

Using Mapping Tools to Work with Natural Hazards Data

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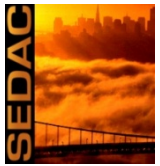
NASA Socioeconomic Data and Applications Center (SEDAC)
Center for International Earth Science Information Network (CIESIN)
The Earth Institute, Columbia University

2017 Summer ESIP Meeting

Session: Drones, Data, and the Great American Eclipse
Thursday, 27 July 2017; 8:30 a.m. - 5:30 p.m.



SEDAC, the NASA Socioeconomic Data and Applications Center



- NASA Distributed Active Archive Center (DAAC)
 - NASA Earth Observing System Data and Information System (EOSDIS)
 - NASA Earth Science Data and Information System (ESDIS) Project
 - Focus on human interactions in the environment
- Develop, archive, and disseminate data, tools, and services
 - Disseminating over 200 data sets within 40 collections
 - All resources are freely accessible, 24 x 7
- Serving interdisciplinary audiences
 - Diverse data collections covering a variety of themes
 - Supporting research, learning, and decision-making
 - Supporting the integration of socioeconomic and earth science data *
 - Serving as an "Information Gateway" between earth sciences and social sciences *

* Based on <http://sedac.ciesin.columbia.edu/about>



SOCIOECONOMIC DATA AND APPLICATIONS CENTER (SEDAC)

A Data Center in NASA's Earth Observing System Data and Information System (EOSDIS) — Hosted by CIESIN at Columbia University

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Tools and Apps - SEDAC - MAPPING TOOLS - HazPop (HazPop)



The Hazards and Population Mapper (HazPop) is a free mobile application that enables users to easily display recent natural hazard data in relationship to population, major infrastructure, and satellite imagery.



SEDAC Map Viewer

Featured Data Sets

More...

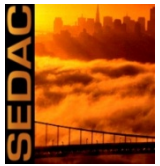
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Selected Mapping Tools Available from SEDAC

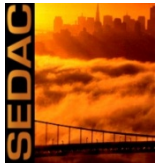
<http://sedac.ciesin.columbia.edu/maps/tools>



- **NASA Hazards and Population Mapper (HazPop)**
 - Free app for the iPhone
- **NASA SEDAC Hazards Mapper**
 - Browser-based web app for locating and obtaining information on hazards
- **Population Estimation Service**
 - Browser-based Population Estimator Web App for estimating populations around the Earth
- **Ramsar Wetland Sites Mapper**
 - Map client for data set, Sea Level Rise Impacts on Ramsar Wetlands of International Importance
- **SEDAC Map Viewer**
 - Browser-based visualization of map layers in 4 windows
- **CHANGE Viewer**
 - Climate and Health ANalysis for Global Education Viewer (java-based client)



