

OWLeS Radiosonde Systems

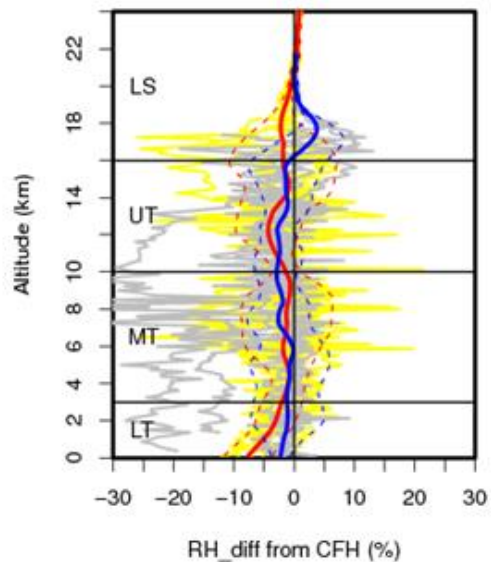
university	vendor	model	post-processing	sampling rate	ascent rate
U Utah	GRAW	DF-09	GRAWMET-5		
Millersville U	Vaisala	RS-92-SGPL	MW-41 v1.1	1 Hz	4.2 (100 g) 5.3 (200 g)
SUNY Oswego	Vaisala	RS-92-SGPD	latest from vendor		~3
UIUC	GRAW	DF-09	GRAWMET-5	1 Hz	~3
HWS	GRAW	DFM-06	GRAWMET-5	1HZ	~3



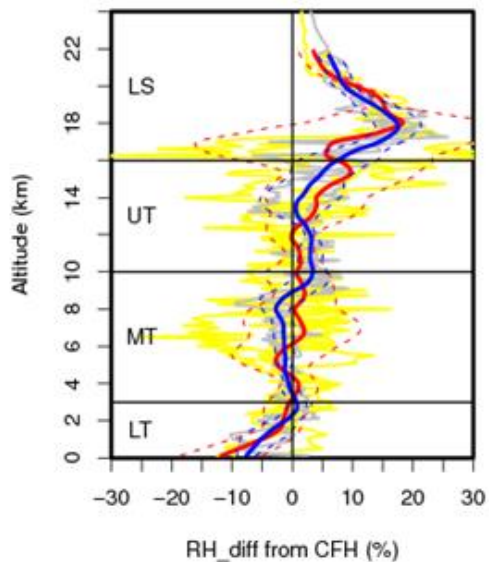
1. Radiosonde performance?
2. Importance of inter-comparisons among sondes and with other instruments
3. Enough ascent rate for Vaisala RS92
4. Consistent data processing and same formats

Radiosonde Performance (WMO 2010 Intercomparison)

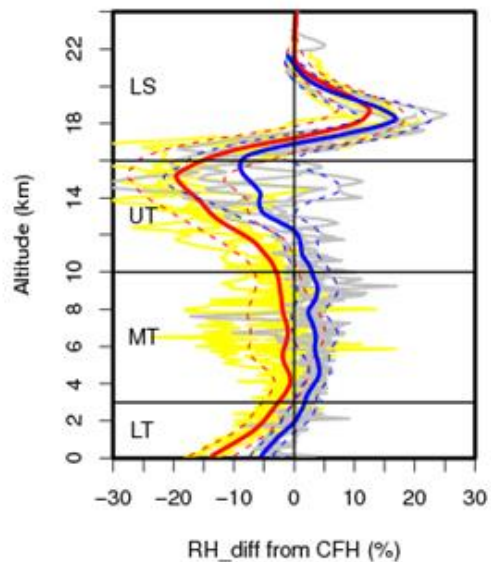
Vaisala_RS92 12



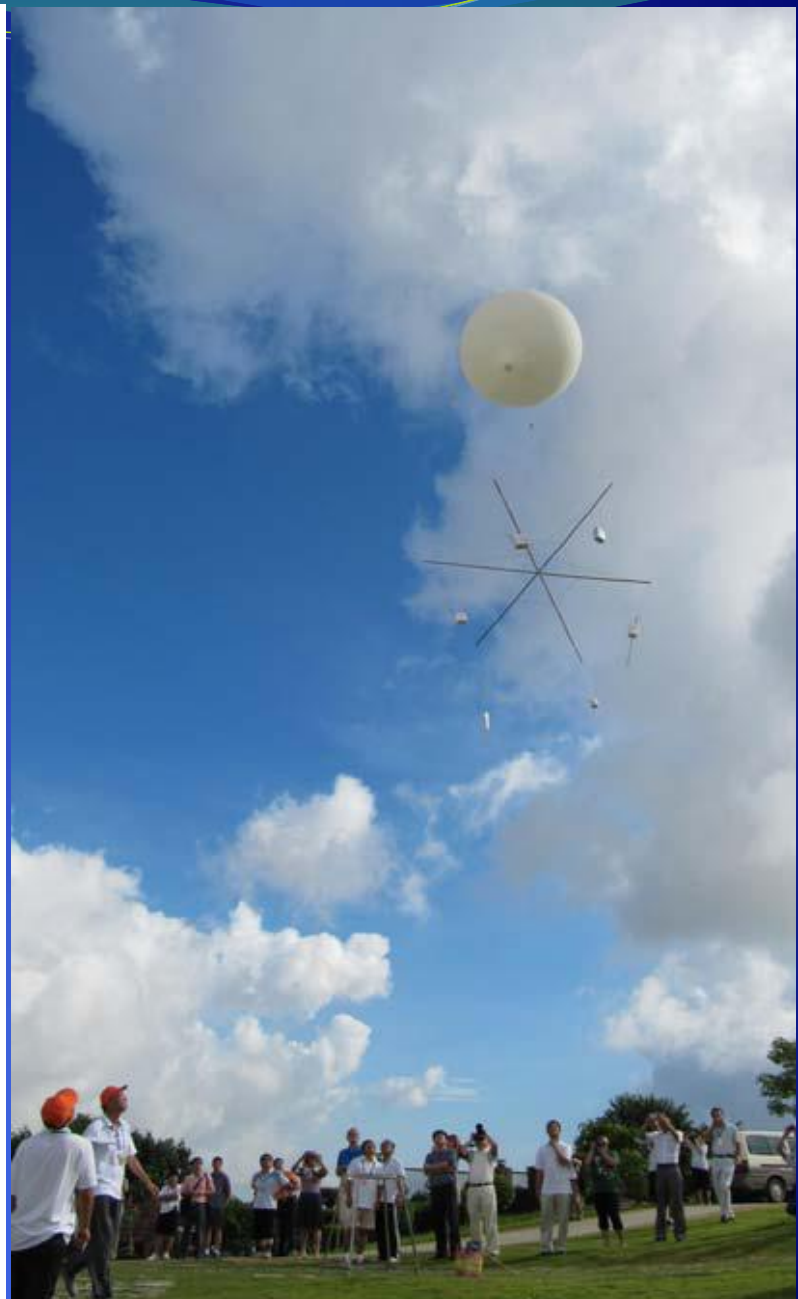
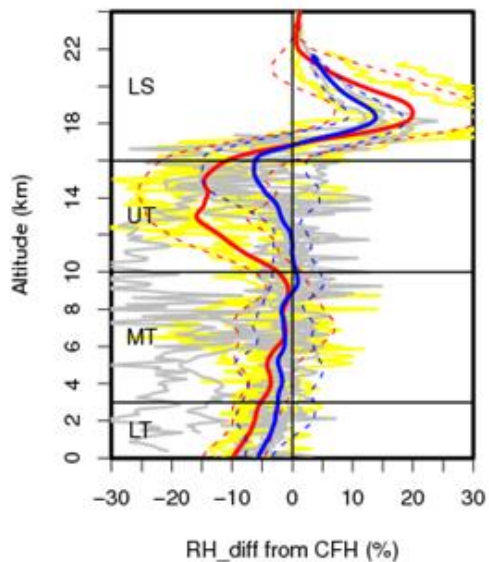
Graw 6



