

Aquarius Cal/Val Meeting
15 November 2011

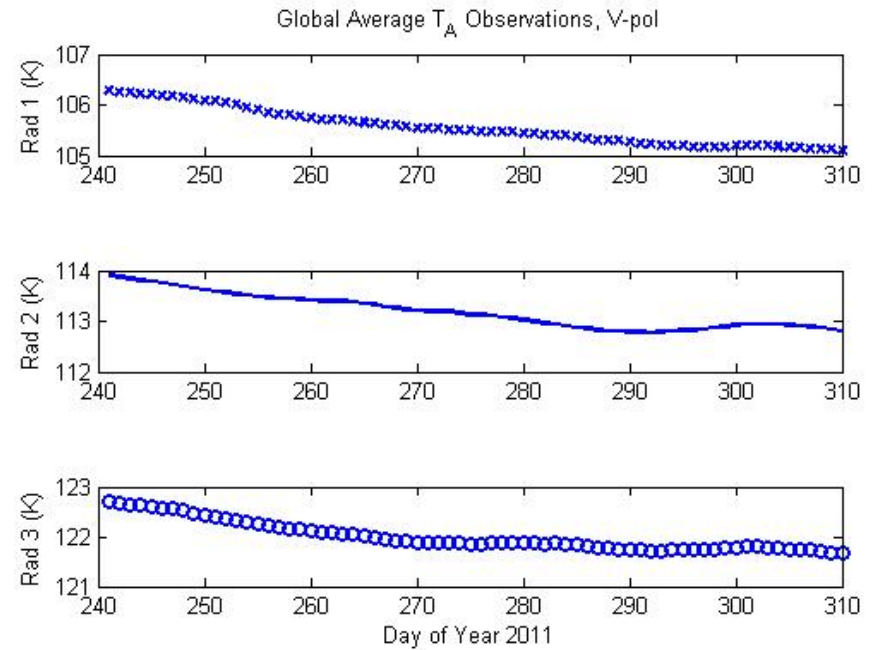
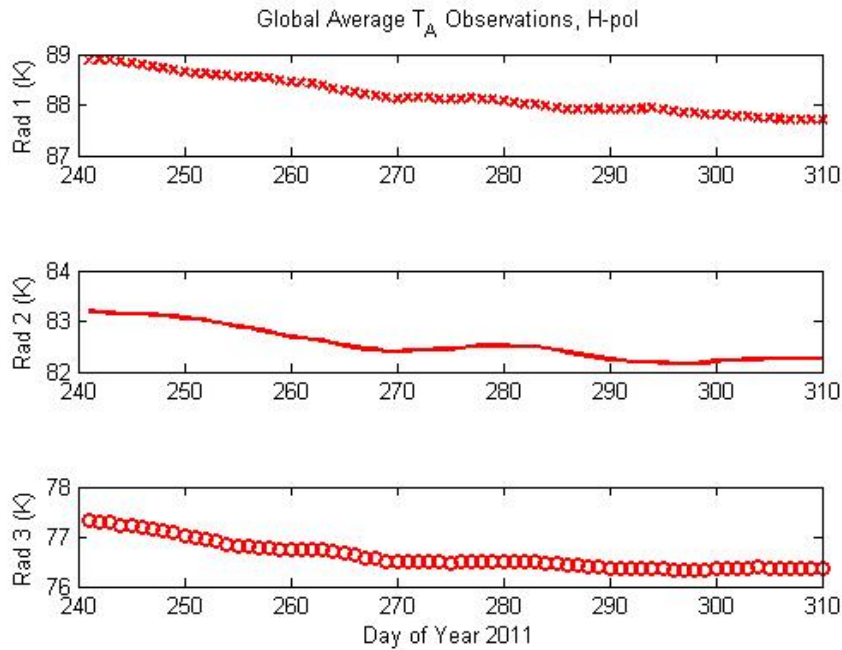
TA Calibration Bias and Trend Analysis

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Aquarius T_A Calibration

- Calibration for radiometer oceanic observations
 - Flags: Land fraction $> 0.01\%$, sea ice fraction $> 0.01\%$, $T_A < 60$ K or $T_A > 130$ K, RFI contamination
- Two calibration approaches
 - Global average
 - Vicarious cold calibration
- Statistics applied over 7 days of data for stability
 - Centered on reported day ± 3.5 days
 - Computed for T_A observations and simulations
- Full timeseries from 29 August to 6 November, 2011

