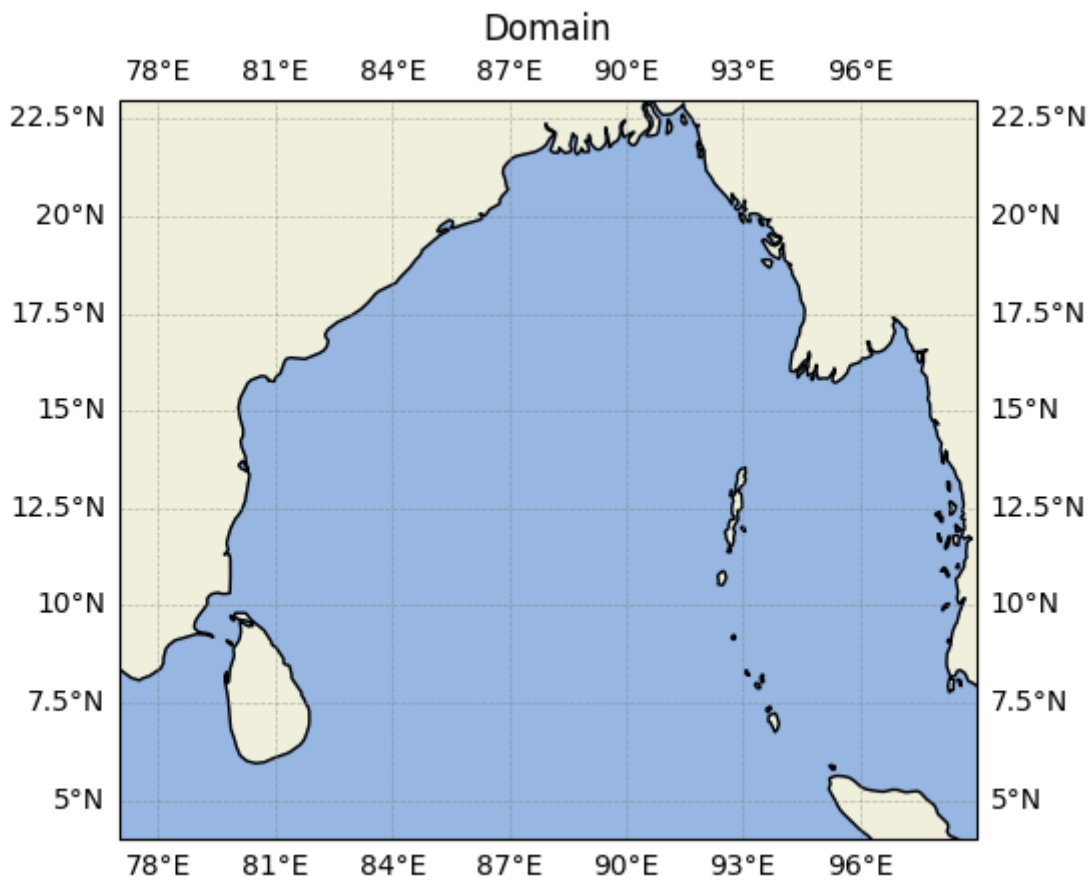