Meisei 10

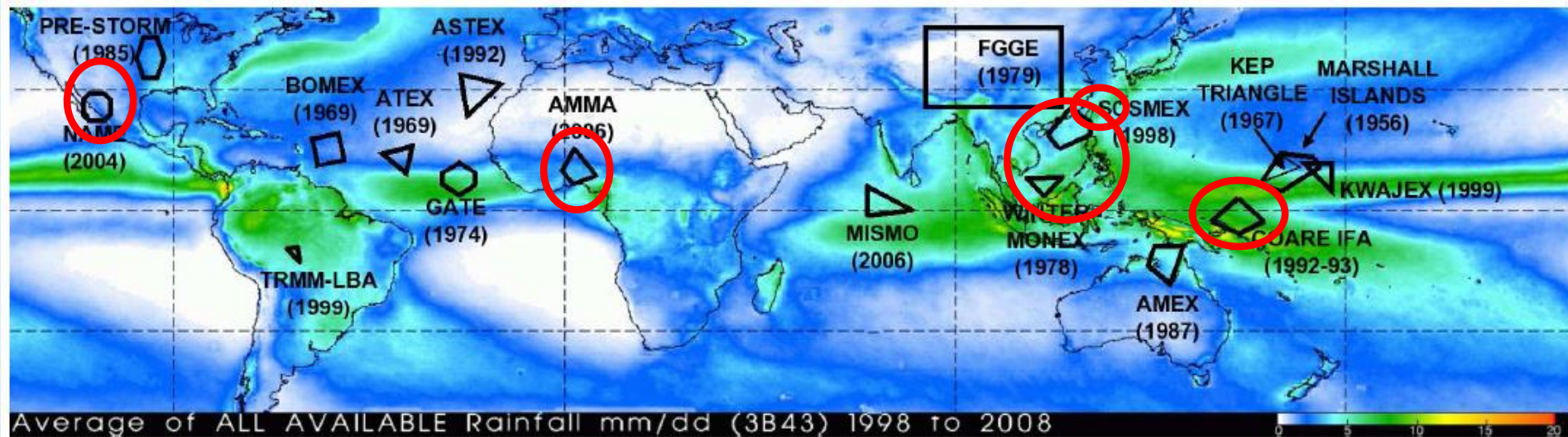


Sippican
LMG 12



Why Intercomparison? (lesson learn from before)

