



Earth System Research Laboratory
Global Monitoring Division

Boulder, Colorado

Dale Hurst
June Wang
Emrys Hall
Allen Jordan



Marshall Launch Site



TDL Hygrometer with FPH



Testing the Vaisala RR01



Dual FPH flight

Start-Up of Weekly RS92 Launches

commenced 15 June, 2011



Problem:

Unable to receive data from RS92 at Marshall while sonde is on the ground

Cause:

RS92 transmits at less than full power until it is launched. Distance is too great for reception of the weak RS92 signal

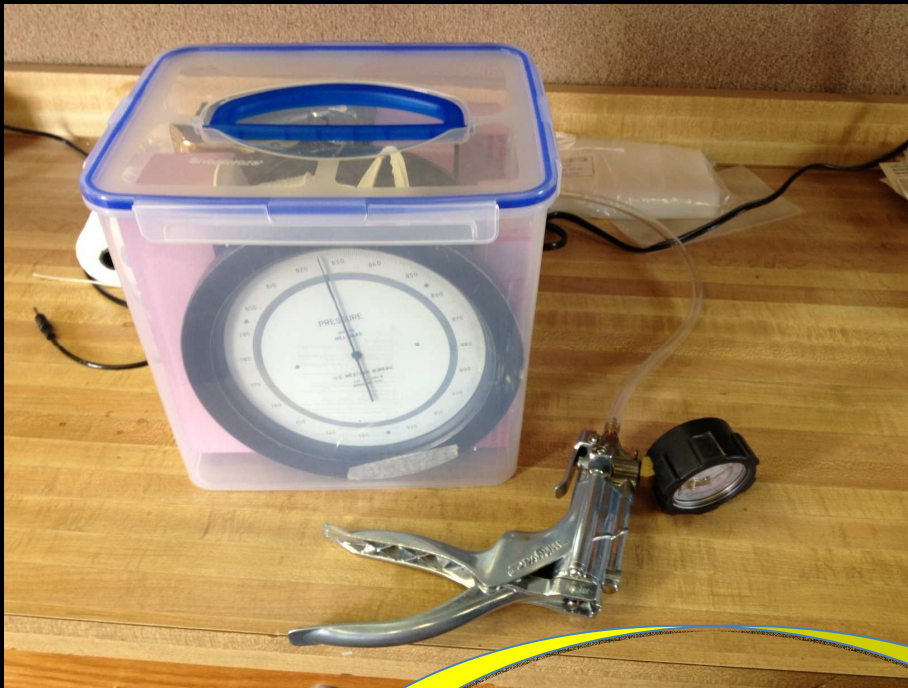
Remedy:

Make the RS92 think it's been launched, but don't allow the DigiCORA to know this.

The Pump Down Box

Re-sealable, airtight box with hand pump and pressure gauge.

