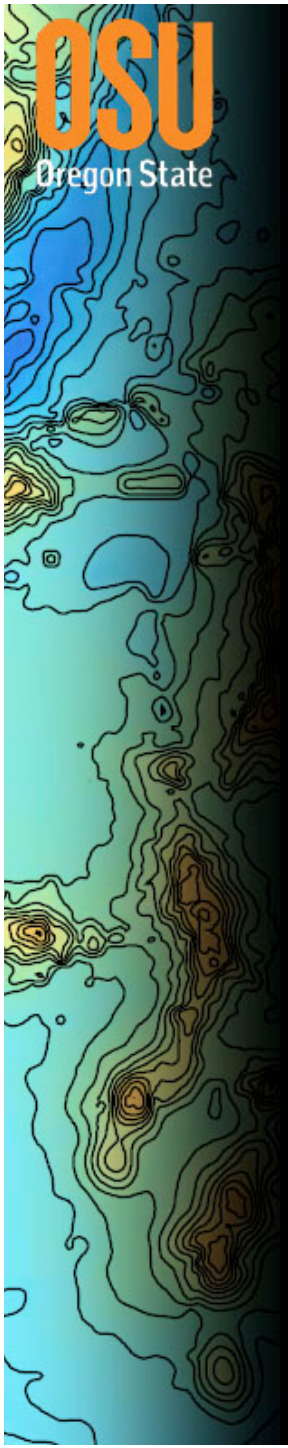


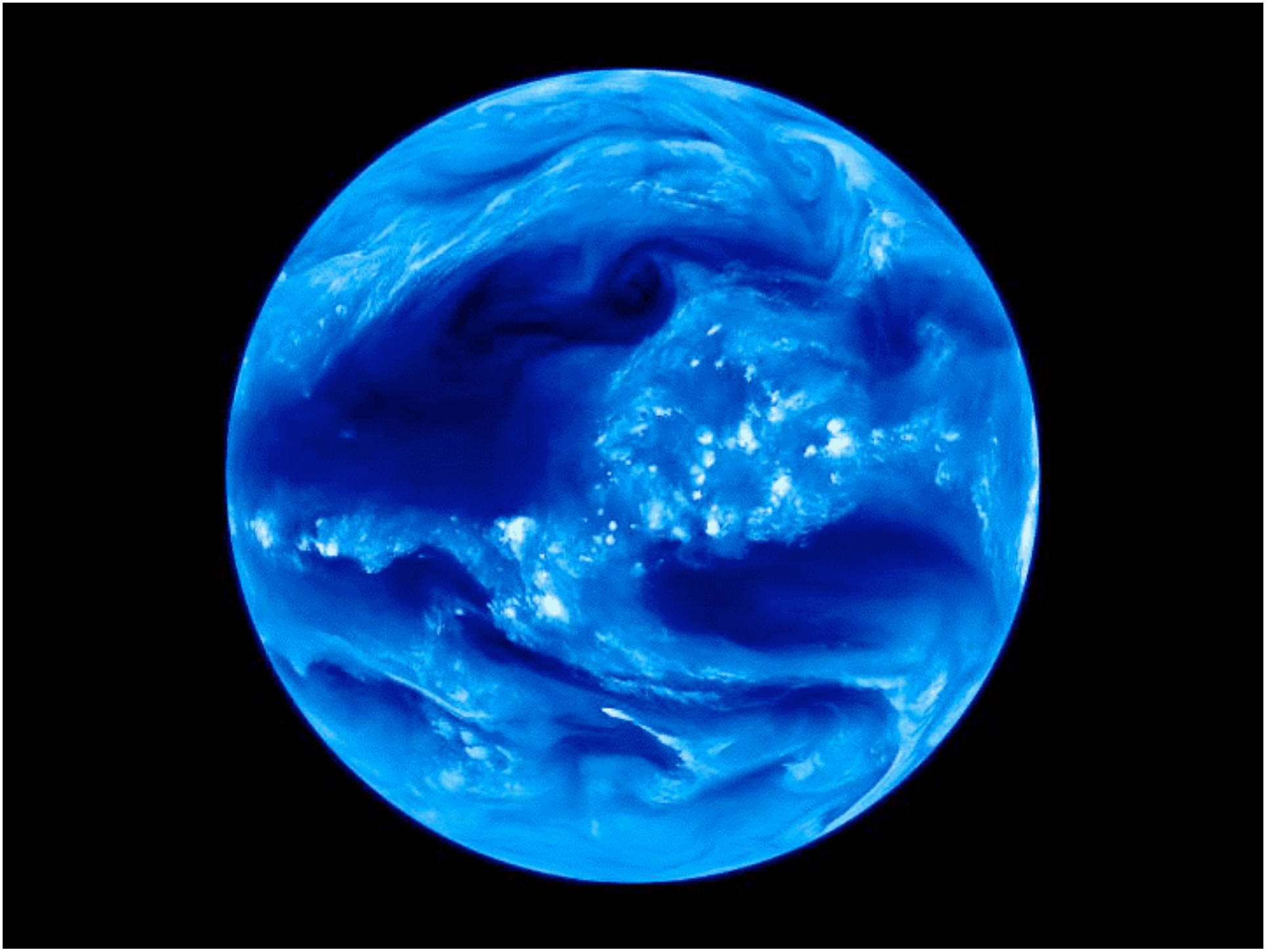
Mapping and Exploring the "Hidden Oregon"

