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We present an evaluation of 7 years (2006-2012) of ocean analysis for the Mid-Atlantic Bight. The analysis was produced by assimilating Sea Surface Height Anomalies along the Jason1/Jason2 tracks and individual passes of AVHRR Sea Surface Temperature using 4-Dimensional Variational (4-DVar) data assimilation in the Regional Ocean Modeling System (ROMS). The analysis is compared with a varied collection of not-assimilated surface and subsurface observations such as surface HF-Radar currents, drifter data, buoy SST, subsurface temperature and salinity from gliders and CTD casts (both in the shelf and deep ocean), and mean subsurface currents from current-meters and ADCP transects. The general circulation of the resulting analysis is described, and the performance of the system in extraordinary events such as Hurricane Irene (2011) and Hurricane Sandy (2012) is presented. It is shown that overall the system has a good degree of hindcast/forecast skill both in the shelf and the deep ocean, demonstrating how the combination of models with satellite observations via variational methods could be useful to infer the subsurface variability in other parts of the world.
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