Notes on computing RotD50 for Fourier acceleration spectra (FAS)

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- Compute RotD50 for FAS
    - Compute complex FAS for the as-recorded two horizontal components (*FASx*, *FASy*)
    - Project complex FAS for the two components into an azimuth θ: $FAS = \cos\theta * FASx + \sin\theta * FASy$
    - Smooth abs(*FAS*) and downsample, if desired, using Konno and Ohmachi smoother
    - Repeat the projection and compute abs(*FAS*) for all non-reduntant azimuths ($\delta\theta$ increments from 0 to $180 - \delta\theta$ degrees)
    - For each frequency tabulate the smoothed abs(*FAS*) over all rotation angles and compute the median of the tabulated values. This is RotD50 (any other percentile, such as RotD00 and RotD100, can be computed by sorting the tabulated abs(FAS))

Here is an example (showing a portion of the spectrum):

Saguenay, 11-25-1988, BSPQ

dTheta=2 degrees

KO smooth, with smooth param b=20, SmoothLogFas=FALSE
- - - abs(FASx)(as recorded: smoothed and downsampled)
- - - abs(FASy)(as recorded: smoothed and downsampled)
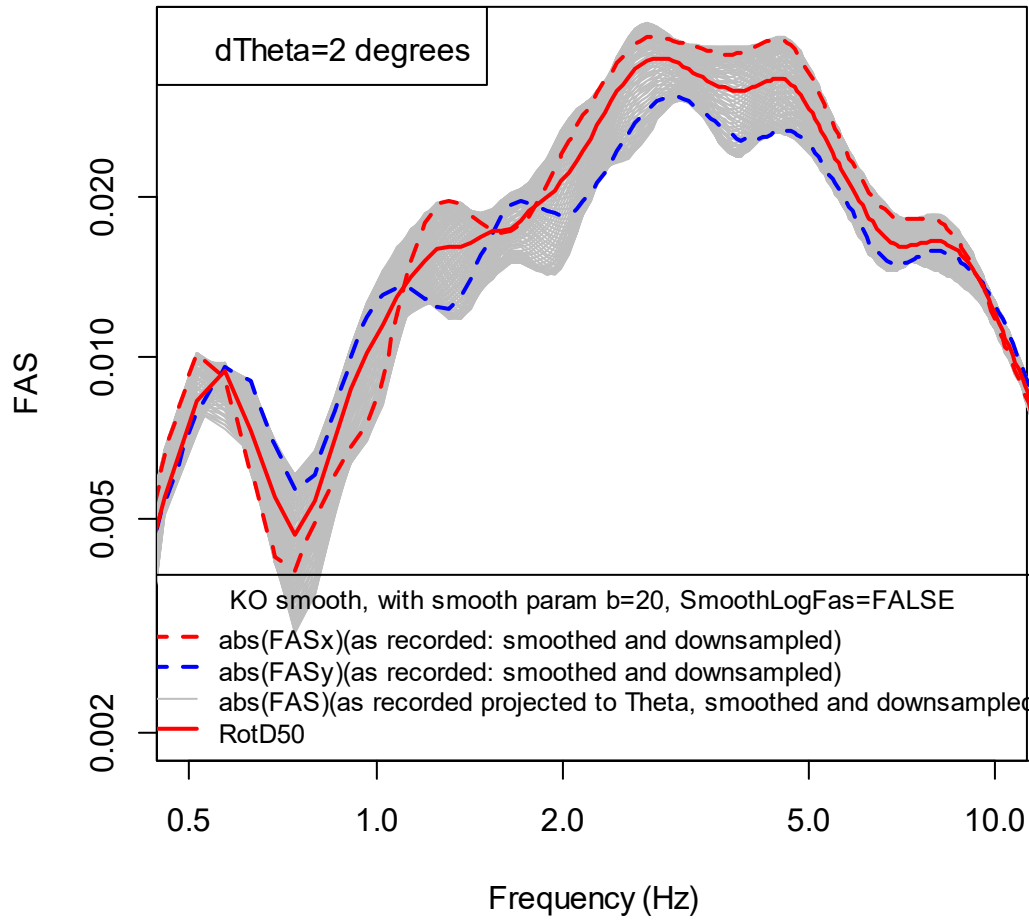—— abs(FAS)(as recorded projected to Theta, smoothed and downsampled
—— RotD50

Figure 1. A screenshot from a run of *C:\Natrium_SSHAC_L3_GMC_Team\programs-R\Compute_RotD50_for_FAS.R*