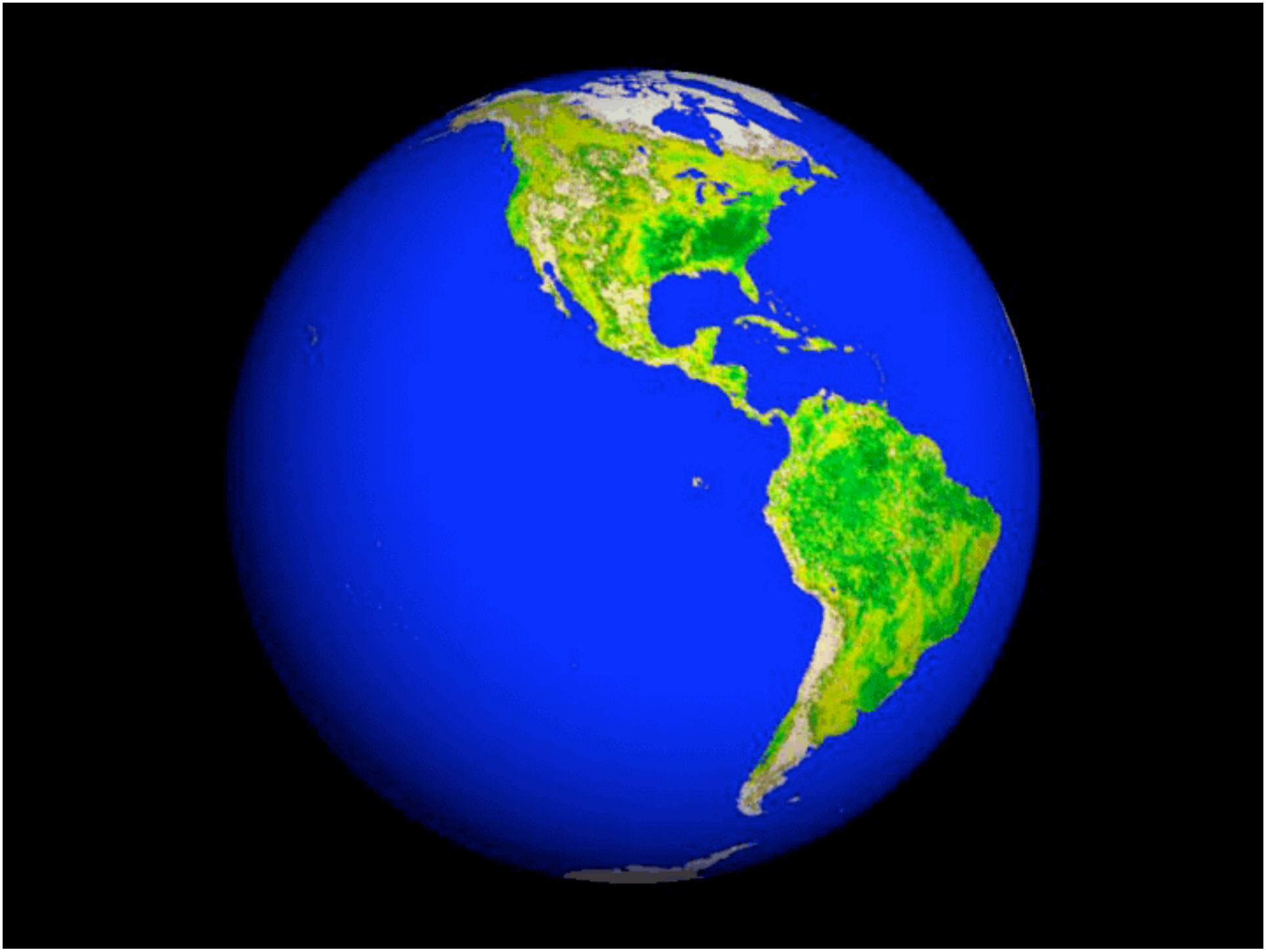
Dr. Dawn Wright, OSU

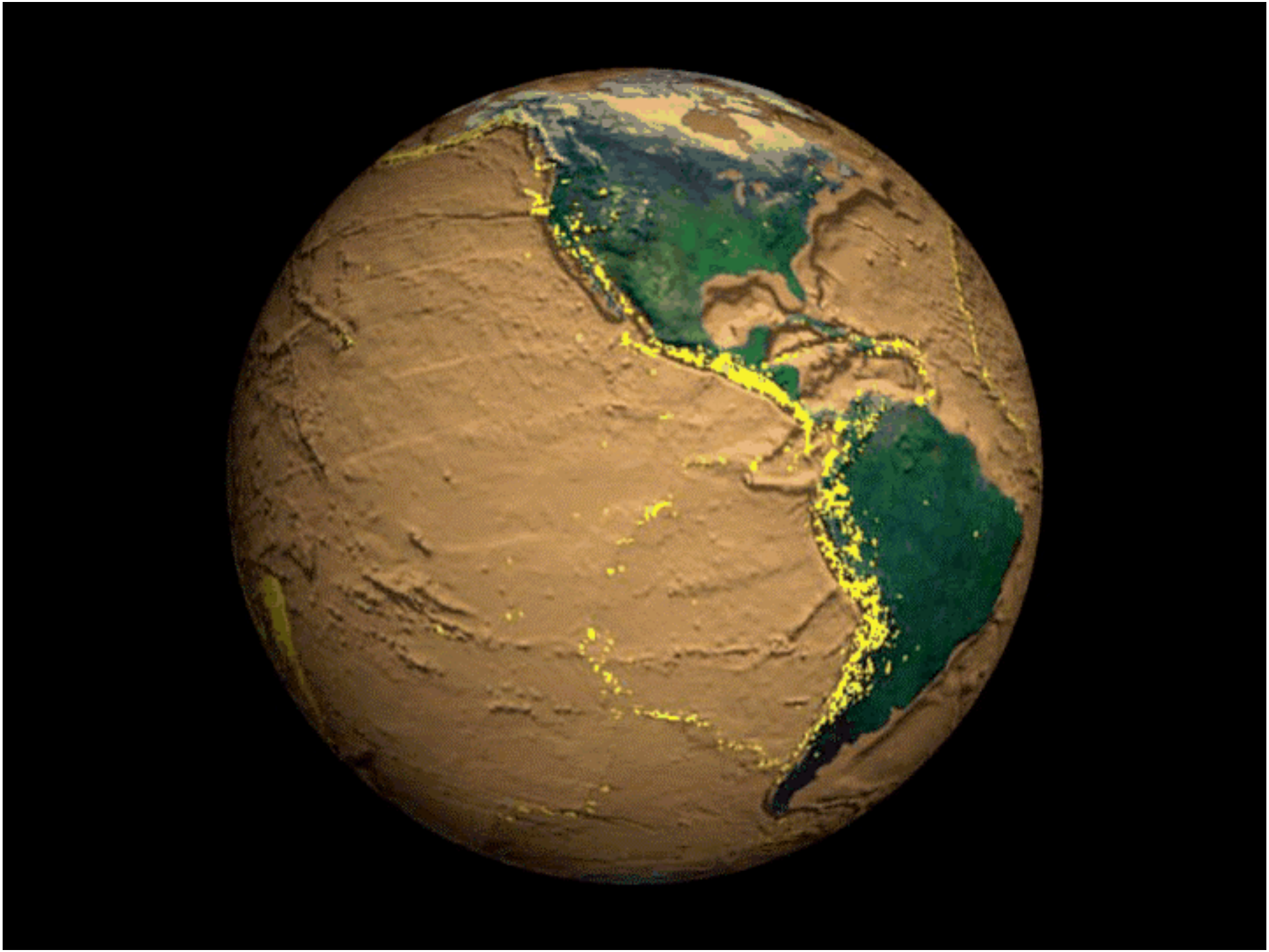
and the

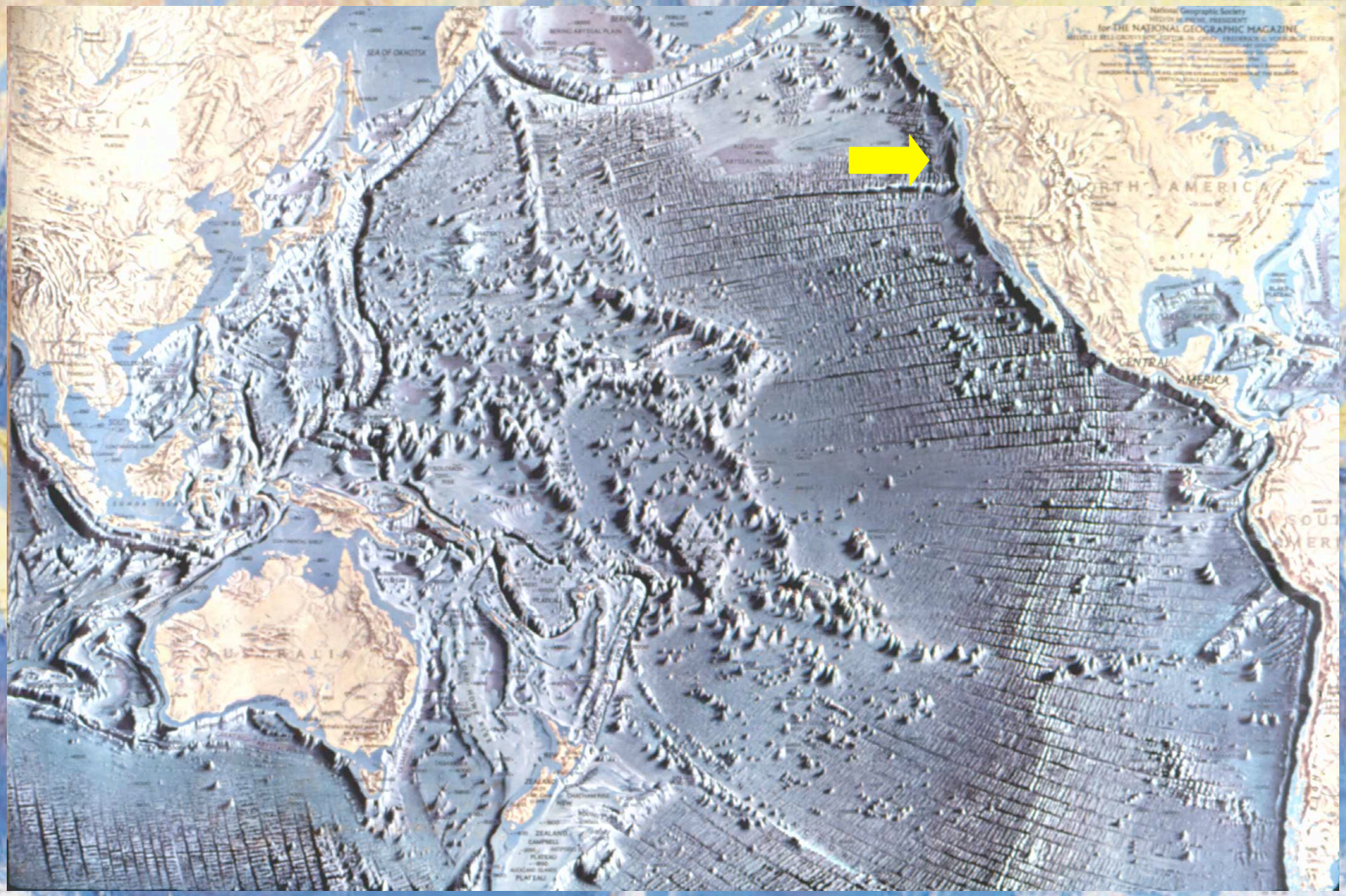
Oregon Territorial Sea Task Force

Images courtesy of the National Air and Space Museum

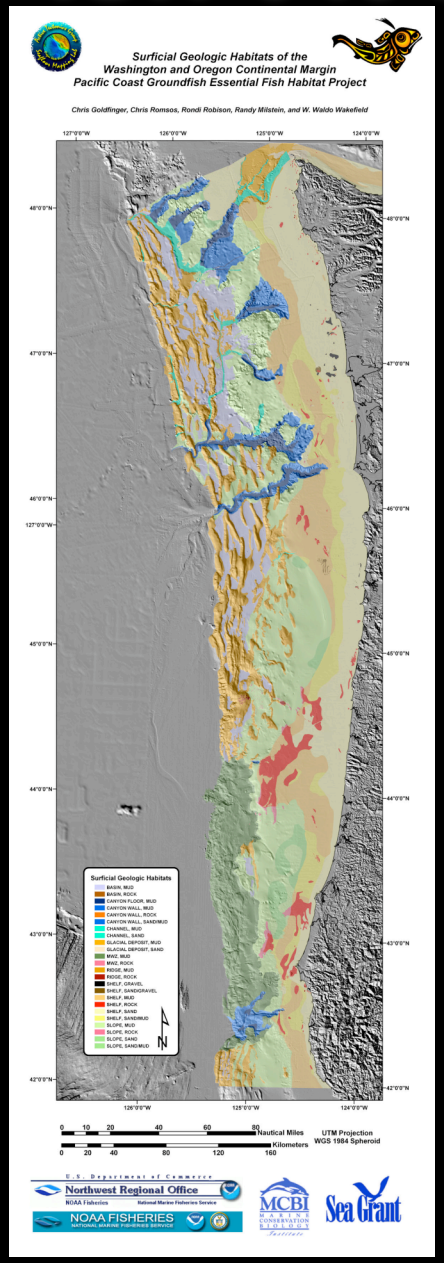


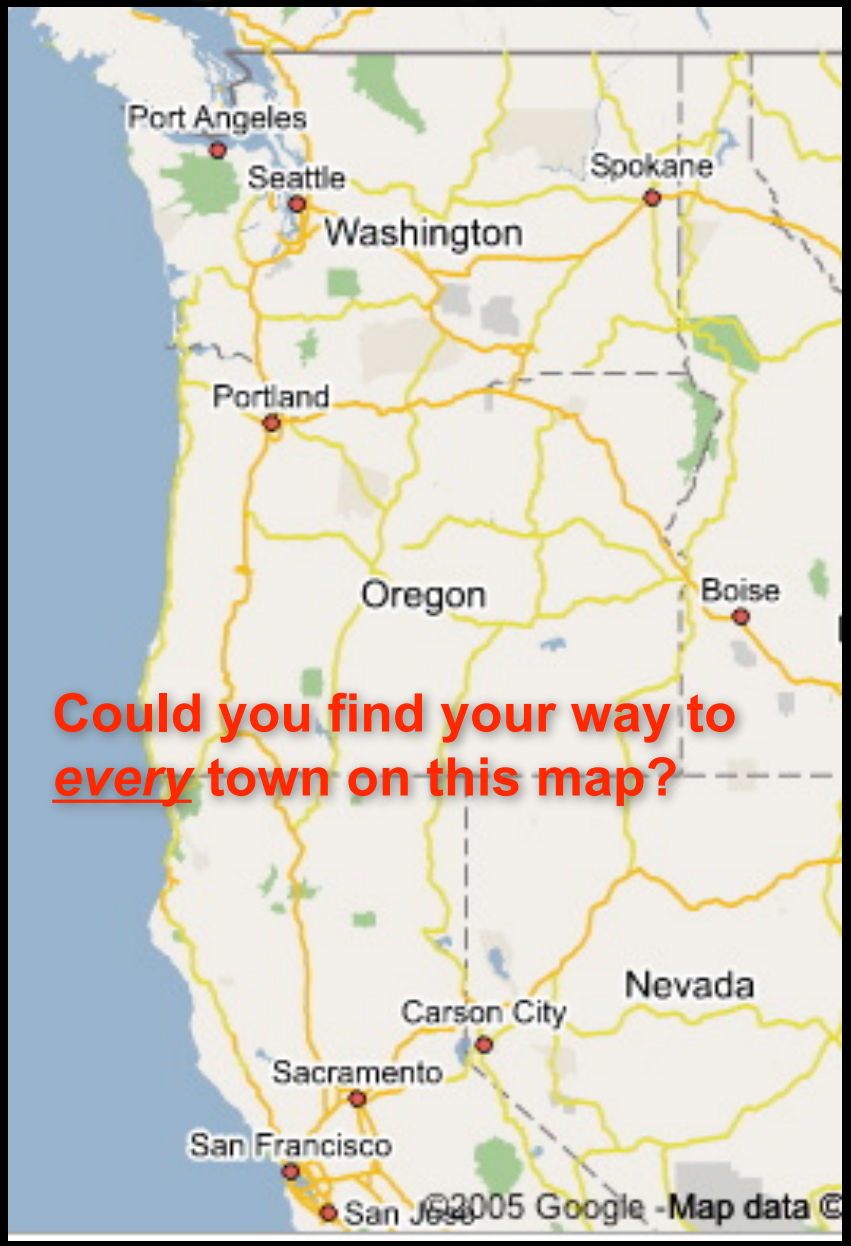