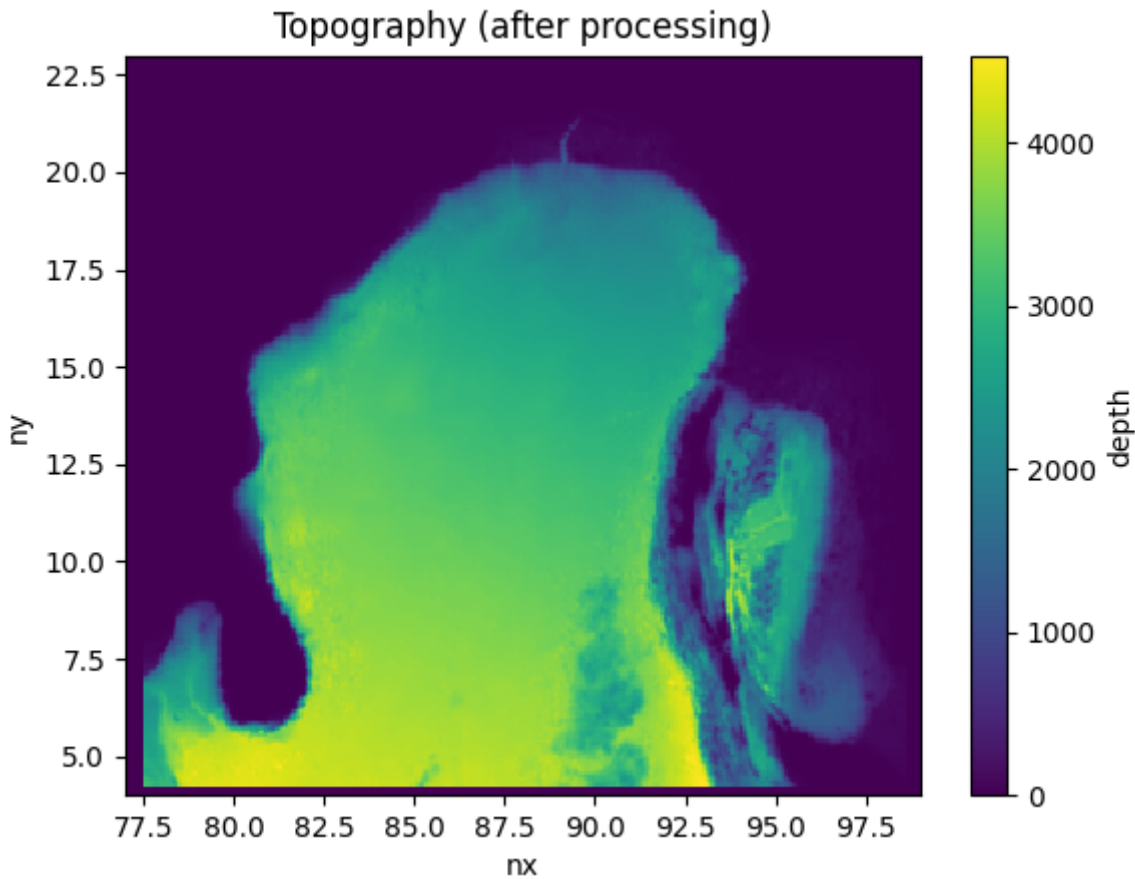


