

# Aim

- Configure and setup high-resolution ocean model for bay of bengal region

## Model overview

- **Geophysical Fluid Dynamics Laboratory (GFDL) MOM6**
- publicly available in the NOAA-GFDL public domain. (GIT)
- Modular ocean model version 6 (MOM6) is a hydrostatic, primitive equation, free surface, Boussinesq ocean model with **ALE vertical grid remapping** to use any kind of vertical coordinates and generalized orthogonal horizontal coordinates.
- Equations governing ocean dynamics and thermodynamics are discretized on a fixed eulerian grid, with **Arkawa C grid** defining the horizontal arrangement of model variables

# Model Build

## Grid system

Vgrid Hgrid Topo

**FRE\_NC tools**

## Initial conditions

HYCOM model output  
as initial conditions

**41 level HYCOM  
single time 2012**

## Forcing

ERA5 reanalysis JRA55

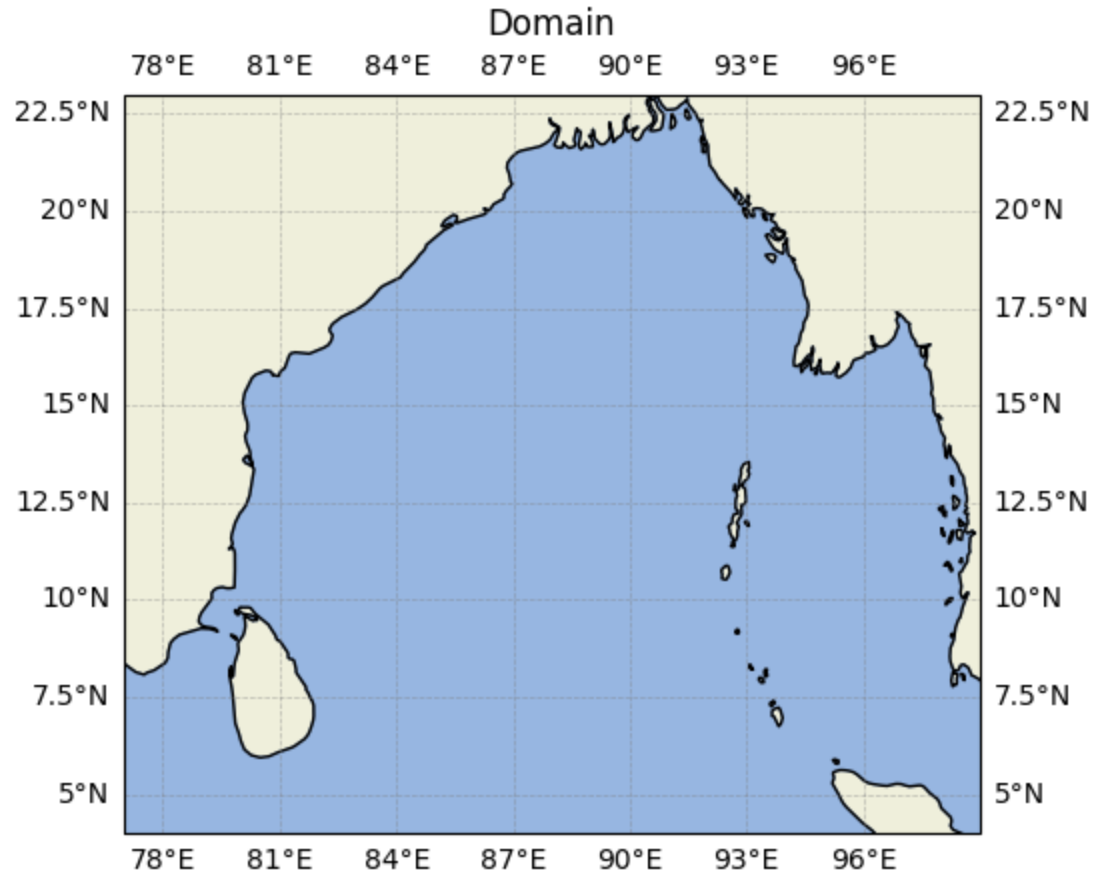
- 2m temp
- u10,v10
- precipitation
- runoff
- Specific humidity
- SLP
- downward longwave flux
- downward shortwave flux

