

What is MTR?

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1. What is MTR?

MTR is “Meisei Temperature Reference” that has been developed toward as a temperature reference for GRUAN purpose.

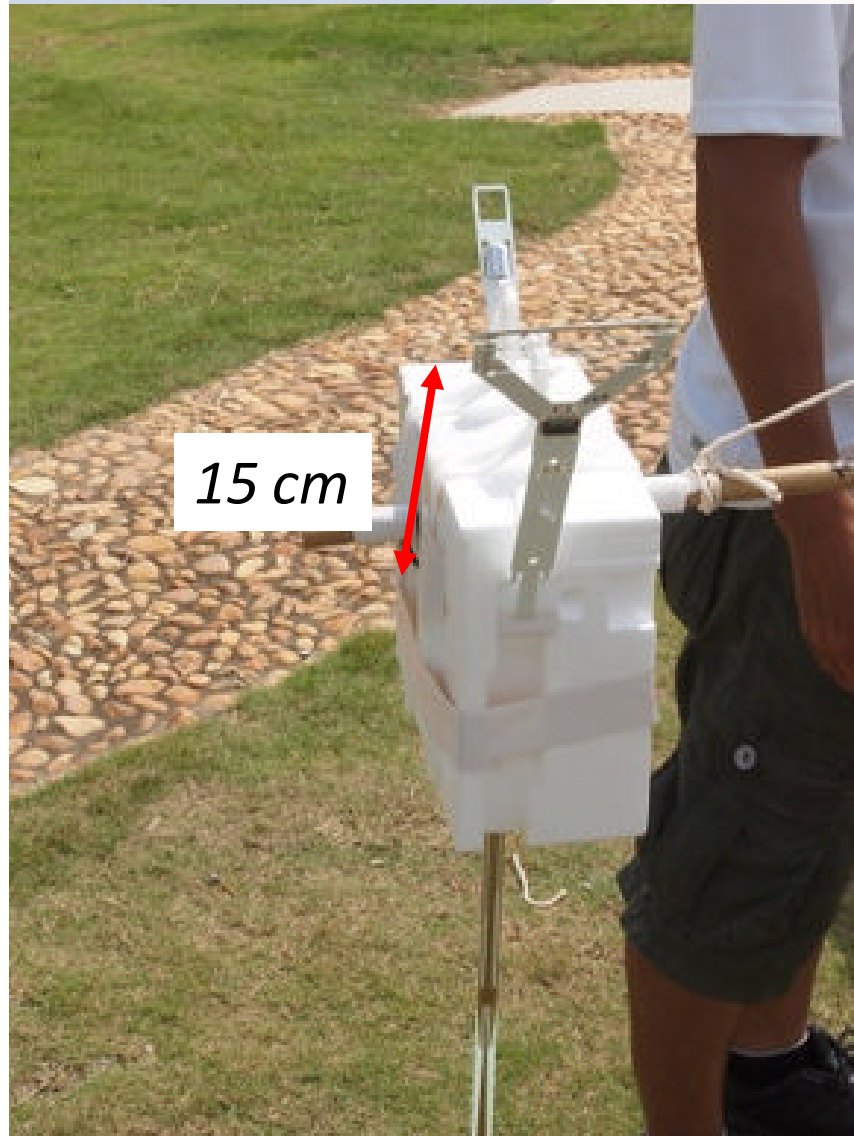
Concept of design

** Not rely on the ambiguous correction procedure.*

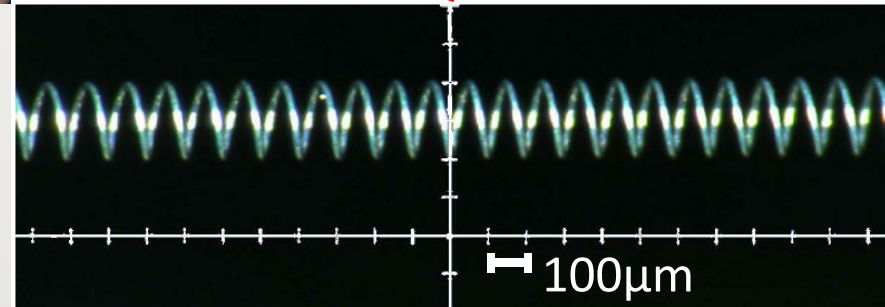