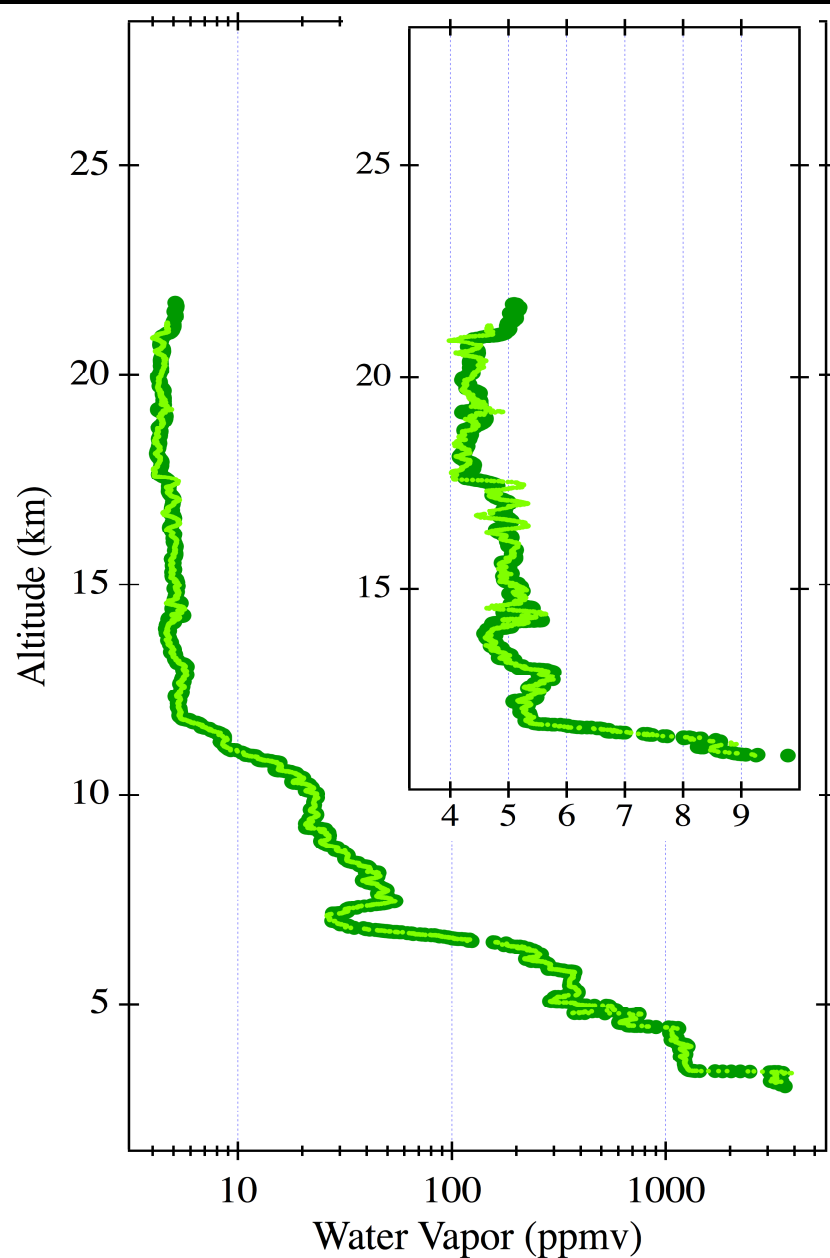
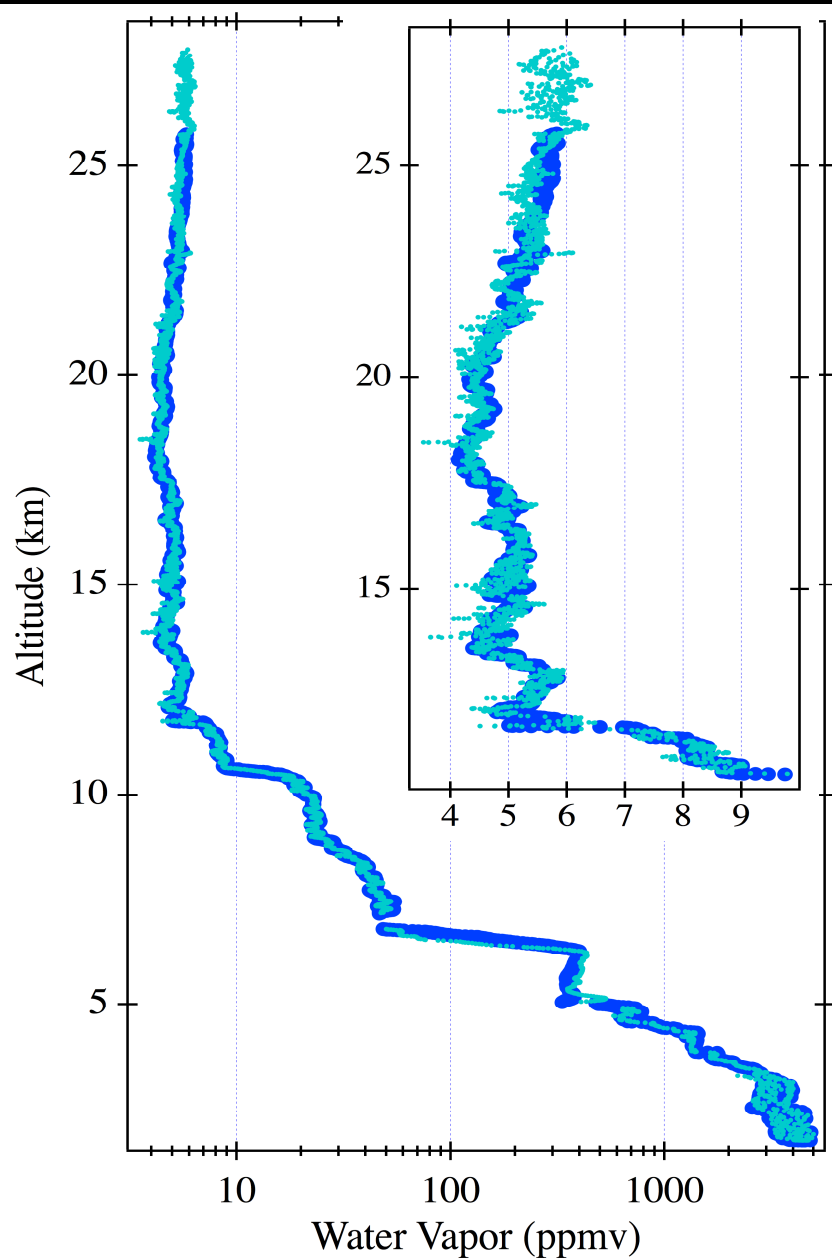
Box located inside metal sea container that blocks sonde transmission



