Concurrent Session Notes for:
Data: Managing Information to Support Decision Making
November 4, 2010

All of the environmental work associated with marine renewable energy recovery will generate large, heterogeneous datasets. How to manage them effectively and transparently was discussed in this session.

Moderator:
Debra Hernandez, Executive Director, Southeast Coastal Ocean Observing Regional Association

Speakers:

Kyle Baker (Standardizing Protected Species Data Collection for Renewable Ocean Energy Projects)

- The presentation consisted of an overview of potential impacts for data collections, drivers for data collection, types of data collection, and data program elements and standards
- The Protected Species Observer (PSO) Data Program is implemented for species protected under the Marine Mammal Protection Act and Endangered Species Act since there are requirements for monitoring and reporting conditions.
- Development of Standards for PSOs, data collection, submission, quality assurance and quality control. Recommendations for standardization of data collection to develop a national database are provided by BOEM and NOAA for the PSO data program
- There are 5 main components of the PSO Data program management and involves NOAA standards, PSO trainers, PSO providers, Company and permits, and permit agency. Currently people are trained in different ways so there is a need for standards and for qualified people.
- Currently working on standardized forms and standardized data for documentation with a goal for electronic data submission that is submitted daily.
- Standards very important but need qualified and PSO qualified people gathering data.

Andrea Copping (Managing Data for Environmental Effects of Marine and Hydrokinetic Energy Development-A Knowledge Management System)

- The presentation consisted of environmental effects of MHK energy development, complexity of data management needs for MHK, Tethys - data management system, and next steps for Tethys and data management development
- There is a need for development of a Knowledge Management System (KMS)
- Tethys is built on Semantic Wikimedia will facilitate documents into Wiki including PDF files, word documents, web pages, and tabular and gestational data.
- There is complexity of dealing with the environmental effects data. There are potential environmental impacts of marine and hydrokinetic energy devices. There are many ways data can be collected
- What are complexities? Data itself – data coming in from lab studies and industry. There are many types of data including tabular, geospatial, scientific papers, pdf, photos, etc. There are many different iterations and many audience with an interest (researchers, regulators, stake holders)

- What do we need in the database? Flexibility of data intake, good user interface, able to maintain quality, link to other database, automatic data update, and ways for machines to be smart enough for the process
- Solution – Tethys – the reason – analyze risk assessments and output to analyze – have a lot of experience in the lab for these systems. Went out and talk to users, stakeholders, regulators, who would you like this data? What do you want out of this data?
- What are platform features? Automatic influx of documents. Using wiki software where not anyone can get in. It has strong security, developed the semantic pipeline. There are rich annotation features and searching
- Where are we right now? Just finished requirements document. Started to show users how to use the system. Started to populate Tethys with data and started to build Annex IV.

Scott Terrill (Environmental Assessment Framework for MHK Siting Issues)

- The presentation consisted of MHK becoming a renewable environmental benign source of power if sited properly. As projects move forward, many stakeholders will need to be engaged. There can be many potential conflicting uses and issues which may not be well understood.
- Apply a scenario-based assessment approach to the emerging hydrokinetic technology sector to improve understanding of potential environmental and navigation impacts.
- Work with ReVision – develop a scenario based assessment approach to MHK
- There are numerous complexities with new technology and uncertainty to see how far we can extrapolate data
- There are two approaches – risk approach and Raptools
    - Risk approach - addresses basic questions about temporal and spatial exposure, effects, measures that could minimize or mitigate impacts, potential effects or species responses.
    - Raptools – is a multi-disciplinary (Rapfish), multidimensional scaling of a set of scored attribute conducing on getting input and ranking (professional opinions) of stakeholders to enable them to address questions that compare scenarios.
- Risk analysis steps were reviewed (gather data and baseline information, identify data gaps, select indicator species and habitats, identify overlaps, and design mitigation and avoidance into project
- Created a matrix format for risk assessment analysis to help avoid gaps of missing things. This includes activities and actions related to fish, birds, and marine mammals

John Sloan (Building Reliable Turbines for Harnessing Ocean Energy)

- The presentation consisted on reviewing tangible vision and measurable objectives, data architecture, and data gaps.
- Need to explore the feasibility of adapting existing software tools, explore workflows into which software tools can be integrated, and review how environment health monitoring may interact with other monitoring systems
- There are long term and immediate impacts - from stressors to impacts
- Mass-balanced trophic models for diagnosis – point source stressors are all manageable from an engineering standpoint but stressors in ecopath have to do with fishing.

