PanOpt project

PanOpt: An Interactive Website for Satellite and Webcam Time-Series Imagery

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Project Description

PanOpt is an interactive website which melds high frequency imagery from satellite and ground-based sensors. Side-by-side comparison of satellite imagery with web camera panoramic photos supports analysis of myriad environmental phenomena, including meteorology to plant phenology. Our prototype integrates the NOAA GOES-11 satellite with a multi-view FogCam on Santa Cruz Island (http://zulu.geog.ucsb.edu/Data/camera_sbarc.html). The PHP based website allows users to filter this dataset by date, time of day, and view angle and to specify increment and display size; and then view the image stack as animations or in a matrix form. Extracted time series metrics for regions of interest can be viewed as a table or graph. Hyperlink-enabled data points initiate image display through click and mouseover actions. As funded by the ESIP student grant, we will further develop the interface, adding scatter plot functionality, making the site more user-friendly, and expanding the number of GOES-11 images included. A portal (http://zulu.geog.ucsb.edu/panopt/) will make the documented source code available, include a page of links, and provide access to the interfaces. In terms of outreach, we will create a Wikipedia entry on digital repeat photography and develop an educational module following the format of the Earth Exploration Toolbook (http://serc.carleton.edu/eet/index.html). There are many other objectives as part of this project, which may or may not be completed in time for the winter ESIP conference. Depending on the success of the learning module, we will submit it for consideration to EET. Also we are interested in conducting a user interaction study to compare the efficiency and accuracy for information retrieval from the original FogCam website and PanOpt. However, this aspect will most likely have to wait in order to be part of a Spring 2010 class. Lastly, we would like to create a test case for including meteorological station data (insolation, relative humidity, etc.) into the online analysis.

Milestones

Education

- Develop learning activity based on the satellite and webcam imagery (atmospheric – fog inundation or biosphere – plant phenology). Use the Earth Exploration Toolbook for inspiration and format, potentially submit chapter for consideration.

Outreach

- Wikipedia entry for “digital repeat photography” or “near surface remote sensing”
- PanOpt links page with annotated list of relevant websites and resources
- Describe and make available PanOpt source code elements for public use/adaption
- Explore possibility of using Talkoot for creating a collaborative portal
- Website
- [Scatter plot functionality (http://zulu.geog.ucsb.edu/Data/scatter_sbarc.html)]
- Test and finalize code, adjust time of day algorithm

Documentation and help

- Post source code notes, links page, and educational module
- Include Google Analytics tracking code to see location and browser information for users