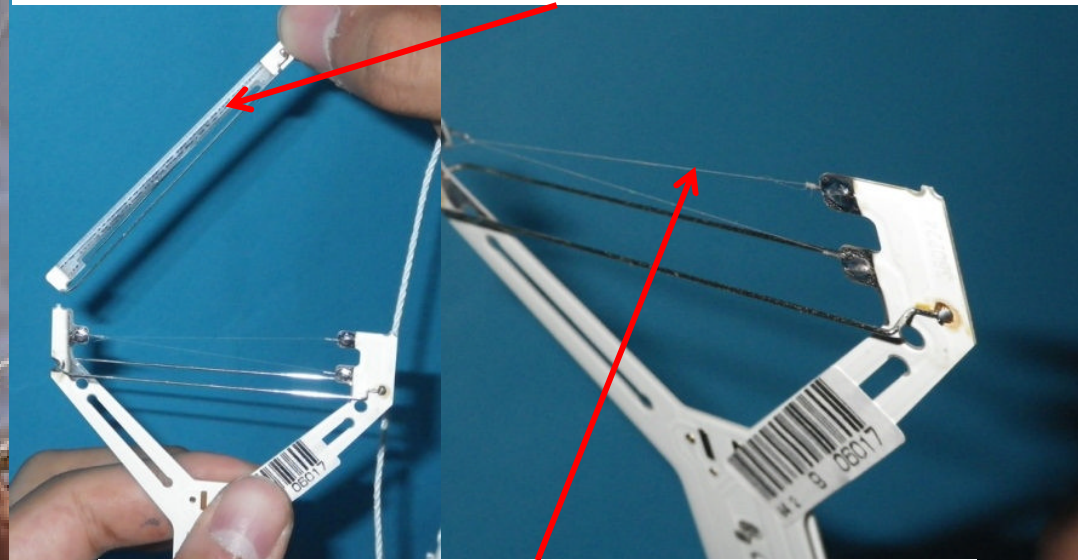
 *“Small solar radiation correction” and “fast-response”*

MTR uses the temperature dependence of the electrical resistance of the tungsten wire that was once used for the rocket-sonde.

2. Tungsten fine wire



*To avoid the any contamination,
Top of sensor support is removed before launch.*



