

Taking the world for a spin: teaching spatial and data visualization with a digital globe



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Abstract

In the summer of 2016, the Earth Sciences & Map Library at the University of California, Berkeley, purchased a Magic Planet digital globe in a collaboration with the departments of Geography and Earth & Planetary Science. This 30" diameter 3D display supplements and expands the library's instruction and outreach activities in GIS, data visualization and modeling. Faculty and graduate students were surveyed regarding their interest in using the globe for teaching and research projects. Based on this feedback, librarians developed a basic training plan for using the globe in the classroom, as well as an assessment tool to rate the effectiveness of instruction with the digital globe. Student and faculty responses at the end of fall semester (2016) were evaluated for suggestions to increase the variety of data sets and animations available to view on the globe. Curriculum and guides for visualizing custom and interactive data sets will be developed and made available based on researcher and student interests. We are excited about partnering with our departments and engaging our students in the possibilities of 3D visualization, and look forward to sharing lessons learned.

Outreach and Events

INTRODUCING THE DIGITAL GLOBE

Friday, 9/16
11 am - 12 pm
Earth Sciences & Map Library - 50 McCone Hall
<http://guides.lib.berkeley.edu/mapsandmore>

Tracking Interest

An online interest form was sent to the Geography and Earth & Planetary Science Departments to gauge interest and survey potential use cases for the globe.

Digital Globe Interest Survey

Interested in using the Earth Sciences & Map Library's digital globe?
Let us know how you might use it and what data you will need.

I am interested in using the globe for:

- Classroom instruction
- Student assignments
- Creating my own 3D visualizations
- Research related
- Other...

I am interested in seeing the following topics or datasets available for projection on the globe. For ideas, consult: <http://sos.noaa.gov/Datasets/>

Long answer text

I am interested in creating applications, standards, base maps, or other new content for the globe.

- Yes
- Sorry, no!
- No, but I can recommend someone else.
- Other...

