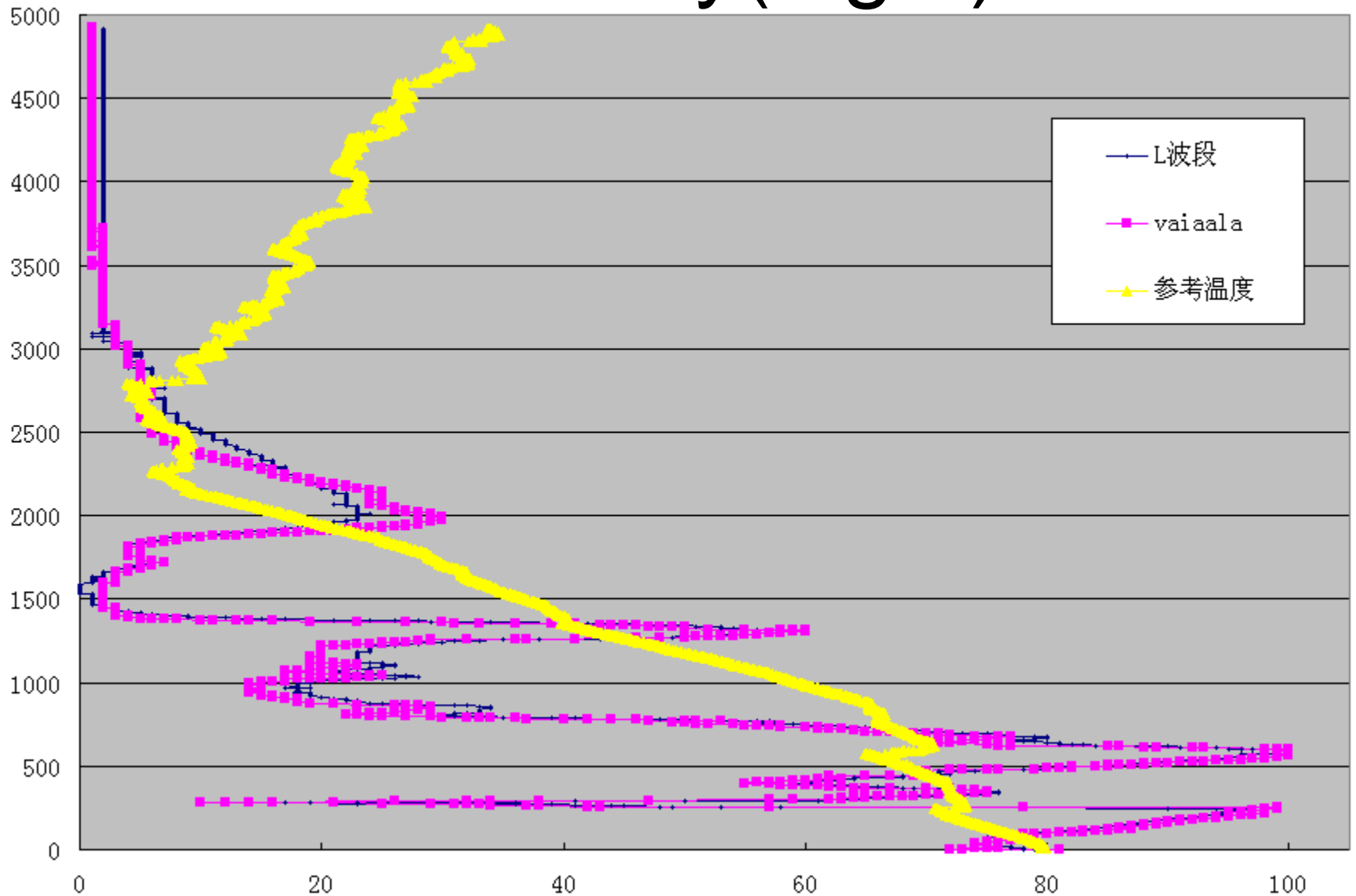


ø5mm

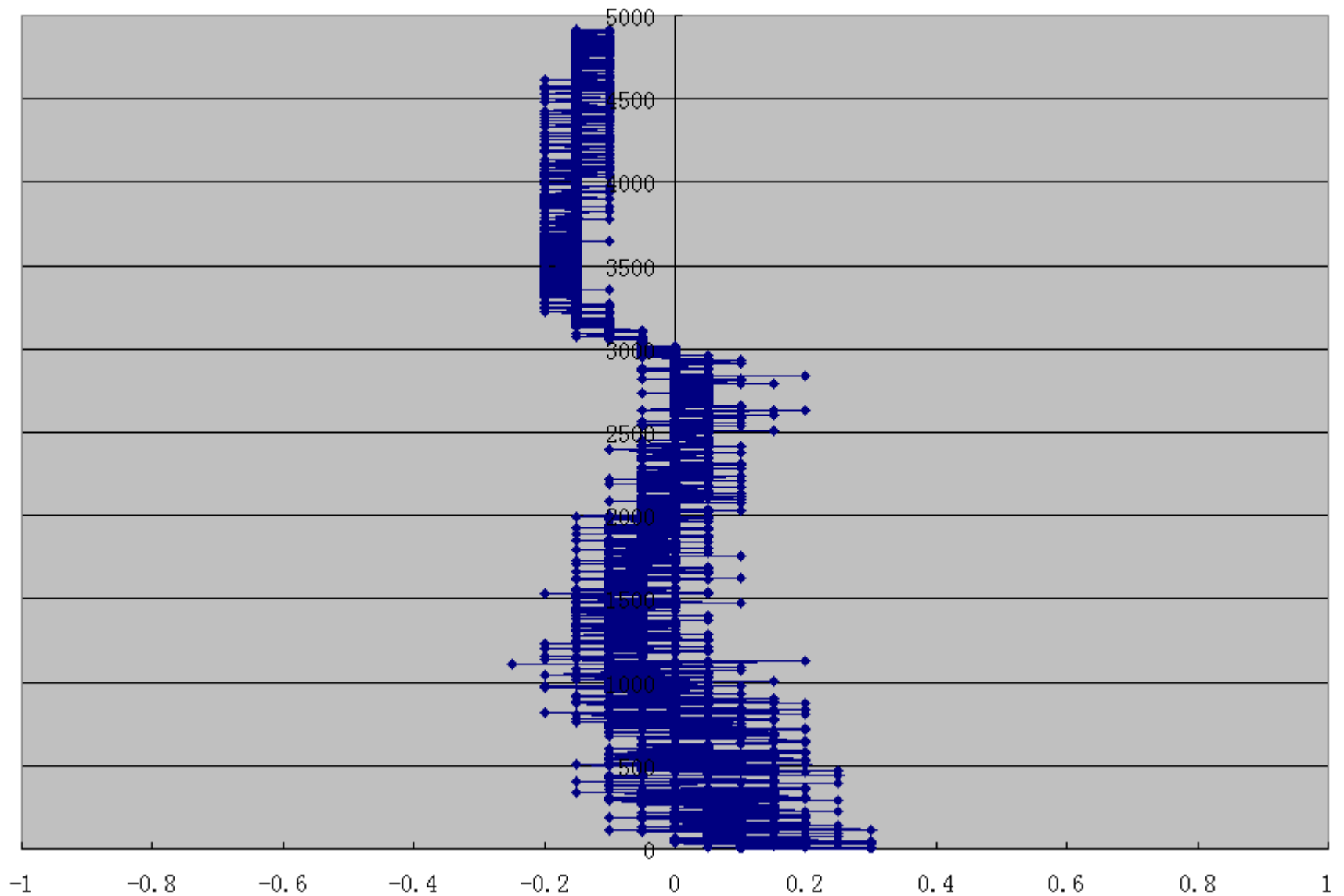