The model setup has a uniform horizontal resolution 0.036 degrees in longitude and 0.036 degrees in latitude and model domain covers the bay of bengal between latitudes 4N to 25N and longitudes 77E to 99E. Equations deriving ocean dynamics and themodynamics are discronetized on a eulerian grid, with arkawa C grid defining horizontal arrangement of model variables.



The model has 41 vertical levels (HYCOM) and spacing gradually increases up to 5000m and MOM6's vertical lagrangian remapping enabled for using any kind of coordinates.



All 4 sides are treated as solid rigid walls among them southern wall is fake rigid boundary. The bottom topography is based on new version of ETOPO (ETOPO version 1).

Equation of state used in the model is based on *Wright (1997)*. Vertical mixing uses the KPP scheme with nonlocal mixing. Chlorophyll schemes are not used for estimating shortwave penetration.

Field	Data Source	References	Frequency
Air Temperature (K)	ERA 5 Interim reanalysis	The ERA5 Global Reanalysis Hersbach, H. et al. May 2020. QJRMS	daily
Short wave Downward flux (W/m^2)	ERA 5 Interim reanalysis	The ERA5 Global Reanalysis Hersbach, H. et al. May 2020. QJRMS	daily
Longwave downward flux (W/m^2)	ERA 5 Interim reanalysis	The ERA5 Global Reanalysis Hersbach, H. et al. May 2020. QJRMS	daily
Specific Humidity	ERA 5 Interim reanalysis	The ERA5 Global Reanalysis Hersbach, H. et al. May 2020. QJRMS	daily
10m U wind (m/s)	ERA 5 Interim reanalysis	The ERA5 Global Reanalysis Hersbach, H. et al. May 2020. QJRMS	daily
10m V wind (m/s)	ERA 5 Interim reanalysis	The ERA5 Global Reanalysis Hersbach, H. et al. May 2020. QJRMS	daily

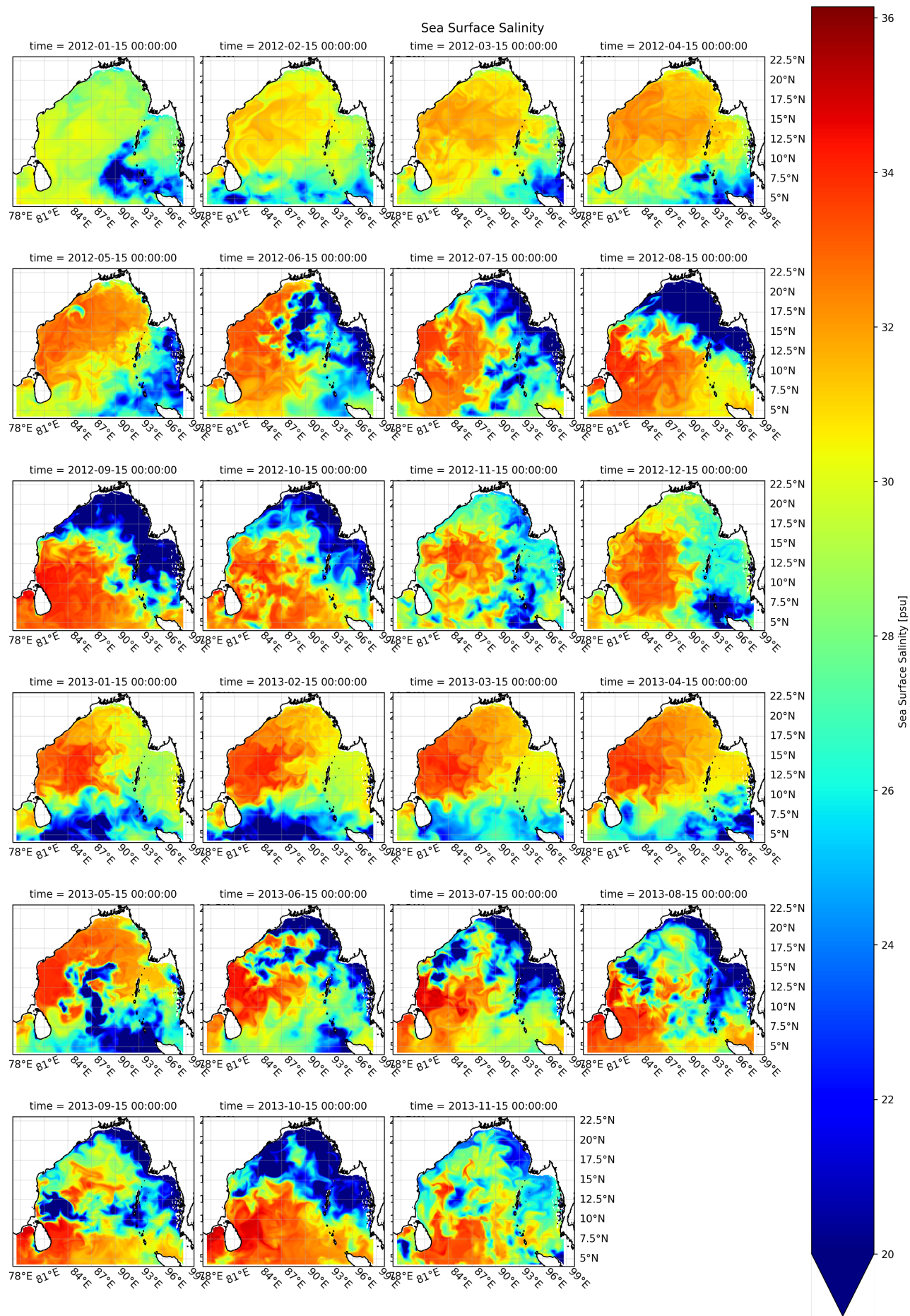
Field	Data Source	References	Frequency
Precipitation	ERA 5 Interim reanalysis	The ERA5 Global Reanalysis Hersbach, H. et al. May 2020. QJRMS	daily
Runoff flux	GRUN	GRUN: An observations-based global gridded runoff dataset from 1902 to 2014	monthly
Sea Level Pressure	ERA5 interim reanalysis	The ERA5 Global Reanalysis Hersbach, H. et al. May 2020. QJRMS	daily

