

T-PARC Driftsonde Data Post Processing and Quality Control

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NCAR

Outline:

- Summary (instrument, operation and data)
- Data post-processing procedures
- Special problems
- QCed data (characteristics and data format)
- Data highlights



DRIFTSONDE Concept

Zero (or Super) Pressure
Balloon (363 m³)

Gondola
38 Sonde
Capacity

Flight Altitude
125mb to 50mb (~58,000')

Iridium LEO Satellite
Communications

Dropsonde
PTH & Wind

Sondes Dropped
by Time or Command

Command & Control
Ground Station

Cost-effective dropsonde observations of wind, temperature, and humidity to fill critical gaps in coverage over oceanic and remote arctic and continental regions over days to weeks.



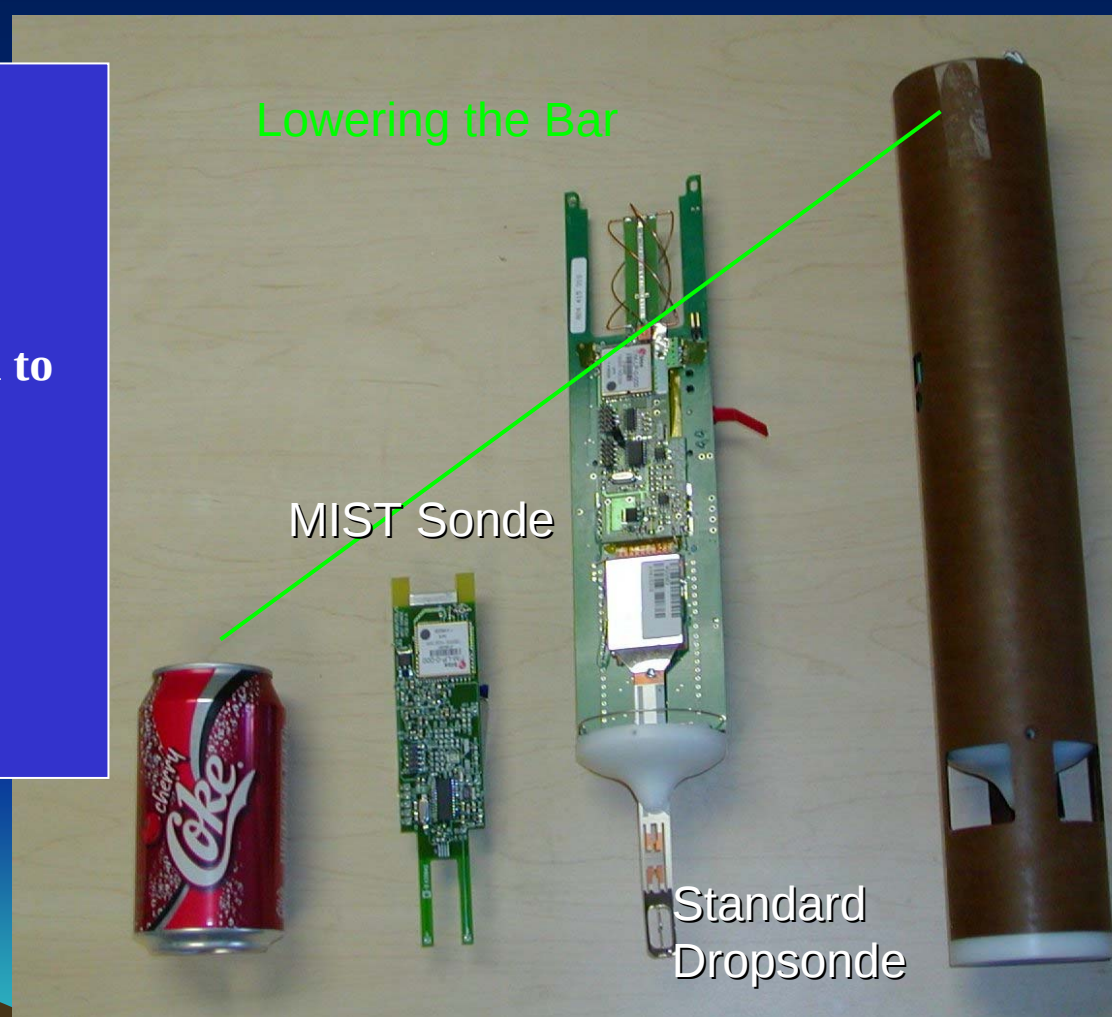
Miniature In-situ Sounding Technology (MIST Sonde)

MIST Sonde

- Small size
- Lightweight (184 g)
- Low cost (compared to a Dropsonde)

Sensors

- GPS Wind (U-blox)
- Vaisala PTU sensor module



The THORPEX Pacific Asian Regional Campaign (T-PARC, Aug.-Sept. 2008)

- 16 Balloons Launched (13 Good)
- 339 sounding files
- 268 Good (79%)
- 41 stuck in Gondola (12%)
- 30 terminated before 100 mb (9%)

Gondola 10 (17)

Gondola 11 (18)

Gondola 12 (16)

Gondola 13 (13)

Gondola 16 (1)

Gondola 17 (20)

Gondola 20 (25)

Gondola 21 (19)

Gondola 22 (22)

Gondola 23 (18)

Gondola 24 (23)

Gondola 25 (25)

Gondola 26 (23)

Gondola 27 (28)

