Seafloor Mapping in Oregon's Territorial Sea* and Adjacent waters

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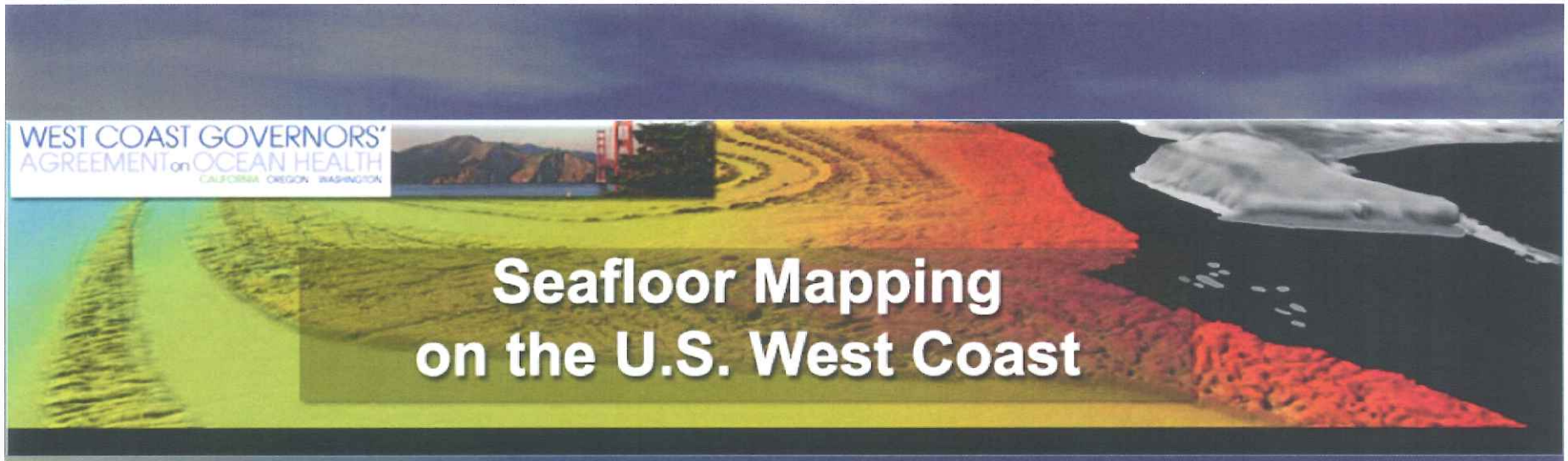
NOAA

