

Using GIS to Engage the Public in Ocean Science



EXPLORATION
HUB

Join us while we explore different types of data from around the world and delve into ocean science topics

Urban Observatory™



Story Maps



THESE APPS AND OTHERS AVAILABLE AT
AQUARIUM.PACIFIC.ORG/EXHIBITS/INTERACTIVES



More Than a Fish Tank.

A Think Tank.

Using GIS to create a more engaged, scientifically literate public

The Aquarium strives to be "more than a fish tank" by creating innovative, immersive experiences through the use of geospatial technologies. These experiences instill our audiences with an appreciation for the impacts humans have on our planet and the future we can create together.



Jennifer Anne Lentz, Ph.D.

Education Specialist at the Aquarium of the Pacific

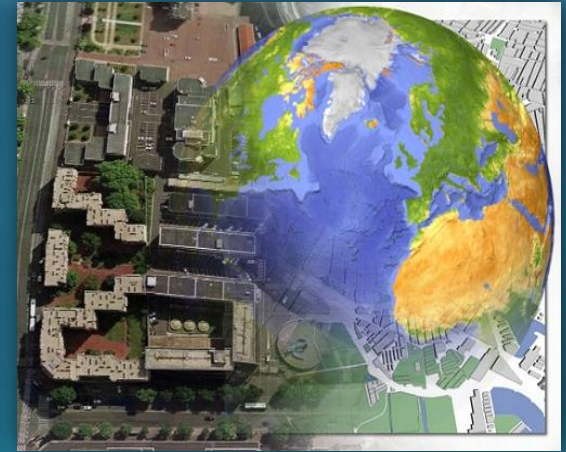
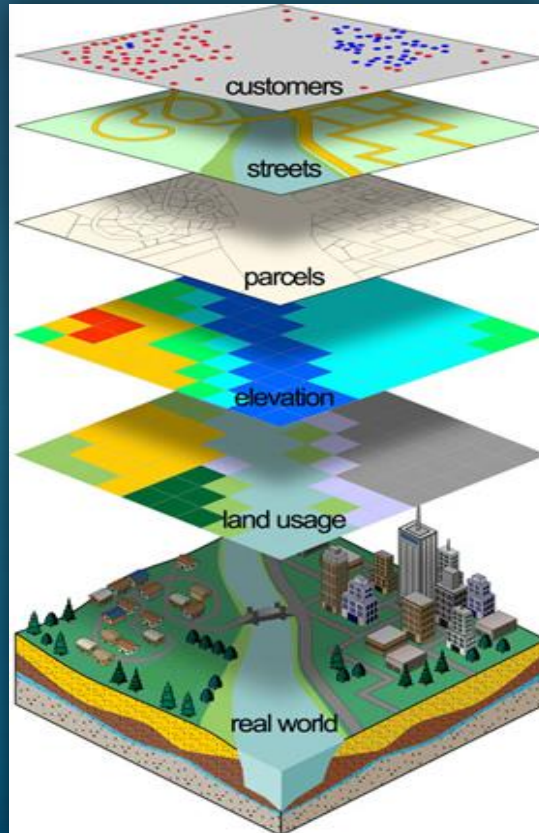
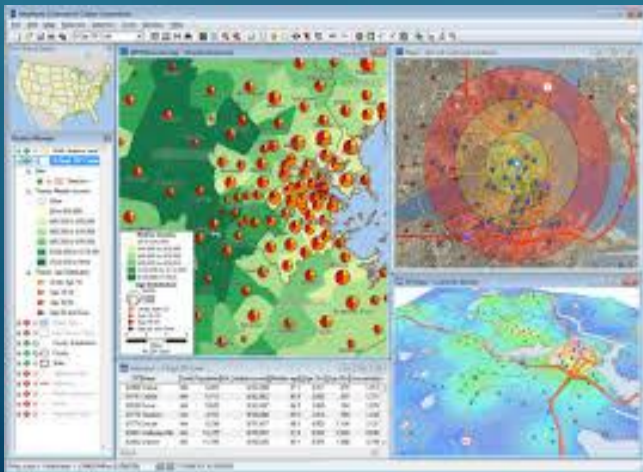
AOP All Staff Meeting Presentation

June 22nd & 27th, 2015

Geographic Information Systems



Spatial Analysis



Remote Sensing



Aquarium of the Pacific
SITE PLAN
march 2013 (not to scale)



