

Hurricane Sandy Science Projects

For More Information: <http://pubs.usgs.gov/circ/1390/>

For full database: <http://northatlanticlcc.org/resources/hurricane-sandy>

Project Listing

Theme 1: Coastal topography and bathymetry.

GS1-1A - Establish a Sandy Region Coastal National Elevation Database (CoNED)

GS1-1B - Topographic surveys (LiDAR) for impact area assessment and reconstruction

GS1-1C - Delivery Systems for Hazards, Topographic, and Bathymetric Elevation Data

GS2-1A - Topographic Surveys: Lidar Elevation Data

Theme 2: Impacts to coastal beaches and barriers.

GS1-2A - Pre- and post-storm mapping of coastal impacts and vulnerability

GS1-2B - Develop coastal impact forecast models

GS1-2C - Coastal Hazards Information and Decision Support Portal

GS2-2A - Assateague Barrier Island and Estuarine Wetland Physical Change Assessment

GS2-2B - Fire Island Regional Study

GS2-2C - Assateague Island Regional Study

GS2-2D - Estuarine physical response to storms

Theme 3: Impacts of storm surge and estuarine and bay hydrology.

GS1-3A - Storm Surge Response, Data Collection, and Data Delivery

GS1-3B - Storm Tide Monitoring Networks and Data Analysis

GS2-3A - Enhance Storm Tide Monitoring, Data Recovery, and Data Display Capabilities

GS2-3B - Storm Surge Science Evaluations to Improve Models

Theme 4: Impacts on environmental quality and persisting contaminant exposures.

GS1-4A - Characterize Persisting Threat of Ecological Exposures to Storm-Related Contaminants

GS1-4B - Characterize Persisting Threat of Human Exposures to Storm-Related Contaminants

Theme 5: Impacts to coastal ecosystems, habitats, and fish and wildlife.

FWS-1 - Decision Support to Increase Resiliency of Tidal Wetland Habitats and Species

FWS-2 - Decision Support to Increase Resiliency of Beach Habitats and Beach-Dependent Species

FWS-3 - Coastal Barrier Resources System Comprehensive Map Modernization

FWS-4 - Predictive model for submerged aquatic vegetation and salt marsh resiliency

FWS-5 - Three National Wildlife Refuge projects to increase coastal resilience and preparedness

FWS-6 - Resilience of the Tidal Marsh Bird Community and Assessment of Restoration Efforts

FWS-7 - Increasing Resiliency of Road Stream Crossings While Restoring Aquatic Connectivity

GS1-5A - Climate change forecasting and coastal planning

GS1-5B - Migrating landbirds and their habitats.

GS1-5C - Long term Impact to coastal wetlands and lagoons

GS1-5D - Long-term Impact Spatial Patterns of Wetland Morphology

GS1-5E - Analysis of Marine and Estuarine Wetlands

GS1-5F - SET cores

GS1-5G - Surge and Marsh Dieback in the New Jersey

GS1-5H - Assessment of wetland

GS1-5I - Seabird Migration

GS1-5J - Threatened Shorebird

GS1-5K - Coastal Bird and Other Wildlife Populations

GS1-5L - Coastal Forest Resources of Atlantic Coast DOI Parks and Refuges

GS1-5M - Joint Ecosystem Modeling (JEM)

GS2-5A - Assess wetland ecosystem function and process response to impacts

GS2-5D - Forecasting Biological Vulnerabilities

NPS-1 - Acquire high-resolution elevation data

NPS-3 - Evaluate ecological impacts of breaching on estuarine habitats

NPS-4 - Provide Support for the Science and Resilience Center at Jamaica Bay

NPS-5 - Submerged Marine Habitat Mapping

NPS-6 - Assess Groundwater Resources to Adapt to Climate Change

NPS-7 - Breach Management Plans

Theme: NOAA Project

NOAA-100 - Geostationary Data Assimilation and Product Development

NOAA-101 - Global Model upgrades and ensemble prediction of hurricane tracks

NOAA-102 - Tropical Cyclone Relocation for NAM

NOAA-103 - Acquire Caribbean Radar Observations

NOAA-104 - Cloudy Radiance Assimilation

NOAA-105 - Global 4-D Hybrid Data Assimilation

NOAA-106 - Observing System Experiments

NOAA-107 - Operational Implementation Support

NOAA-108 - Atmospheric Motion Vectors (AMVs)

NOAA-109 - Marine Debris Assessment and Removal Support

NOAA-110 - Enhance Environmental Sensitivity Index maps

NOAA-111 - Skillful Predictions of Seasonal Hurricane Frequency, Track, and Landfall

