Preliminary Estimates to Separate $dT_f$ and $dT_e$ in the $dT_a$
Update with V1.3.5

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dTa for Global, Asc and Dsc
(Jeff’s analysis)
Matrix manipulation

Transform: \( DD = dTa \times T \)
Regression: \( R = DD \backslash dTa \)
Inverse: \( dTa_r = DD \times R \) Expected to contain geophysical model error (\( dTe \)) but not instrument error (\( dTf \))

\[ dTa - dTa_r = dTf \]
\[ dTe = -dTa_r \]
Results 1V A,D
Matrix manipulation N.S

Transform: DD = dTa x T
Regression: R = DD\dTa
Inverse: dTa_r = DD*R Expected to contain geophysical model error (dTe) but not instrument error (dTf)
dTa – dTa_r = dTf
dTe = -dTa_r
Results 1V N,S
Results 1V dTf

Estimated dTf for Two Methods, Channel 1V
Results 2V  A,D
Results 1V N,S

G,N,S, Channel 2V

G-N, G-S, Channel 2V

dTe for G,N,S, Channel 2V

dTf for G,N,S, Channel 2V
Results 2V dTf

Estimated dTf for Two Methods, Channel 2V
Results 2V dTf

Scatterplot dTf for Two Methods, Channel 2V

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Results 3V A,D

G,A,D, Channel 3V

G-A, G-D, Channel 3V

dTe for G,A,D, Channel 3V

dTf for G,A,D, Channel 3V
Results 3V N.S
Results 3V dTf

Estimated dTf for Two Methods, Channel 3V
Results 3V dTf

Scatterplot dTf for Two Methods, Channel 3V
Remarks, Conclusions and Recommendations

• Very similar results estimated dTf using A-D and N-S hemispheres.
• Similar results (not shown) can be derived from combining various quadrants NA, ND, SA, SD, but less consistent.
• **Summary conclusion** is the it is possible to make a very good estimate for dTf, separate from dTe, for global(G), ascending (A) and descending (D) passes.
• **Recommendation:**
  – Use just the G,A,D solution
  – Correct for dTf as either a gain or offset
  – Leave dTe portion uncorrected (geophysical error) in the radiometer calibration.
• Implementation details need to be worked out.