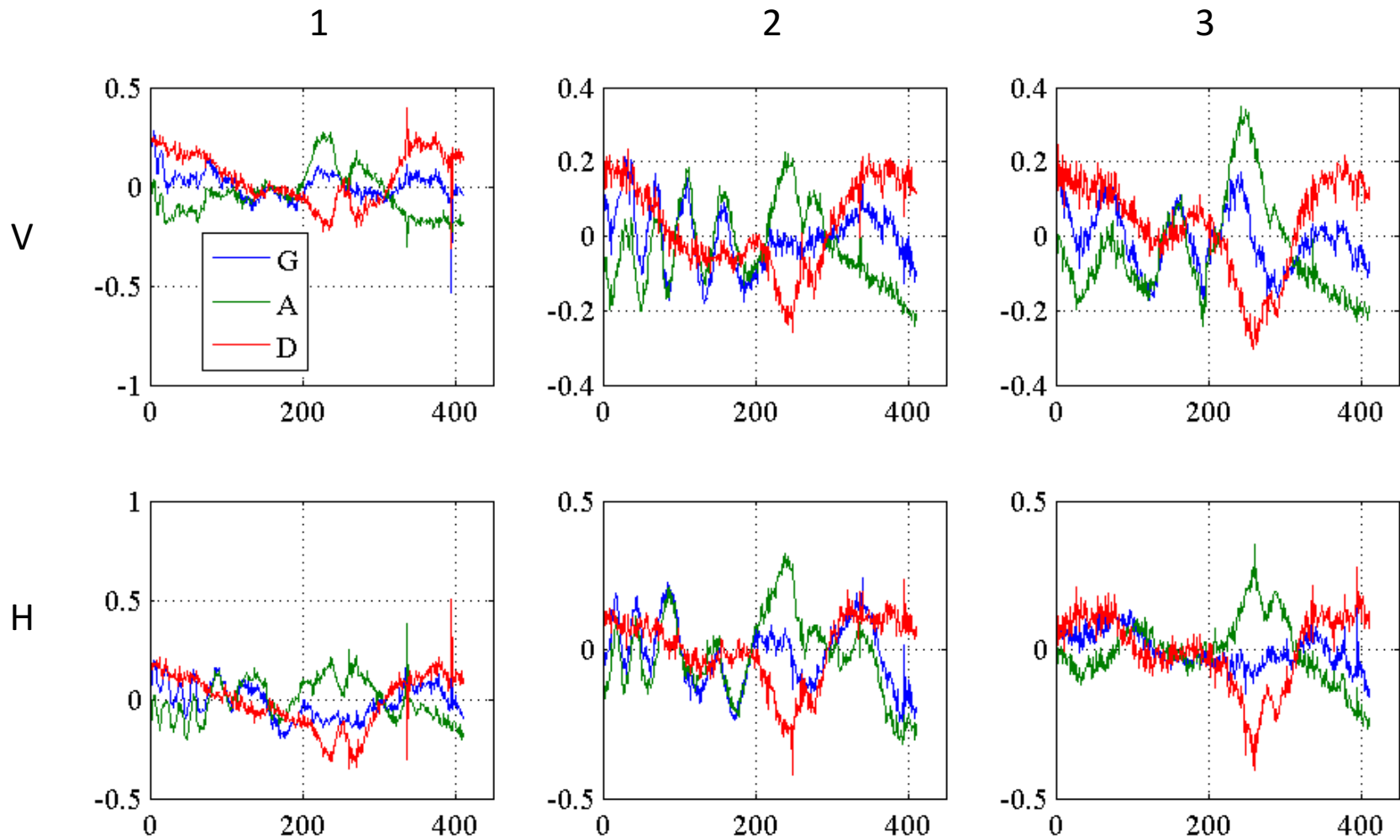


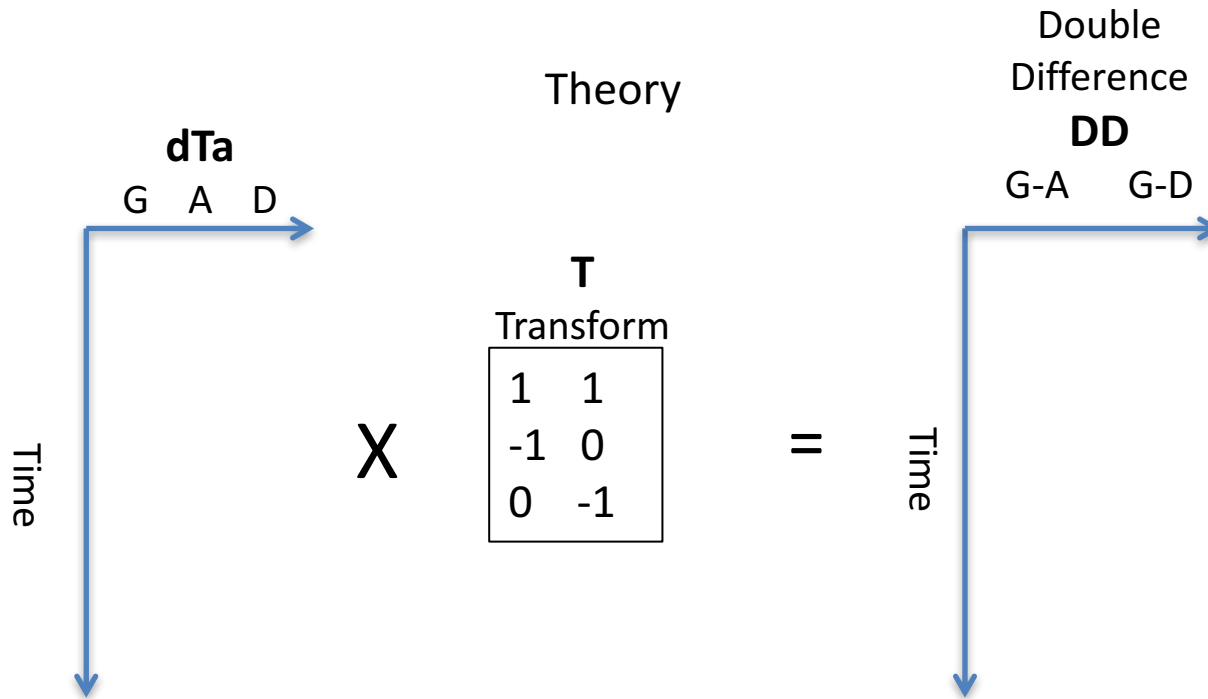
Preliminary Estimates to Separate dTf and dTe in
the dTa
Update with V1.3.5

Gary Lagerloef
31 Oct 2012

dTa for Global, Asc and Dsc (Jeff's analysis)