Islands of Micronesia

Papua New Guinea

Kiribati

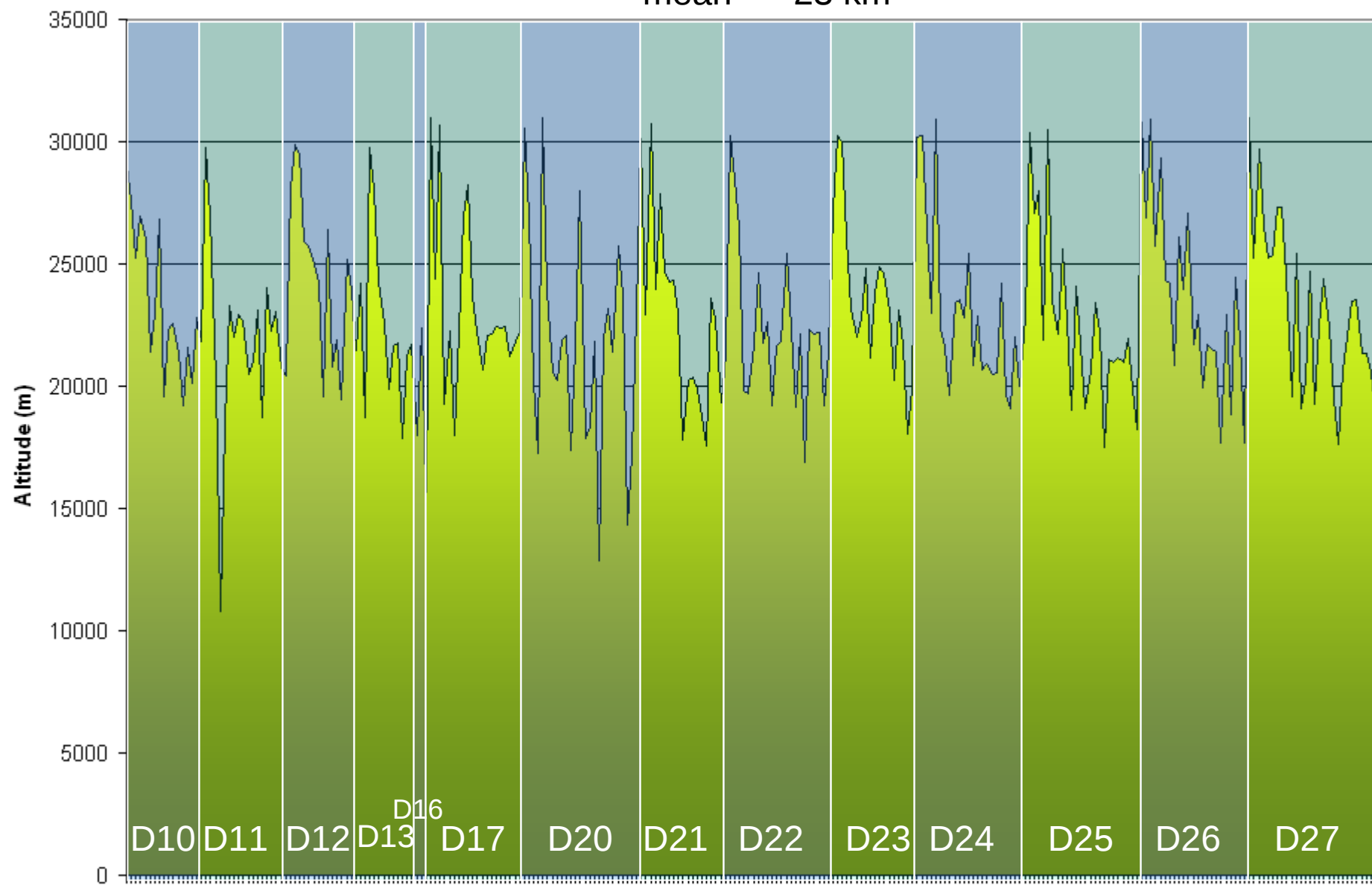
Tuvalu

Solomon Islands

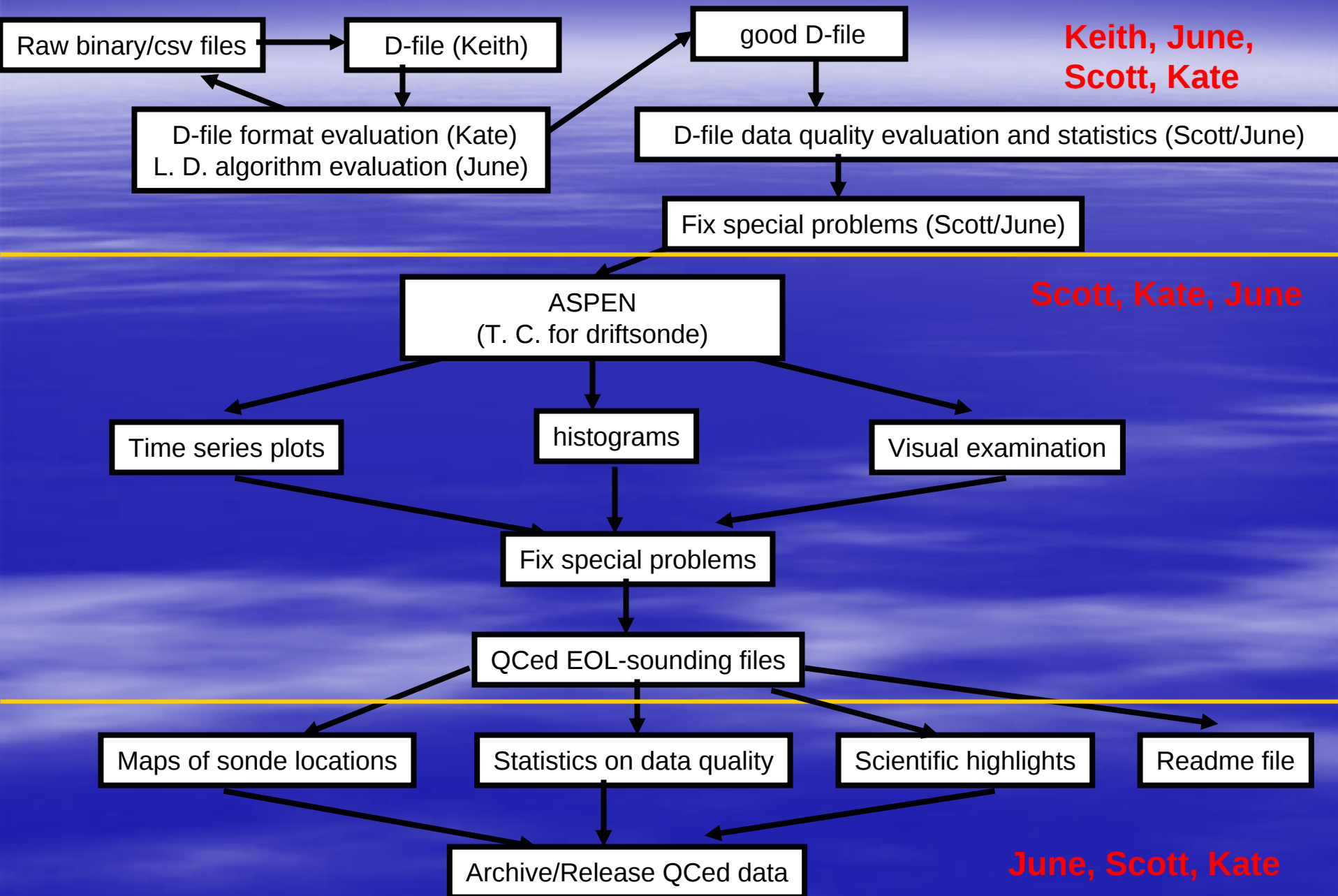


Driftsonde Release Altitudes

mean = ~23 km



T-PARC Driftsonde Data Postprocessing



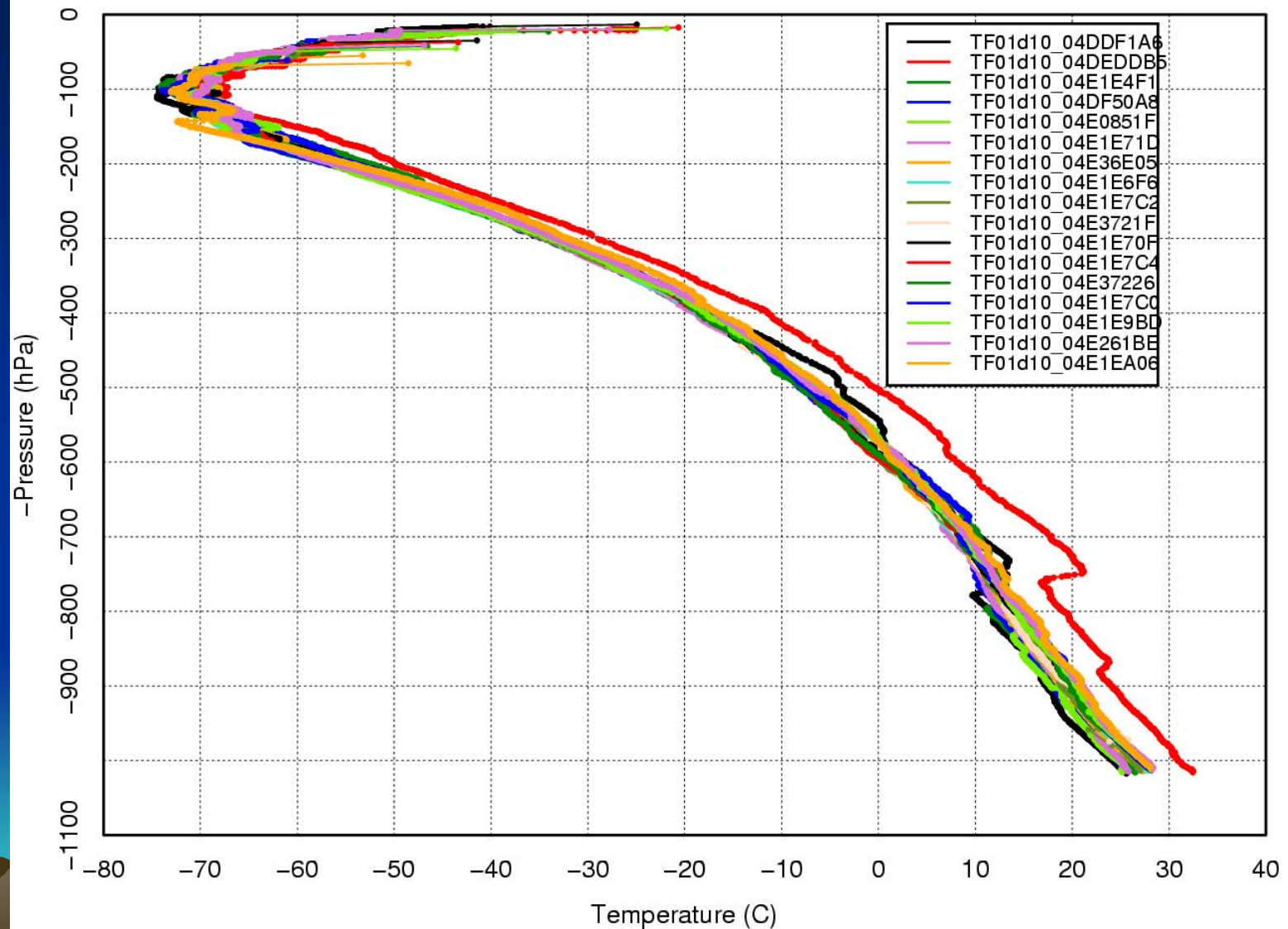
Special problems to note

Category	#	Corrections	Notes
Broken T sensor	1	none	No T data (TF09d20_04E1E7A1)
Suspicious warmer T	2	None (see plots)	Take caution TF01d10_04EDDB5 TF04d13_04E37256
Suspicious T/RH data	3	RH removed, T kept (see plots)	Take caution when using T data TF03d12_04DF4DE5 TF03d12_04E08A83 TF03d12_04E1E797
Smooth, near-saturation RH profiles	13	None (see plots)	Take caution when using RH data
Pressure offset	45	Corrected (see plots)	
Fast fall	2	Wind data are set to missing	TF16d27_04E1E7D6 TF15d26_04DDC944 (< 800mb)
Not reaching surface	14	Geopotential height integrated from flight level	



