### Hashtags: #earth, #coastalinundation

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### Tags: Citizen Science, Data Visualization, Model

**Challenge Description**

Coastal communities are becoming increasingly vulnerable to the risk of damage and danger from flooding. We only have to remember the recent impact of Hurricane Sandy on communities in the northeast to see the potential damage that a single storm can cause. Your challenge is to create tools and provide information so communities can prepare for coastal inundation. Through the use of data, visualization, citizen engagement, and simulations, you can help people understand their exposure to coastal inundation hazards and their increased vulnerability due to population increase and sea level rise.

Here are some ways your tool could be used:

· Help coastal businesses determine if they are currently at risk from coastal inundation and if they will be impacted in the future due to sea level rise and coastal erosion;

· Help coastal communities determine if they are in an existing or future floodplain.

· Identify the potential impacts of future coastal inundation risks to Federal facilities;

· Help coastal communities visualize the impacts from coastal inundation on their most vulnerable locations and populations; and

· Use data gathered by citizens to measure the effects of coastal inundation, coastal erosion, and sea level rise at specific coastal locations. Compare the results to satellite data and models of expected impacts.

**Background**

Coastal inundation is the flooding of normally dry, low-lying coastal land, primarily caused by severe weather events along the coast, estuaries, and adjoining rivers. These flood events are some of the more frequent, costly, and deadly hazards that can impact coastal communities. You can see the basics about coastal inundation at this site:

<http://www.csc.noaa.gov/digitalcoast/inundation/understand>

In order to prepare for coastal inundation, decision makers and citizens need to understand the potential risks and plan ahead. This link provides background about preparedness: <http://www.stormsurge.noaa.gov/preparedness.html>. Other tools, like the [Coastal County Snapshots - Flood Exposure tool](https://www.csc.noaa.gov/digitalcoast/tools/snapshots), let users see county-specific data for a coastal county of interest.

Many datasets are now available from the Federal Government that illustrate the hazards of coastal inundation. In the spring of 2014, as part of the Climate Data Initiative, the Federal Government will bring together datasets that relate to coastal vulnerability and future climate impacts on flooding and make them available on [climate.data.gov](http://climate.data.gov) , planned for March 19, 2014. The data will come from agencies such as the National Oceanic and Atmospheric Administration (NOAA), the National Aeronautic and Space Administration (NASA), the Federal Emergency Management Administration (FEMA), the Geological Survey (USGS), the Environmental Protection Agency (EPA), the Army Corps of Engineers (USACE), and the Department of Defense (DOD). The goal is to leverage data to stimulate innovation and private sector entrepreneurship to advance the preparedness of communities, companies and citizens for the immediate impacts of coastal inundation and future flood risk. The Climate Data Initiative will later expand to include other climate risks and impacts such as heat waves and droughts.

**Solution Ideas**

Here are some ways for you to frame this solution:

· Retrieve data about coastal inundation, sea level rise, or coastal erosion, and social and economic vulnerability from the federal government sources below;

· Present or visualize data that shows potential coastal inundation in a specific community; and

· Enable citizens to gather data about coastal inundation, for example, the condition of evacuation routes, the sources of response and resilience as well as vulnerability in their neighborhoods, the community landmarks, venues, and businesses that could be affected by floods. This could be done in partnership with community mapping platforms, for example, or with your local community service organizations or government which will allow users to compare to data from citizen scientists, satellites, and models.

**Sample Resources**

* <https://hazards.fema.gov/femaportal/NFHL/>
* <http://fema.maps.arcgis.com/home/webmap/viewer.html?webmap=cbe088e7c8704464aa0fc34eb99e7f30>
* <http://www.csc.noaa.gov/slr>
* <http://www.csc.noaa.gov/ArcGISPUB/rest/services/dc_slr>
* <http://marine.usgs.gov/coastalchangehazardsportal/>
* [*http://maps.csc.noaa.gov/arcgis/rest/services/Roadmap/RoadmapPilot\_HazardComposite/MapServer*](http://maps.csc.noaa.gov/arcgis/rest/services/Roadmap/RoadmapPilot_HazardComposite/MapServer)
* <http://www.csc.noaa.gov/ArcGISPUB/rest/services/dc_slr/Flood_Frequency/MapServer>
* <http://www.csc.noaa.gov/ArcGISPUB/rest/services/sovi/sovi_blockgroups/MapServer>
* <http://csc.noaa.gov/ArcGISPUB/rest/services/enow>
* <http://climate.data.gov/climate/climate-resources>