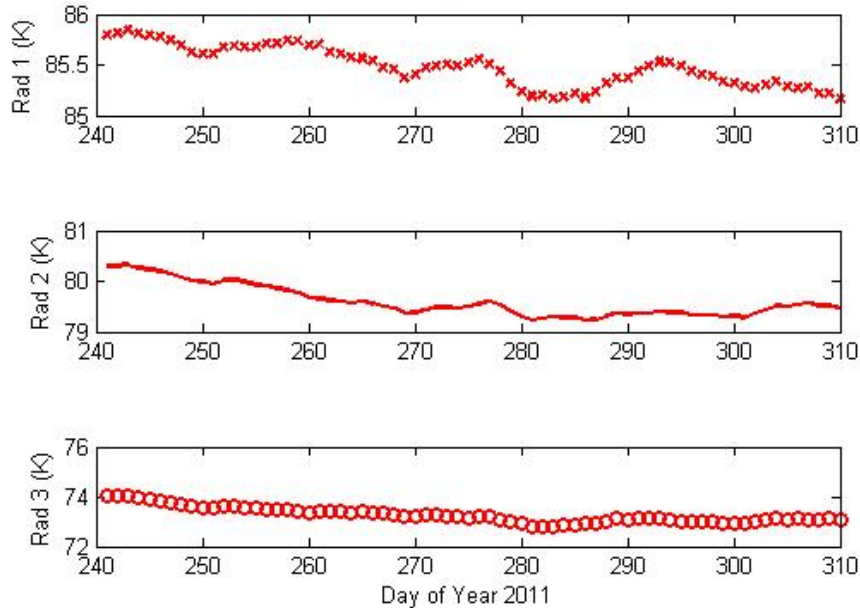
Global Average T_A



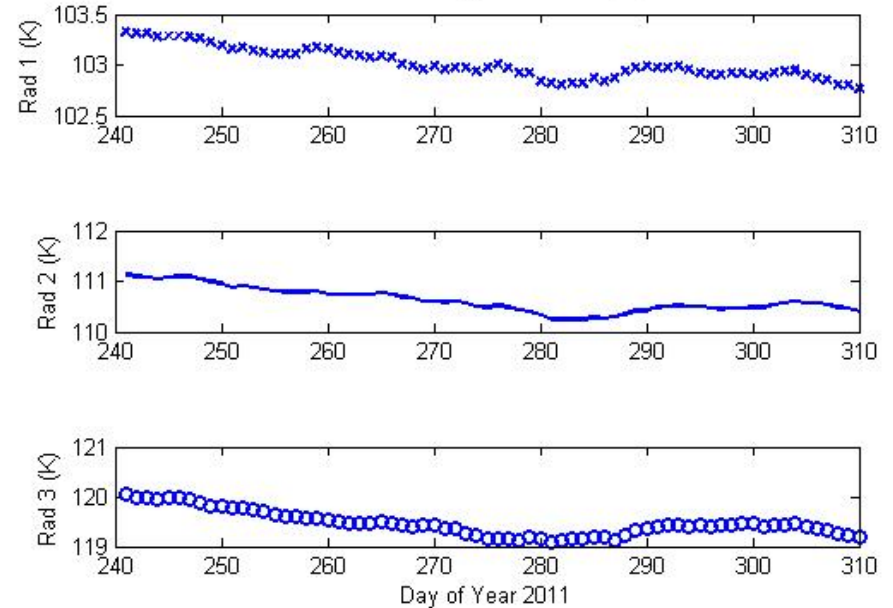
	Rad 1 (K)	Rad 2 (K)	Rad 3 (K)
Mean (H-pol)	88.2	82.5	76.6
Mean (V-pol)	105.6	113.2	122.0