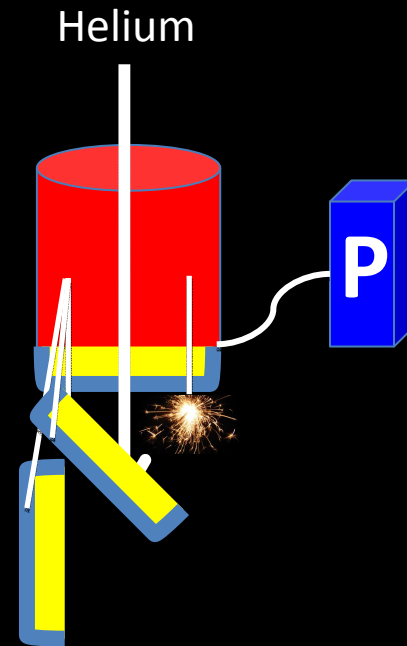
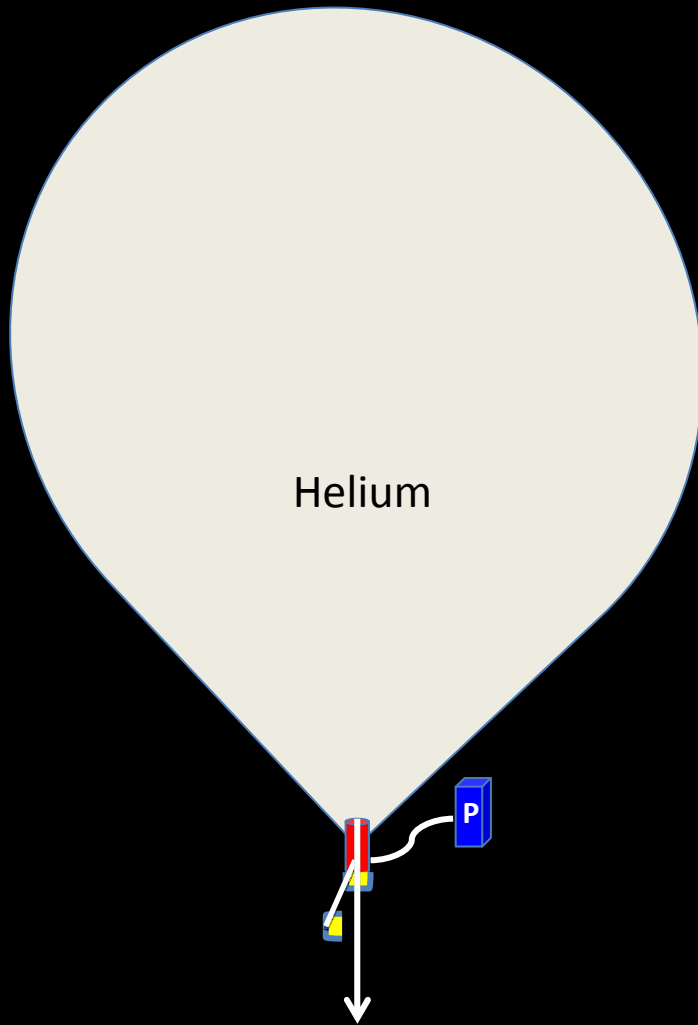
Sonde placed in foil bag for added shielding, box sealed then pumped down ~ 50 hPa.

Sonde removed from box, now transmitting at full power.

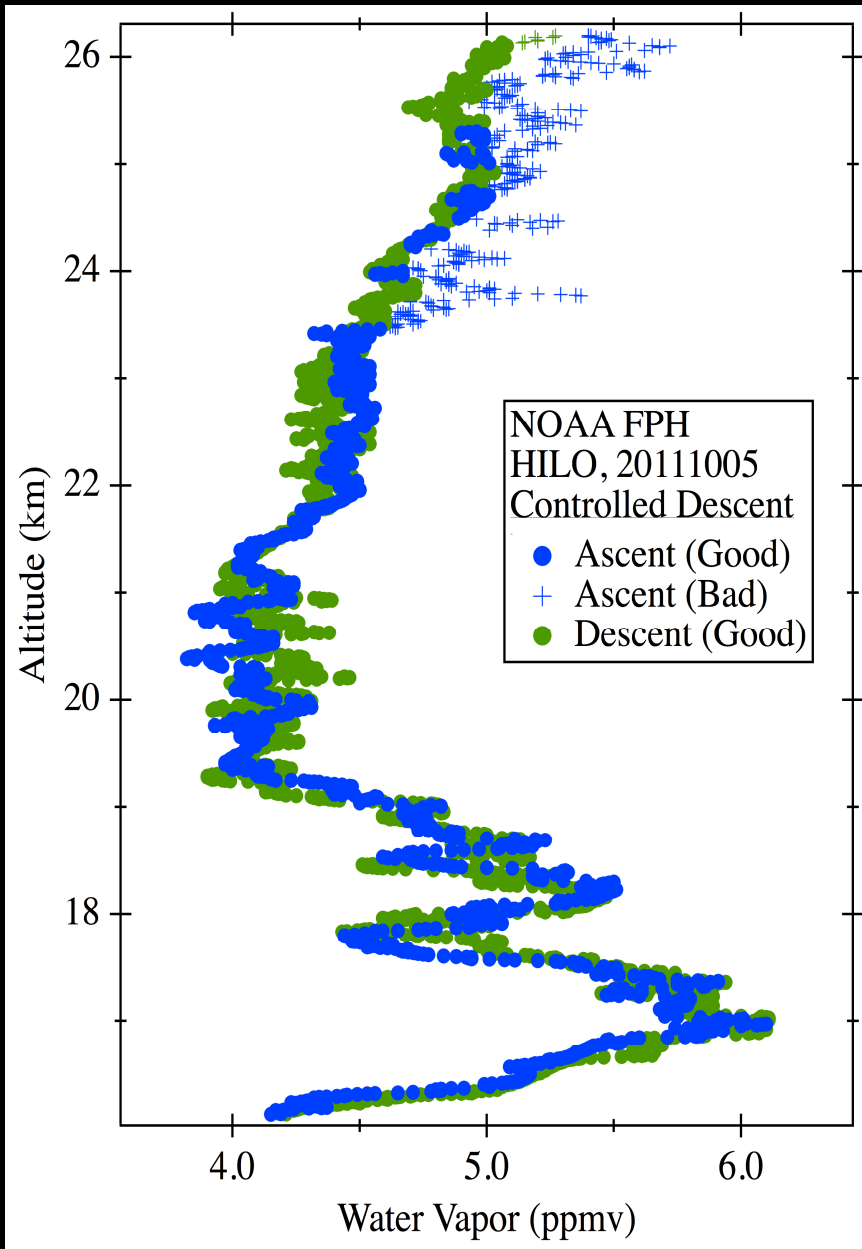
Dual FPH Soundings (*using one iMet radiosonde*)