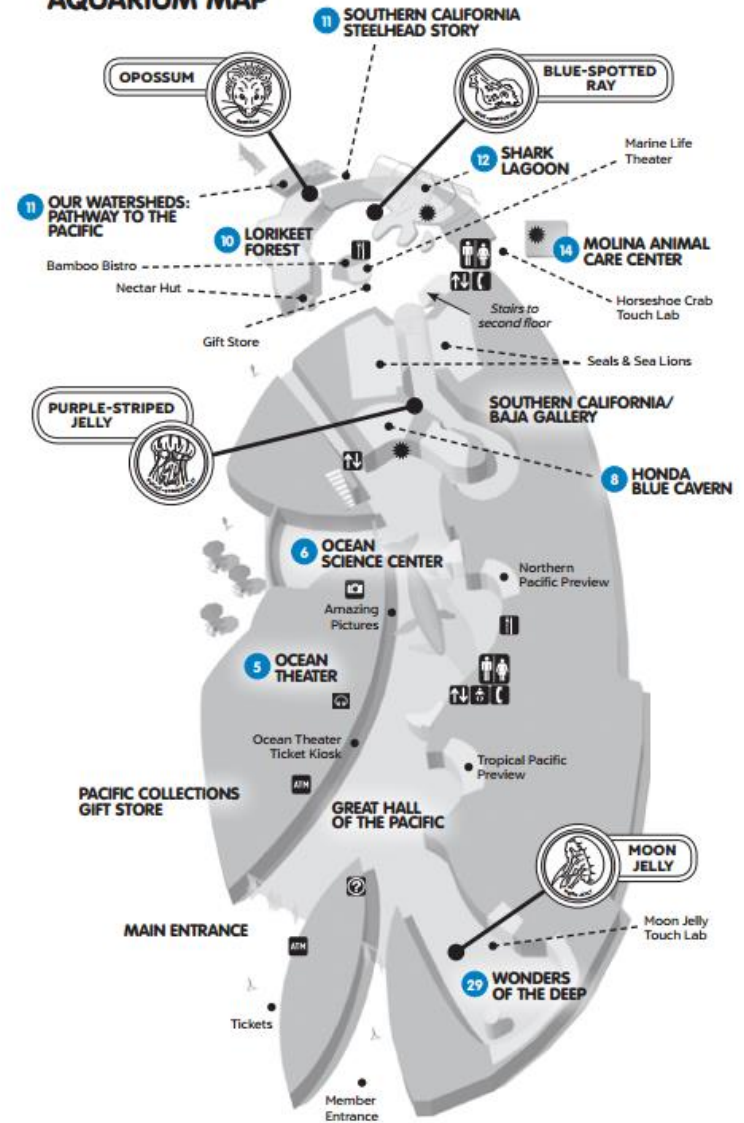
Site Planning

Aquarium of the Pacific

MAP & VISITOR GUIDE



FIRST FLOOR AQUARIUM MAP



2 • Aquarium Visitor Guide

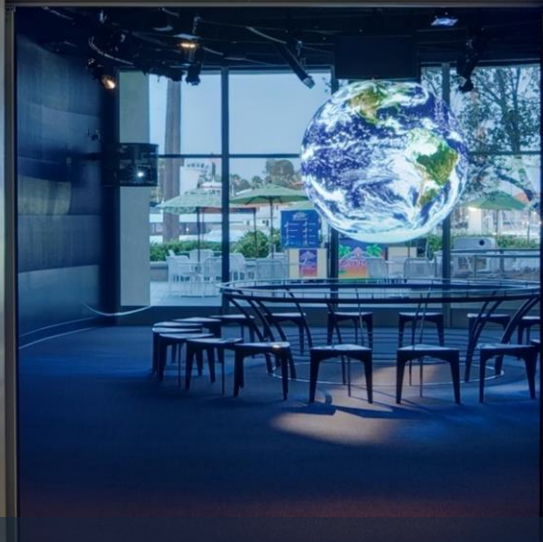




Google Galaxy

Ocean Science Center

EXIT



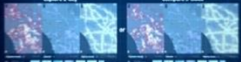
Science on a Sphere (SOS)

Exploration HUB

EXPLORATION
HUB

Join us while we explore different types of data from around the world and delve into ocean science topics

