Integrating NOAA’s GNOME with Magello

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The goal of the SRI 2015 team was to create a visualization of NOAA’s GNOME spill predictions (Fig.1) onto Google Earth in order to integrate it with Magello. For the New York/New Jersey region, we have simulated a spill of 160 barrels of a non-weathering pollutant at a Combined Sewer Overflow (CSO) location (40°38'53.17"N, 74° 1'45.85"W) using the NYHOPS data for currents and NAM data for near surface winds. The data processing was done entirely on MATLAB using the NetCDF output files from GNOME along with the MATLAB Mapping Toolbox, KML Toolbox and Google Earth Toolbox.

Figure 1: GNOME simulation for a near shore NYC release
Our goal was to visually integrate the spill simulation with other data sets available in Magello, such as: currents’ directions and velocities, near surface winds and shoreline sensitivity index. The final product (Fig 2) displays the oil spill position on a specific timestamp, where the user will be able to interactively go through the simulation using a time bar. This integration allows emergency responders to react more efficiently to a local spill. The next steps will require a fully integrate user interface module within Magello, allowing the end user to create a simulation and input its own environmental parameters to be displayed on our Magello mapping platform.

Figure 2: Final product includes: GNOME’s spill predictions, surface ocean currents predicted by NYHOPS, and environmental sensitivity index displayed on Google Earth
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