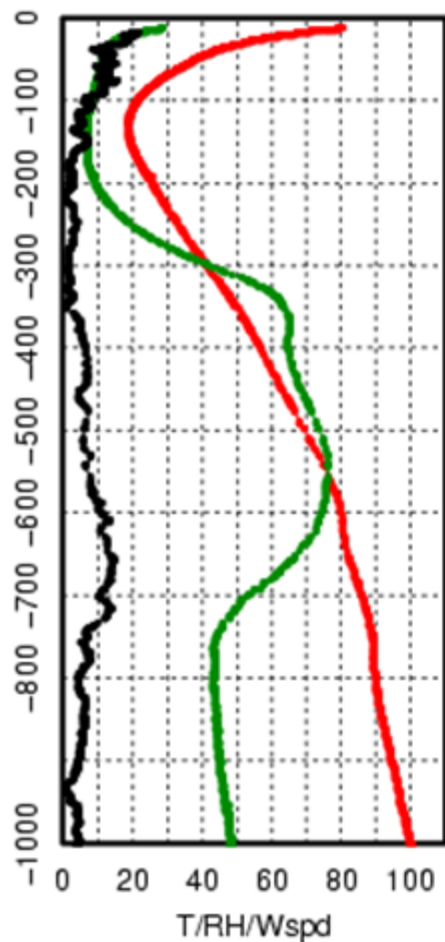
Suspicious warmer T

T-PARC TF01d10

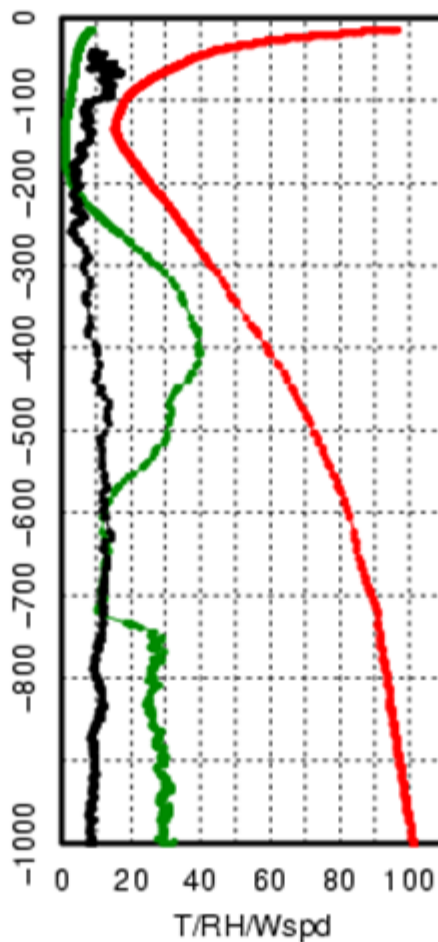


Suspicious RH/T profiles

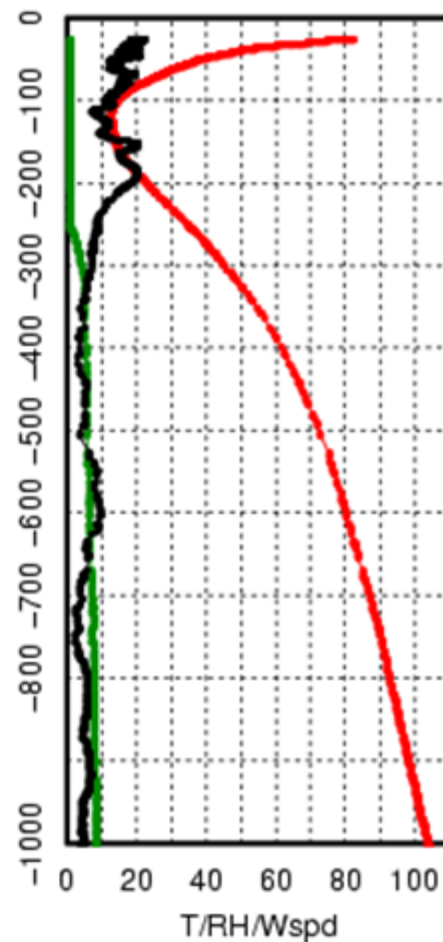
TF03d12_04DF4DE5



TF03d12_04E08A83

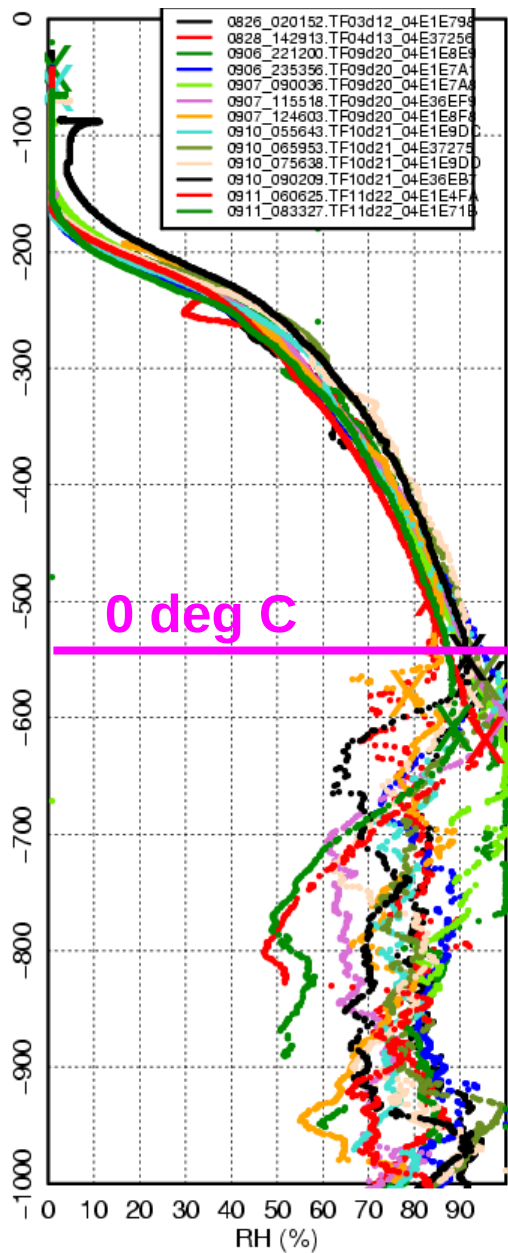


TF03d12_04E1E797

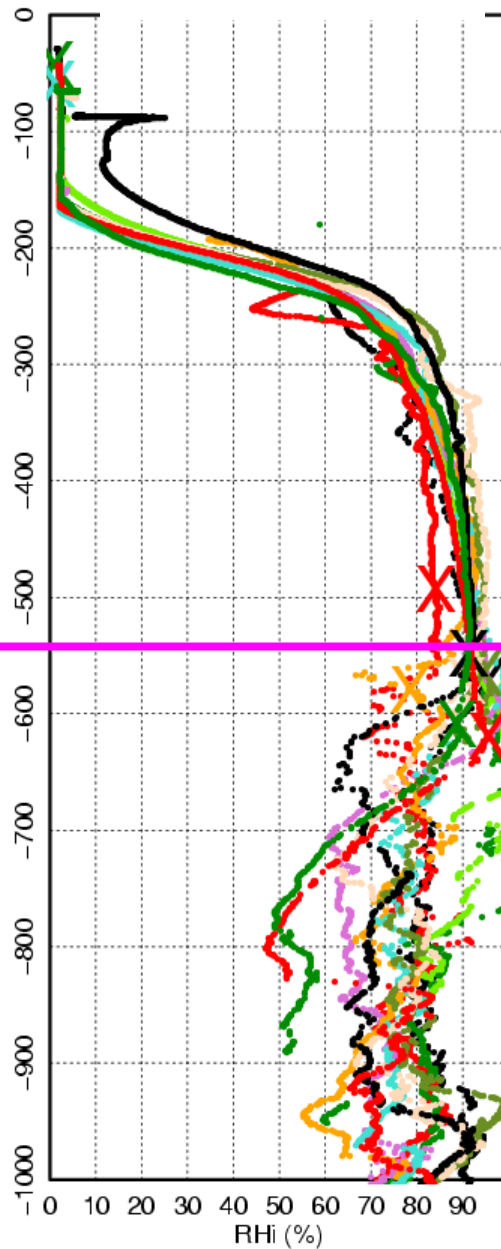


Smooth, near-saturation RH

