



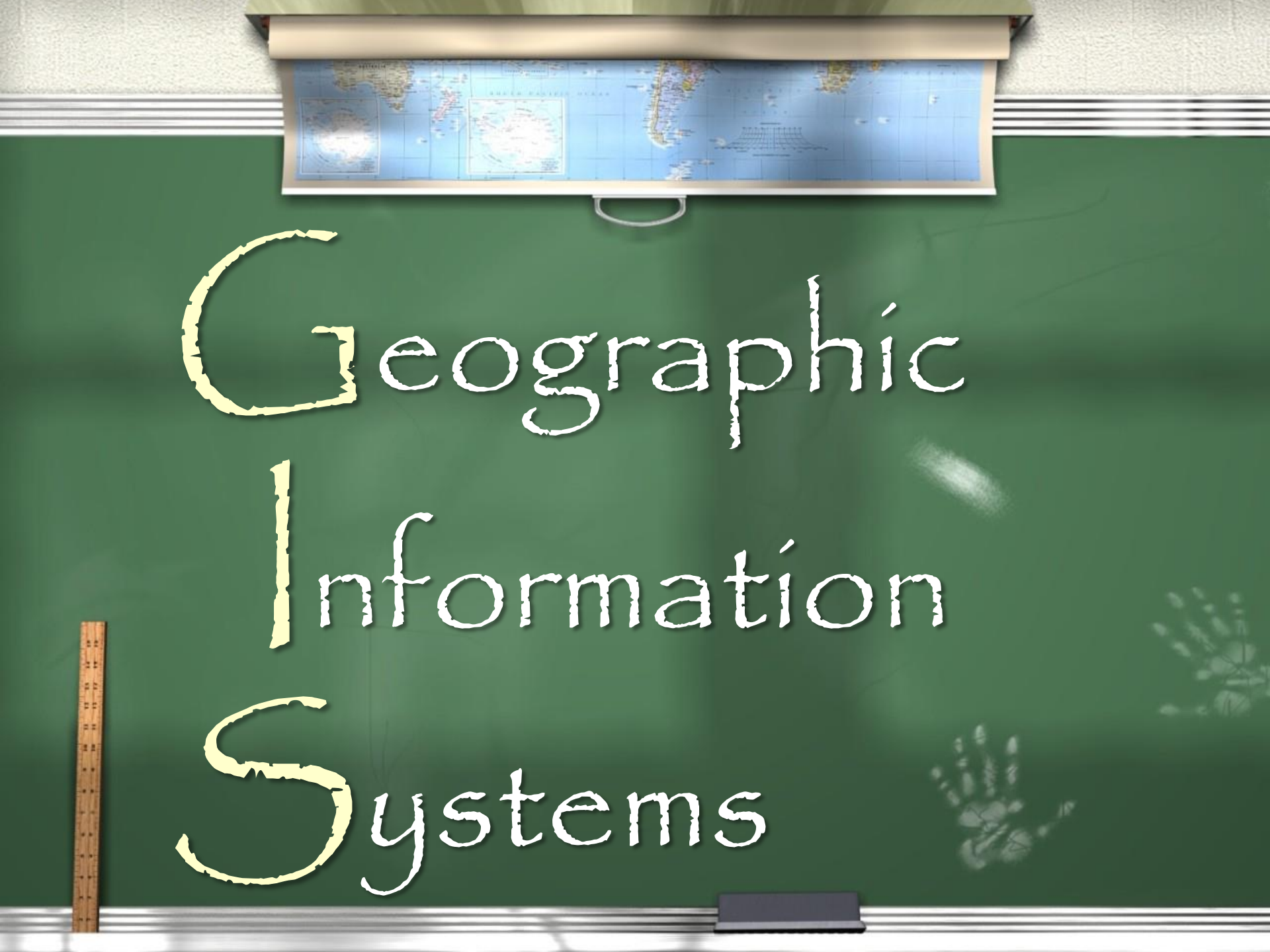
Storytelling with Maps

by Jennifer Lentz, Ph.D.

Education Specialist at the Aquarium of the Pacific

Boeing Teacher Institute (BTI) Presentation

August 4th, 2014

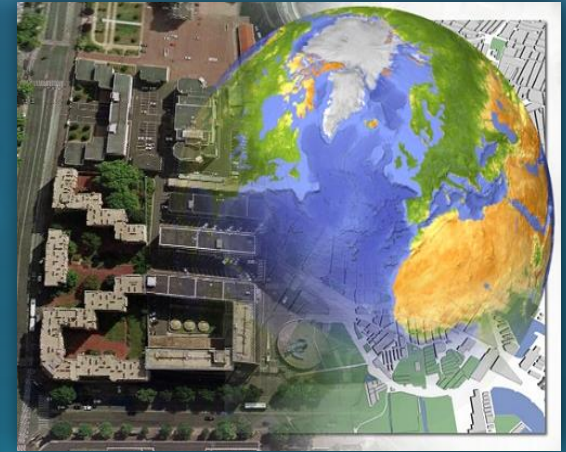
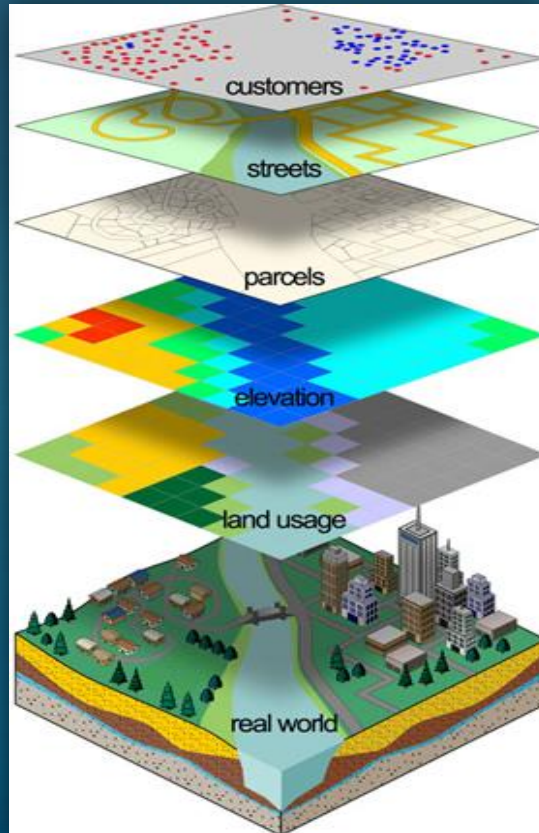
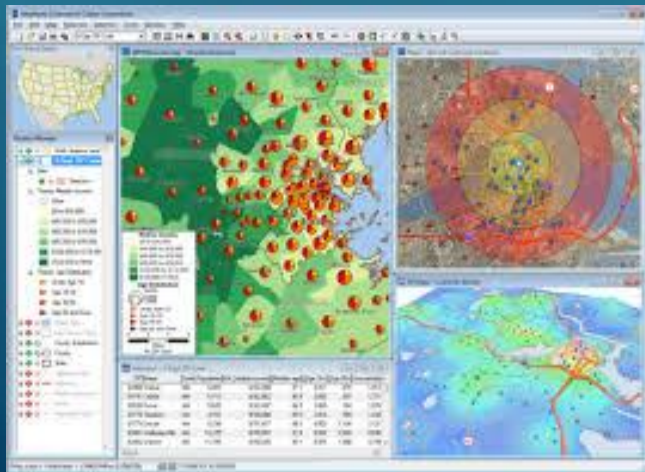


Geographic Information Systems

Geographic Information Systems



Spatial Analysis



Remote Sensing



GIS Applications

Crime Analysis

CRIMES LEGEND MAP AIR PHOTO

Select a crime type to update the map. **Crime Definitions**

- (0) Homicide
- (0) Sex A
- (0)

8TH ST
G ST
Gallery Pl-Chinatown
Gallery Pl-Chinatown
8TH ST

Ecologic & Climate Science

ClimateWizard
www.climatewizard.org

The Nature Conservancy
Protecting nature. Preserving life.