open

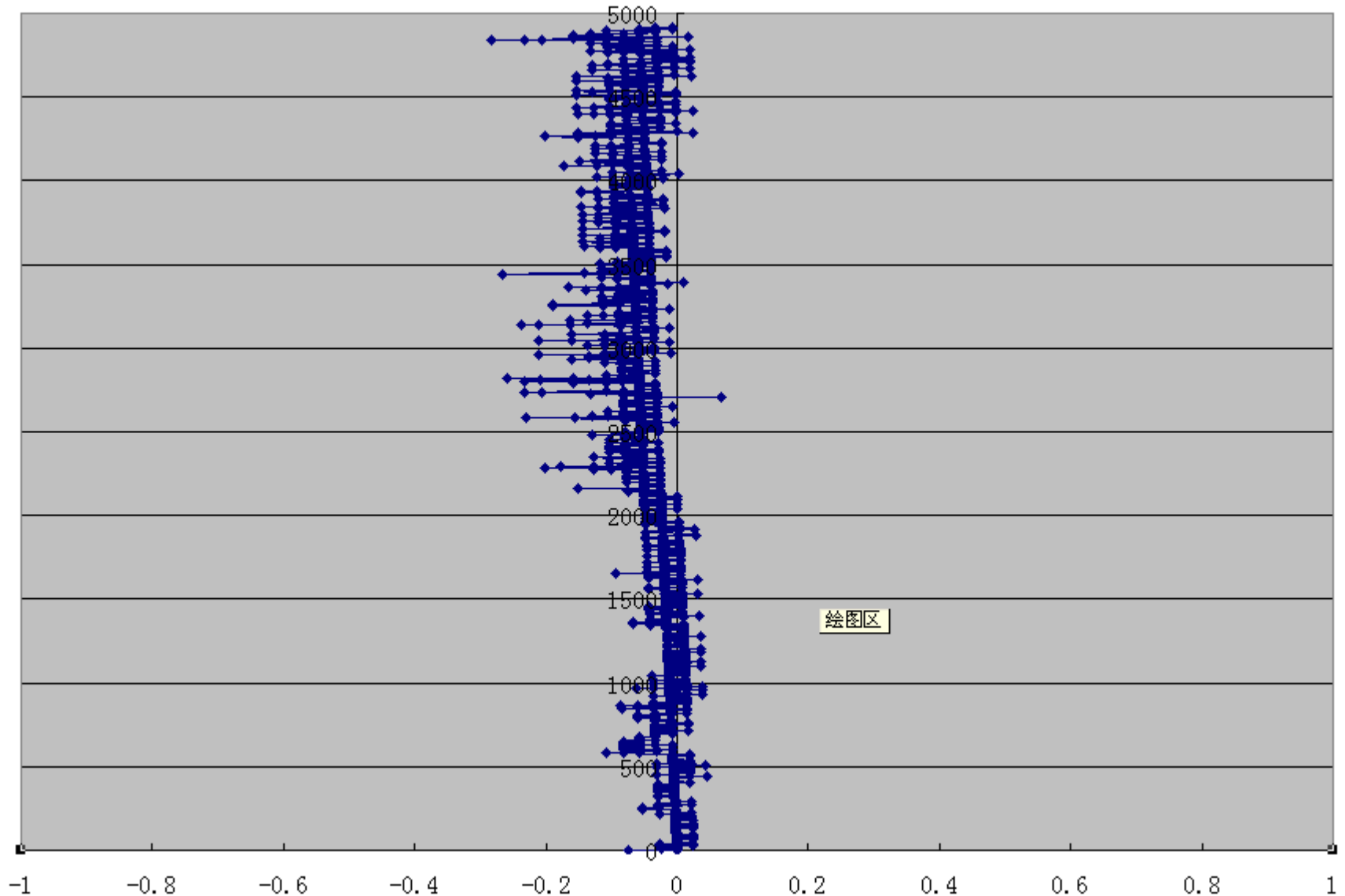
Humidity(night)