*Sensor material :
10 μm thin tungsten wire coil
with aluminized coat*

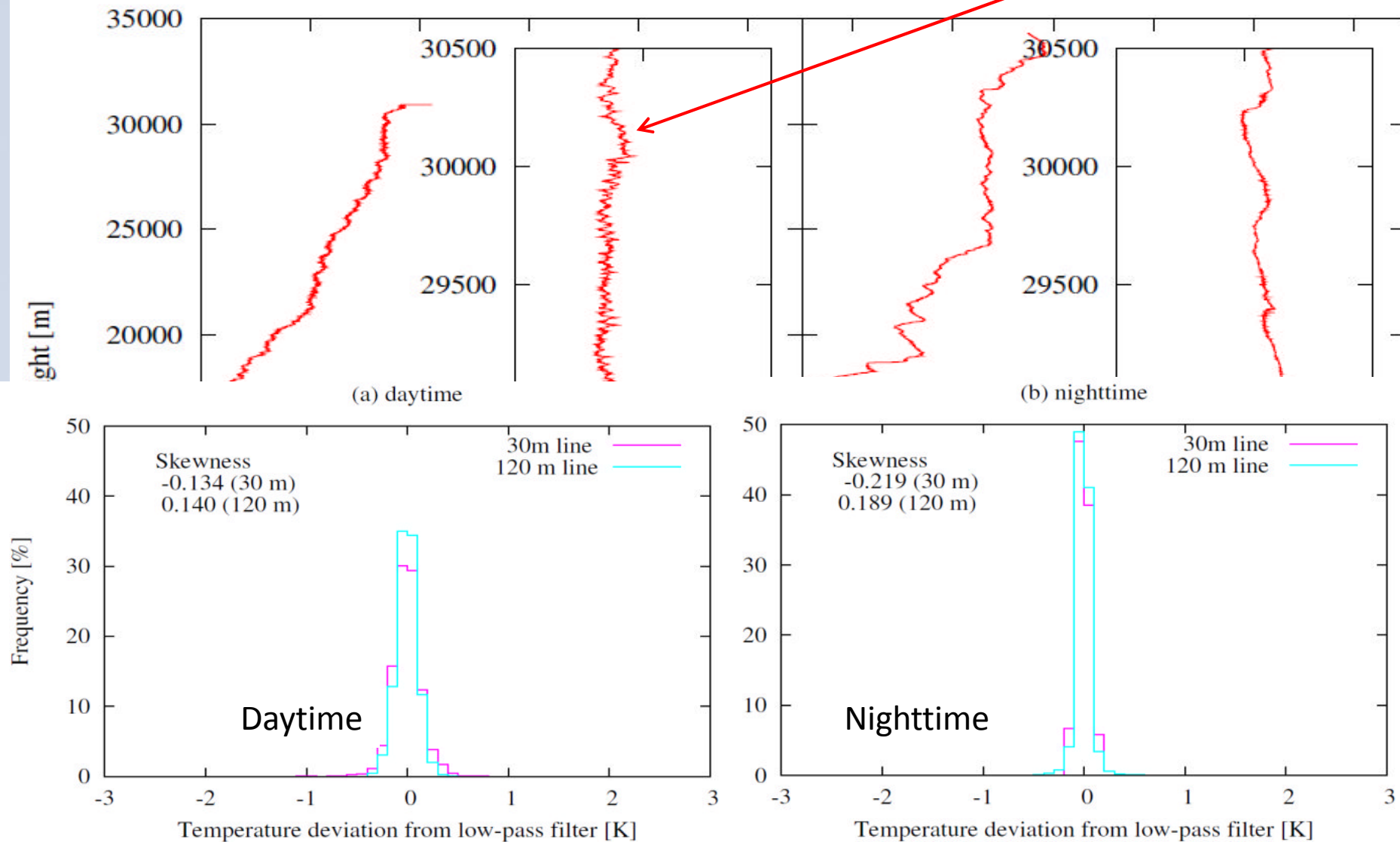
3. Specification

	Unit		Remarks
Model name		MTR-08S	
Observation range	°C	-100 to 50	
Resolution	°C	0.01	
Precision in laboratory	°C	0.14 (1 σ)	Obtained by experiment
Accuracy (Repeatability)	°C	0.12 (1 σ)	Obtained by 2 tungsten sonde with same payload
Solar correction		Unapplied	
Radiation error	°C	0.47	at 30 km in daytime
Response time at ground	ms	300	Determined by nyquist filter
Response time at 10 hPa	ms	300	Determined by nyquist filter
Material		Tungsten wire	
Surface coat		Aluminized	
Sampling rate	Hz	6	
Arm length	cm	15	
Weight	g	250	Include RS-06G for transmitter
Size	cm	16 x 16 x 9	Excluding protrusions

The uncertainties of sounding will be evaluated at LC in this year.

4. Contamination free profiles

Radiation error by the solid angle modulation of the illumination against the sensor body.