ClimateWizard
UNIVERSITY OF WASHINGTON
KASTRUP MIDDLETOWN

About Us FAQs Contact Us

Analysis Area: Global
Time Period: Mid Century (2050s)
Map Options: Map of Change
Measurement: Precipitation

Change in Annual Precipitation by the 2080s
Model: Ensemble Average, SRES emission scenario: A2

Change Transparency: Factors, Top, World

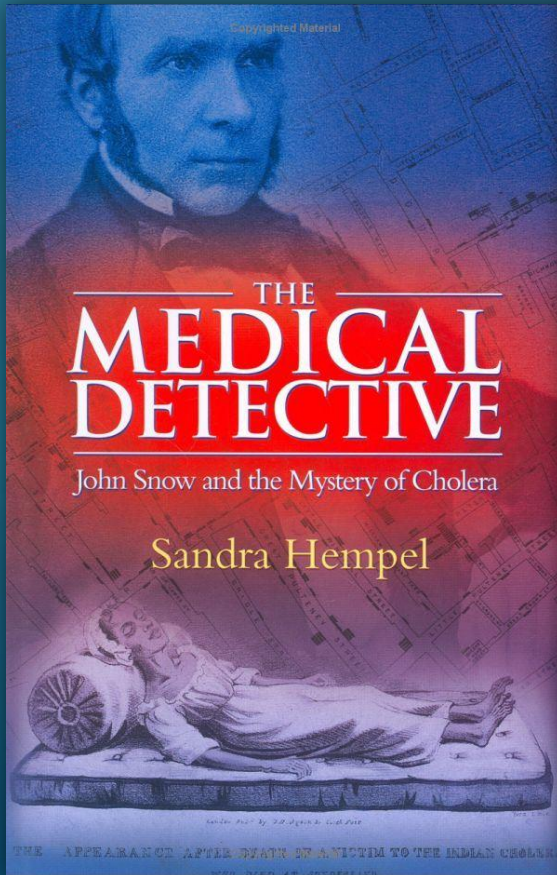
50%: This map shows the precipitation change projected by the model. Areas that are blue are projected to increase by at least half of the model, and areas that are yellow to red are projected to decrease in precipitation by at least half of the model.

Medical Geography & Spatial Epidemiology



Dr. John Snow (1813-1858)

“Father of **Modern Epidemiology**”



ST. JAMES, WESTMINSTER.

The GOVERNORS and DIRECTORS of the POOR
HEREBY GIVE NOTICE,
That, with the view of affording prompt and Gratuitous assistance to Poor Persons resident in this Parish, affected with Bowel Complaints and

CHOLERA,

The following Medical Gentlemen are appointed, either of whom may be immediately applied to for Medicine and Attendance, on the occurrence of those Complaints, viz.—

Mr. FRENCH, 41, Gt. Marlborough St.
(Opposite, Bow's Court, Mansell Street)

Mr. HOUSLEY, 28, Broad Street.

Mr. WILSON, 16, Great Ryder St.

Mr. JAMES, - 49, Princes Street.

Mr. DAVIES, 25, Brewer Street.

SUGGESTIONS AS TO FOOD, CLOTHING, &c.

Regularity in the Hours of taking Meals, which should consist of any description of wholesome Food, with the moderate use of sound Beer.

Abstinence from Spirituous Liquors.

Warm Clothing and Cleanliness of Person.

The avoidance of unnecessary exposure to Cold and Wet, and the wearing of Damp Clothes, or Wet Shoes.

Regularity in obtaining sufficient Rest and Sleep.

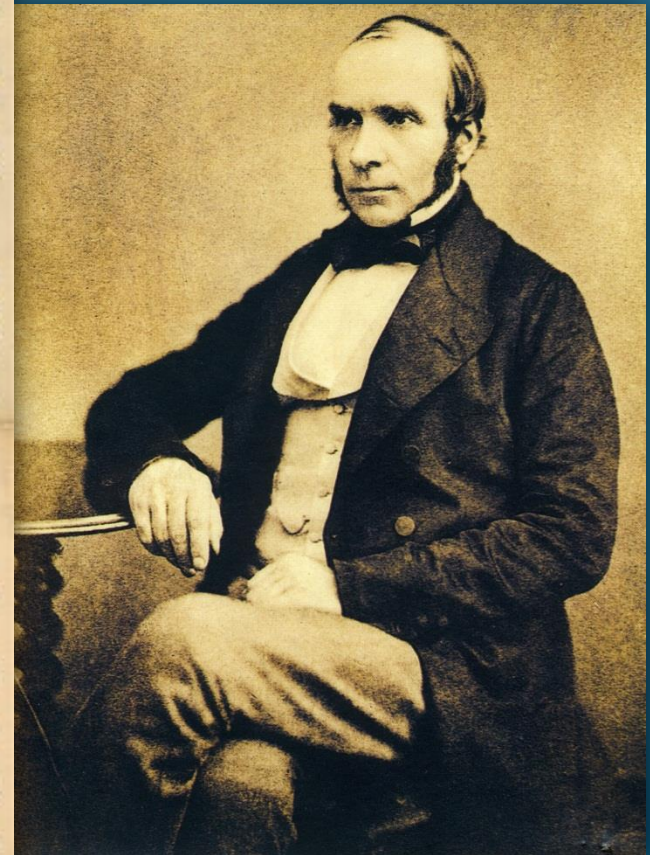
Cleanliness of Rooms, which should be aired by opening the Windows in the middle of each day.

By Order of the Board,
GEORGE BUZZARD,
Clerk.

FRENCH'S OFFICE, Palace Street,
20th November, 1831.