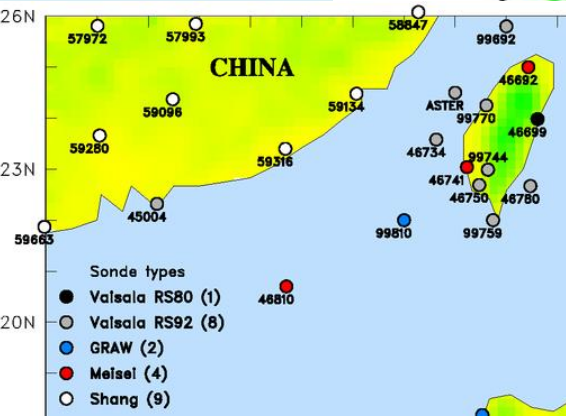
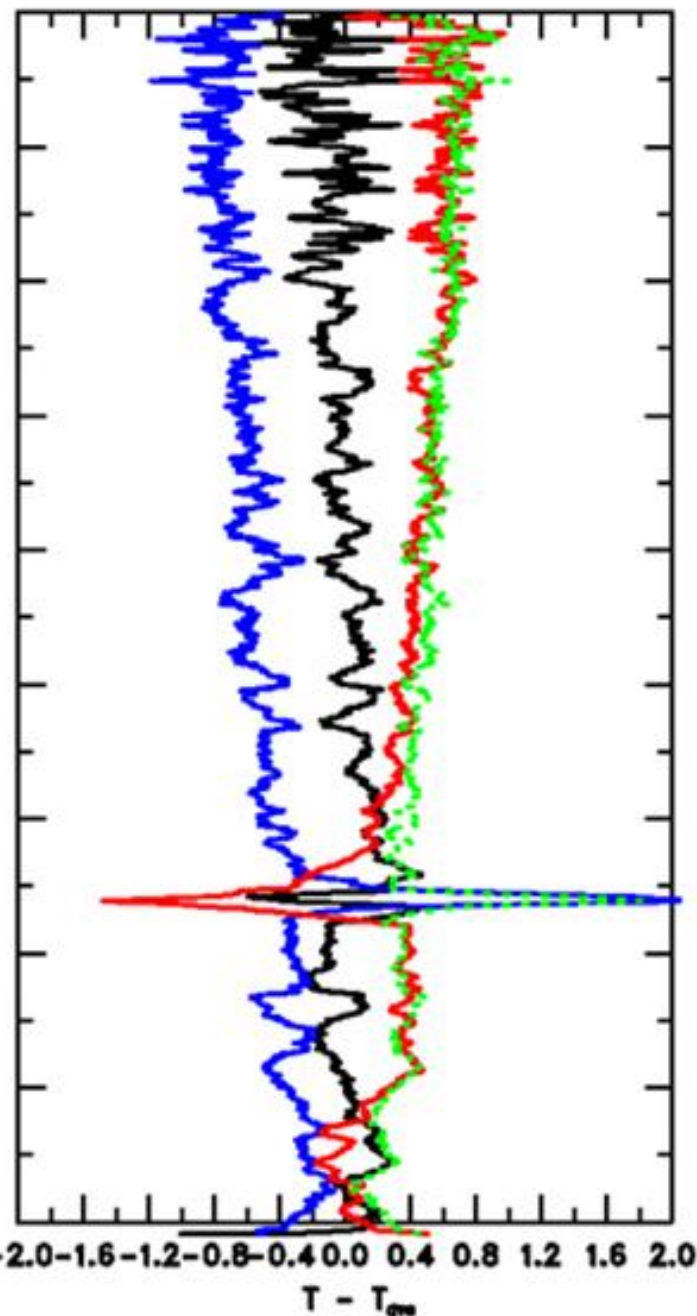
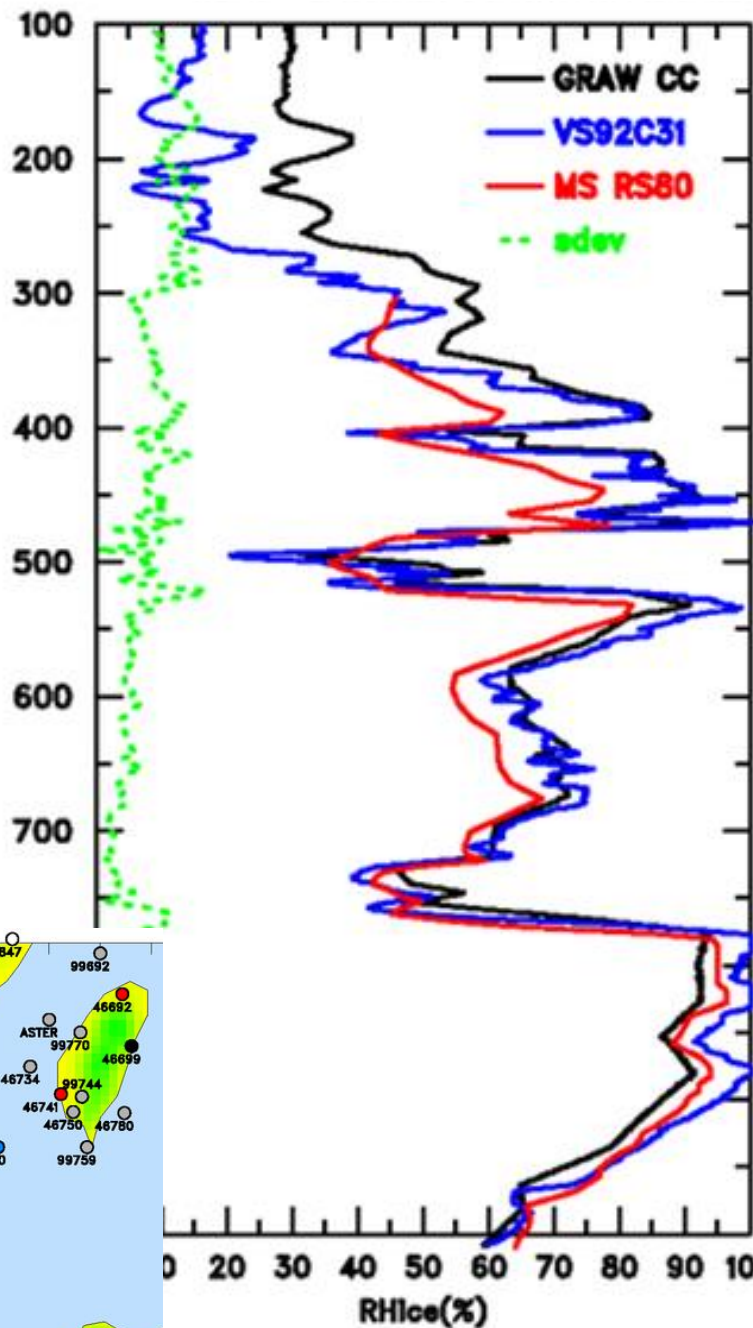
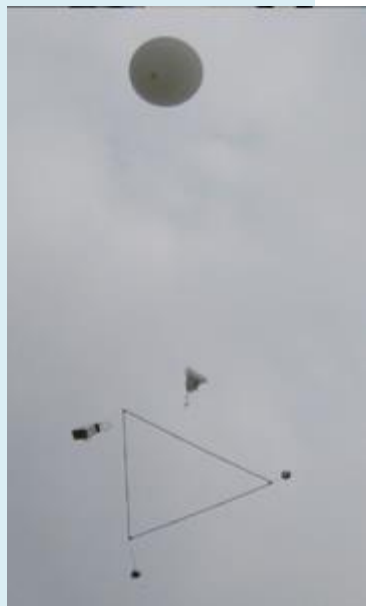
Why do we become more efficient?



