Ascent-Descent Differences in Radiosonde Pressure and Temperature Measurements

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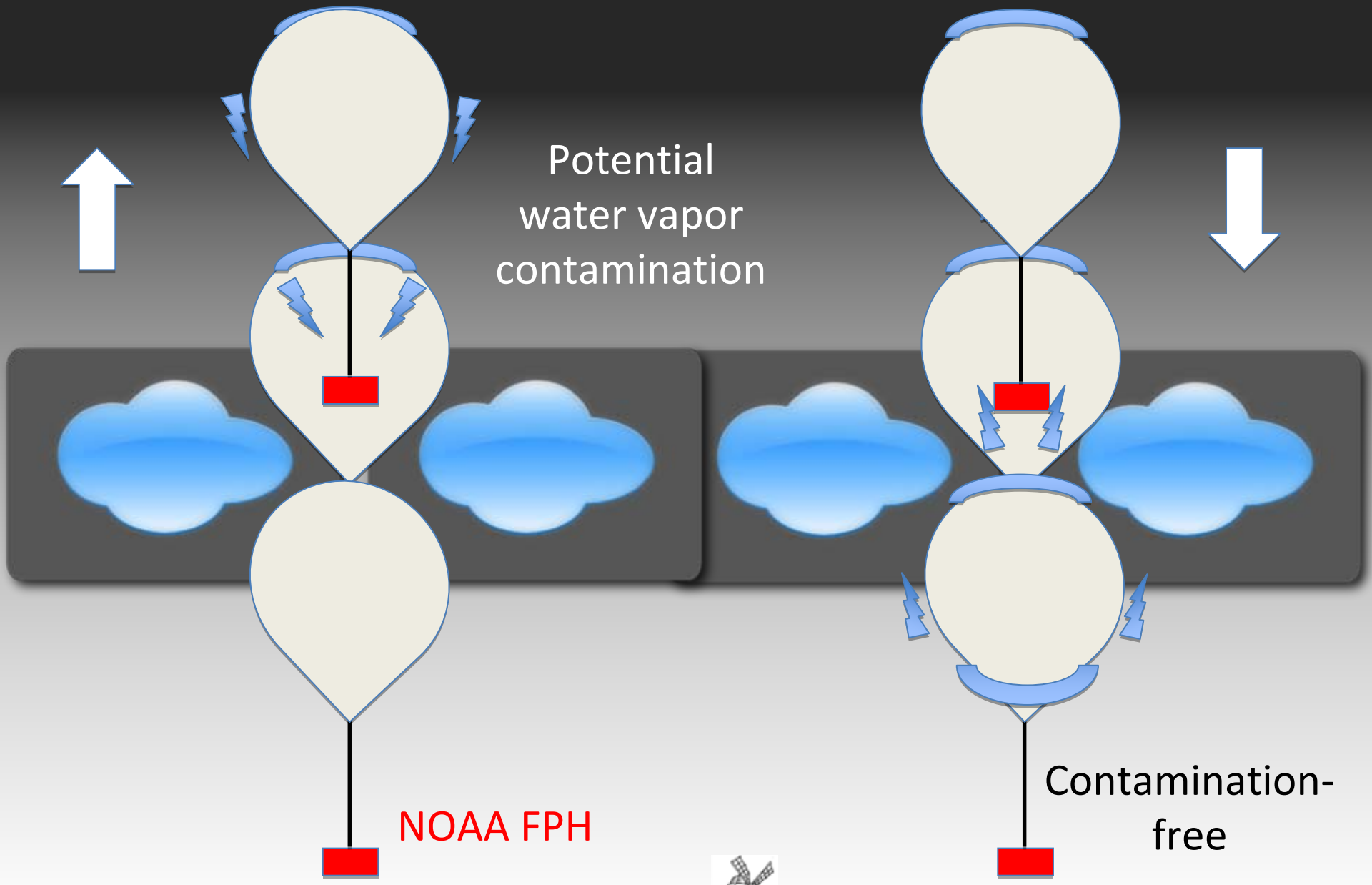
Why do we want descent measurements?



Why do we want descent measurements by radiosondes?