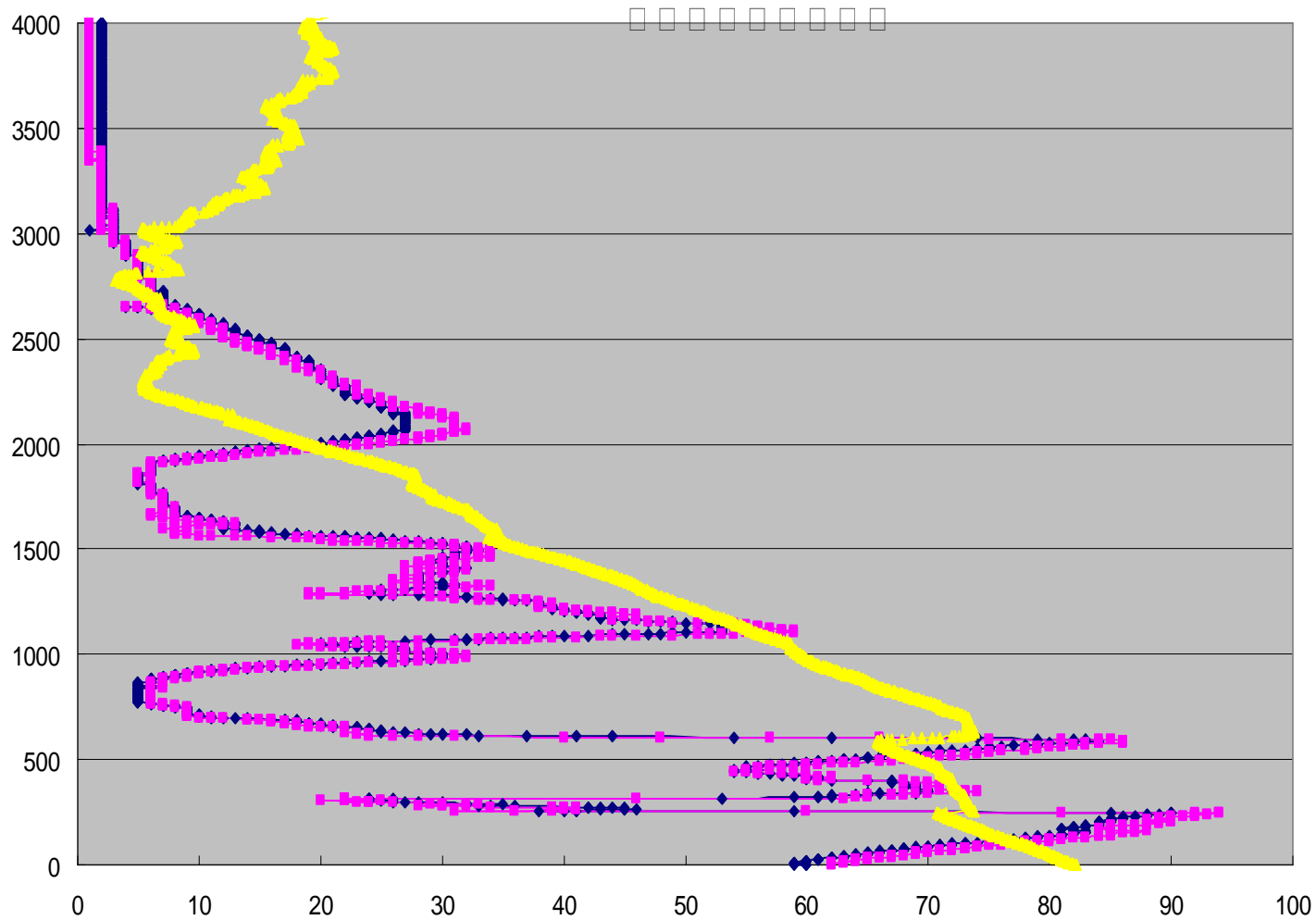
Pressure(night)