WORLD OCEAN FLOOR
National Geographic Society
for THE NATIONAL GEOGRAPHIC MAGAZINE
SEA OF OKHOTSK
NORTH AMERICA
CENTRAL AMERICA
AUSTRALIA

Isn't it already mapped?

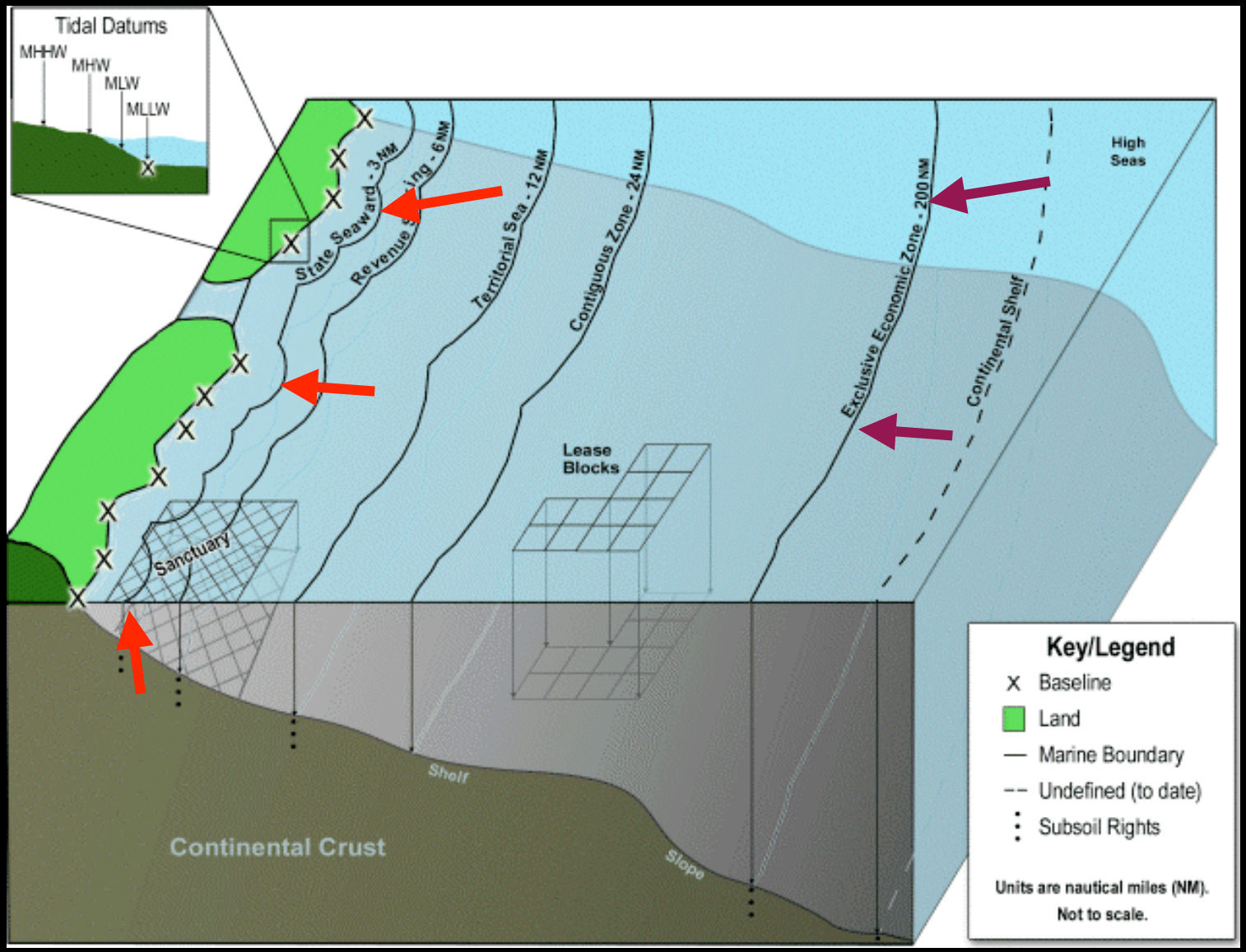




Could you find your way to *every* town on this map?

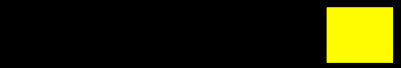
Goldfinger et al., OSU Active Tectonics Lab

