# Investigating Hurricanes Using Online Geospatial Tools

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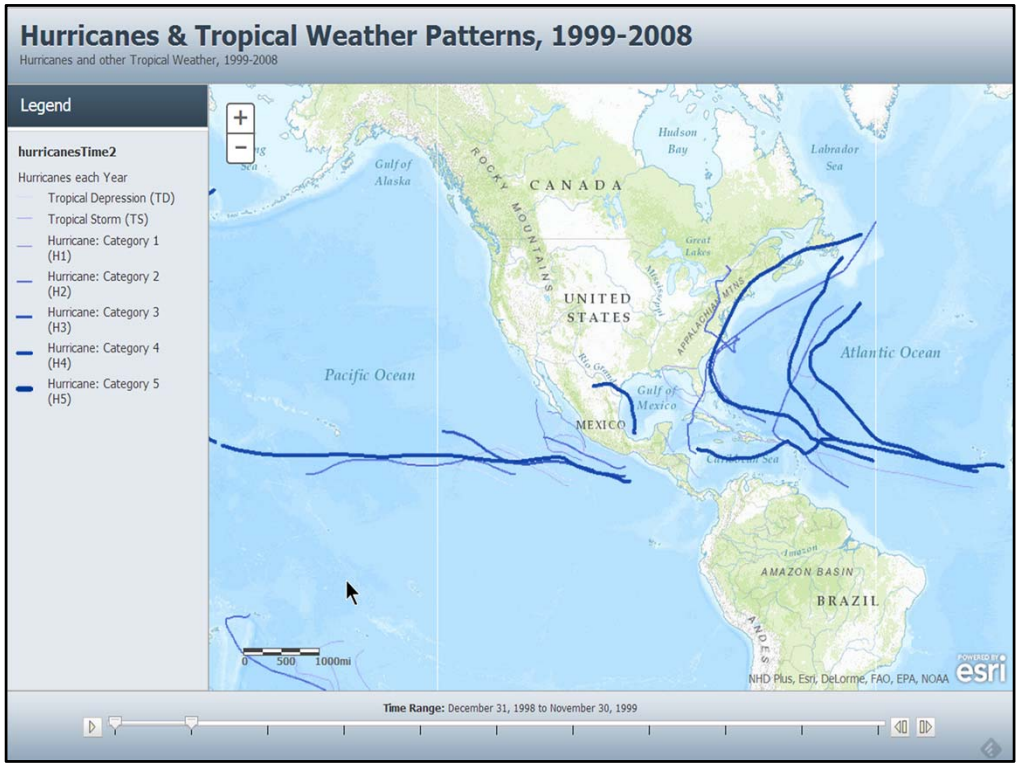
# Session Agenda

- Introduction to ArcGIS Online
- Climate change and hurricanes
- Hands-on Activity
- Resources