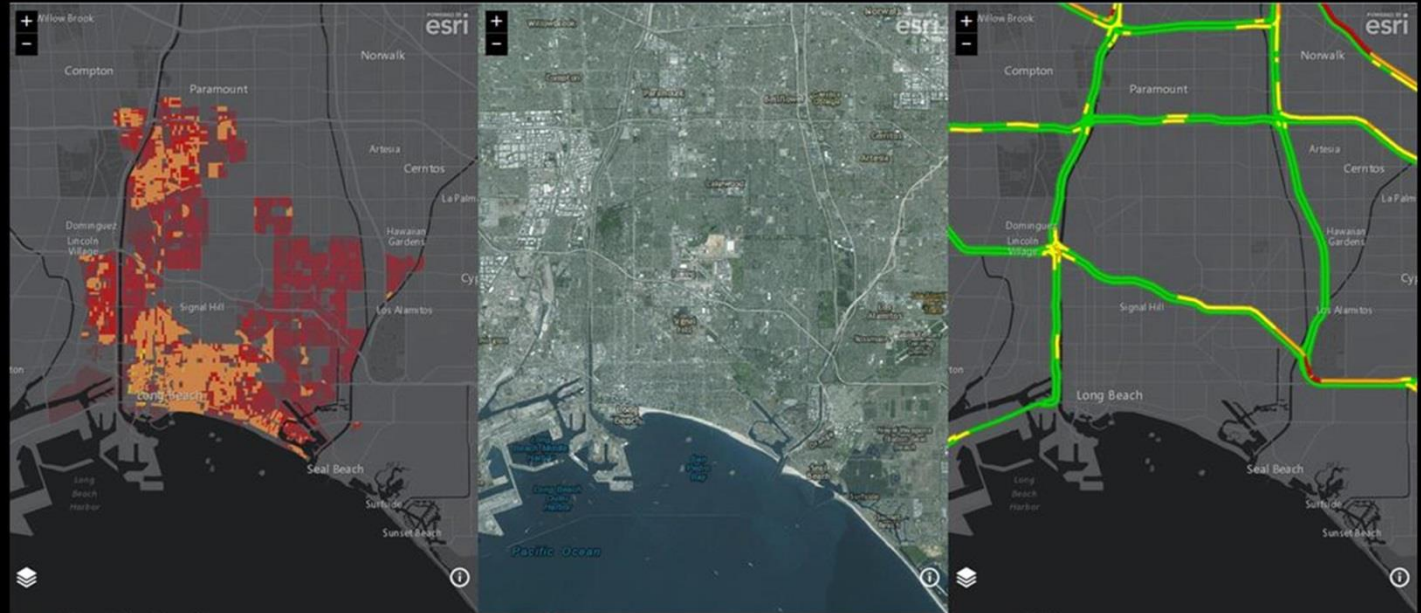
Urban Observatory™



Story Maps



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AQUARIUMOFPACIFIC.ORG/EXHIBITS/INTERACTIVES



People Population Density

Systems Imagery

Movement Traffic



Selected City /
Long Beach

Explore 3 Cities



Browse All Cities

Urban Observatory

Interactive Web Apps

Sea Level Rise App

AQUARIUM OF THE PACIFIC
Sea Level Rise

Infrastructures at Risk

- Healthcare Facilities
- Schools
- Police Stations
- Fire Stations
- Wastewater Treatment Plants
- EPA Regulated Site

Population

- Vulnerable Population

Hazard Zones

- Potential Flood Zones
- Erosion
- Wetland Frontier
- CA Coastal Zone

You are looking at potential flood zones along the coast of California. According to the Pacific Institute of California, these areas are at risk of flooding if an extreme storm were to hit the coast. The area in blue is the area at risk today. The area in pink is the area at risk if sea level rises 5 feet or more. Zoom out to view the flood zones for the entire California.

[More Info](#)

<http://www.aquariumofpacific.org/webapps/slr/>

Watersheds App

AQUARIUM OF THE PACIFIC
our watersheds

entrance →
Pathway to the Pacific

Watersheds of San Pedro Bay

- San Gabriel River Watershed
- Los Angeles River Watershed
- Dominguez Channel Watershed

San Pedro Bay
Pacific Ocean

A watershed is an area of land where all the surface water drains to the same lower destination, such as San Pedro Bay. This water can come from high in the mountains or from rain that falls on the streets.

Watersheds come in all shapes and sizes. They cross county, state, and national boundaries. No matter where you are, you are in a watershed. And what you do in your watershed impacts the ocean and the animals that call it home. Get to know your watershed - go on a hike.

