Regional MOM6 in CESM: New Setup Software, User Experience, & Open Development

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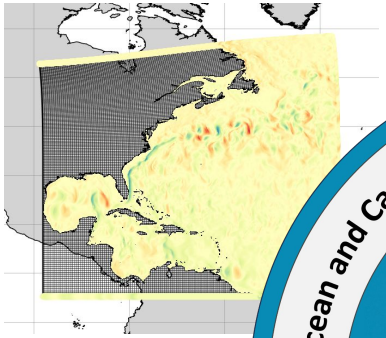
- New software engineer at NCAR

NWA Regional Domain



CrocoDash

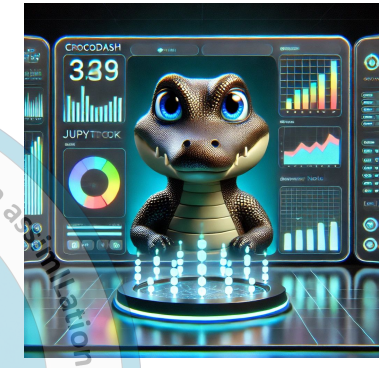
CESM Regional Ocean and Carbon cOnfigurator with Data assimILation and EmbedIng

CROCODILE

pyDARTDiags

CrocoLake

CrocoDash



CESM Regional Ocean and Carbon cOnfigurator with Data assimilation and Embedding

CROCODILE

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What tools can we implement to help YOU?

One Jupyter dashboard to rule them all

coDash Structure

CESM Setup:
visualCaseGen

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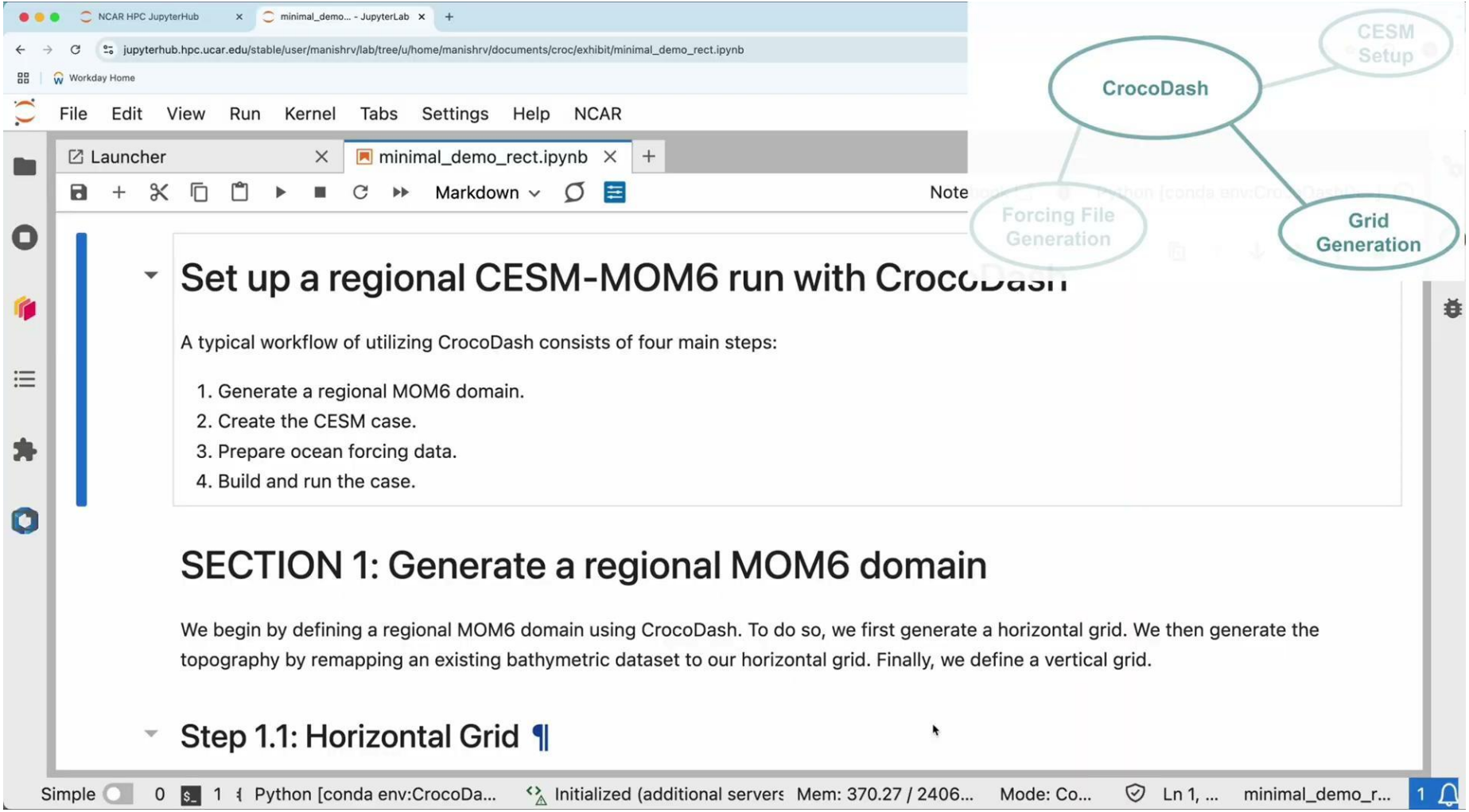
regional_mom6

