

# Separating Instrument for Model Errors

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Understanding  
the Interaction  
Between Ocean  
Circulation, the  
Water Cycle,  
and Climate by  
Measuring  
Ocean Salinity

**Analysis period: 8/25/2011-11/25/2012**

**Aquarius/SAC-D**



**Cal-Val Virtual Workshop WebMeeting**

**29-30 January /2013**

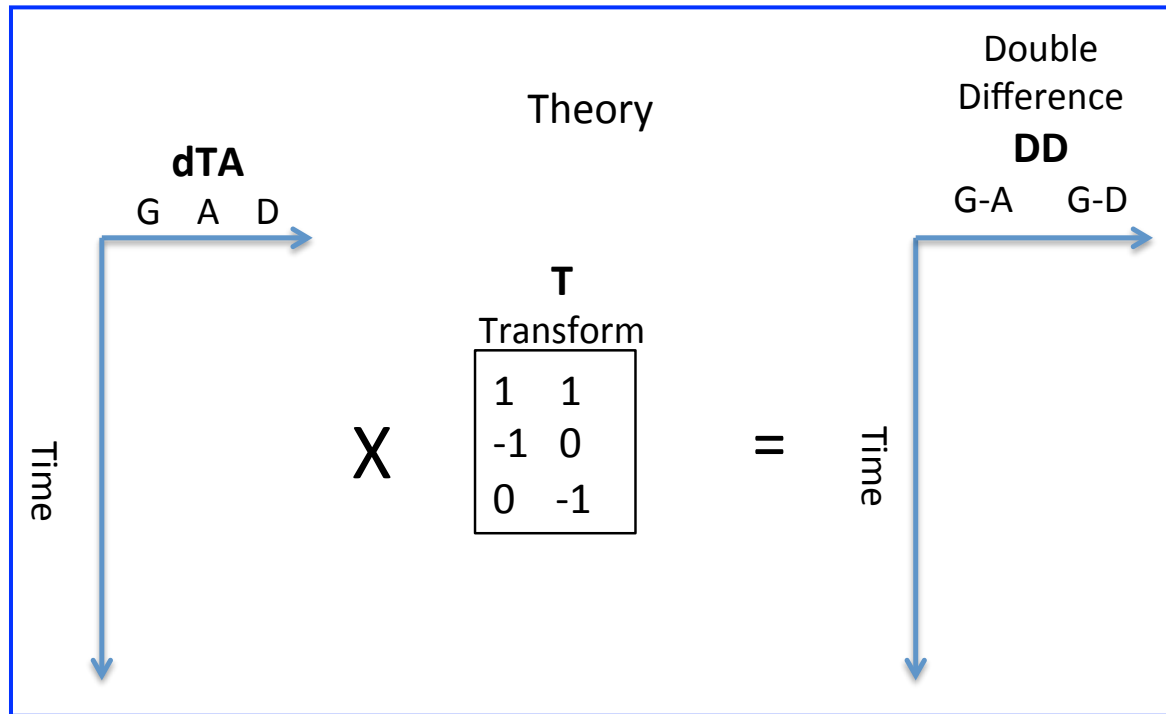
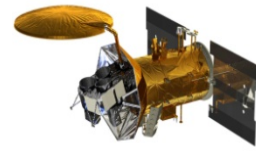
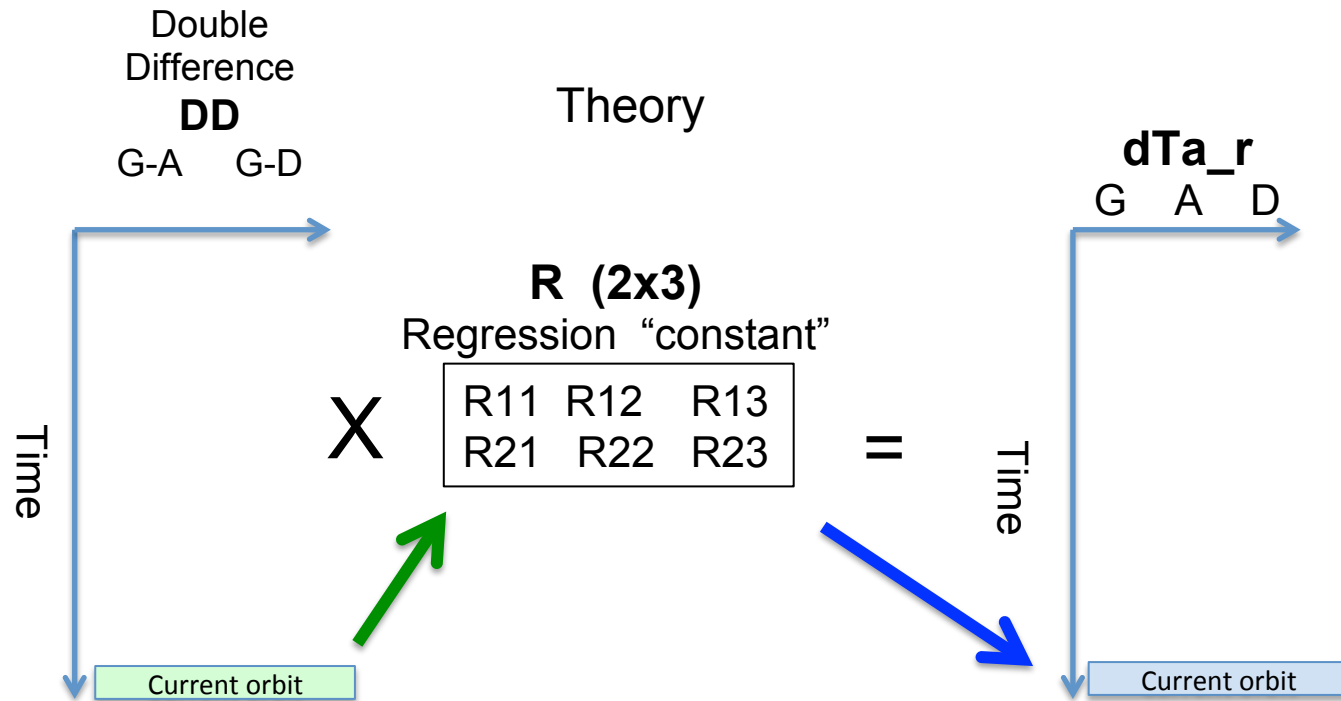
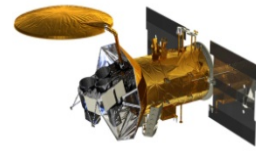