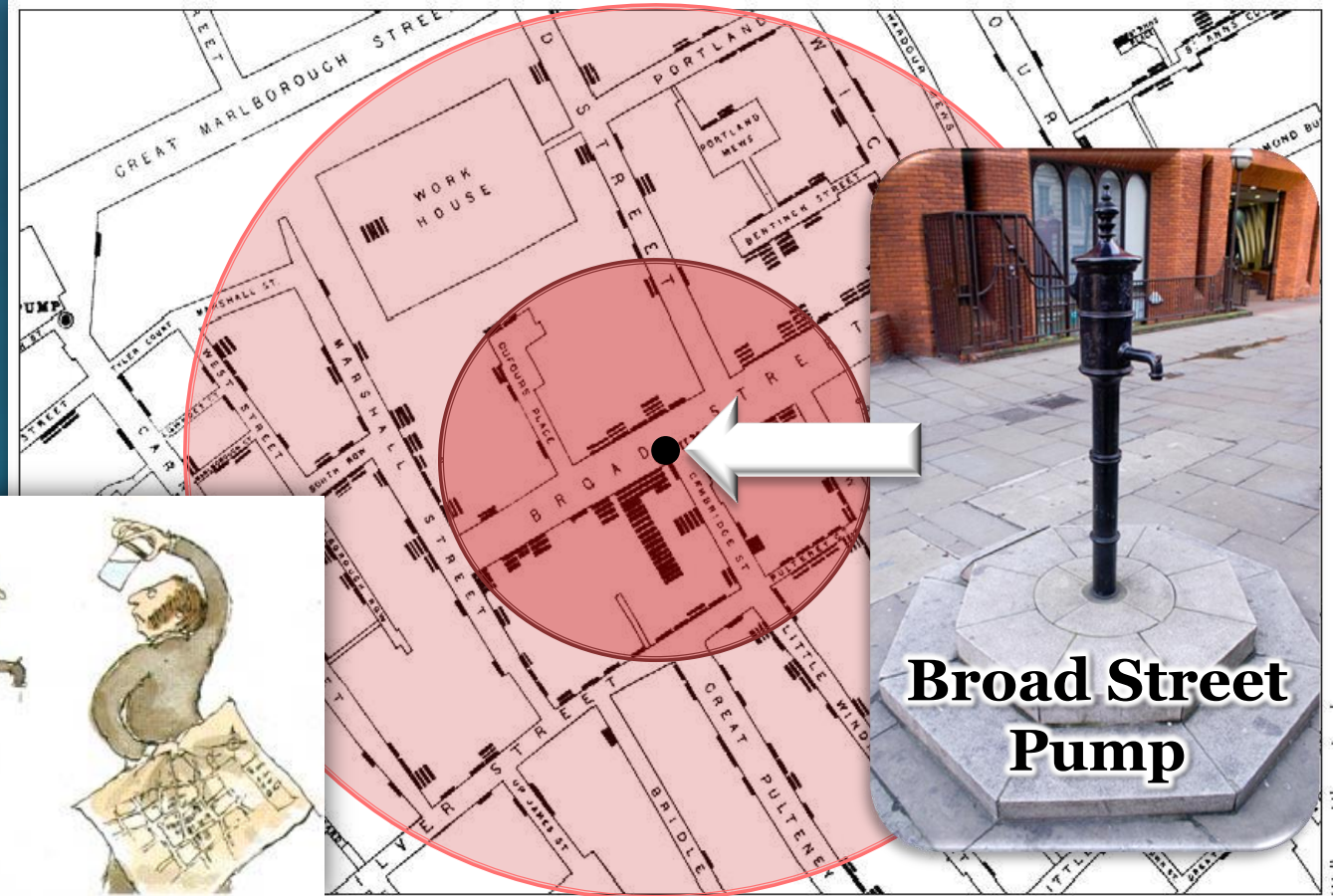
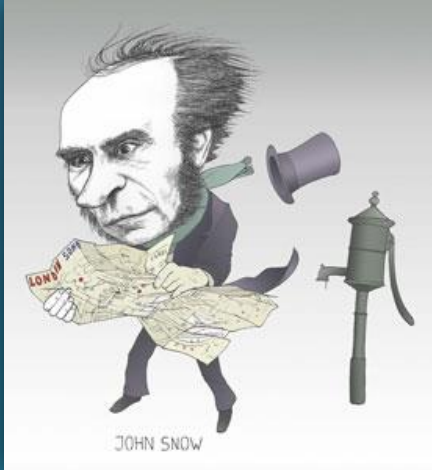
It is requested that this Paper be taken care of, and placed where it can be easily referred to.

PRINTED BY J. JOHNSON, ST. PAUL'S CHURCH-YARD, LONDON.



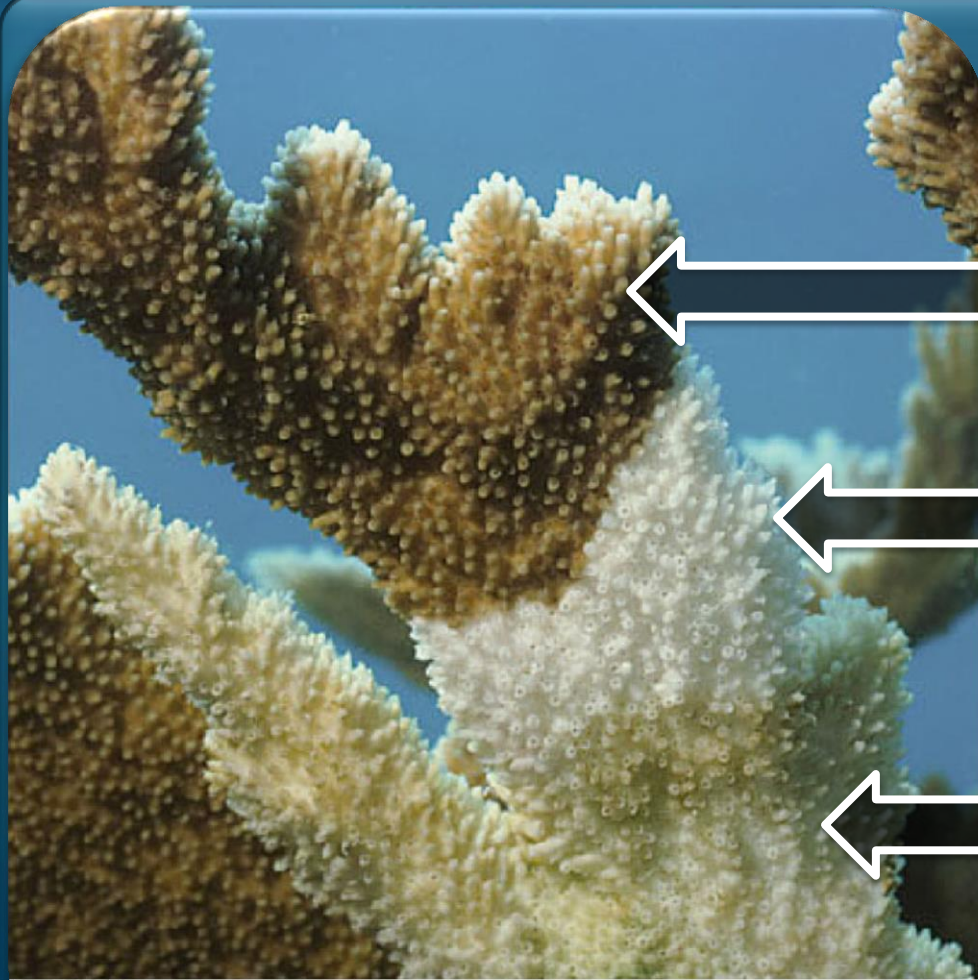
Dr. John Snow (1813-1858)

“Father of **Medical Geography**”



Street map of cholera deaths in Soho in 1853 from John Snow's *On the Mode of Communication of Cholera*

Coral Reef Diseases



Healthy Tissue

Active WBD

**Recently Dead tissue
killed by WBD**

Fig.4.19: WBD; Caribbean *Acropora palmata* infected with WBD-I.
Sutherland et al, 2004

Coral Reef Diseases

95% decline in Caribbean *Acropora* corals

Past



Present



My Background

Bachelor of Arts (BA) degree from **Hamilton College**
with an Interdisciplinary Concentration in **Environmental Studies**

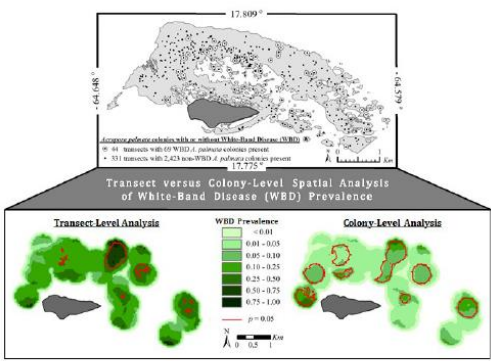


My Background

Ph.D. from **LSU's** Department of **Oceanography and Coastal Sciences** with a **GIS Minor**