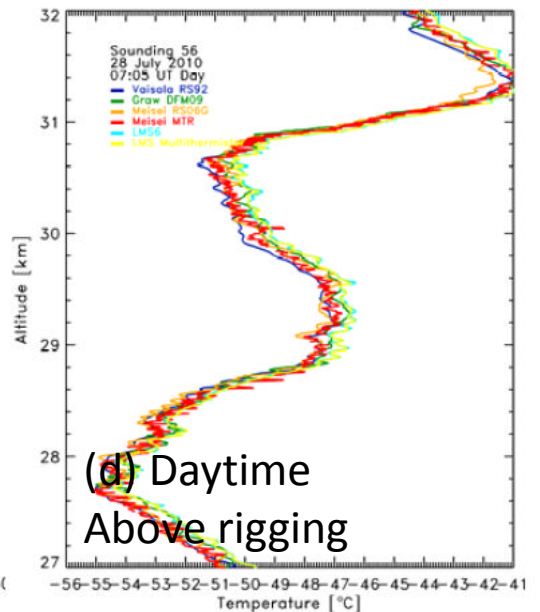
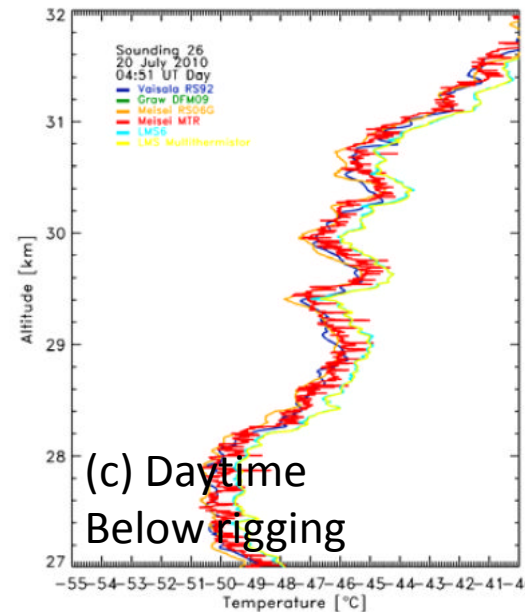
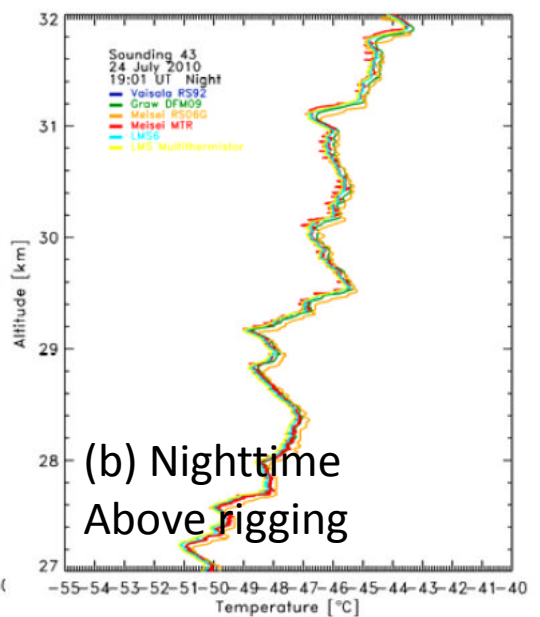
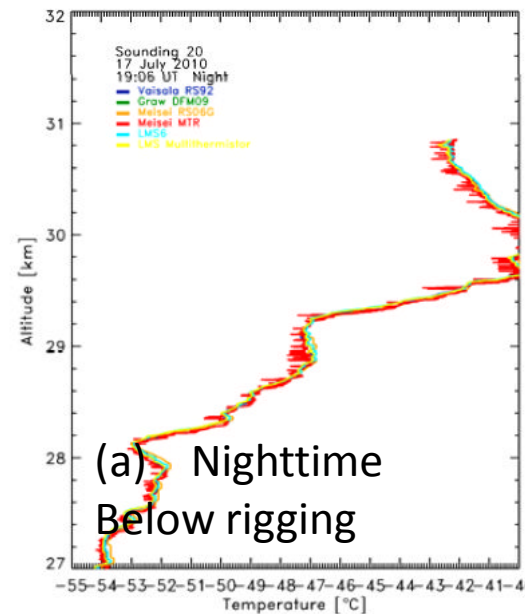
5. Advantage of MTR