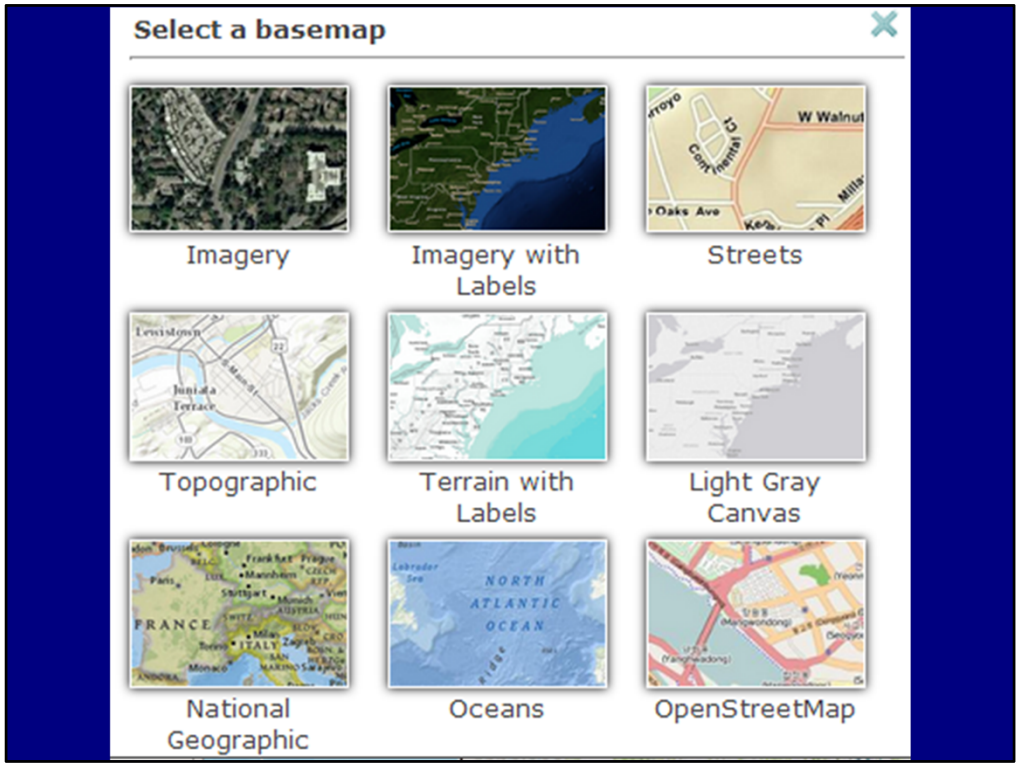



Today you will make an application similar to the one shown here:

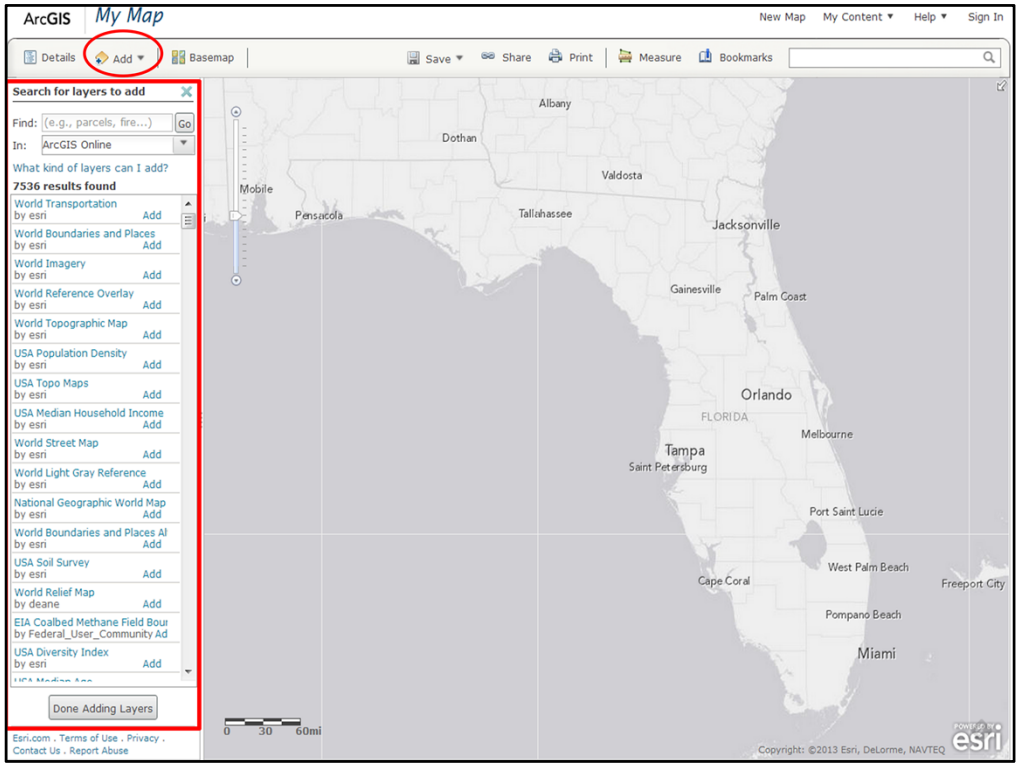
- Basic web map application
- Elements associated with a map: title, legend, scale bar
- The map is interactive, web-based – i.e., not on your computer
- Dynamic – zoom in and more and more detail is shown
- Includes a time element