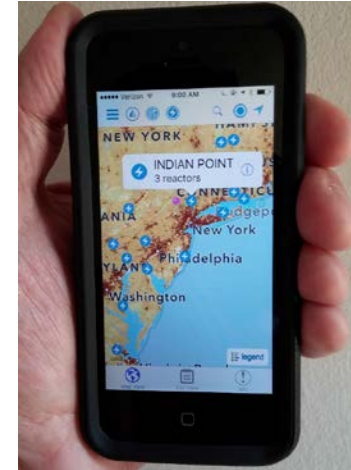
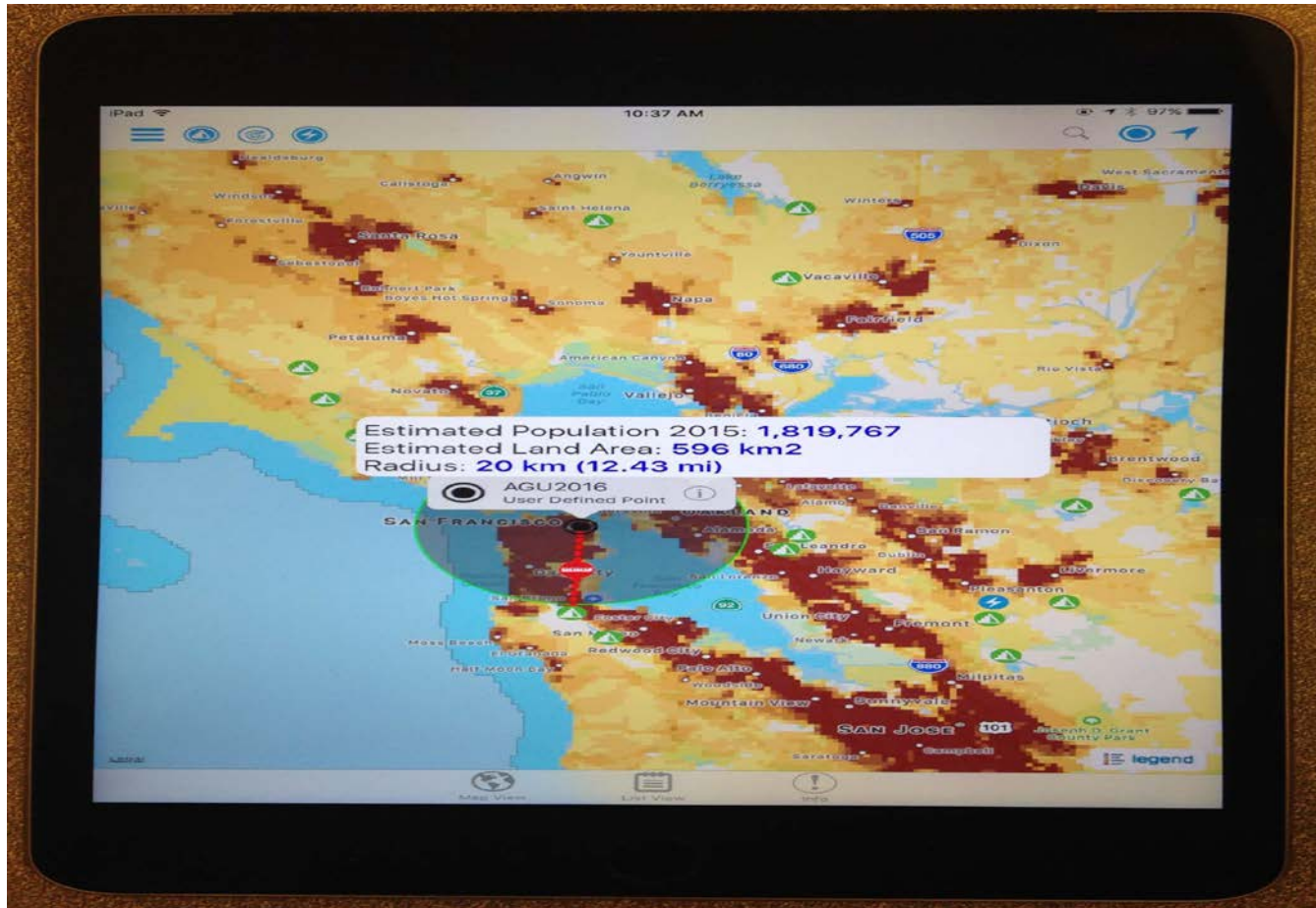
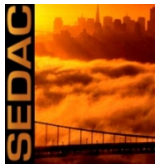
Mapping Tools to Access Natural Hazards Data



- NASA Hazards and Population Mapper (HazPop)
- NASA SEDAC Hazards Mapper



NASA Hazards Population Mapper (HazPop)

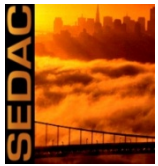


HazPop runs on the iPhone and iPad (iOS 9.0 or later):