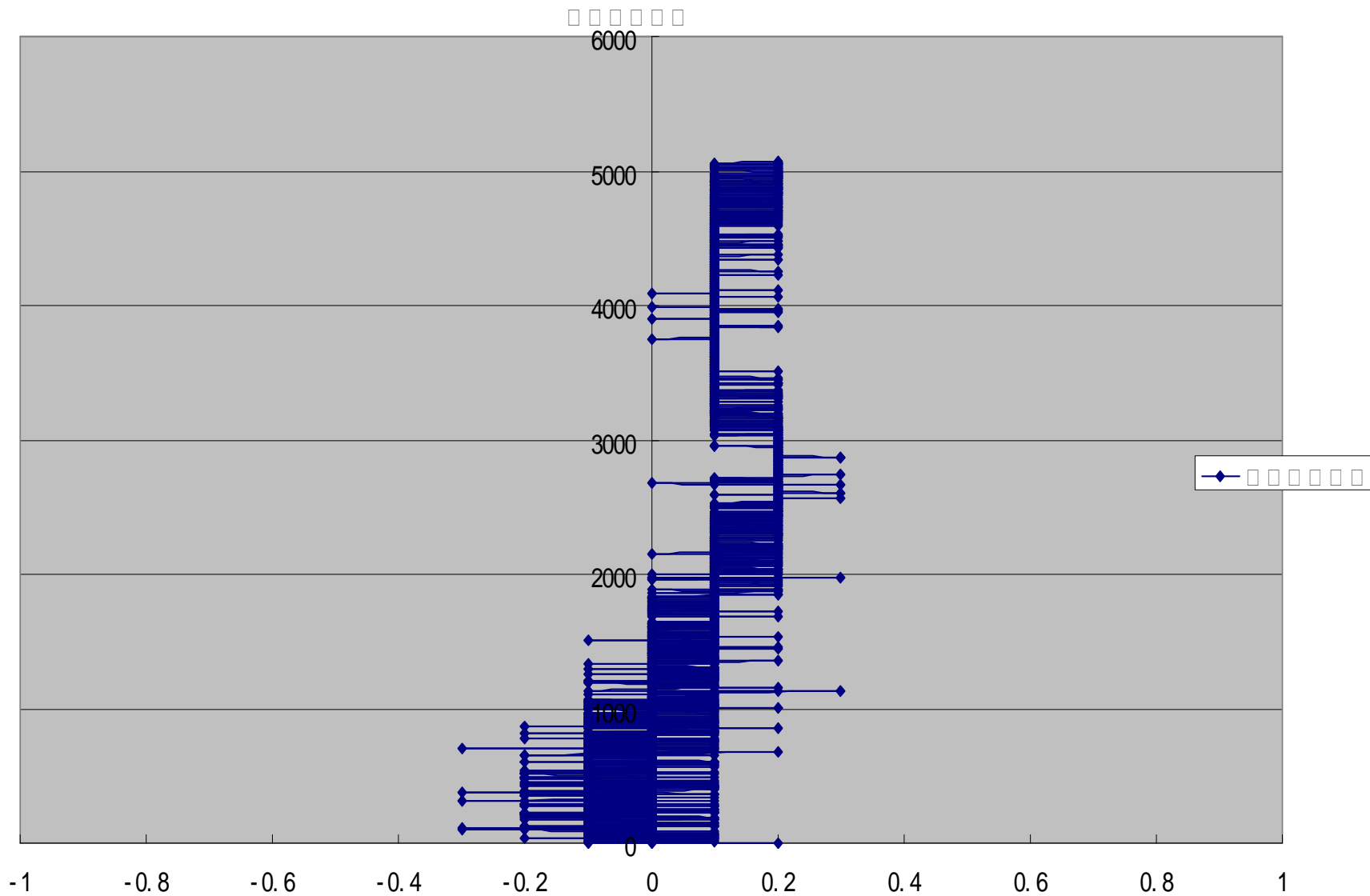
Temperature(night)



