



SPRING 2014 SEMINAR SERIES

DEPARTMENT OF OCEAN, EARTH, AND ATMOSPHERIC SCIENCES
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“VISUALIZING GEOSPATIAL DATA AND ANALYZING GLOBAL CHANGE WITH GOOGLE EARTH!”

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ABSTRACT

The virtual globe called Google Earth is less than a decade old yet it has already revolutionized how we visualize the Earth for geoscience education and research applications. There are significant geospatial datasets built into the desktop application but the greatest strength of this particular virtual globe lies in its extensibility via Keyhole Markup Language (KML). Custom KML files and KMZ archives can include draped maps, panoramic field photography, emergent models, virtual specimens, and web links. The Google Earth web browser plugin and API allows instances of Google Earth to be embedded in web pages and linked to HTML controls. In 2011 and 2012 Google enhanced street view and extended it to the oceans. This makes it possible to design literally and figuratively immersive virtual field trip experiences for both onsite and distance education. !!Until this year, however, Google Earth was predominantly a passive geobrowser. It had basic polyline and polygon drawing tools but serious GIS applications still required ArcGIS. However, with the release of Google Maps Engine and Google Earth Engine, Google Earth has become a platform for geo-spatial research projects. Incorporation of Big Geodata from Federally funded research programs and crowd-sourced maps makes it possible to design authentic undergraduate research experiences leading to new discoveries. And the timeline feature aids visualization of recent global change. It is now even possible to evolve the 3D terrain through time. My colleague and I are designing game-style learning resources and are aiming to build inverse MOOCs—online courses in which small groups of students are taught by hundreds of professors. Of course a virtual globe will never replace real, in-person field experiences but the technology is opening opportunities for underrepresented minorities who were excluded from geoscience in the past.

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