- Diffusion models might be smaller and more expensive
- Take what we found for diagnosis and make predictions based on differences between what diagnosed previously and later. Look at differences in evaluation of prediction. Look at documentation. Simulation and distribution models may be used for prediction

Whitney Blanchard (Physical, Chemical, and Biological Impacts and Risks Workshop Report)

- The presentation consisted on reporting on the OTEC Workshop including scope, regulatory considerations, characteristics and assumptions, and general observations
- Need to find out ways to assess potential physical, chemical and biological impacts and risks ocean thermal energy conversion (OTEC) facilities, identify the baseline and monitoring data to evaluate biological impacts resulting from operation of OTEC facility, and find ways facility designs can be adjusted to avoid, minimize, or mitigate impacts
- Moving forward to rule making process. Need to provide to applicants interested in providing application information about what to submit in order to have a complete application. There are regulatory considerations – Ocean Thermal Energy conversion Act (OTECA)
- Ocean Thermal Energy Conversion Closed Cycle – unique and large system – needed to put a parameter down so that participants can work with some numbers. Water discharge is important for OTEC. Identified the environmental impacts, looking at modeling capability and where additional research is needed
- Learned from technology report that the environment and industry changed over the last 20 years. There are different systems, tools to move forward and existing data. However, there is also a lack of data.
- Report: http://Coastalmanagemetn.noaa.gov/programs/otec.html

Debra Hernandez (Strategic Ocean Observations: Serving the Renewable Ocean Energy Research, Development, and Regulatory Communities)

- The presentation consisting of giving a background of ICOOS Act of 2009, IOOS and NFRA, explaining who and what is SECOORA, and what are CMSP efforts in other regions
- Regional information coordination entities include in situ, remote, and other coastal and ocean observation, technologies, and data management and communication systems, designed to address regional and national needs
- Data management communication – have to be stakeholder driven
- Purpose for system is to meet societal goals
- Regional information coordination entities have to be certified to be part of the system.
- SECOORA is funded by NOAA as part of national integrated ocean observing system
- Authorizing legislation signed into law in March 2009
- SECOORA – membership base nonprofit organization. SECOORA's vision is to provide the most reliable marine data and information to meet needs of society and stakeholders to protect people and property. There are 45 representatives from academic, industry, NGO. People that join had vested interested to get data or to study the ocean to ensure robust system in SE. Currently working with south Atlantic alliance.
- Established a Strategic priorities Document defining initial priorities (evolving). Priorities document gave opportunity to define explicitly the areas that capabilities meet society needs

- With marine spatial planning, looking at wind. Emphasis was placed on identifying severe constraints likely to preclude any wind energy development. Each constraint weighted equally. Study provides conservative introductory group.
- Data management consists of a network of scientists and data management experts. Core capabilities range from doing a thorough needs assessment to capturing and making operable the data. Then capturing and making available to users
- SECOORA has a staff of 3 provide support to PIs – USF/FWRI, UNC-CH, USC are data management nodes. BioHab – covers the entire four state regions. Begins to organize the information to do a comprehensive marine spatial plan for the area.
- SECOORA news and alert – go to the website … or communications@secoora.org
- What are other regions doing?
    - CenCOOS is very involved in contributing data and information to California marine map. Have a tool to involve stakeholders and establishing boundaries
    - NERACOOS is the sister organization in the NE. The organization is very involved with NREC and do visualization regarding marine spatial planning
    - NANOOS participated in several marine special planning workshops and provide technical assistance. Workshops deal with wave energy and engage to provide background data and information.

