Predicting Ocean Currents

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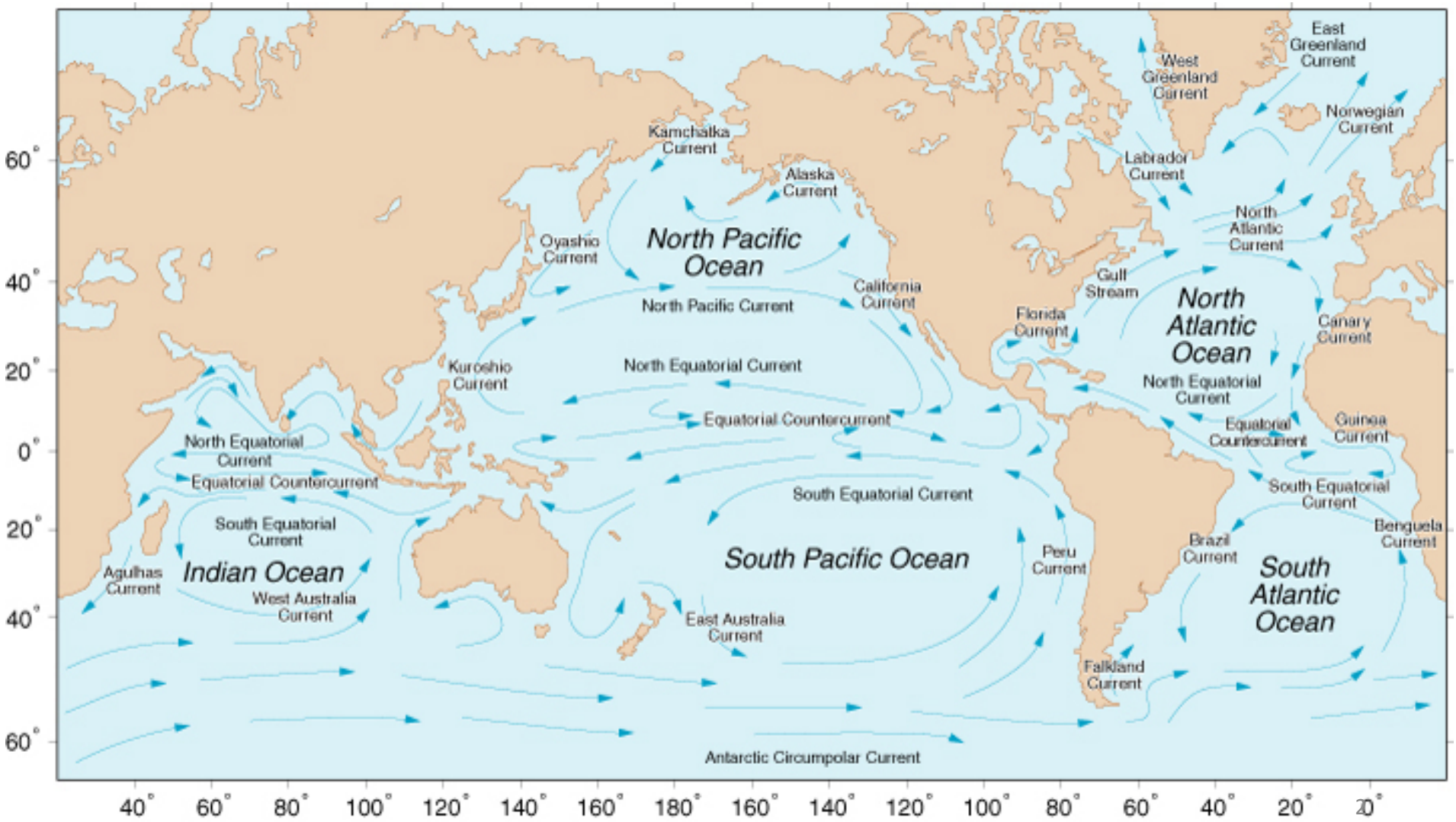
Jet Propulsion Laboratory
California Institute of Technology