Vicarious Cold T_A

Vicarious Cold T_A Observations, H-pol



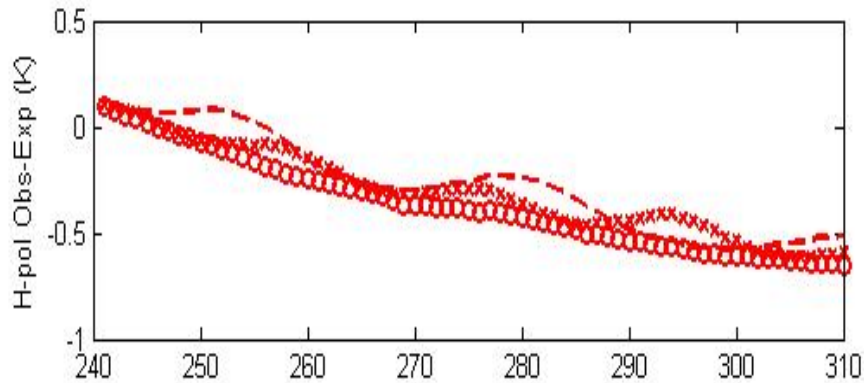
Vicarious Cold T_A Observations, V-pol



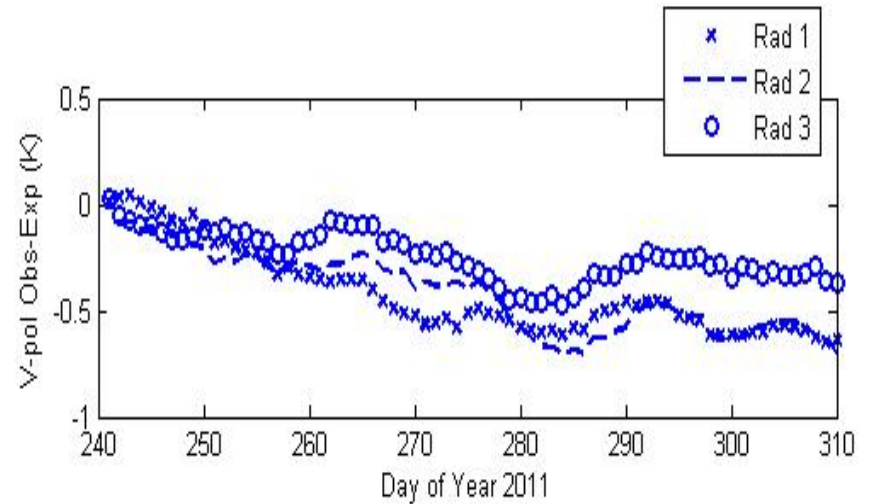
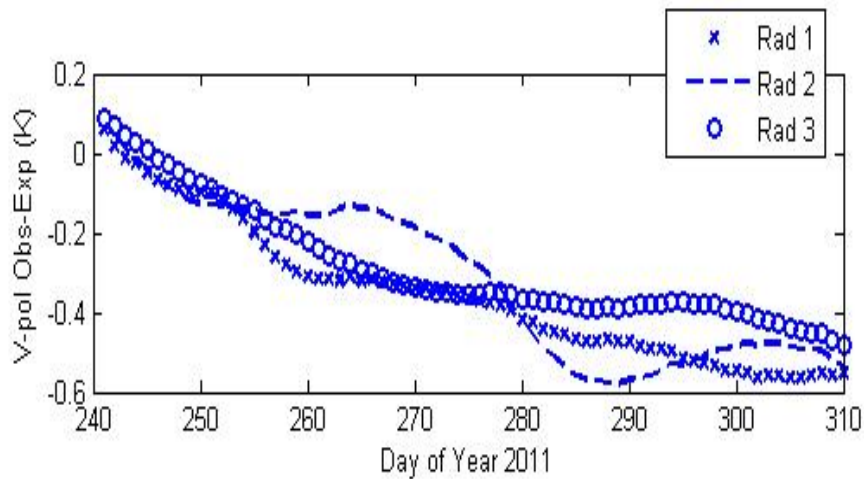
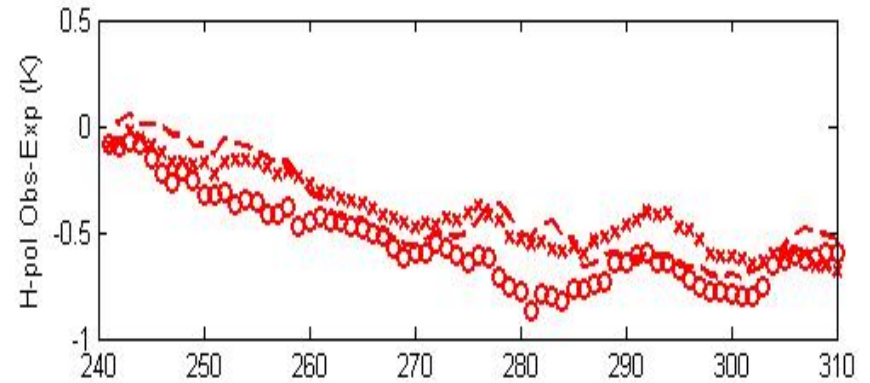
	Rad 1 (K)	Rad 2 (K)	Rad 3 (K)
Mean (H-pol)	85.5	79.6	73.3
Mean (V-pol)	103.0	110.6	119.5