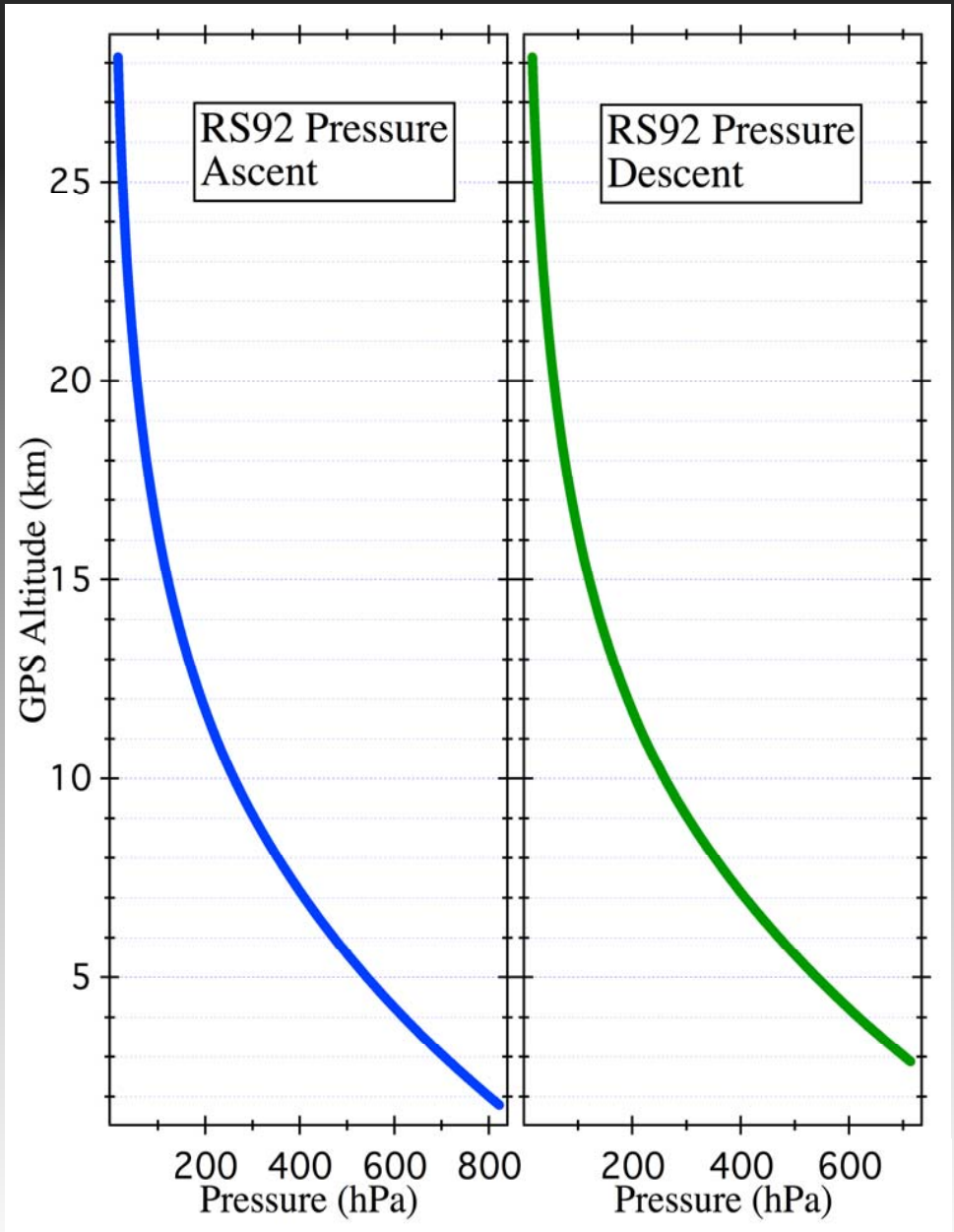
To calculate this from FPH data:	Need coincident measurements of:
Water vapor mixing ratio	Ambient Pressure
Relative Humidity	Ambient Temperature

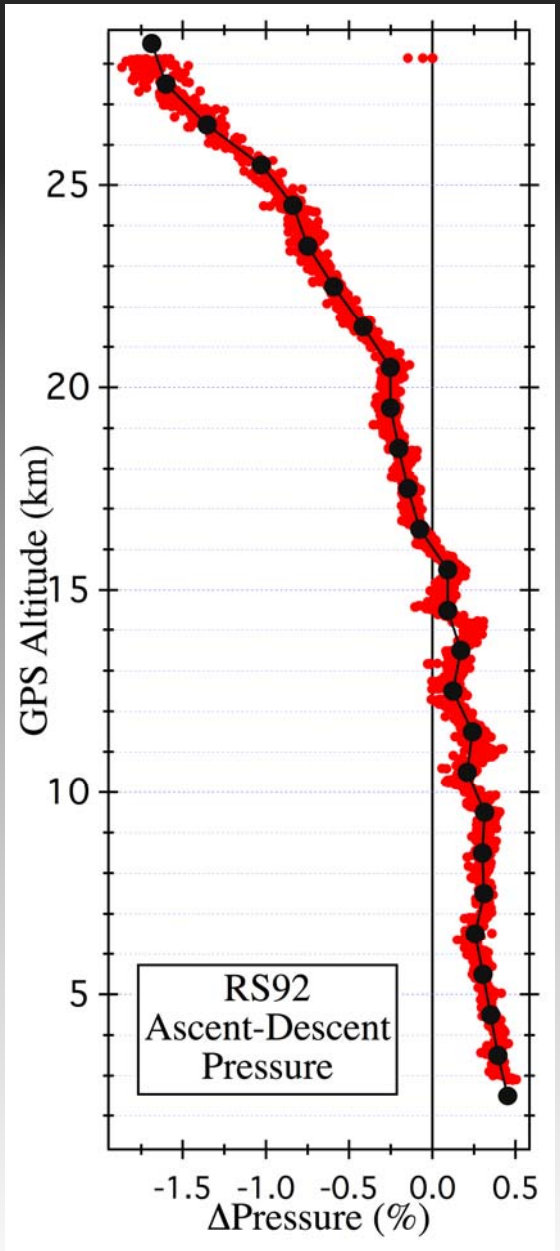
Why do we want <u>controlled</u> descent measurements?

NOAA FPH frost control is better at controlled descent rate of 5 $m \cdot s^{-1}$ than during free fall (40-50 $m \cdot s^{-1}$)

Ascent-Descent measurements of Pressure and Temperature by radiosondes may agree better