NOAA-112 - Mapping, Charting & Geodesy Services

NOAA-113 - Mapping, Charting & Geodesy Services

NOAA-114 - Re-Wing Kit Project

NOAA-115 - Series 3.5 Engine Upgrade

NOAA-116 - Re-Wing Kit Installation

NOAA-117 - Sandy Hook, NJ – Annex Construction

NOAA-118 - NWR Facilities

NOAA-119 - NWLON Repair

NOAA-120 - PORTS Repair

NOAA-121 - Integrated Rapid-Response Observations and Ocean Ensemble Optimization

NOAA-122 - Modernizing the Tropical Atmosphere/Ocean Observing System

NOAA-123 - Next Generation Architecture

NOAA-124 - Augmenting Research HPC Resources and Software Engineering

NOAA-125 - LMR Consulting Services

NOAA-126 - USGS Gauge Operations and Maintenance (O&M)

NOAA-127 - NCCOS COL Seawater & Other Facilities Repairs CCFHR Beaufort Laboratory Quad

NOAA-128 - Hurricane Forecast Improvement Project (HFIP)

NOAA-129 - Improve Gulf-Coast Hurricane Forecast Through Assimilation of Radiance Data

NOAA-130 - Development and Demonstration of a Relocatable Ocean OSSE System

NOAA-131 - Water Level Support for Hydro Surveys

NOAA-132 - Fisheries Disaster Assistance due to Sandy

NOAA-133 - Upper Air

NOAA-134 - NMFS Facilities Maintenance

NOAA-135 - IOOS QUAD

NOAA-136 - Hydrographic Surveys

NOAA-137 - Coastal Inundation Modeling

NOAA-138 - NWS and NWR/BMH

NOAA-139 - METOP Data Continuity

NOAA-140 - Nautical Charting Support

NOAA-141 - High Impact Weather Prediction Pilot (HIWPP) Project

NOAA-142 - Develop Improved Predictions of Inland Flooding

NOAA-143 - Evaluating Observing Systems to Improve Storm Prediction

NOAA-144 - Social Science of Storm Risk Communication

NOAA-145 - Behaviorally Realistic Communications to Improve the Public's Response to and Preparedness

NOAA-146 - Assessment of Severe Weather Social Media Usage and a Twitter-based Model

NOAA-147 - Audience Segmentation Analysis of CT Coastal Residents to Support Storm Preparedness

NOAA-148 - Adolescent and Family Decision Making In Time of Disaster

NOAA-149 - Best Practices in Coastal Storm Risk Communication

NOAA-150 - Understanding and Improving Public Response to NWS Coastal Flooding Forecasts

NOAA-151 - Measuring public responses to a surge of information

NOAA-152 - Forecasting evacuation behaviors of coastal communities in response to storm hazard

NOAA-153 - Understanding Responses to Storm Warnings from Those Who "Rode Out" Hurricane

NOAA-154 - Evaluating evacuation decision-making processes among residents of Long Beach, NY

NOAA-155 - NDBC

NOAA-156 - Leveraging European Models

NOAA-157 - Coastal Impact Assistance Program

NOAA-158 - S-NPP Data Processing & Distribution

NOAA-159 - Geostationary Data (GOES-R & International Missions)

NOAA-160 - Direct Readout Imagery from Other Satellites

NOAA-161 - NWS Ground Readiness

NOAA-162 - NWS Data Availability

NOAA-163 - VDatum Upgrades

NOAA-164 - WFO Hardening

NOAA-165 - WFO Repair

NOAA-166 - MRMS Transition to Operations

NOAA-167 - Tropical/Extra-Tropical Storm Surge Warning

NOAA-168 - Storm Surge Training

NOAA-169 - Social Science & Science Infusion Training / DSS Tropical Training

NOAA-170 - Replace coastal monitoring infrastructure at nine reserves affected by Hurricane Sandy

NOAA-171 - Mapping, Charting & Geodesy Services

NOAA-172 - Mapping, Charting & Geodesy Services

NOAA-173 - NEXRAD Dual Pol

NOAA-174 - Operational HPC

NOAA-175 - X-Band Direct Broadcast Receipt Sites

NOAA-176 - Nearshore Wave Prediction System (NWPS)

NOAA-177 - Fisheries Surveys

NOAA-178 - Targeted Observations for High Impact Events

NOAA-179 - Observing System Simulation Experiments for Satellite Data Gap Mitigation

