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Improving Surface Geostrophic Current from a GOCE derived Mean Dynamic Topography using Edge Enhancing Diffusion filtering

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With the increase in the geoid resolution provided by the Gravity and steady-state Ocean Circulation Explorer (GOCE) mission, the ocean's Mean Dynamic Topography (MDT) can be now estimated with an accuracy that has not been seen before using geodetic methods. Nevertheless, it still needs to be filtered in order to remove the noise in the signal. Here we deal with the capabilities of the Edge Enhancing Diffusion (EED) filters for filtering the MDT in order to improve the computation of the surface geostrophic currents (SGC). It is proved how this method conserves all the advantages that the non-linear isotropic filters have over the standard linear isotropic Gaussian filters. Moreover, the EED is shown to be more stable and almost independent of the local errors. This fact makes this filtering strategy preferred when filtering noisy surfaces.