[More Info](#)

http://www.aquariumofpacific.org/ourwatersheds_site/

Whale Research App

AQUARIUM OF THE PACIFIC
Southern California Whale Research Project
Connecting People, Science, and Whales

Blue Whale

Humpback Whale

Gray Whale

Minke Whale

Southern California Whale Research Project
Connecting People, Science, and Whales

[More Info](#)

<http://whaleproject.aquariumofpacific.org/>

Whales: Voices in the Sea

VOICES IN THE SEA

Home Species Exhibit Videos Education Games Blog

Click a *Marine Mammal* to Explore Voices in the Sea

California Blue Whale Update

Learn how photographs are used to identify individual whales, allowing scientists to track their populations. Watch: California Blue Whale Update

PACIFIC LIFE FOUNDATION

SCIENCE SOCIETY OF CALIFORNIA

http://cetus.ucsd.edu/voicesinthesea_org/index.html

HOME GALLERY MAP GROUPS

Sign In



Story Maps and other GIS-related projects



AOP's CELC Story Map



AOP's Magellanic Penguins Story Map



AOP's Visions '13 Cruise Story Map



AOP, The GREEN Aquarium Story Map

The Aquarium of the Pacific's mission is to instill a sense of wonder, respect, and stewardship for the Pacific Ocean, its inhabitants, and ecosystems. Our vision is to create an aquarium dedicated to conserving and providing Natural Capital (Nature and Nature's services) by building Social Capital (the relationships and trust among people).

The Aquarium of the Pacific (AOP) is the fourth most-attended aquarium in the nation. It displays over 12,000 animals in more than 50 exhibits that represent the diversity of the Pacific Ocean. Each year more than 1.5 million people visit the Aquarium. Beyond its world-class animal exhibits, the Aquarium offers educational programs for people of all ages from hands-on activities to lectures by leading scientists. Through these programs and a variety of multimedia experiences, the Aquarium provides opportunities to delve deeper into ocean science and learn more about our planet. The Aquarium of the Pacific is the most significant and vibrant gathering place where diverse cultures and the arts are celebrated and great, important topics facing our world are explored by scientists, policy-makers and stakeholders in the search for sustainable solutions.

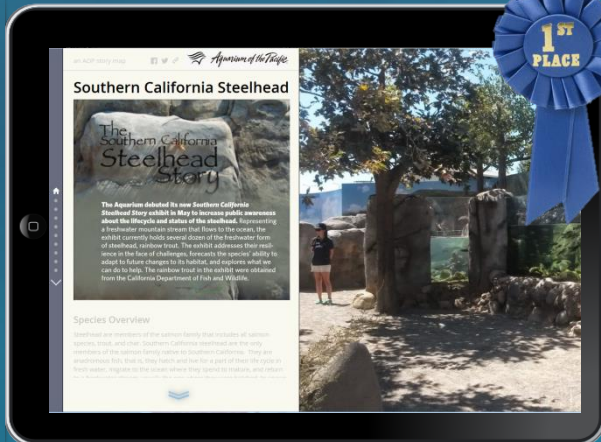
ArcGIS Online & Story Maps

Using Story Maps to help guests learn more about our...

Animals



Exhibits



Experiences



Locations




Issues



Example of a Story Map about our Animals

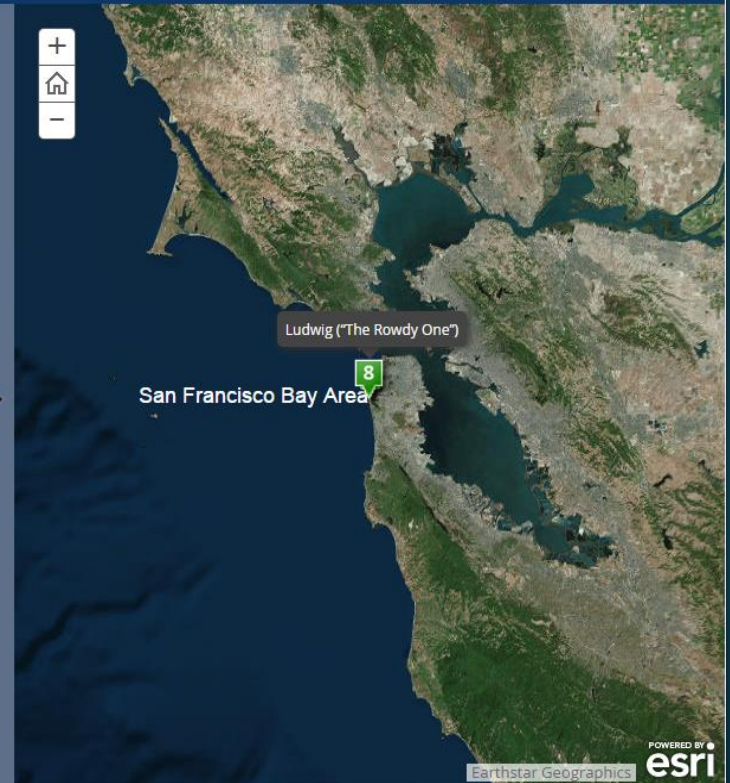
Aquarium of the Pacific's Magellanic Penguins Story Map

An Aquarium of the Pacific (AOP) story map   



Ludwig ("The Rowdy One")

Ludwig is definitely the rowdiest of the younger penguins in the group, his trainers report. They say he would rather be in the water than with humans, who he tends to shy away from. However, he's quite assertive when he wants to be. Ludwig is 1 of 4 penguins in the "San Francisco group," that were bred in captivity at the San Francisco Zoo as part of the Association of Zoos and Aquariums (AZA) "Species Survival Program."