Observed – Expected T_A

Global Average T_A Obs-Exp

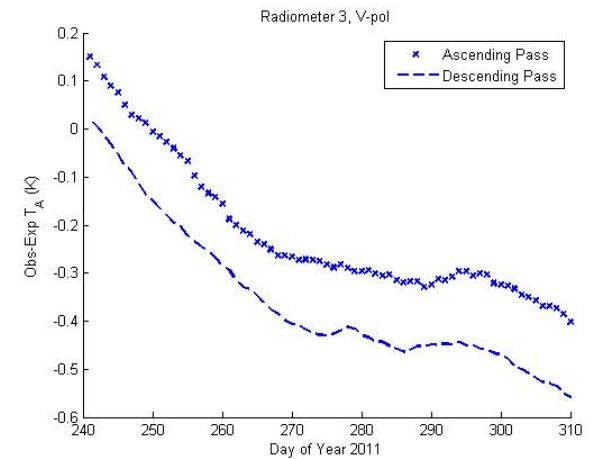
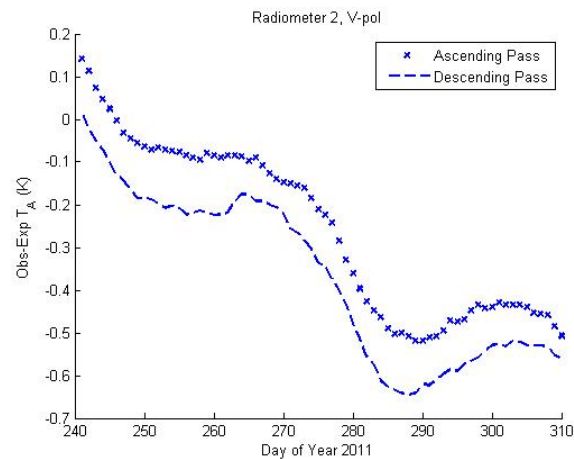
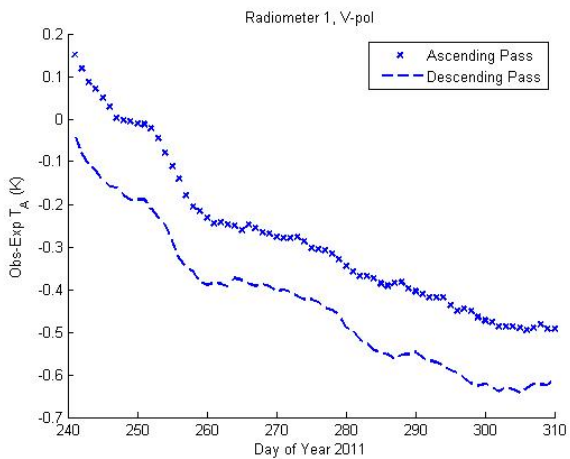
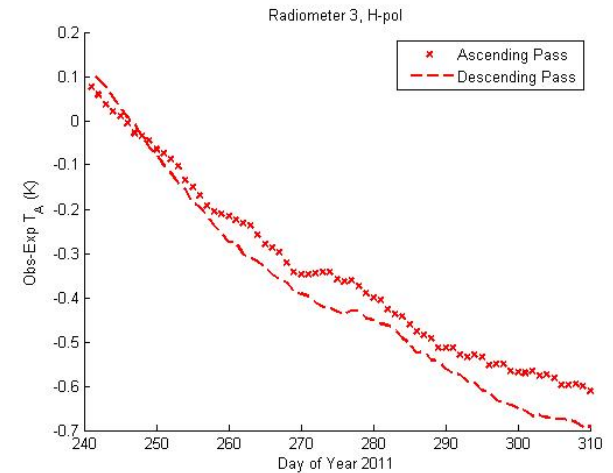
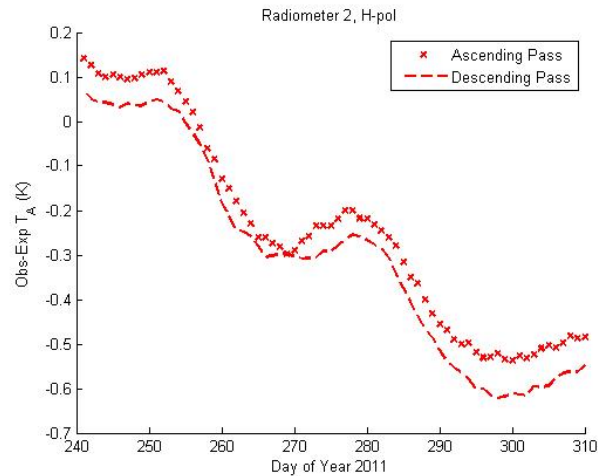
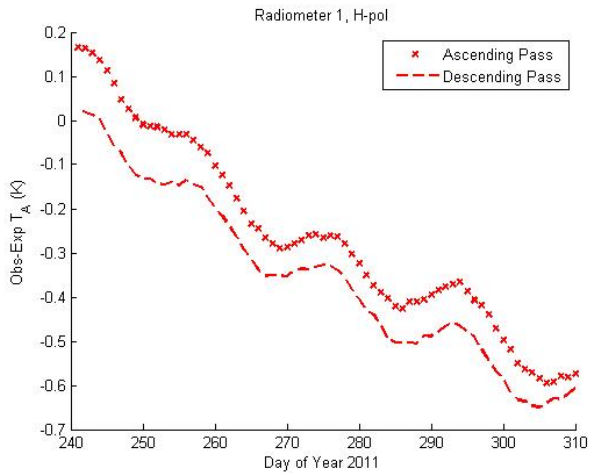