The model spin up was started with Initial conditions from HYCOM high resolution model output (HYCOM) with SST,U,V currents and SSS from 1 st January 2012. The model is forced by daily climatology derived from ECMWF reanalysis for the period 2012-2013. The sea-ice ,land and atmospheric components are turned on for all model runs. The first year (2012) is considered as cold run while the second year model is assumed to be stable.

Model Physics options

Vertical mixing scheme is the KPP scheme of Large et al. [1994] with nonlocal mixing

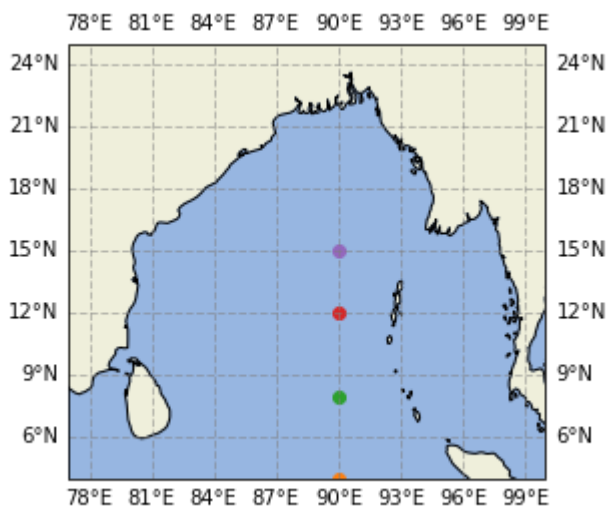
Model Outputs (2012-2013,with river runoff)