## boundary conditions

Open boundary conditions Open boundary conditions

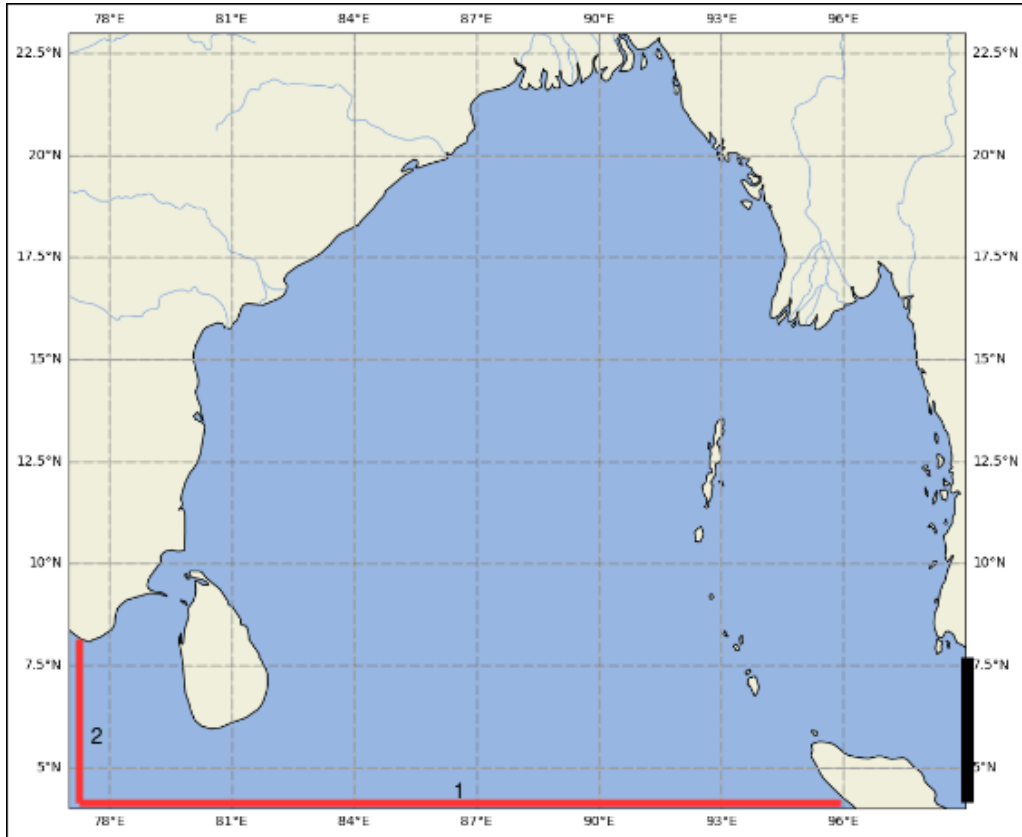
**Fake rigid boundary  
- edited topography**

**open boundary conditions  
- MOM5 Indian ocean model  
output**



## Domain

- 0.062 degrees resolution
- 4N , 25N and 77E to 99E
- 1-min ETOPO1
- 41 levels vertical resolution (HYCOM)
- max depth of 5000m



# Boundary Conditions

- 3 boundaries were considered
- One closed and two open boundaries
- The input data for boundaries are from Indian ocean model simulation (MOM5)

# Track and progress

main ▾


2 branches

1 tag

Go to file

Add file ▾

Code ▾

 **nmathewa** present

✓ 25e5d6d 15 minutes ago

🕒 584 commits

📁 .github/workflows	Update main.yml	9 months ago
📁 data_ana	final	7 months ago
📁 exps	obc_mom_trunc	19 hours ago
📁 post	present	15 minutes ago
📁 prepro	obc_west	3 days ago
📁 references	obc2_pynotes	2 months ago
📁 scripts	Merge pull request #20 from nmathewa/dependabot/pip/scripts/mom6n...	7 days ago
📁 summs	present	15 minutes ago
📁 wiki	prepro.md	7 days ago
📄 .gitignore	update	3 months ago
📄 README.md	Update README.md	8 days ago
📄 Screenshot from 2021-11-17 07-57-...	map upadete	2 days ago