*MTR has been rolled out
In Yangjiang campaign.*

*MTR 6 Hz temperature
measurements reveal ...*

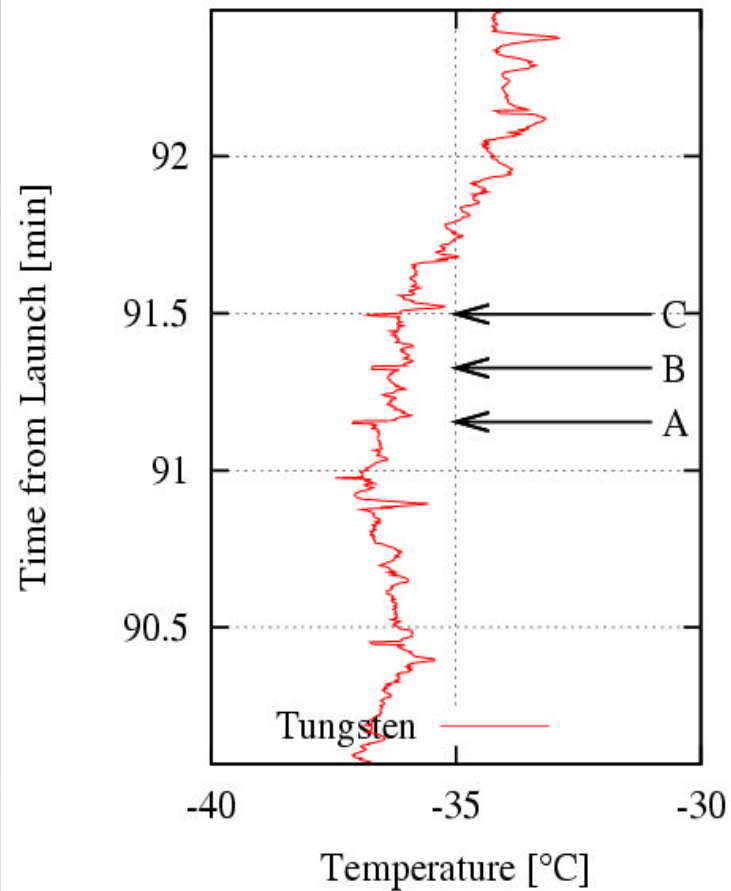
- *Rigging effect*
- *Issue of multi payload*
- *Self-contaminations*