Vicarious Cold T_A Obs-Exp

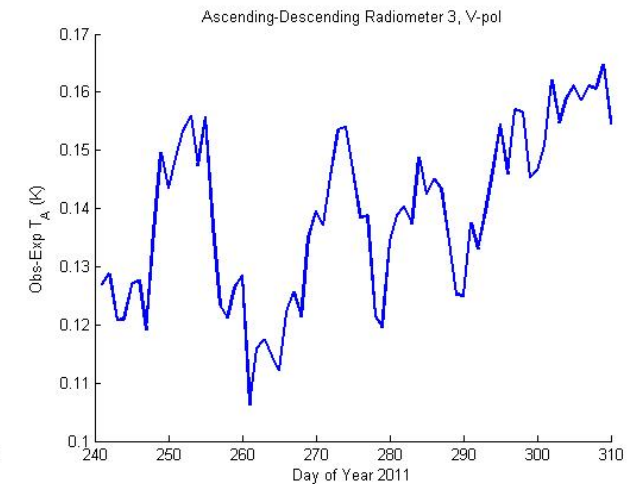
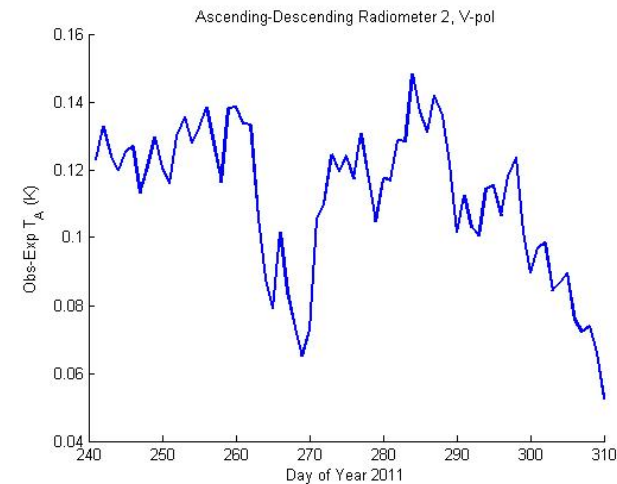
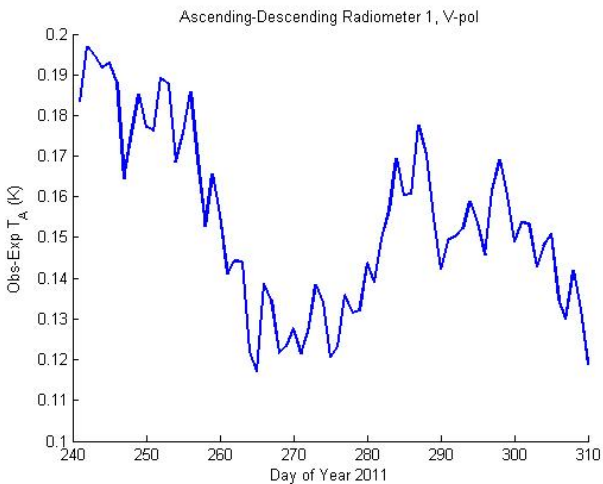
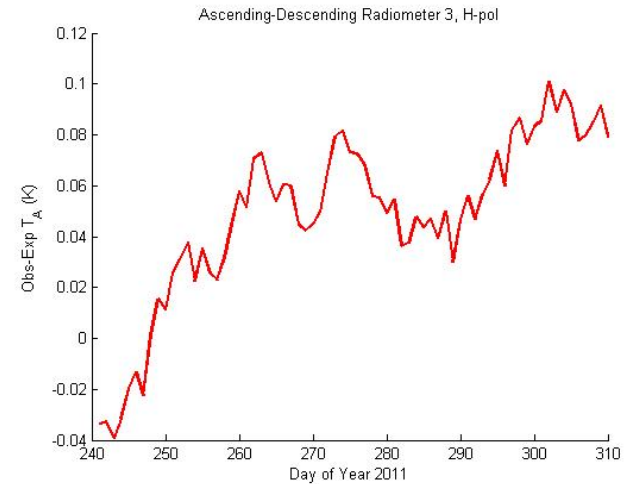
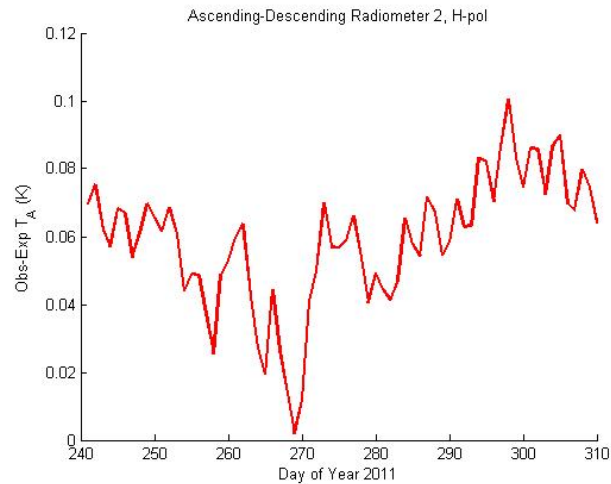
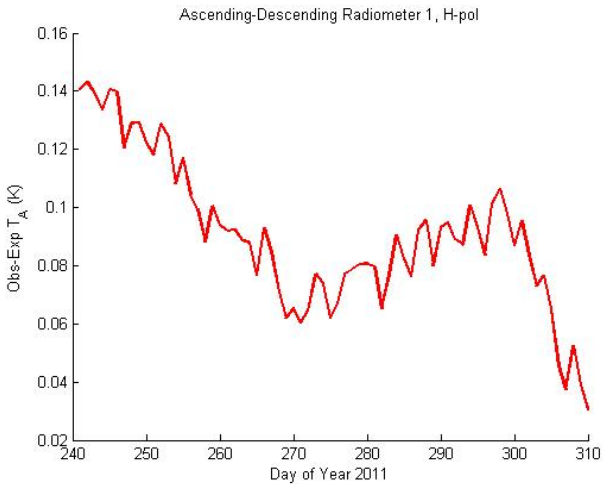