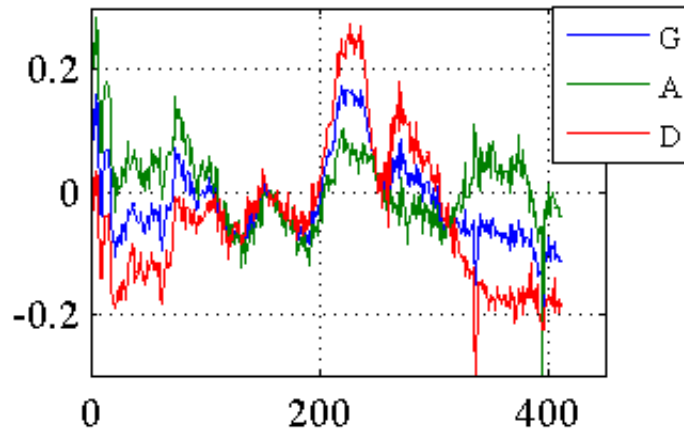
Matrix manipulation



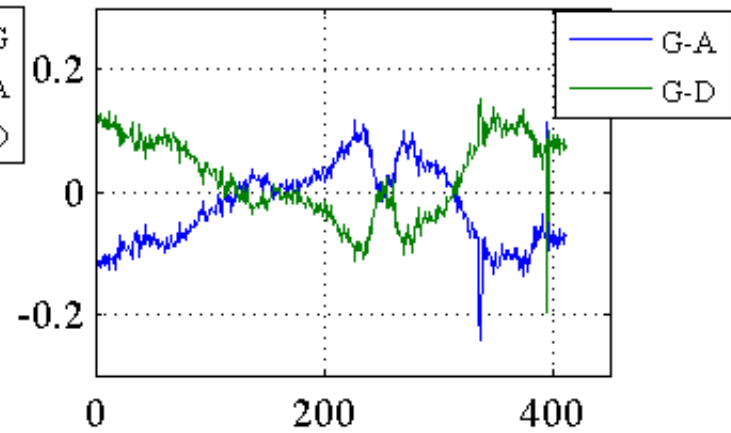
- Transform: $DD = dTa \times T$
- Regression: $R = DD \backslash dTa$
- Inverse: $dTa_r = DD * R$ Expected to contain geophysical model error (dTe) but not instrument error (dTf)
- $dTa - dTa_r = dTf$
- $dTe = -dTa_r$