*Though these spikes are
not fully understand,
MTR can detect it clearly.*

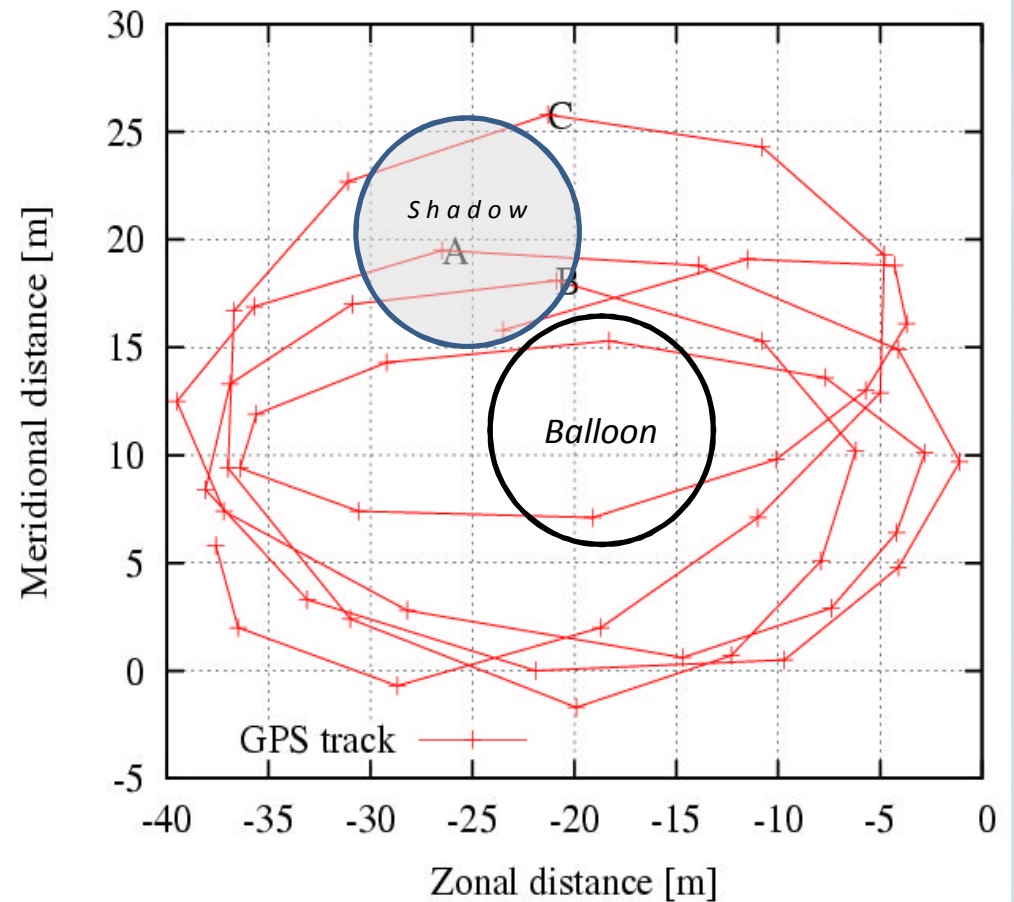