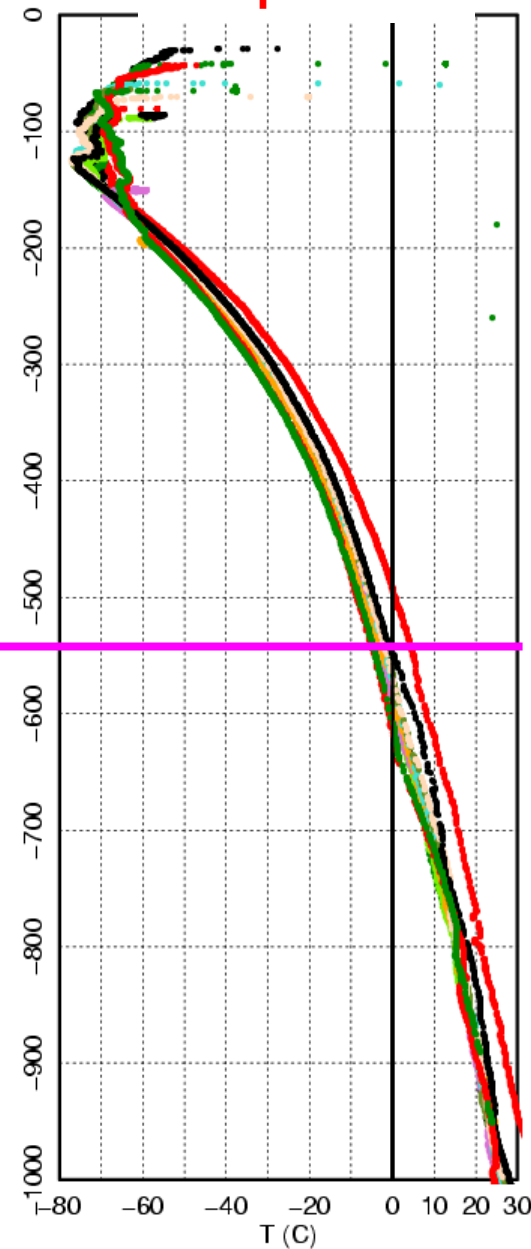
RH w.r.t water



RH w.r.t ice

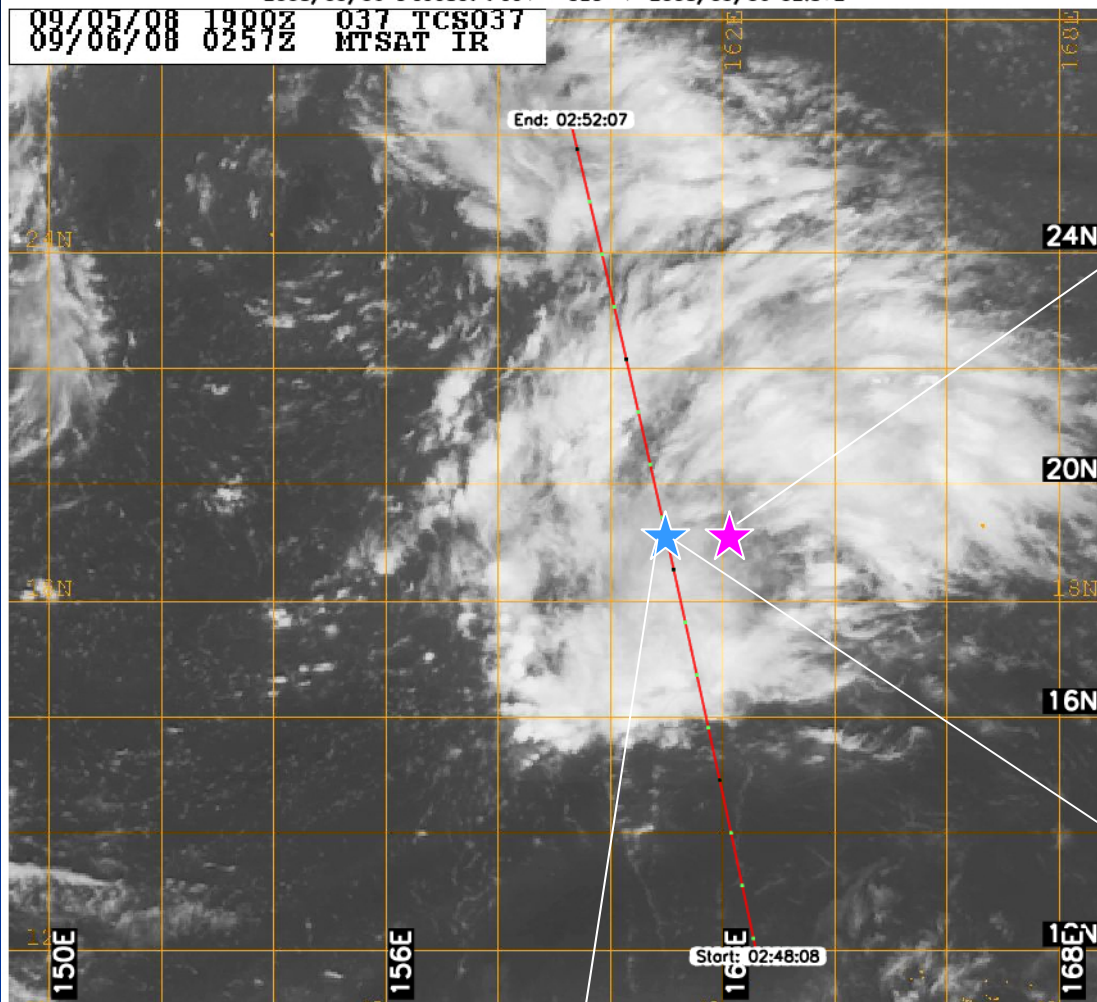


Temperature

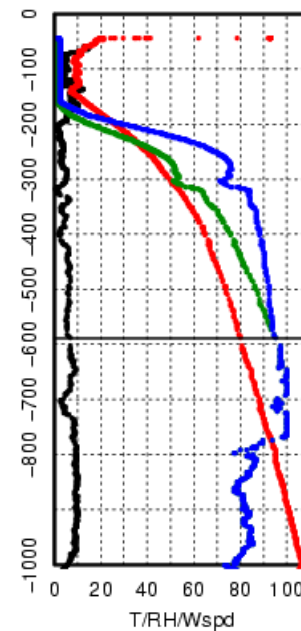


2008/09/06 CloudSat track - GEO IR 2008/09/06 02:57Z

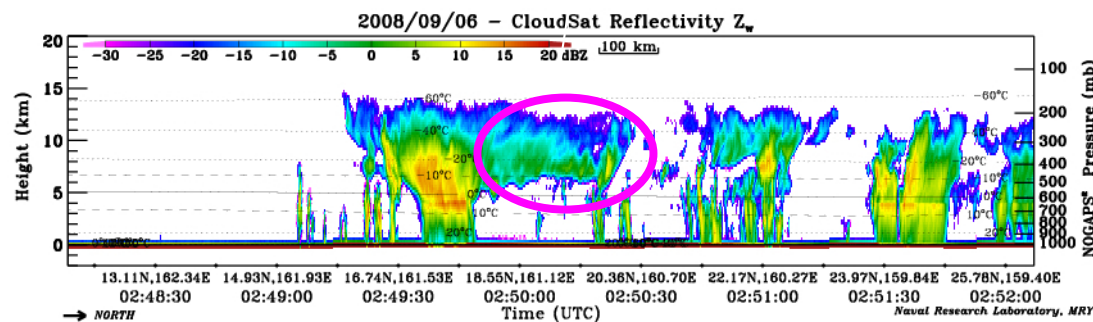
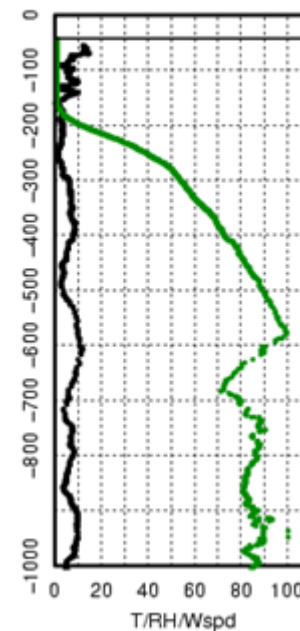
09/05/08 1900Z 037 TCS037
09/06/08 0257Z MTSAT IR



