Using MyNASADATA to Assist Pre-Service Teachers in the Generation of Authentic Data Visualizations

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Live Presentation Times

11:30-12:00   1:00-1:30   2:30-3:00   4:00-4:30
10:00-10:30 will be a presentation by Dr. Crompton

Introduction and Background

The Next Generation Science Standards (NGSS) embed many scientific practices in their performance expectations (i.e. standards) for all grade levels from K-12. These practices include planning and carrying out investigations, analyzing and interpreting data, using mathematics and computational thinking, engaging in argument from evidence, and obtaining, evaluating and communicating information.

MyNASADATA (http://mynasadata.larc.nasa.gov) was created in XX as a way to make NASA Earth Observing Mission data available in an accessible format for teachers and students to use in learning and science projects. The site includes a number of teacher generated lesson plans organized by grade-level and duration, and numerous tutorial lessons to assist users.

Applications Used for Pre-Service Education

Content Discovery

In introducing topics that would normally be presented in lecture, a guided exploration can allow students to construct their own knowledge using data directly from the source.

Example: Solar Insolation as a function of day of year and latitude, and in time series at a point location

Open Investigation

Because there are a wide variety of datasets available, students may explore relationships between variables on their own, either as part of a wholly student-directed investigation or as an extension from a guided activity.

Example: Exploring differences between El Nino and La Nina years in North America, as an extension from mapping SST in the Pacific Ocean.

The MyNASADATA interface...

The MyNASADATA interface is built on the Live Access Server model developed by Pacific Marine Environmental Laboratory (http://ferret.pmel.noaa.gov/LAS/). There are three levels of complexity, all relatively similar in design. The Advanced Interface is shown below:

...is highly adaptable.

Analysis and visualization options include:
- Animation and Customizable plots
- Comparison and Difference Maps
- Google Earth Export and Overlays
- Hovmuller plots and multivariable scatterplots
- Export to spreadsheet and link embedding
- Simple mathematical formulas