Dwayne Porter (Making the Most of Ocean Observations through Data Management Innovation)

- The presentation consisted of setting the stage, describing challenges and opportunities, explaining the DM infrastructure of coastal and ocean observing, and providing examples of integrative efforts and outcomes of integrative efforts
- Need to hear from coastal and ocean decision makers to develop decision support tools to increase utility and illustrate science
- Talked to end users regarding data needed.
    - Super National – Integrated Ocean Observing System
    - National level – several NOAA supportive monitoring program and USGS
    - Regional level – SECOORA
    - Regional and sub-regional monitoring programs.
- There are bottlenecks for access to data is still an issue, insufficient density, inconsistent protocols and formats. The issues become more complicated when data from multiple sources need to be aggregated. There are different standards, different applications
- There are challenges and opportunities including interoperability. There is a need to create common standards, processes/protocols, and middleware for transferring information
- Need to find out what we have available and what is the commonality. Need to look at delivery interfaces that we're challenged to utilize. There is a need to work on developing products that people are looking for.
- Looking at ways of providing data – people are expecting to push data to them. They have a variety of services to make the data available. Need to identify data sets and find out how to best incorporate it ensure that they have a data structure in place. There is a lot of work to be

done but have come a long way to making data more useful. Need to address issues of sustainability.

- Example of federal university private partnership is the National Weather Service need to establish the SE US Gulf of Mexico marine portal. Need to find out how to incorporate the data sets into displays to improve the quantitative and qualitative data. In order to get the confidence from the weather service had to be able to demonstrate. Talking to the west coast for expansion of this project.
- Outcomes include improving the understanding of the role, pluses and minuses of technologies, maintaining and enhancing infrastructure, improving knowledge of data, providing rapid access to multiple users, and improving the coordination and communication. Data management is a tool to improve communication

Leslie-Ann McGee (Toward Visions of Ecosystem-Based Management of the Coast Ocean)

- The presentation consisted on a discussion of where should we be, what do we want our oceans to look like, what is our future, how do we decide, where do we start and at what scale, and what kind of skill sets is needed.
- Challenges and steps for ecosystem-based marine spatial planning (MSP) include development of current and future ocean use scenarios, availability of baseline assessment data, and stakeholder participation
- Need to find out where to start. Ecosystem, migration, political boundaries, cultural, or economic are things when looking at goals of marine coastal planning
- Need to determine the scale: Large (science and data gaps) and small (unmatched ecosystem boundary).
- Marine spatial planning could produce sustainable marine development, more efficient permitting processes, more societal benefits, preparation for climate change, co-exist of different activities
- For the mass plan had to scramble to get together working groups to build information to build an ocean resource information system and had to generate information quickly and figure out how to include information into a plan. The mass plan is not very specific. It is not as comprehensive. It was driven by ocean wind.
- Information analysis to help produce comprehensive spatial plans, monitoring planning and assessment methods very important

Kris Ohleth (Science-Based CMSP for Offshore Renewable Ocean Energy)

- The presentation reviewed the goals for CSMP, ocean economy, marine ecosystem health, biodiversity, resilience and resistance, coordination, regulatory efficiency, public and stakeholder participation, and preparation for PEIS
- There is a need for collection, analysis and use of environmental and socio-economic data
- Compiling and analyzing existing data, determining types of data to use, and collecting new data
- Rhode island SAMP – ability to look at another layer that exists and knowing data that is out there can be catalogued. Looking at data sets and incorporating in federal waters.

- Ocean policy task force of the White House Council on environmental quality has a proactive approach to marine spatial planning and advance priorities for each region.
- Marine ecosystem health is what ocean conservancy is mostly concerned with. Having society economy and environment moving forward is how our nation will see e the most benefit.
- Resilience and resistance of ecosystem have harder time dealing with climate change issues make them stressed.
- All GIS available are two years of data. How can they make sure that everyone collecting data can put it on a database? Developers want to expand the data if able to use as part of permitting data. Data collection on state wide basis.
- Providing a programmatic EIS for a region and then having that plan start the dialog for energy development for that region. With wind two EIS may be required.