Comparison plots and analysis

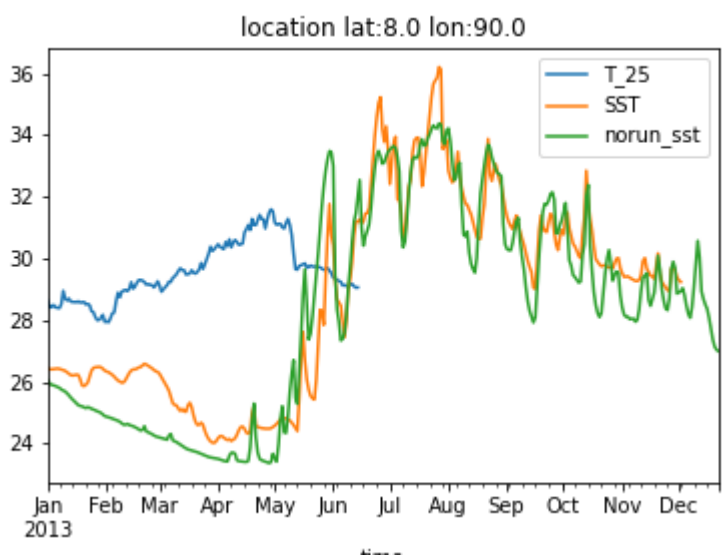
T_25 is the observational SST

Compared locations



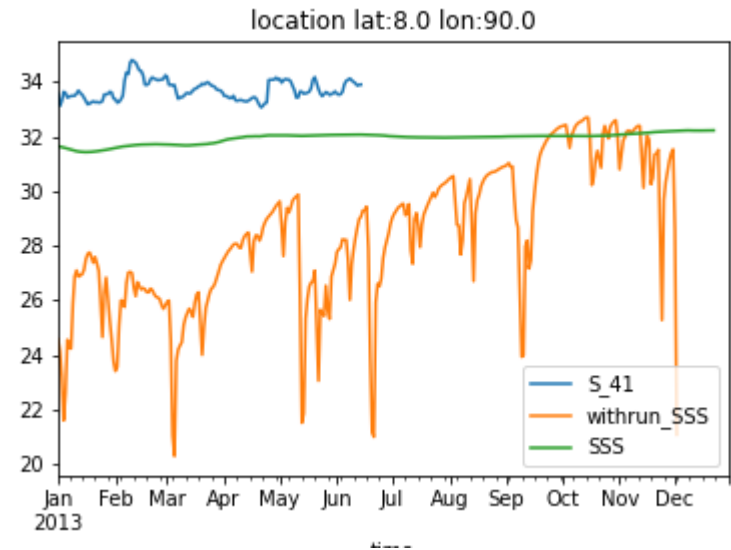
1st location

Temp

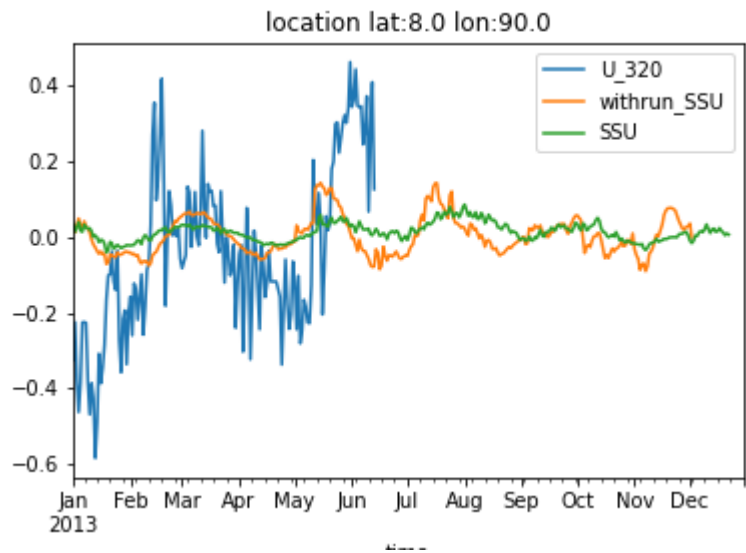


	T_25	SST	norun_sst
T_25	1.000000	-0.481060	-0.215725
SST	-0.481060	1.000000	0.951776
norun_sst	-0.215725	0.951776	1.000000