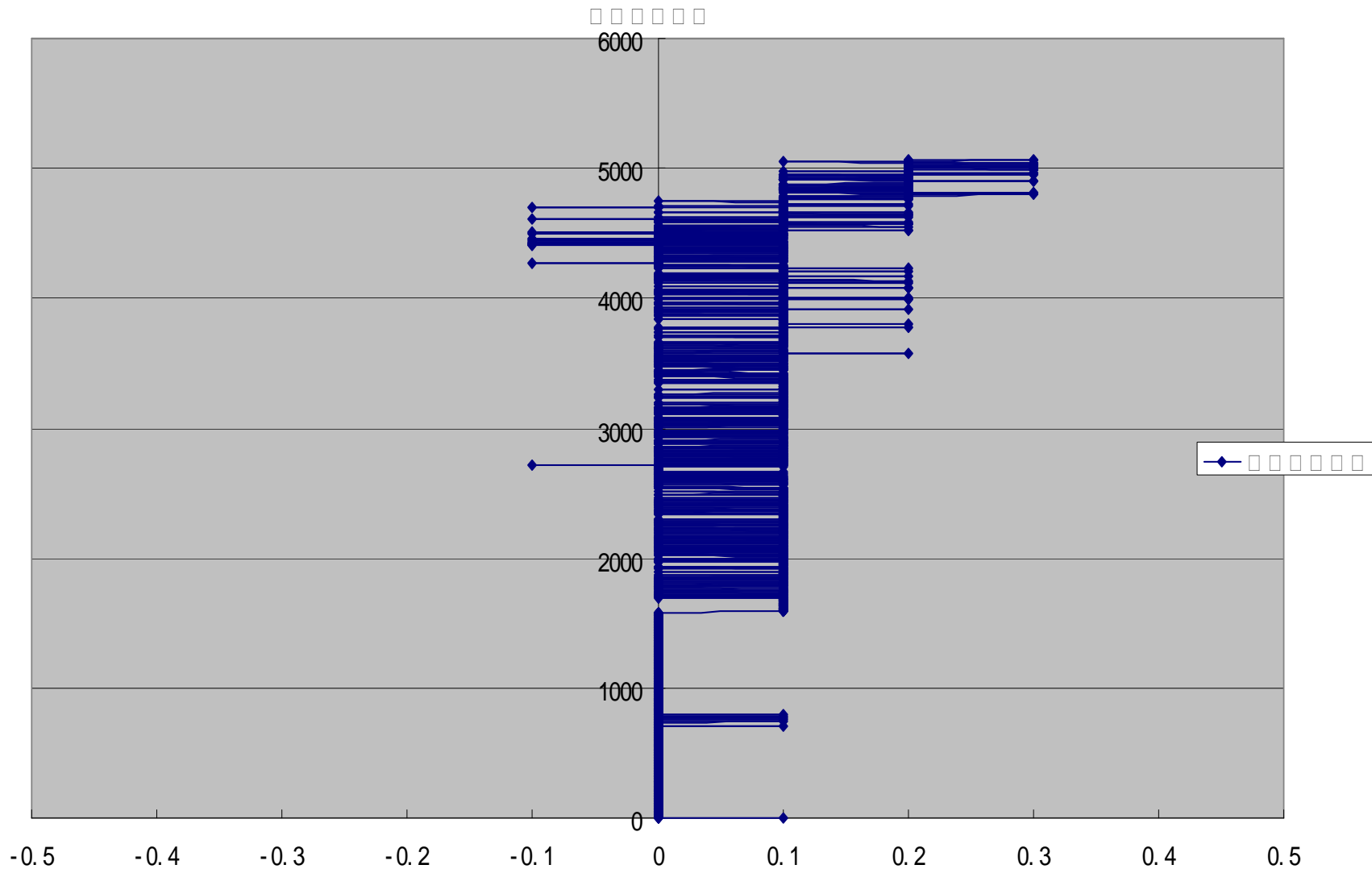
Humidity(day)



Pressure(day)



Temperature(day)

