Title: Harmful Algal Bloom (HAB) ecology: Coastal oceans to the Great Lakes.

Harmful algal blooms (HABs) are influenced by a variety physicochemical environmental factors which are often impacted by anthropogenic drivers. By exploring HABs in different ecosystems we can further our understanding of how environmental conditions trigger physiological responses in harmful algal species. I’m going to take you on a tour of three different ecosystems impacted by HABs and explore how ecosystem level changes impact phytoplankton community dynamics. I will present information on how timing of upwelling events within the western boundary current influences *Pseudo-nitzschia* spp. blooms and domoic acid production, as well as the emerging threat of *Vibro* sp. within coastal Mozambique. Next, the Mississippi-Atchafalaya River Basin (MARB) is highly influenced by anthropogenic influences, where cyanobacteria HABs (*Microystis* sp*.*, *Dolichospermum* spp. (formally *Anabanea* spp.), and *Cylindrospermopsis* spp.) blooms have steadily increased over the past decade. I will present data on the impact of ocean acidification on phytoplankton communities from two biogeochemical distinct regions within MARB. In the Great Lakes ecosystem, cyanobacteria HABs have been a recurrent feature since mid-1990s, with expansive blooms in western Lake Erie and Lake Huron (Saginaw Bay). I will discuss the establishment of a monitoring network within western basin of Lake Erie and Lake Huron, which includes the use of in situ monitoring sites and remote sensing technology, such as Environmental Sample Processor (ESP) and hyperspectral imaging. Data from 2016 – 2019 suggest inter- and intra-annual variability in the distribution, extent, and severity of the cHAB based on climate factors (wet versus drought years) and timing of precipitation. As HABs expand across the freshwater-marine continuum, being able to make connections between ecosystems is key for establishing effective monitoring and management strategies.

Publications:

Mallozzi, A, **Errera, RM**, Hermann, A., Bargu, S. 2018. Impacts of elevated *p*CO2 on estuarine phytoplankton biomass and community structure in two biogeochemically distinct systems in Louisiana, USA. Journal of Experimental Marine Biology and Ecology 511:28-39.