Thursday, February 20, 2025 at 9am PST
Registration Link: https://us06web.zoom.us/meeting/register/jSFGsesDQD6SNh6bcztc8A
Meeting ID: 827 7390 1851 ● Passcode: 729569

SCOR Working Group 168 Webinar #2

Title: Leveraging 4-dimensionally mapped ocean biogeochemistry data products to inform species distribution modeling

Presenter:
Mary Margaret Stoll
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Despite recent advances in biologging and monitoring technologies to inform fisheries species distribution models (SDMs), limitations remain in understanding migratory patterns in the context of a 4D ocean. The Biogeochemical Argo (BGC-Argo) array has revolutionized our spatiotemporal view of subsurface biogeochemistry, providing a new perspective on the linkages between species migratory patterns and environmental conditions. The four-dimensional biogeochemical landscape imposes critical constraints on suitable fish habitat through oxygen and hypoxia, pCO_2 and hypercapnia, temperature thresholds, and feeding behavior. Given that these biogeochemical characteristics bound physiologically suitable habitat, their inclusion in SDMs provides a basis for more reliable, mechanistic relationships between species and their environment. To evaluate the utility of depth-resolved information in SDMs, we leverage archival tags datasets, mapped ocean biogeochemistry data products, and machine learning to examine the extensive migratory behaviors of North Pacific albacore tuna (*Thunnus alalunga)*, a commercially important fishery species. Our model predicts habitat suitability from 4D biogeochemical predictor variables with high skill across space and time. Furthermore, subsurface information improves our understanding of species migrations within their desired habitat zones through a refined view of regions with high primary productivity and biomass. The synthesis of fisheries abundance data and four-dimensional biogeochemical information offers new avenues to study species distributions and inform fisheries management by incorporating interior ocean biogeochemical information.

Agenda for February 20, 2025 (9am PST)

1. **Introduction:** WG 168 Co-Chairs (5 mins)
2. **Main Presentation:** Mary Margaret Stoll (40 mins)
3. **Q & A Session** (15 mins)

Webinar Series Information

The 4D-BGC Working Group seeks to enhance access and utility of Biogeochemical (BGC) Argo observations through four-dimensional (4D) data products. These advanced data products aim to refine our understanding of ocean biogeochemistry, improve biogeochemical models and reanalysis products, and provide valuable insights for policy making. The goal of this webinar series is to introduce new and in-development BGC data products, review techniques used to develop data products from in situ observations, and to explore ways in which 4D-BGC products are leveraged to answer scientific questions.