

**2014 Ocean Sciences Meeting**  
**February 23-28, 2014, Honolulu, HI**

## **CONTRIBUTED TALK**

### **Session 113 – Big Data for a Big Ocean: Progress in Data Availability and Interoperability**

Conveners: Edward Kearns (NOAA), Cynthia Chandler (WHOI)

<http://www.sgmeet.com/osm2014/sessionschedule.asp?SessionID=113>

#### **Bathymetry: Reducing Big Data**

**Bertrand Baud**, Environmental Systems Research Institute (Esri), Redlands, CA, USA

**Dawn Wright**, Environmental Systems Research Institute (Esri), Redlands, CA, USA

Advances in sonar technology lead to a seemingly ever-increasing volume of data collected by bathymetric sensors. For example, modern, dual-head sonars can capture bathymetry, backscatter, and water column characteristics at rates up to 115 Gb/hour or a 1.5 billion to 1 ratio.

Although bathymetric surveying has always been about very large datasets requiring specialized software, managers in charge of large amounts of bathymetric data do not necessarily need to fall victim to a Big Data problem.

In this presentation, we highlight recently developed GIS functionalities, including indexing schemes for scalable storage, “intelligent metadata,” rules-based composition and interactive modeling, which can dramatically reduce the complexity of managing very large datasets. Although derived from a traditional geospatial database approach, these techniques can in many cases solve the data management problem without requiring a paradigm shift to Big Data tools. We will also review some limitations of this approach, and discuss how Big Data will allow moving beyond solving storage and indexing challenges, as it promises to unlock analysis at unprecedented scales.

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## CONTRIBUTED TALK

### **Session 002 - Understanding Coupled Human-Natural Systems: Multi-disciplinary Approaches for Addressing Sustainability of the Marine Environment**

Conveners: Geoffrey Cook (RSMAS, U. of Miami), Jay Pearlman (IEEE & CU-Boulder), Lida Teneva (Stanford), Hans von Storch (Institute for Coastal Research, Helmholtz Zentrum Geesthacht), Christopher Keble (NOAA), John Kittinger (Stanford Center for Ocean Solutions)

<http://www.sgmeet.com/osm2014/sessionschedule.asp?SessionID=002>

### **GIS as a Multidisciplinary Integration Tool for Marine Ecosystems**

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Geographic Information System (GIS) technology, which has long provided effective solutions to the integration, visualization, and analysis of information about land, is increasingly being applied to oceans. In recent years, our ability to measure change in the oceans (including open ocean, nearshore, and coast) is growing, not only because of improved measuring devices and scientific techniques but also because new GIS technology is aiding us in better understanding this dynamic environment. This domain has progressed from applications that merely collect and display data to complex simulation, modeling, and the development of new research methods and concepts. In this presentation, the capabilities of GIS to support multi-discipline efforts will be discussed, in context to the integration of marine ecosystem models and both large and complex datasets.