November 14, 2011

Our Knowledge of Ocean Currents: Long-Term Mean



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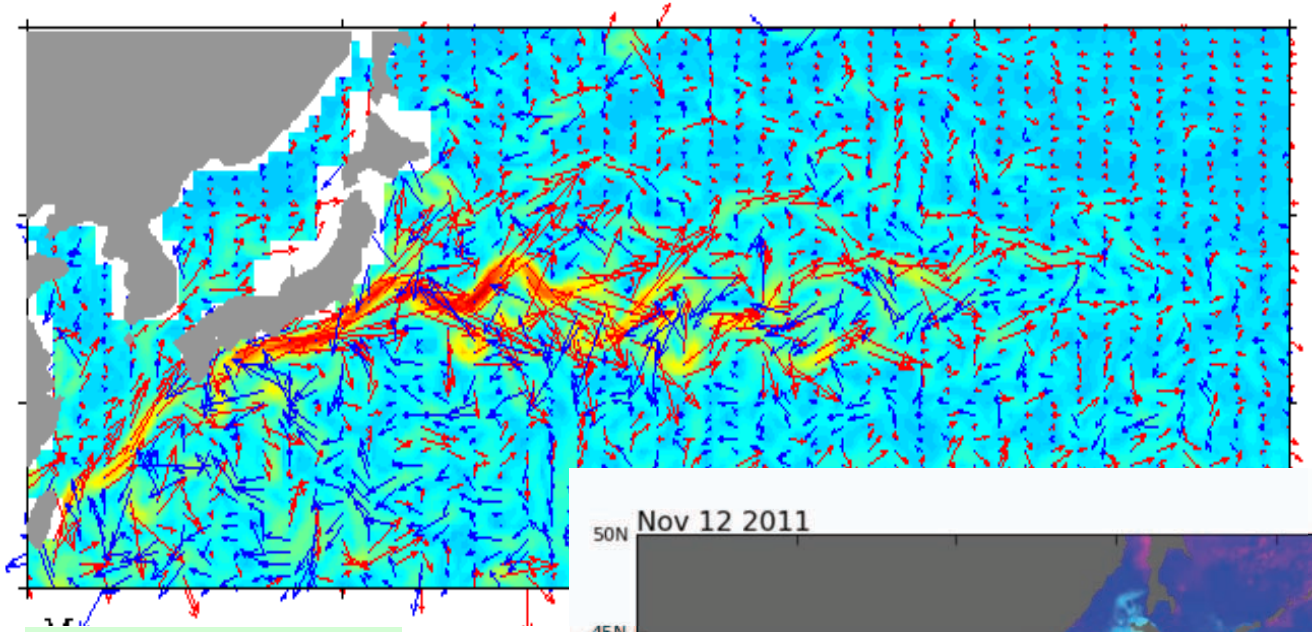
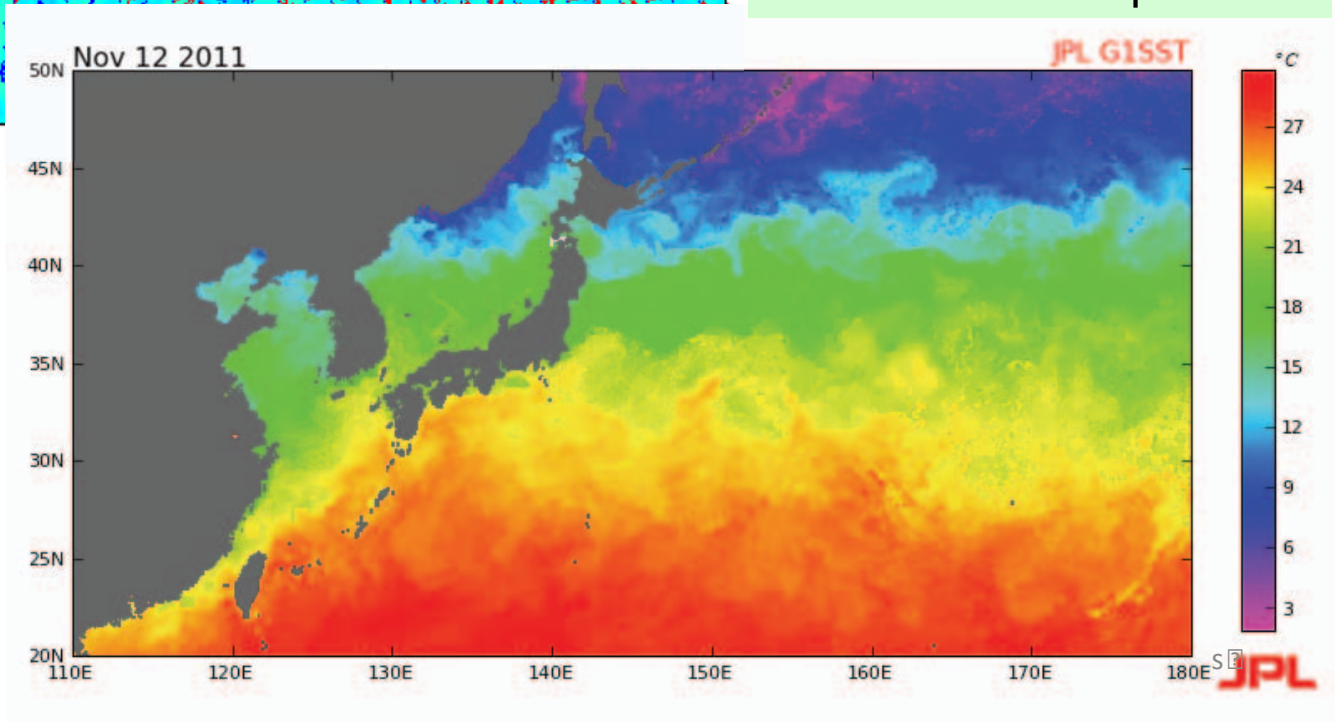
Our Knowledge of Ocean Currents: Long-Term Mean

