

# SP2 Measurements

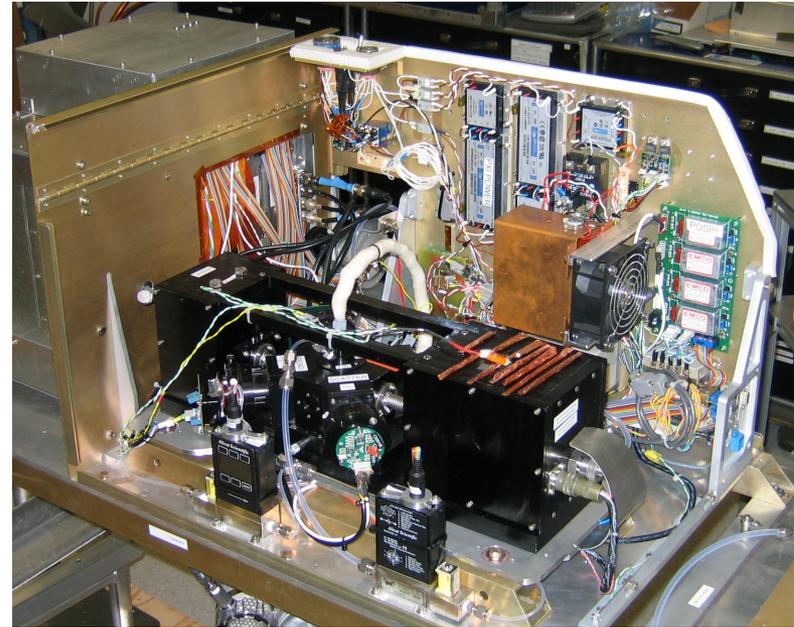


**HIPPO Science Team Meeting  
Boulder, Colorado  
March 12, 2012**

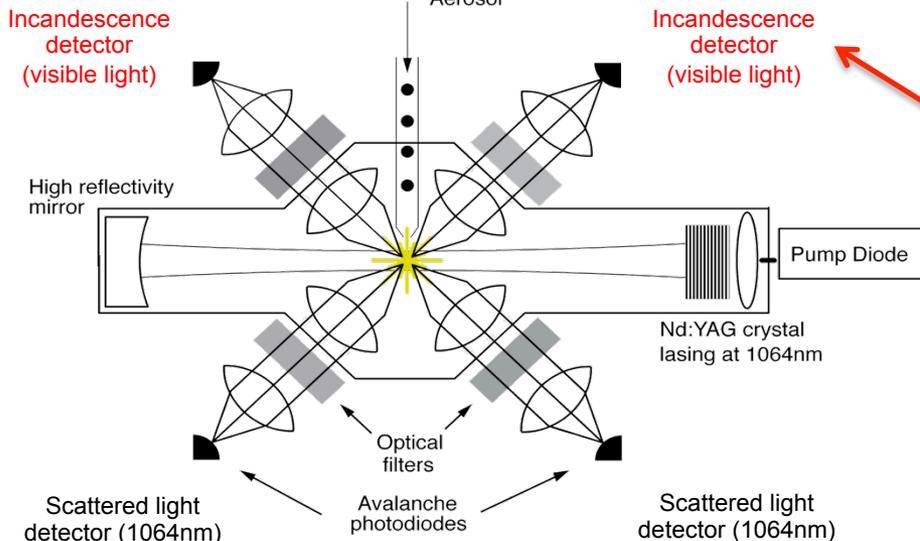


# Single Particle Soot Photometer (SP2)

- Single particle soot photometer (SP2) detects refractory internally and externally mixed BC mass
- Laser-induced **incandescence** is linearly proportional to **mass** and independent of the mixing state and morphology of a BC particle
- SP2 samples **~90%** of BC mass in the accumulation mode (**90-700 nm** diameter) and **~50%** of BC number
- Uncertainties: 40% mostly due to BC mass calibration



SP2 instrument for GV installation



Particle incandescence temperature determined by ratio of narrow and broadband visible light detectors.