Active Tectonics Group Seafloor Mapping Lab

Oregon State University OSU

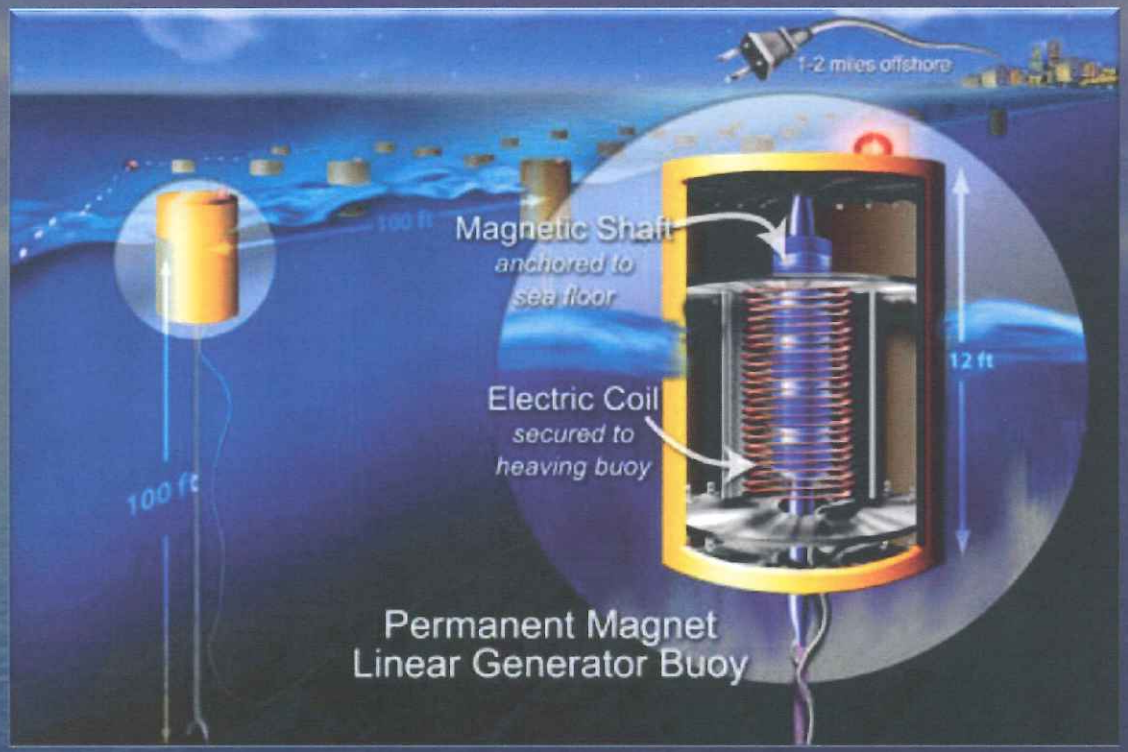


Scientific consensus for seafloor mapping has been established in the three west coast states through public meetings, workshops and scientific publications showing the benefits and need for mapping data. In response, comprehensive seafloor mapping with an initial emphasis on state waters has been identified as an important and unifying goal of the West Coast Governors' Agreement on Ocean Health. It is a high priority for the WCGA to identify the federal and state resources to map 100% of shelf waters within the next decade to address the following critical issues:

Tsunami Inundation Modeling

Oregon, Northern California, Washington and Vancouver Island, face a 20-70% probability of experiencing a magnitude 8-9 subduction zone earthquake and tsunami in the next 50 years, much like the 2004 disaster in Indonesia. Given the impacts of the 2004 event, we are just now beginning to understand what a similar disaster will mean for the populations of the west coast. We are unable to accurately model tsunami inundation because the models depend on detailed coastal seafloor maps (and other factors) that presently do not exist. Data will also provide information on active nearshore faults and submarine landslides capable of generating smaller, locally important tsunamis.