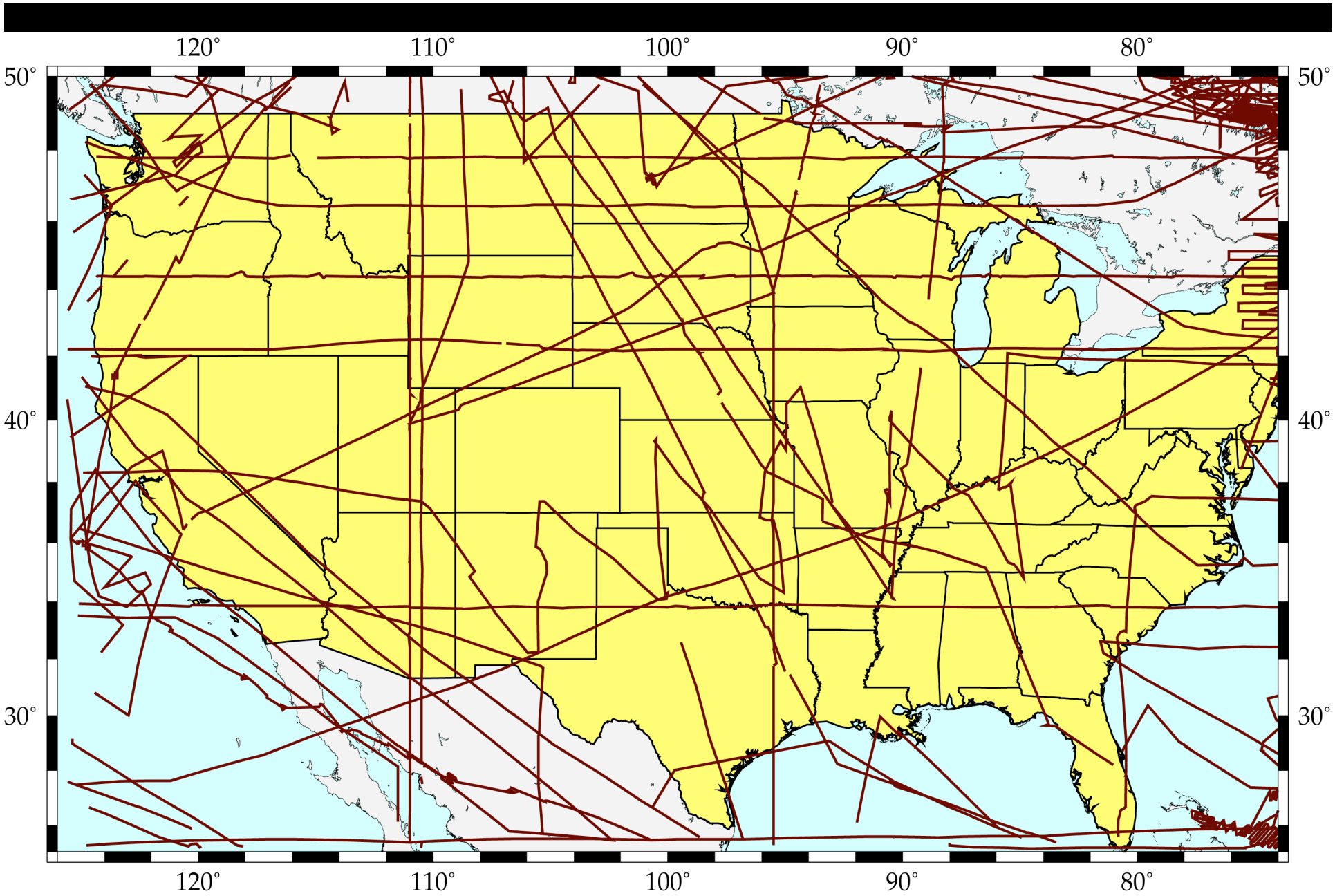
Territorial Sea, *not* the EEZ



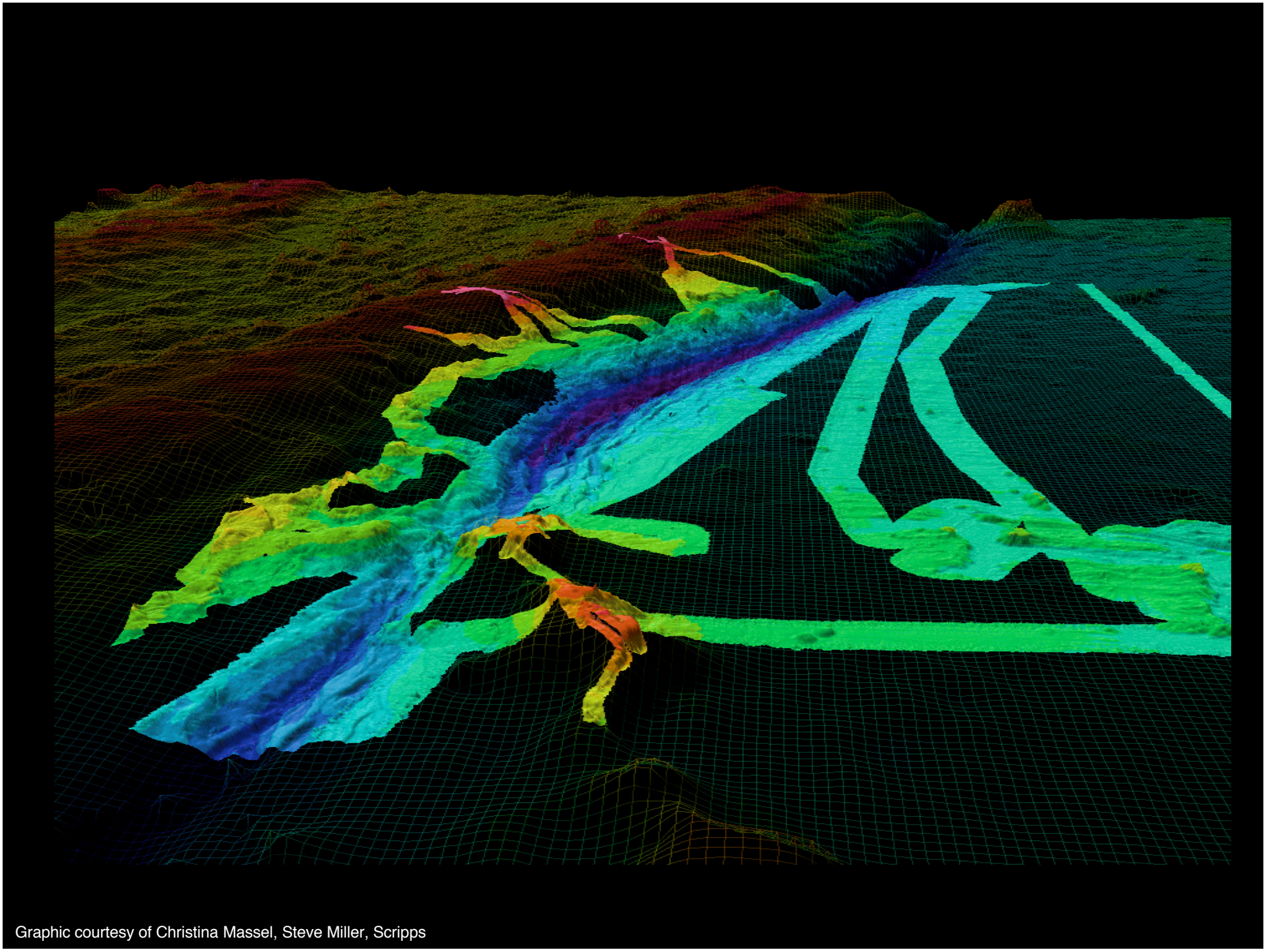
NOAA Coastal Services Center

Only 5% Thus Far!





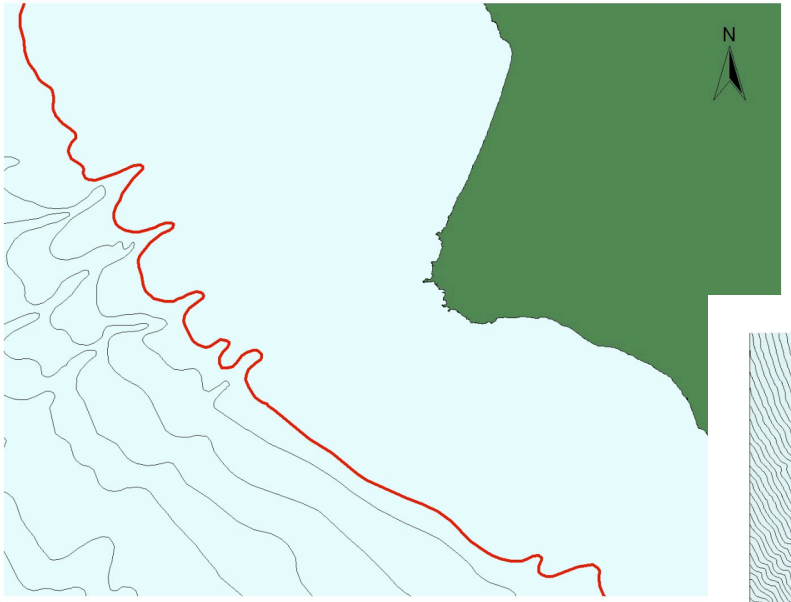
Slide courtesy of Dave Sandwell, Scripps Institution of Oceanography



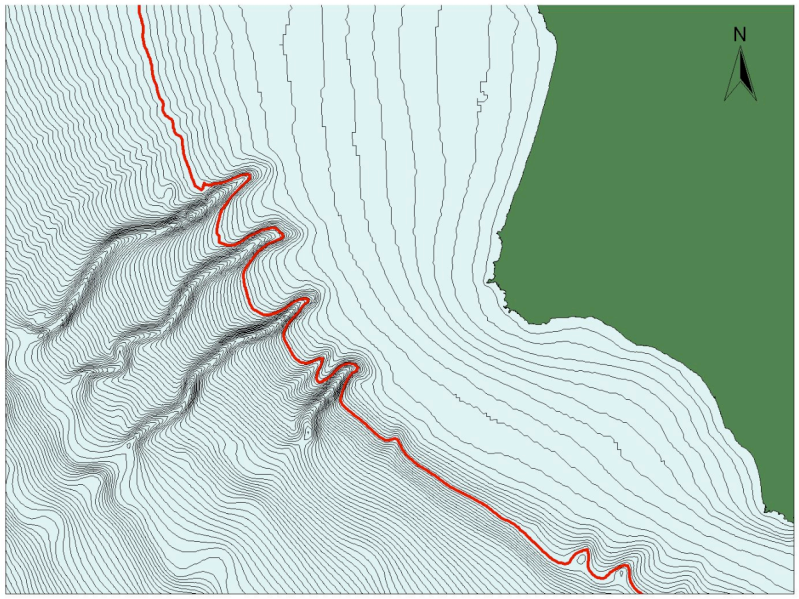
Graphic courtesy of Christina Massel, Steve Miller, Scripps