Our Knowledge of Ocean Currents: September 2011

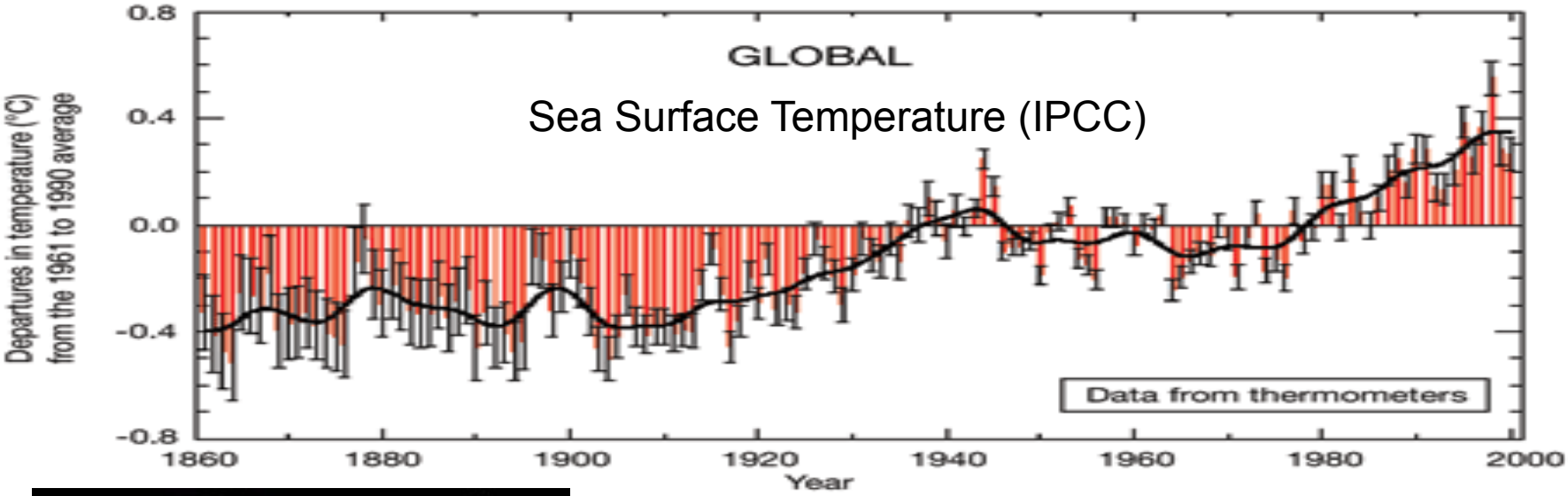


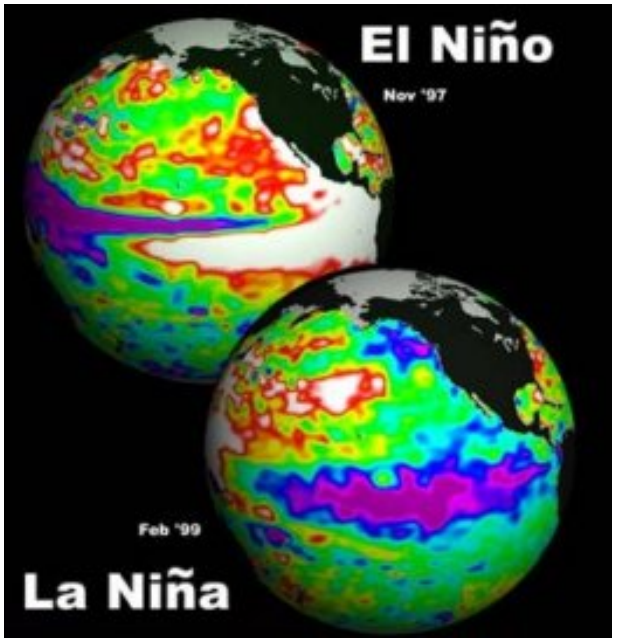
Surface Current

Sea Surface Temperature

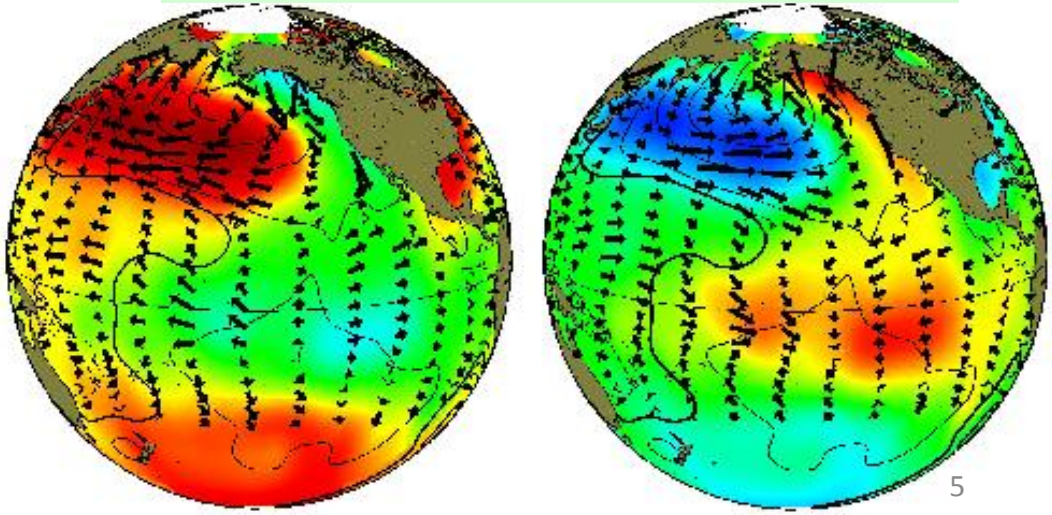


Our Knowledge of Ocean Currents: Fluctuations at Multiple Time Scales