exp. name	dates	# snds	# sn types	Time
TOGA COARE:	11/1992–2/1993	~14,000	3	10 yr
SCSMEX:	5-6/1998	~23,000	?	4 yr
NAME:	7/1–8/15/2004	~24,000	?	3 yr
TiMREX:	5/15–6/25/2008	~2,300	?	2 yr
DYNAMO	10/2011–3/2012	~25,000	7	1.5 yr

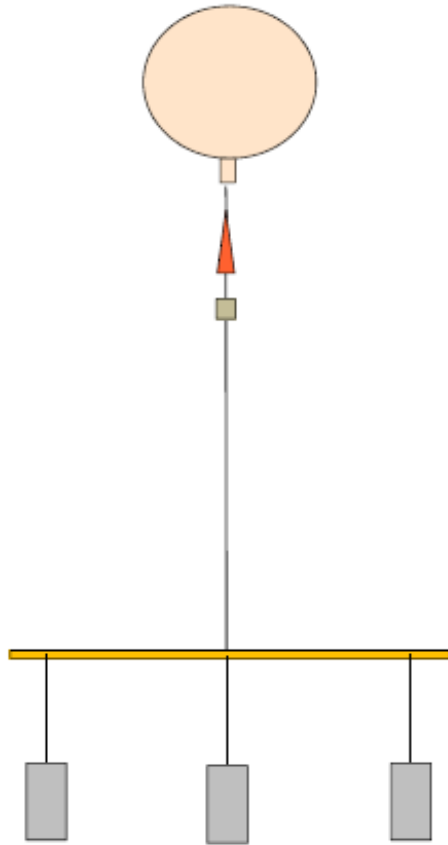
Pre-TiMREX sonde intercomparisons

15 April 08 at 14LT



Multiple sonde configuration

Instruments connected to rig,
hanging



Comparisons of prelaunch radiosonde and surface data (both in field and post-processing)

Compare Radiosonde Data to Surface Data System

Surface Data System Values

Pressure (mb) 833.2

Air Temp (C) 18.6

Humidity (%) 34.4

Time of Last Surface Data Measurement 21:01:15

Sonde Values

833.8

18.4

31.5

Sonde Sensor Offsets

-0.6 mb

0.2 C

2.9 %

Compare the sonde sensor values above to the Surface Data System values.

Acceptable Sonde Sensor Offset Limits:

Pressure	5	mb
Air Temp	2	C
Humidity	10	%

Click: "Continue" if Sonde Offset values are reasonable.

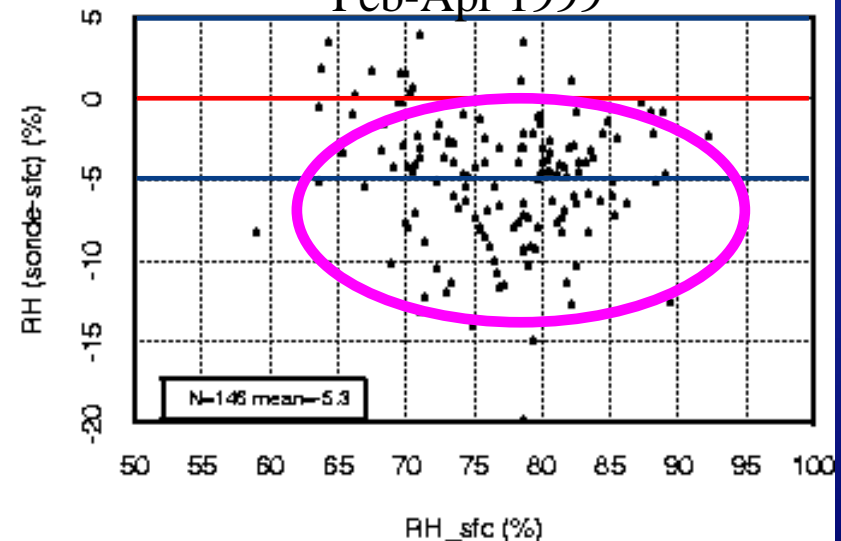
Click: "Bad Sonde!" if the values indicate a bad sensor. This choice will return you to the 'Prepare Radiosonde' display.

Bad Sonde!

