

## Satellite derived indices of red tide in the Eastern Gulf of Mexico and groupers

Presenter: John Walter (SEFSC)

This paper presents probabilistic satellite-derived indices of the probability of a *Karenia brevis* bloom in the Eastern Gulf of Mexico for the time period 1998-2010. We derive a generalized additive model to predict the probability of a bloom as defined as cell counts greater than 100,000 cells/liter, using a combination of sample data and a suite of SeaWiFS satellite-derived oceanographic products. These predictive models provide predictions and standard errors of the probability of a bloom in time and space. Summing the predictions in space over a year allows for the development of annual indices of the severity of red tide. The index values clearly indicate that 2005 was an extraordinarily high year where model predictions indicate a large and extensive area occupied by high bloom probability (see Figure). The results of this paper provide valuable indices of red tide severity as well as spatially and temporally explicit predictions useful for many research purposes.

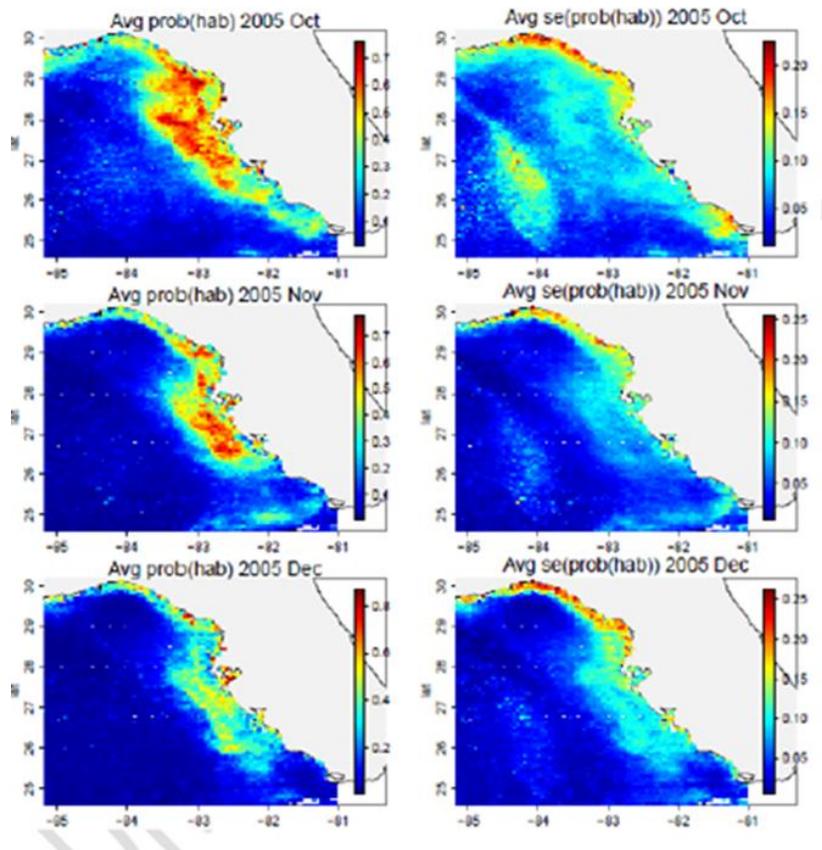


Figure: Monthly-averaged predicted presence and average standard errors of prediction of algal concentrations greater than 100,000 cells per liter for October-December 2005 during a documented red tide event.