☰ README.md

🖋

Functions for automation pre-processing

Automation

Run model HPC, OpenMPI

Make grid

About

MOM6 development

📖 Readme

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Contributors 3

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 **nirmalalex**

 **Parag0206**

# MOM6dev repo

## exps

CAOPS

regional2

2012\_bob

2012\_bob\_obc

## Experiments and tests

## wiki

Installation

preprocess

run

post-process

## Rough Documentaion

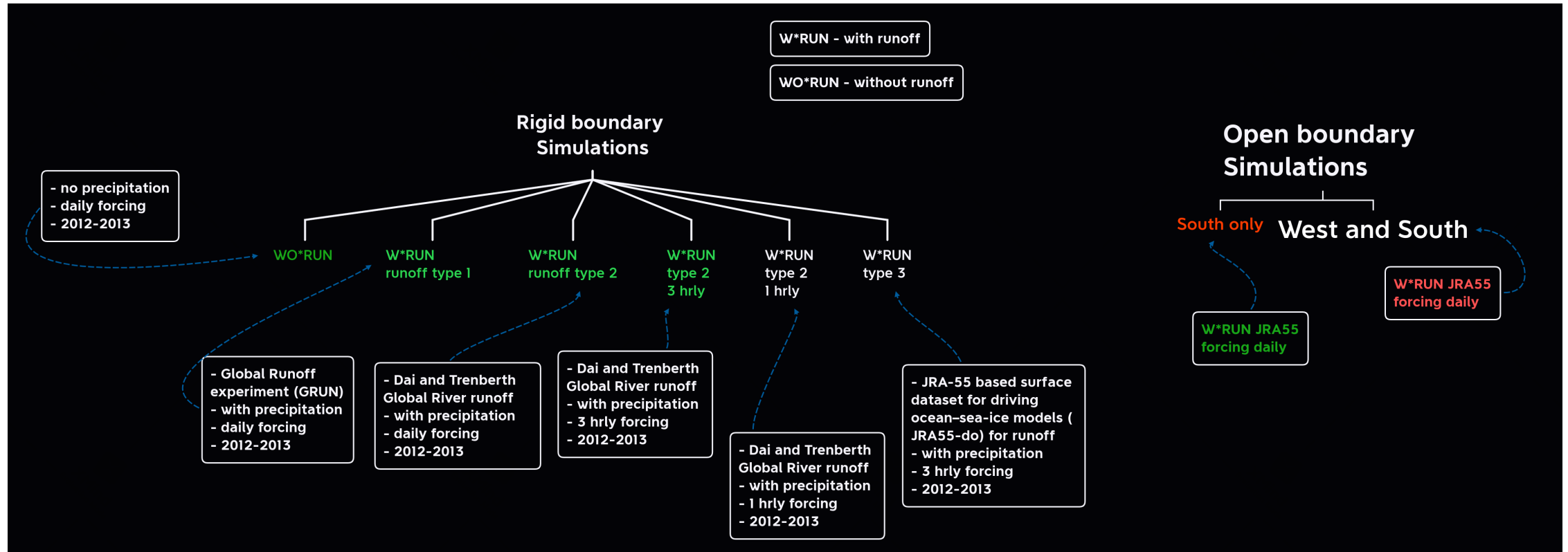
## scripts

python notebooks

ferret

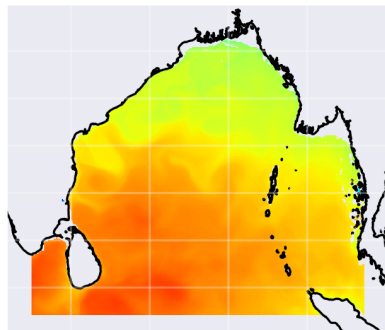
## supporting scripts

# Overview of simulations



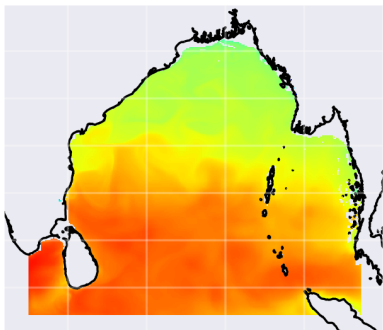
# Sea Surface Temperature

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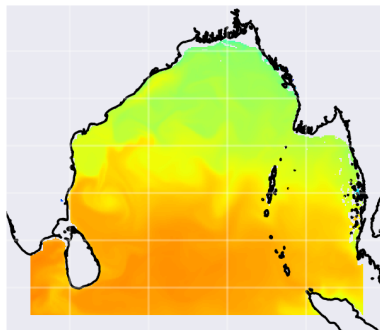
80°E 85°E 90°E 95°E 100°E