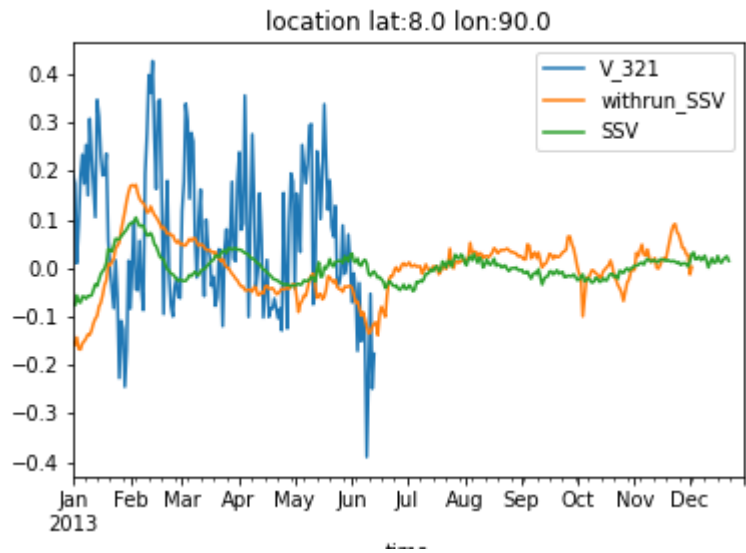
Salinity



U current

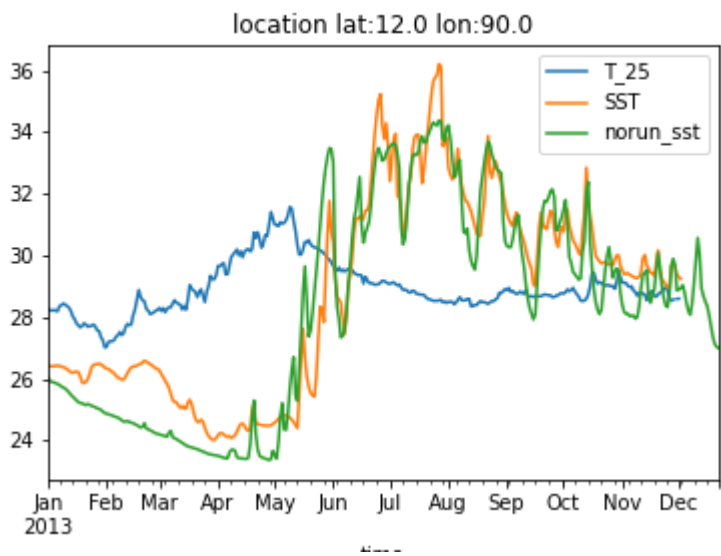


V current

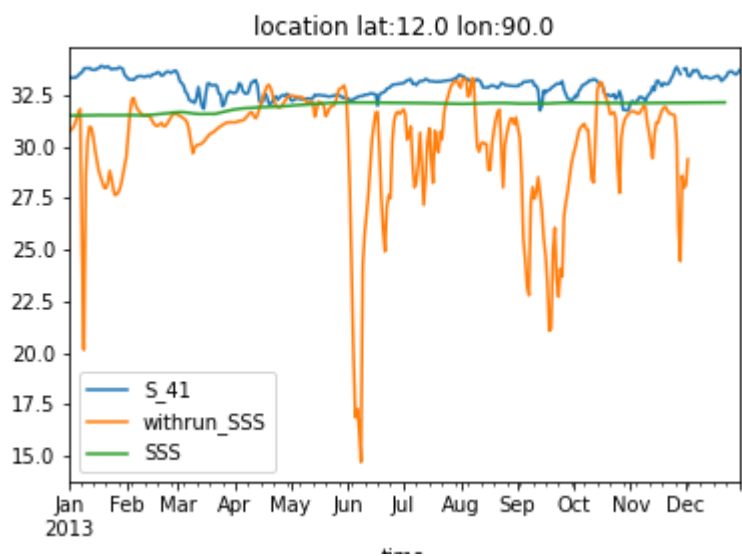


2nd location

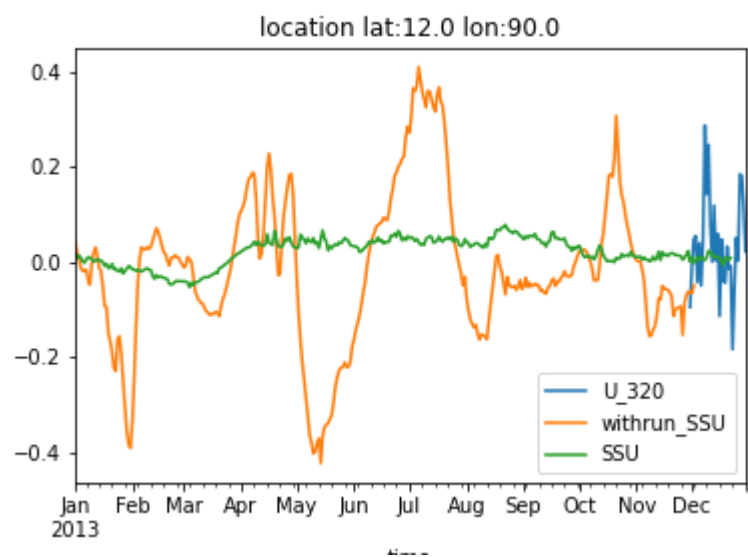
Temp



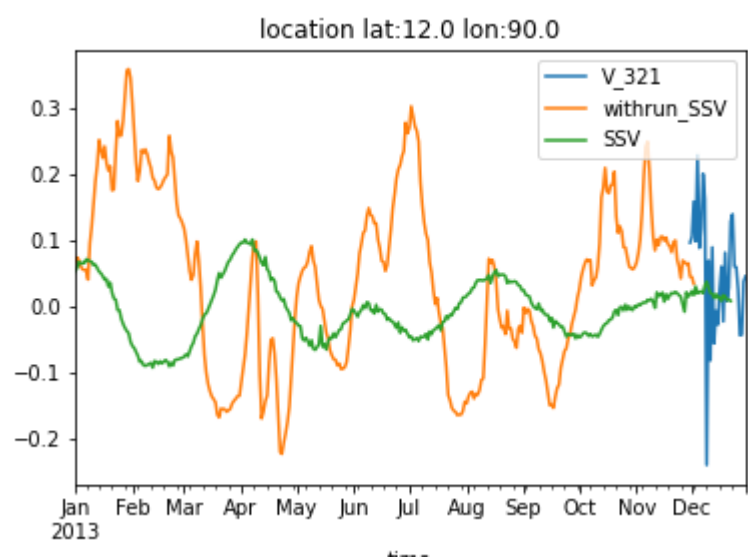
Salinity



U current

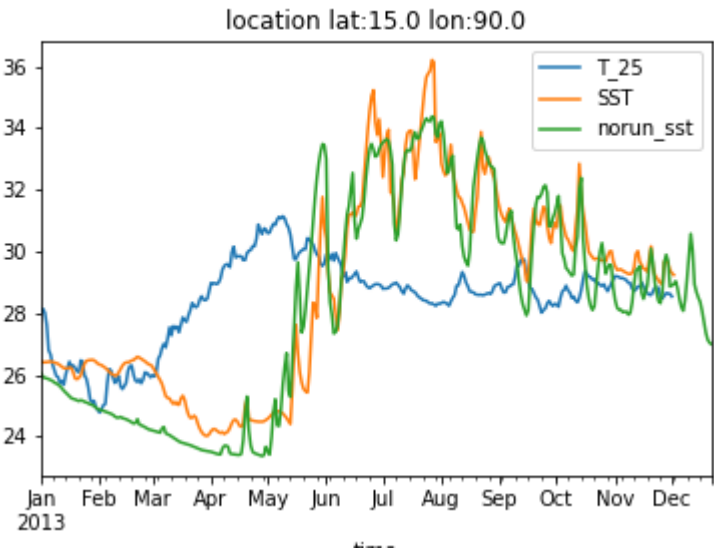


Vcurrent



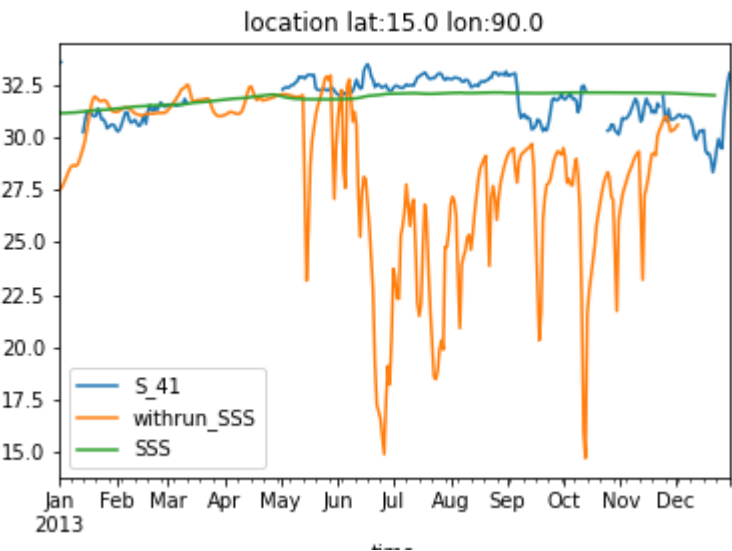