A Dissertation Defense
Department of Oceanography and Coastal Sciences

**Developing a Geospatial Protocol
For Coral Epizootiology**



Transect versus Colony-Level Spatial Analysis
of White-Band Disease (WBD) Prevalence

Transsect-Level Analysis

WBD Prevalence

Colony-Level Analysis

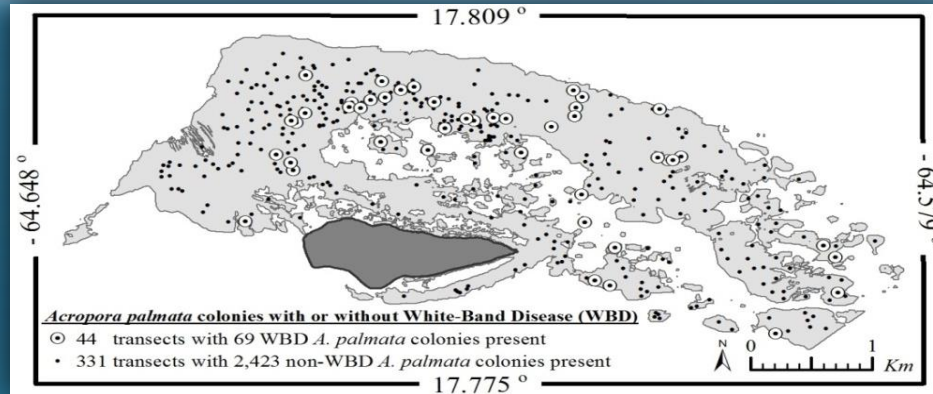
by
Jennifer Anne Lentz
B.A., Hamilton College, 2005

Thursday, March 29th, 2012 at 1:00pm

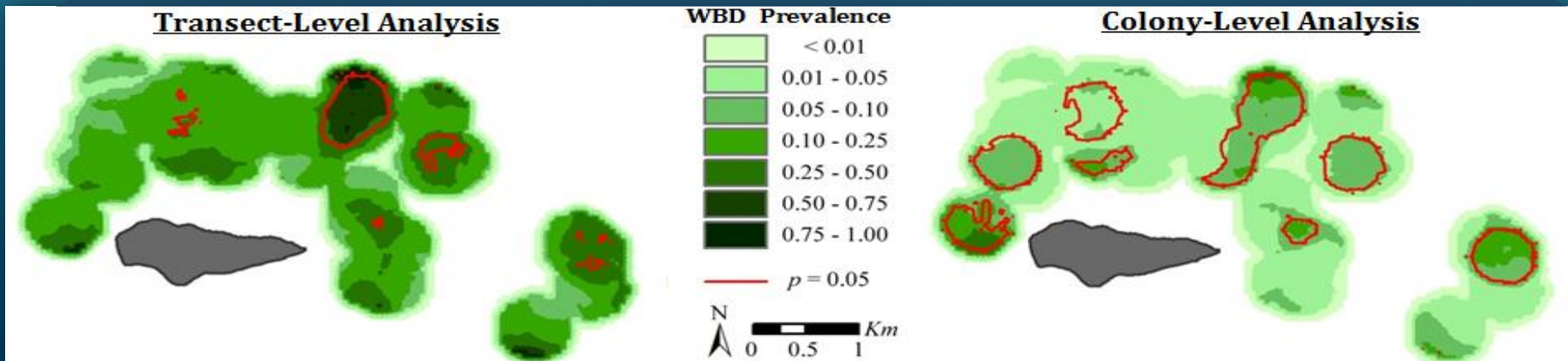
Dalton J. Woods Auditorium
Energy, Coast, and Environment Building
Louisiana State University, Baton Rouge, Louisiana



Coral Reef Diseases



Transect versus Colony-Level Spatial Analysis of White-Band Disease (WBD) Prevalence



Home Range & Habitat Use

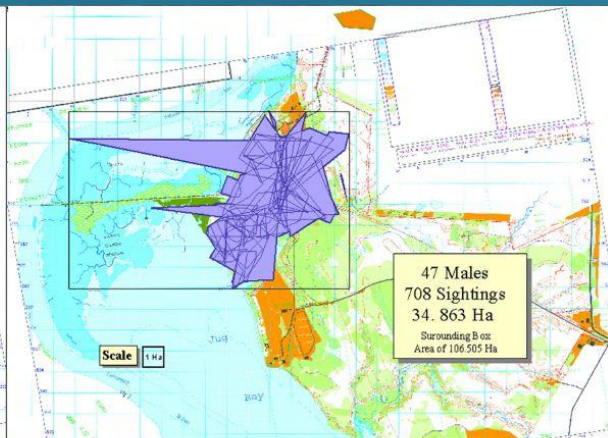
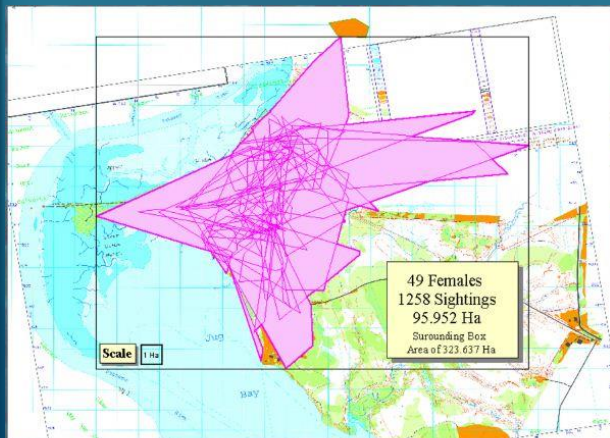


Fig. 6. Combined home ranges based on the Minimum Convex Polygon method. The home range of each individual turtle is depicted as a thin lined polygon; the total area used by each gender is depicted by a thick lined, shaded polygon.