Continue



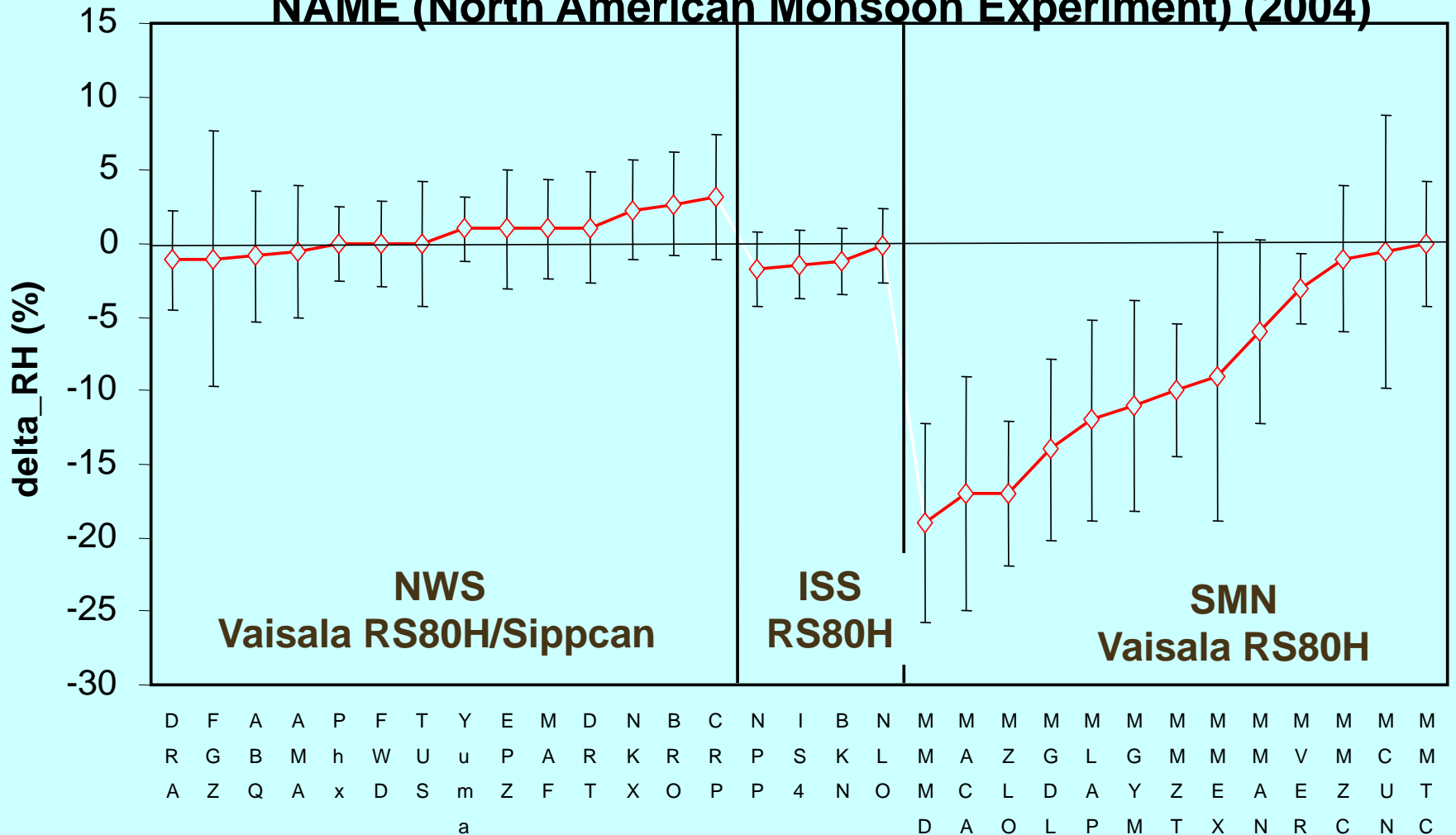
INDOEX sagar (raw) Feb-Apr 1999



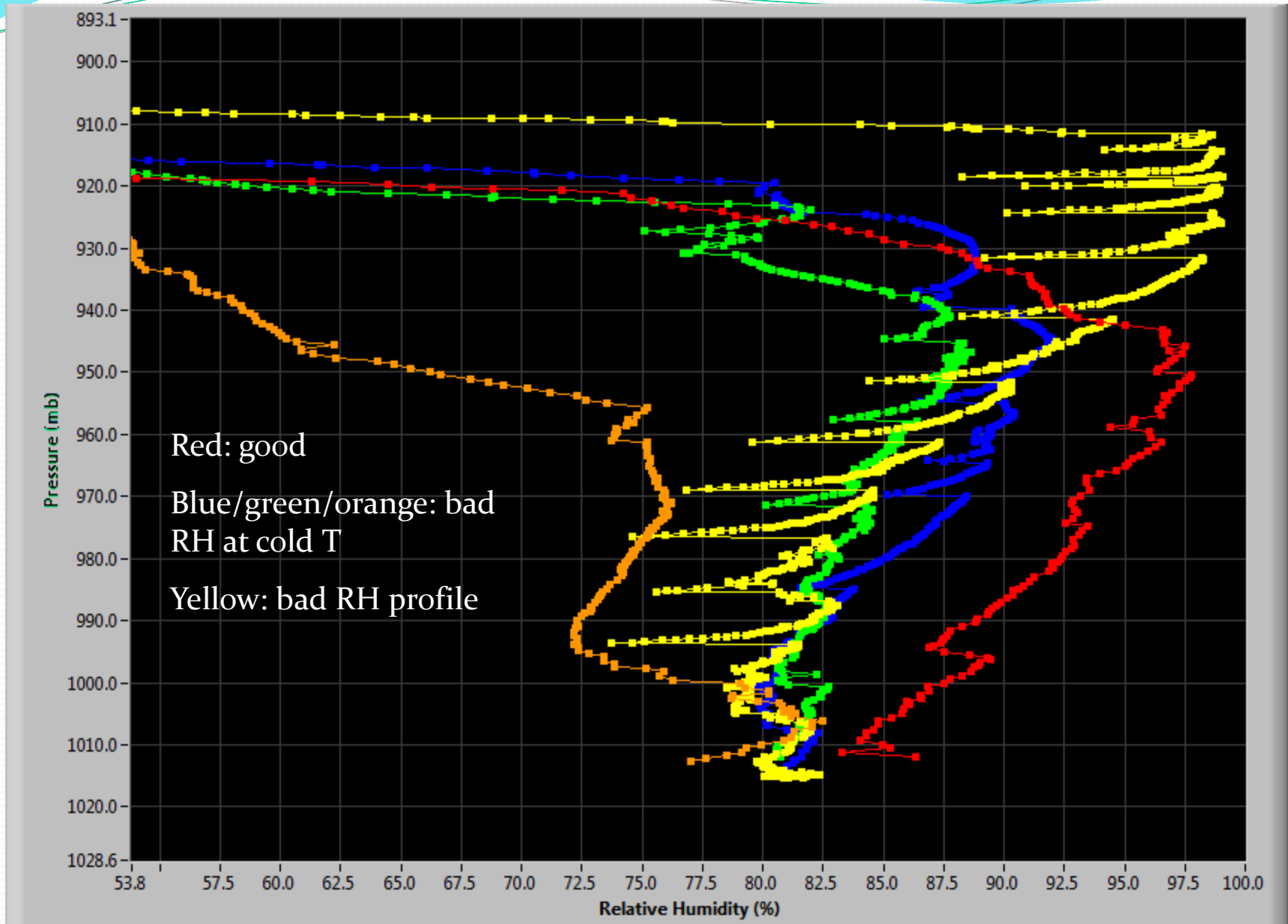
Best Surface Met Data