Figure Schematic of the matrices and computations for G, A, D as described in text.

1. Transform:  $DD = dTA \times T$
2. Regression:  $R = DD \backslash dTA$
3. Inverse:  $dTA_r = DD * R$  Expected to contain geophysical model error ( $dTA_{exp}$ ) but not instrument error ( $dTf$ )
4.  $dTA - dTA_r = dTf$
5.  $dTA_{exp} = -dTf$



1. Transform:  $DD = dTa \times T$
2. Regression:  $R = DD \backslash dTa$
3. Inverse:  $dTa\_r = DD * R$  Expected to contain geophysical model error (dTe) but not instrument error (dTf)
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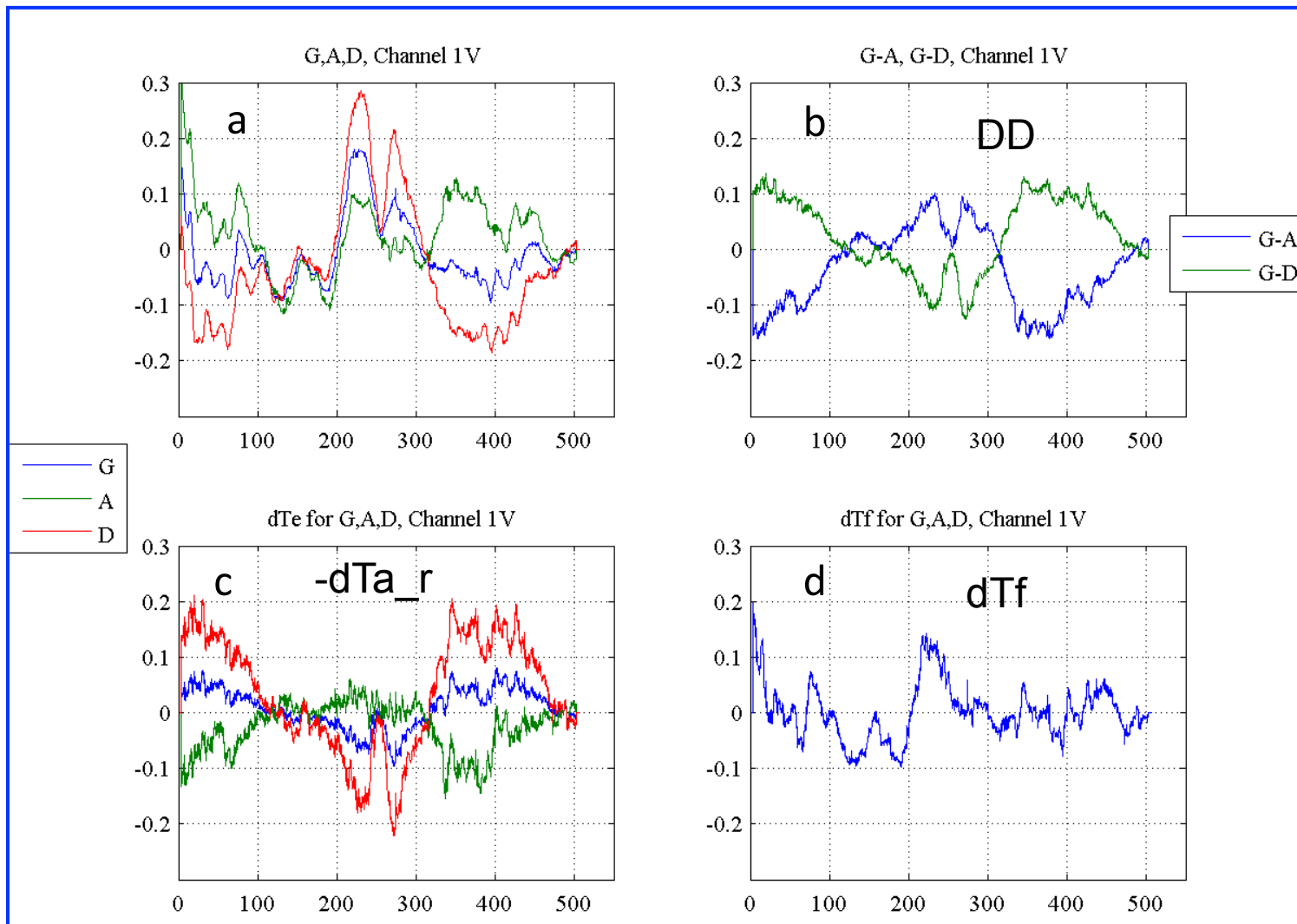
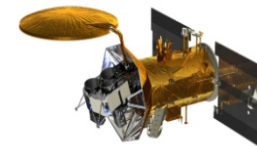


Figure (a) Example dTA time series for G, A, D, x-axis in days, y-axis in K. (b) DD values. (c)  $dT_{a\_exp}$ . (d)  $dT_f$ .