Details, Details…

100 m

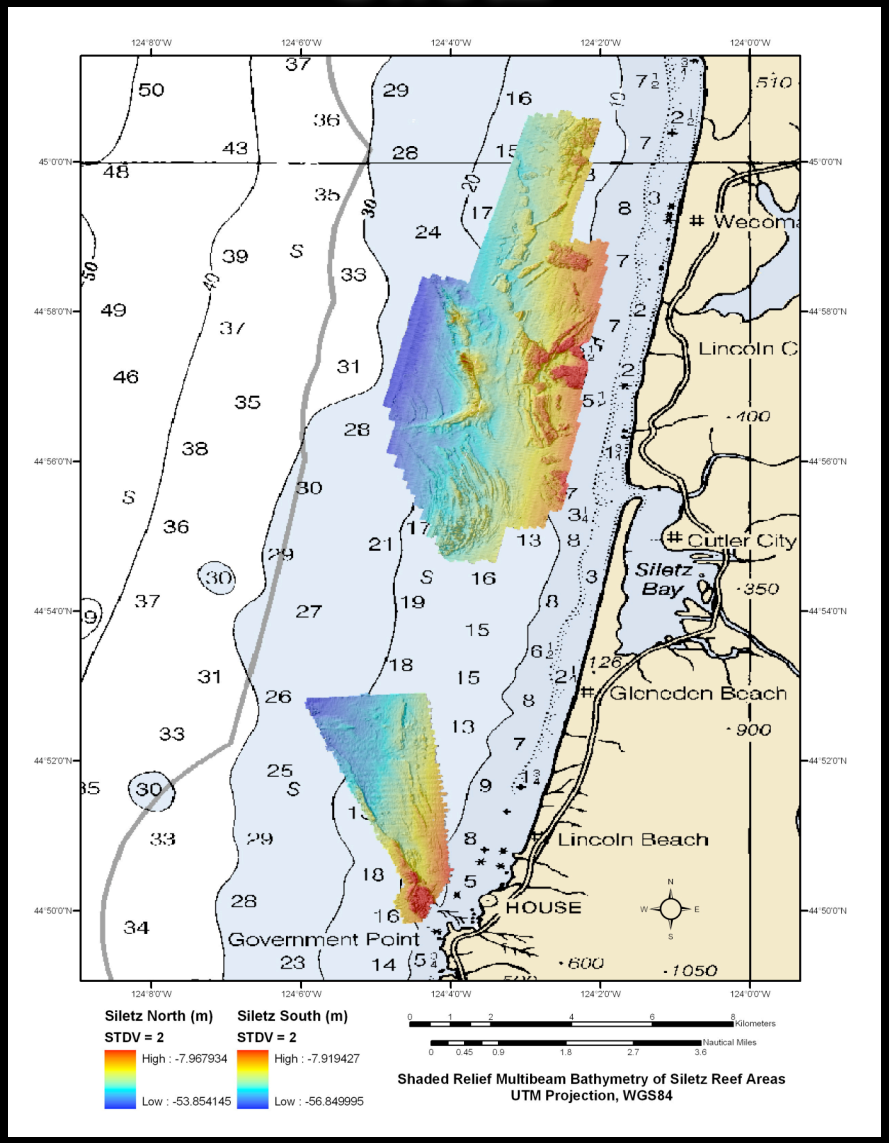


10 m



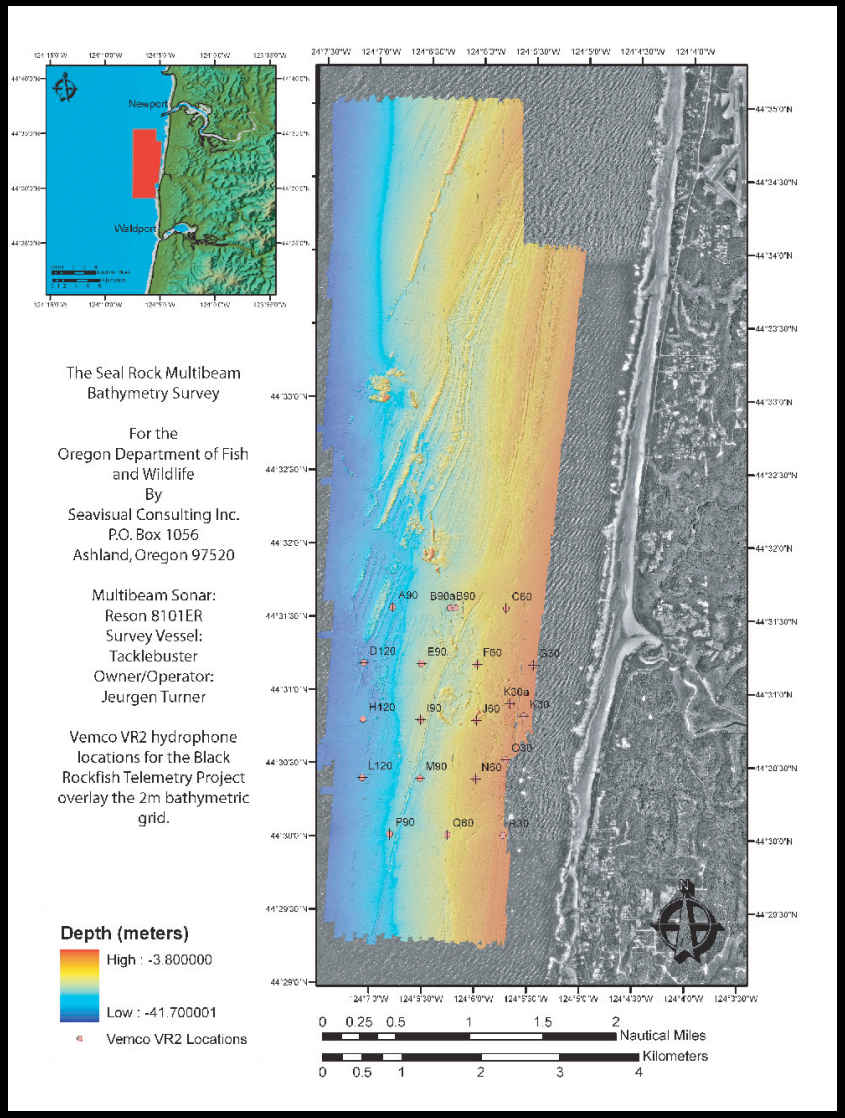
California Dept. of Fish & Game, Moss Landing Marine Labs

An Example of Required Detail: Siletz



Oregon Department of Fish & Wildlife, Marine Resources Program

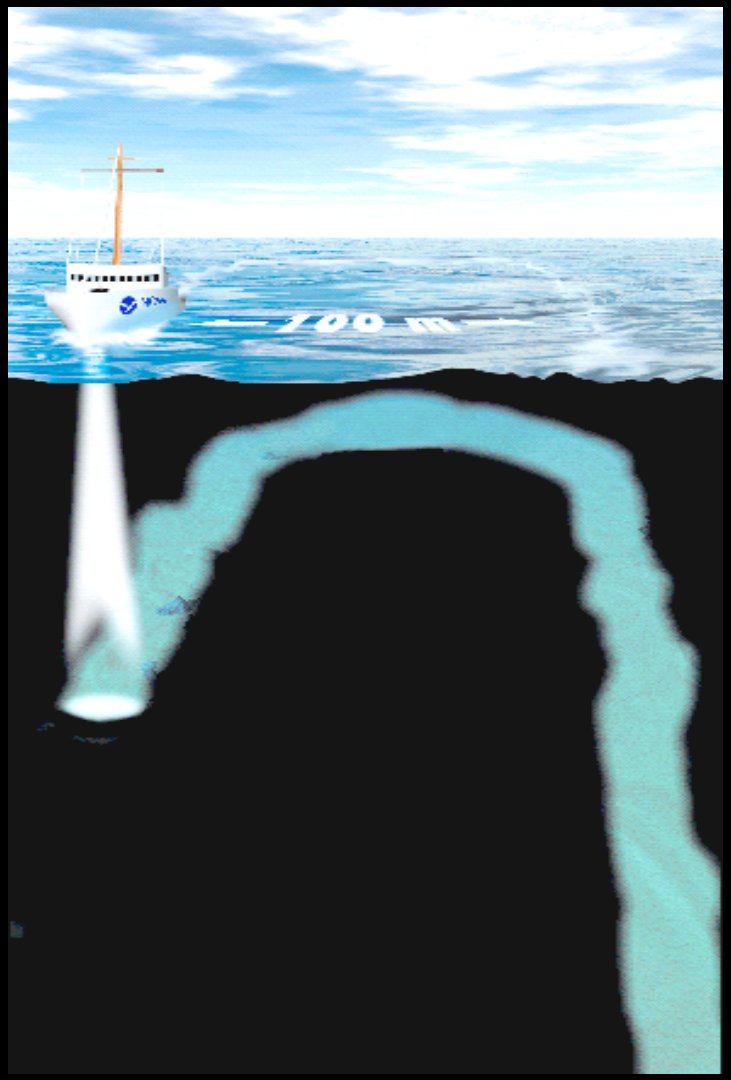
An Example of Required Detail: Seal Rock



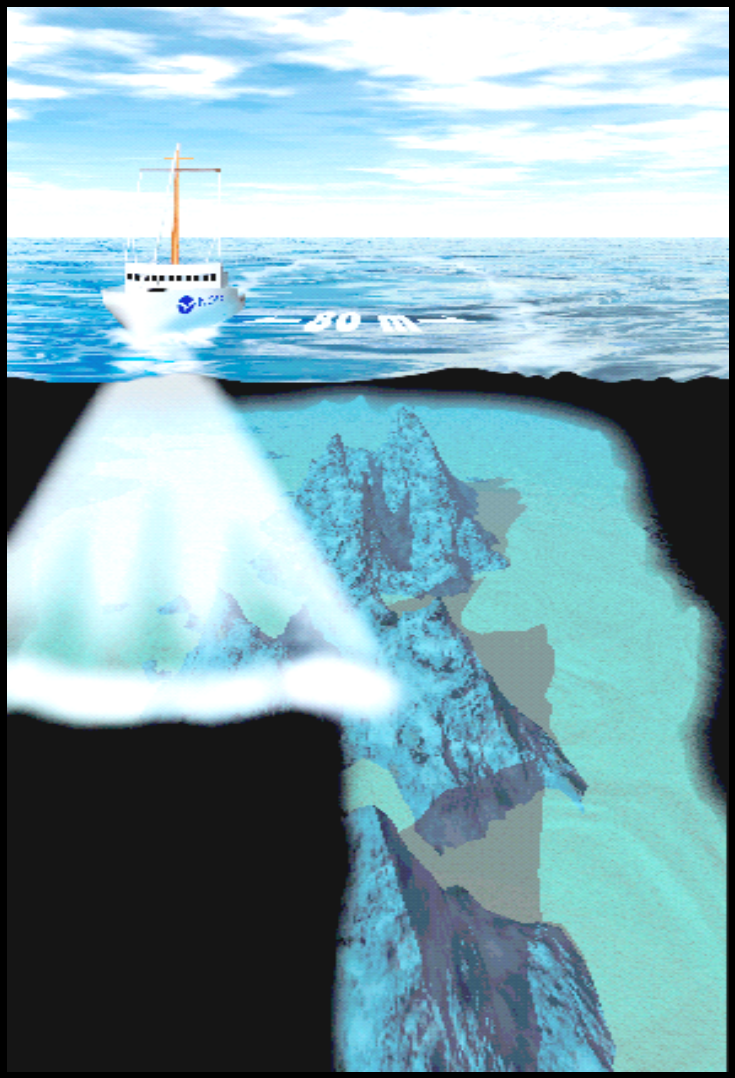
Oregon Department of Fish & Wildlife, Marine Resources Program

Seafloor Mapping: What and How?

Single Beam



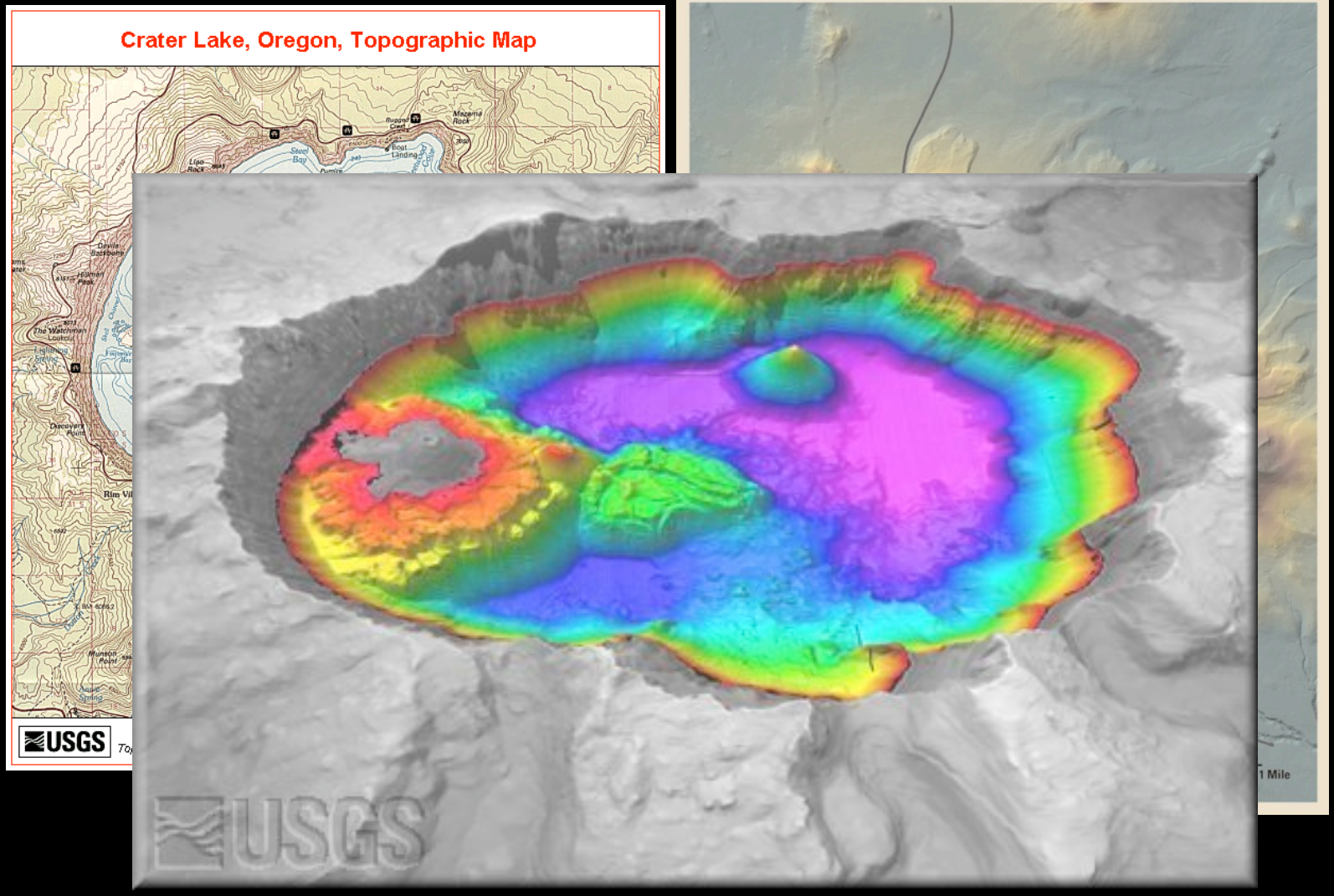
Multibeam



Images courtesy of NOAA and UNH

Dawn Wright, OSU

Topo/Bathy is the Fundamental Base "Layer"