3rd location

Temp

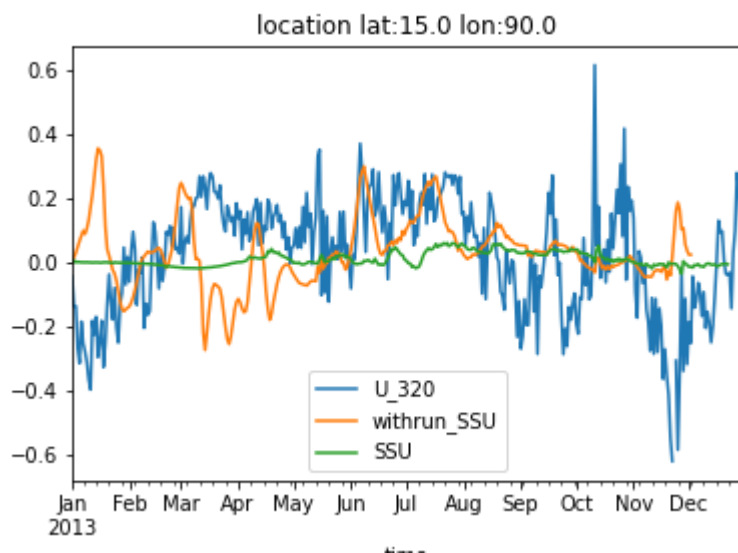


	T_25	SST	norun_sst
T_25	1.000000	0.140384	0.272010
SST	0.140384	1.000000	0.951776
norun_sst	0.272010	0.951776	1.000000

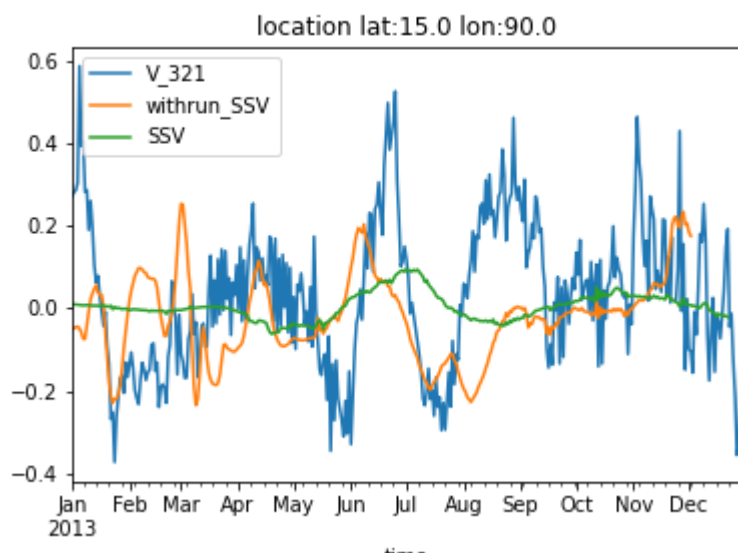
Salinity



U current



V current



- overall an negative correlation between observational and model output SST
- Comparitively simulations with river runoff (and precipitation) are more closer to the observed values.
- after Jun/July the model values start to approach observational values
- Even the values are close, poor correlation suggests model does not picking up the patterns
- A run for 6 or 7 year might make the model stable (2007-2013)
- The V and U current an acceptable positive correlation of 0.48