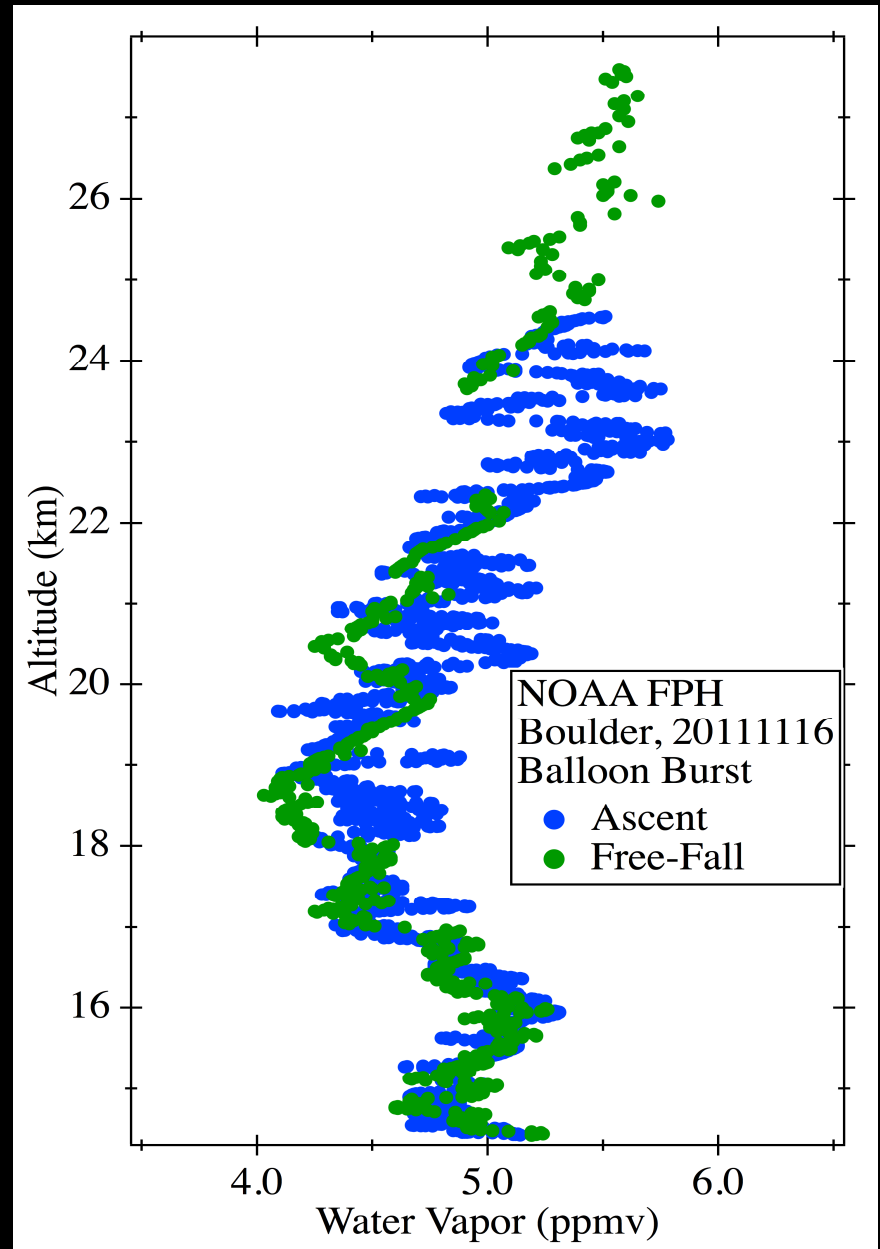
Simple Valve System