American Samoa

Tutuila and Aunu'u

Courtesy National Park Service

N
W
E
S

National Park of American Samoa

Vatia Bay

Fagaitua Bay

Aunu'u Island

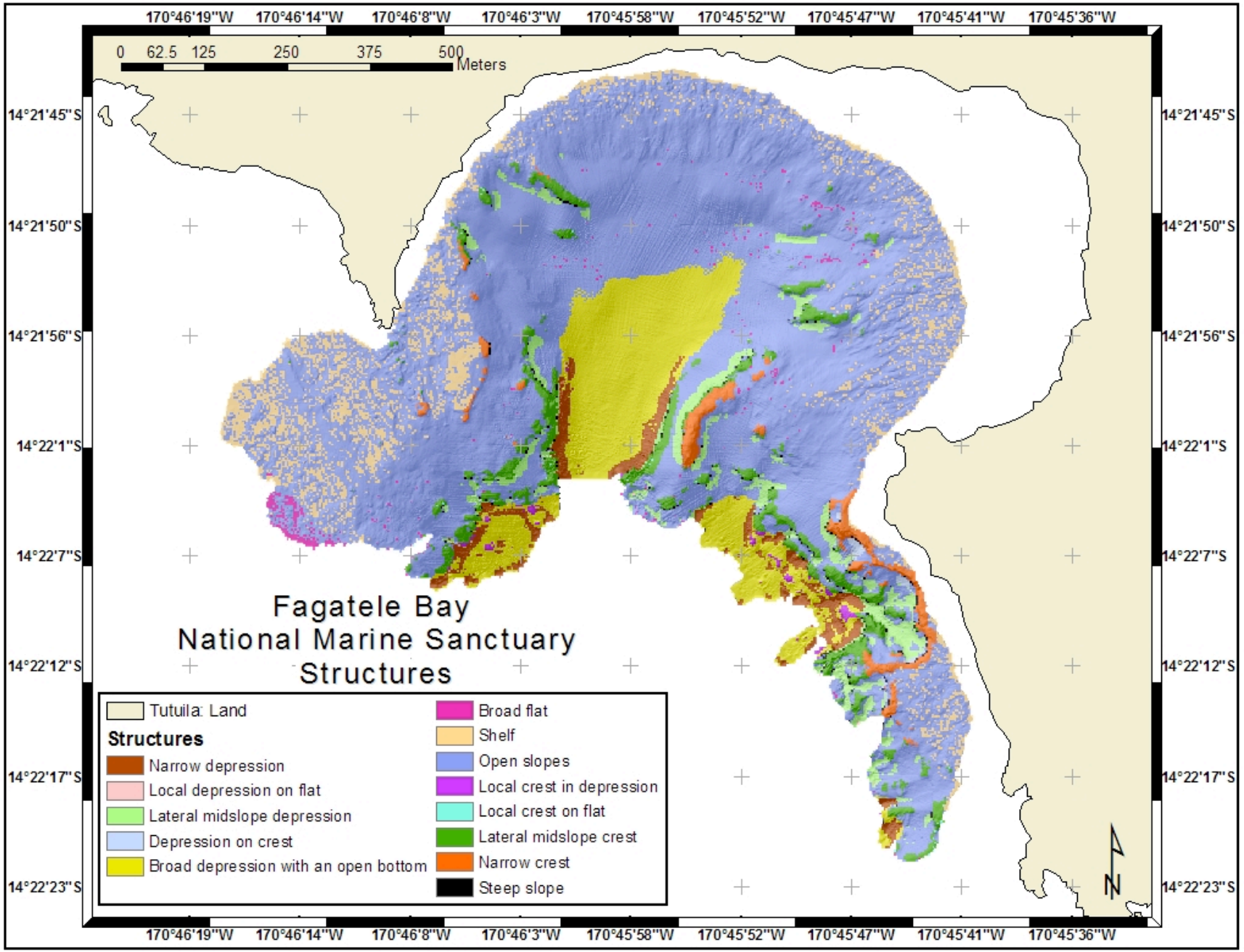
Taema Bank

Fagatele Bay National Marine Sanctuary

Emily M. Larkin
Department of Geosciences
Oregon State University
June 1, 2003

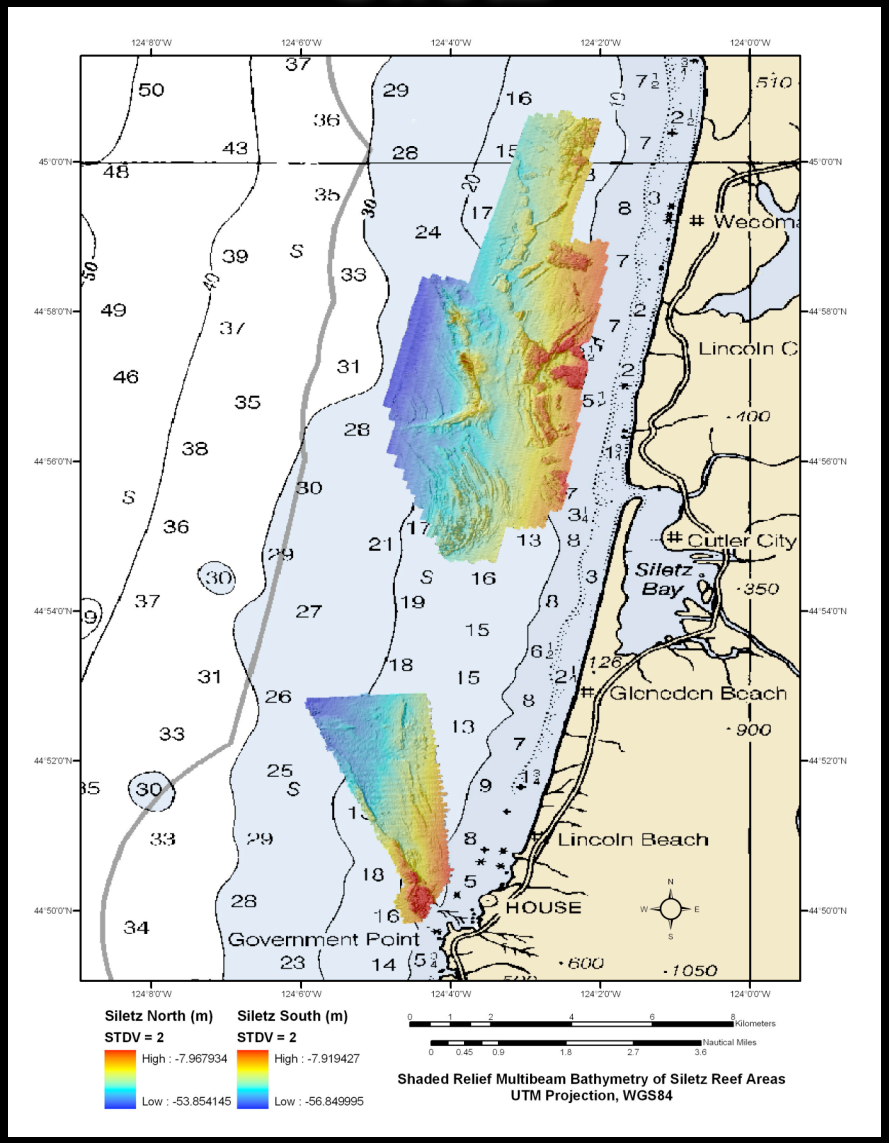
0m
663m
0 km
5 km

By former OSU grad student Emily Larkin



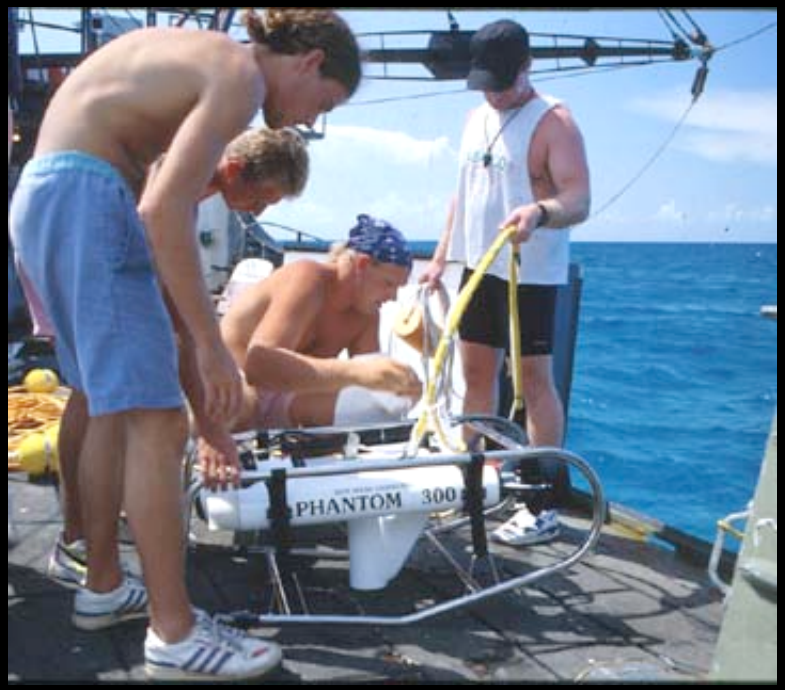
Emily Lundblad, Dawn Wright et al., OSU

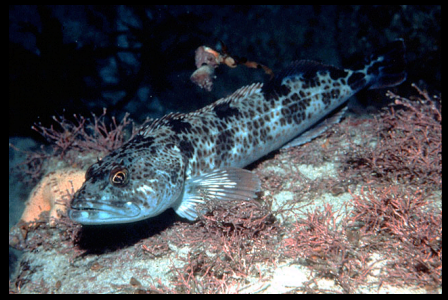
An Example of Required Detail: Siletz



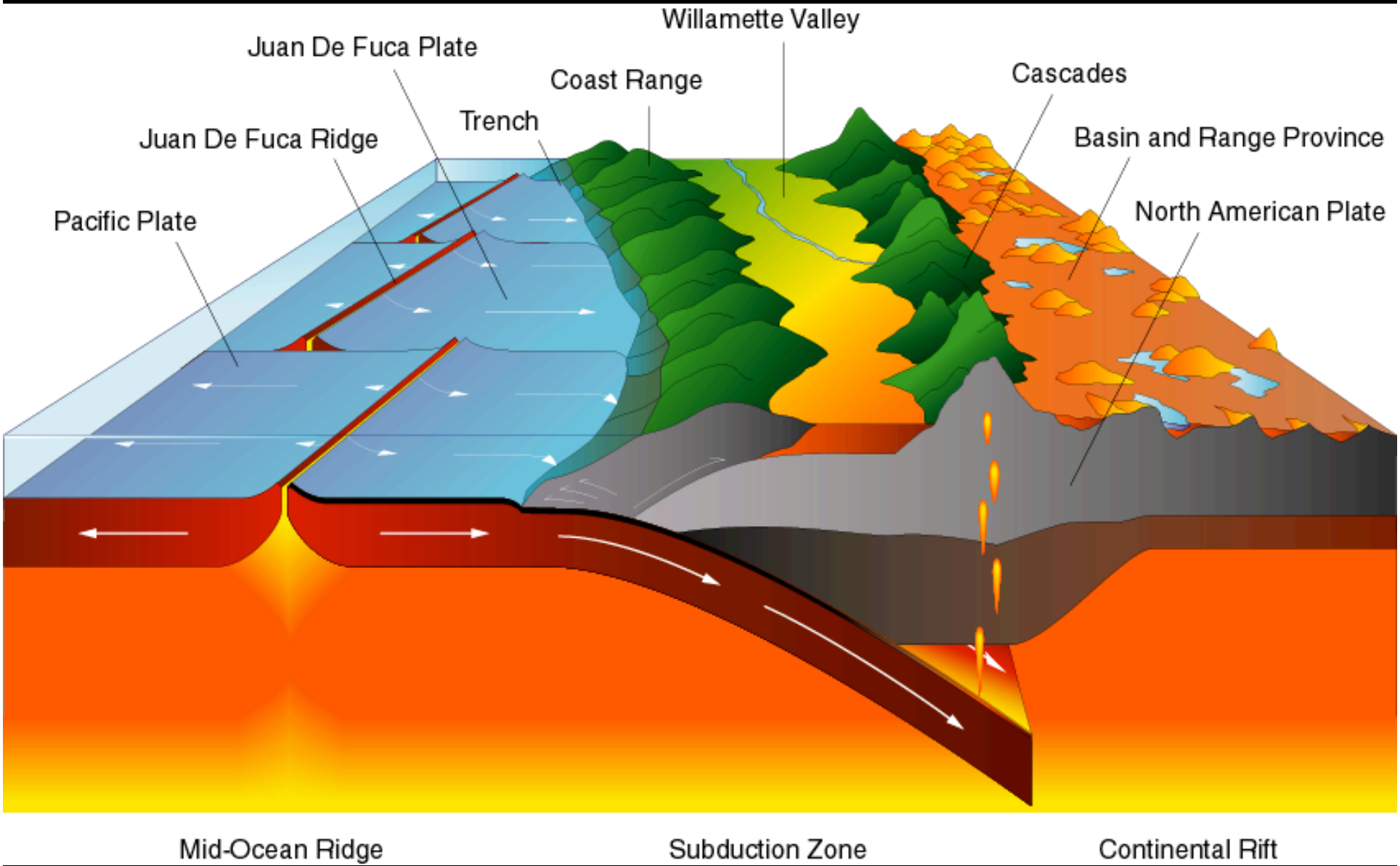
Oregon Department of Fish & Wildlife, Marine Resources Program