Earthstar Geographics 



Geographic Range



Aquarium of the Pacific's "June Keyes Penguin"



Shim ("The Big One")



Noodles ("The Bruiser")



Patsy ("The Shy One")



Whatever ("The Bold One")



Floyd ("The Curious One")



Ludwig ("The Rowdy One")



Newsom ("The Baby")

Example of a Story Map about our Exhibits

an AOP story map



Southern California Steelhead

Steelhead

Historian John G. "Tom" Tomlinson, Jr., in collaboration with the Aquarium of the Pacific, has written a book documenting the local history of the Southern California Steelhead, including historic photos, postcards, fishery data, newspaper clippings, and rainfall statistics.

This book gathers historical information about this fish species and describes its resilience in the face of the region's changing watersheds, rainfall levels, and manmade infrastructure.

Against the Currents is available for sale in the Pacific Collections gift store or online at shop.aquariumofpacific.org

Learn More

Watch "Southern California Steelhead: Against All Odds" by California Trout



available online at: <http://vimeo.com/79393289>

More information about southern California Steelhead can be found online at:

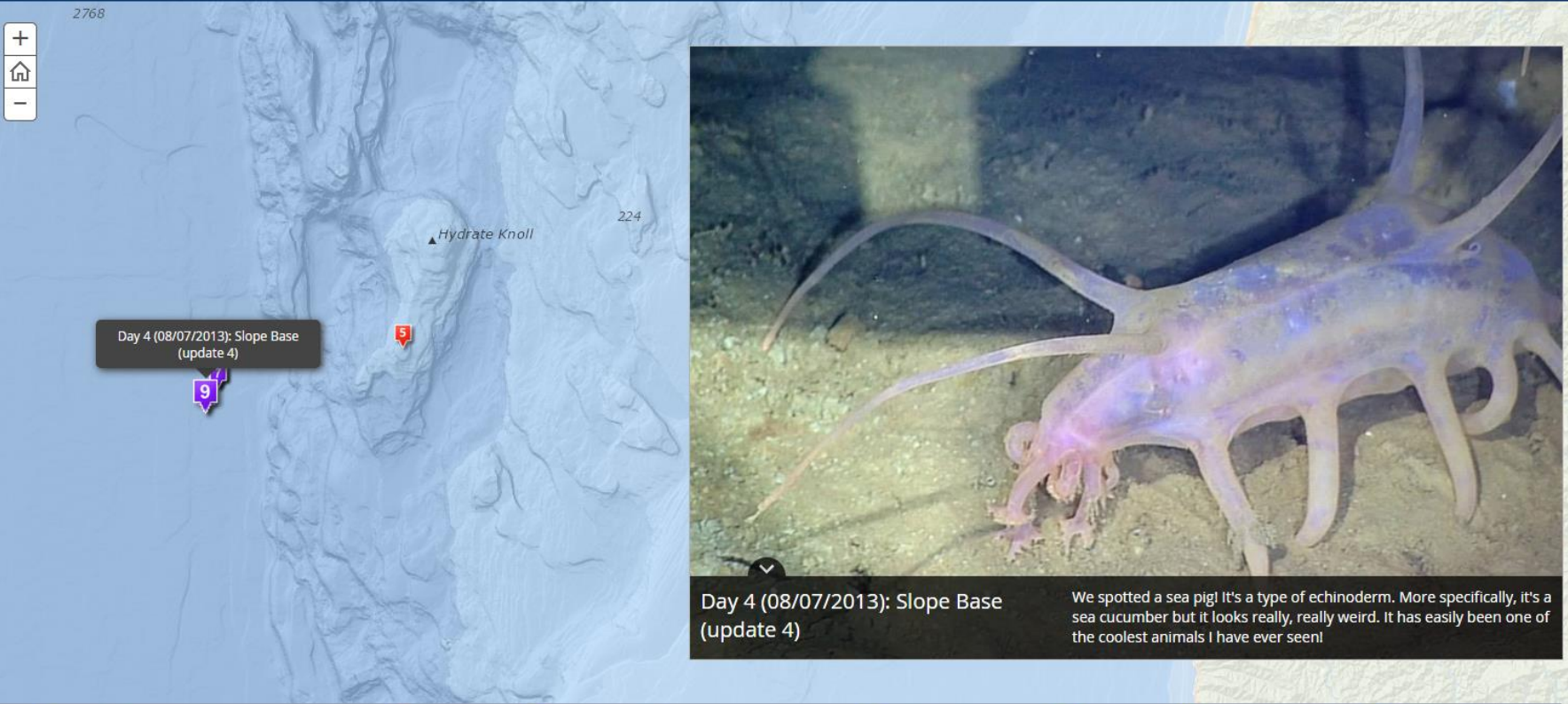
- The Aquarium's Online Learning Center "Southern California Steelhead" page
- National Marine Fisheries Service (NMFS) [Steelhead profile](#)
- The [Recovery Plan for Southern California Steelhead](#) (Jan. 2012)