Contact information *

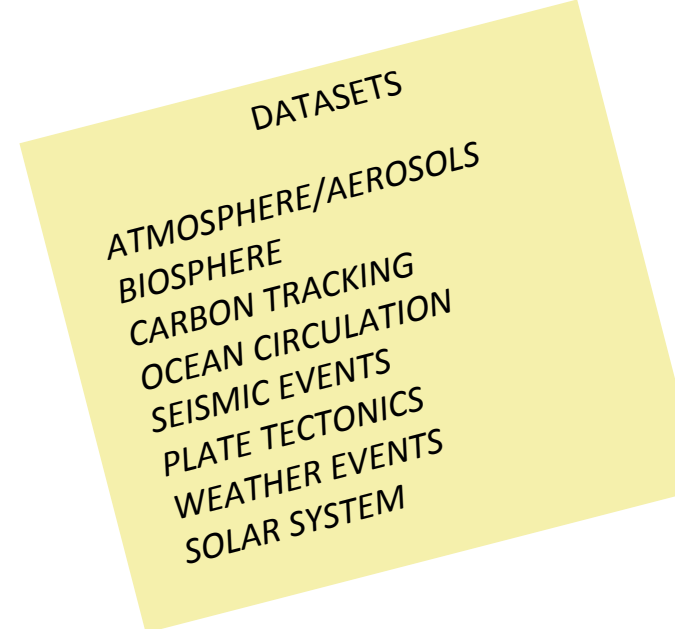
Short answer text

Digital Globe Procedures

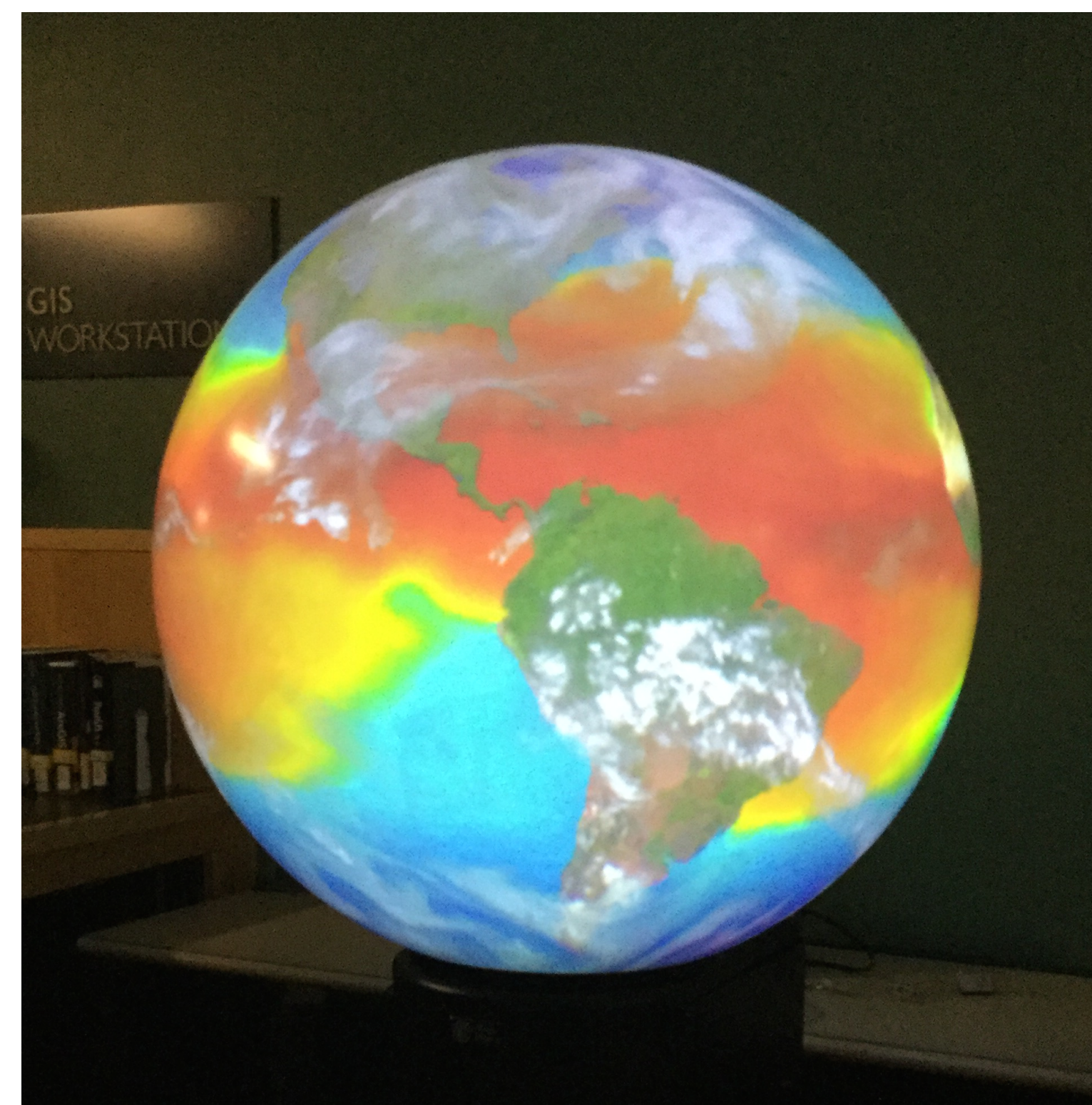
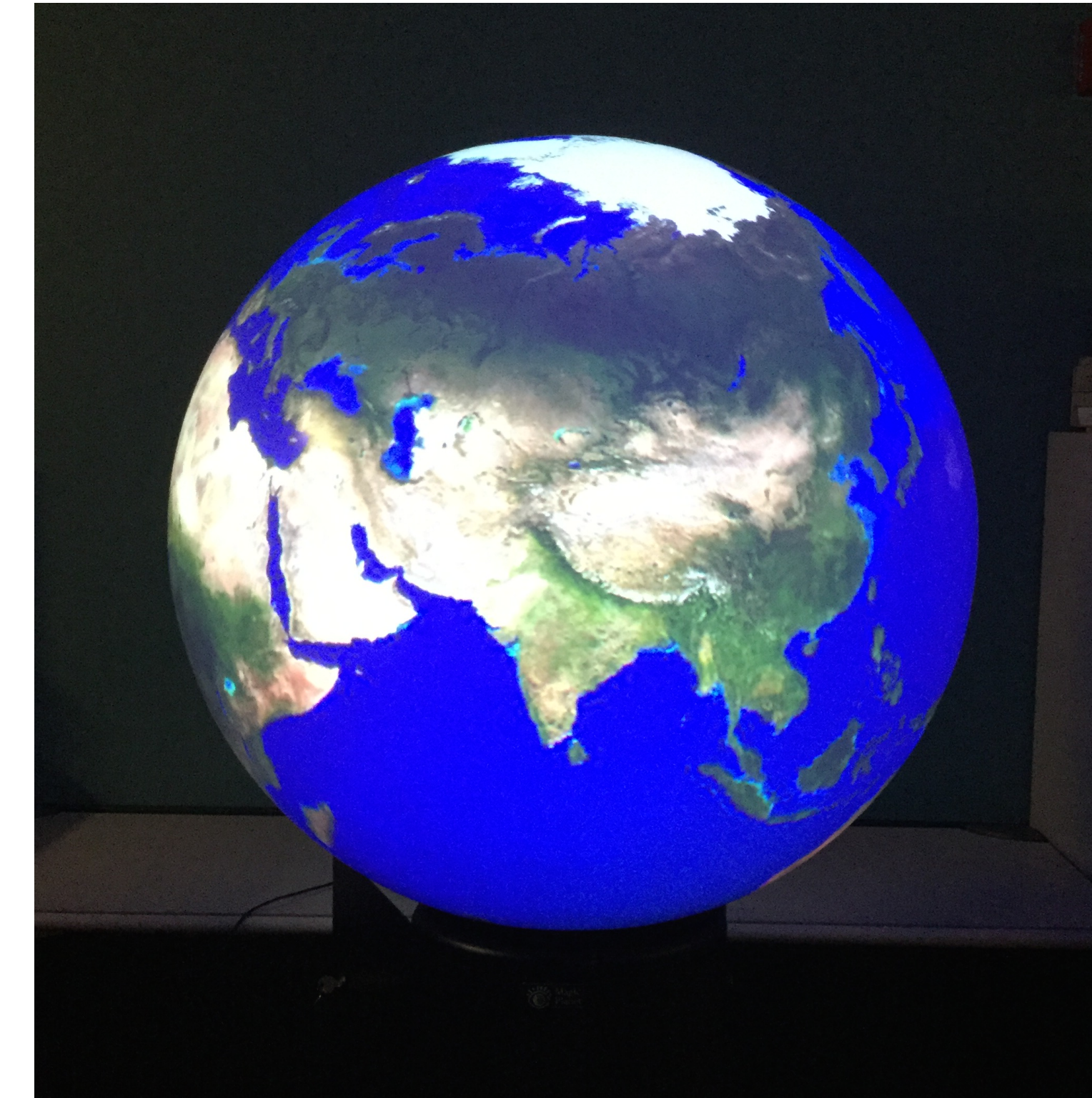
Schedule a trial with the globe