Results 1V A,D

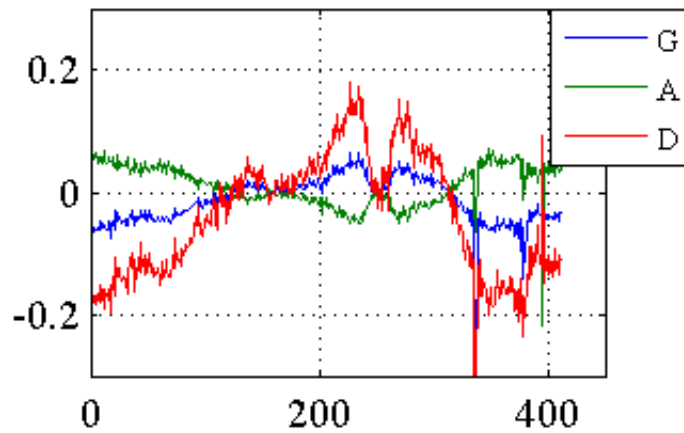
G,A,D, Channel 1V



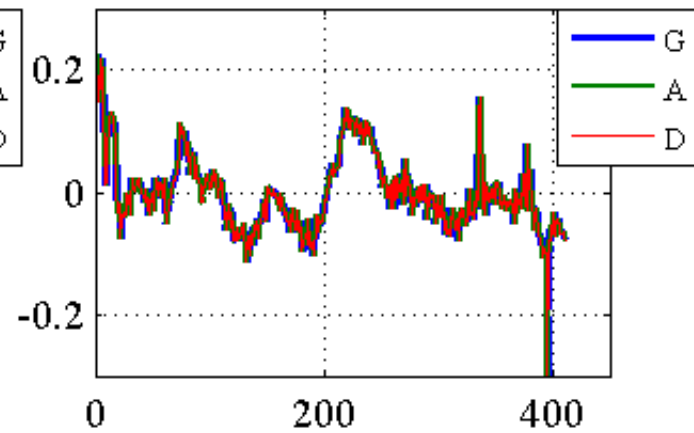
G-A, G-D, Channel 1V



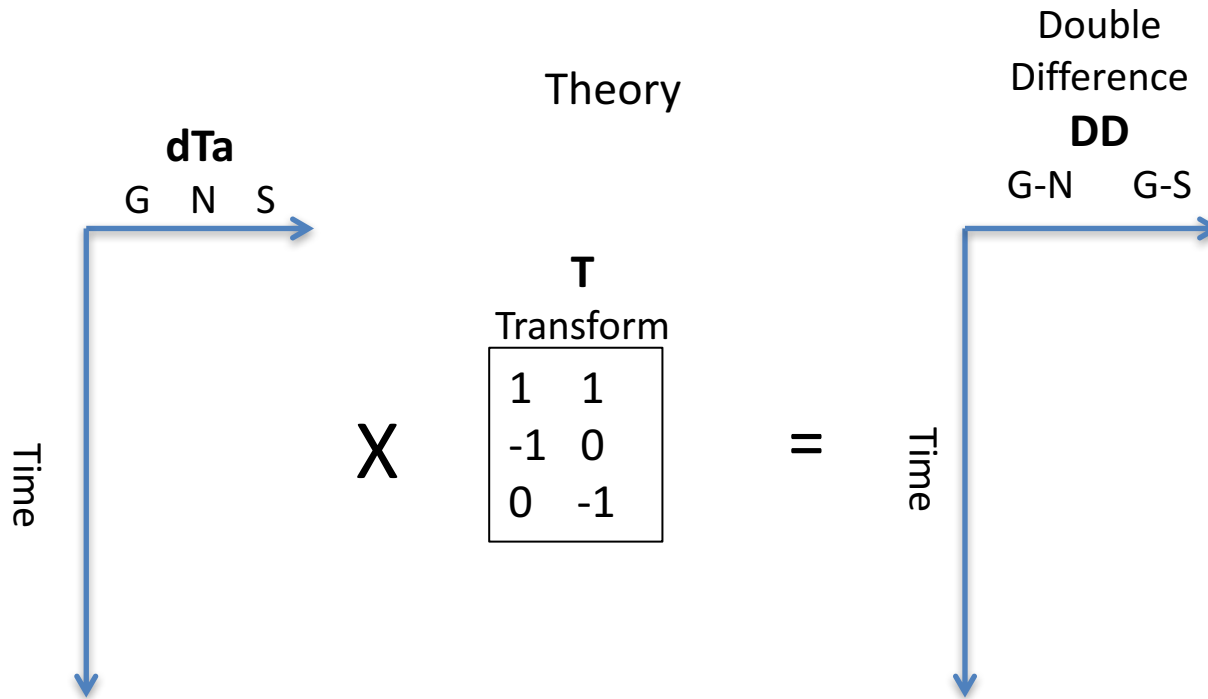
dTe for G,A,D, Channel 1V



dTf for G,A,D, Channel 1V



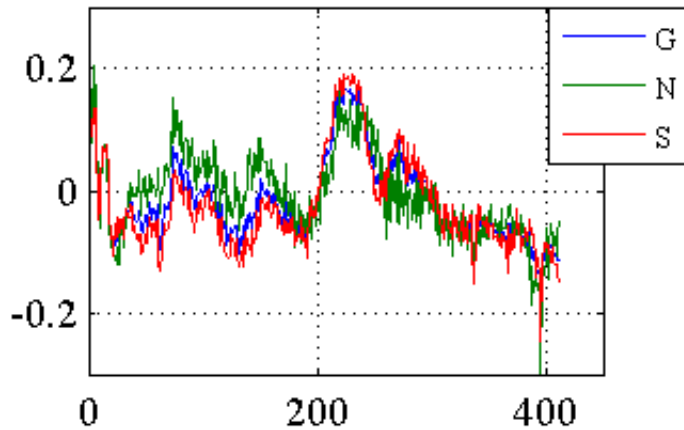
Matrix manipulation N.S



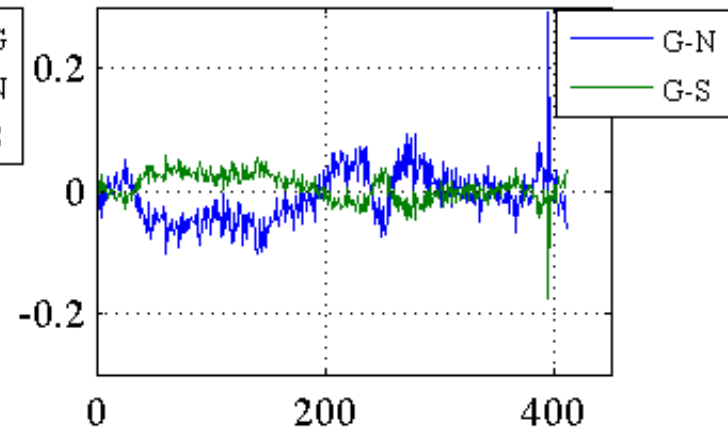
- Transform: $DD = dTa \times T$
- Regression: $R = DD \backslash dTa$
- Inverse: $dTa_r = DD * R$ Expected to contain geophysical model error (dTe) but not instrument error (dTf)
- $dTa - dTa_r = dTf$
- $dTe = -dTa_r$