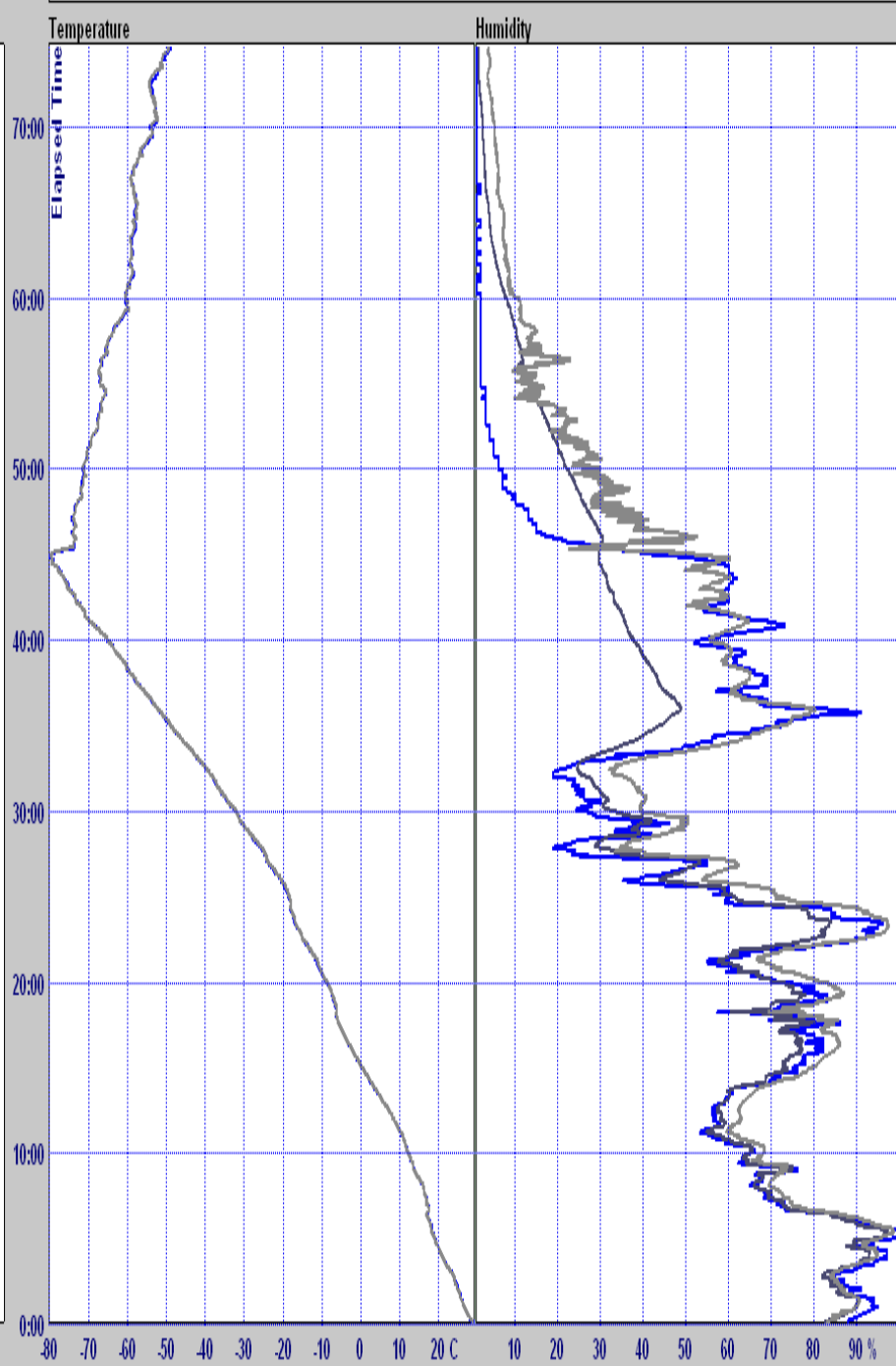


Algorithm for Humidity

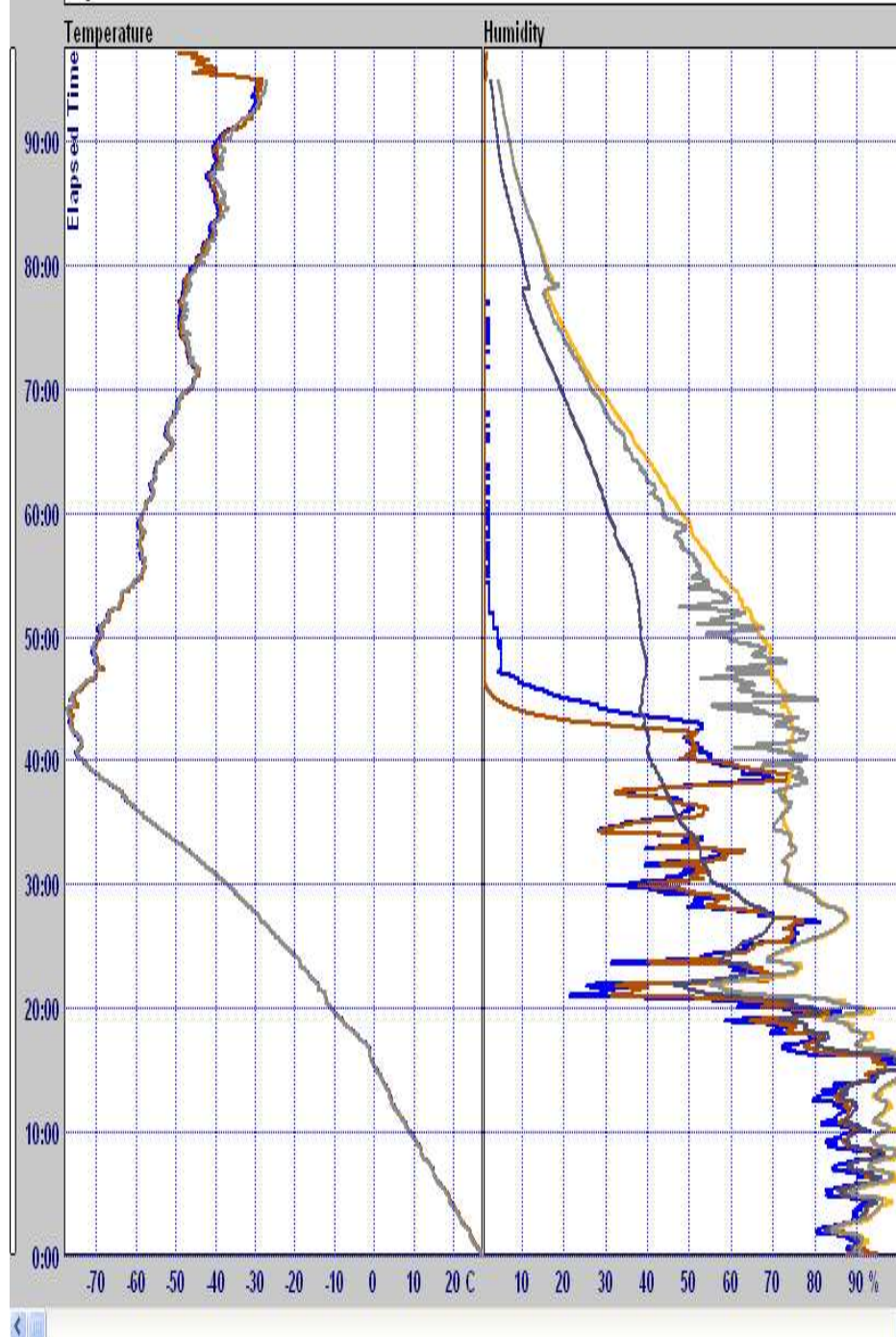
- T-compensation and Time-lag correction
- For Vaisala
 - Time-lag before T-compensation
- For E+E
 - T-compensation, no time-lag

What about GRAW or LOCKMARTIN?