## SP2 data summary

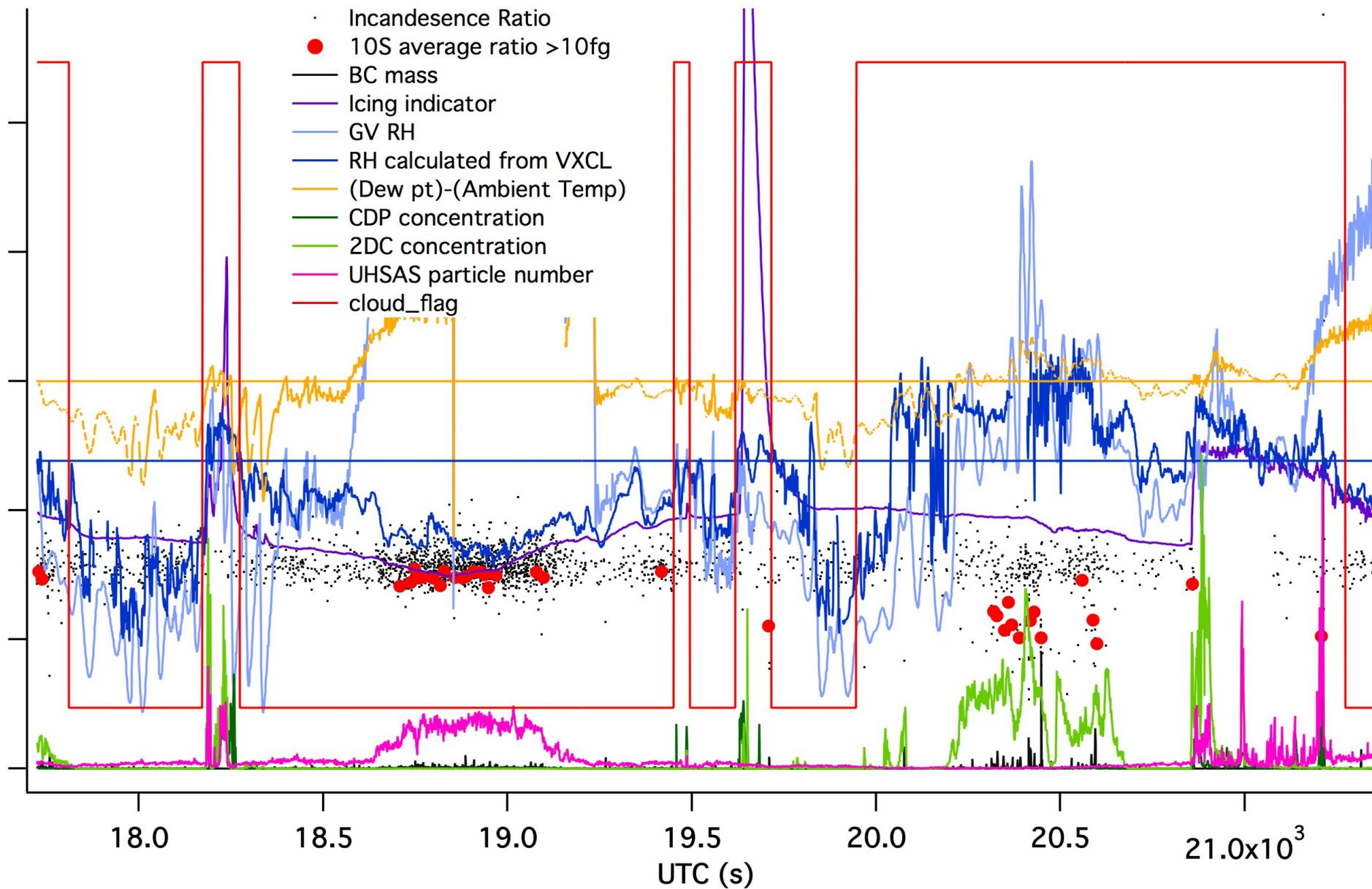
- Final data have been submitted for phases 1-3
- Final data for phases 4 and 5 will be submitted shortly
- Final processing includes removal of **clouds** and application of a correction factor for **unmeasured mass**.
- Measurement uncertainty is ~40% (mainly due to calibration material uncertainties)