RH difference between 1st sonde and surface data

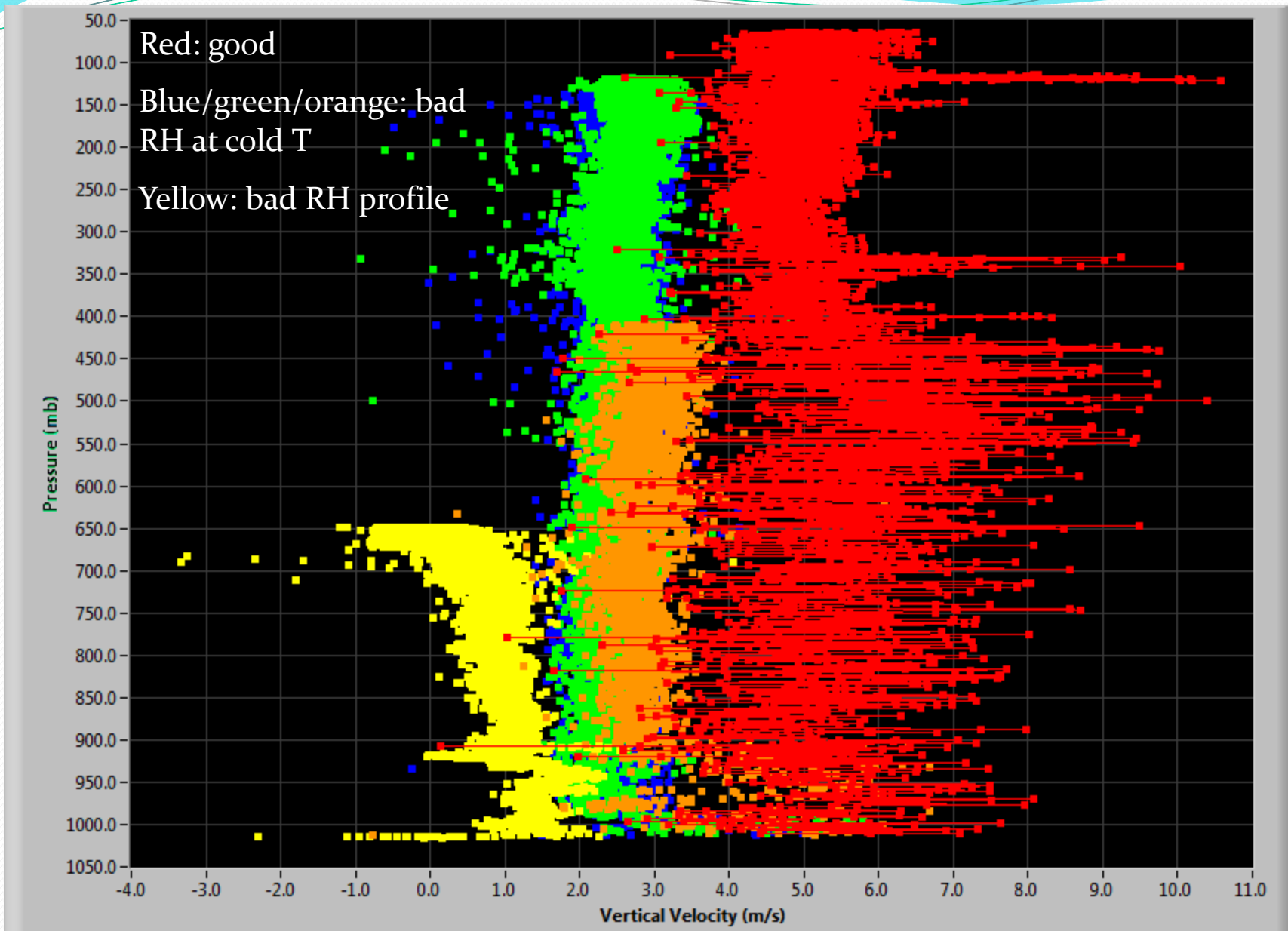
NAME (North American Monsoon Experiment) (2004)



Five soundings from VOCALS (RH in lower troposphere)