Learn More

Example of a Story Map about our Experiences

Visions '13 Expedition Story Map

An Aquarium of the Pacific (AOP) story map   



2768

Hydrate Knoll

224

Day 4 (08/07/2013): Slope Base (update 4)

9

5

Day 4 (08/07/2013): Slope Base (update 4)

We spotted a sea pig! It's a type of echinoderm. More specifically, it's a sea cucumber but it looks really, really weird. It has easily been one of the coolest animals I have ever seen!



1
AOP staff joins the crew of the R/V Thompson



2 R/V Thompson
Day 1 (08/04/2013): Port of Newport, OR



3
Day 2 (08/05/2013): Port of Newport, OR



4
Day 2 (08/05/2013): Transit



5
Day 3 (08/06/2013): Southern Hydrate Ridge



6
Day 4 (08/07/2013): Slope Base (update 1)



7
Day 4 (08/07/2013): Slope Base (update 2)



8
Day 4 (08/07/2013): Slope Base (update 3)



9
Day 4 (08/07/2013): Slope Base (update 4)

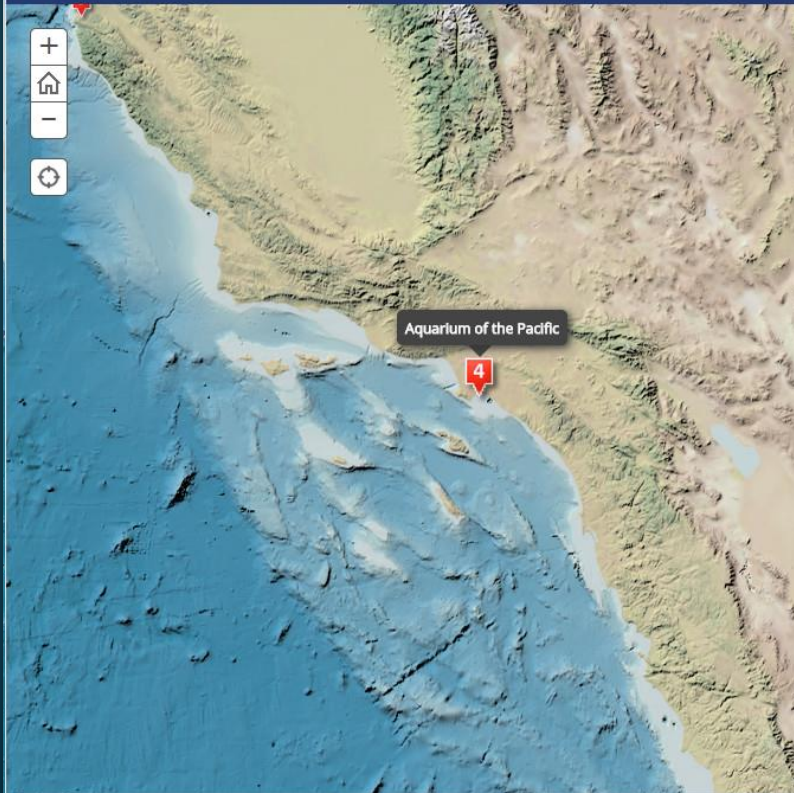
Example of a Story Map about our Locations

Coastal Ecosystem Learning Centers

an AOP story map   

This story map explores Coastal America's network of Coastal Ecosystem Learning Centers (CELCs) distributed throughout the United States, Canada, and Mexico.