Alternative Energy Sites and Dynamics

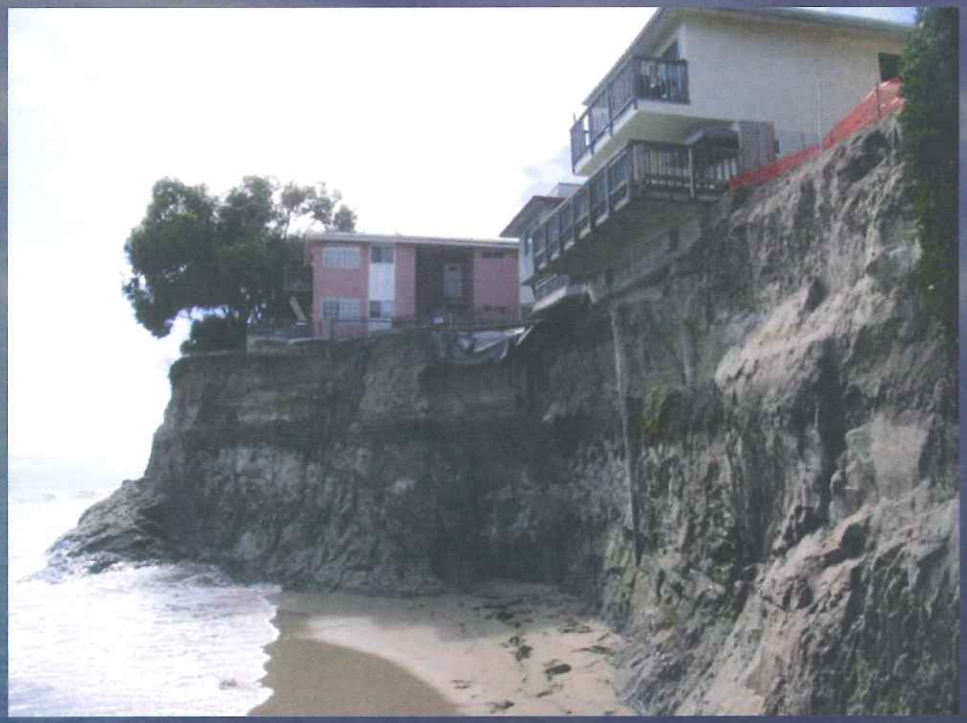


The same storms, waves and tides that contribute to erosion along our coast can be used to generate renewable power through the application of emerging energy technologies. In fact, areas for future wave "farms" and tidal generators have already been proposed and demonstrations of power-generating buoys have been successful. Seafloor mapping is necessary for identifying, evaluating and siting potential wave power installations along the west coast.

Marine and Habitat Science

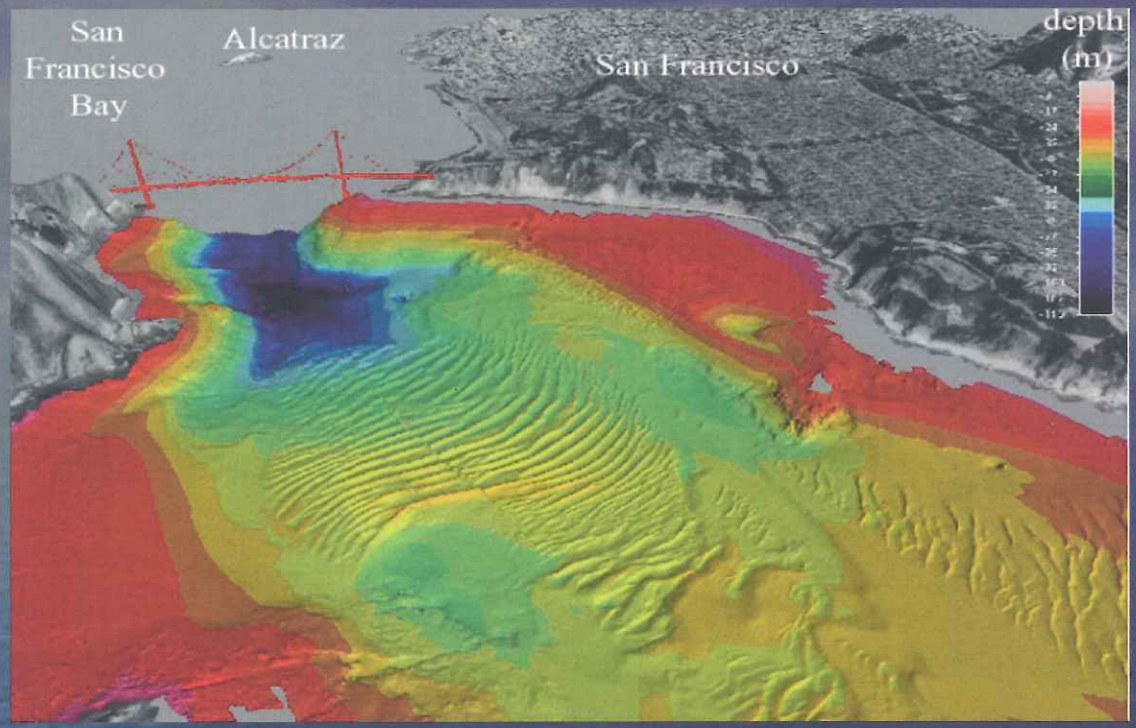
We now understand that many west coast fish and other marine life are dependent upon spatially explicit, yet limited, seafloor habitat features. Describing and classifying these habitats are essential components of effectively assessing and managing west coast marine resources. Seafloor mapping is the fundamental starting point for modeling nearshore fish populations for both the Federal Essential Fish Habitat process and State fisheries management. Mapping is also needed to identify the marine debris that locally degrades important habitats.