<https://itunes.apple.com/us/app/hazards-population-mapper/id1092168898?mt=8>



NASA SEDAC Hazards Mapper



sedac.ciesin.columbia.edu/mapping/hazards/

SEDAC Hazards Mapper

Pop Count 2015 0-100 100-300 300-500 500-1K 1K-4K 4K-20K 20K-90K 90K-1.1M 1.1M+ (persons)	Earthquakes (last 7 days) ● Magnitude 4.5 - 5 ● Magnitude 5.1 - 6 ● Magnitude 6.1 - 7 ● Magnitude 7+	Single Dam Point 61 Dam Point Clusters Nuclear Plant	Settlements Fires (48 hours) Flood Warnings (USA)
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Aerosol Optical Depth (yesterday)
0 .70

- Roadmap
- Aerial
- Terrain
- Country Boundaries
- Corrected Relectance (yesterday)

Socioeconomic

- Population Count 2015 (GPWv4)
- Settlement Points (GRUMPv1)

Natural Disasters | Environment

- Flood Outlook (USA only)
- Aerosol Optical Depth (yesterday)
- Fires (Last 48 Hours)
- Global 250m Water Map
- Earthquakes Mag 4.5+ (7 days)
- EONET Hazards

Infrastructure

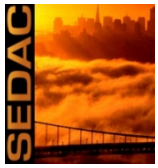
- Nuclear Power Plants
- Dams

Longitude: -132,89 Latitude: 39,10

Esri, SEDAC Gridded Population of the World v4



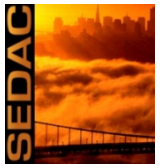
NASA SEDAC Hazards Mapper and HazPop: Common Layers



- **Magnitude 4.5+ Earthquakes, Past Week.** U.S. Geological Survey (USGS). http://earthquake.usgs.gov/earthquakes/feed/v1.0/summary/4.5_week.geojson
- Land, Atmosphere Near real-time Capability for EOS (LANCE) and Global Imagery Browse Services (GIBS). **MODIS Combined Value Added Aerosol Optical Depth.** NASA. <https://wiki.earthdata.nasa.gov/display/GIBS/GIBS+Available+Imagery+Products#expand-AerosolOpticalDepth16Products>
- Lehner, B., C. Reidy Liermann, C. Revenga, C. Vorosmarty, B. Fekete, P. Crouzet, P. Doll, M. Endejan, K. Frenken, J. Magome, C. Nilsson, J.C. Robertson, R. Rodel, N. Sindorf, and D. Wisser. 2011. **Global Reservoir and Dam Database, Version 1 (GRanDv1): Dams, Revision 01.** Palisades, NY: SEDAC. <http://dx.doi.org/10.7927/H4N877QK>
- Center for International Earth Science Information Network - CIESIN - Columbia University. 2015. **Population Exposure Estimates in Proximity to Nuclear Power Plants, Locations.** Palisades, NY: NASA SEDAC. <http://dx.doi.org/10.7927/H4WH2MXH>
- Fire Information for Resource Management System (FIRMS). **Fires48 Layer.** NASA Earth Observing System Data Information System (EOSDIS). <https://firms.modaps.eosdis.nasa.gov/>
- **SEDAC Population Estimation Service (PES) based on SEDAC's Gridded Population of the World, version 4 (GPWv4) Population Count data for 2015.** <http://sedac.ciesin.columbia.edu/data/collection/gpw-v4/population-estimation-service>



Additional HazPop App Layers



- **National Weather Service Forecasts Guidance Warnings. Significant River Flood Outlook. NOAA.**
http://idpgis.ncep.noaa.gov/arcgis/rest/services/NWS_Forecasts_Guidance_Warnings/sig_riv_fld_outlk/MapServer
- **National Weather Service Forecasts Guidance Warnings / NHC Atlantic Tropical Cyclones Active. NOAA.**
http://idpgis.ncep.noaa.gov/arcgis/rest/services/NWS_Forecasts_Guidance_Warnings/NHC_Atl_trop_cyclones_active/MapServer



Hands-on Demonstration