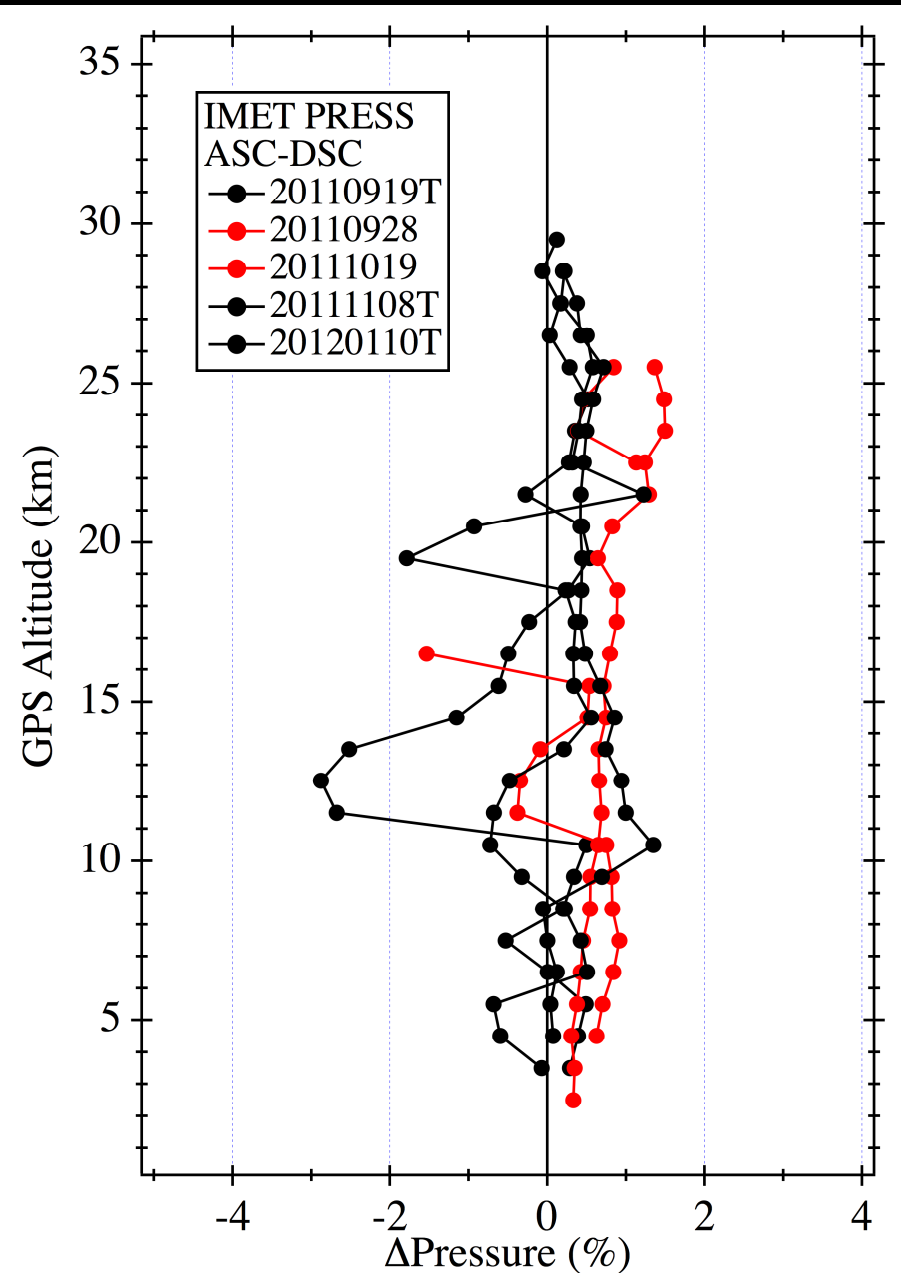
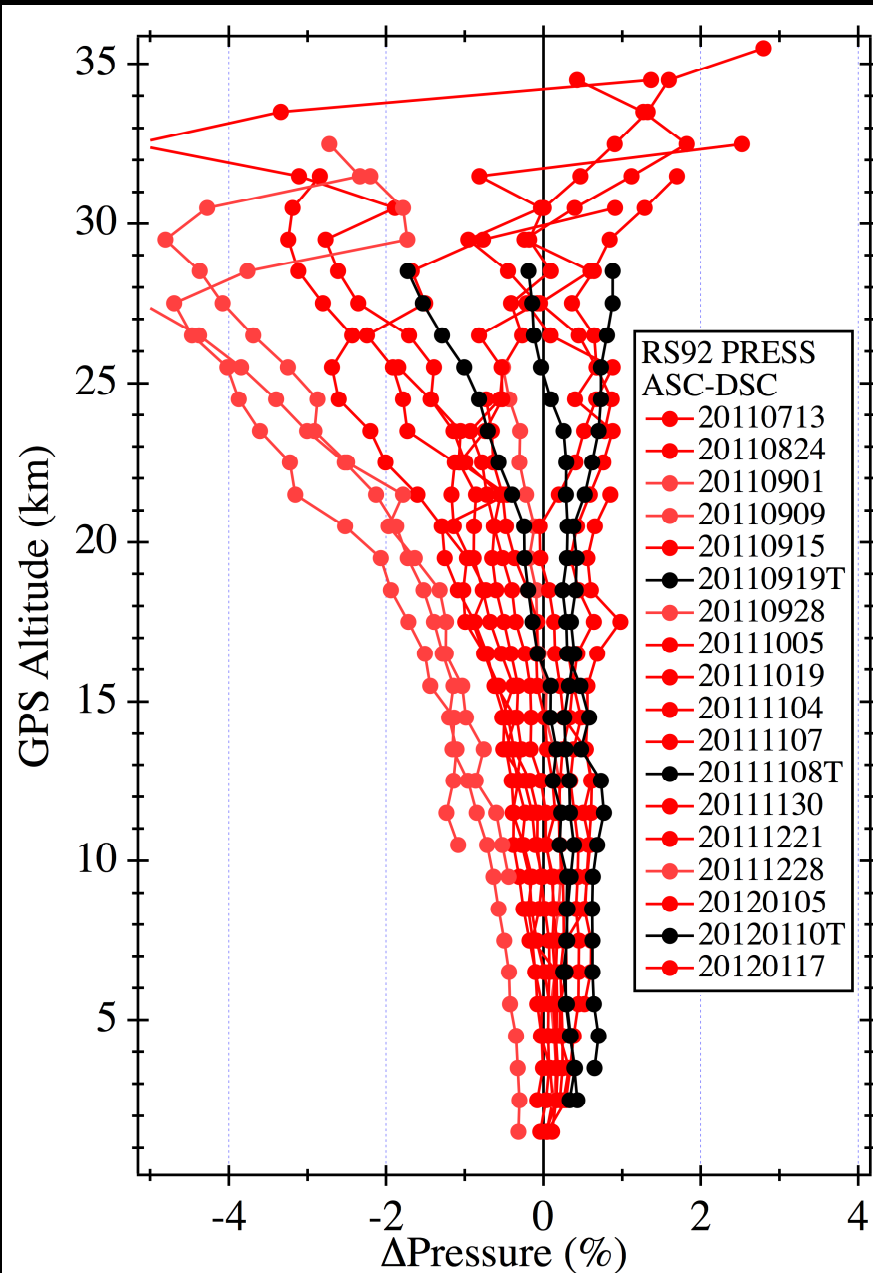
Controlled Descent