Coastal Erosion and Rising Sea Level



West coast states have been experiencing significant coastal erosion, threatening property, infrastructure, recreation, and coastal economies. Coastal erosion and significant flooding from large winter storms will become even more important as sea level continues to rise in the coming decades. Protecting the coastline and regional sediment management are among the many coastal zone management challenges that require high-resolution near-shore bathymetry and coastal topography. Seafloor mapping data provide the basis for modeling ocean circulation, currents, waves, and sediment transport, needed to develop mitigation strategies.

Navigation and Safe Commerce



Nautical charting is of critical importance to safe navigation and commerce, and depends upon detailed seafloor data. Many areas along the west coast presently are charted based on data collected during the 19th and 20th centuries using lead weights at the end of a rope. Not only are these data of poor quality, the nearshore seabed is constantly changing, requiring modern new data. Modern surveys in these areas have revealed numerous unknown navigation hazards. High-resolution seafloor mapping data supports safe navigation and maritime commerce as well as providing base map data for engineering, scientific and commercial activities.

Vessels

Mapping

R/V Pacific Storm, Newport, Oregon

Owner: OSU Marine Mammal Institute

Ships Complement: 12 (4-5 crew, 7-8 Science)

Staffed by DEA Hydrographers and OSU team

Sampling

F/V Michele Ann, Newport, Oregon

Owner: Carleton Fisheries Inc.

Ships Complement: 5 (3 crew, 2 Science)

Staffed by OSU

Vessels

Sampling

R/V Miss Linda, Coos Bay, Oregon

Owner: Bob Pedro

Ships Complement: 5 (3 crew, 2 Science)

Sampling

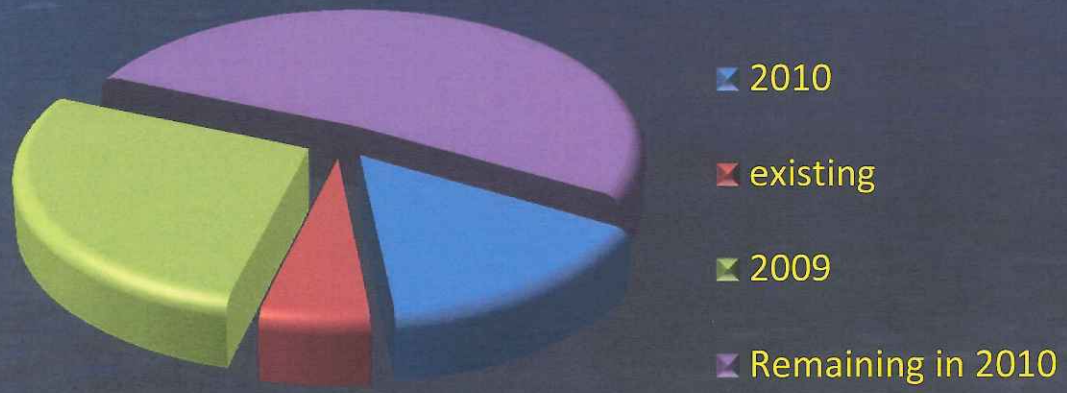
F/V Maggie, Newport, Oregon

Owner: Duane Edwards.