Flight 64. VAISALA GRAW UOC12S HYURAW U UMS UC UCS



Flight 16. VAISALA GRAW UOC12S HYURAW U UT UMS UC UCS



Ground Check Box

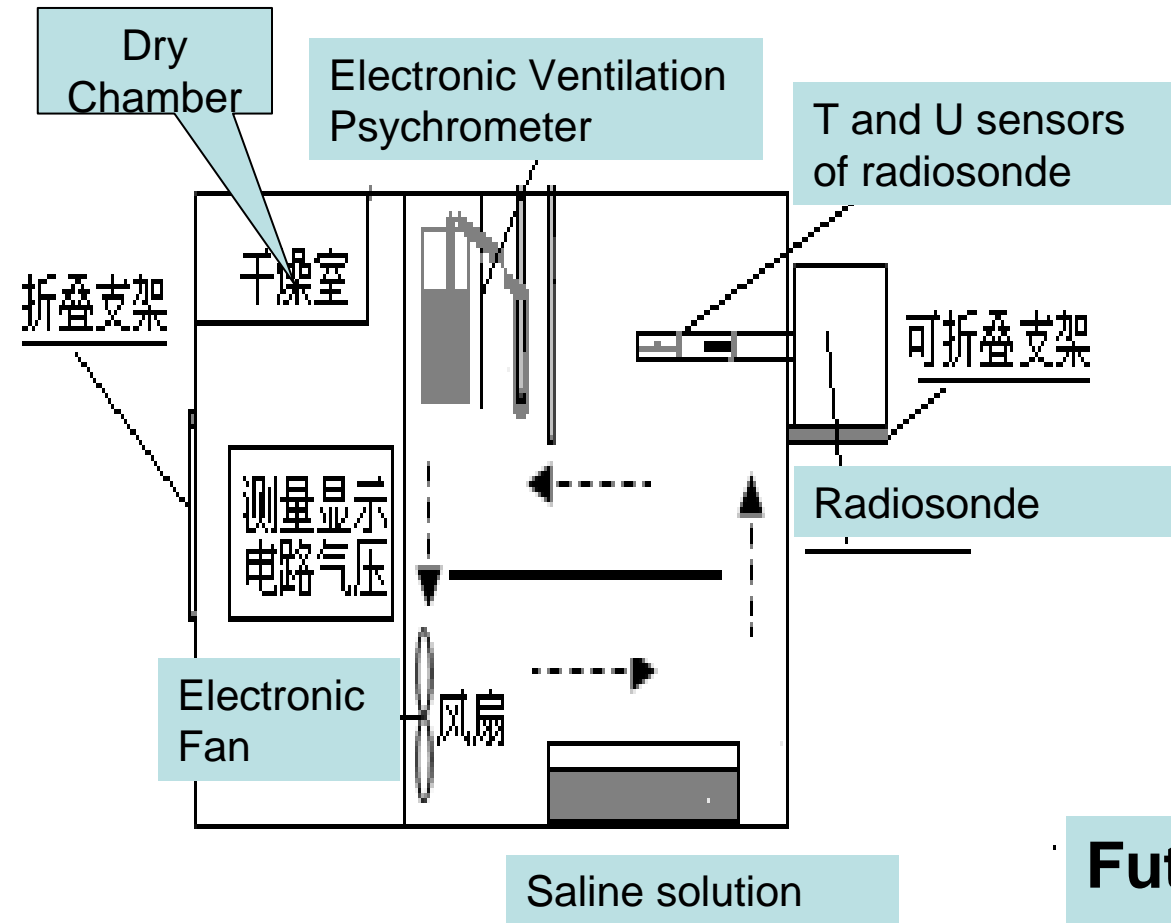


图 1 检测箱原理结构示意图

- Double deck
 - 3.5m/s □
- T:0.06K □ U:2%RH
- P:0.3hPa
- Several controlled humidity tested points
- Molecular sieve for 0%

Future:

Operational use

Questions

- Does it agree with standard humidity chamber as additional ground check?
- How can we applied the ground check value for upper-air observation correction?