Future
Modules


NCAR HPC JupyterHub
minimal_demo... - JupyterLab
jupyterhub.hpc.ucar.edu/stable/user/manishrv/lab/tree/u/home/manishrv/documents/croc/exhibit/minimal_demo_rect.ipynb
Workday Home
File Edit View Run Kernel Tabs Settings Help NCAR
Launcher
minimal_demo_rect.ipynb
Markdown
Note
Set up a regional CESM-MOM6 run with CrocoDash
A typical workflow of utilizing CrocoDash consists of four main steps:
1. Generate a regional MOM6 domain.
2. Create the CESM case.
3. Prepare ocean forcing data.
4. Build and run the case.
SECTION 1: Generate a regional MOM6 domain
We begin by defining a regional MOM6 domain using CrocoDash. To do so, we first generate a horizontal grid. We then generate the topography by remapping an existing bathymetric dataset to our horizontal grid. Finally, we define a vertical grid.
Step 1.1: Horizontal Grid ¶
CrocoDash
CESM Setup
Forcing File Generation
Grid Generation
Simple
Python [conda env:CrocoDa...
Initialized (additional servers
Mem: 370.27 / 2406...
Mode: Co...
Ln 1, ...
minimal_demo_r...

CrocoDash (Currently)

….. a quick and efficient way to setup a regional ocean model in three steps:

1. Grid Generation
2. CESM Setup
3. Forcing File Generation

CROCODILE-CESM

Regional ocean and carbon cycle modeling and data assimilation within the Community Earth System Model

Follow

README.md

CROCODILE: Python interfaces for regional ocean modeling and data assimilation

CROCODILE is an NSF-funded cyberinfrastructure collaboration between the NSF National Center for Atmospheric Research (NSF NCAR) and the Woods Hole Oceanographic Institution (WHOI).

Our goal is to build a community of practice around regional ocean modeling for studying ocean physics, the carbon cycle, climate change and intervention, and more, by creating and curating a common set of open-source tools.

We want **YOU** to be up and running a regional ocean model, with all the necessary forcing files, boundary conditions, etc., for fairly arbitrary domains and model resolutions, including data assimilation capabilities, in a matter of hours rather than weeks!

CROCODILE combines

- The MOM6 ocean model

View as: Public

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Get started with tasks that most successful organizations complete.