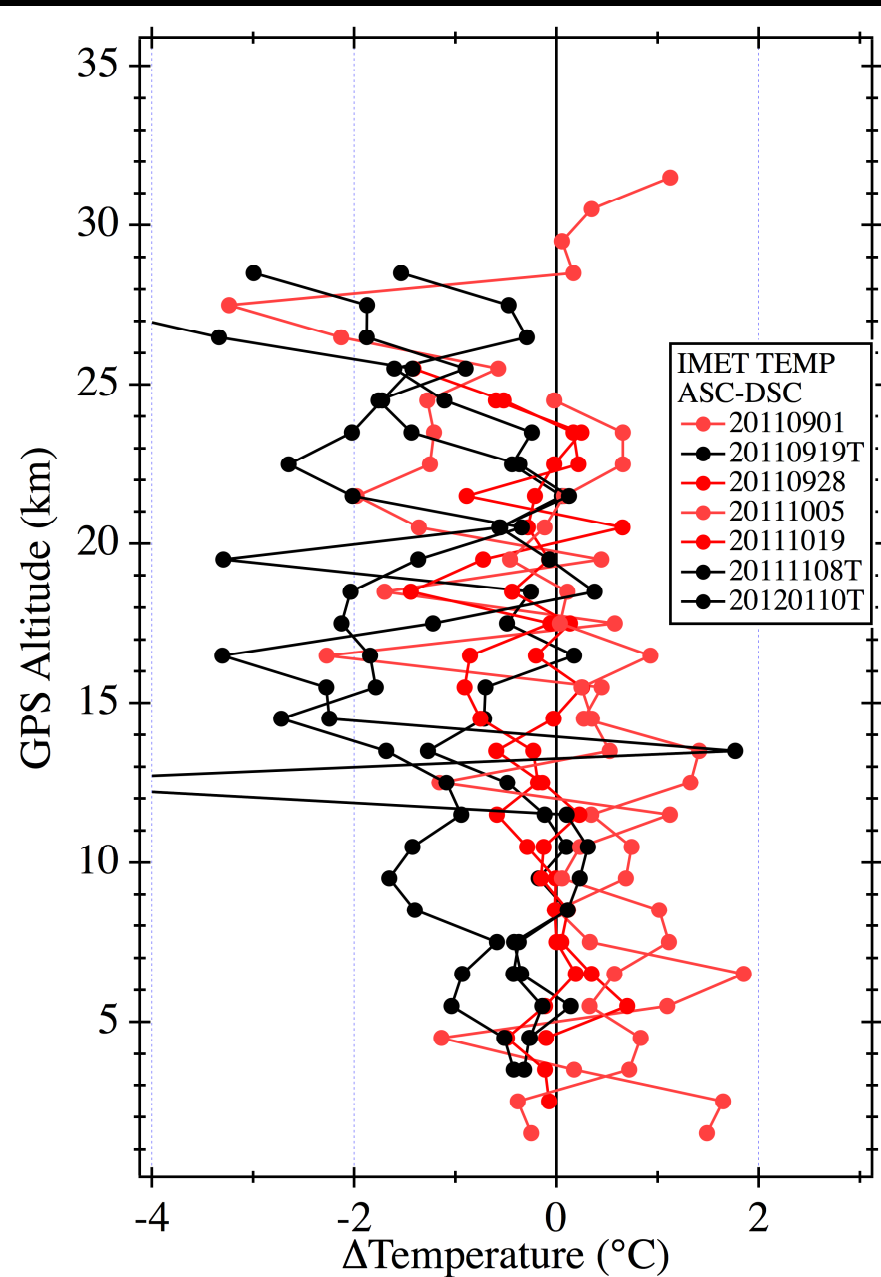
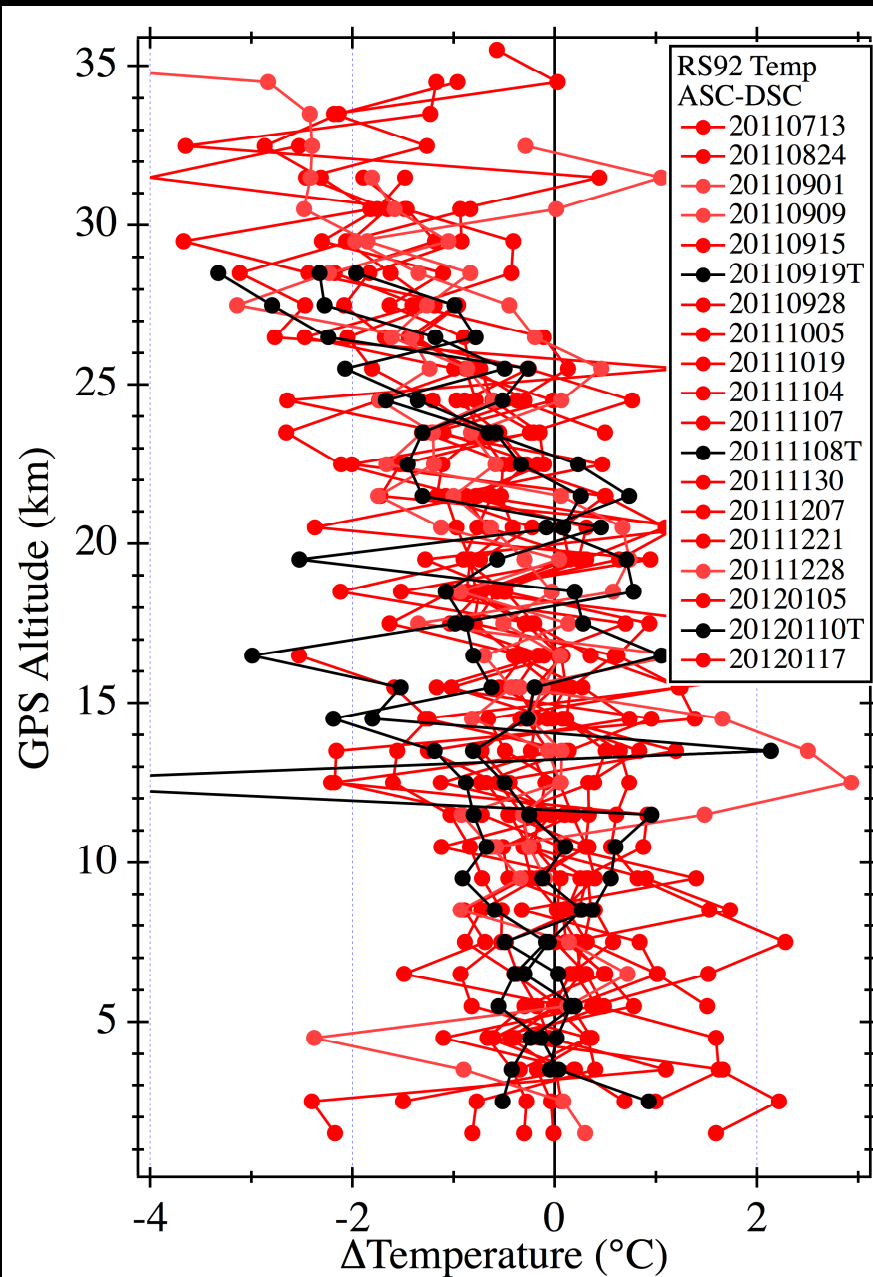
Balloon Burst