5. Advantage of MTR

May 21, 2010 08LT
Moriya

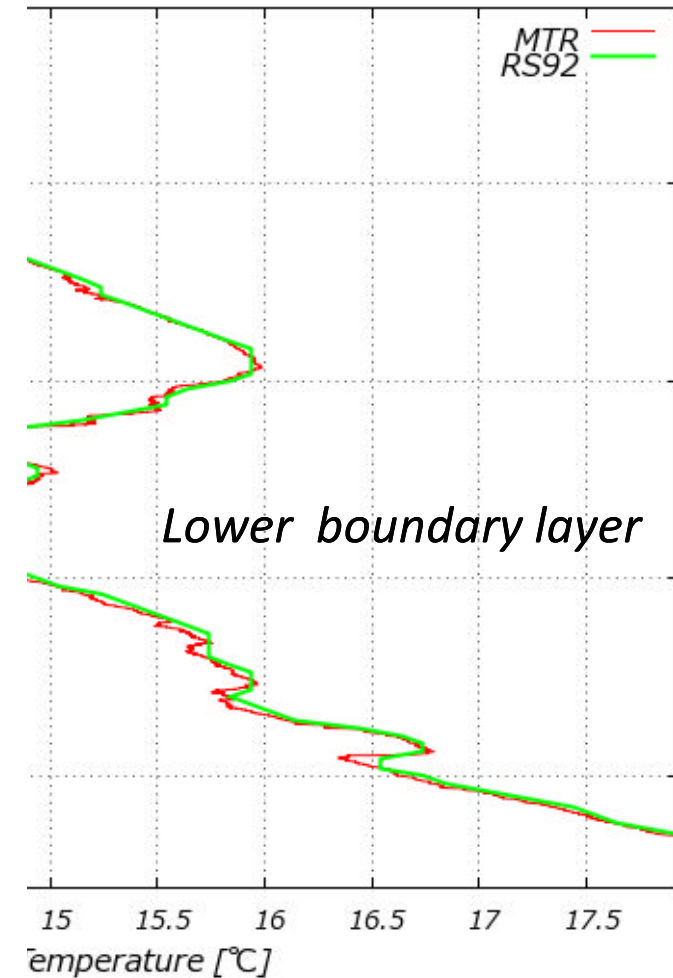
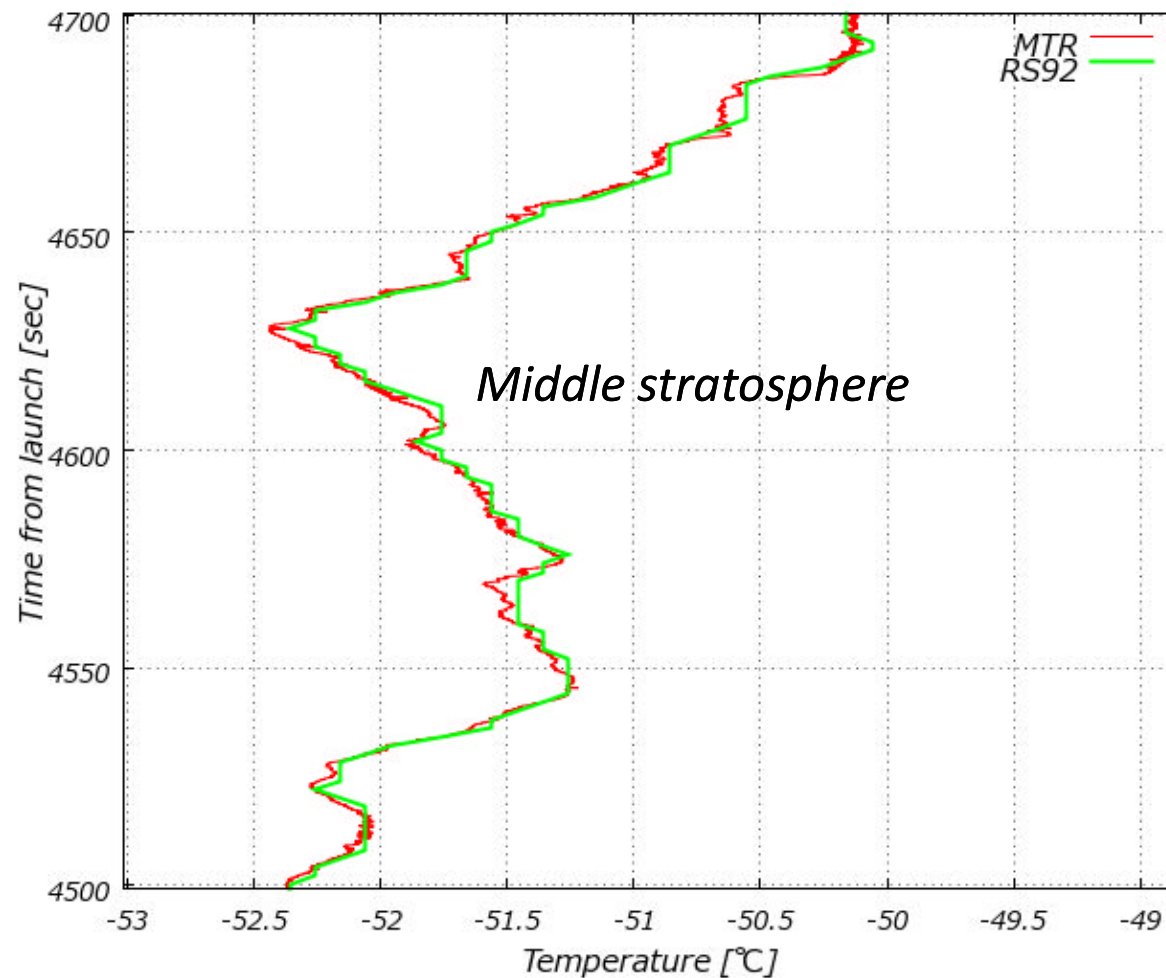