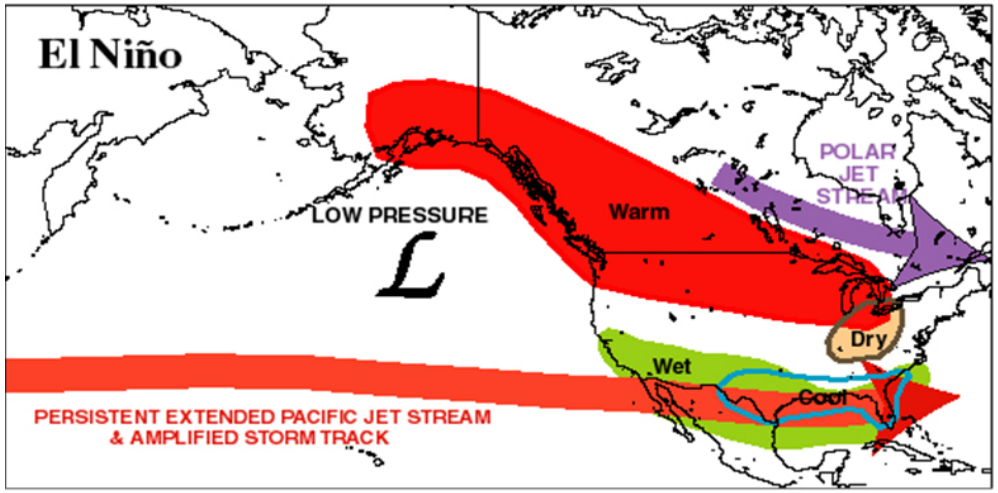


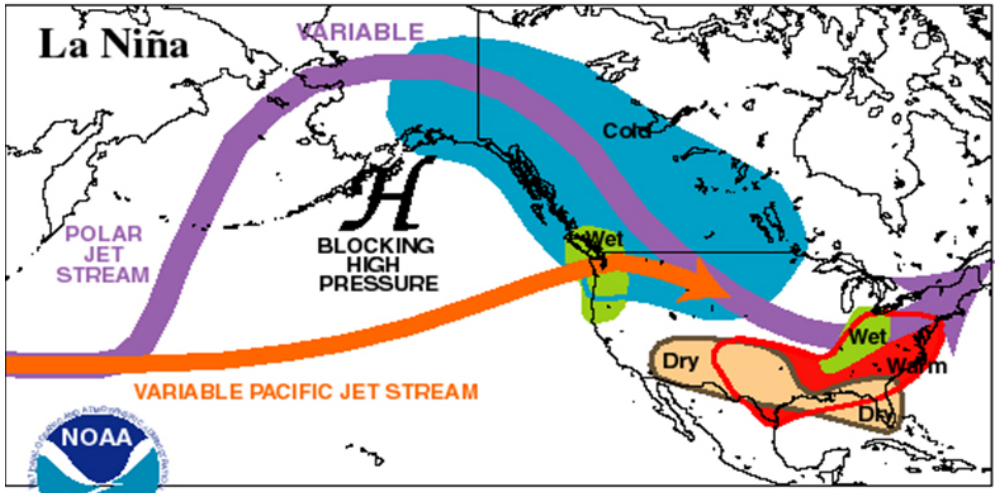


Pacific Decadal Oscillation (PDO)



How to Predict Ocean Currents?
Weather & Climate Prediction Examples

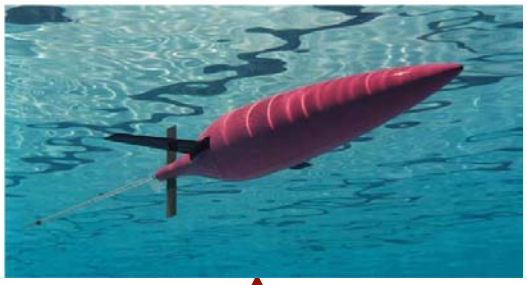




Climate Prediction Center/NCEP/NWS

How to Predict Ocean Currents?