Results 1V N,S

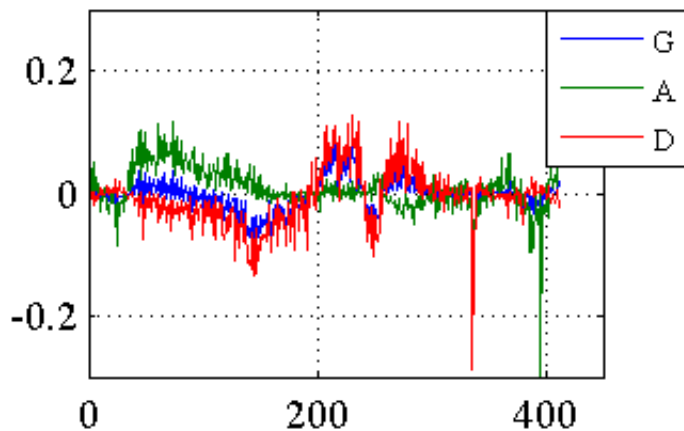
G,N,S, Channel 1V



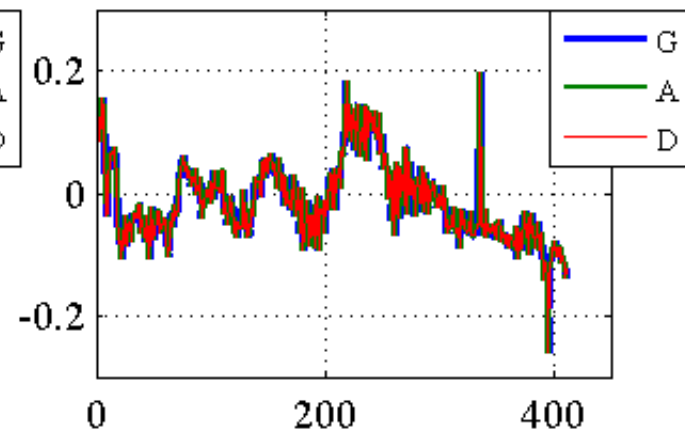
G-N, G-S, Channel 1V



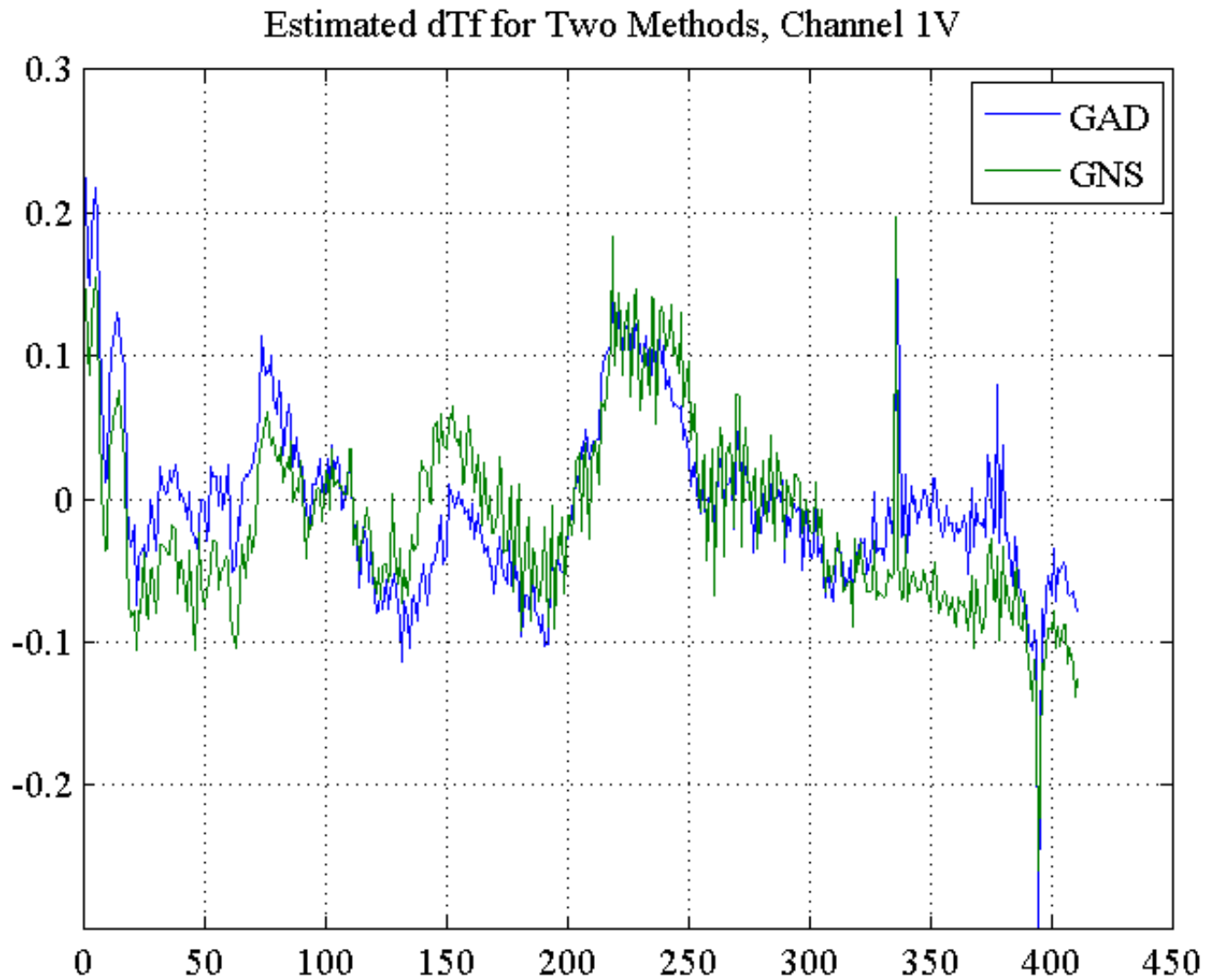
dTe for G,N,S, Channel 1V



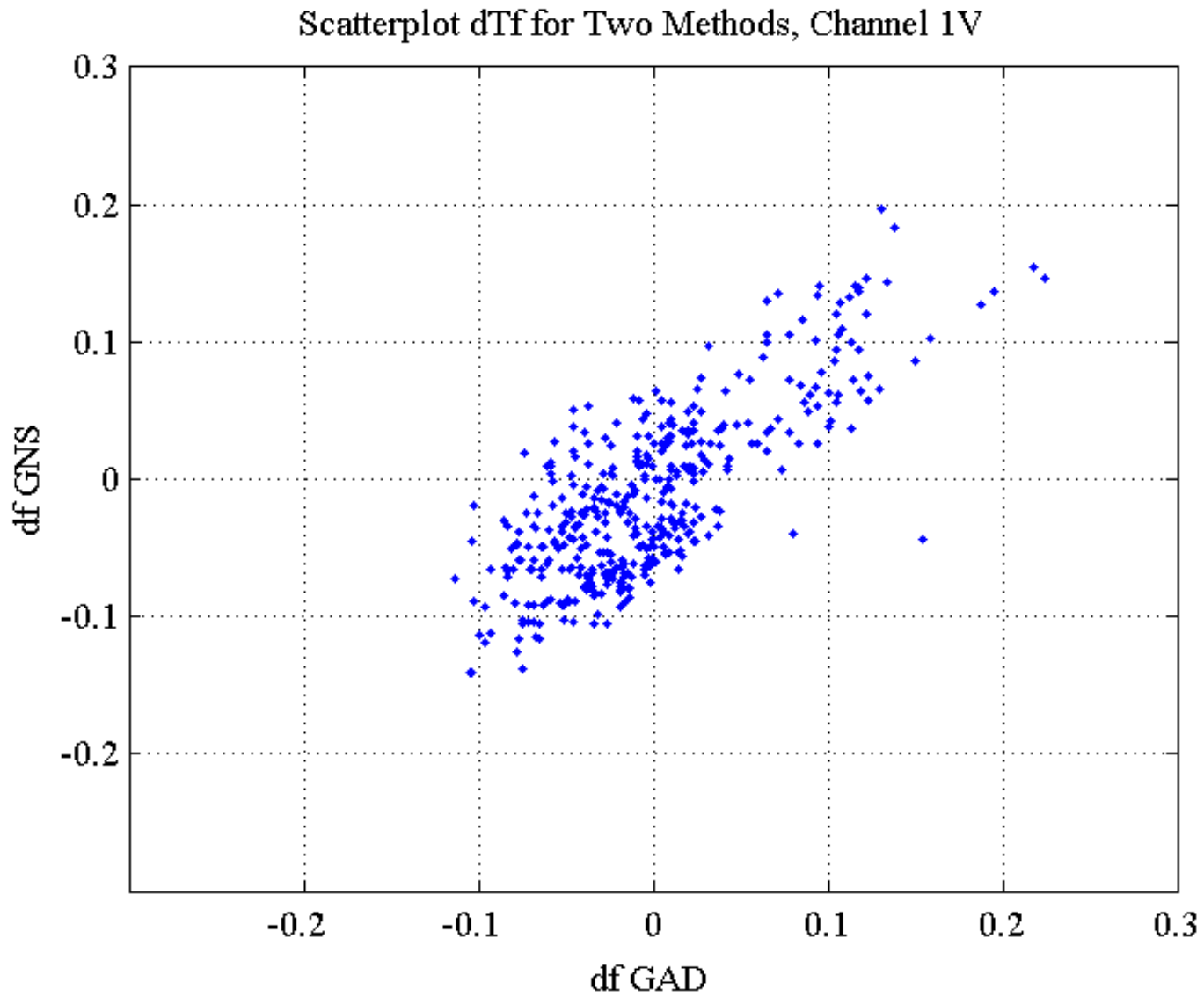
dTf for G,N,S, Channel 1V



Results 1V dTf

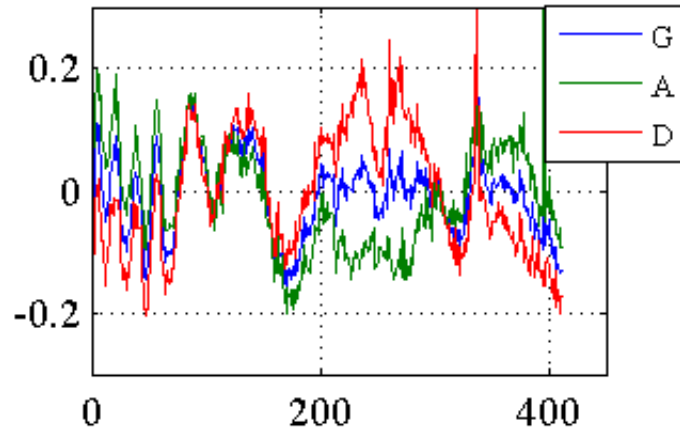


Results 1V dTf