ArcGIS Online (arcgis.com) is:

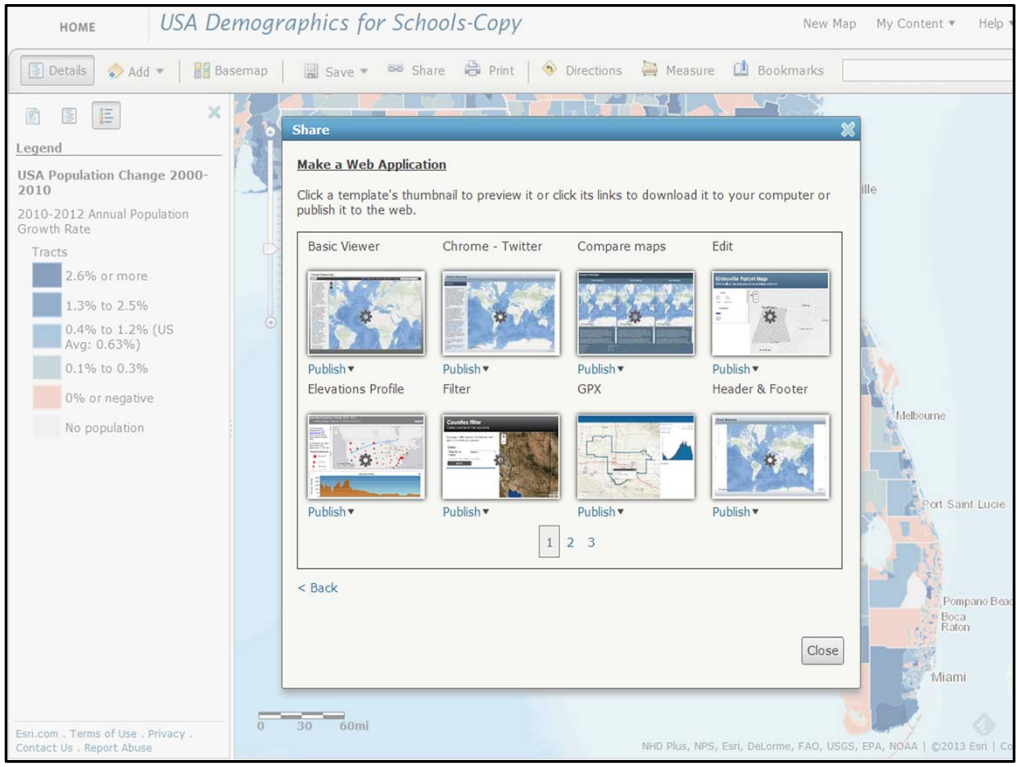
- cloud-based system (which means that everything you need to use it is on a computer located elsewhere)
- Includes Maps & Data for educational purposes
- Access it via your web browser (no plugin required)
- It is on-demand, as long as you are connected to the Internet
- Configurable
- Allows you to create webmaps and share data and applications