Observation



Model
Data Assimilation

Data Assimilation

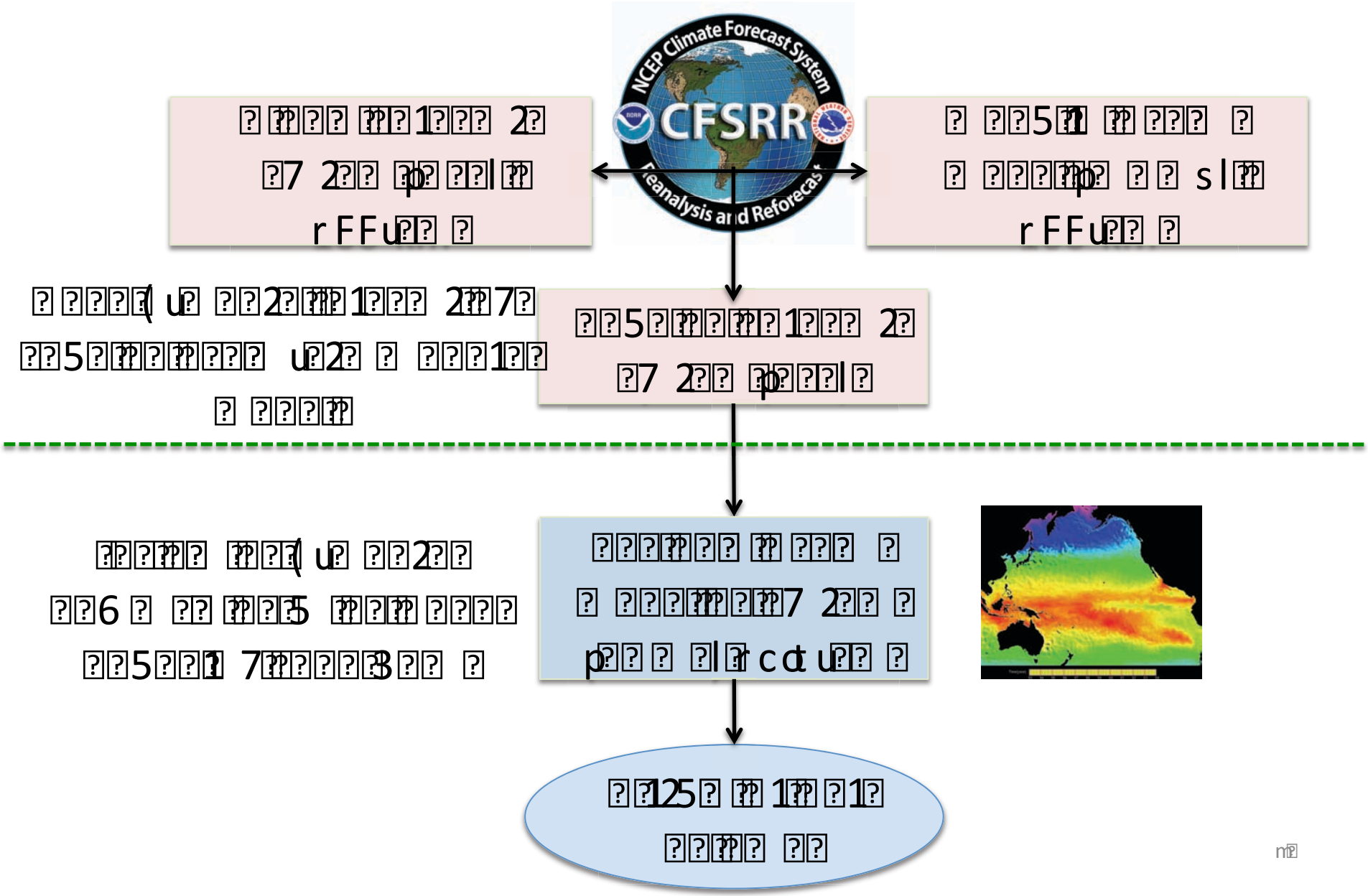
Forecasting

Products

Feedback

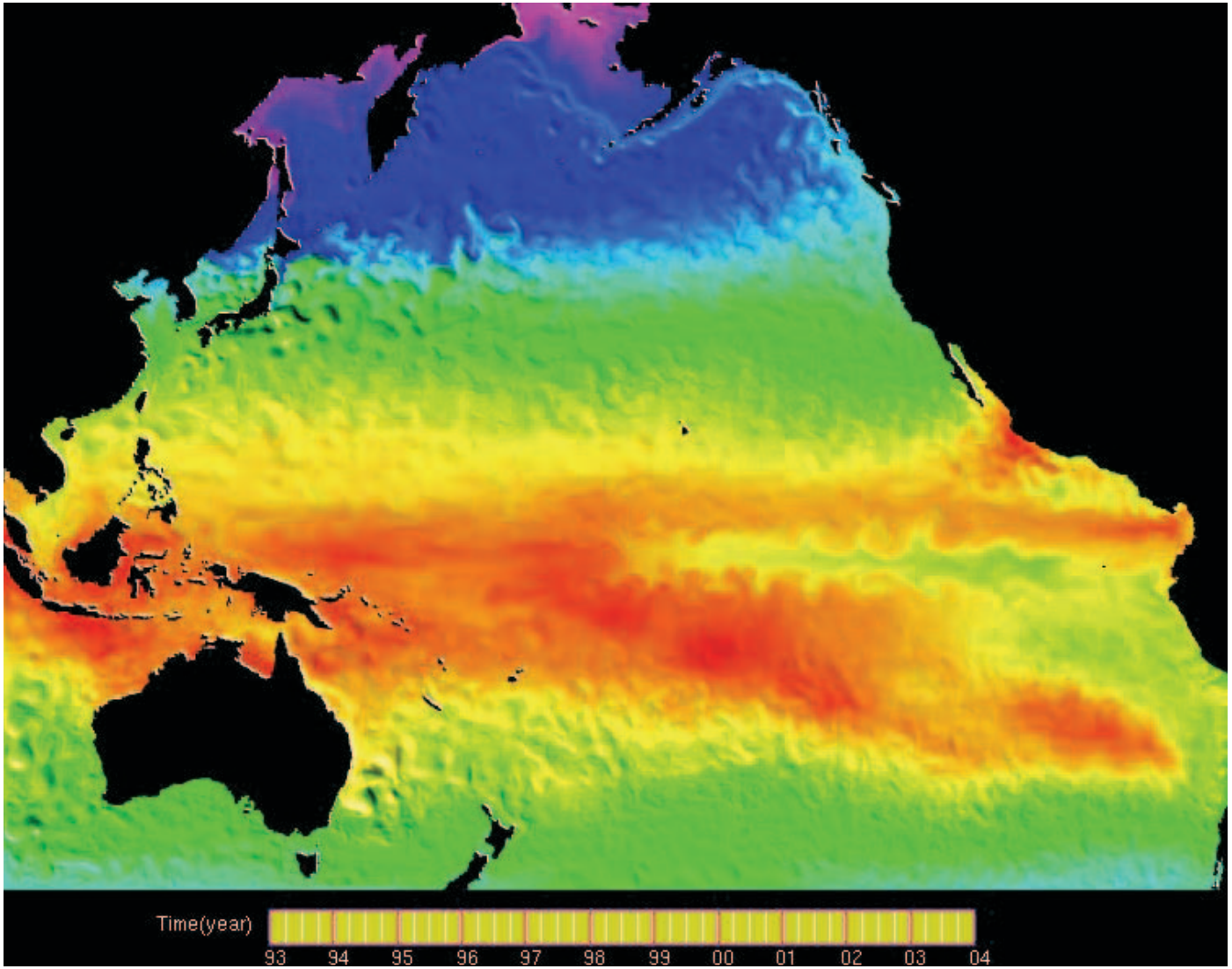