Story Maps and other GIS-related projects



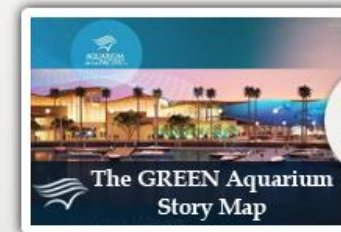
AOP's CELC Story Map



AOP's Magellanic Penguins Story Map



AOP's Visions '13 Cruise Story Map



AOP, The GREEN Aquarium

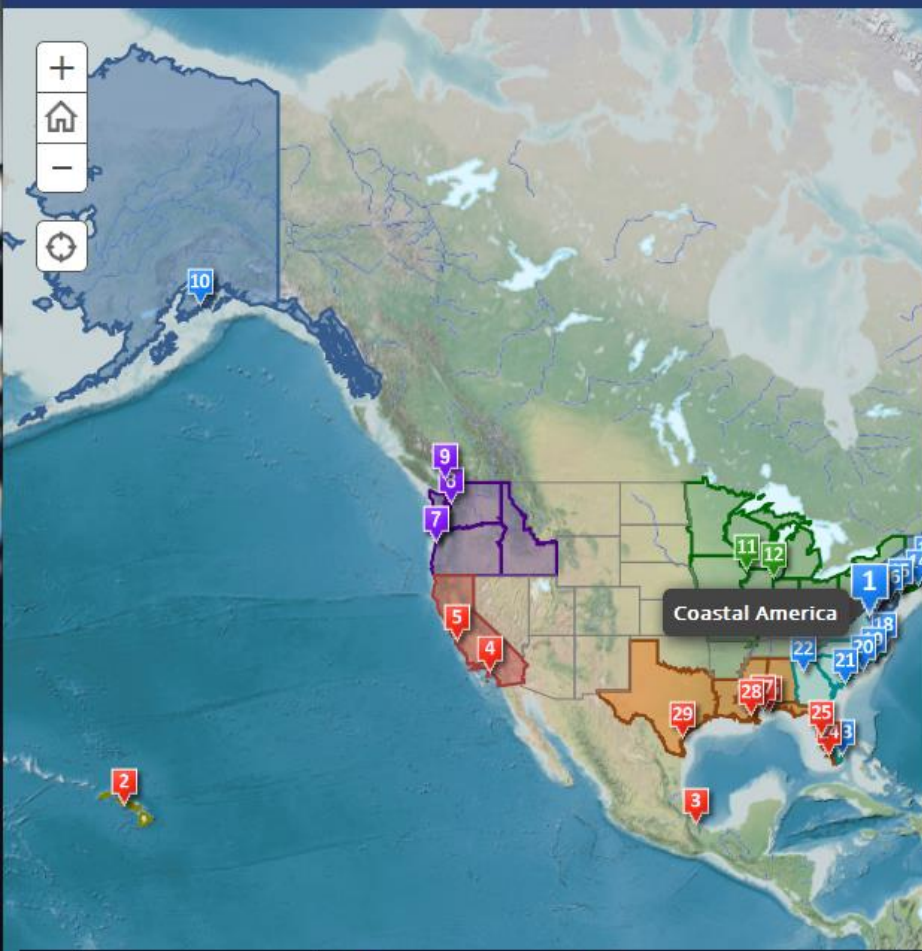

The Aquarium of the Pacific's mission is to instill a sense of wonder, respect, and stewardship for the Pacific Ocean, its inhabitants, and ecosystems. Our vision is to create an aquarium dedicated to conserving and building Natural Capital (Nature and Nature's services) by building Social Capital (the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

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 has redefined the modern aquarium. It is a community gathering place where diverse cultures and the arts are celebrated and a place where important topics facing our planet and our ocean are explored by scientists, policy-makers and stakeholders in the search for sustainable solutions.

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.

Coastal America

"is a unique partnership of federal agencies, state and local governments, and private organizations. The partners work together to **protect**, **preserve**, and **restore** our nation's coasts. The partnership accomplishes tasks that no one group could accomplish alone."

"Recognizing the need for a strong geographic focus, Coastal America works through **multi-agency Regional Implementation Teams** in the following regions:

Northeast	Gulf of Mexico	Alaska
Mid-Atlantic	Southwest	Great Lakes/ Upper Miss.
Southeast	Northwest	Pacific Islands

Coastal Ecosystem Learning Centers (CELCs)

"Spanning our coasts, this network was established as an **outreach channel** to help raise **public awareness** and increase **public stewardship** for coastal and marine resources. Currently, over 25 million people a year visit the Learning Center network."

Quotes from http://coastalamerica.gov/index.php?option=com_content&view=article&id=1550&Itemid=81

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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.



1 
Coastal America

2 
Waikiki Aquarium

3 
Acuario de Veracruz

4 
Aquarium of the Pacific

5 
Monterey Bay Aquarium

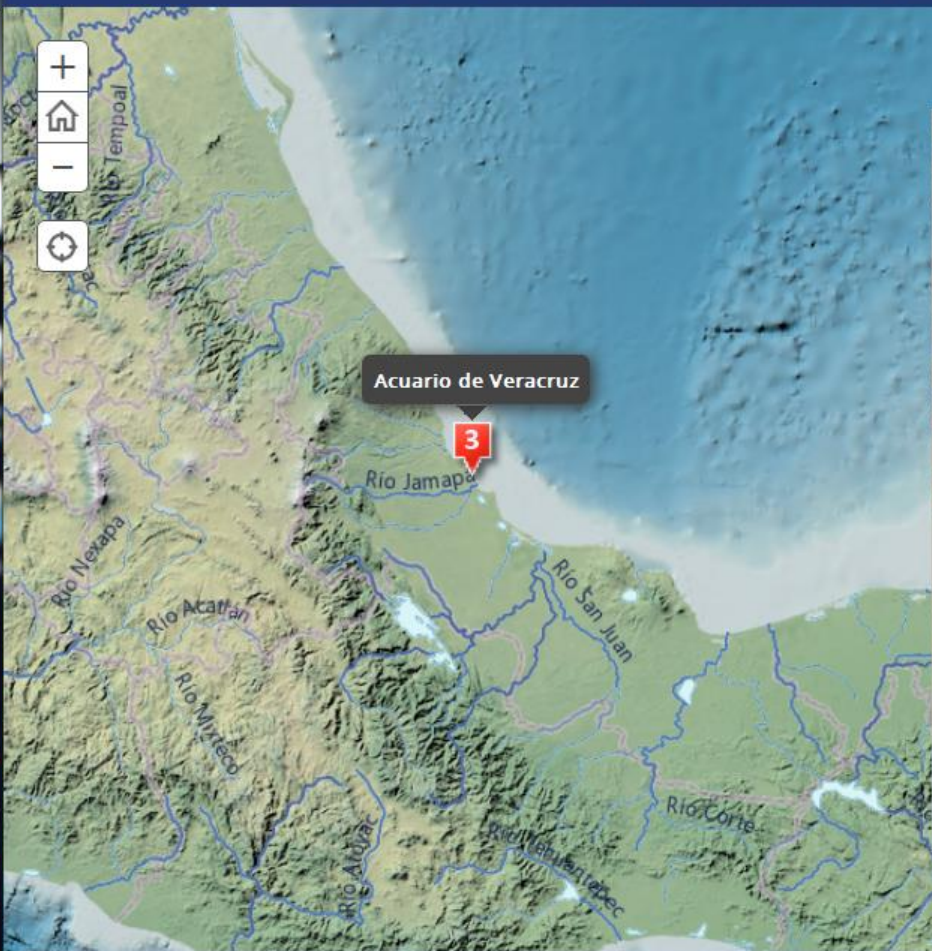
6 
Oregon Coast Aquarium

7 
Hatfield Marine Science Center

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.



Acuario de Veracruz
Blvd. Manuel Ávila Camacho S/N
Ricardo Flores Magón, Veracruz 91900
Mexico
10:00 A 19:00 hrs



