

Forecasting Ocean Chlorophyll in the Equatorial Pacific

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Background:

- First forecast of chlorophyll (chl) using a dynamical model framework

Analysis:

- Using the NASA Ocean Biogeochemical Model (NOBM) and the NASA GMAO seasonal forecast we provide a global 9-month forecast of chl
- Skills of forecast assessed by comparing the chl forecast with the Suomi-NPP VIIRS data in the Equatorial Pacific

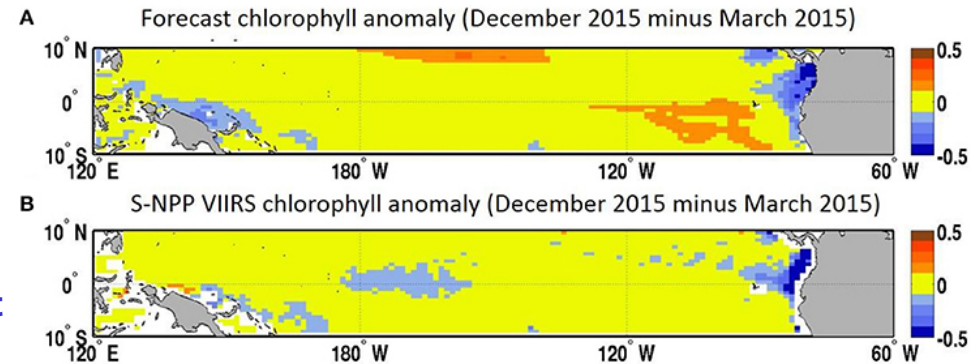
Findings:

- The forecast was able to reproduce the phasing of the variability in chlorophyll concentration in the Equatorial Pacific, including the beginning of the 2015–2016 El Niño
- The 1-month lead forecast of chlorophyll was significant ($p < 0.05$, $R = 0.33$)

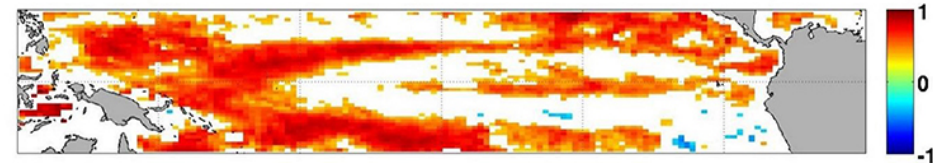
Significance:

- This experimental forecast could potentially provide support in the planning of missions (e.g. EXPORTS) as well as forecast of Harmful Algal Blooms, support fisheries management (e.g. changes in phytoplankton during El Niño events), hypoxia/anoxia events, oil spills or the dispersal of pollutants).

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Chlorophyll concentration anomaly (December 2015 minus March 2015, $\mu\text{g chl L}^{-1}$) from the March 2015 forecast for December 2015 and (B) chlorophyll concentration from S-NPP VIIRS ($\mu\text{g chl L}^{-1}$).



Anomaly correlation coefficient between the forecasted chlorophyll at 1-month lead and S-NPP VIIRS chlorophyll for the period 2012–2015. White indicates that the correlation was not significant ($p > 0.05$).