Users

9-Month Ocean Current Prediction

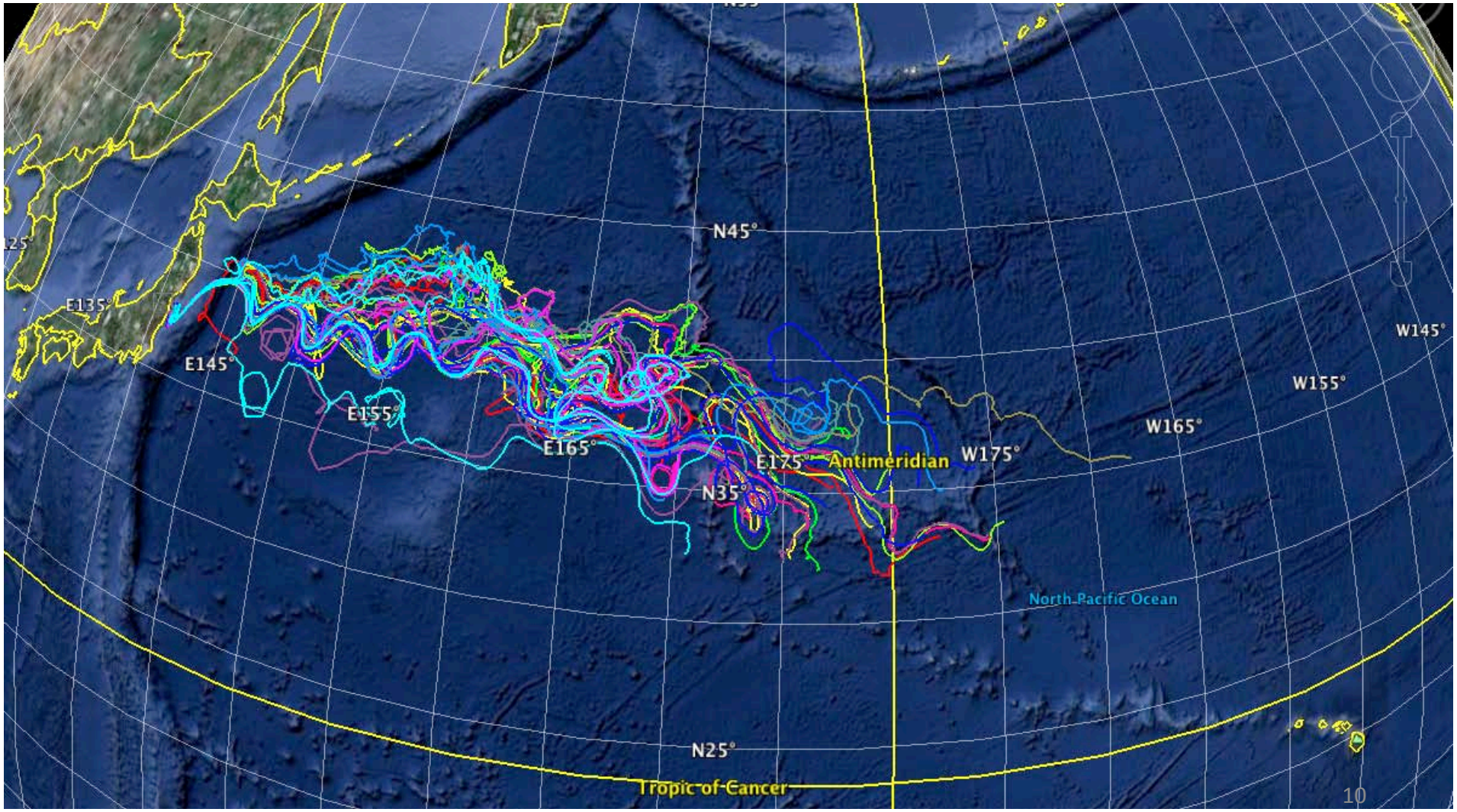


Pacific Ocean Model Simulation

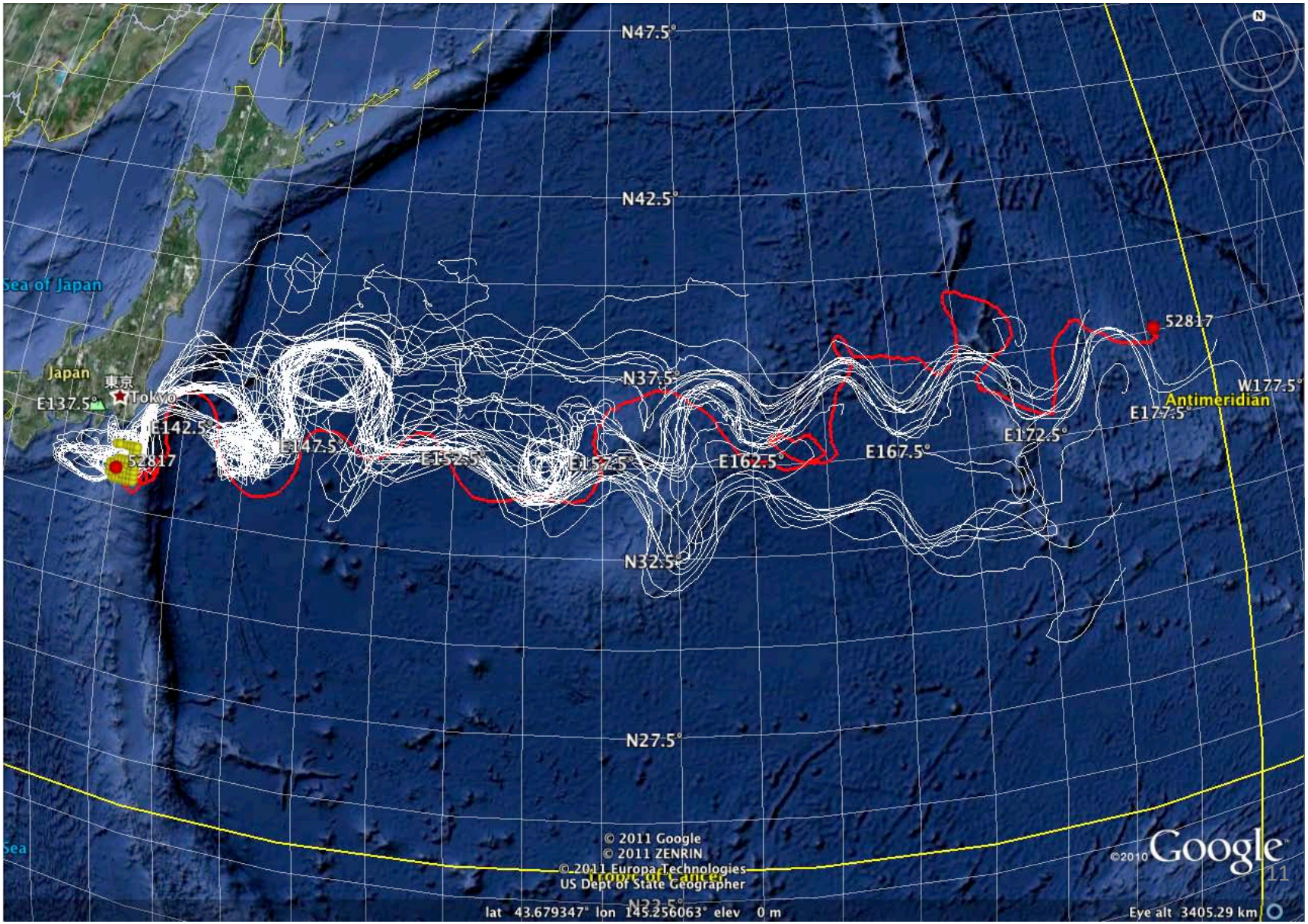
http://ourocean.jpl.nasa.gov/animations.html



Virtual Drifter Trajectories: Released off the coast of Japan in April 2011 and tracked until Jan.2012