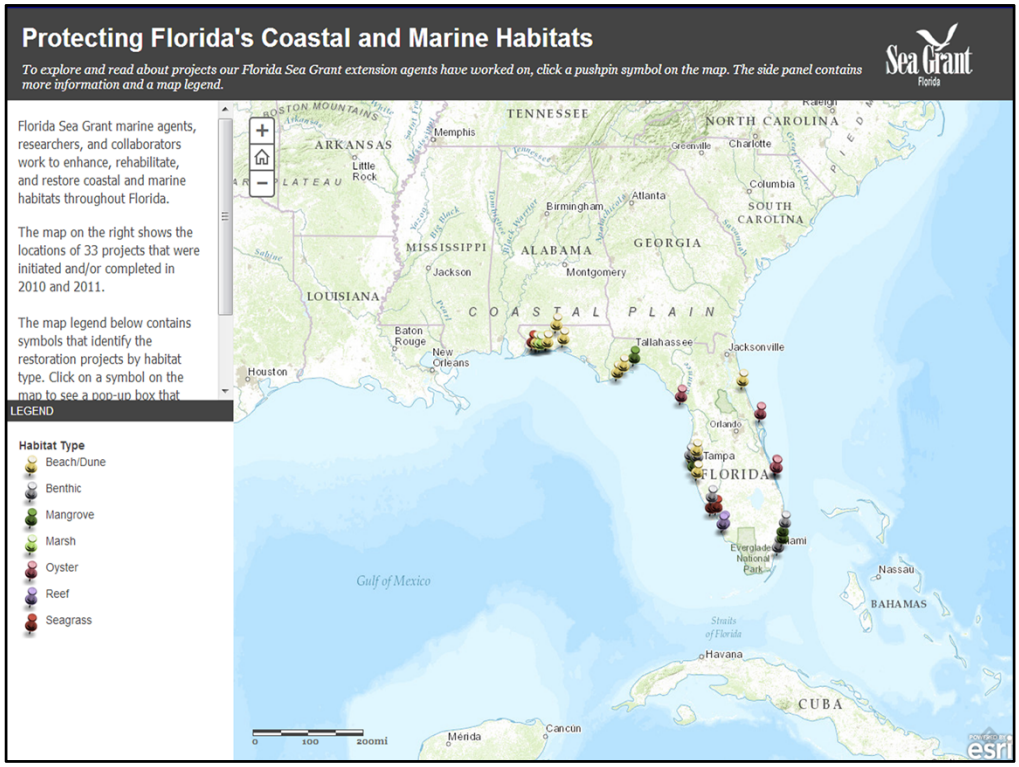

Includes a series of basemaps
That are scale dependency (detail in map changes with the scale – zoom in / zoom out)




- You can add data from thousands of available data layers
- Our can create our own data right on the map




- There are configurable applications available to us
- The applications can then be shared
- These can also be downloaded and customized via javascript, html, css, and other programming languages




Components of include:

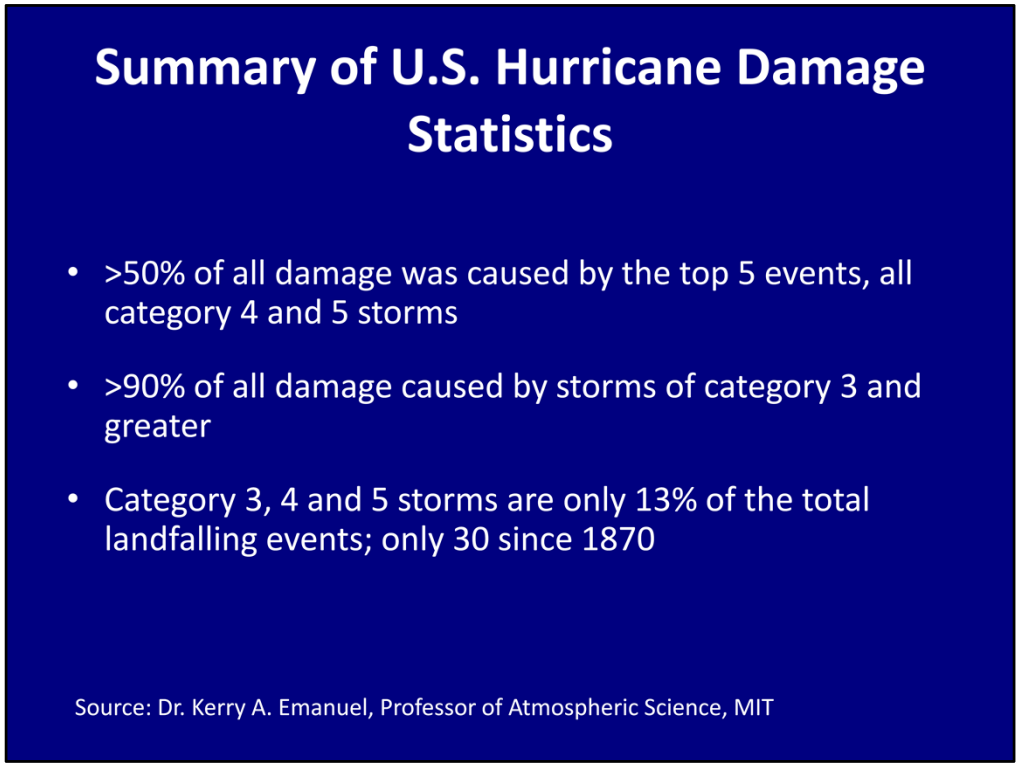
- Basemap
- Data layers (these could be editable – i.e., students could be granted the ability to add features, either from their computer, or using a cellphone and other devices in the field)
- Can add own data (including CSV, KML, GPS files)
- Maps encompass a geographic area (extent)
- Pop-up windows to display characteristics of map features
- Legend
- Share the dynamic interactive map via mobile devices, web browsers, iPads, etc.; via twitter, facebook; also embed in webpages