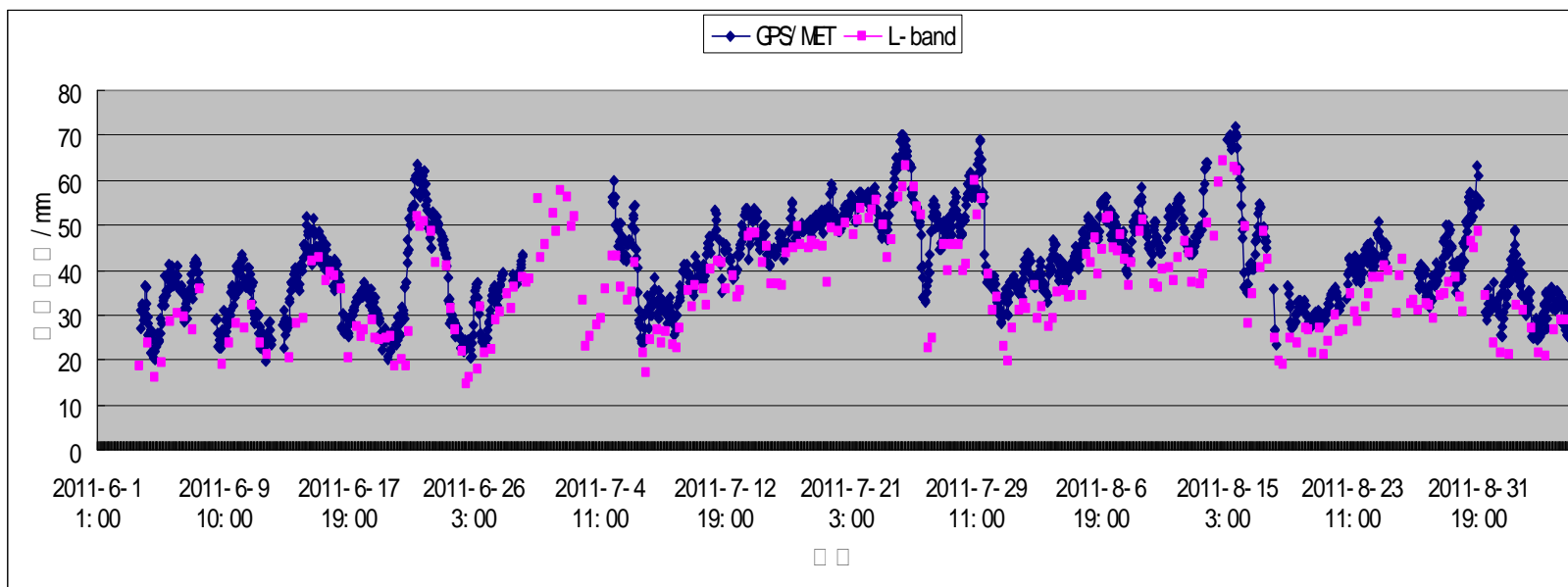
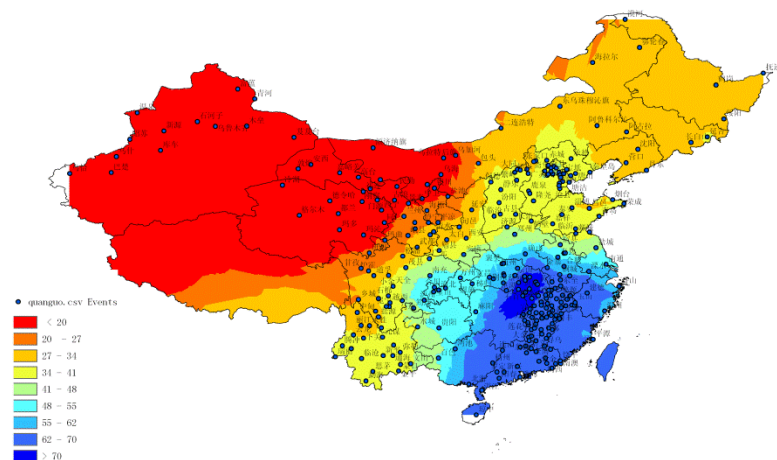
Ideas for GRUAN radiosonde

- GNSS radiosonde system with aluminium paint bead resistance sensor and E+E humidity sensor as well as pressure sensor
- Pre-test collaborated with manufacturer and Lead Center
 - Uncertainty estimation
 - Correction algorithm design! Very important for GRUAN site can get benefit from GRUAN community
- Weekly dual radiosonde intercomparison(Site)

Who will be responsible for every flight data processing, in particular non-Vaisala radiosonde?

Remote sensing

2011年07月12日03时全国GPS水汽分布



The path to GRUAN site

- Choose a qualified radiosonde
 - At least satisfied the minimal needs for GRUAN (by Who?)
- Uncertainty estimation
 - Develop a standard model (by who? Lead Center?)
 - Cooperation among site, manufacturer and Lead Center (need more detail guidance!)
- Dual flight
 - Vaisala RS92 has been available in Xilinhot
- Training
 - Intercomparison implementation, Software management, Site data process, and ?
- Getting financial support
 - Infrastructure and ancillary instruments
 - Daily expense for dual flight or extra flight

Advices

- Detail technical guidance needed ASAP
 - What's the basic requirements?
 - As for new comers, what shall or should do?
 - Detail responsibility for different parts
 - What kind of benefits could be acquired from GRUAN community?
- Getting the support from Met office
 - Human resource
 - Financial support

Thanks for your attention!