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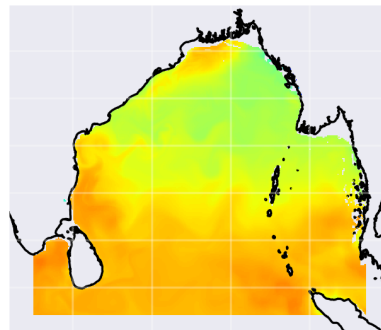
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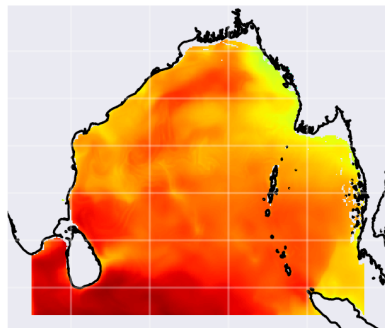
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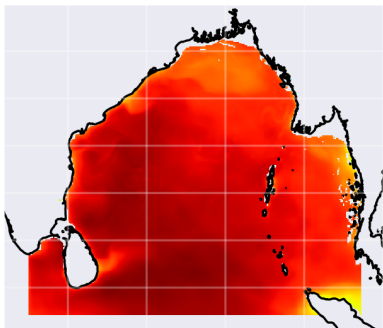
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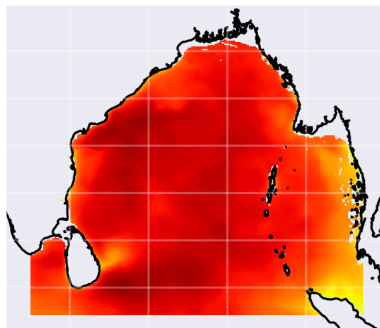
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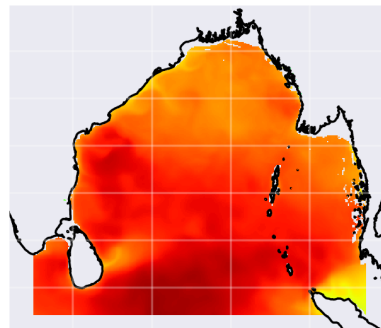
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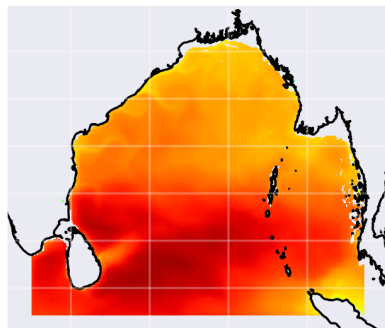
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time = 2013-08-15 00:00:00



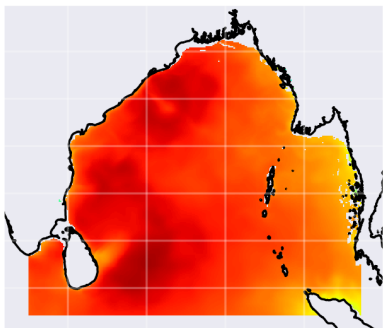
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time = 2013-09-15 00:00:00



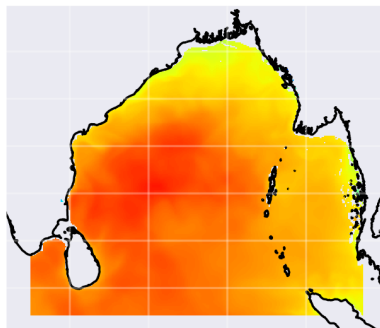
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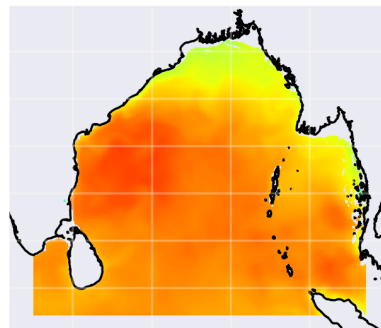
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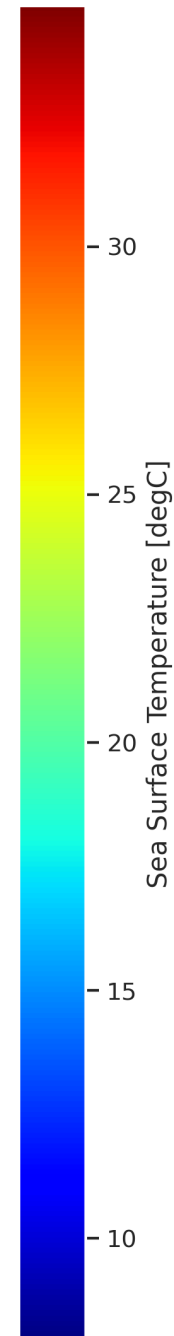


