Forecasting Ocean Chlorophyll in the Equatorial Pacific

Cecile S. Rousseaux (NASA GMAO/GESTAR) & Watson W. Gregg (NASA GMAO)

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.

Rousseaux CS and Gregg WW (2017) Forecasting Ocean Chlorophyll in the Equatorial Pacific. Frontiers in Marine Science 4:236. doi: 10.3389/fmars.2017.00236.