Photos/Videos of the Mapped Bottom

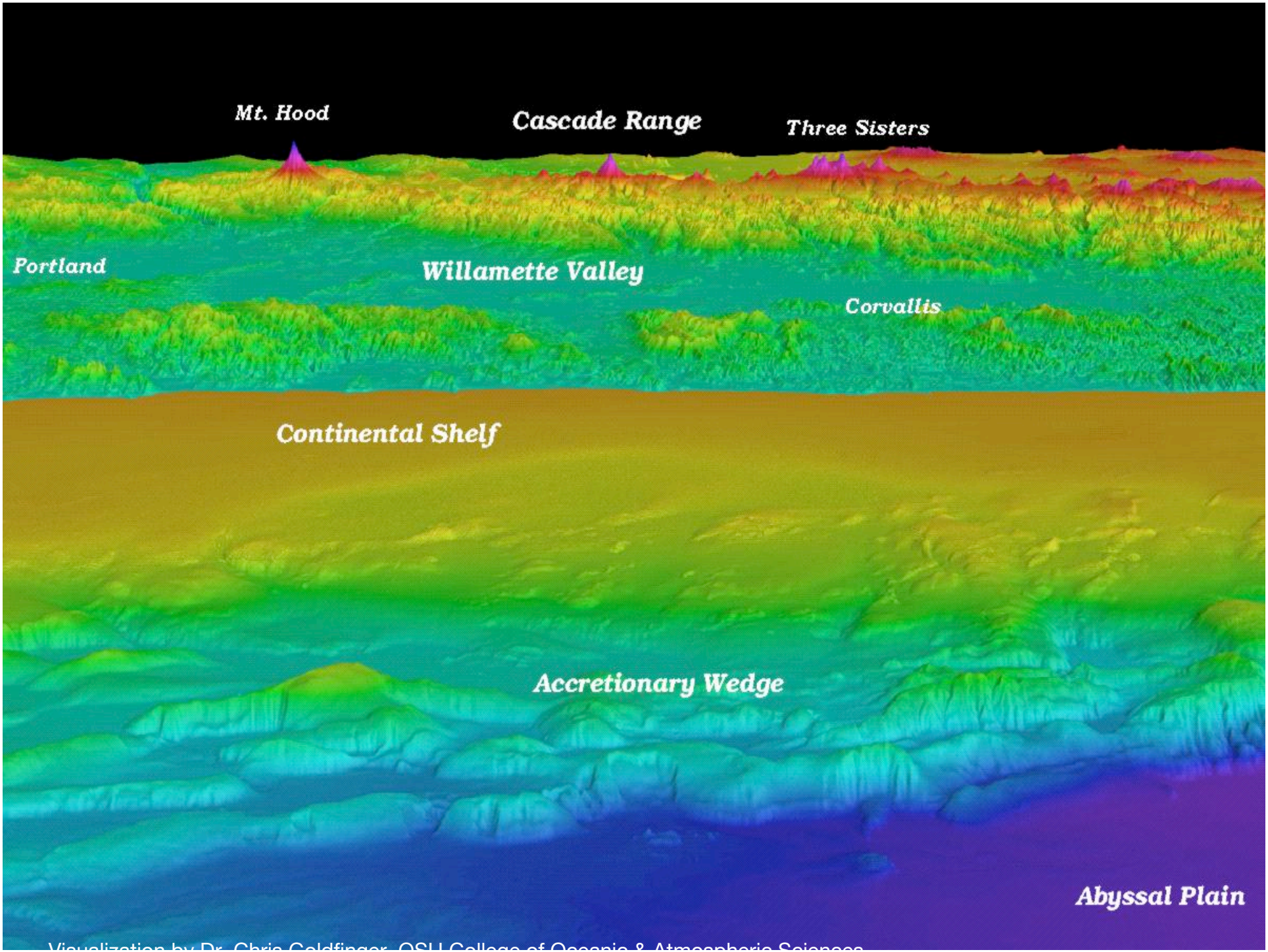




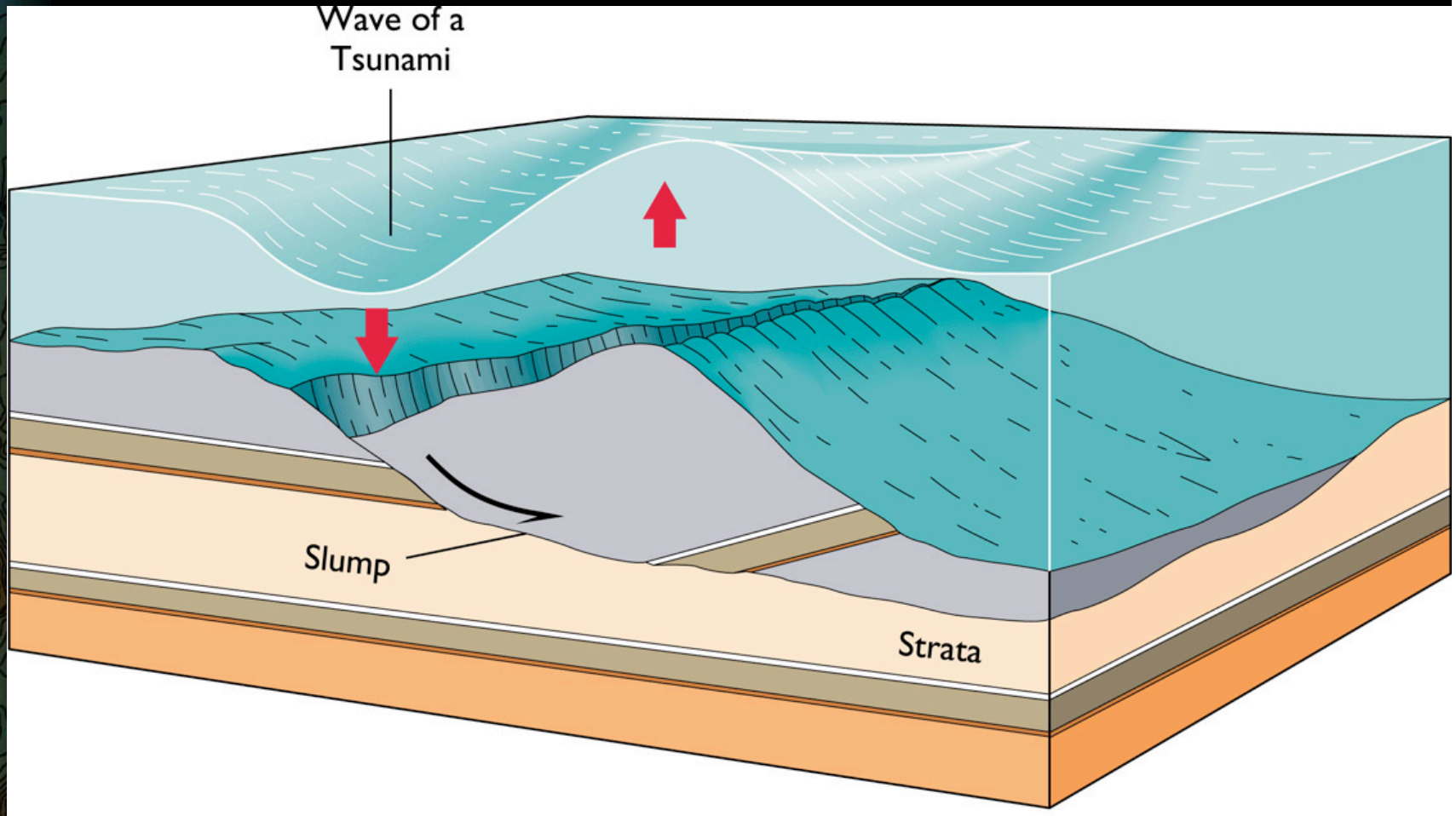
Images courtesy of Deidre Sullivan, MATE Center, Monterey, CA



Courtesy of Bob Lillie, OSU Geosciences


Mt. Hood
Cascade Range
Three Sisters
Portland
Willamette Valley
Corvallis
Continental Shelf
Accretionary Wedge
Abyssal Plain
Visualization by Dr. Chris Goldfinger, OSU College of Oceanic & Atmospheric Sciences

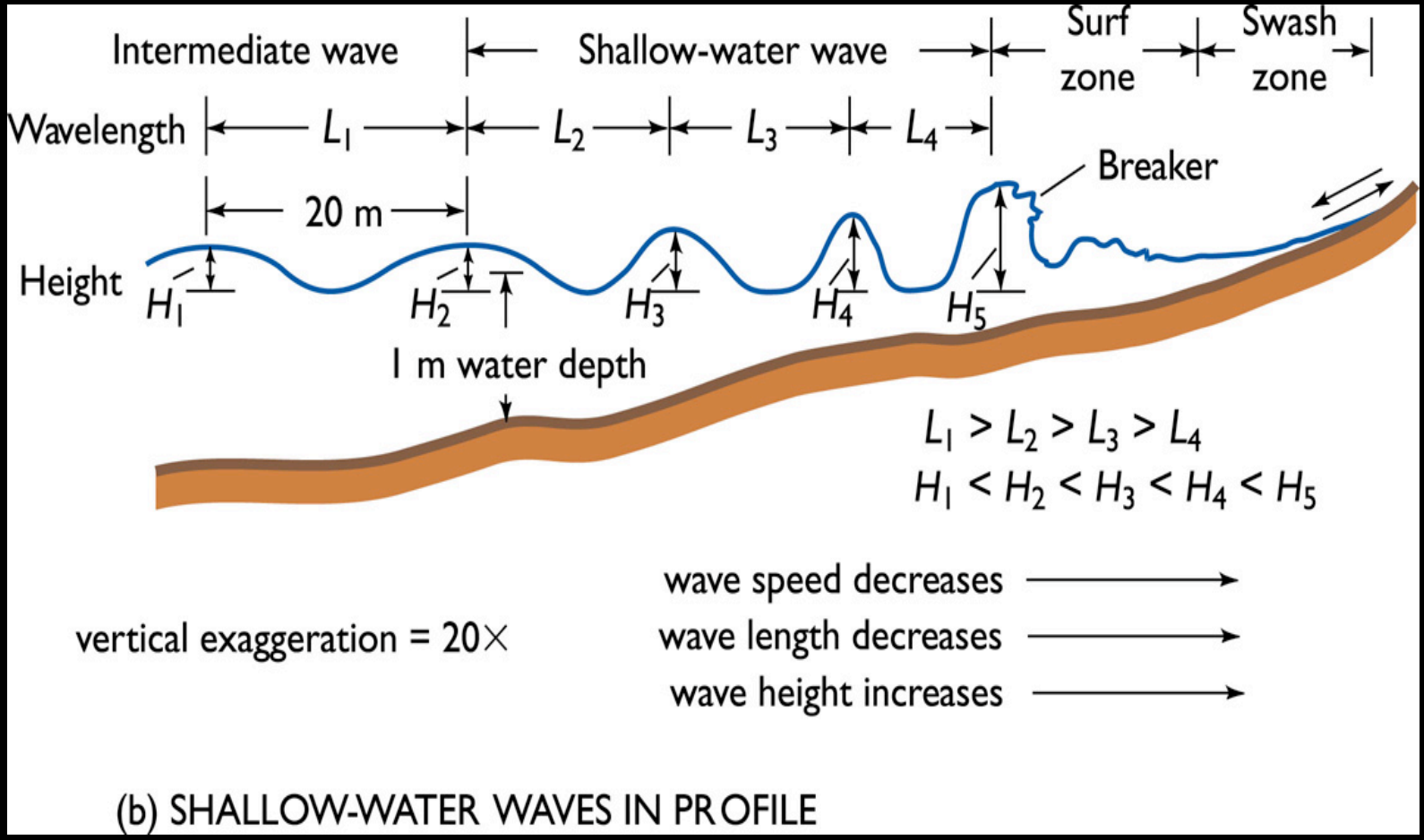
Generation of a Tsunami



(a) GENERATION OF A TSUNAMI

Paul Pinet textbook, *Invitation to Oceanography*

"Feeling the Bottom"



(b) SHALLOW-WATER WAVES IN PROFILE

Applications

Tsunami Runup Models - Evacuation Planning	Emergency Response, Impact Assessment
Shoreline Change Analysis	Analyzing Storm Impacts - Coastal Erosion
Marine Reserve Design	Habitat Restoration
Fisheries Management Commercial Fishing	Port Security
Maps and Visualizations	Navigation Products, Services
Wave Energy	Oil Spill Response, Tracking
Coastal tourism, recreation	MANY others

dusk.geo.orst.edu/3mile/consensus_statement.pdf

Scientific Consensus Statement for Mapping the Oregon Territorial Seafloor

For Oregon, as for most coastal states, the sea represents both a valuable resource and a potential threat. The sea provides many Oregonians with a livelihood, food, and recreation, and it attracts visitors to our coastal communities. The sea also represents a significant threat in the form of an inevitable earthquake-generated tsunami, akin to the recent one in Indonesia.

Understanding the nature of Oregon's Territorial Sea is critical to sustaining sport and commercial fisheries, coastal tourism, and a broad range of other ocean derived ecosystem services valued by Oregonians, in addition to addressing the threat posed by a major tsunami.

Presently, we have detailed bottom mapping of only about 5% of the area of the Oregon Territorial Sea, which extends 3 nautical miles from the coast and comprises approximately 950 square nautical miles. Effective decisions concerning the management and conservation of ocean resources and the modeling of shoreline inundation and erosion from storm waves or a tsunami all depend upon better knowledge of the nearshore waters.

This consensus statement expresses the belief that completing seafloor mapping of Oregon's coastal nearshore ocean is of the highest priority. We, the undersigned academic and government agency scientists, urge State and Federal officials to support and expedite ocean floor mapping of Oregon's territorial sea within the next two years. Oregon Statewide Planning Goal 19 (12/1/2000) calls for stewardship and conservation of ocean resources in Oregon's Territorial Sea. This consensus statement is consistent with and inspired by Goal 19.