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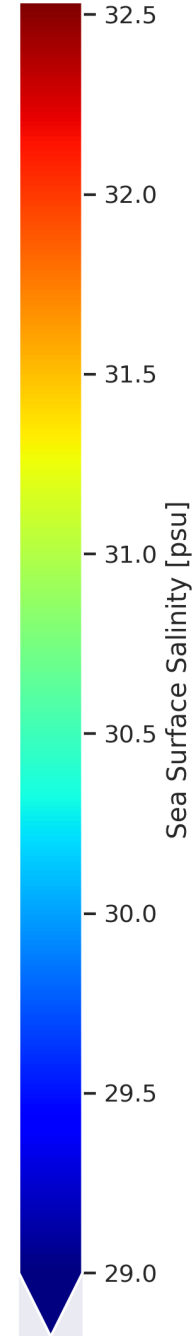
80°E 85°E 90°E 95°E 100°E





time = 2013-01-15 00:00:00    time = 2013-02-15 00:00:00    time = 2013-03-15 00:00:00    time = 2013-04-15 00:00:00

80°E 85°E 90°E 95°E 100°E    80°E 85°E 90°E 95°E 100°E    80°E 85°E 90°E 95°E 100°E    80°E 85°E 90°E 95°E 100°E



time = 2013-05-15 00:00:00      time = 2013-06-15 00:00:00      time = 2013-07-15 00:00:00      time = 2013-08-15 00:00:00

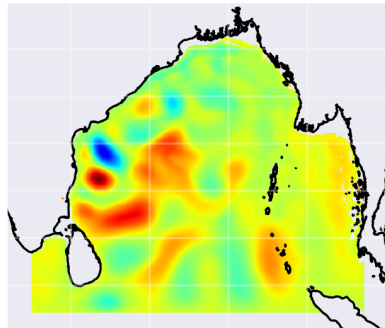
80°E 85°E 90°E 95°E 100°E      80°E 85°E 90°E 95°E 100°E      80°E 85°E 90°E 95°E 100°E      80°E 85°E 90°E 95°E 100°E

time = 2013-09-15 00:00:00      time = 2013-10-15 00:00:00      time = 2013-11-15 00:00:00      time = 2013-12-15 00:00:00

