



Ocean Condition Forecasts Using a Multi-Model Consensus during the Grand Lagrangian Deployment (GLAD) Experiment

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The GLAD experiment is part of the CARTHE within the Gulf of Mexico Research Initiative and is designed to understand the dispersion of surface materials under the action of ocean surface processes. Several ocean models were used to assist the deployment of 300 surface drifters in the Gulf of Mexico in July 2012. The models were the Navy Coastal Ocean Model (NCOM) at 1km and 3km resolutions, the Navy operational NCOM at 3km resolution, and two versions of the Hybrid Coordinates Ocean Model set at 4km. All models showed good skills in capturing the general regional dynamics during the experiment.

The set of drifters deployed during the main experiment were used to build a multi-model consensus by combining the skills of the different models into a single forecast through an ensemble Kalman filter. Results showed the consensus forecasts provided an improvement relative to any of the single model runs. Since trajectory predictions are very sensitive to the accurate timing and positioning of fronts and jets, the scarcity of in-situ profile and currents used in real-time for data assimilation limited the overall accuracy obtained with the consensus.