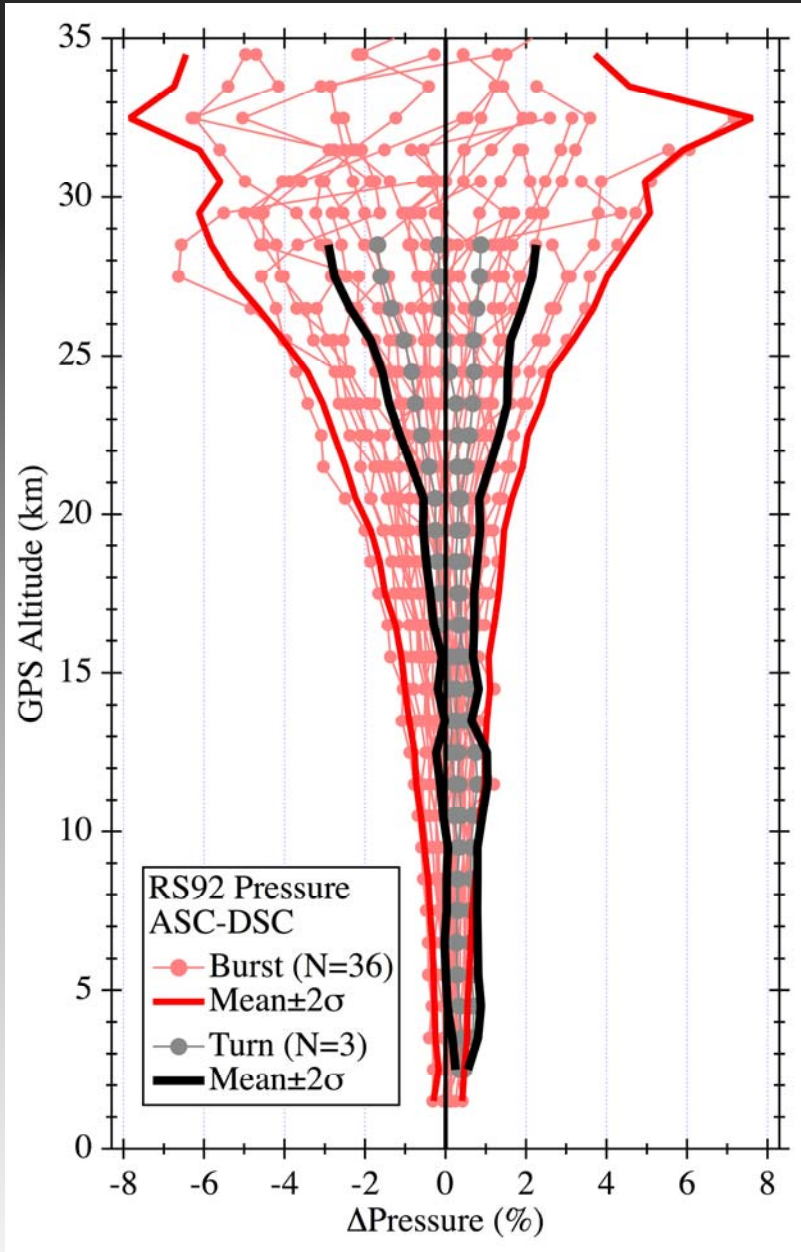
Differences between Ascent and Descent Data





Differences between Ascent and Descent Data:

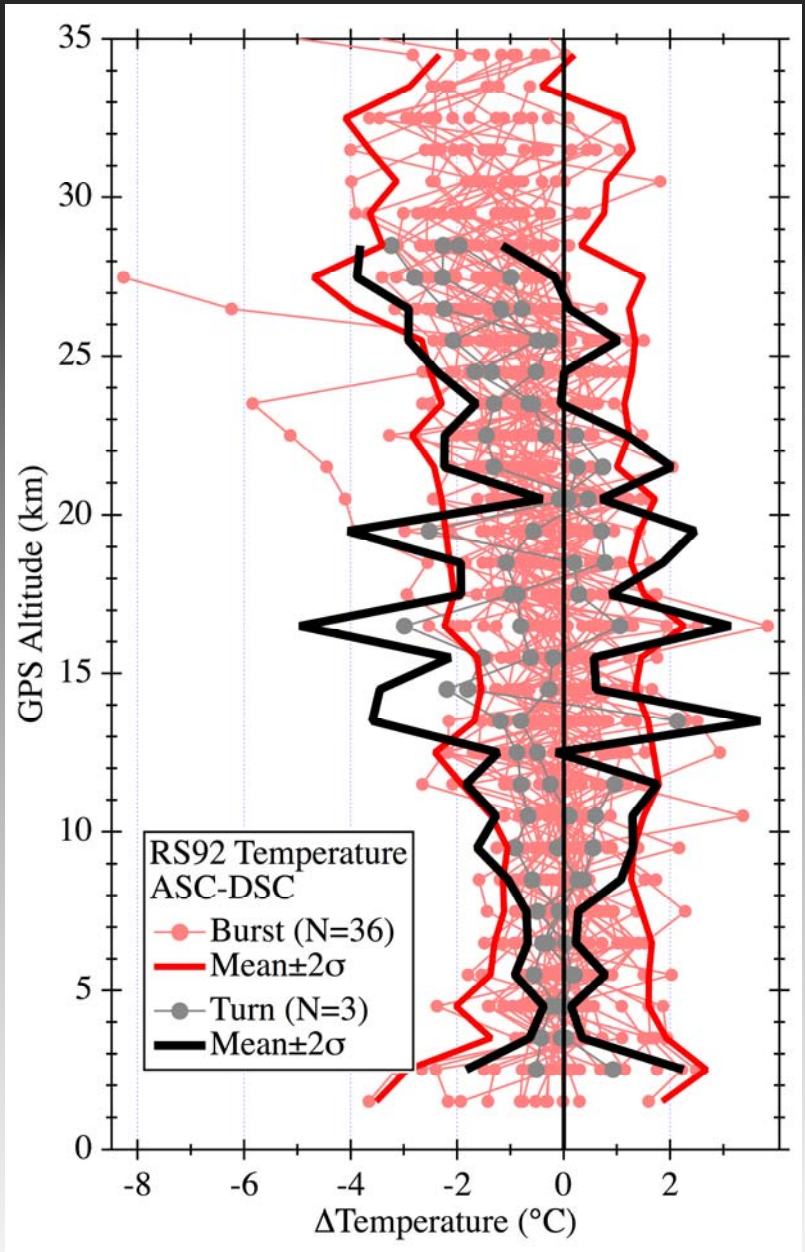
RS92 Pressure



Controlled Descent ("Turn") significantly reduces RS92 ascent-descent pressure differences

Differences between Ascent and Descent Data:

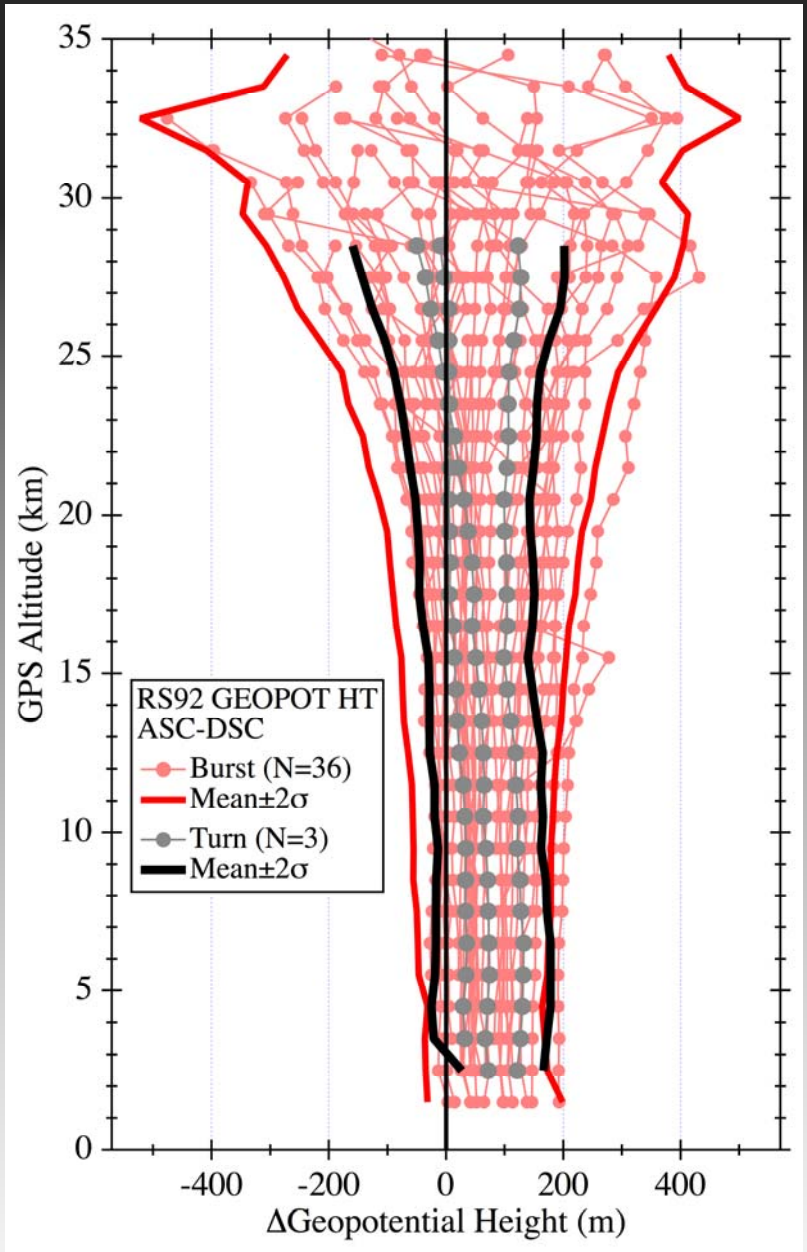
RS92 Temperature



Controlled Descent ("Turn") does not reduce RS92 ascent-descent temperature differences

Differences between Ascent and Descent Data:

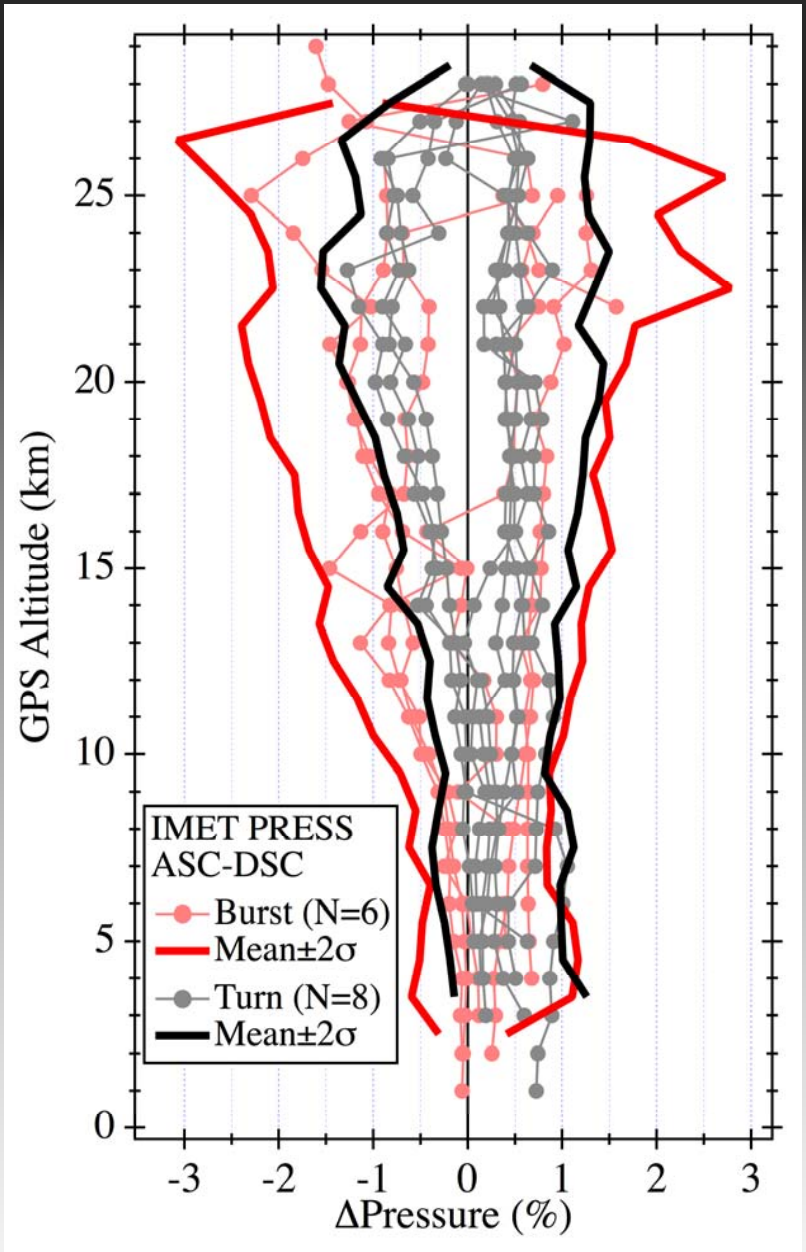
RS92 Geopot. Height



Controlled Descent ("Turn") significantly reduces RS92 ascent-descent geopotential height differences

Differences between Ascent and Descent Data:

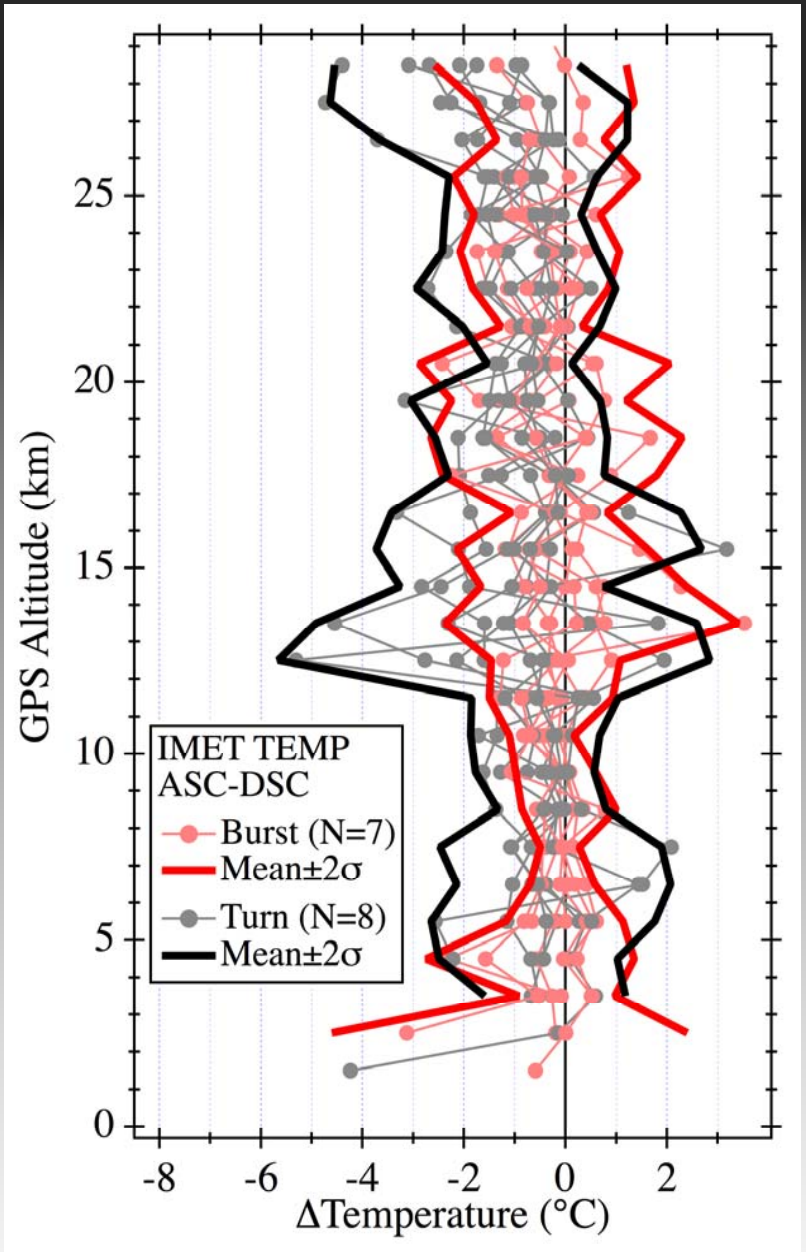
Imet Pressure



Controlled Descent ("Turn") significantly reduces Imet ascent-descent pressure differences

Differences between Ascent and Descent Data:

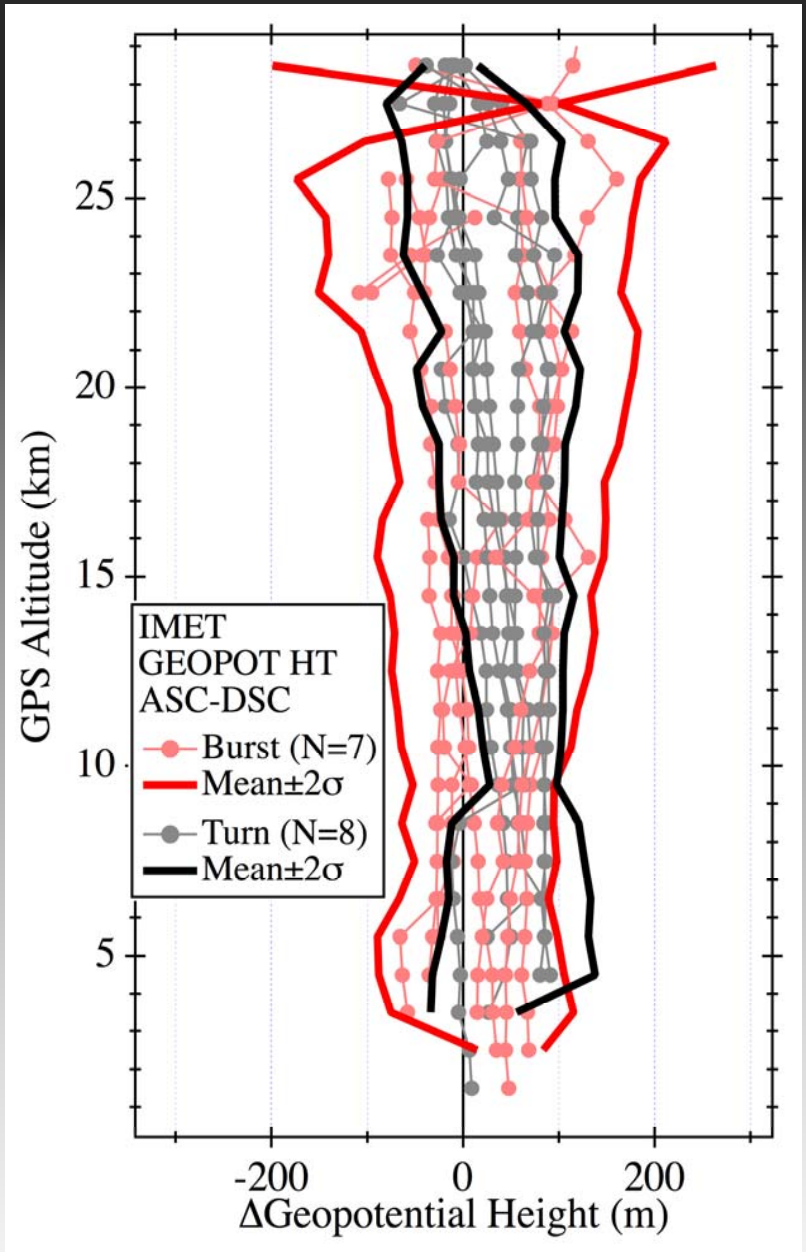
Imet Temperature



Controlled Descent ("Turn") does not reduce iMet ascent-descent temperature differences