Pre-filtering: Ascending vs. Descending

Global Averages



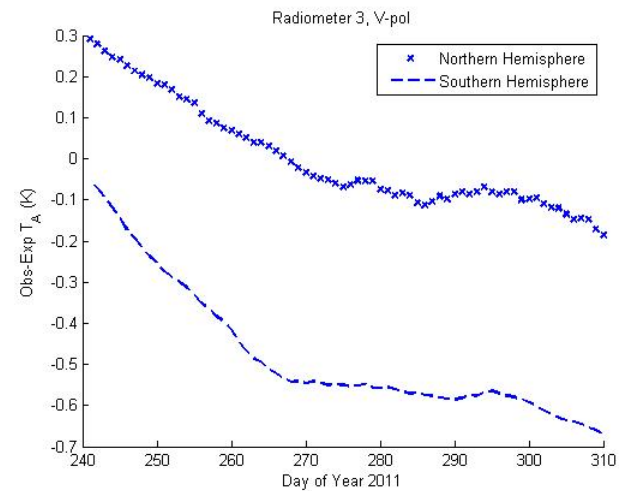
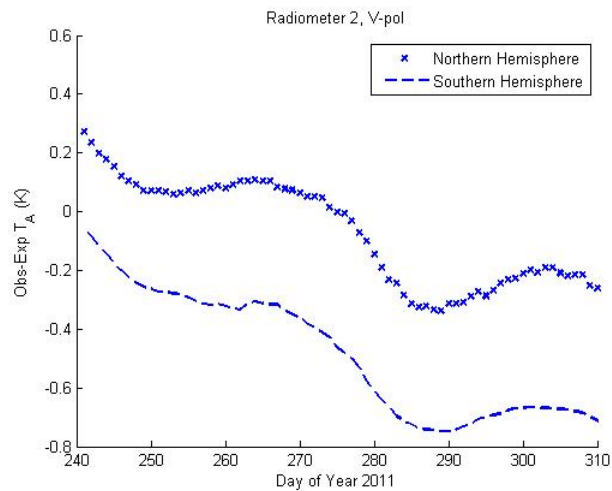
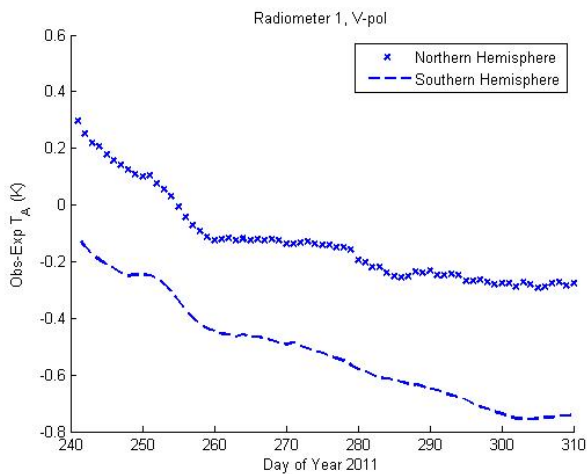
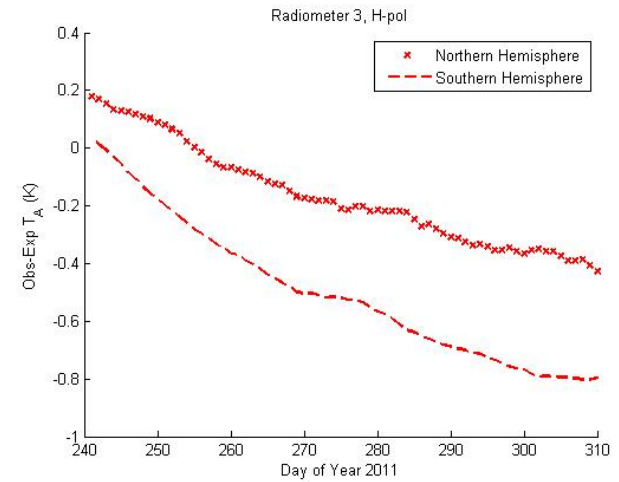
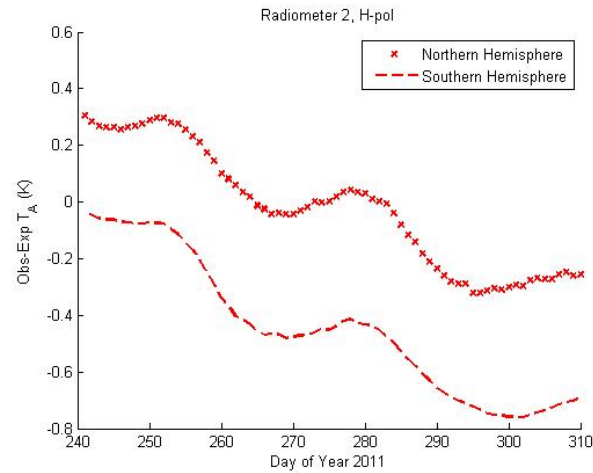
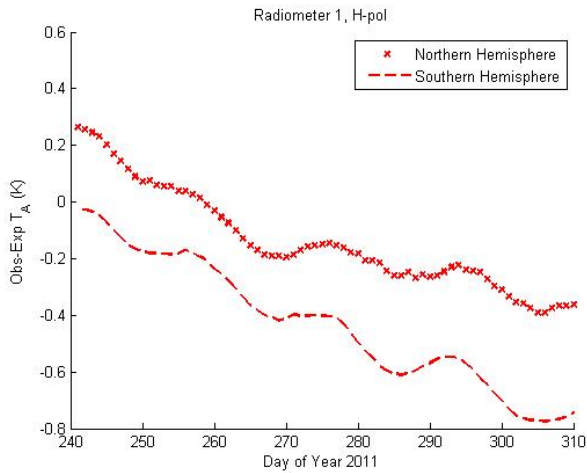
Pre-filtering: (Ascending – Descending) Global Avg. Differences