80°E 85°E 90°E 95°E 100°E      80°E 85°E 90°E 95°E 100°E      80°E 85°E 90°E 95°E 100°E      80°E 85°E 90°E 95°E 100°E

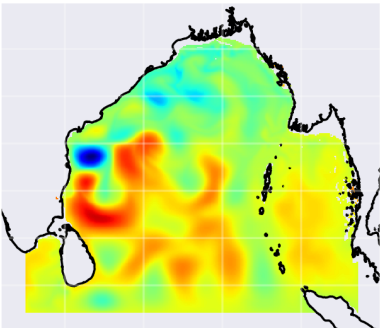
# Sea Surface Height

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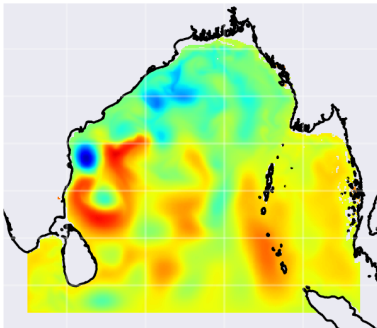
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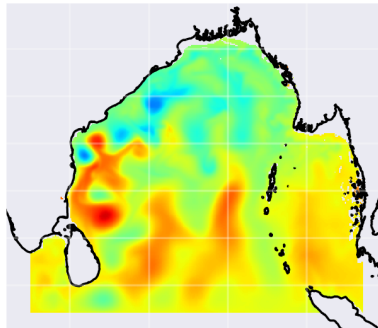
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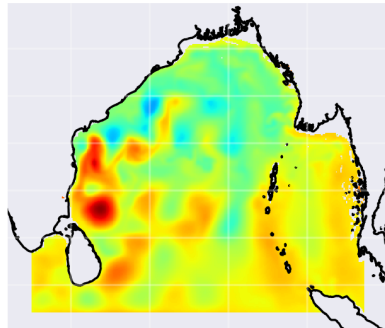
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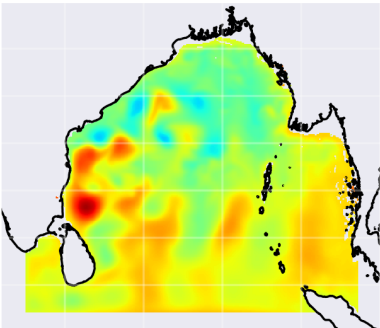
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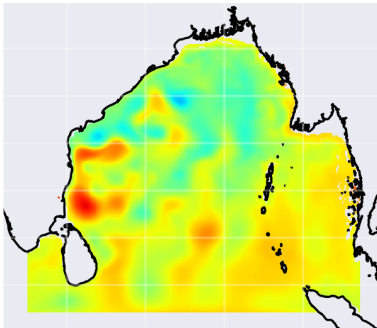
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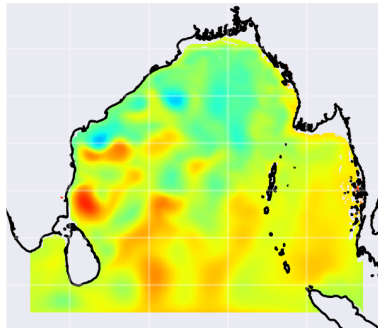
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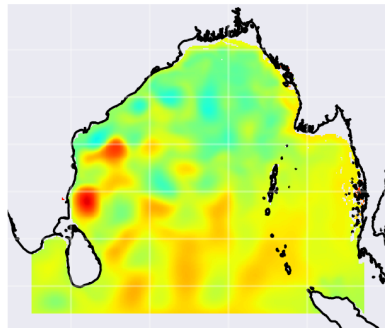
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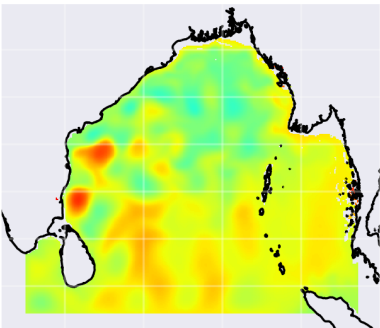
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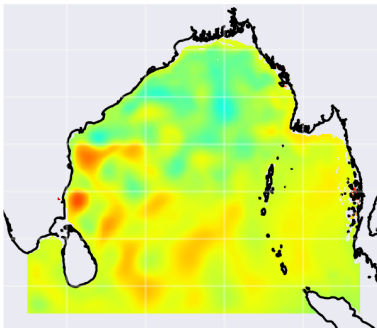
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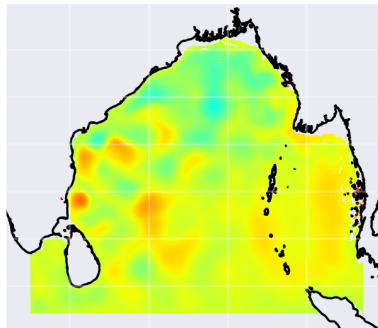
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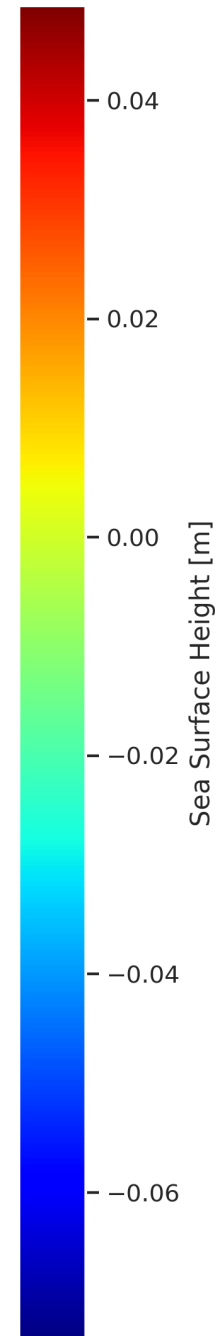