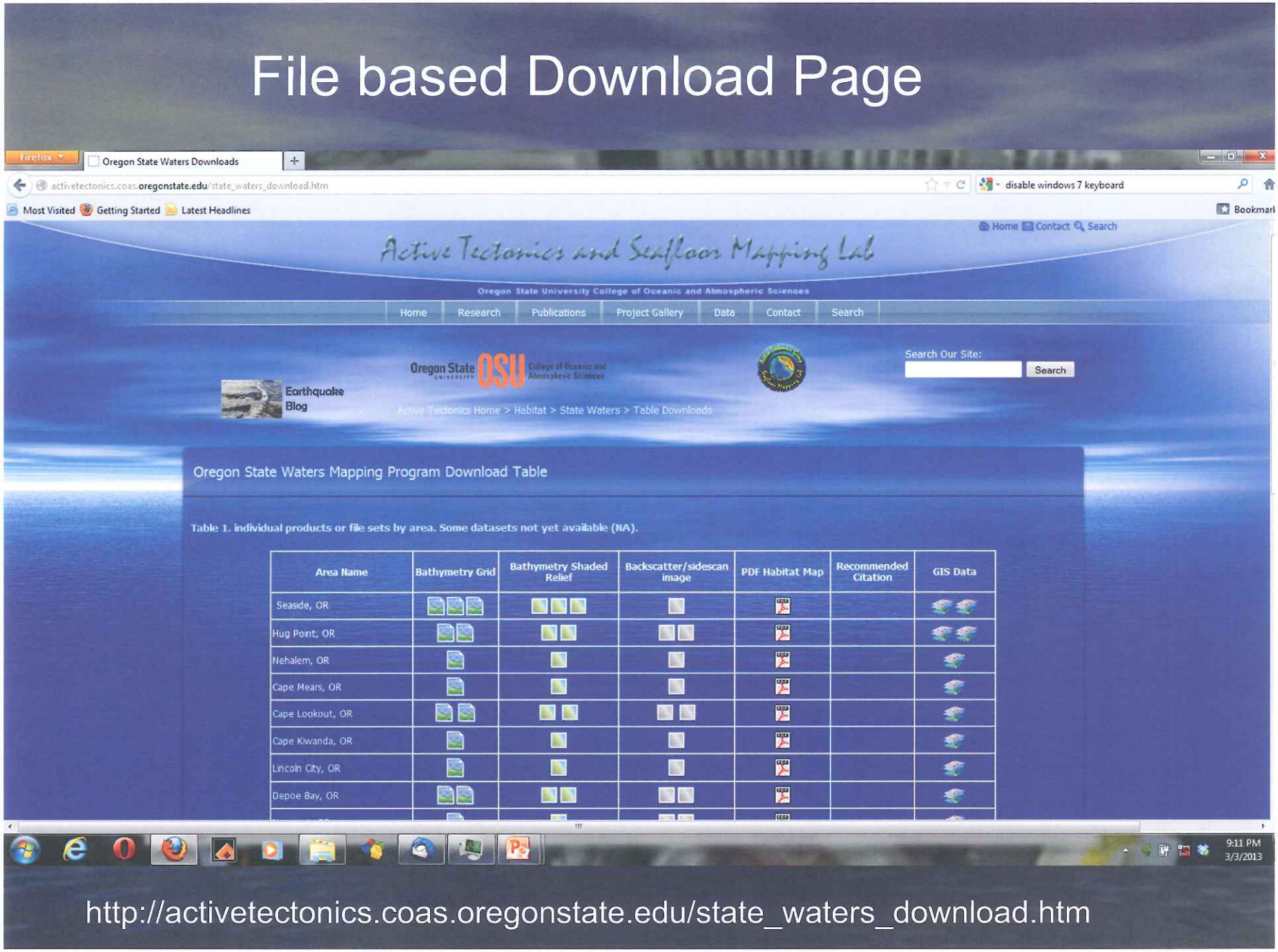
Ships Complement: 2-3 (1 crew, 2 Science)

Survey Areas 2009-2010 - Results

- Total Area = 3,250.45 km2 = 100%
- Previously Mapped = 426.2 km2 = 6.4%
- Mapped in 2009 = 1059.9 km2 = 32.6%
- 2010-2011 Mapping = 493.2 km2 = 15.1%
- Total coverage to date = 54.1%

