Mesoscale Features in Surface Currents

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Abstract: Ocean Surface Current Analyses-Realtime currents (OSCAR, podaac.jpl.nasa.gov) are global ocean surface currents. OSCAR uses the AVISO gridded MADT sea surface height (SSH) fields (http://www.aviso.altimetry.ft/). Compared with global surface drifters, velocity standard deviations are underestimated by 20-50% in OSCAR over much of the oceans. A considerable portion of this underestimation is likely attributable to the large degree of smoothing implicit in the creation of the AVISO gridded products. Here we will apply the local polynomial fitting mapping methods used in the Aquarius Level 3 salinity gridding to altimetry fields. An important feature of local polynomial fitting over optimal interpolation methods is the order of fit: a first-order (linear) fit calculates gradients as part of the mapping. Geostrophic velocities will therefore be directly calculated from the data, which is expected to result in stronger, more accurate, albeit noisier, velocities. This work is newly NASA funded. Here we present *preliminary* results of a gridding process for the gradients of SSH which retains, rather than smooths out, the mesoscale and sub-mesoscale "noise".