# Investigating Hurricanes Using Online Geospatial Tools

# Hurricane Risk

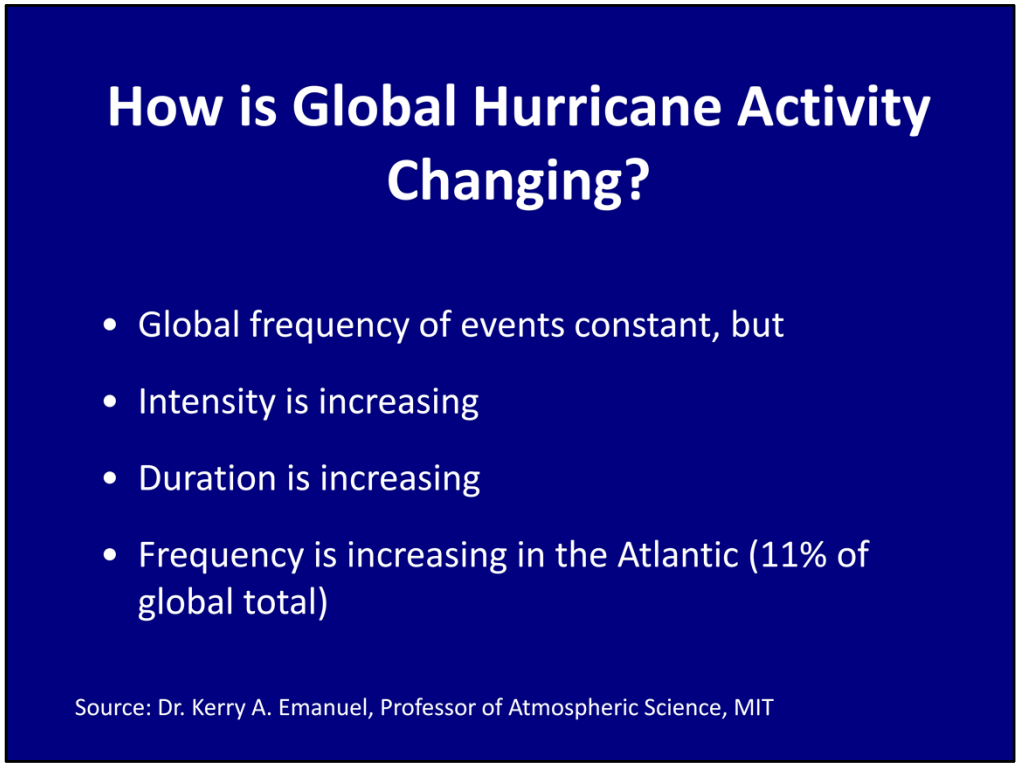
- Tropical cyclones account for the bulk of natural catastrophe U.S. insurance losses
- Losses vary roughly as the cube of the maximum wind speed
- Katrina caused > 1300 deaths and > $130 billion in damage
- Risk assessment is vital to the insurance industry and to government disaster preparedness programs

