NetCOLOR webinar November 9th, 2022 at 2PM EST

Zoom link: https://ulaval.zoom.us/j/64811680701?pwd=OVNaOVBpK21sdlpmZy9tUU90SmVqUT09

Chair: Emmanuel Devred

Lisa Matthes from Takuvik at University Laval

Impact of subsurface chlorophyll maxima on satellite-based Arctic spring primary production estimates

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Abstract:

Arctic ocean color bio-optical algorithms consider the unique bio-optical properties of the Arctic Ocean to extract surface chlorophyll *a* (Chl *a*), one of the key inputs into many satellite-based net primary production (NPP) algorithms, among other parameters from spectral remote sensing reflectance (R_{rs}). However, these algorithms exclude production at deep subsurface chlorophyll maxima (SCMs), leading to varying underestimations of NPP during the post-bloom period. During the Green Edge campaign in June/July 2016 in Baffin Bay, SCMs were observed during the spring bloom at the sea ice edge raising the question to what extend these SCMs contribute to R_{rs} and depth integrated NPP_{Rrs} estimates. We used radiative transfer simulations to examine the effects of observed vertical heterogeneous Chl *a* profiles on R_{rs}, algorithm-derived surface Chl a_{Rrs} and NPP_{Rrs}. NPP_{Rrs} estimates were compared to NPP_{Rrs} estimates of reference simulations using homogenous Chl *a* profiles and to measured NPP_{in_situ}. Results show a significant contribution (>60%) of shallow SCMs <30 m to water color (R_{rs}), increasing Chl a_{Rrs} relative to an homogenous ocean. Interestingly, maximum Chl a_{in_situ} significantly influencing R_{rs} was found down to the fifth attenuation depth. This contribution of shallow SCMs to surface Chl a_{Rrs} lowered the difference between NPP_{in_situ} and NPP_{Rrs} from –18 ± 20% assuming a homogenous ocean to 3 ± 13% using actual Chl a_{in_situ} profiles of shallow SCM stations. Due to this partial representation of shallow and very productive

SCMs in R_{rs}, the deviation between regional NPP_{Rrs} and NPP_{in_situ} was relatively small (±20%) during the ice edge spring bloom.

Emmanuel Devred from BIO / DFO

Phytoplankton and detritus in the Northwest Atlantic: seasonal and long-term changes

Abstract:

DFO has been collecting oceanographic properties of the Northwest Atlantic for more than 20 years, including absorption by detritus and phytoplankton. Analysis of this large dataset revealed the seasonal cycle and long-term change of these two properties on the Scotian Shelf, the Northwest Atlantic Basin and the Labrador Sea. Results will be presented and discuss in relation to phytoplankton biomass and community structure as indicated by Fucoxanthin, a proxy for the presence of diatoms. I will also present a new index, the phytoplankton apparent absorption wavelength, a simple metric that inform on the trophic status of phytoplankton.

Kristen Wilson from BIO / DFO

Challenges and lessons learned while developing satellite-based coastal bottom habitat maps along the Atlantic coast of Nova Scotia

Abstract:

Coastal bottom habitat mapping with multispectral remote sensing is increasingly being used to map large areas of coastal habitat. At DFO Maritimes we have been developing methods to readily provide bottom habitat maps for shallow coastal waters across Atlantic Nova Scotia. While developing these methods several challenges that are not unique to Nova Scotian coastal waters were encountered. In this talk I will discuss how we overcame these challenges. We hope to initiate discussions that can help inform the design of other coastal bottom habitat mapping projects within Canadian waters.