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Frequency domain versus time domain smoothing of physical observations

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Physical observations by their nature are contaminated with the noises. The noises can be due to nuisance environmental situations affecting the observations or the limited observation's accuracy. While some noises can be effectively removed from the observations in time domain the others need some knowledge of spectral variations of the observations so that be removable from the observation in the spectral domain. In this paper comparison between filtering of noises in time domain versus frequency domains and specifically using Kalman and Wiener filters is studied. As case study Jason-1 and TOPEX/Poseidon satellite altimetry observations are used.