

Advancing Global Ocean Colour Observations

Research to Operations (R2O) Applications: Fisheries Management OC needs

Cara Wilson

NOAA/NMFS/SWFSC Environmental Research Division Monterey, CA USA



IOCS, Busan S. Korea, April 10, 2019













Stock Assessment is a fancy way of saying "counting fish"





- NOAA Fisheries (National Marine Fisheries Service) in the USA is responsible for managing ~450 fish stocks.
- NMFS manages ~200 protected or endangered species (marine mammals and turtles).





In theory, counting fish seems relatively straightforward.







Photo credit: Octavio Aburto

In practice, it's much more complicated.



Species composition of CA landings























Snapshot of five chlorophyll products in waters surrounding Southeast Asia averaged across months between 2012-01 to 2018-06. Scale bar shows log chlorophyll concentration (mg/m-3). Grey and black pixels indicate areas that have concentrations greater and less than 1.5 standard deviations from the mean of all products, respectively.

Welch, H. et al. Downstream propagation of difference between ocean color products. In prep.



Visualizing "The Blob"?

"The Blob" was an oceanic 'heatwave' that affected a large area of the N. Pacific ecosystem in 2014-2015.



- Where is "the Blob"?
- It's not readily evident, but its manifest as the northward deflection of the isotherms in the eastern Pacific







"The Blob" was an oceanic 'heatwave' that affected a large area of the N. Pacific ecosystem in 2014-2015.



No Blob



Visualizing "The Blob"

"The Blob" was an oceanic 'heatwave' that affected a large area of the N. Pacific ecosystem in 2014-2015.



It's quite easy to see with the SST anomaly product!



Did "The Blob" impact Chl?



There are no available chl anomaly products to identify anomalous features



Fishery Management Overview

- Satellite data is underutilized in fisheries management. Training courses are an effective way to increase the usage of satellite data
- Long-term Climate Quality ocean color data are needed for stock assessments, ecosystem assessments, and dynamic ocean management and conservation applications.
- Products like GlobColour and ESA's OC-CCI, that consistently merge data across multiple sensors (ie SeaWiFS, MODIS, MERIS, VIIRS and OLCI), are crucial to fisheries management applications.





- A NRT product for the merged datasets is needed.
- Differences in magnitudes between products makes it problematic to switch between different products for operational uses.
- Having associated anomalies products for the merged timeseries would be extremely useful.
- The ESA OC-CCI product has 40+ variables but does not have PFT groups, information that could be useful for fisheries management.

Thank You! cảm ơn bạn