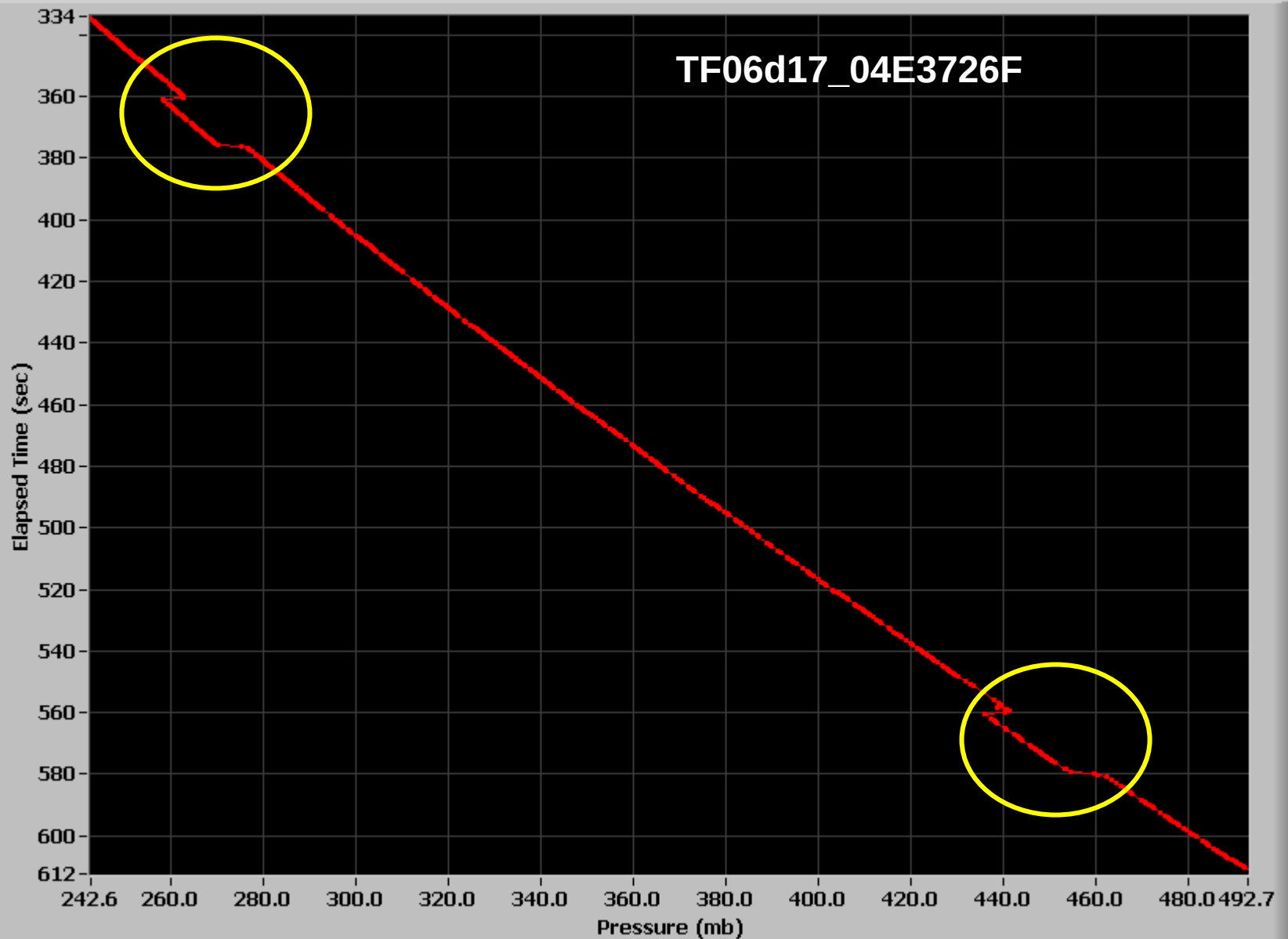
TF09d20_04E1E8E9



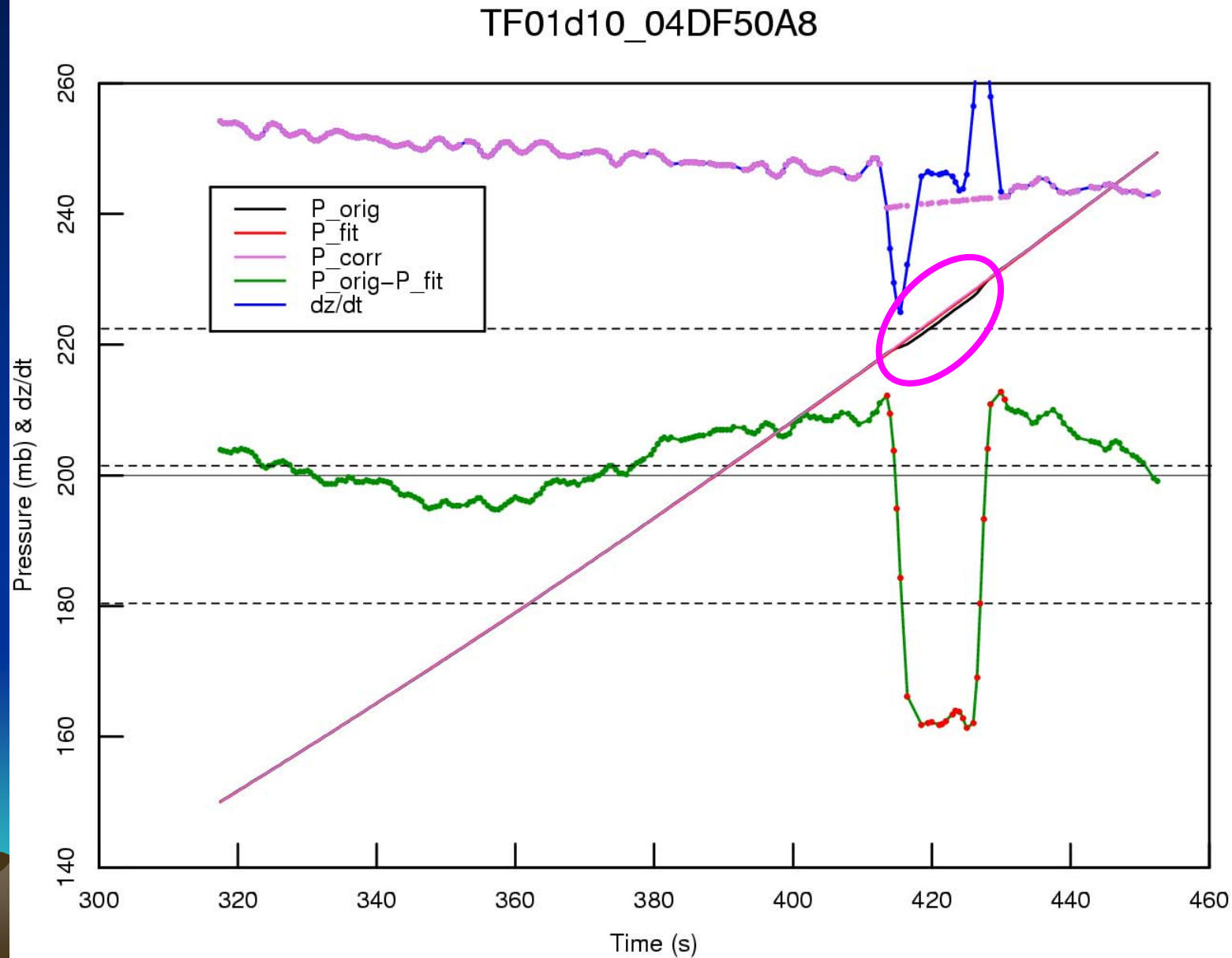
TF09d20_04E1E7A1



Pressure offsets



Pressure offset correction



EOL sounding format

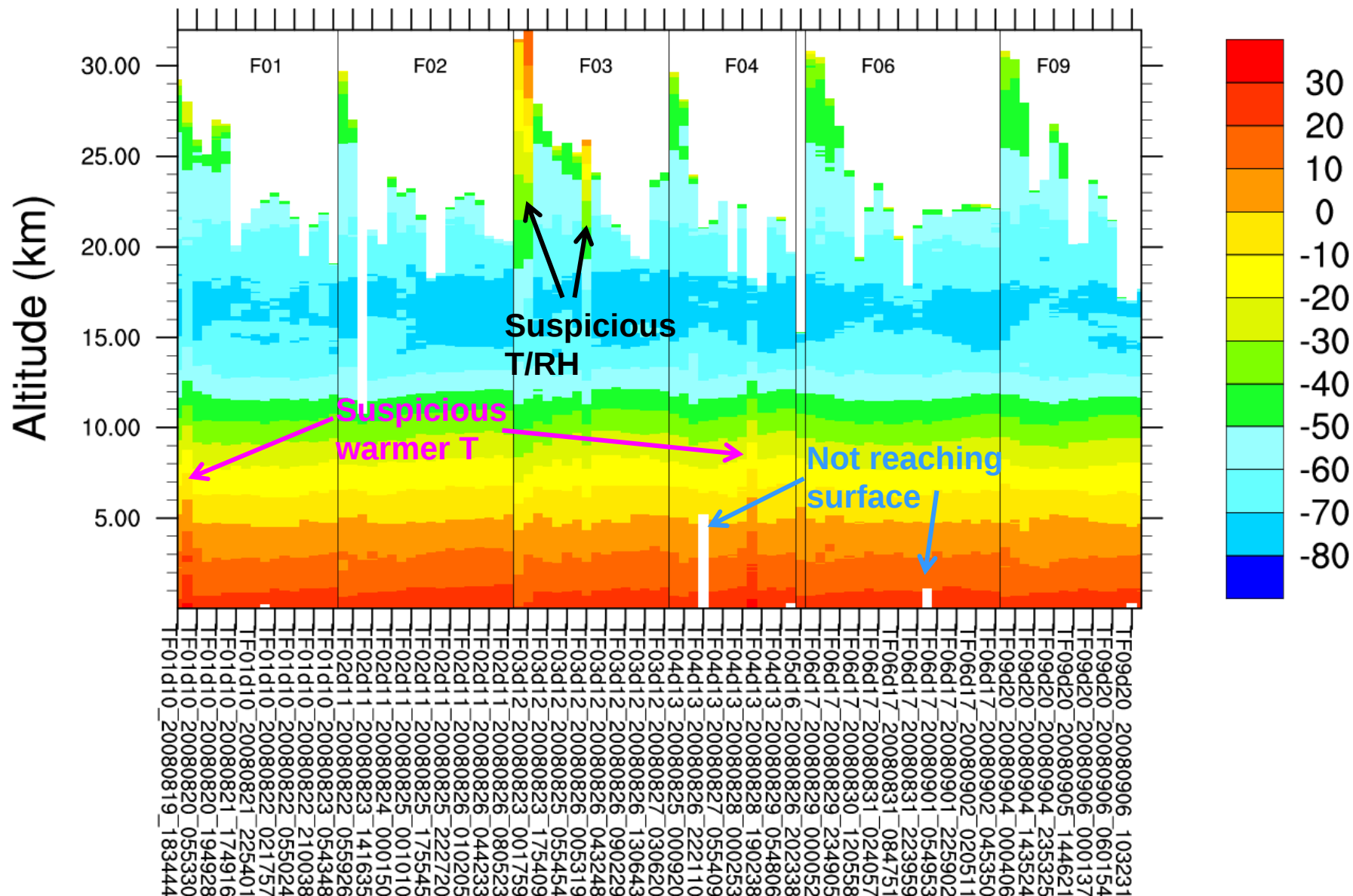
Data Type/Direction: DRIFTSONDE SOUNDING DATA, Channel 1/Descending
File Format/Version: EOL Sounding Format/1.0
Project Name/Platform: T-PARC Driftsonde, TF01d10/DRIFTSONDE, drift10
Launch Site:
Launch Location (lon,lat,alt): 157 28.70'W -157.478414, 18 56.44'N 18.940643, 29081.34
UTC Launch Time (y,m,d,h,m,s): 2008, 08, 19, 18:39:16
Sonde Id/Sonde Type: 081654182/Mistsonde
Reference Launch Data Source/Time: Sonde/None/
System Operator/Comments: Remote Launch/None/
Post Processing Comments: Aspen Version 2.8.1.5, Configuration mod-editsonde
/

Time sec	-- hh	UTC mm	-- ss	Press mb	Temp C	Dewpt C	RH %	Uwind m/s	Vwind m/s	Wspd m/s	Dir deg	dZ m/s	GeoPoAlt m	Lon deg	Lat deg	GPSAlt m
-1.0	18	39	15.00	13.65	-25.00	-68.23	1.00	-23.22	-0.12	23.22	89.70	-999.00	29248.36	-157.478414	18.940643	29081.34
1.0	18	39	17.00	-999.00	-999.00	-999.00	1.00	-999.00	-999.00	-999.00	-999.00	-999.00	-999.00	-999.000000	-999.000000	-999.00
1.5	18	39	17.50	-999.00	-999.00	-999.00	1.00	-999.00	-999.00	-999.00	-999.00	-999.00	-999.00	-999.000000	-999.000000	-999.00
2.0	18	39	18.00	-999.00	-999.00	-999.00	1.00	-999.00	-999.00	-999.00	-999.00	-999.00	-999.00	-999.000000	-999.000000	-999.00