Source: Dr. Kerry A. Emanuel, Professor of Atmospheric Science, MIT




Summary of U.S. Hurricane Damage Statistics:
More than 50% of all damage was caused by the top 5 events, all category 4 and 5 storms.
Over 90% of all damage caused by storms of category 3 and greater.
Category 3, 4, and 5 storms are only 13% of the total landfalling events (only 30 since 1870).

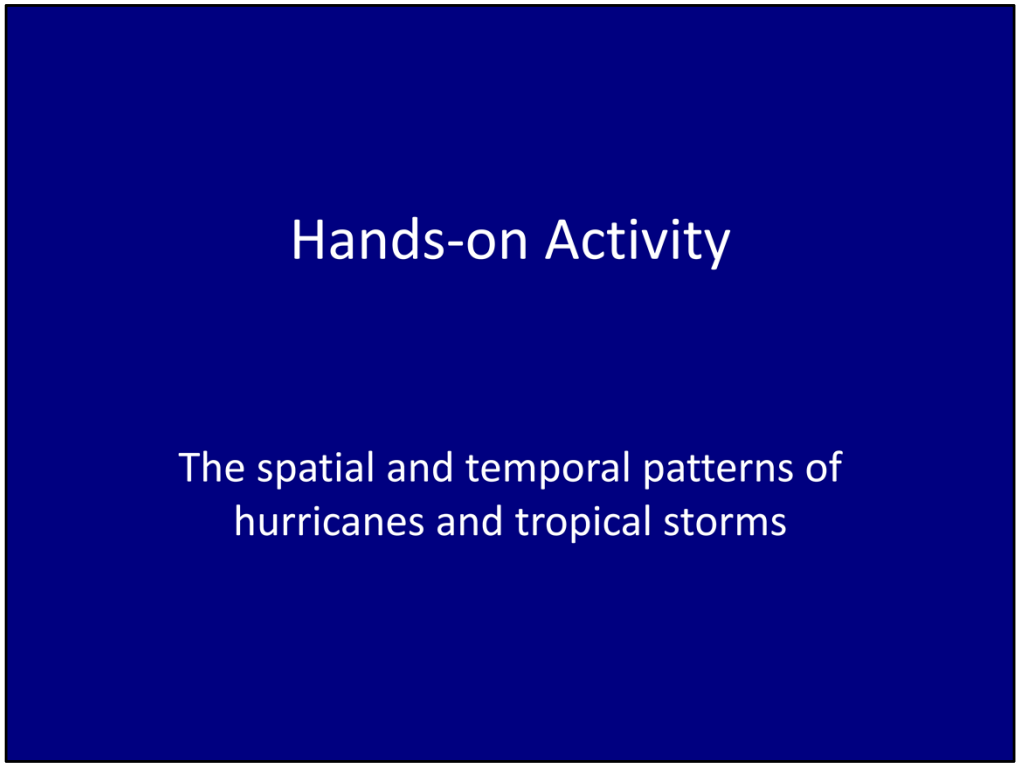
Therefore, landfalling storm statistics are grossly inadequate for assessing hurricane risk.




How is global hurricane activity changing?

Hurricane intensity and duration are both increasing. Global frequency of hurricane events is constant, but frequency is increasing in the Atlantic (11% of global total).

Why is global hurricane activity changing?




Teachers logged onto computers and made maps on ArcGIS online

# Resources

- Mapping with ArcGIS Online
- The Hurricane - Climate Change Connection: Bringing Cutting Edge Research into the Classroom
- **Historical Hurricane Tracks**

# Thank You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