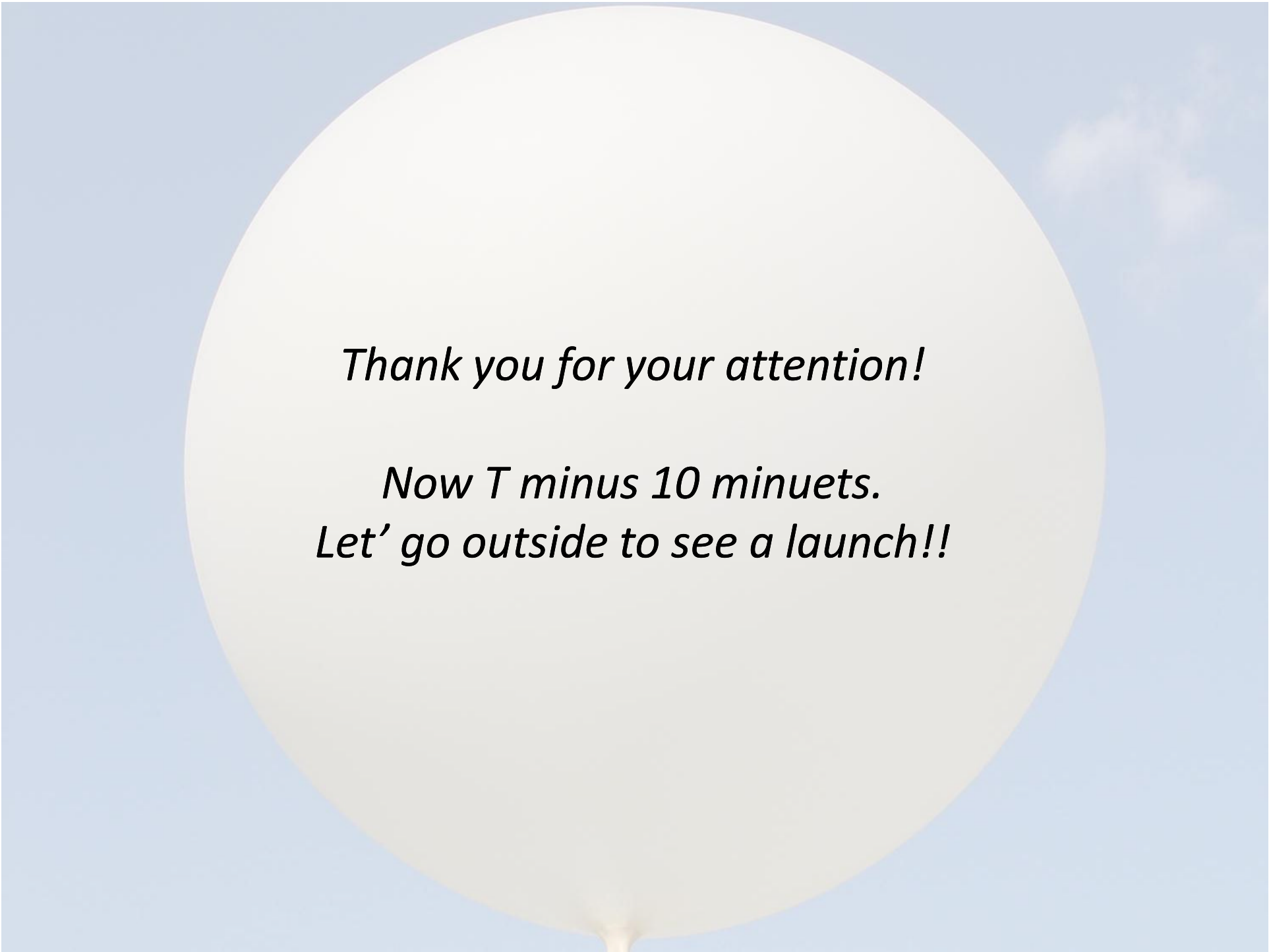
Horizontal projection of the sonde trajectories relative to the mean wind



6. Potential of MTR

Detail temperature profiles will be useful for boundary layer, atmospheric wave and turbulence science.



A large, white, oval-shaped balloon is the central focus of the image. It is set against a background of a clear blue sky with a few wispy white clouds in the upper right corner. The balloon has a small, light-colored string or neck visible at the bottom center.

Thank you for your attention!

*Now T minus 10 minuets.
Let' go outside to see a launch!!*