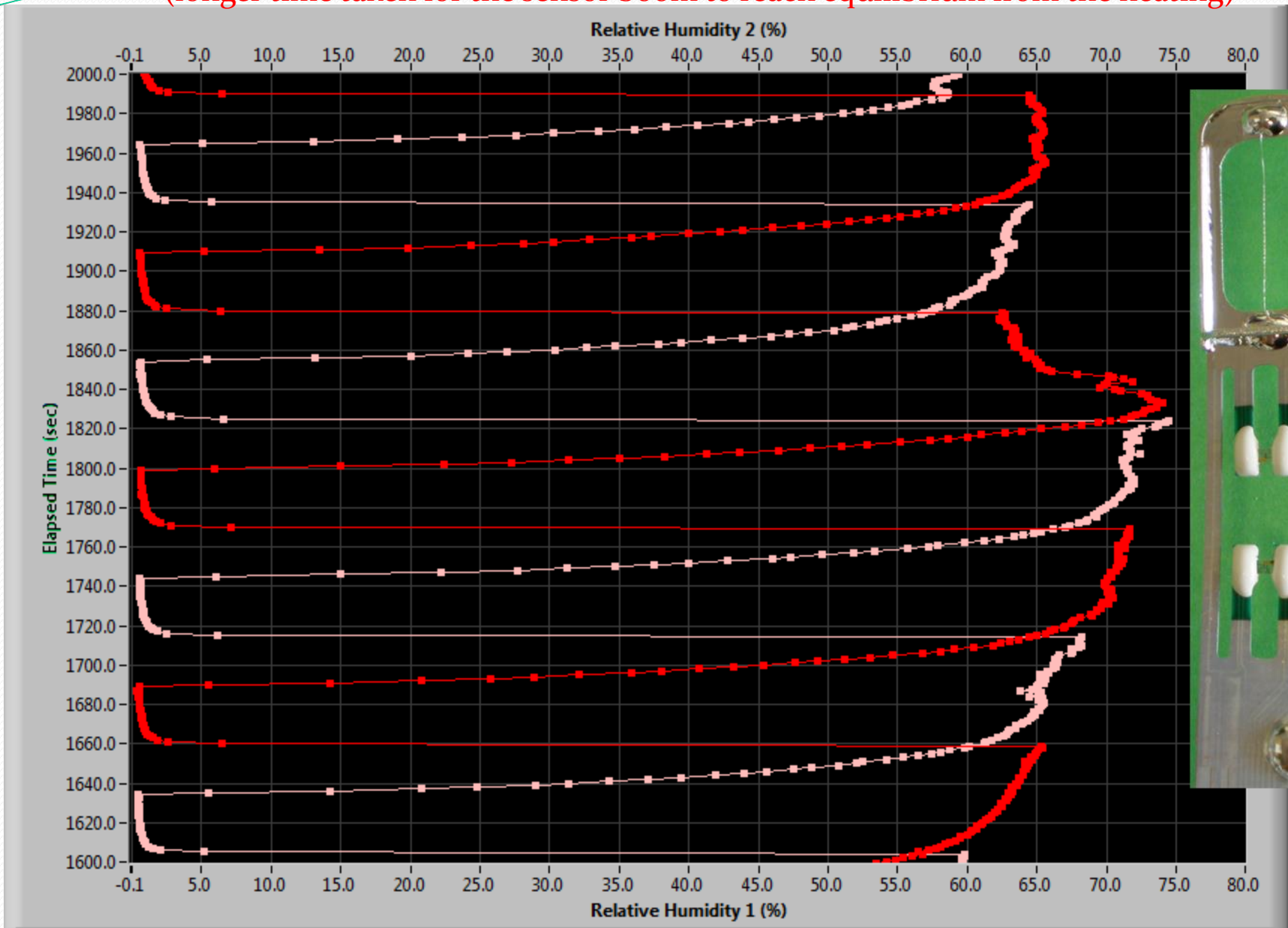


Five soundings from Olaya (Ship) during VOCALS-2008

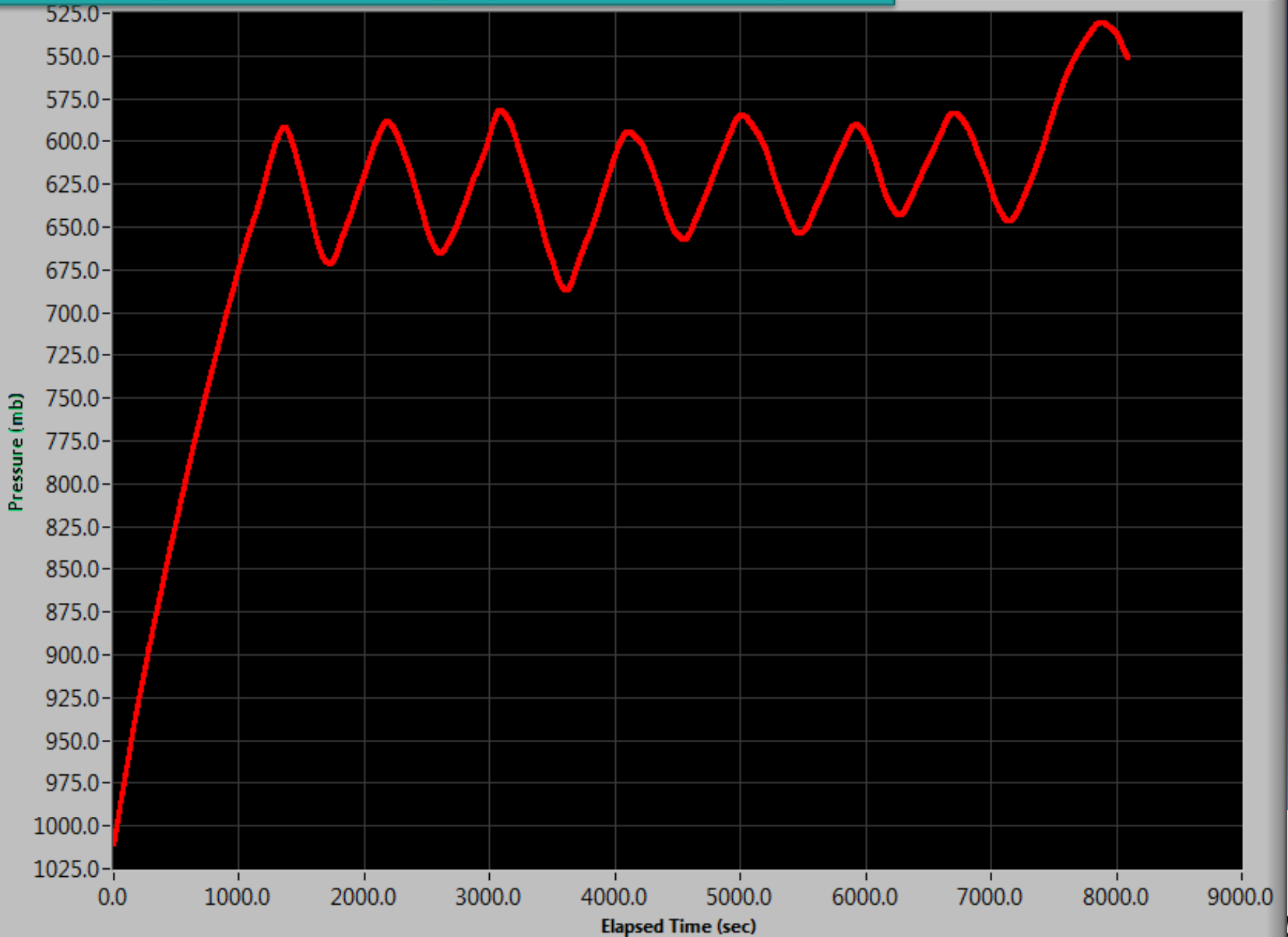


RH₁/RH₂ profiles (v.s. time) for orange sounding in Slide #1)