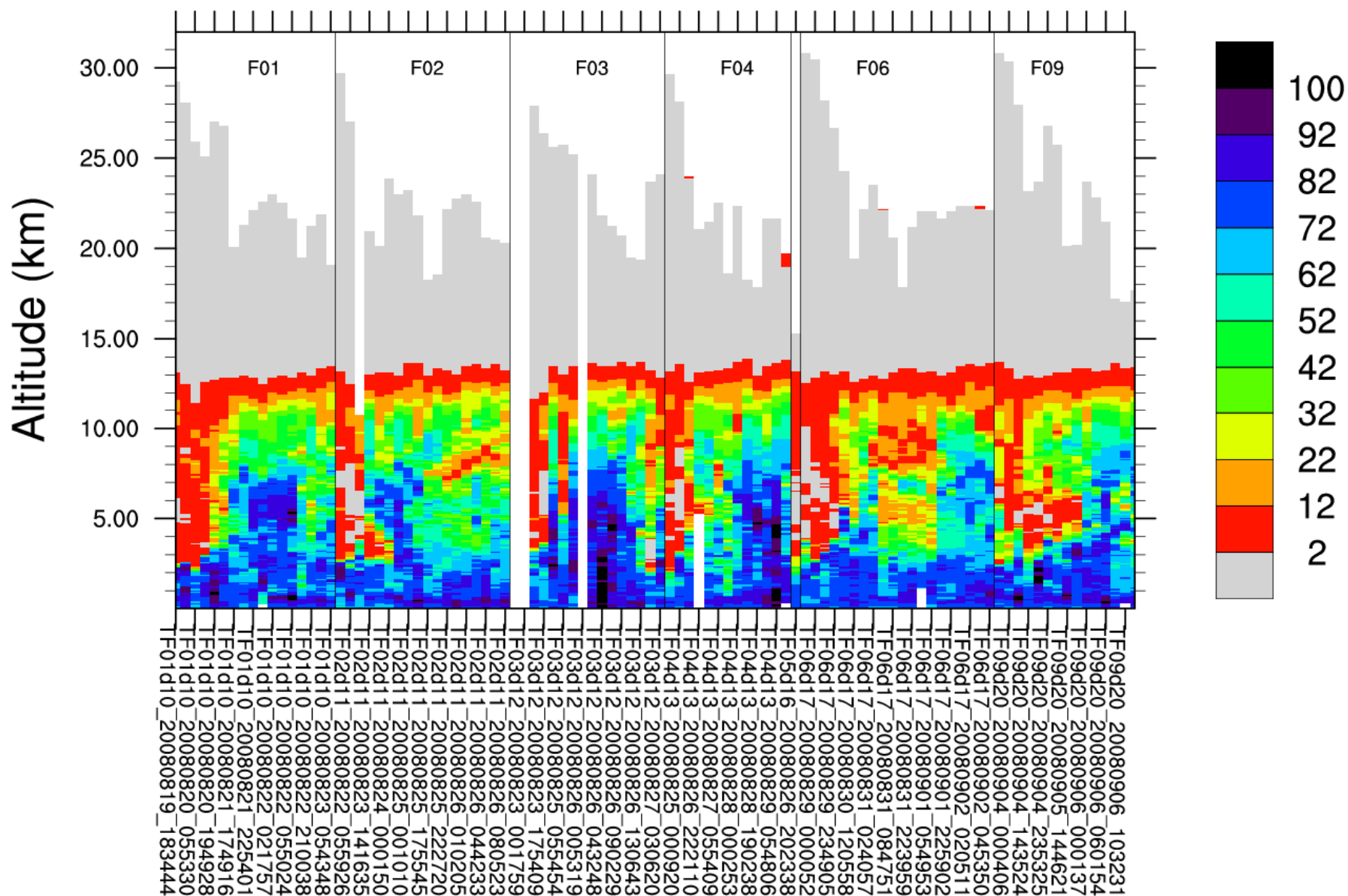
1. **Filename: D20080819_183444.TF01d10_04DDF1A6QC.eol.**
2. **Vertical resolution: 0.5 s.**
3. **Missing value: -999.**
4. **“GeoPoAlt” are recommended to use in stead of “GPSalt”.**
5. **Flight level data at -1s: use with caution since some of them are from Gondola data and some from the first available sonde data.**



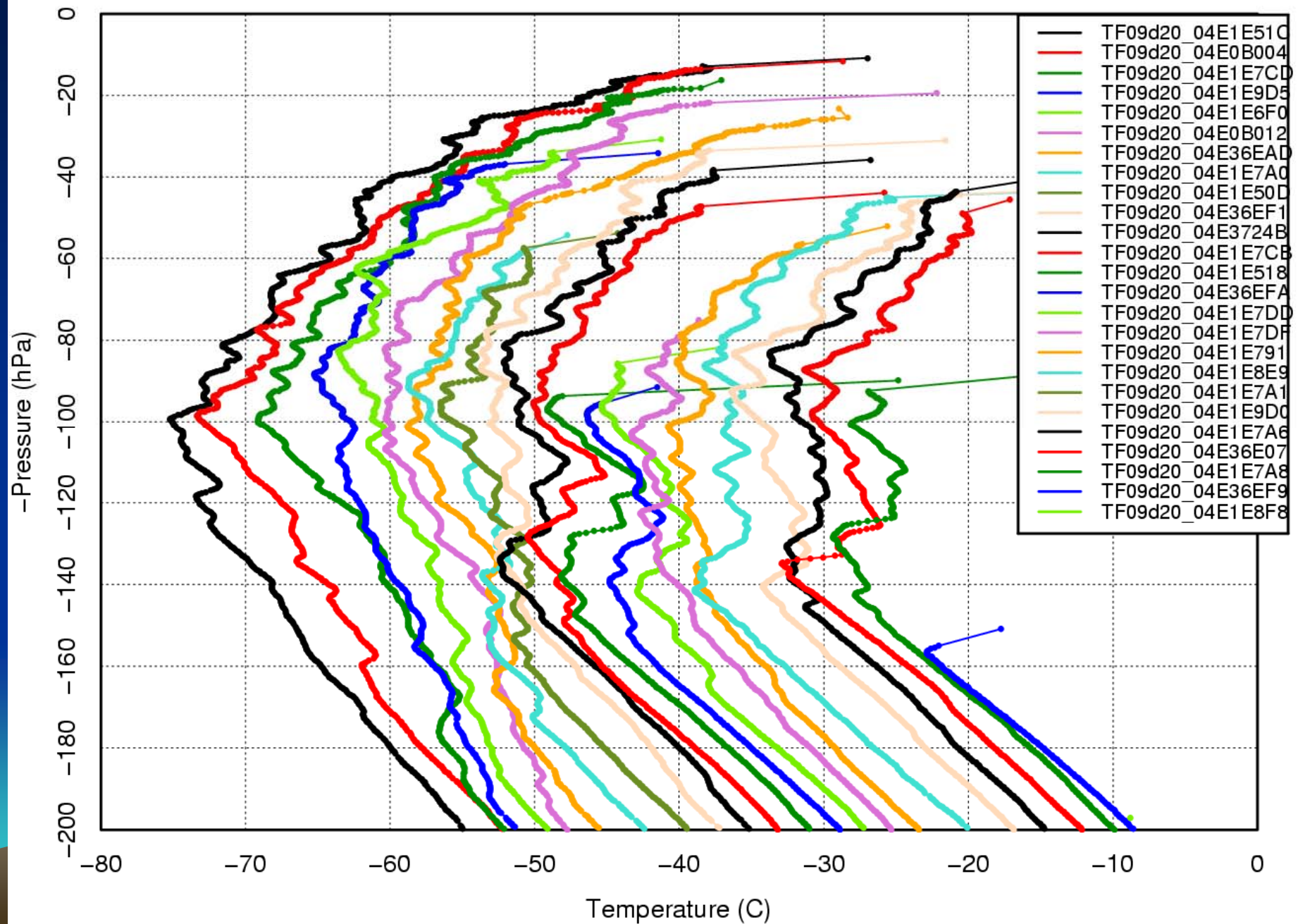
TPARC Driftsondes (1-100) - Temperature



R



TPARC TF09d20



Summary

1. 268 soundings dropped from NCAR driftsonde system during T-PARC provided unprecedented thermodynamic and wind profiles with high vertical resolution and high quality from surface to stratosphere over Pacific Ocean.
2. The data has undergone extensive QC/QA. Necessary corrections have been made to the data.
3. The QCed data will be released next week.
4. Contact: junhong@ucar.edu.

