

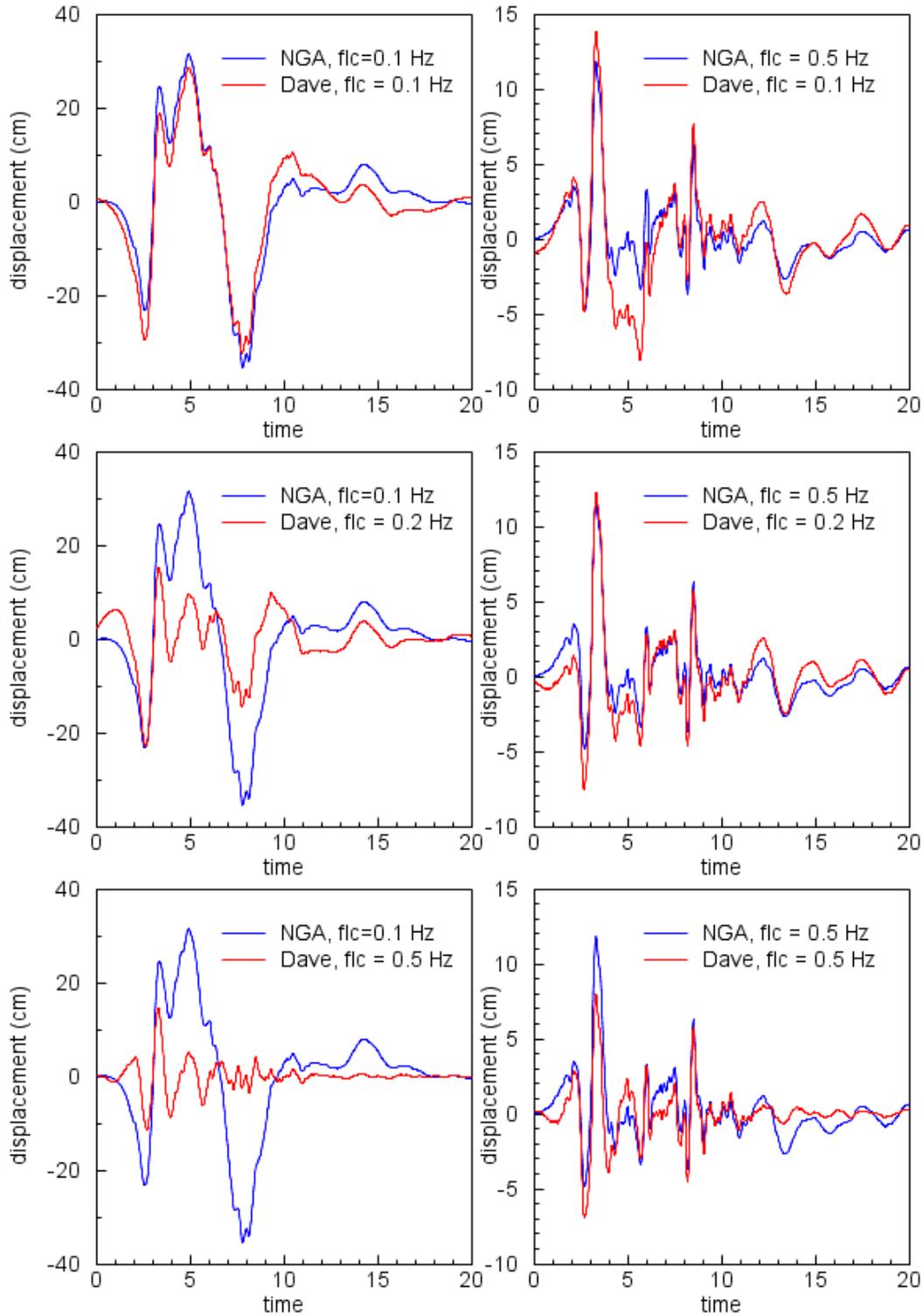
Dave Boore's questioning of the low-cut filter used for component 254 of the Pacoima Dam recording of the 1971 San Fernando earthquake.

As I pointed out in an earlier Word document today, there is a large difference in the gmrot values at long periods in the v 7.2 Excel file and the more recent 727brian.xls file for the Pacoima Dam recording of the 1971 San Fernando earthquake. The reason for this is that one of the filter corners was 0.5 Hz for the 254 degree component, which trumps the filter corner of 0.1 Hz used for the 164 degree component. This results in a lowest useable frequency of 0.625 Hz. In my processing of the Pacoima data I was satisfied with a filter corner near 0.1 Hz, so I wanted to look into the reason for the large difference in filter corners for the two components. I include a plot below that shows the displacements from the NGA processing and from my processing. For my processing I used filter corners of 0.1, 0.2, and 0.5 Hz. The first thing to note is that my results for flc = 0.1 Hz are close to those of NGA for the 164 degree component, which confirms the value for the filter corner given in the data file and in the NGA flatfile. But the next thing to note is that the dependence on filter corner is much more extreme for the 164 degree component than it is for the 254 degree component. What this tells me is that there is not much low frequency content in the unfiltered 254 degree component record. So why was a value of 0.5 Hz used for the filter for that component? I think it is easier to justify, from the appearance of the waveforms, a filter value of 0.1 Hz for the 254 degree component than for the 164 degree component! But I think that 0.1 Hz can be used as the filter corner for both components--- doing this will add to the dataset at longer periods and close distances.

Here is the plot:

SF71, Pacoima, 164 degree component

SF71, Pacoima, 254 degree component



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