Sea surface temperature characterization using a high-resolution ocean model

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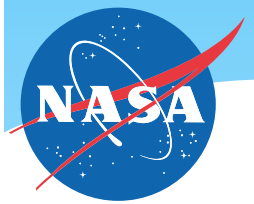
15th GHRSST Science Team Meeting



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California Institute of Technology
Pasadena, California

ECCO LLC

* llc_4320 : global simulation on 1/48th-degree lat-lon-cap grid
* Time steps in 25 secs
* 90+ depth iterations, meters in the upper ocean
* Realistic tidal and diurnal forcing (from ECMWF)
* Run and results stored on NASA AMES supercomputer… really big big data

* We will report on the use of simulated sea surface temperature (SST) from a highly instrumented (hourly output of full 3D fields), high-resolution (0.75 to 2.2 km horizontal grid spacing and 90 vertical levels) global ocean configuration of the Massachusetts Institute of Technology general circulation model (MITgcm) to investigate SST L2P matchups, and sampling issues in the generation of Level-4 analyses. The simulation is particularly well suited to carry out these exercises because it has thin vertical levels (1 m) near the surface and includes tidal forcing and realistic diurnal forcing from latest 0.14-degree European Centre for Medium-Range Weather Forecasts (ECMWF) analysis. In the first exercise we use the