

Dg.0 2004 Project Highlight: *Infrastructure for Data Sharing, Spatial Analysis, Resource Decision-Making, and Societal Impact: The Oregon Coastal Atlas*

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Overview

The Oregon Coastal Atlas (OCA), a collaboration of the Oregon Ocean-Coastal Management Program, Oregon State University and Ecotrust, is an interactive map, data, and metadata portal for coastal resources managers and scientists, with additional outreach sections for the general public. The portal enables users obtain data, but also to understand its original context, and to use it for solving a spatial problem via online tools. The design of the atlas draws from the reality that resource decision-making applications require much more than simple access to data. Resource managers commonly make decisions that involve modeling risk, assessing cumulative impacts and weighing proposed alterations to ecosystem functions and values. These decisions involve pulling together knowledge from disparate disciplines such as biology, geology, oceanography, hydrology, chemistry and engineering. Practitioners within each one of these disciplines are often vested in the technologies that dominate the market within their particular field. This presents significant data integration difficulties for investigators involved in management decisions that are as inherently interdisciplinary as those in the coastal zone. The goal of our proposed effort is to address these problems by incorporating a variety of geospatial data and *tools* within a common framework.

Ideas

The current research employs intensive research partnerships across the disciplines of coastal oceanography, geographic information science, natural resource management and computer science, and addresses problems in coastal hazards management, watershed assessment, and protection of ocean areas (sanctuaries, no-take zones, marine protected areas). Each of these applications needs much more than simple access to data catalogs. The data difficulties experienced by local level decision-makers are commonly a result of combinations of limited time, access to data sources, technology platforms, physical media or training. The common outcome is that resource decisions are often made with whatever information is readily at hand, regardless of whether it represents a full and accurate picture of relevant status. Staff time at the local level is often in such short supply that it is highly unrealistic that significant "data mining" and conversion be expected to occur to alleviate this problem. EIA funding has made possible the integrated approach that is now overcoming this. With the Oregon Coastal Atlas we are developing the computational infrastructure needed to support data sharing, but also spatial analysis tools and increased use of up-to-date geo-spatial resource data in local coastal management decision-making.

Tools

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In this way we seek to improve universal participation in coastal decision-making among communities by extending infrastructure to public offices that would otherwise face difficulties accessing these services and resources. Several coastal planners are now using the Atlas on a weekly basis to assist in permitting.

People

An REU supplement to this grant has brought about a rich research opportunity for an undergrad that most certainly would not have been possible without EIA support. An undergrad majoring in Electrical & Computer Engineering has been introduced to these disciplines and partnerships, and is gaining practical research experience in helping the PI and senior personnel to meet actual project deliverables, all with the goal of inspiring and encouraging the student to pursue graduate studies and a career in science. Activities have included assisting the research team in web interface design, Internet map service installation and testing, user tutorial development, and creation of dynamic map animations. The student was also provided with airfare, hotel, meals, and registration for the world's largest most pre-eminent geographic information system conference, the ESRI International User Conference, San Diego Convention Center, July 8-12, 2002 (<http://www.esri.com/events/uc/>).

The PI and senior personnel have submitted a follow-up proposal for additional NSF funds in answer to program announcement NSF03509, "Communicating Research to Public Audiences". The research team will develop and produce a video tentatively entitled "What You Need to Know about Living on the Oregon Ocean Shore". The objective of the video will be to educate the public and encourage more informed decision making by both individuals and public commissions regarding development along the ocean shore. We hope to inform prospective buyers, builders and others about the dynamic nature of the geologic and climatic settings prevalent along the Oregon ocean shore. The video will include comparative summer/winter footage of beaches experiencing erosion and storm events, interviews with scientists, experts, planners, property owners, advice on where to get information and what kinds of questions to ask regarding a site. Scientific topics to be addressed include coastal erosion/deposition (for which tools are already being prepared for incorporation into the Oregon Coastal Atlas), bluff failures, tsunamis, landslides and flooding. Once completed, the video will be distributed to local cable channels, libraries, community colleges, and shown to realtor groups, rotary and other clubs, neighborhood associations, and other interested parties. Excerpts will be converted to mpeg or QuickTime for incorporation into the Atlas.

In Progress

(1) Wright, D. J., Haddad, T., Klarin, P., Dailey, M., Dana, R., Infrastructure for data sharing, spatial analysis, resource decision-making, and societal impact: The Oregon Coastal Atlas, *Ocean and Coastal Management*, in prep.; (2) Haddad, T., Dailey, M., Wright, D. J., Klarin, P., Dana, R., Marra, J., and Revell, D., The tools of the Oregon Coastal Atlas, in *Place Matters: Geospatial Tools for Marine Science, Conservation, and Management*, Corvallis, OR, OSU Press, in review.