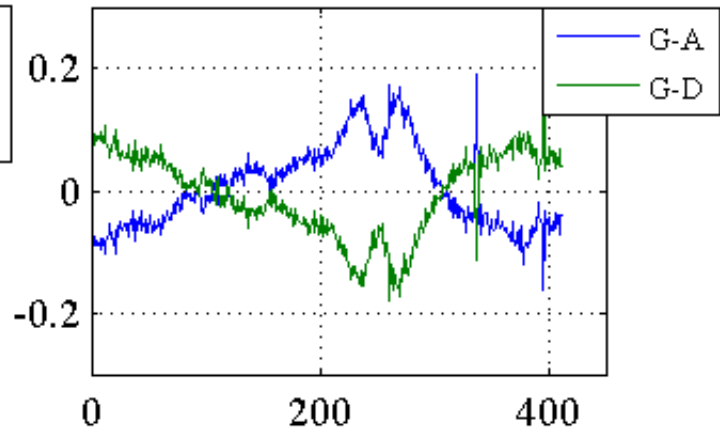


Results 2V A,D

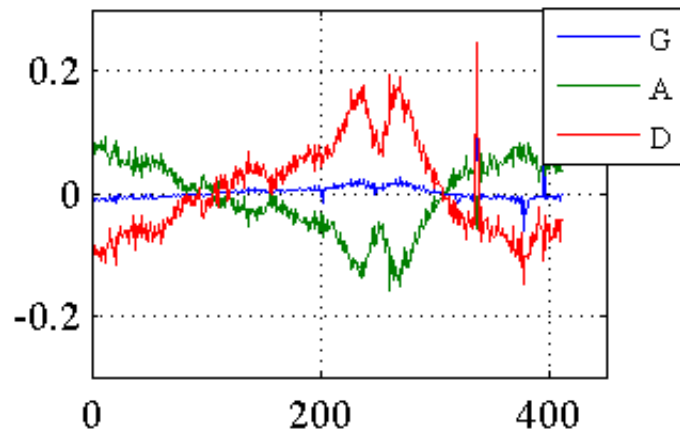
G,A,D, Channel 2V



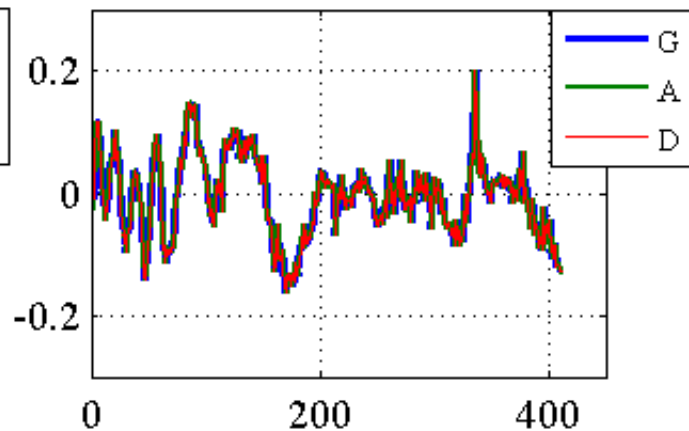
G-A, G-D, Channel 2V



dTe for G,A,D, Channel 2V

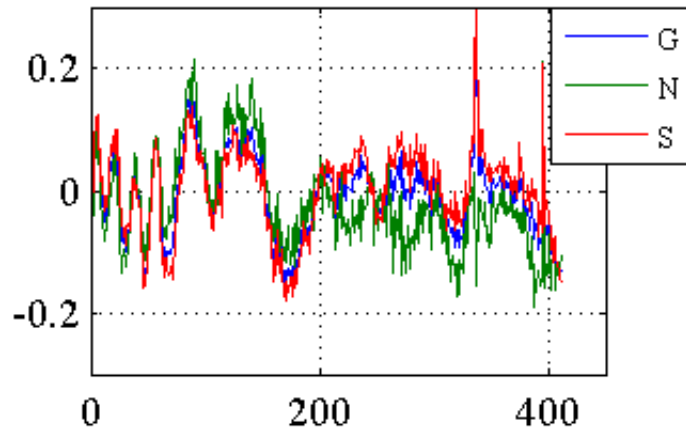


dTf for G,A,D, Channel 2V

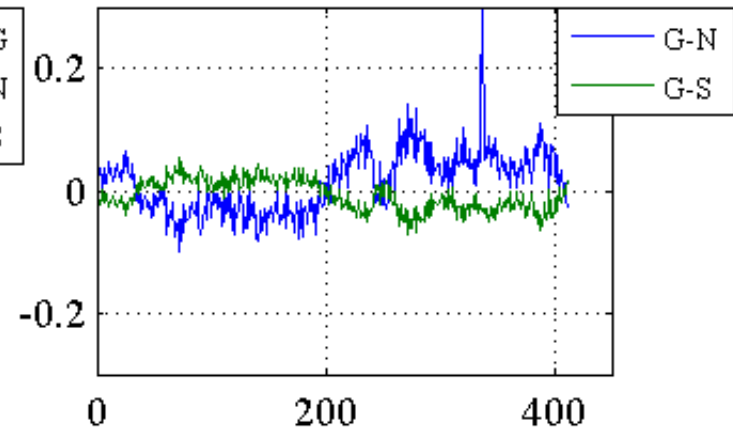


Results 1V N,S