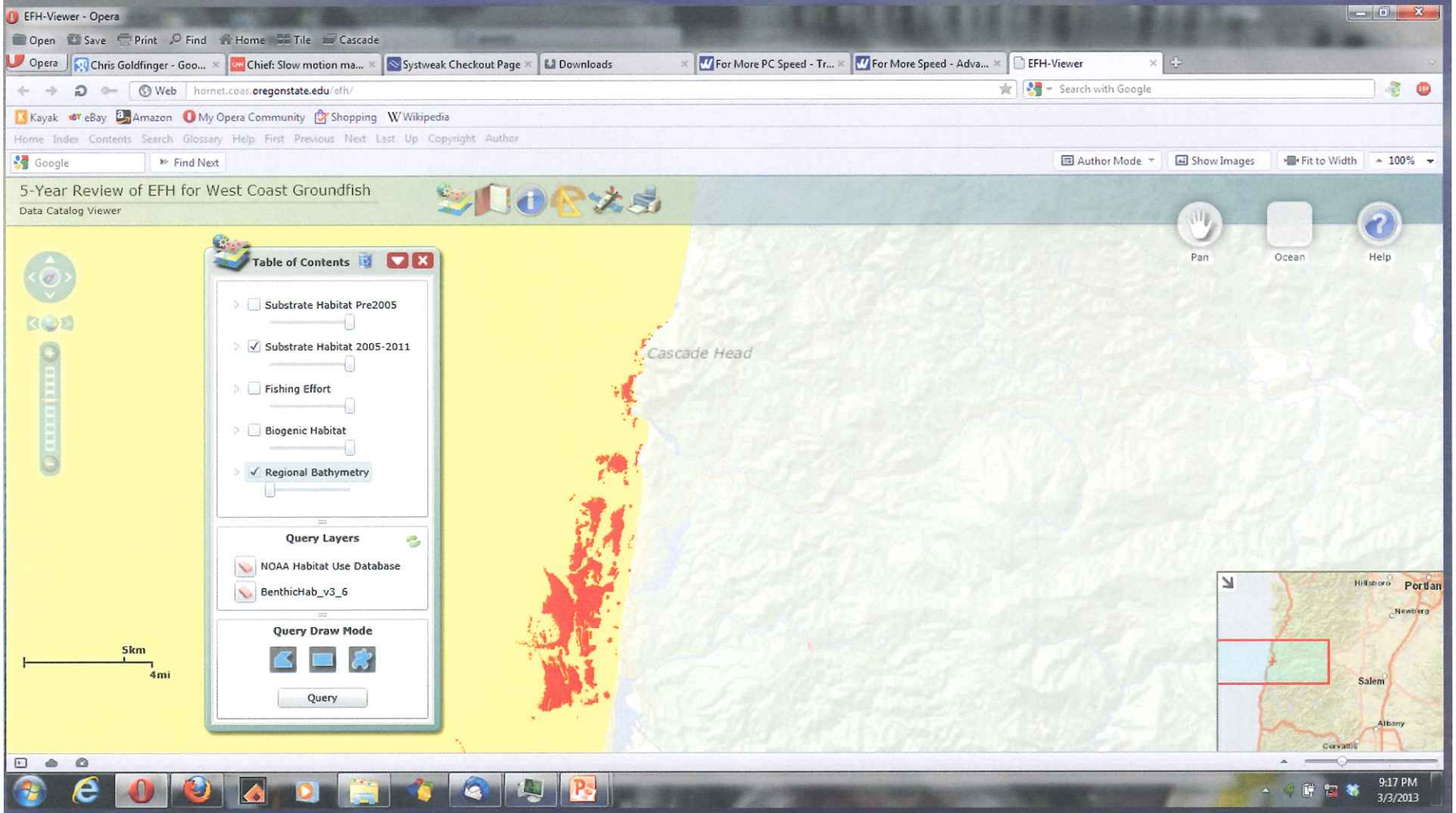


File based Download Page



http://activetectonics.coas.oregonstate.edu/state_waters_download.htm

PaCOOS Interactive Server



Coming soon!