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Observing ocean health with chemical and biological sensor networks

The ocean provides critical services to life on the planet, absorbing 93 percent of the heat from anthropogenic warming and a quarter of human carbon dioxide emissions each year. However, rising ocean temperatures and carbon dioxide levels also change the marine environment—pH and oxygen levels fall, ocean currents change, and nutrient fluxes and concentrations are shifting—all with large effects on ecosystems and the cycles of oxygen, nitrogen, and carbon throughout the ocean and atmosphere. Observing these biogeochemical processes across remote ocean areas with seasonal to interannual resolution has been impractical due to the prohibitive costs associated with ship observations. Yet such observations are essential to understand the natural and perturbed systems. Robotic profiling floats provide a transformative solution to this need. These biogeochemical (BGC) profiling floats are capable of observing chemical and biological properties from 2,000 meters depth to the surface every 10 days for many years. The NSF-funded Southern Ocean Carbon and Climate Observations and Modeling (SOCCOM) program serves as a basin-scale pilot for a global array; its 160 operating BGC floats demonstrate that the major challenges associated with operating a large-scale, robotic network have been overcome and that there is a substantial user base for the data. In this talk, work accomplished in the SOCCOM program will be reviewed and plans to expand the array to a global scale (BGC-Argo) will be discussed.

Registration for this webinar is required and space is limited. [Please RSVP here.](#)