Seafloor mapping of the Oregon continental margin is presently underway through a variety of efforts. However, the nearshore area is commonly left out due to the difficulty of mapping in shallow waters and insufficient resource allocations. As a group of leading scientists engaged in all aspects of study of our coastal ocean, we urge an initiative to map the seafloor of our coastal territorial sea. The costs are not excessive (under $6 million), and the benefits are inestimable. Presently, there is no State or Federal agency charged with this responsibility. Over the last several years, new sonar technologies, and the associated data management infrastructure, have moved what was once prohibitively expensive within our reach. Nevertheless, current efforts to accomplish this important work are insufficient. Without a coordinated effort, it will take 50 years or more at the present rate of progress. This pace is much too slow to meet the needs of coastal erosion studies, tsunami planning and resource management decision-making.

Specifically, we recommend mapping of the seafloor of the Oregon Territorial Sea for the following reasons:

- Oregon, along with Northern California, Washington, and Vancouver Island, faces a 20% probability of experiencing a magnitude-9 subduction earthquake and tsunami in the next 50 years, much like the 2004 disaster in Indonesia. We are just now beginning to understand what this disaster will mean for the Oregon coast. For the many towns along the coast, we presently cannot say how far the waters will rise, because the modeling of tsunami waves depends on detailed knowledge of coastal water depths that presently does not exist. Managing the hazards posed by this inevitable geological event requires this knowledge.

- We now understand that many Oregon nearshore fisheries and other marine life are dependent upon spatially explicit, yet limited, habitat features. Describing and classifying nearshore habitats are essential components of effectively assessing and managing Oregon's marine resources, including nearshore fish populations for both the Federal Essential Fish Habitat and State nearshore management processes.

continued on back

The Consensus Statement is …

An expression of need…

to fill a critical gap in data

Apolitical …

coalition of academic and agency *scientists*

An information tool to consider and use when making decisions for and with the governor

Part of governor's public position on ocean stewardship

A suggested process …

(communal funding, communal availability)

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