Differences between Ascent and Descent Data:

Imet Geopot. Height



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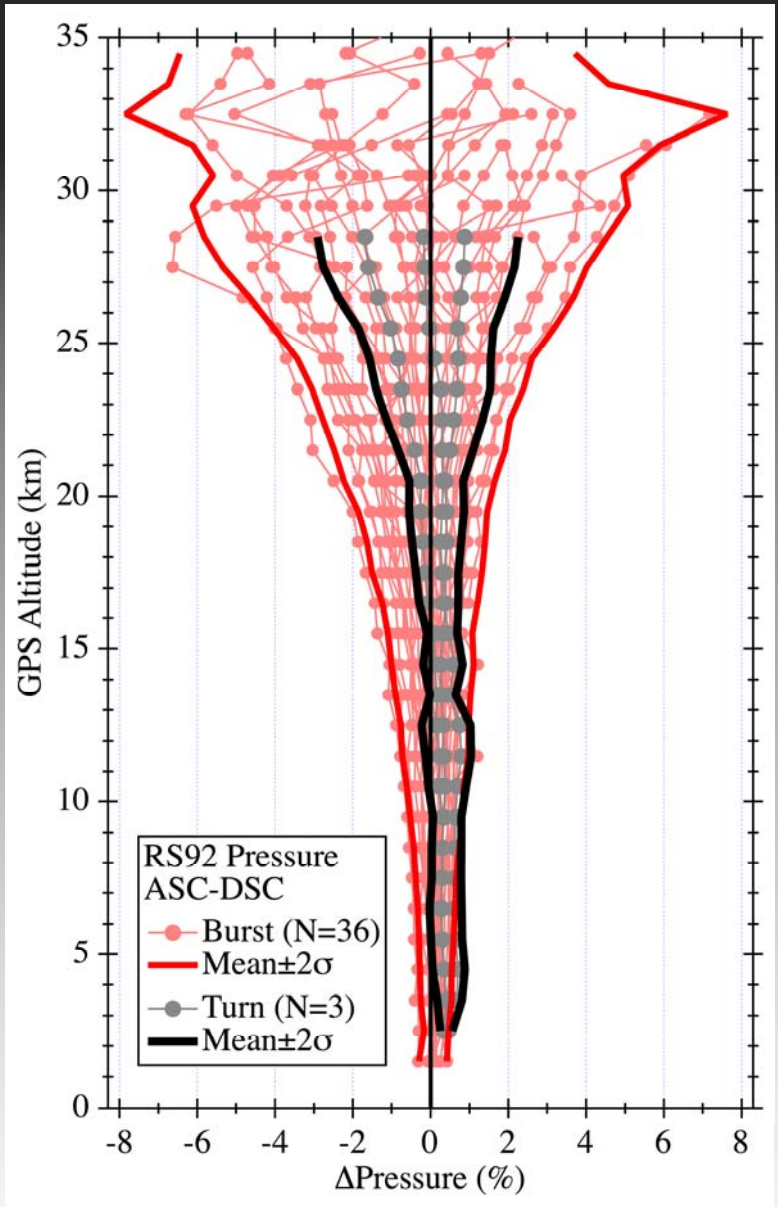
