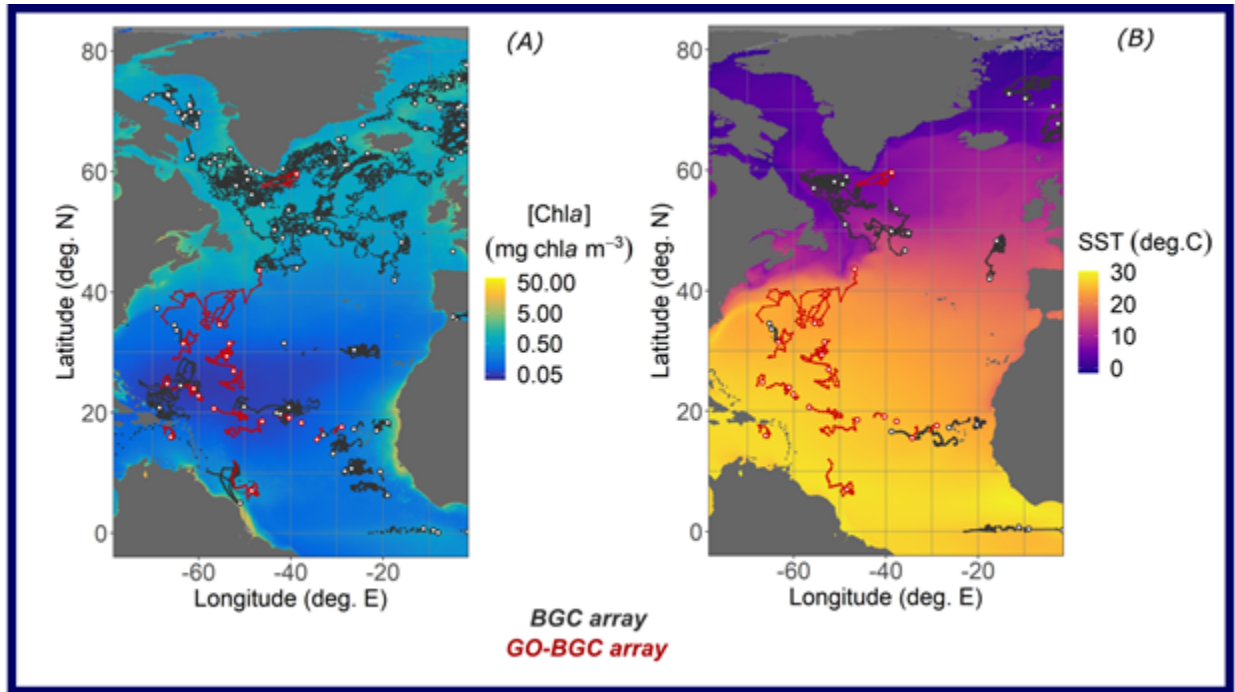


GO-BGC Data Example #1: Estimating Net Primary Production and Carbon Export



The North Atlantic Ocean is home to a diversity of ecological and hydrodynamic regimes. The GO-BGC, multi-parameter float array makes it possible to study complex biogeochemical dynamics within these regimes, such as those related to air-sea exchange, physical fluxes, and biological processes, at high spatial and temporal resolution. For example, floats equipped with bio-optical sensors that measure chlorophyll fluorescence and particle backscattering (Panel A: profile locations from floats carrying bio-optical sensors over a map of the MODIS chlorophyll-a annual climatology) can be used with the Carbon-based Production Model to estimate vertically resolved net primary production (NPP), which can be compared with remote sensing-based NPP estimates. Additionally, by combining *in situ* chemical (oxygen, nitrate, and carbon) and bio-optical sensor observations from the float with remote sensing observations, we can estimate net community production (NCP) and *in situ* carbon export by simultaneously constraining multiple biogeochemical tracer budgets (Panel B: profile locations from floats carrying pH sensors over a map of the MODIS sea surface temperature annual climatology). Co-located and contemporaneous estimates of NPP and NCP from BGC Argo floats will allow the community to refine our understanding of biogeochemical processes and the mechanisms involved in primary production and carbon export throughout a diversity of North Atlantic Ocean ecosystems and beyond.

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