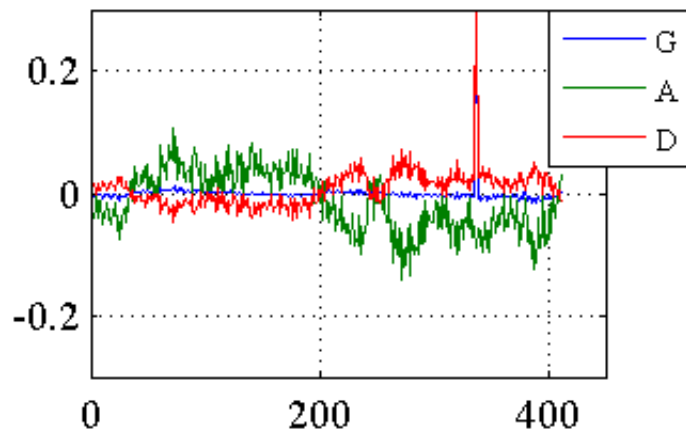
G,N,S, Channel 2V



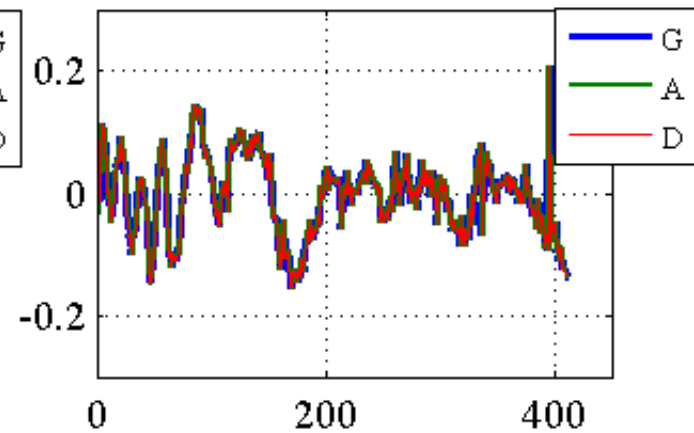
G-N, G-S, Channel 2V



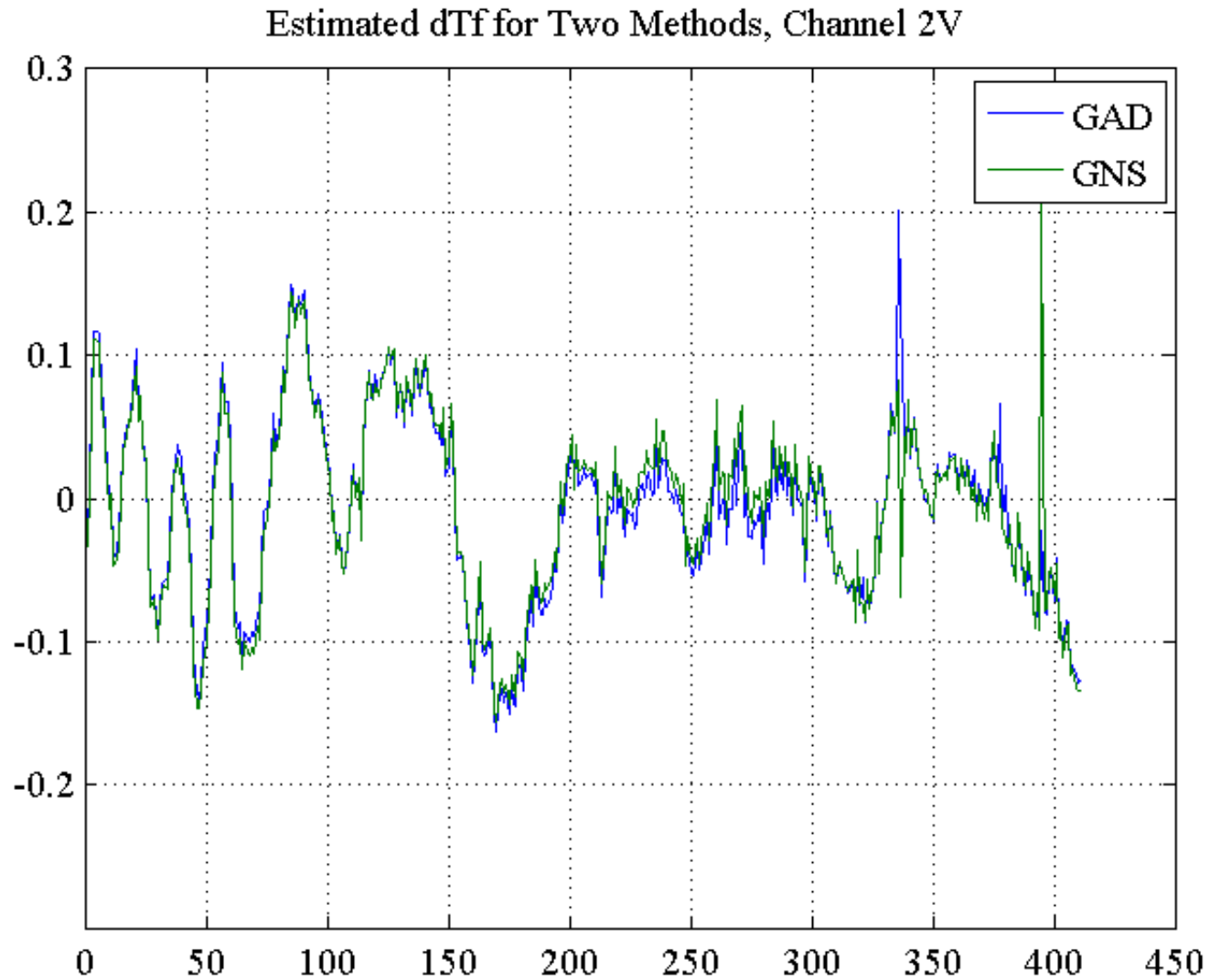
dTe for G,N,S, Channel 2V



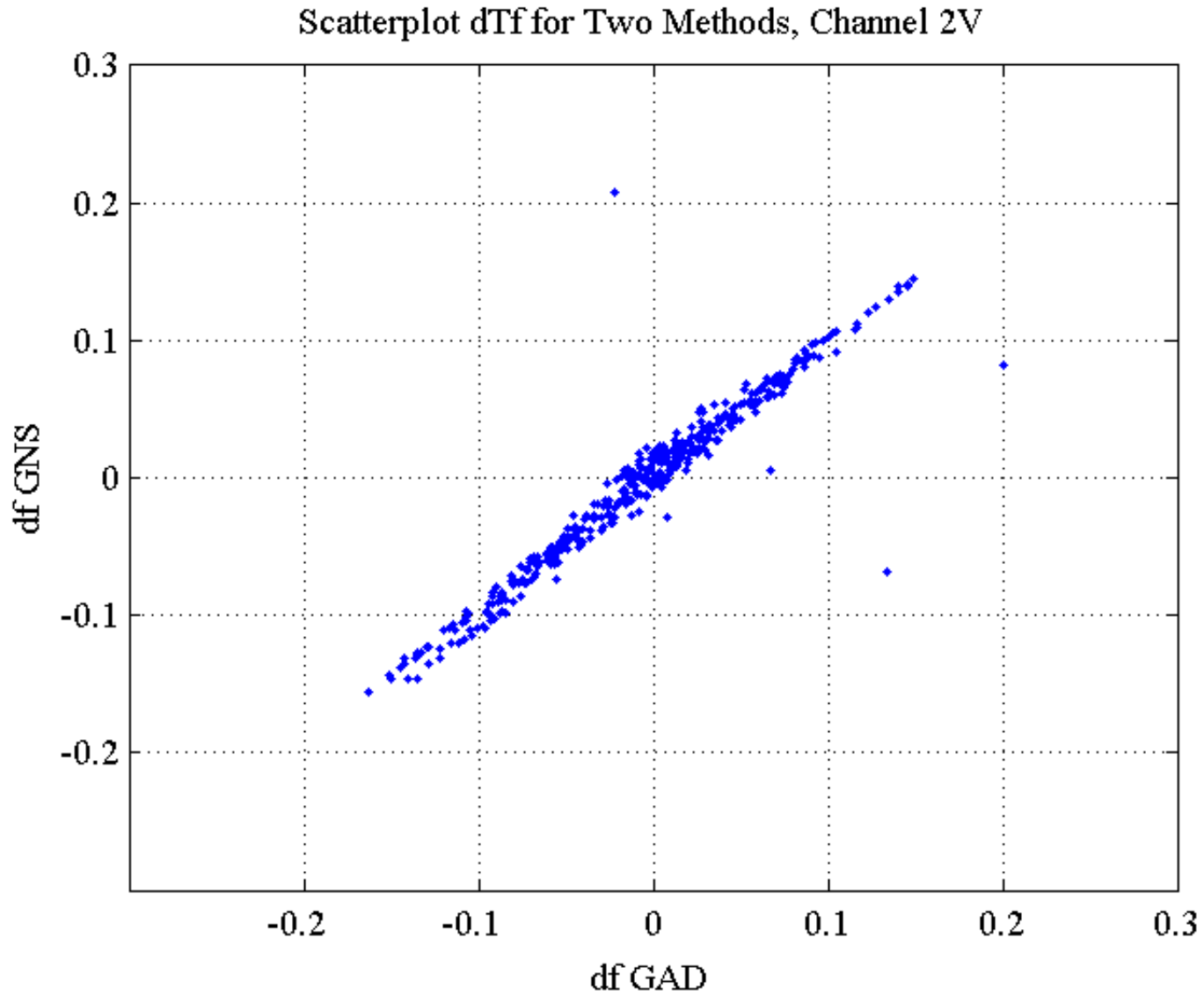
dTf for G,N,S, Channel 2V



Results 2V dTf

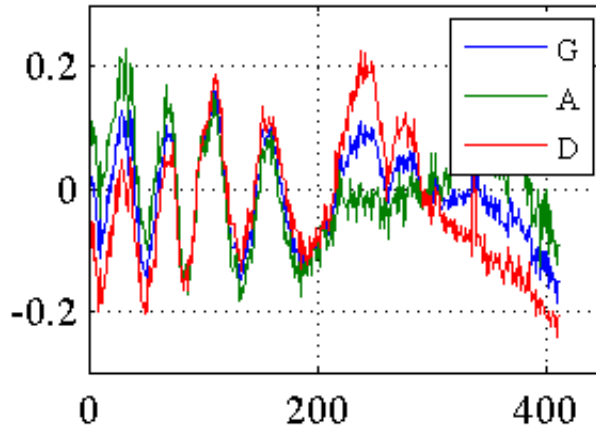


Results 2V dTf

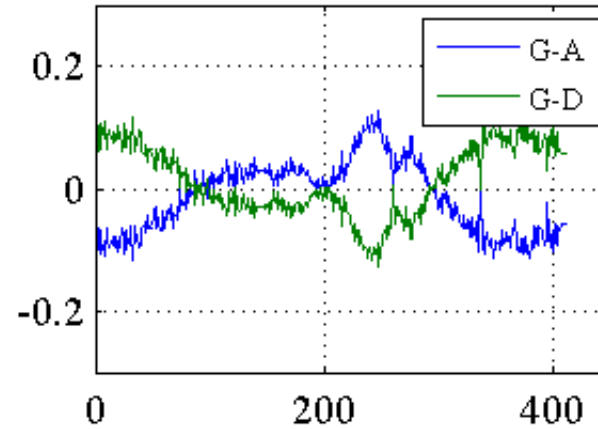


