

Exploring Creative Ways to Use Virtual Reality to Analyze and Visualize 3D Weather and Climate Datasets

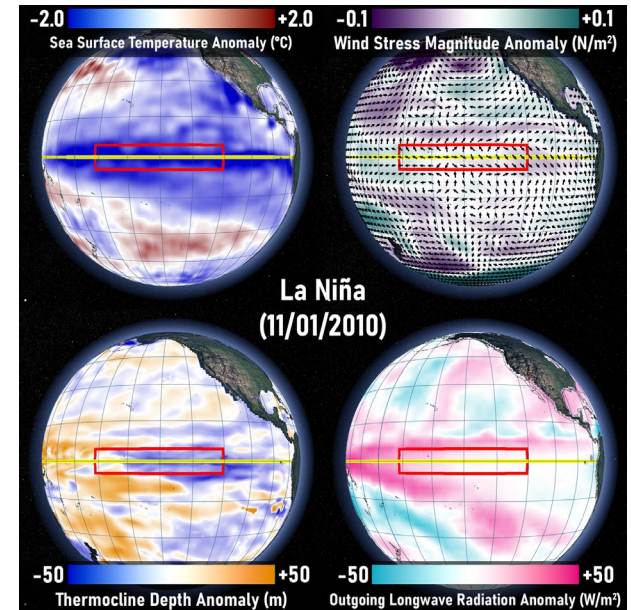
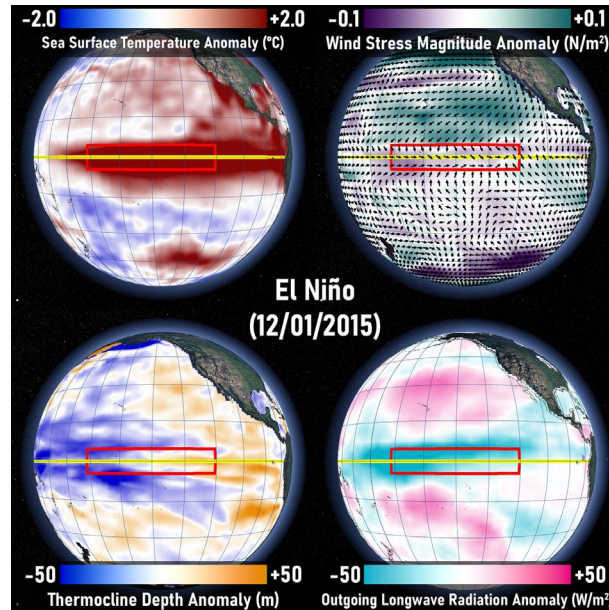
Interns: Ashmita Pyne and Damian Figueroa
Mentors: Guangyang Fang and Joseph Ray Patton

Objectives:

- Mechanisms of El Niño and La Niña
- To better visualize oceanic data compared to atmospheric data

Datasets:

- Sea Surface Temperature
- Wind Stress
- Thermocline
- Outgoing Longwave Radiation



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Tech Used:

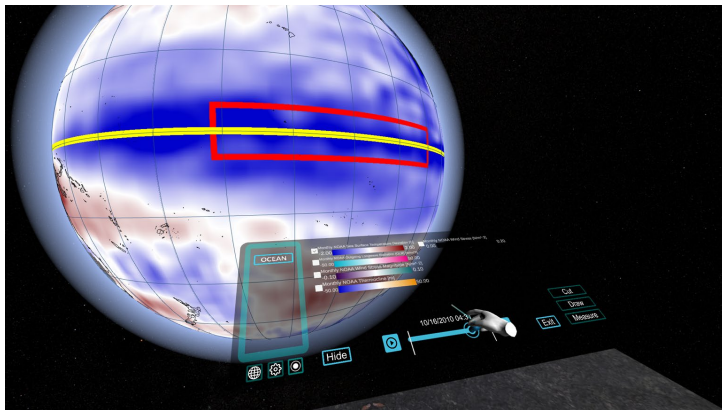
- Oculus Quest 2
- 2 Desktops in ESSIC Lab
 - NVIDIA Quadro P5000



Video Demo



OpenXR



Original Application	New Application
Required use of command-line to launch the application and specify datasets.	Application can be launched directly and datasets can be chosen from the main menu. Datasets are loaded in parallel for faster load times .
Only supported Oculus VR headsets.	Supports any OpenXR-compatible headset including wireless VR support via Virtual Desktop
Focused on visualizing preprocessed atmospheric data.	Basic support for visualizing any scalar/vector data from NetCDF and GRIB datasets at runtime

Future Features & Plans

- Redesigned and modernized control panel that is easier to use
- Lightning data visualization
- Real-time data processing
- Standalone Oculus Quest support (no PC attached)
- Used enhanced data processing for visualizing Atlantic Niño/Niña