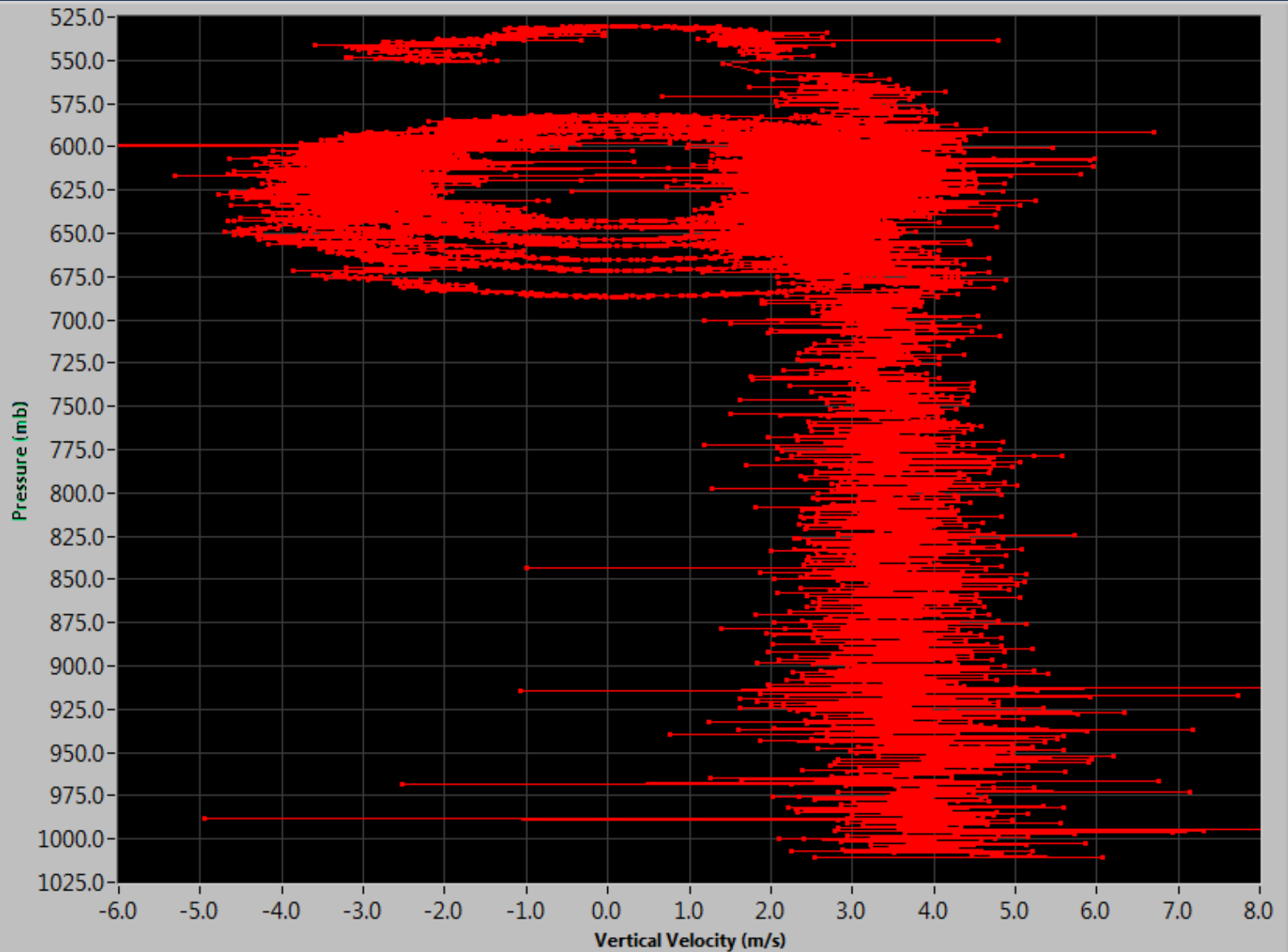
(longer time taken for the sensor boom to reach equilibrium from the heating)



Icing Sounding (DYNAMO)

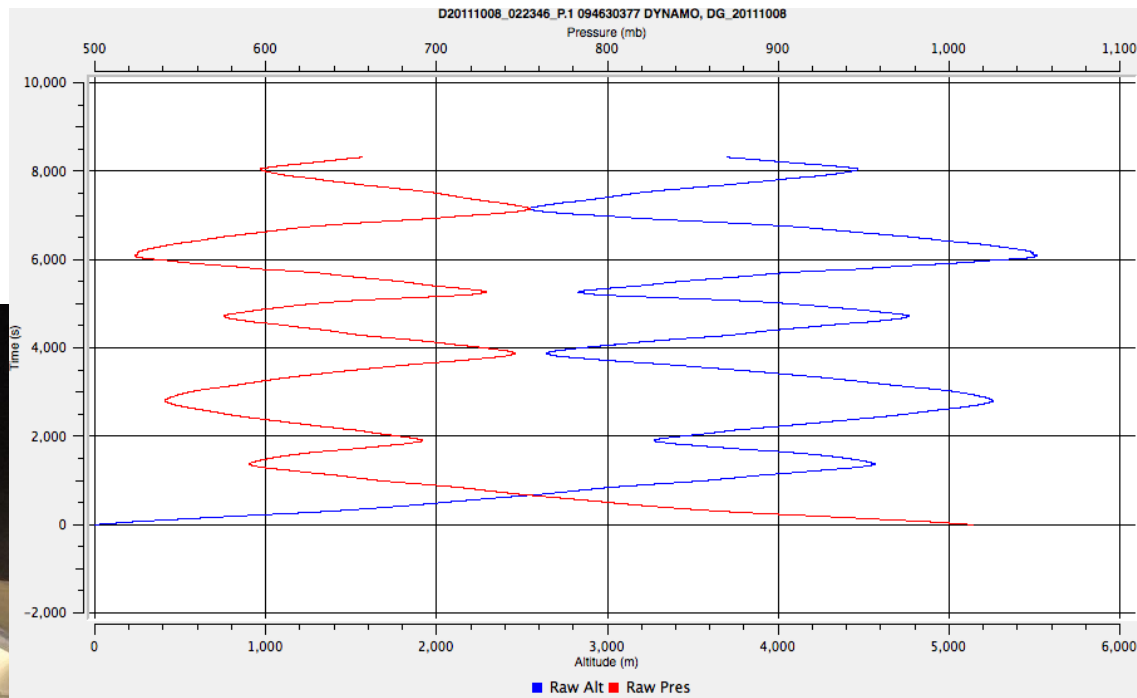


Icing Sounding (DYNAMO)



DYNAMO

Icing



- In heavy rain at up around the freezing level the balloons often iced up
- Affected around 2% of soundings
- Added extra Helium and applied Pam