 Aquarium of the Pacific



Aquarium of the Pacific

100 Aquarium Way
Long Beach, CA 90802



Coastal America



Waikiki Aquarium



Acuario de Veracruz



Aquarium of the Pacific



Monterey Bay Aquarium



Oregon Coast Aquarium



Hatfield Marine Science Center



Seattle Aquarium



Vancouver Aquarium

Example of a Story Map about an Issue / Topic

An AOP Story Map

Seafood Story Map

Exclusive Economic Zones (EEZs)

Global Economic Exclusive Zones (EEZs)

Facebook Twitter Share

Top 10 Largest EEZs by Sovereign Region

Facebook Twitter Share





Marine Aquaculture in the United States

The U.S. is uniquely positioned to expand aquaculture production, especially in the marine environment. According to the United Nations Food & Agriculture Organization, the U.S. has more area with the potential to grow environmentally-responsible aquaculture in the marine environment than any other nation (FAO 2013). Among other reasons, the U.S. has the largest Exclusive Economic Zone (EEZ), or the area from the coastline extending out to 200 miles, in the world.

Facebook Twitter Share


esri

Example of a Story Map about an Issue / Topic

An Aquarium of the Pacific (AOP) st...    

Ocean Exploration


E/V Nautilus



The Exploration Vessel (E/V) Nautilus, is a 64-meter research vessel operated by the Ocean Exploration Trust

The Ocean Exploration Trust was founded in 2008 by Titanic-discoverer and National Geographic Explorer-in-Residence Dr. Robert Ballard to engage in pure ocean exploration.

Map of the 2014 Nautilus Expeditions



NAUTILUS 2014 FIELD SCHEDULE

Their international programs center on scientific exploration of the seafloor. In addition to conducting scientific research, their expeditions are made available to explorers on shore via live

NAUTILUS LIVE

Explore the ocean LIVE with Dr. Robert Ballard and the Corps of Exploration



MAIN THE EXPEDITION PHOTOS & VIDEOS THE TECH THE SCIENCE THE TEAM LATEST NEWS EDUCATORS JOIN US

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LATEST NEWS



Meet the Siphonophore



"Wrath of Khan" Worm Found in Mussels



The Future of Science: Exploring with Remote Telepresence



What Happens to Collected Samples?



Nautilus Doodles: Science Communication Through Art



Shrinking Cups in the Deep



OCEAN EXPLORATION TRUST



Google Earth

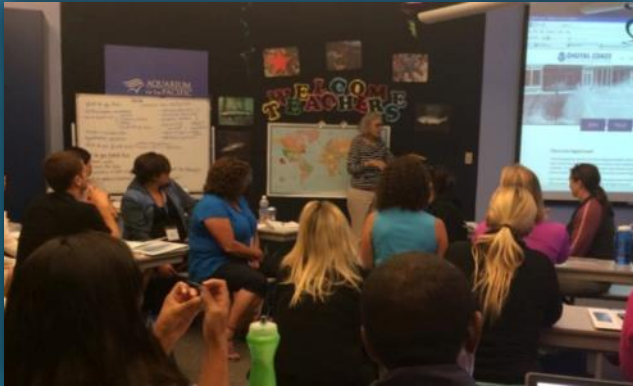


NAUTILUS 2014 FIELD SCHEDULE

Interpreting with Story Maps



Introducing GIS to Teachers



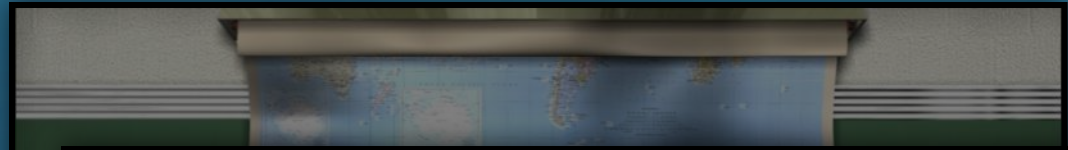
Alie LeBeau Clarke
August 21, 2013 · Long Beach, CA

We talked about data and storymapping and GIS with Jennifer Lentz, so I thought you might enjoy this map of favorite field trip destinations. p.s. the AOP is missing. How is that possible? Anybody want to submit their glowing recommendation?