Coastal America



Waikiki Aquarium



Acuario de Veracruz



Aquarium of the Pacific



Monterey Bay Aquarium



Oregon Coast Aquarium

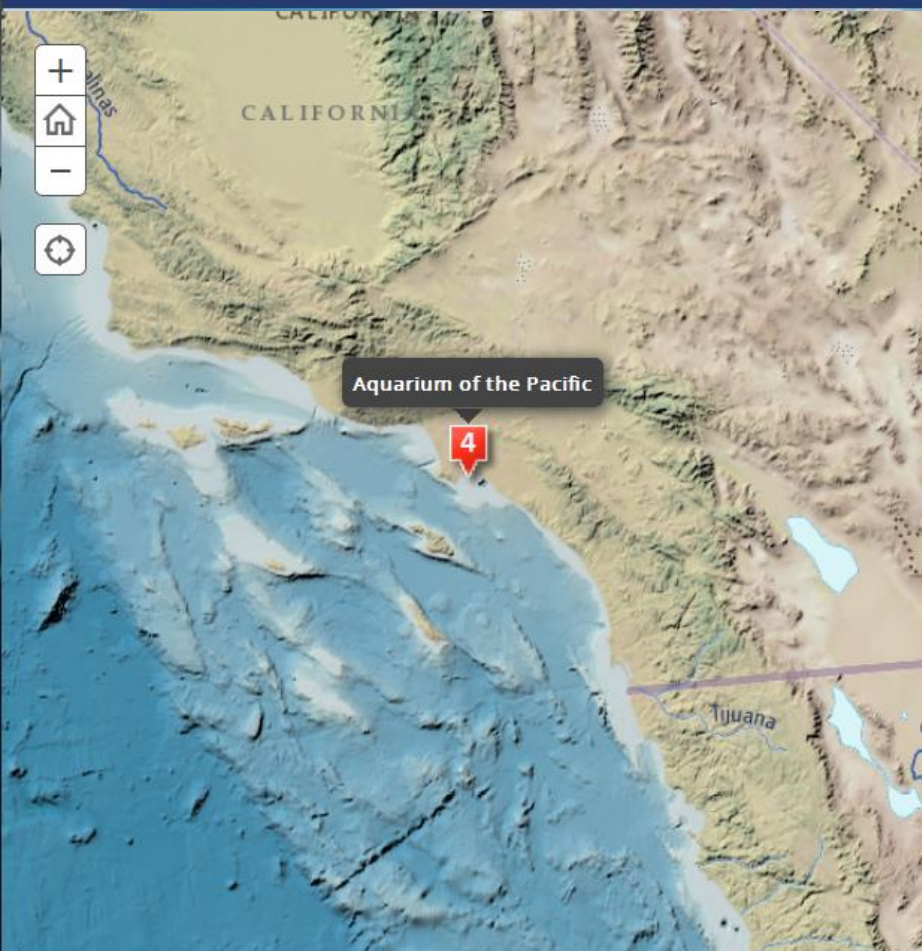


Hatfield Marine Science Center

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

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

Work on Multiple Platforms

The image illustrates a multi-platform digital experience for the Aquarium of the Pacific's Magellanic Penguins Story Map. It features three devices: a desktop monitor, a tablet, and a smartphone, all displaying the same interactive content.

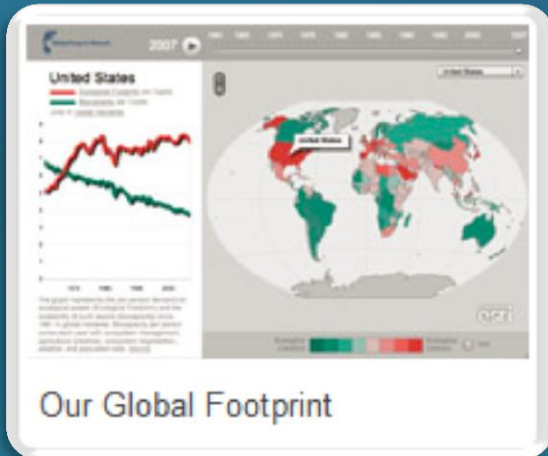
Desktop Monitor: Displays the main story map interface. The title is "Magellanic Penguins" with the scientific name *Spheniscus magellanicus*. It highlights the "Geographic Range" of the species, showing "Breeding range" (indicated by a light orange outline) and "Non-breeding range" (indicated by a darker orange outline) along the southern coast of South America. A small penguin illustration is visible on the right side of the map.

Tablet: Shows a detailed view of a penguin chick named Heidi ("The Playful One"). The text indicates she is 1 of 2 Magellanic Penguins at the Aquarium, first-time residents, and that she and her partner have incubated both eggs. A photo credit is also present.

Smartphone: Displays a profile for a penguin named Kate ("The Flirt"). The text describes her as the flirtatious female of the bunch, who has paired up with Avery and follows him around. It mentions that she and her partner are interested in her and do speed swims around the water tank. Her trainers call her a "highly southern belle." Kate is 1 of 4 penguins in the "Brazilian group," which were found beached and stranded off Natal, Brazil. They were rehabilitated and deemed non-releasable, and were sent to live at the Aquarium of the Pacific in the Spring of 2011, as yearlings.

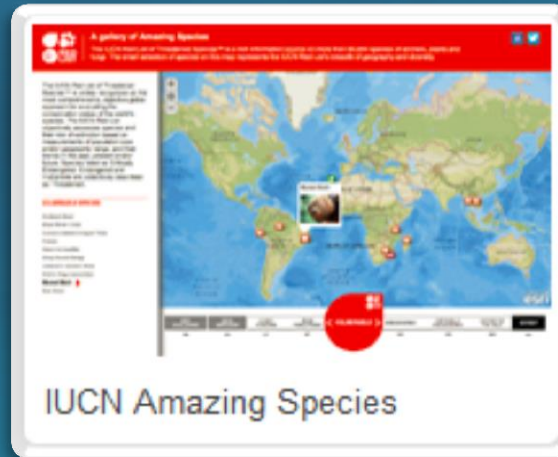
Story Maps

These Story Maps & Others can be found at: <http://storymaps.esri.com/>



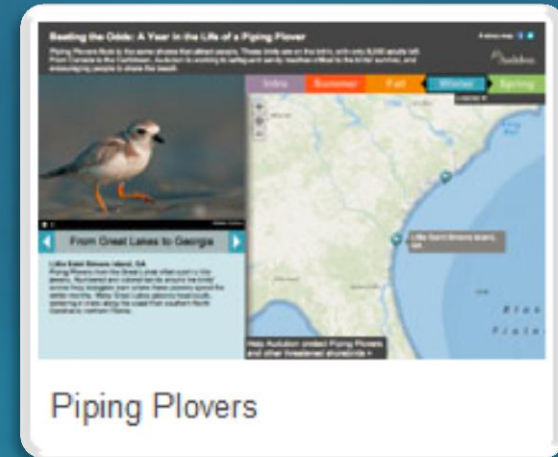
This story map, titled "United States", features a line graph on the left showing two data series over time. The right side displays a world map with color-coded regions representing different levels of carbon footprint. The map uses a color scale from green (low) to red (high).

Our Global Footprint



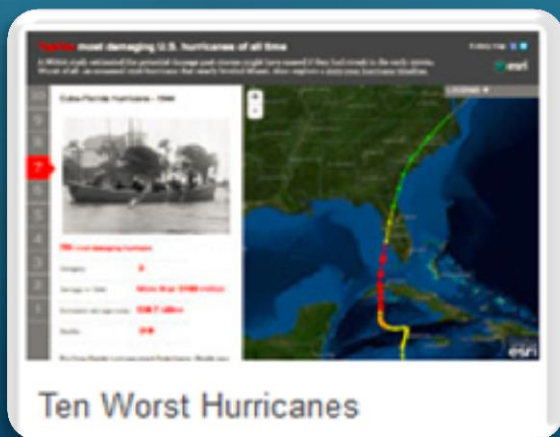
This story map, titled "A gallery of Amazing Species", includes a text introduction on the left and a world map on the right. The map highlights various species distribution areas with red and orange markers. A red circular callout is visible on the map.

