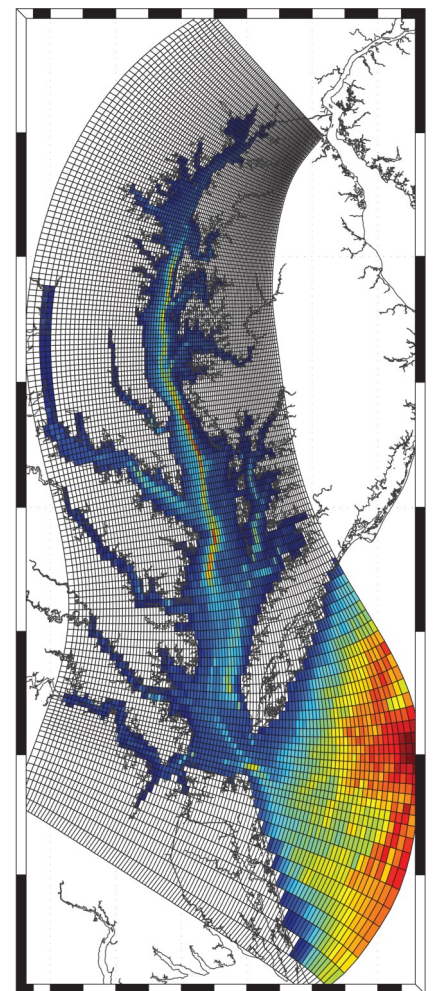


State Estimation in the Chesapeake Bay: Data Assimilation and Satellite Derived Salinity

Dr. Matthew Hoffman

The Chesapeake Bay is the largest estuary in North America and supports a fishing and recreation industry of over \$1 billion per year. In response to concern over the health of the Bay, statistical and dynamic models of bio-geochemistry are being developed in the Bay, but they are dependent on accurate inputs of temperature and salinity values. The existing sampling programs in Chesapeake Bay provide a long-term trend for these values, but they do not have sufficient spatial and temporal resolution to drive accurate bio-geochemical models. Two ongoing efforts are presented for obtaining more complete state estimates of hydrodynamic variables in the Chesapeake Bay. One involves the assimilation of both satellite sea-surface temperature and in situ data into a 3D-hydrodynamic model using an ensemble Kalman filter and the second is the derivation of sea-surface salinity maps from NASA MODIS satellite ocean color products.



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