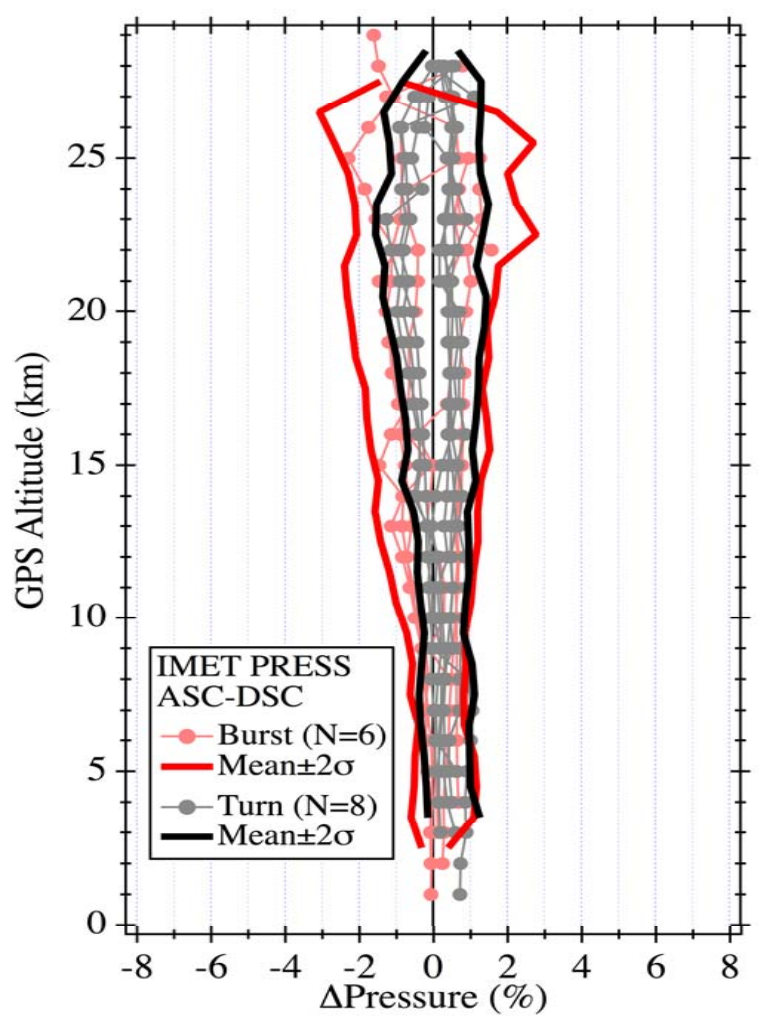
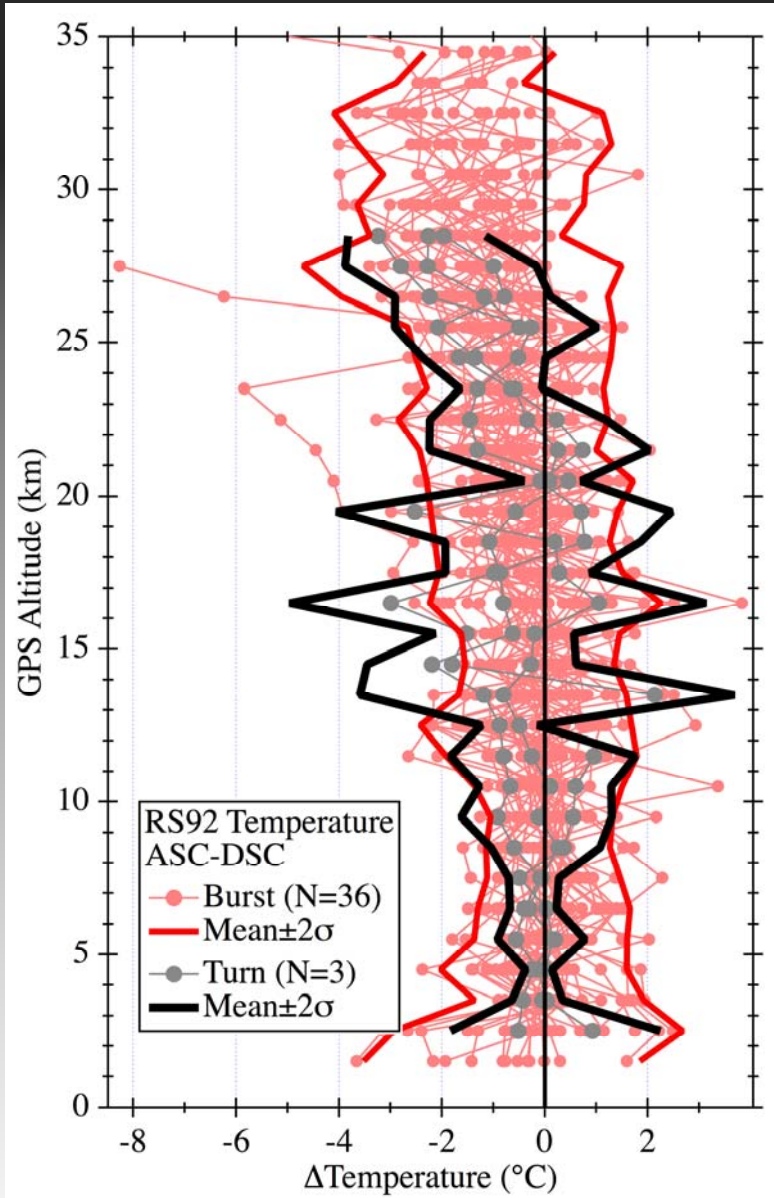
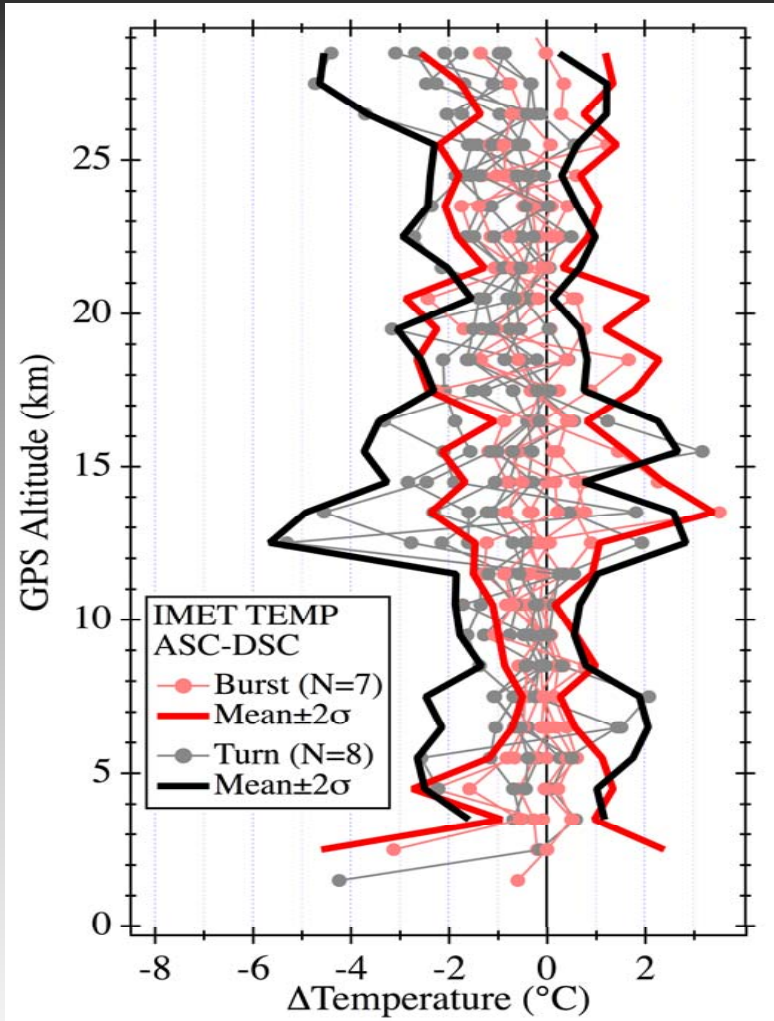
Ascent and Descent Pressure Differences