IUCN Amazing Species



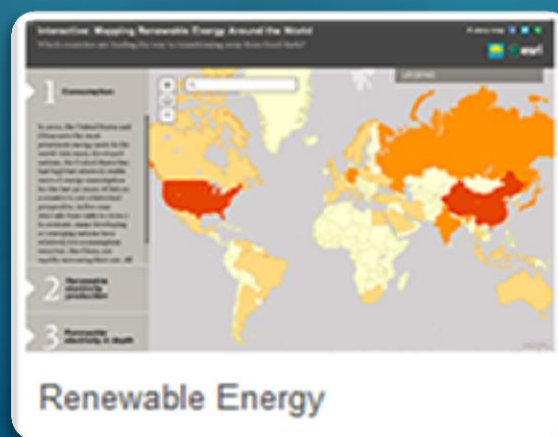
This story map, titled "Beating the Odds: A Year in the Life of a Piping Plover", features a photograph of a piping plover on the left. The right side shows a map of the eastern United States with a highlighted migration route. A red circular callout is present on the map.

Piping Plovers



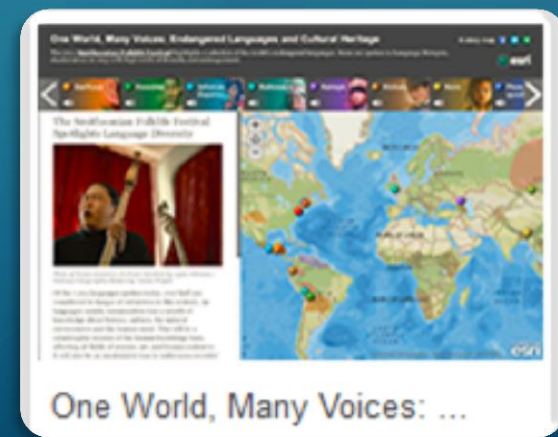
This story map, titled "Ten Worst Damaging U.S. Hurricanes of all Time", includes a photograph of a hurricane on the left. The right side shows a map of the United States with a highlighted path of a hurricane along the coast. A red circular callout is visible on the map.

Ten Worst Hurricanes



This story map, titled "Interactive: Mapping Renewable Energy Around the World", features a world map on the right with color-coded regions representing different renewable energy sources. A red circular callout is visible on the map.

Renewable Energy



This story map, titled "One World, Many Voices: Endangered Languages and Cultural Heritage", includes a photograph of a person on the left. The right side shows a world map with color-coded regions representing endangered languages and cultural heritage. A red circular callout is visible on the map.

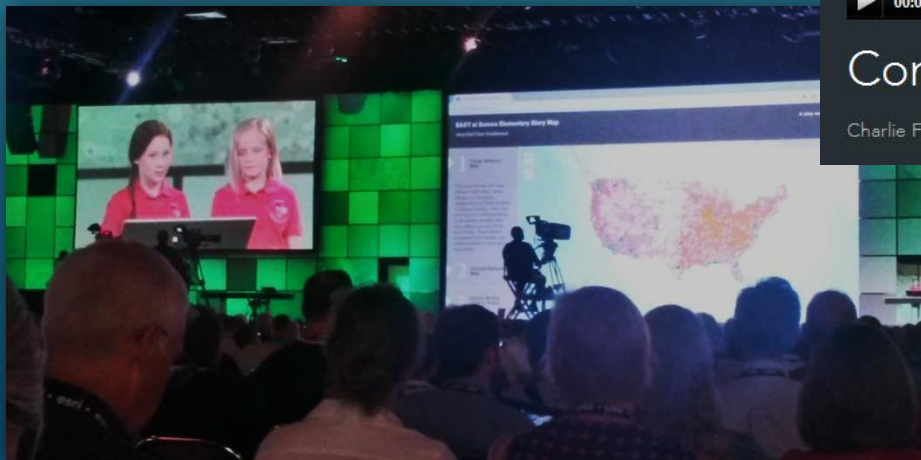
One World, Many Voices: ...

So Easy 4th Graders Can Do It!



Connecting GIS with Education

Charlie Fitzpatrick introduces the amazing work by students at Sonora Elementary in Springdale, Arkansas.



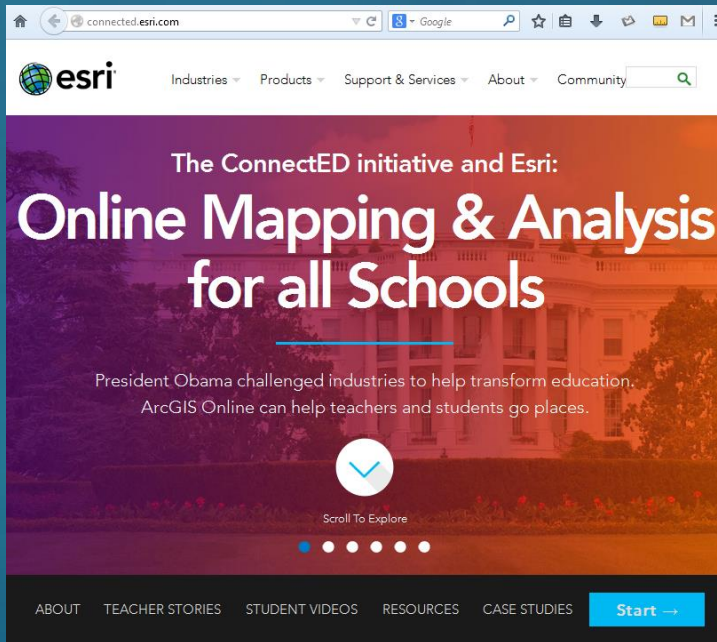
Watch Kylie & Rikki demo their GIS work
online at:
<http://video.esri.com/watch/3665/connecting-gis-with-education>

“GIS Kids Are Super!” blog post (<http://blogs.esri.com/esri/ucinsider/2014/07/15/gis-kids-are-super/>)

Create Your Own Story Map

➤ Step 1: Familiarize yourself with GIS and

Esri's "ConnectEd Initiative"
<http://ConnectEd.esri.com>



- This site includes links to...
 - Teacher Stories
 - Student Videos
 - Resources
 - Case Studies

➤ Step 2: Create a FREE ArcGIS Online Organization Account

by filling out this form: <https://esri.app.box.com/connectedrequest>

Create Your Own Story Map

➤ Step 3: Download & Install the Following Apps



“Snap2Map”

- with this FREE app by Esri, you can now create and publish Map Tour story maps from your smartphone
- available for both iPhone and Android devices

Your Favorite GPS Tracking App

- There are lots to choose from, just make sure you pick one that you can export your tracks to your computer with.
- Below are some popular examples:



