

OCEANS'17 Workshop
September 18, 2017
1:00-5:00 pm

**Data Management in the Ocean Sciences:
Technologies, Tools, and Approaches Learned From a Decade Managing Data**

Presented by Chris Turner and Dr. William Koeppen from Axiom Data Science

Description:

Data management in the ocean sciences is challenging due to the diversity of data types collected and analysis procedures used, the vast range of oceanographic variables studied, and the variety of stakeholder communities that need to use and understand the data. Full cycle data management means end-to-end support to stakeholders throughout the data life cycle from data collection to data discovery and re-use, and it involves organization, documentation, processing, analysis, synthesis, visualization, publication, and archiving. To do that effectively in the era of big data and big science requires a willingness to embrace new technologies including high performance compute clusters, cloud-based data sharing, and interoperability systems.

This workshop provides a view into the technology, tools, problems, and solutions developed by Axiom Data Science and their agency and industry partners to meet these challenges. It will address the following:

- a wide variety of specific use cases including securely sharing data within an integrated ecosystem research team preparing for publication;
- minting, building software that facilitates PI-led submission of data to external oceanographic or biological archives;
- minting DOIs;
- visualizing and hosting huge oceanographic datasets over the web for the public to explore;
- working in frameworks that allow for the efficient development of many targeted applications that each tackle an independent issue.

About Axiom Data Science:

Axiom Data Science (Axiom) is an informatics and software development firm focused on developing scalable solutions which can be leveraged across a variety of users, clients and institutions in order to make the best tools for data management, integration, and visualization. We support a variety of federal, private, academic and non-governmental organizations managing and conducting research in the ecological, geological and ocean sciences. Axiom Data Science staff includes software architects and engineers, GIS and data analysts, web and graphic designers, scientists and data librarians. Axiom headquarters is located in Anchorage, Alaska, and we have two satellite offices that each maintain a High Performance Compute (HPC) cluster in Portland, Oregon and Providence, Rhode Island. Together, Axiom's HPC resources are composed of more than 1400 processing cores staged in a series of interconnected blade arrays as well as 1.4 PBs of storage distributed across clustered storage nodes. Core clients include the Alaska Ocean Observing System (AOOS) and the NOAA Integrated Ocean Observing System (IOOS) - <http://www.axiomdatascience.com/clients/>

For more on Axiom, please visit: <http://www.axiomdatascience.com/>

Instructor Bios:

Dr. William Koeppen

Physical Scientist

Will has a Bachelor of Science degree from Juniata College (Geology and Physics, 2001); a Masters degree from Washington University in St. Louis (Earth and Planetary Science, 2003); and a PhD from the University of Hawaii at Manoa (Geology and Geophysics, 2008). His doctoral work included using laboratory analyses and satellite data to understand the composition and evolution of Mars. As a postdoc, he worked on a hybridized time-series analysis algorithm to detect volcanic eruptions in near-real time using real-time satellite data and methods to identify the presence of geologic materials associated with nuclear enrichment in thermal infrared airborne data. At Axiom, Will serves as staff scientist as well as a liaison to many of the scientific groups with which Axiom works.

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Chris Turner

Data Librarian

Chris is a data librarian and metadata evangelist trying to make it easier to responsibly share and document research data. He has a Bachelor of Science degree from University of Alaska, Anchorage (Mathematics, 2007) and a Master of Science from Syracuse University (Library and Information Science, 2012). His prior work experience includes working in libraries doing serials cataloging, collection maintenance, and photo and document digitization, serving as a data management consultant for NSF funded research groups while an eScience Fellow at SU, and comparing and crosswalking scientific metadata standards while interning at the NSIDC. Chris was hired at Axiom to help document data resources, develop metadata strategy, liaise with program managers and PIs, and to develop and promote data management best practices.

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