model near-surface output from one month to investigate the temporal evolution of model SST relative to geostationary SST observations in the South Atlantic and Indian Ocean. **Goals of the comparisons include investigating the diurnal signature of SST in cloudy regions, determining how to use model SST as a proxy for foundation temperature, and gauging the accuracy and realism of the model itself using the satellite SST observations. For the second exercise, we review the use of the model fields themselves as sources of high-resolution synthetic data for Level-4 analysis experiments.**
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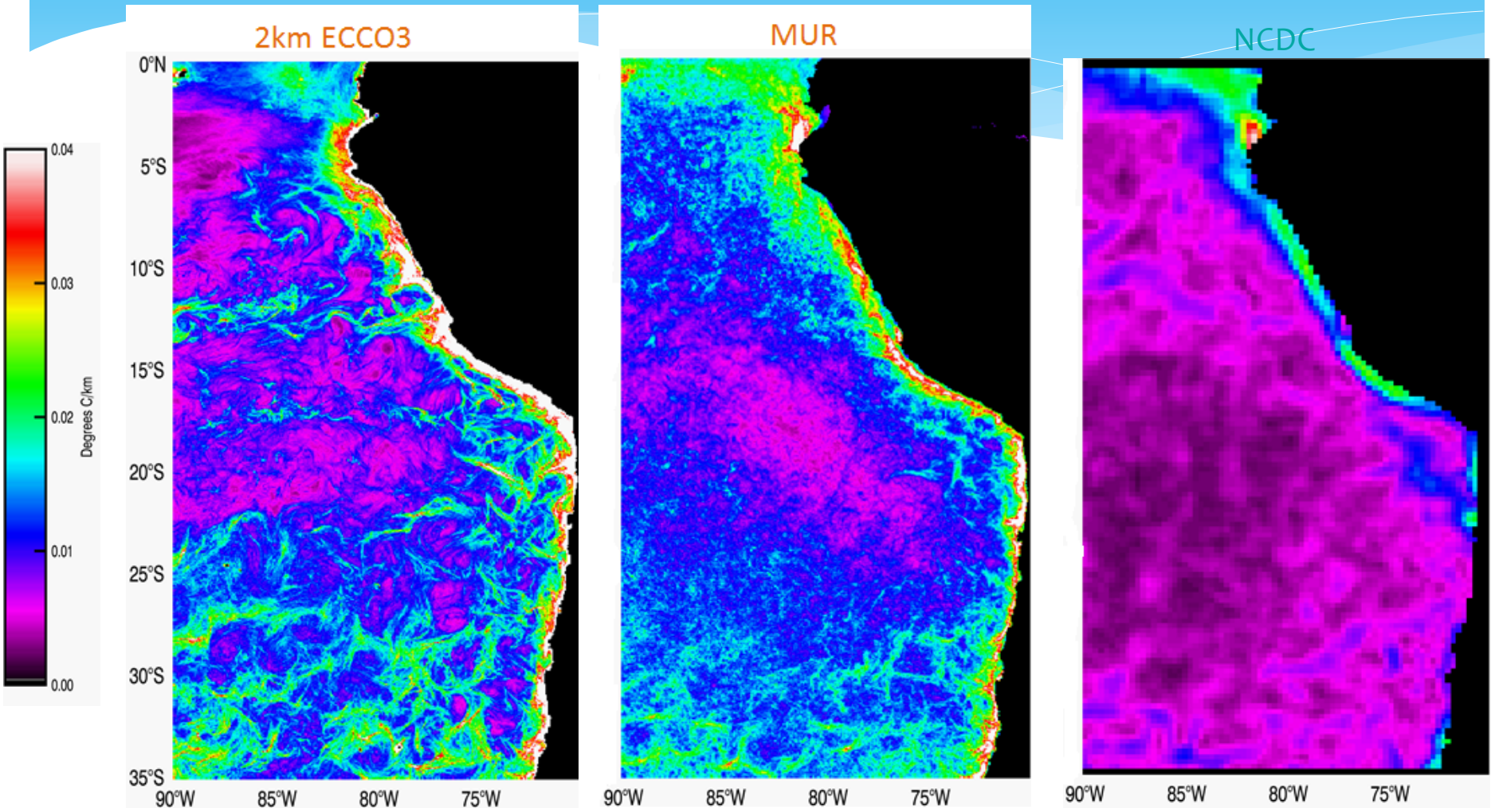
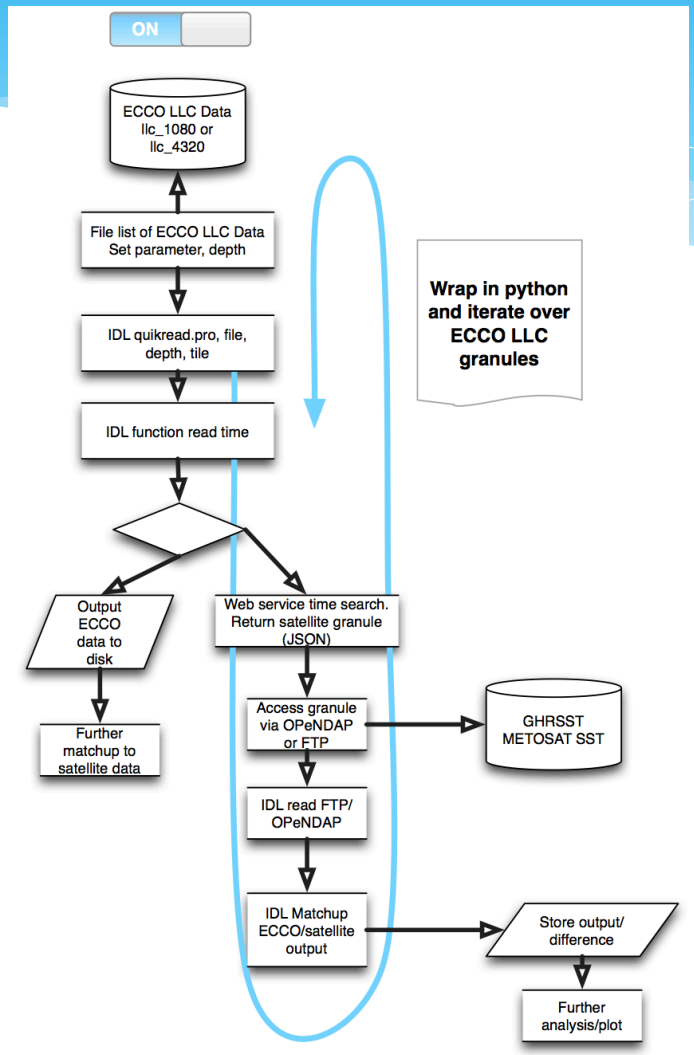
Comparison of Mean SST Gradient Magnitudes derived from 2km ECCO2, MUR and NCDC for a 2-month period (Oct-Nov 2011)




ON
ECCO LLC Data
llc_1080 or
llc_4320
File list of ECCO LLC Data
Set parameter, depth
IDL quikread.pro, file,
depth, tile
IDL function read time
Wrap in python
and iterate over
ECCO LLC
granules
Output
ECCO
data to
disk
Further
matchup to
satellite data
Web service time search.
Return satellite granule
(JSON)
Access granule
via OPeNDAP
or FTP
GHRSST
METOSAT SST
IDL read FTP/
OPeNDAP
IDL Matchup
ECCO/satellite
output
Store output/
difference
Further
analysis/plot