Opening my Science: A Jupyter Book on Analyzing Sea Level Variability with Xarray

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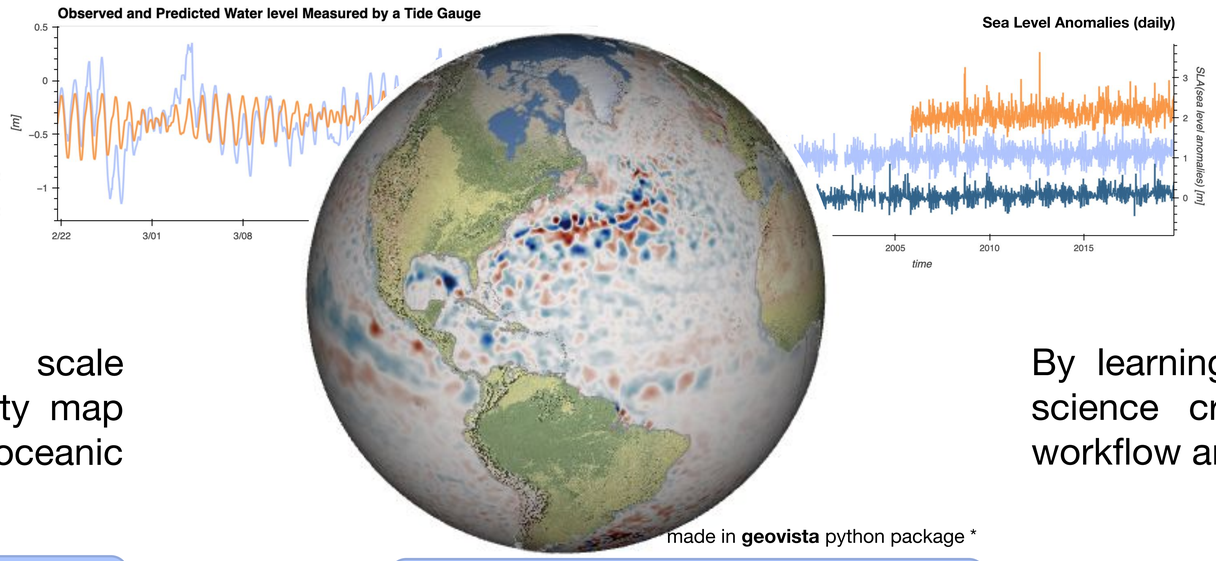
Data

- Tide Gauge (NOAA)
- Satellite Altimetry (CMEMS)
  (see a 3D plot of the sea surface height (SSH) altimetry data on the right)



made in **geovista** python package *

Analysis Methods

- Resampling and averaging
- EOF analysis
  (empirical orthogonal functions)
- Multiple Linear Regression

Research question:

How does the regional scale structure in coastal variability map onto large atmospheric and oceanic patterns of variability?

Objective

By learning and adopting principles of open source science create a more efficient scientific analysis workflow and publicly share the result.

What Open Science Means to Me

TRANSPARENT
FAIR principles
- Findable
- Accessible
- Interoperable
- Reusable

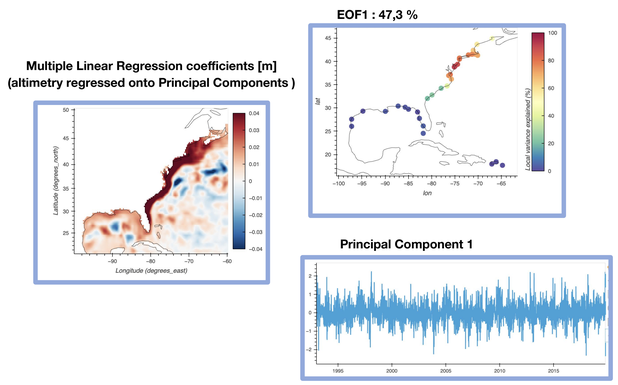
REPRODUCIBLE
the process and results should be reproducible by anyone

INCLUSIVE
Everyone is welcome to learn and participate
Everyone is respected

What I did

Practiced open science coding

- I created and published a jupyter {book}



Engaged with the open source science community

- peer-to-peer learning
- I participated in a Pythia Cook-Off
- I attended SciPy 23 and participated in sprints

What I Learned

- to translate a scientific question into code focusing on common patterns and not low-level details
- to think in Xarray
- to create and publish a Jupyter Book
- to use GitHub for version control and collaboration
- collaborate on a coding project

See my code here :

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