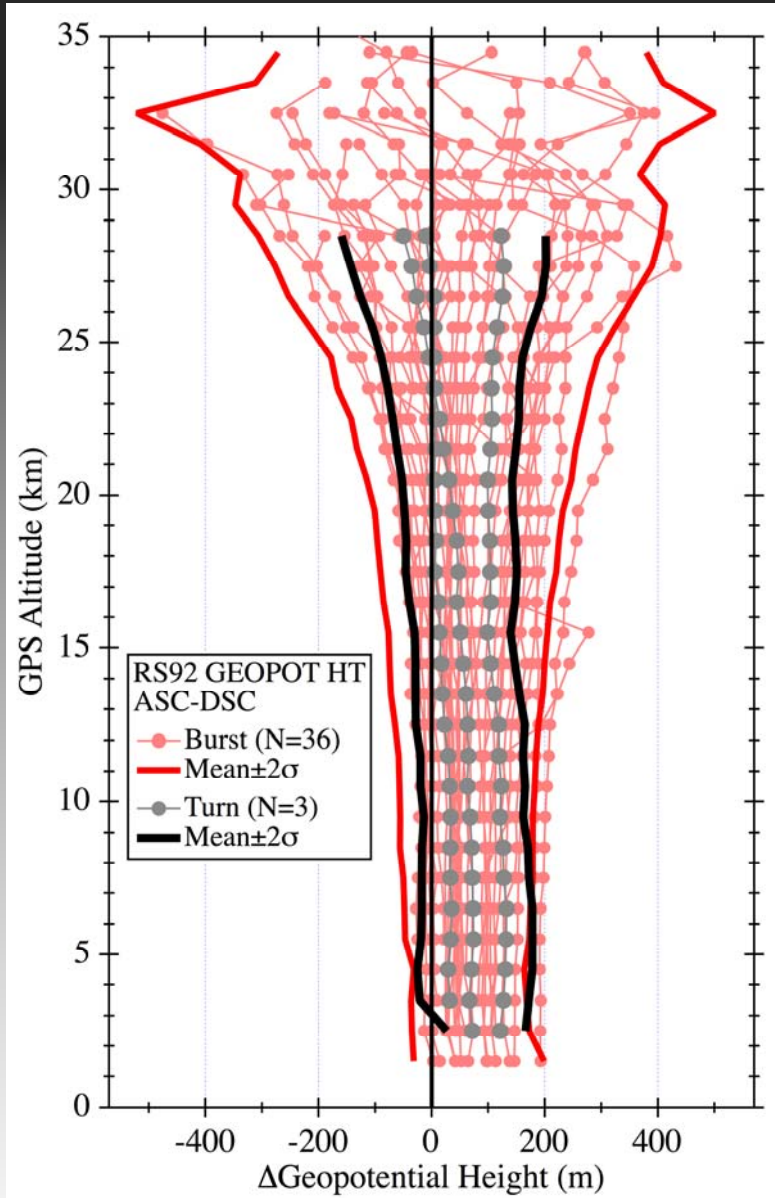


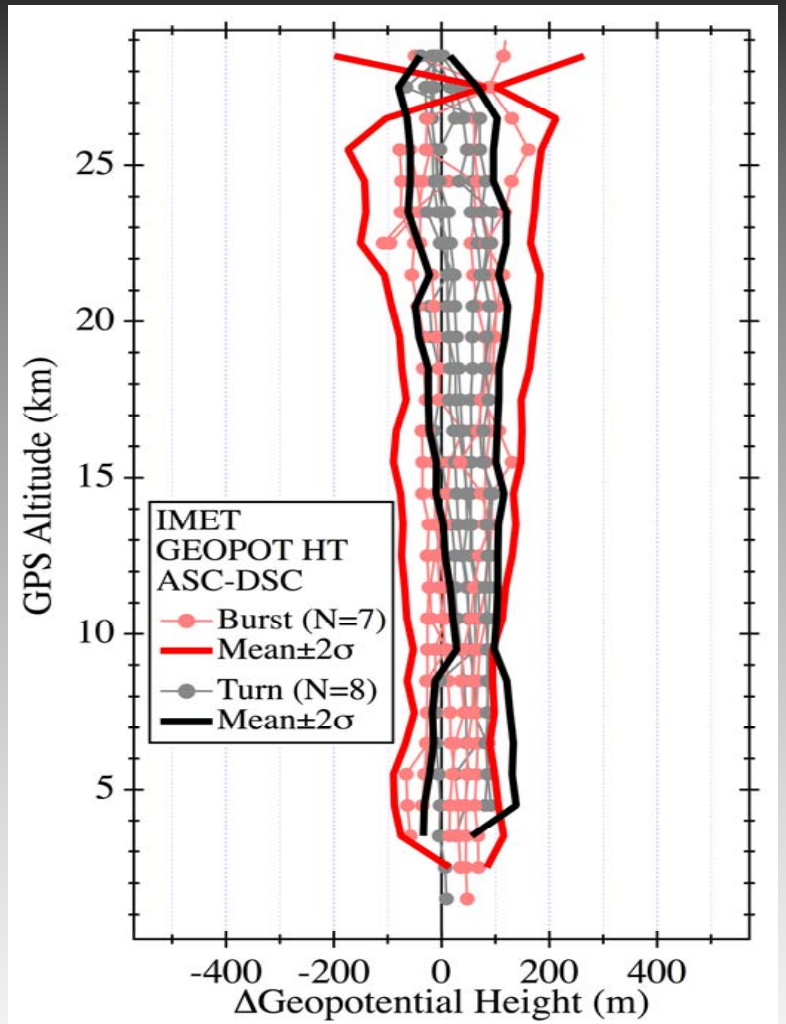
Ascent and Descent Temperature Differences





Ascent and Descent Geopot. Height Differences





Summary of Results

For both RS92 and Intermet radiosondes:

- Differences between ascent and descent pressure are significantly reduced by controlled descent
- Differences between ascent and descent temperature are not reduced by controlled descent
- Differences between ascent and descent geopotential height are significantly reduced by controlled descent

- Intermet Ascent-Descent differences for pressure and geopotential height are smaller than for the RS92
- Ascent-Descent temperature differences are similar for the two radiosonde types