## Specific issues for HIPPO IV

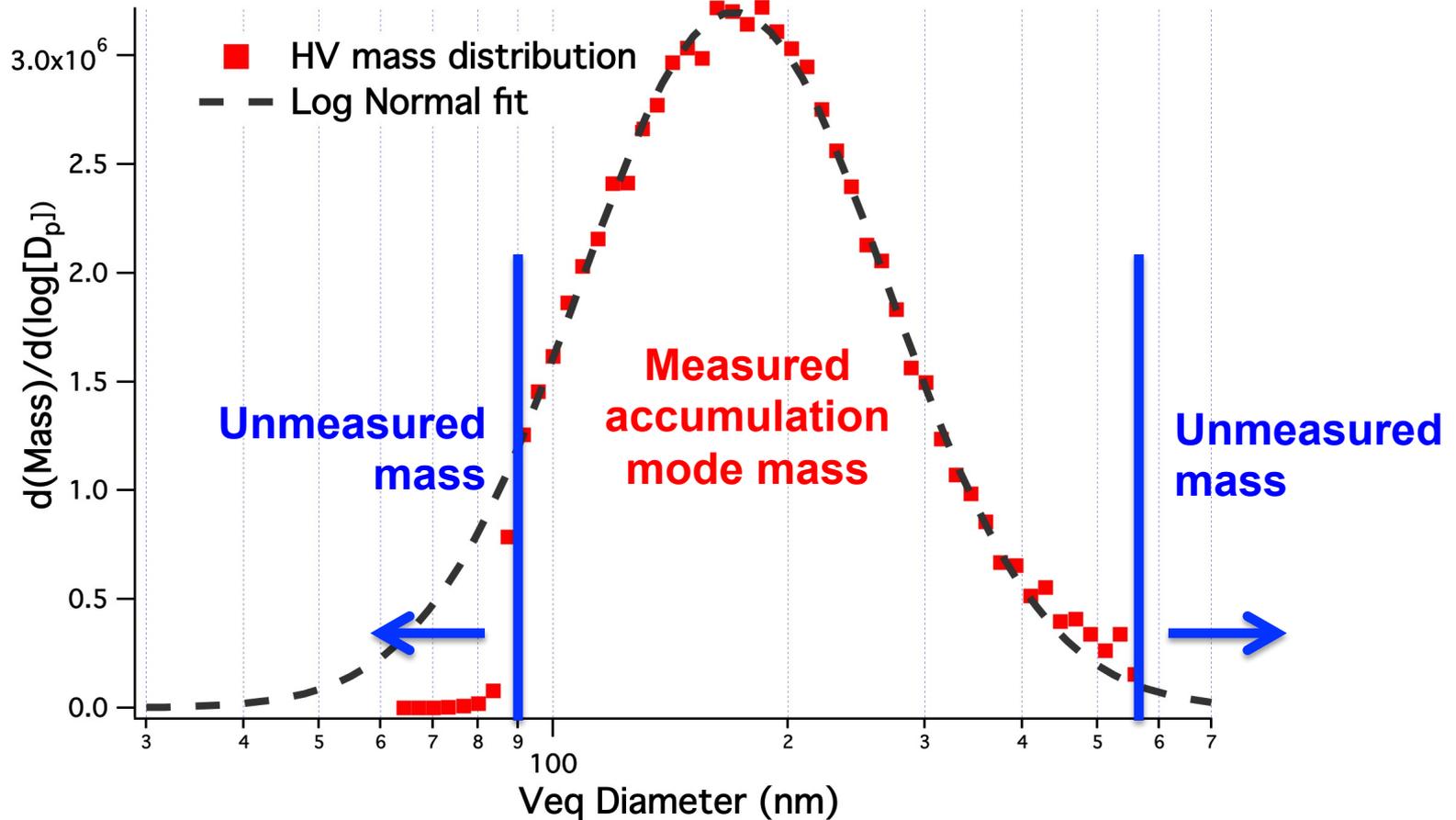
- Potential leak during RF01+RF02 led to omission of data when cabin pressure was >200 mb above ambient.
- The first ~3hrs of RF04 were lost due to a pump malfunction.

## No issues for HIPPO V

# Cloud cuts



# Mass Correction



- Data shown are for HIPPO IV
- Calculated mass correction for this example is 7%