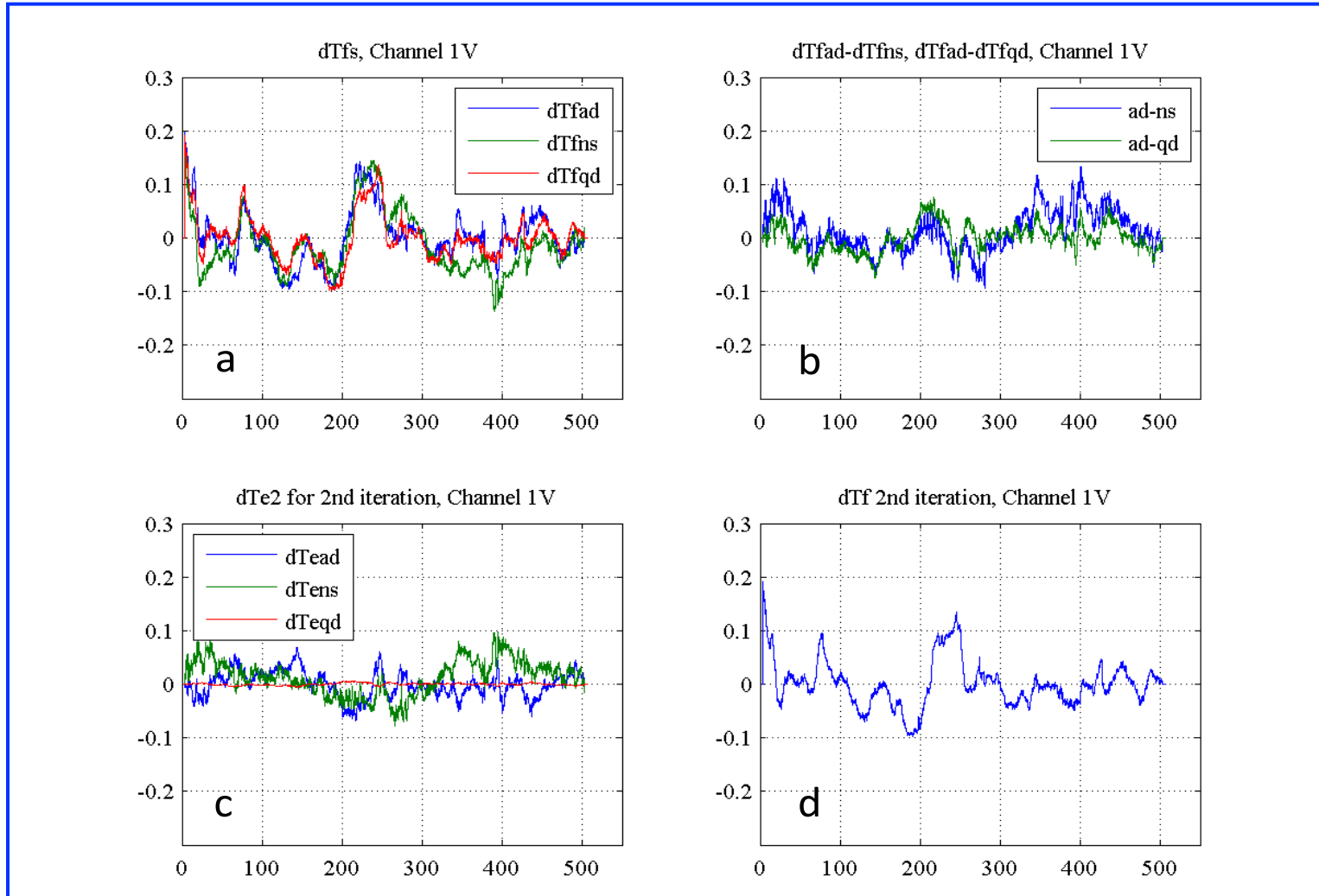
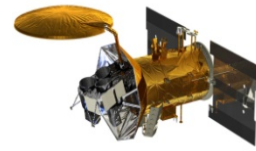


Figure Results for the second iteration (a) dTf from the three zone combinations, (b) DD values, (c) residual non-instrument errors, (d) final dTf instrument error estimate. x-axis in days, y-axis in K.