80°E 85°E 90°E 95°E 100°E

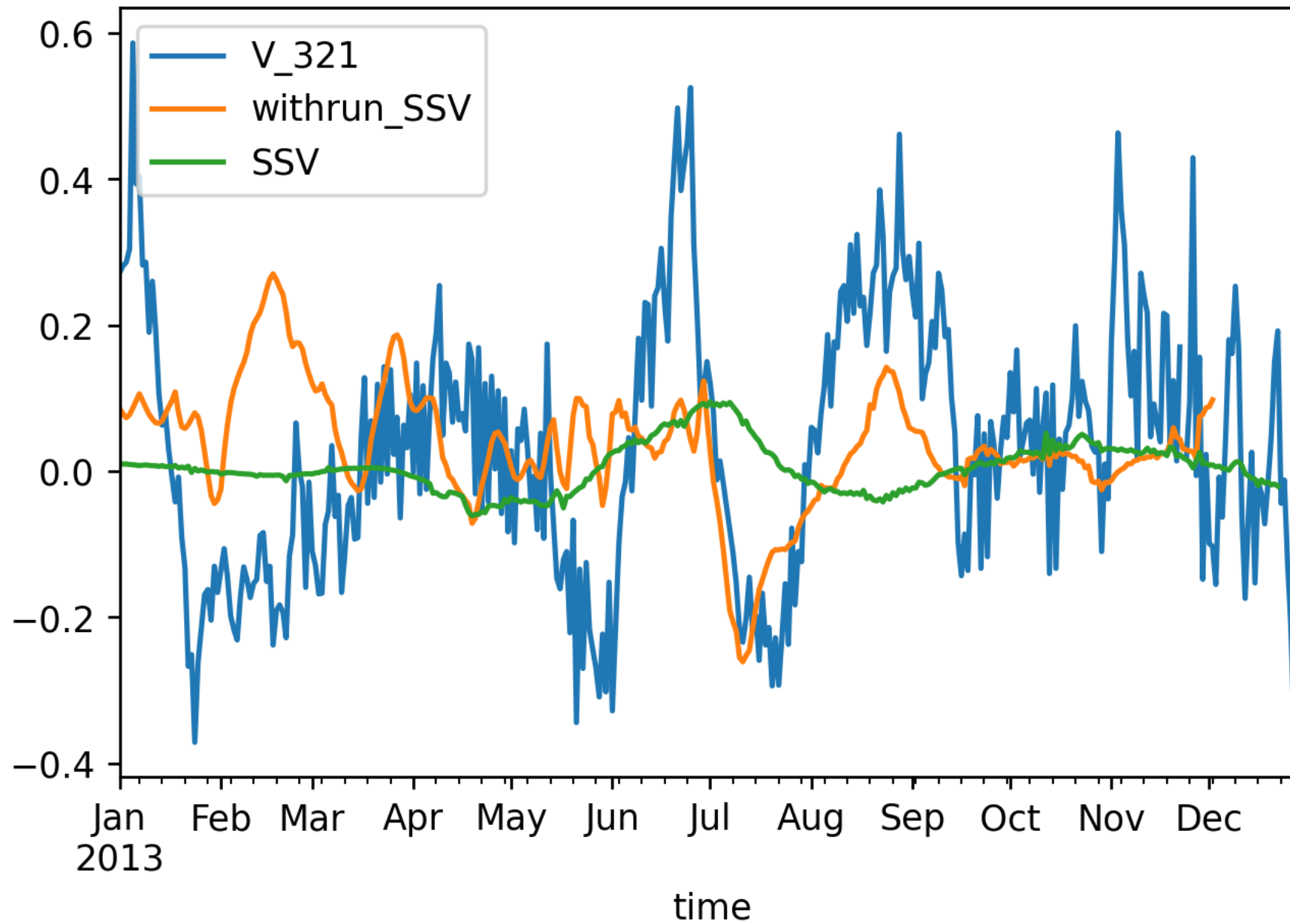
time = 2013-12-15 00:00:00



80°E 85°E 90°E 95°E 100°E



location lat:15.0 lon:90.0



# Next steps

## Short term

- A good amount of experimentation's needed with open boundary
- comparison of namelist and physics option with previous runs
- using 1 hourly high resolution forcing (temp,slp,u and v)

## Long term

- Increasing the resolution and tests