GeoTracker

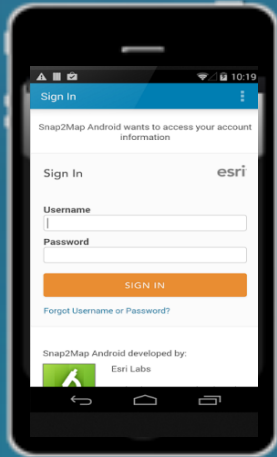
Create Your Own Story Map

➤ Step 4: Start Collecting Data

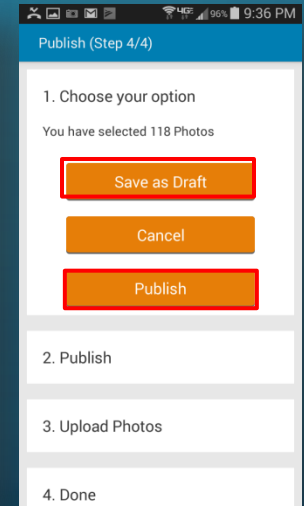
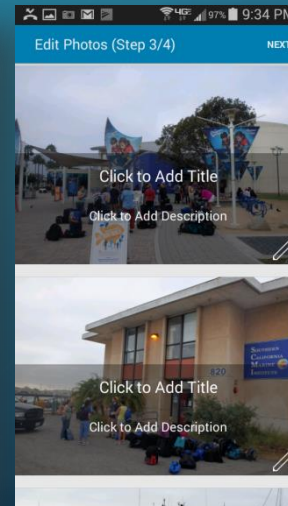
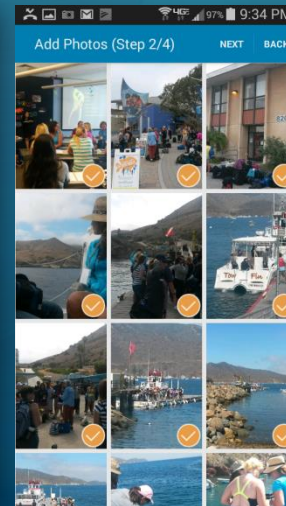
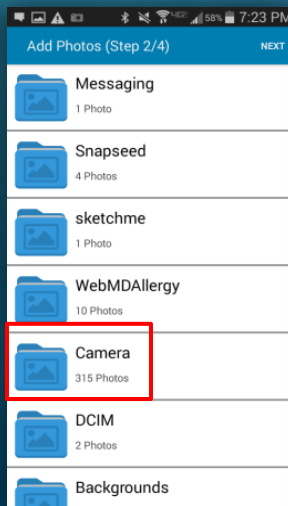
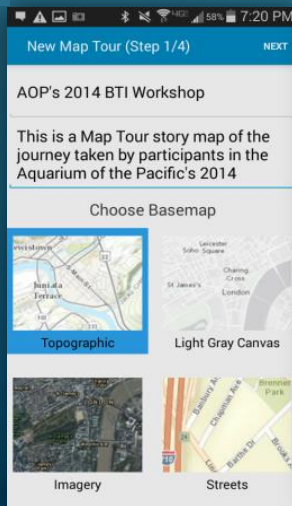
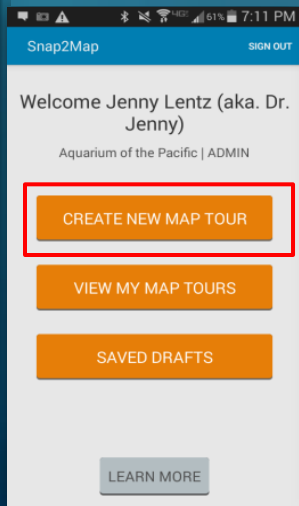
- Make sure your smart-device's Location settings are turned on
- This includes making sure your camera's geotagging feature is ON
- Open your GPS tracking app and start recording your tracks
- Take pictures of anything you want to appear in your Story Map
- Your smart device should automatically tag each photo with the date, time, and specific geographic location in which the photo was taken
- If possible it's good practice to keep a notepad with you to jot down descriptions to go along with the pictures in your story map

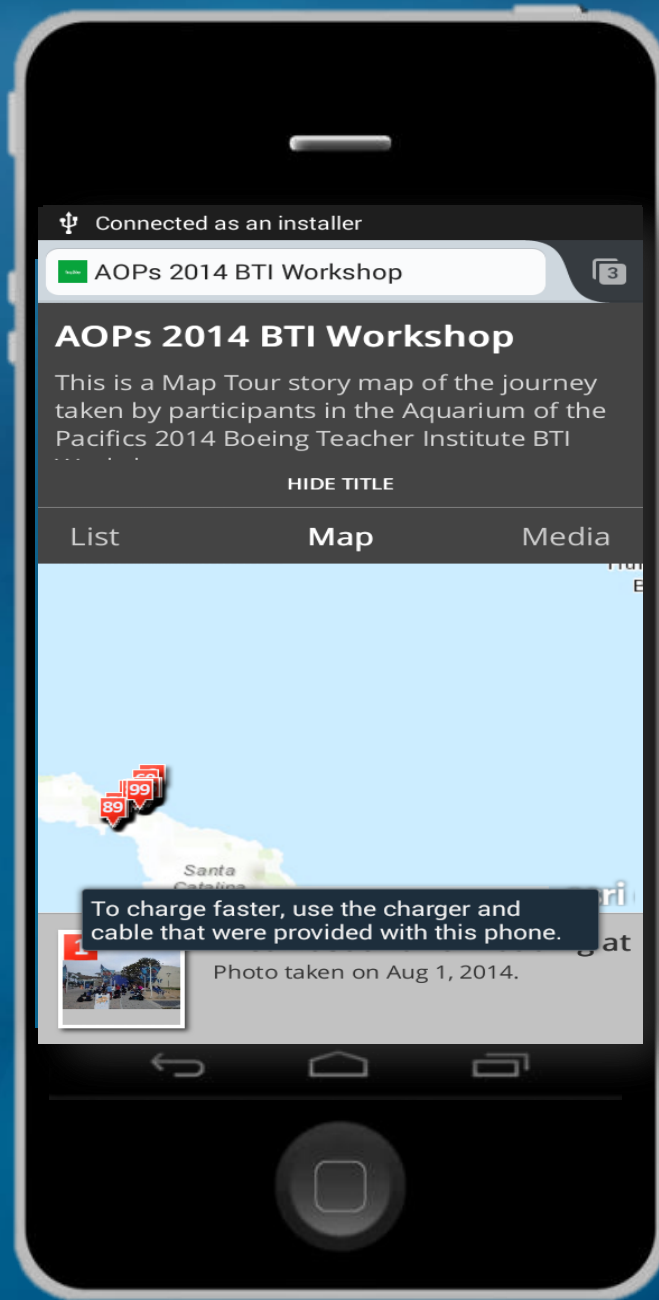
Create Your Own Story Map

➤ Step 5: Open the “Snap2Map” App



- Sign in to your ArcGIS Online Organization Account
- Select **“Create New Map Tour”**
- Fill in the **Title, Description, &** select a **Basemap**
- Select the **folder & photos** to be included in your Story Map
- **Save and Publish** your newly created Map Tour Story Map!





AOPs 2014 BTI Workshop

This is a Map Tour story map of the journey taken by participants in the Aquarium of the Pacific's 2014 Boeing Teacher Institute BTI Workshop

Switch to
builder mode

A story map



Map Tour Story Map Tutorial

Story Map Tutorial and links FREE GIS Lesson Plans for K-12 Classrooms

available online at:

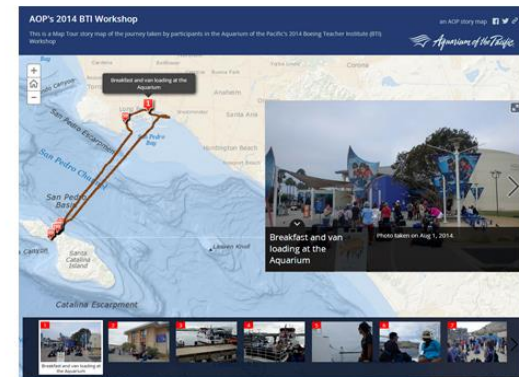
[http://JenniferALentz.info/Teaching/
Tutorials/CreatingMapTourStoryMaps
_2014.pdf](http://JenniferALentz.info/Teaching/Tutorials/CreatingMapTourStoryMaps_2014.pdf)

This PowerPoint Presentation,
as well as other presentations,
are available online at:

<http://JenniferALentz.info/Teaching/>

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>*