# Computed dTf, all Six Channels: Instrument Error

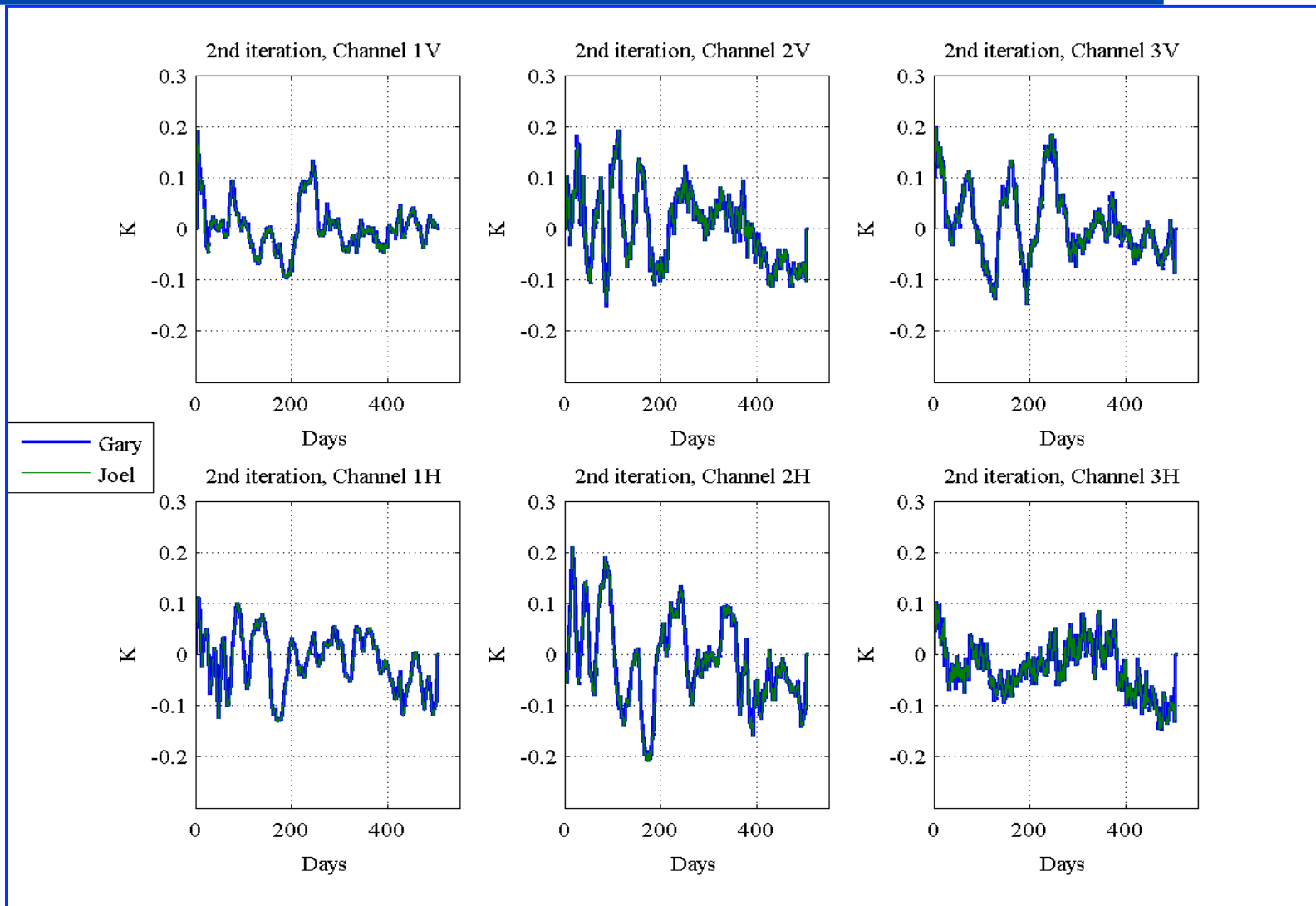
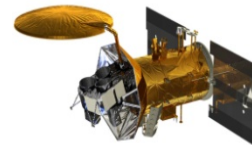


Figure The estimated dTf instrument bias over time for all six radiometer channels.

