September 2016

Data Manager - Darren Wright is responsible for management of data operations.

Background - The Data Management and Communications effort provides scientists, decision makers, and the public access to products and data services that will facilitate a scientific basis for research and management of ocean observations. As an operational Data Assembly Center, SCCOOS aggregates and manages the integration and distribution of ocean data and products. Serving as a federal repository for physical and bio-chemical datasets, the Data Assembly Center provides data ingest, analysis, quality control, discovery, access services, visualization and archive. Observational information is made available in a variety of data formats to ensure that products are useful and easy to access, while preserving the necessary detail to support the scientific and educational communities. SCCOOS continues to foster advances in new visualizations and technologies, making their products more comprehensible and ensuring timely and sustained dissemination.

Goals and Objectives - SCCOOS Data Management and Communications goals are to develop and maintain the following capabilities:

- Deploy the information system components (including infrastructure and relevant personnel) for full life-cycle management of observations including product creation, public delivery, system documentation, and curation.
- Deliver accurate and timely ocean observations and model outputs to a range of consumers including government, academic, private sector users, and the general public utilizing standardization and specifications common across all providers.
- Establish a robust data exchange that is responsive to a wide breadth of customer requirements and user feedback, assuring the data handling flexibility to accommodate decision-support requirements.

SCCOOS will continue to provide access to high-quality integrated data and support regional user needs while complying with the national standards and protocols for sharing and archiving data following the "Guidance for Implementation of the Integrated Ocean Observing System (IOOS) Data Management and Communications Subsystem". SCCOOS will also continue to integrate a broad suite of observations in the form of raw data and products. Collaboration with partner RAs to advance stakeholder access to cross-regional data services as defined by commonalities in specified user requirements, is on-going through IOOS Data Management and Communications including workshops and webinars. SCCOOS is well poised to improve ingestion with a level of quality control based on Quality Assurance of Real Time Oceanographic Data (QARTOD) parameters, standardize the web services for all parameters, submit to National Centers for Environmental Information (NCEI) for archive, and enhance data visualization. By 2018, SCCOOS will ingest select new data sets over the next couple of years, including the mooring data and ocean acidification discrete sampling in the Southern California

September 2016

Bight. Additional desired outcomes are described on pages 18-30 of the Strategic Operational Plan.

Work Plan -

Equipment: SCCOOS Principal Investigators maintain equipment inventories, shipping logs and instrument history logs for equipment owned and/or operated by SCCOOS. All SCCOOS instruments are calibrated, validated, operated, and maintained in accordance with manufacturer's guidance and as recommended by the lead researchers responsible for the equipment.

Computing Infrastructure – SCCOOS stores observational data on reliable servers located at Scripp's CoLo facility. SCCOOS operates two enterprise servers running Redhat Operating Service. Each server has Xeon Processors, 96 GB of RAM and shares a JBOD with 12 Terabyte of storage. Servers are backed-up nightly and copies stored offsite at the University of California San Diego Super Computer Center. Annual disaster and recovery hard drives are sent to the University of Santa Barbara for additional backup.

Data Ingestion - Observations are collected from a variety of platforms in a variety of ways, each of which has its own level of data processing maturity. SCCOOS accepts data from both automated and manual systems via SFTP, HTTP, Serial over Internet, Webforms and Email. Observations are stored in flat files, databases and NetCDF files, all of which are available on the SCCOOS website. By 2018, all existing SCCOOS data will be converted to NetCDF with the appropriate metadata and quality control flags.

Quality Assurance: SCCOOS is regularly in accordance with manufacturer guidance or industry best practice for calibrating, validating, operating, and maintaining equipment owned and/or operated by SCCOOS.

Quality Control – By 2018, all existing publically available data will be quality controlled at minimum with the following QARTOD required tests: 1) timing, 2) syntax, 3) location, 4) range, 5) climatology. SCCOOS maintains an active role in the ongoing effort to develop and apply QC standards throughout the IOOS Regions. Highly leveraged programs such as the Coastal Data Information Program wave data, High Frequency radar network, sea birds and glider programs manage their own quality control which are compliant with the federal repository data management system.

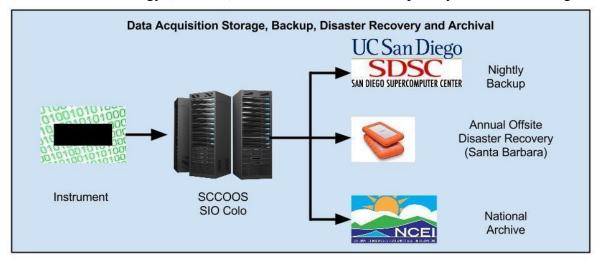
Public Access and Dissemination -

All SCCOOS data are publically available through the SCCOOS website. The High Frequency radar, glider and wave observations are all transmitted to the National Data Buoy Center for inclusion on the World Meteorological Service Global Telecommunication Service. SCCOOS actively participates in on-going efforts to standardize data distribution through the use of web services such as the Sensor Observation Service and the Open-Source Project for a Network Data