Results 3V A,D

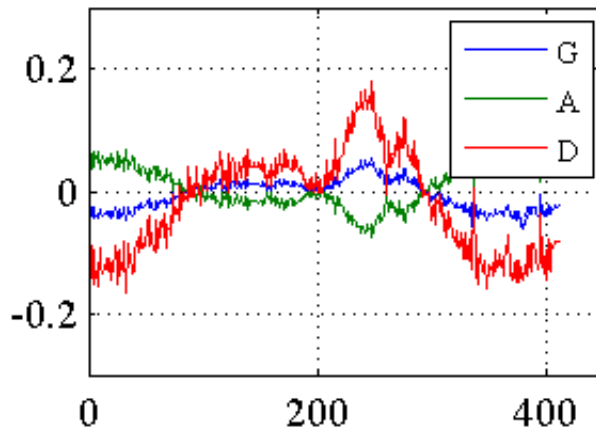
G,A,D, Channel 3V



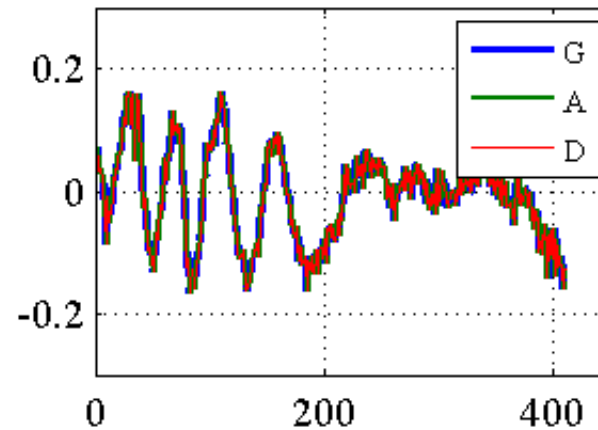
G-A, G-D, Channel 3V



dTe for G,A,D, Channel 3V

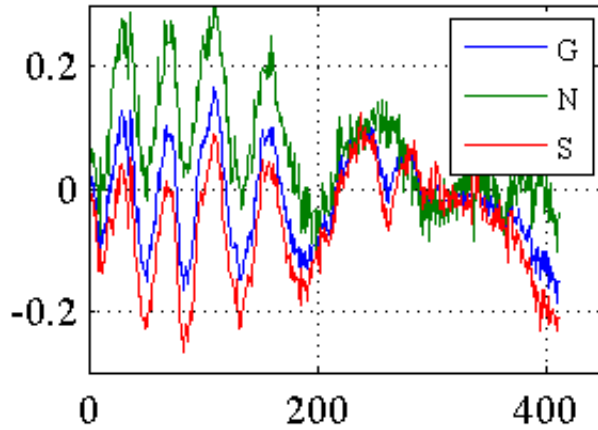


dTf for G,A,D, Channel 3V

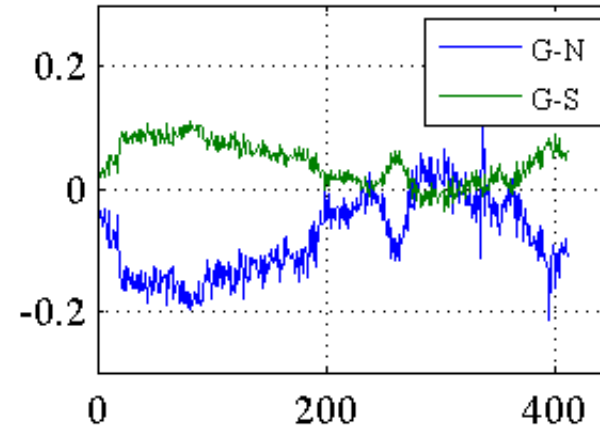


Results 3V N.S

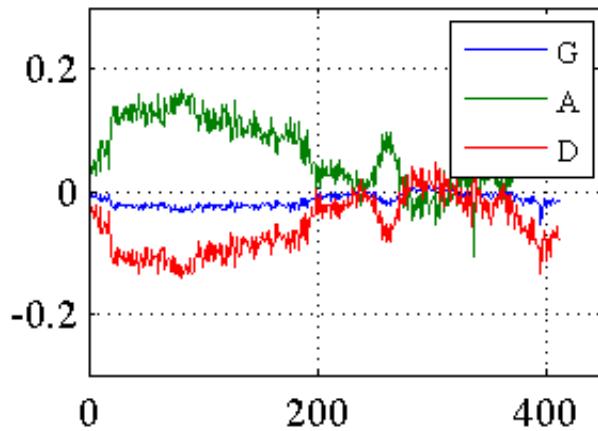