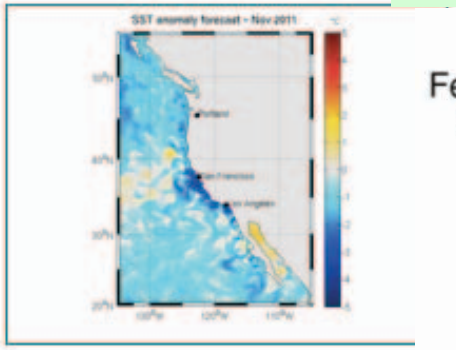
Observed (red) vs. Model Prediction (white)



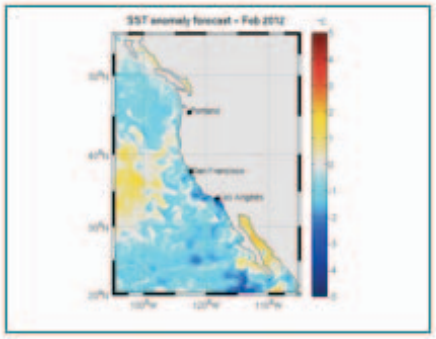
Predicting Ocean Currents: We are ready to produce weekly 9-month predictions

Sea Surface Temperature

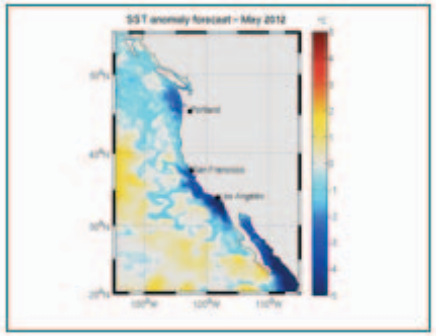
November 2011



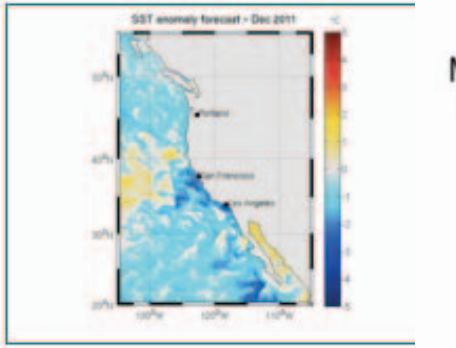
February 2012



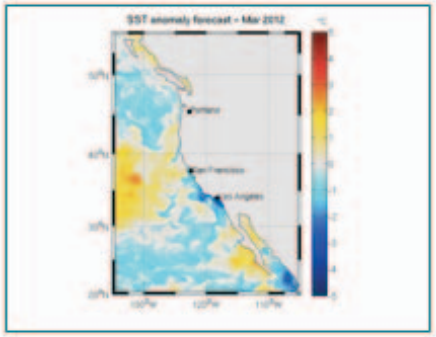
May 2012



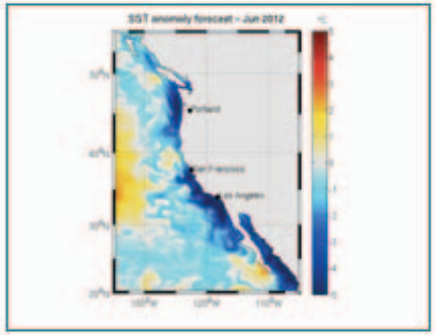
December 2011



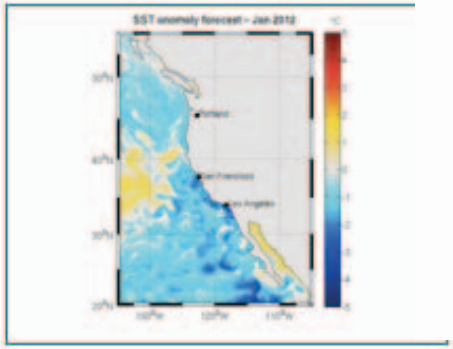
March 2012



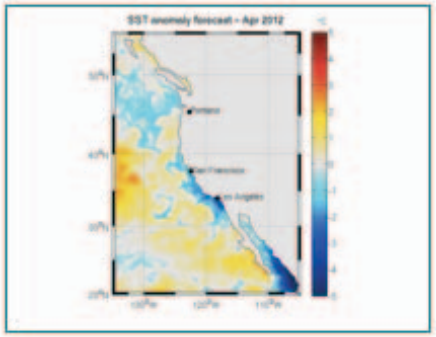
June 2012



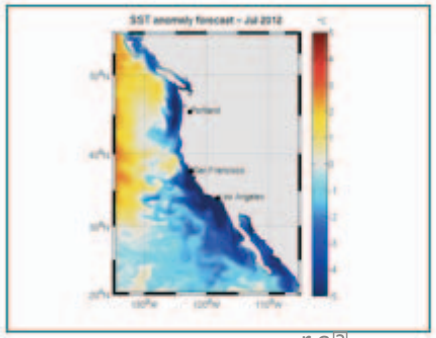
January 2012



April 2012



July 2012



Thanks!

Questions?

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