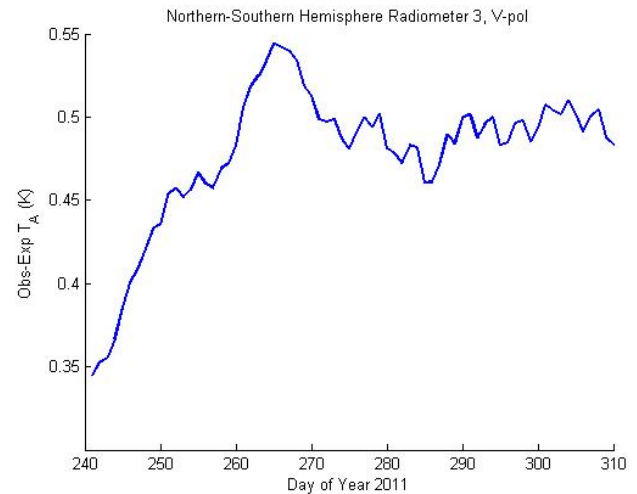
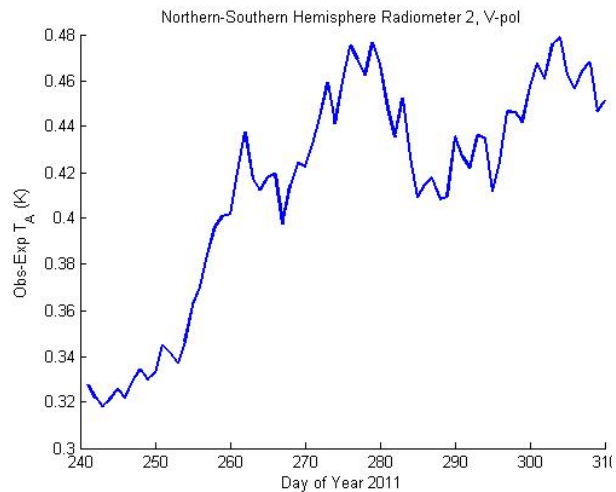
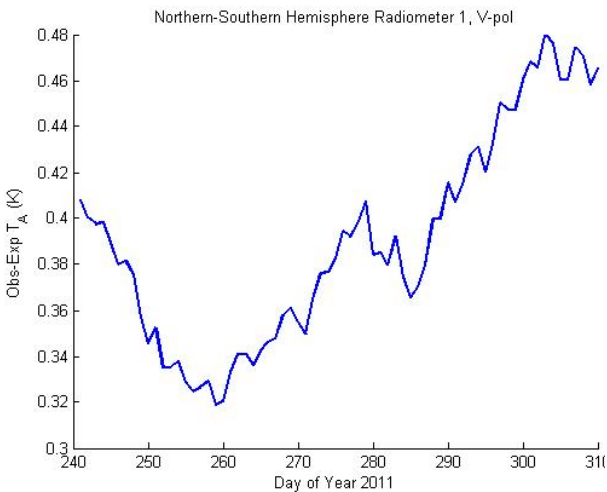
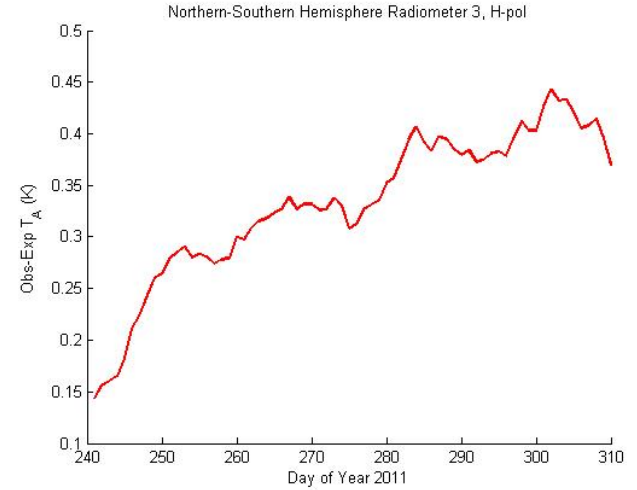
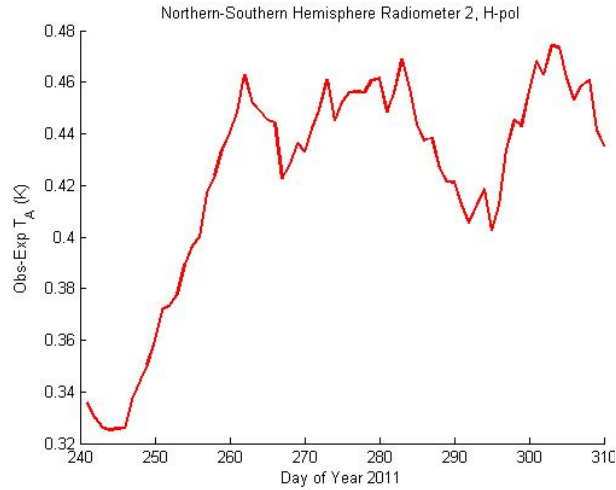
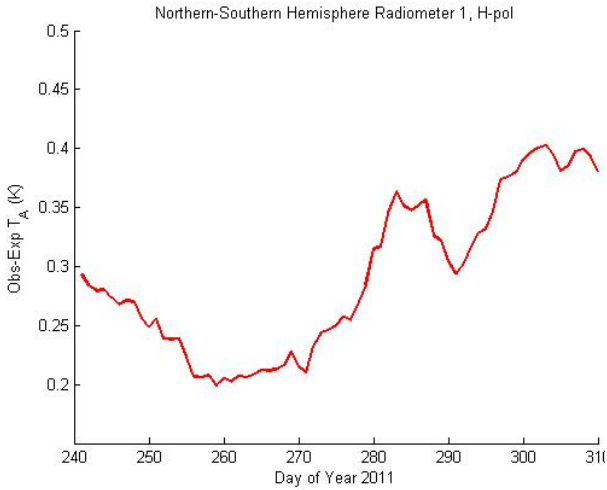
Pre-filtering: Ascending vs. Descending Global Averages

- (Obs–Exp) timeseries for ascending and descending passes follow same general trend, but have significant bias and trend differences
- Possible diagnostic tool for instrument errors
 - ND offset shouldn't vary with pass direction
 - Potential to separate errors in ND and in APC

Pre-filtering: Northern vs. Southern Hemisphere Averages



Pre-filtering: (Northern – Southern) Hemisphere Avg. Differences



Pre-filtering: Northern vs. Southern Hemisphere Averages

- (Obs–Exp) trends between Northern and Southern hemispheric averages track relatively well but diverge over time
- Possible seasonal hemispheric imbalance in model?
 - Smaller hemispheric differences in Northern Fall/Southern Spring
 - Now moving slowly into Northern Winter/Southern Summer
 - Requires longer time series to see if trends converge again in Northern Spring/ Southern Fall