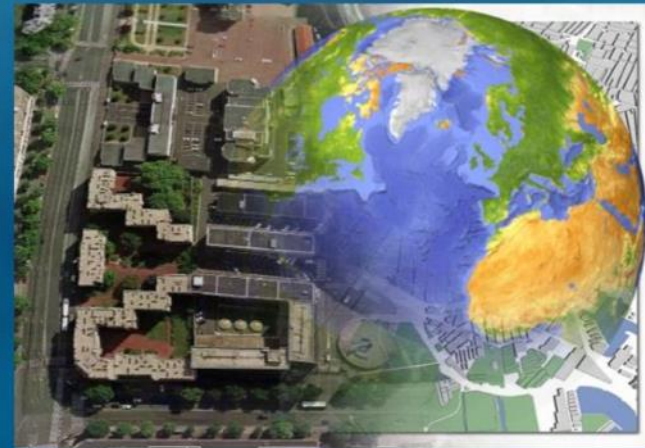


Get Going: Mapping Teachers' Favorite Field Trip Spots
Teachers! Need ideas on where to take your students for beyond-school learning? See our interactive map of the best field trip spots across the U.S. Have a favorite field trip location? Submit your favorite venue and help us build a rich and dynamic...

EDWEEK.ORG



An Introduction to GIS and Spatial Data



Jennifer Anne Lentz, Ph.D.
Education Specialist at the Aquarium of the Pacific
NASA Teacher Workshop Presentation
October 11th, 2013

GIS & Story Map Tutorials

GIS Wildlife Data Tutorial

How to find, Map, & Spatially Analyze Wildlife Data in a GIS System

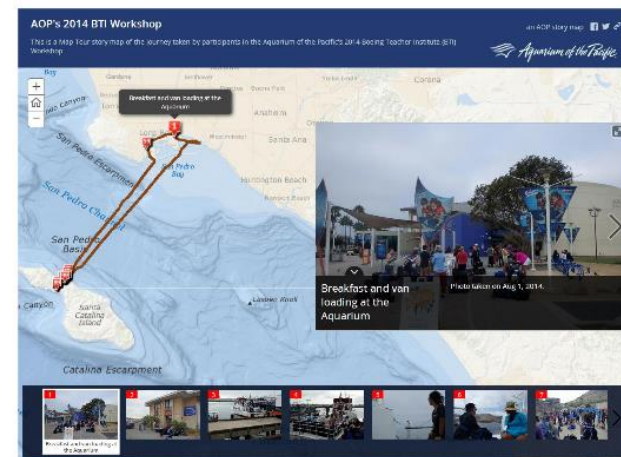


This Tutorial was Created by
Jennifer Anne Lentz, Ph.D.
Education Specialist at the Aquarium of the Pacific

*This tutorial, and other teaching-related materials by Dr. Lentz are available online at:
<http://JenniferALentz.info/Teaching.html>*

Creating “Map Tour” Story Maps

How to create a Map Tour Story Map quickly and easily using your smartphone or tablet, and your ArcGIS Online Organization Account



This Tutorial was Created by
Jennifer Anne Lentz, Ph.D.
Education Specialist at the Aquarium of the Pacific

*This tutorial, and other teaching-related materials by Dr. Lentz are available online at:
<http://JenniferALentz.info/Teaching.html>*

Co-hosted a Story Map Webinar



An Ocean of Story Maps by Dawn Wright of ESRI and Jenny Lentz of the Aquarium of the Pacific

Tue, Jan 20, 2015 11:00 AM - 12:00 PM PST

[Show in My Time Zone](#)

The story map is a relatively new medium for sharing not only data, photos, videos, sounds, and maps, but for telling a specific and compelling story by way of that content. Story map apps provide the user with sophisticated cartographic functionality that does not require advanced training in cartography or GIS. Story maps are essentially web map applications built from web maps, which in turn are built from web-accessible data (including OGC WMS, WFS). Depending on the chosen complexity of a story map, it can be built in anywhere from a few minutes to a few days. With the beauty and utility of underlays such as the Esri Ocean Basemap, as well as a small tsunami of ocean content percolating up through a host of open data sites, there are powerful stories being told about coastal zone management, conservation, exploration and other forms of scientific field work. These stories are informing, educating, entertaining, and inspiring decision-makers on a wide variety of coastal issues. This presentation will take the audience on a small tour of a growing catalog of coastal and ocean story maps, many of which are accessible via MarineCadastre.gov and NOAA's Digital Coast. It will also highlight the various resources available for building and deploying story maps, and discuss the utility of this medium for presenting, not just photos and videos, but more analytical results. Learn more about Story Maps at <http://storymaps.esri.com>.

Webinar co-sponsored by OpenChannels.org.

[Read less](#)

Chapter in Upcoming Book



Chapter 12

More than Maps: Connecting Aquarium Guests to Global Stories

by

Jennifer Lentz, Emily Yam, Alie LeBeau, & David Bader

Expected Release
Late Spring-Early Summer 2015

SAG Award

AOP was selected from more than 100,000 organizations around the world for our “outstanding work with GIS technology”



2015 Esri UC

San Diego Convention Center

July 22, 2015