Go over content

o Test and add datasets



o Align course content with datasets



Technical Questions

- o Learn to connect globe, computer, remote

Schedule your instruction session

o Confirm date, time, number of students and sessions

Coordinate day-of logistics

Give us feedback and spread the word

Assessment

Feedback was solicited through an online form following each session.

Digital Globe Feedback

Tell us about your experience using the globe in your course.

This form is automatically collecting email addresses for UC Berkeley users. [Change settings](#)

1. How satisfied are you with the technical aspects of the globe? *

Very dissatisfied 1 2 3 4 5 Very satisfied

Comments

Short answer text

2. How satisfied are you with the content and datasets available? *

Very dissatisfied 1 2 3 4 5 Very satisfied

Comments

Short answer text

3. How would you rate your students' engagement with concepts explained or displayed on the globe? *

Not engaged 1 2 3 4 5 Very engaged

Comments

Short answer text

Preliminary Results & Feedback

Fall 2016 Usage

Course Sessions: 11

Course Examples:

- The Biosphere
- Introduction to Earth System Science
- Climate Dynamics

Students: 274+

It was great to be able to incorporate that new exercise.

The globe was an amazing tool to analyze spatial data with students.

They were very into the activity and discussion related with the globe.

Future Plans

Technical improvements

- Design system to make datasets easier to search and find
- Improve smoothness of user experience with troubleshooting guides

Content and datasets

- Increase available content and expand subjects, with emphasis on current datasets
- Investigate live data streaming capabilities
- Provide support for visualization and animation of locally produced data
- Explore options for integrating GIS or remote sensing programs with globe display

Engagement

- Pursue outreach to broader campus community, including other STEM disciplines, social sciences, and researchers working at intersection of science and art/design
- Continue assessment of impact of 3D visualization on student learning.