G,N,S, Channel 3V



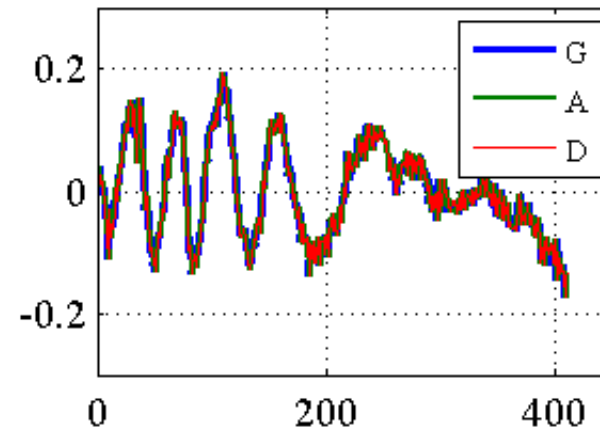
G-N, G-S, Channel 3V



dTe for G,N,S, Channel 3V

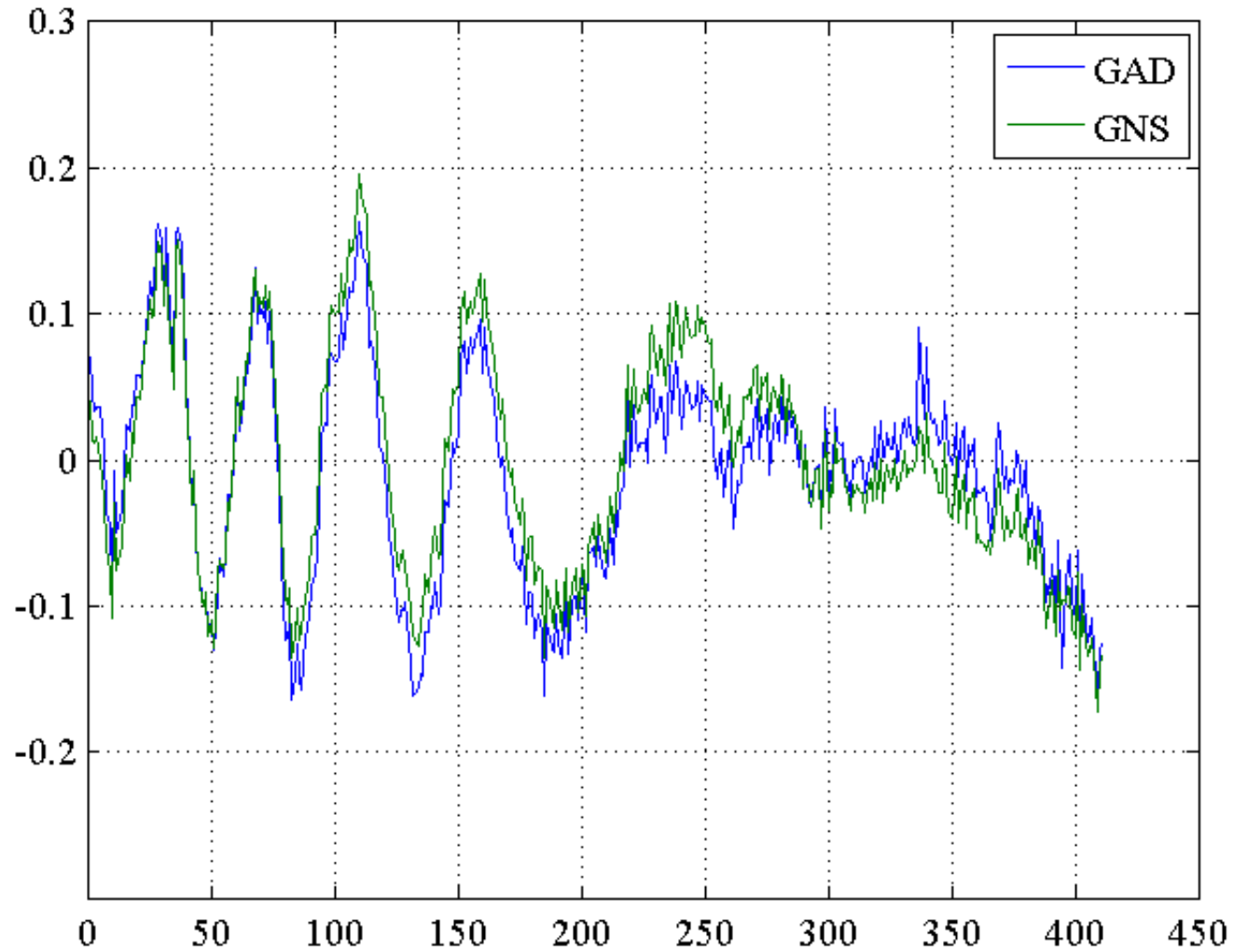


dTf for G,N,S, Channel 3V



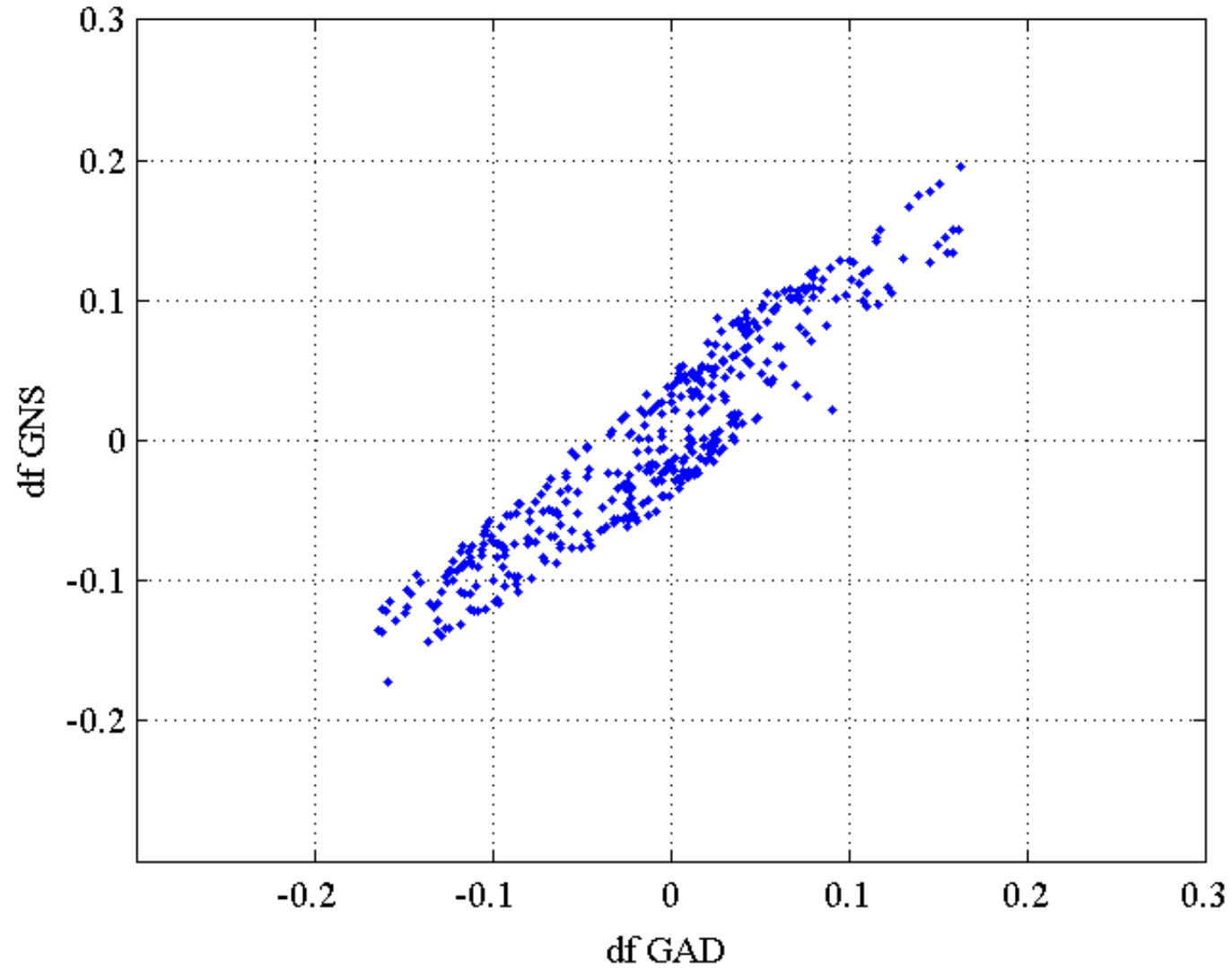
Results 3V dTf

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 that 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.