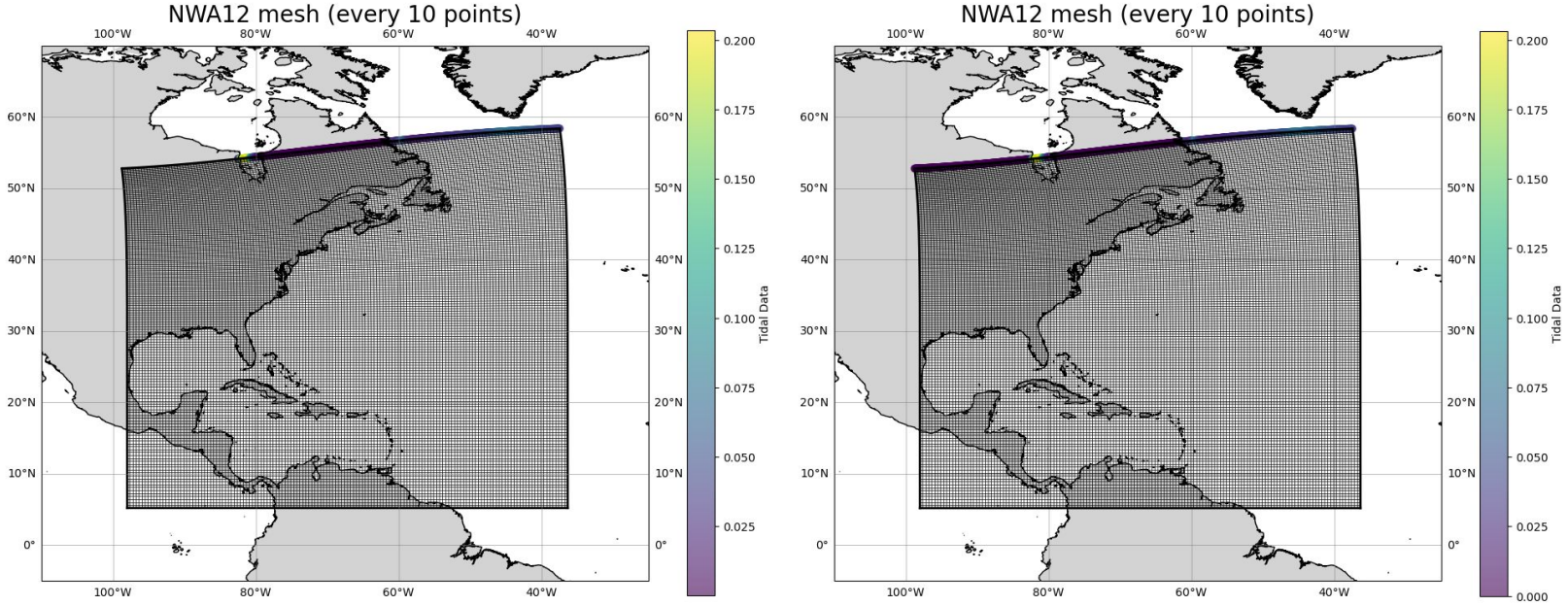
Top discussions this past month

Discussions are for sharing announcements, creating conversation in your community, answering questions, and more.

Start a new discussion

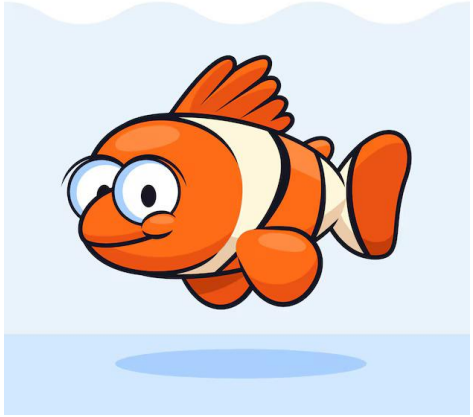
People

What we're working on - Boundary Conditions



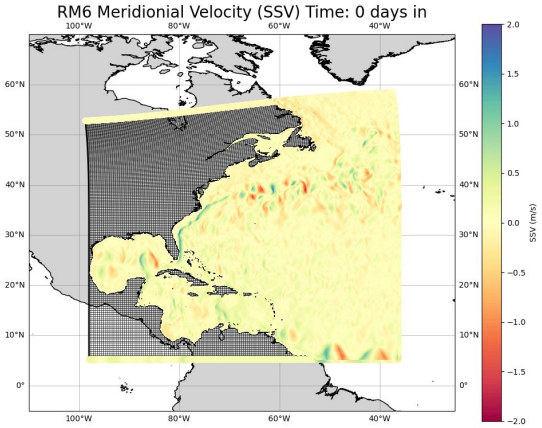
Why do NaNs in OBCs over land result in crashes in the model (in some cases)?

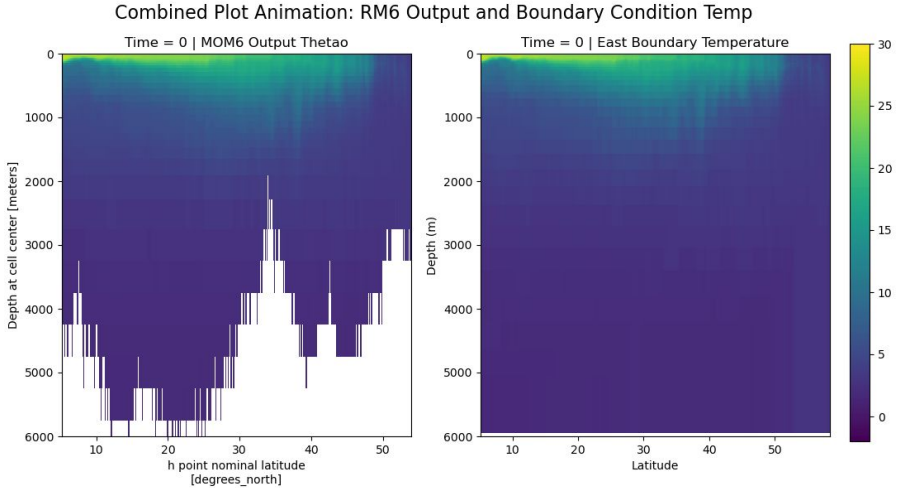
What we're working on - Regional MARBL in MOM6



Why do changes in scalar values of OBCs for **abiotic** tracers impact T & S?

What we're working on - NWA Boundary Issues





What is the best procedure for NWA12 for selecting combinations for OBCs and atmospheric forcing, and can we generalize that across regions and configurations?

Future Development Directions

Dynamic Downscaling w/ the CESM

Easy Input Data Setup

Conclusions

- CrocoDash is a frontend for tools to accelerate regional ocean modeling in CESM
- CrocoDash is a collaborative software, with a recent major advance being the integration of the regional_mom6 package from Ashley Barnes in COSIMA
- What tools can we implement to help YOU?