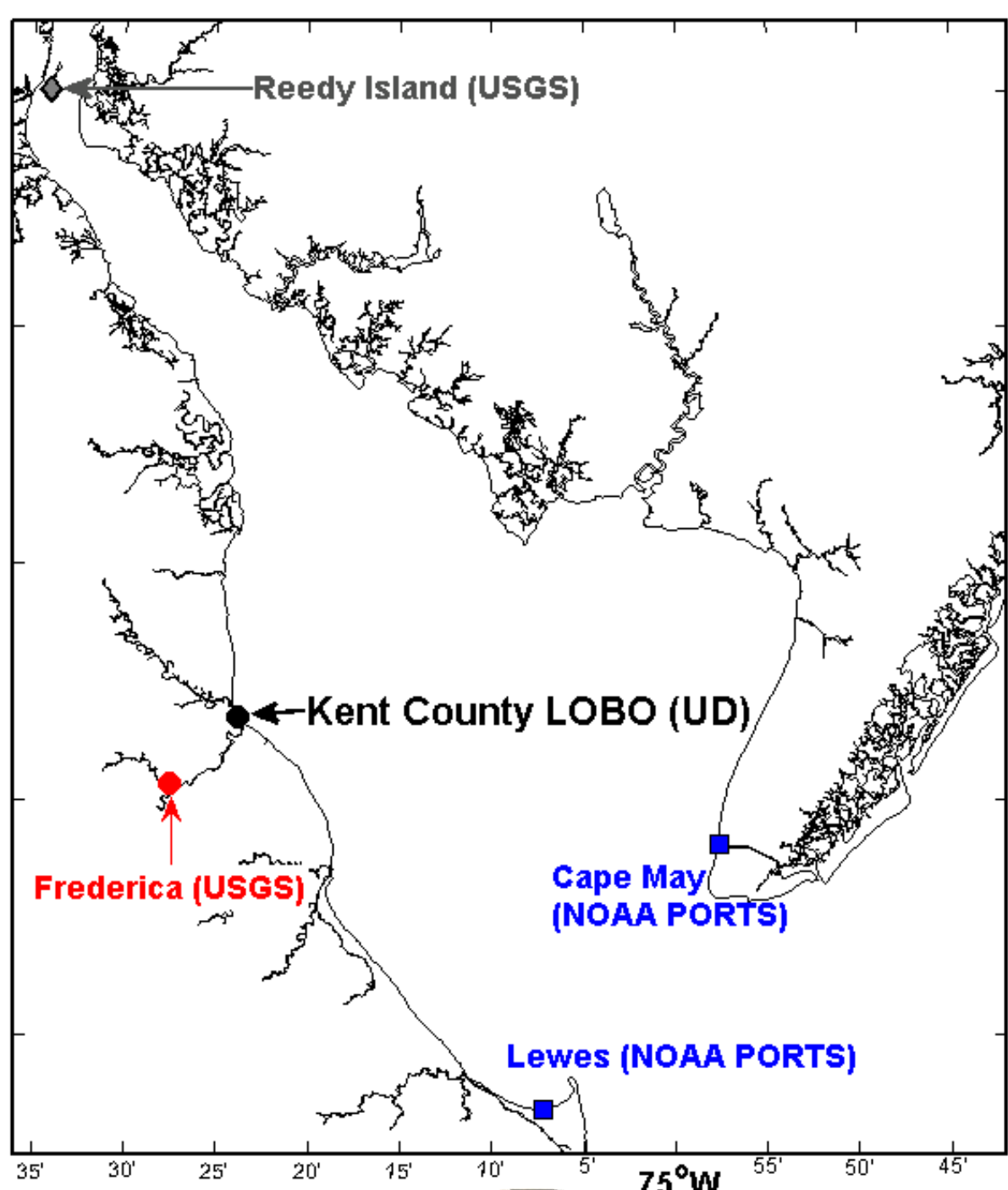


Impact of Hurricane Sandy on the Delaware Bay and Murderkill River, captured by the Kent County LOBO, USGS and NOAA PORTS