# Computed dTe, all Six Channels: Geophysical Error

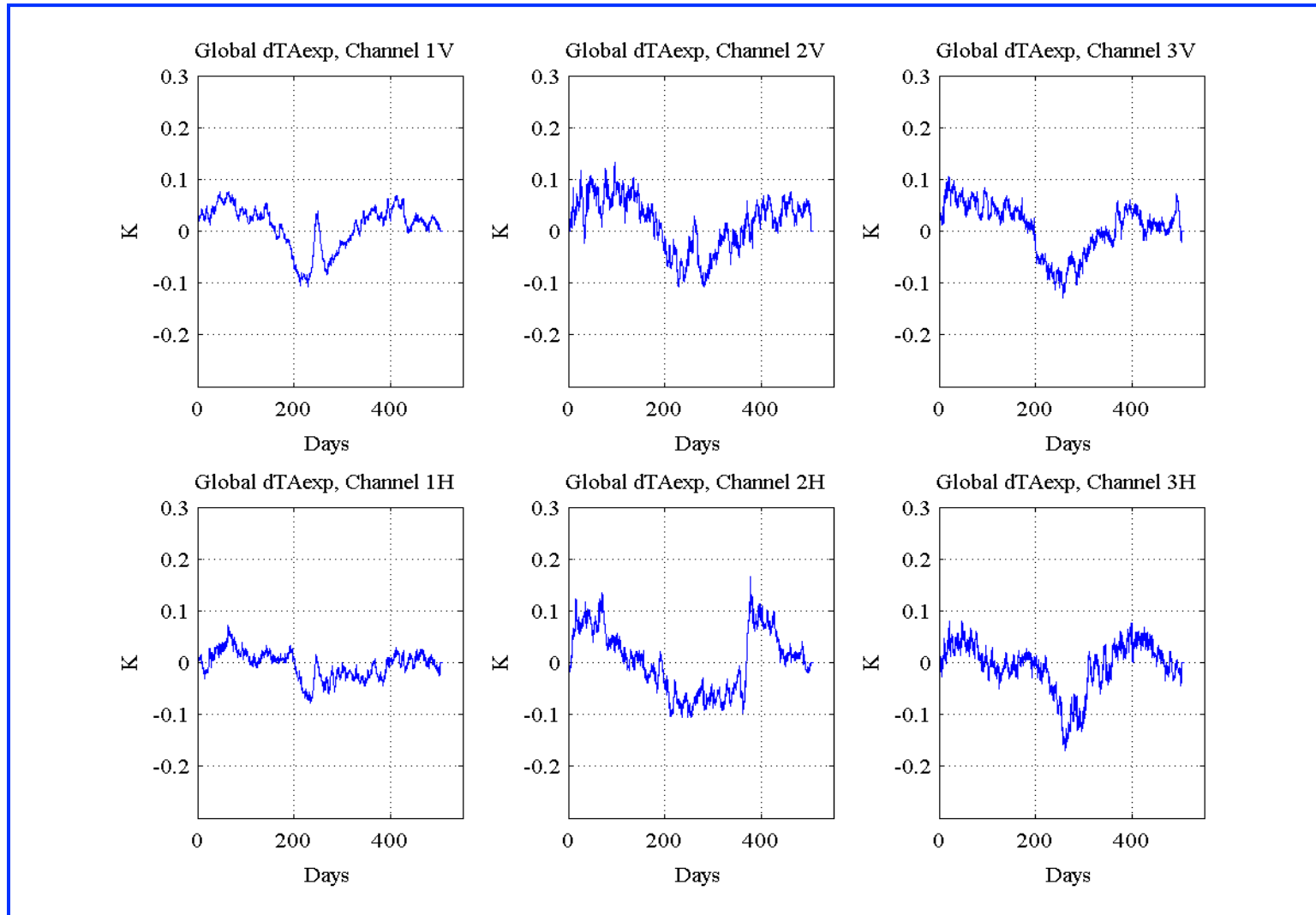
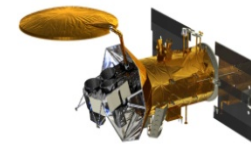


Figure 5 Estimated global average residual geophysical error ( $dTA_{exp}$ ) for all six radiometer channels.