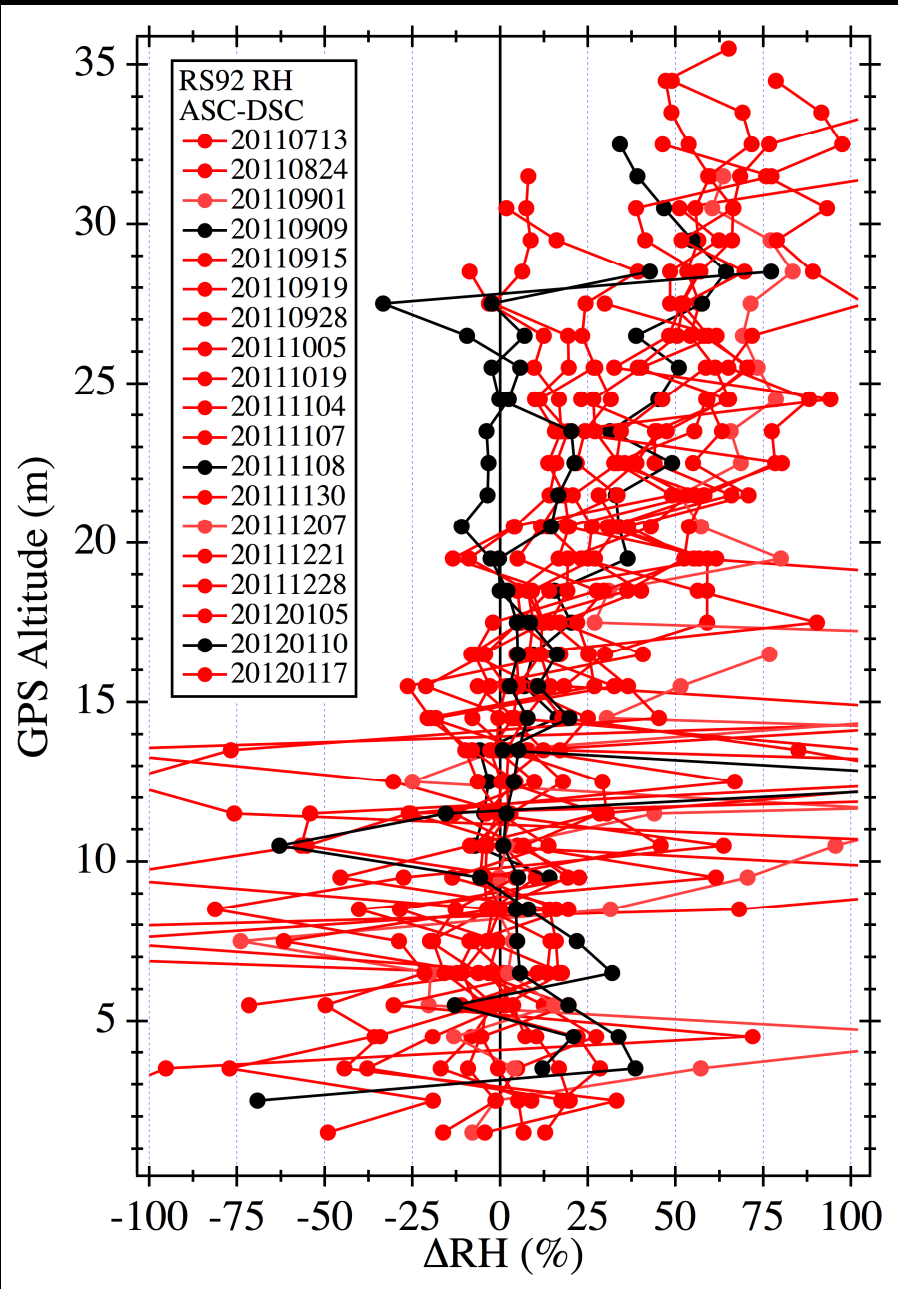
Radiosonde ΔP : Ascent - Descent



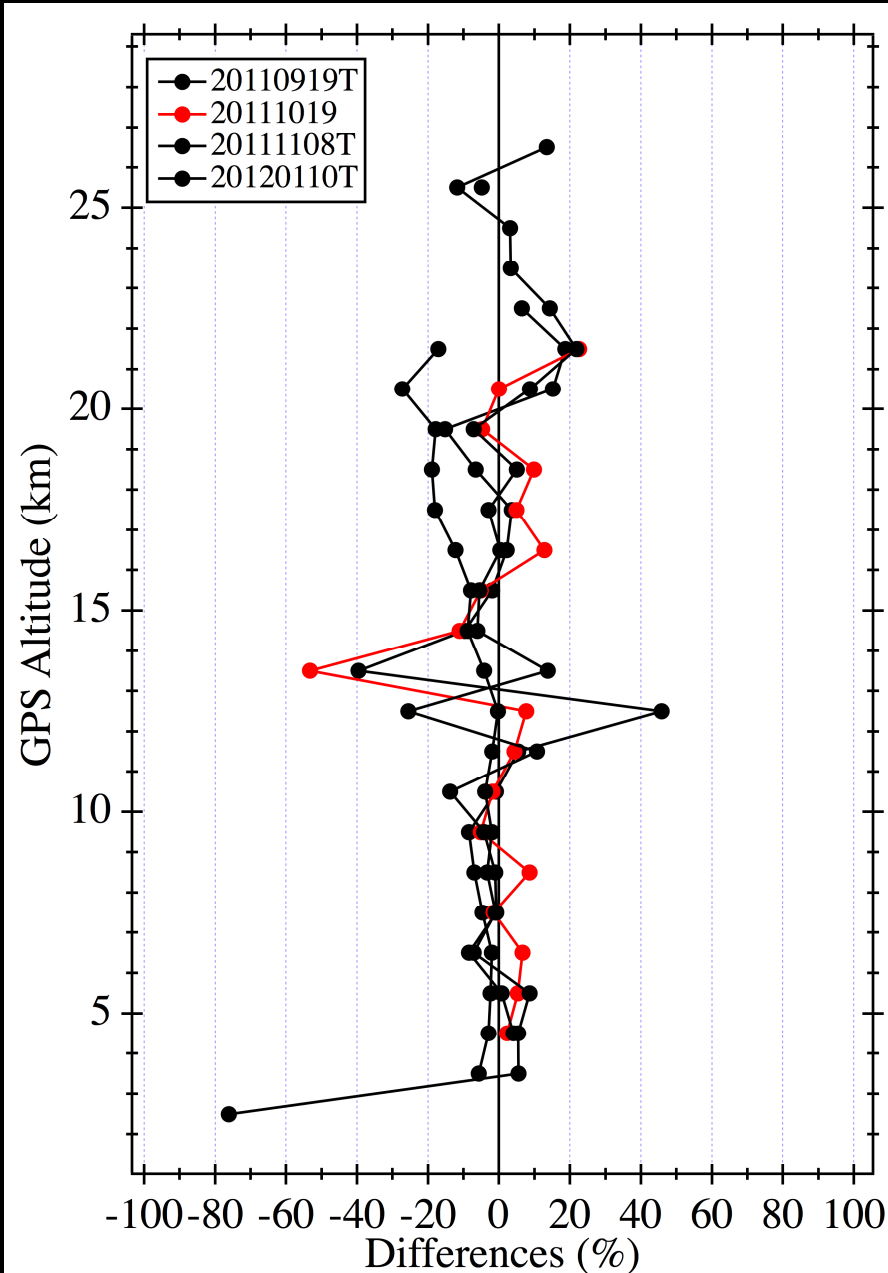
Radiosonde ΔT : Ascent - Descent



RS92 ΔRH : Ascent - Descent



RS92-FPH: $\Delta RH_{ASC} - \Delta RH_{DSC}$



Summary and Upcoming Projects

- Lack of pre-launch RS92 data at Marshall - problem solved
- Dual-FPH flights show good agreement, will help with evaluation of uncertainties
- Use of simple valve system for controlled descent: checks ascent-descent reproducibility and facilitates identification of ascent contamination
- Radiosonde pressures and/or GPS altitudes differ from ascent to descent
Up to 4% differences for both RS92 and iMet: Impacts accuracy of FPH data
- Radiosonde temperatures differ from ascent to descent, 1-2°C bias above 25 km
- RS92 RH ascent-descent differences, 25-50% bias >20 km (RH values are very small)
- Ascent-Descent disparities between Δ RH RS92-FPH are much smaller, mostly <10%
- TDL Hygrometer Intercomparison Flights (w/ Southwest Sciences)
- Surface Acoustic Wave Hygrometer Intercomparison (w/ Univ of Cambridge)
- Vaisala RR01 Intercomparison (w/ NCAR and Vaisala)

Save the dates ...



Earth System Research Laboratory
Global Monitoring Division

Global Monitoring Annual Conference

May 14-18, 2012

Boulder, Colorado

40th Anniversary of the GMD
(aka CMDL, GMCC, ERL) annual meeting

To join the e-mail list send an inquiry to:

Misti.Hinson@noaa.gov

Abstracts are due April 6th