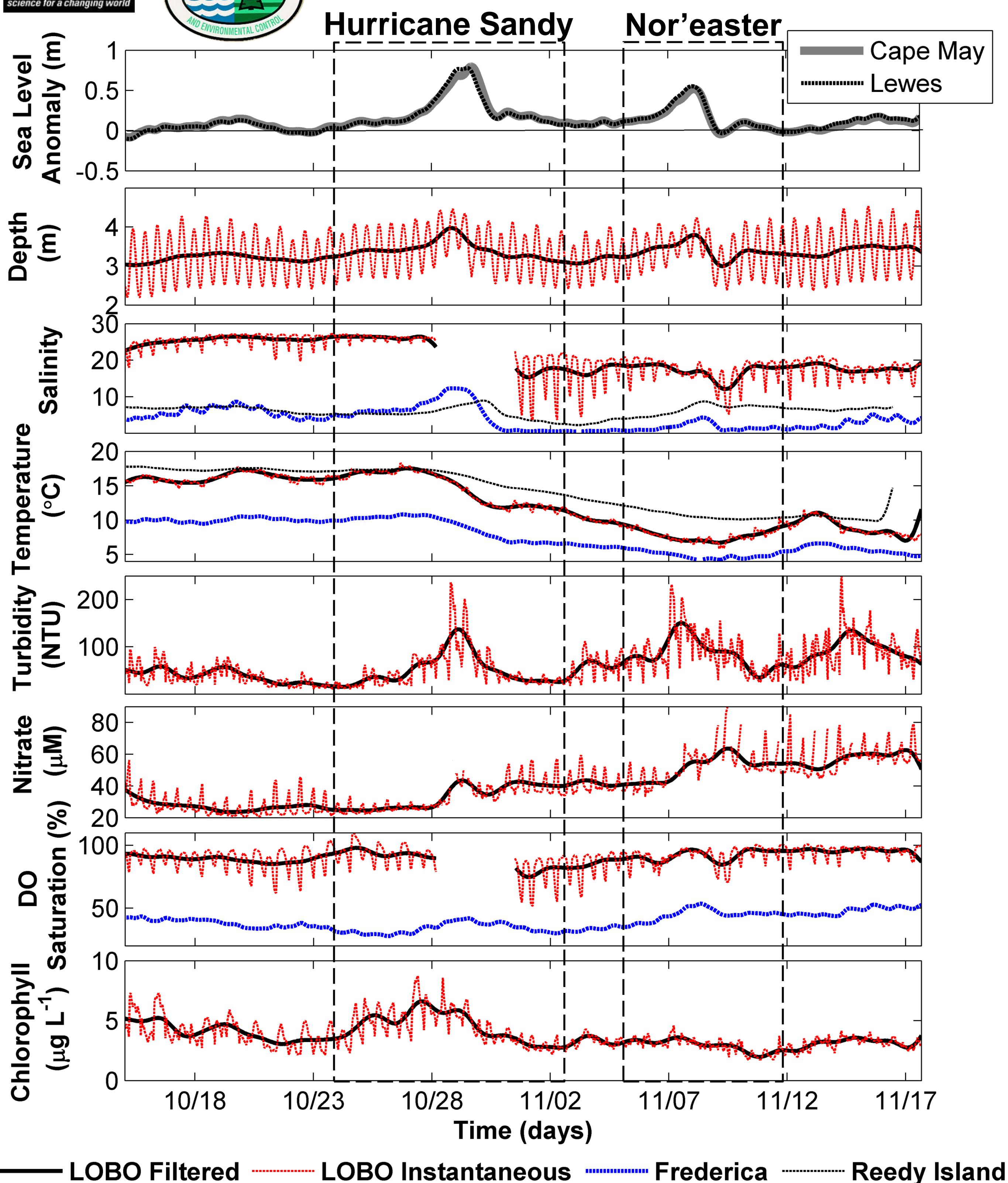
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Hurricane Sandy (Oct 27–Nov 2, 2012) generated significant and prolonged storm surge in the Delaware Bay, and large rainfall in its watershed. The hurricane was followed by a Nor'easter (5–11 Nov). These storms were captured by continuous monitoring stations operated by the US Geological Survey (USGS), the National Oceanic and Atmospheric Administration's Physical Oceanographic Real-Time System (NOAA-PORTS) and the University of Delaware's Land-Ocean Observing System (LOBO), operated with funding from Kent County, Delaware. The monitoring records indicate that offshore forcing has a significant effect on salinity, turbidity, and water quality in the Delaware Bay and its tributaries.



Hurricane Sandy and a Nor'easter caused sea level rise at the Delaware Bay mouth (NOAA PORTS), and in the Murderkill River (LOBO depth record). The sea level changes were reflected in the elevated salinity at Frederica and Reedy Island (USGS).



Methods

- Instantaneous LOBO, Reedy Island and Frederica data were filtered using a 35-hour low-pass Lanczos filter to remove tides.
- The sea-level anomaly was calculated by subtracting the predicted from the measured sea level at Lewes and Cape May (NOAA PORTS).

Preliminary Conclusions

- Salinity drop from rainfall lagged at Reedy Island compared to Frederica after Hurricane Irene. During and after the Nor'easter, salinities varied synchronously.
- Temperature decreased significantly after Hurricane Irene.
- Turbidity increased with high wind speeds and mixing during both storms.
- Nitrate increased after the storms, as salinity decreased, suggesting a significant upstream nutrient source. Also, we observed a stepwise increase in the average nitrate concentrations, suggesting a prolonged storm effect.