September 2016

Access Protocol (OPeNDAP)/THREDDS. By 2018, SCCOOS will integrate an ERDDAP server for existing datasets which will provide a simple, consistent way to download subsets of gridded and tabular scientific datasets in common data formats and provide graphs and maps. Certain datasets that are registered with the IOOS Service Registry contain FGDC and ISO 19115 metadata are available through ERDDAP and THREDDS. SCCOOS participates with IOOS partners in a highly distributed system of interoperable components. HF radar, gliders, both the Automated and Manual Shore Station data and Coastal Data Information Program wave buoys are registered in the IOOS Service Registry. Registration of datasets and services with IOOS provides basic monitoring of service availability and response time. By 2018, once all existing SCCOOS data are available in netCDF, metadata will be available in both FDGC and ISO 19115 supplementing existing management and query capabilities (keywords and ontologies).

Collaboration with international programs such as OceanSITES and the Joint Commission of Oceans and Meteorology (JCOMM) are instructive for CF compliancy and data handling issues.



Data Sharing -

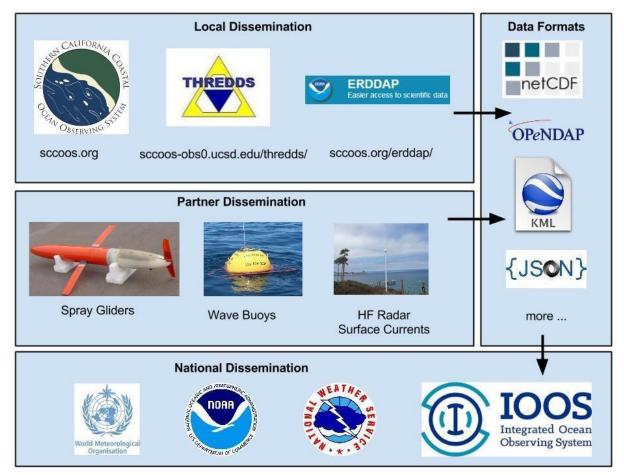
SCCOOS adheres to the NOAA Data Sharing Procedural Directive. All real-time and near real-time data managed by SCCOOS are freely available through open services, without delay or restriction. Avenues for accessing the data include the SCCOOS website: sccoos.org. SCCOOS does not restrict access to any data it collects or serves.

September 2016

	w	MO TH	ALOG5 LA	DORE	5/0	os catal	ob Pass Furded	Operati	gd Maintai	Red C.C. Archive
Automated Shore Stations		х	Х	х	х	х	sccoos	sccoos	sccoos	
Burkolator						х	sccoos	sccoos	sccoos	
Harmful Algae Blooms						х	sccoos	sccoos	sccoos	
State & Federally Leveraged										
State & redefally Leveraged										
Automated Information System						х	USCG	USCG	USCG	
			х			x x			USCG NOAA/NAVY	
Automated Information System	x	x	Х	X	X					
Automated Information System CalCOFI		х	x	x	x x	х	NOAA/NAVY	NOAA/NAVY	NOAA/NAVY	
Automated Information System CalCOFI CDIP Wave Data	х	x		x		x	NOAA/NAVY USACE	NOAA/NAVY USACE	NOAA/NAVY USACE	
Automated Information System CalCOFI CDIP Wave Data Gliders	х				х	x x x	NOAA/NAVY USACE NOAA	NOAA/NAVY USACE NOAA	NOAA/NAVY USACE NOAA	

Table 1: Table indicates which communication, web services and access options are available for SCCOOS distributed data.

September 2016



Metrics

The Google Analytics application demonstrates the high activity on the SCCOOS website. In 2015, there were 217,616 page views and 47,735 users.

Data Portals

In addition to the IOOS base funded tasks, SCCOOS continues to provide project specific data management expertise. A few examples follow for 2015-2016:

- University of California Environmental Health and Safety in which SCCOOS developed the Coastkeeper's Coastal Champion award winning data portal for the La Jolla Areas of Biological Significance site. (http://sccoos.org/data/asbs/)
- The City of Los Angeles Hyperion Water Reclamation Plant funded SCCOOS to assemble and post the results of data collection/monitoring during the repair of the effluent pump station.
 - (http://www.sccoos.org/projects/hyperion/)

September 2016

- Continue to maintain the waves and HF radar site for the Pt Mugu Navair. (http://www.sccoos.org/projects/navair/)
- Continue to maintain the waves, HF radar, nautical charts and winds for the Ports of Los Angele, Long Beach and San Diego. Customize displays of the data for certain on-going projects such as the Under Keel Clearance project: http://www.sccoos.org/data/harbors/#c

Archive

By 2018, all existing SCCOOS data will be archived through NCEI. Presently, the Coastal Data Information Program's wave data, High Frequency radar data and Glider data are all archived at NCEI. Archival of the automated shore station data are now complete through NCEI.

Individual Sensor Data Management Plans for Data Streams Managed by SCCOOS

- Automated Shore Station
- Burkolator- Ocean Acidification
- Harmful Algae Blooms (HABs)