NOAA-180 - DMSP SSMI

NOAA-181 - HPC Hardware Augmentation for OSSEs

NOAA-182 - MADIS

NOAA-183 - Increase Aircraft Observations

NOAA-184 - Seamless Digital Elevation Models

NOAA-185 - NGDC Data Archive and DEMs

NOAA-186 - Stellwagen Bank NMS Pier Repair

NOAA-187 - Leveraging Observations and Models to Improve Predictions of Convective Initiation

NOAA-188 - ASOS

NOAA-189 - Enhanced GRAV-D

NOAA-96 - Avionics Upgrades

NOAA-97 - Extreme Precipitation and Flooding from Atmospheric Rivers

NOAA-98 - SLOSH + Gridded Winds

NOAA-99 - IOCM Processing Center Support

Theme 1: Coastal topography and bathymetry.

GS1-1A - Establish a Sandy Region Coastal National Elevation Database (CoNED)

Project ID: GS1-1A Agency ID: Lead Agency: USGS Project Duration (Yrs): 2

Contact: Teresa Dean, tdean@usgs.gov, 703-648-4825

Theme: Theme 1: Coastal topography and bathymetry.

Title: GS1-1A: Establish a Sandy Region Coastal National Elevation Database (CoNED)

Summary: Topographic and bathymetric elevation data from multiple sources will be processed and combined with the National Elevation Dataset (NED) to create a seamless and integrated Coastal NED (CoNED) within the Hurricane Sandy impact area. A regional topobathymetric elevation database (CoNED) and derivative products for the entire Sandy impact region will be constructed to serve post-Hurricane Sandy recovery and other needs, including assessing coastal landscape change and vulnerability; designing restoration, redevelopment, and protection projects; predicting future hurricane storm surge, coastal and inland flooding and; devising strategies for climate change adaptation from sea-level rise and other effects. Derivative products include: (1) a Sandy subregion elevation dataset with enhanced vertical accuracy within low-lying extreme inundation hazard zones, (2) high-resolution bare earth LiDAR datasets over vulnerable urbanized zones, (3) a multi-temporal topobathymetric database over geomorphically dynamic coastal subregions, (4) hydrologically enforced and corrected topographic datasets for selected major river basins, and (5) maps that depict Sandy region data gaps in elevation dataset coverage, age, and quality to guide coordinated interagency investments in coastal mapping. The USGS works through the NSTC Interagency Working Group on Ocean and Coastal Mapping (IWG-OCM) to ensure close cooperation with NOAA, USACE, and other relevant agencies.

General: Integrated elevation datasets for the Hurricane Sandy impact region

Focus:

Project Components: This Sandy impact region, along with much of the broader Atlantic and Gulf coastal regions of the United States is vulnerable to hurricane impacts, and lacks the comprehensive integrated onshore – offshore baseline elevation data required for hazard mitigation policies, redevelopment planning, and emergency preparedness and disaster response. This activity directly responds to actions as outlined in the National Ocean Policy Implementation Plan (National Ocean Council, 2012). The USGS led, multi-agency 3DEP initiative outlines an ambitious goal to improve the elevation data for the nation in order to respond to national level government and private sector requirements. The information provided by this proposed project and associated derivative products is essential to development of more resilient communities and robust coastal ecosystem services.

Products/Outcomes: - Regional topobathymetric elevation database for four subregions including New Jersey-Delaware, Chesapeake Bay, New England, North Carolina

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GS1-1A - Establish a Sandy Region Coastal National Elevation Database (CoNED)

- High-resolution bare earth lidar datasets hydrologically corrected for infrastructure over vulnerable urbanized zones (New York City)
- Hydrologically enforced and corrected topobathymetric datasets for selected major river basins and estuaries (Delaware River, Susquehanna River, Barnegat Bay)
- Multi-temporal topobathymetric databases over geomorphically dynamic coastal subregions (Outer Banks, NC)

Dissemination Strategy: Web access, fact sheets, and direct contact with program coordinator

Project Linkages:

Project Locations:

States	Waterbodies and Areas
<input checked="" type="checkbox"/> CT	<input checked="" type="checkbox"/> Chesapaeake Bay
<input type="checkbox"/> DC	<input checked="" type="checkbox"/> Delaware Bay
<input checked="" type="checkbox"/> DE	<input checked="" type="checkbox"/> Fire Island
<input checked="" type="checkbox"/> MA	<input type="checkbox"/> Gulf of Maine
<input checked="" type="checkbox"/> MD	<input type="checkbox"/> Hudson River
<input type="checkbox"/> ME	<input checked="" type="checkbox"/> Jamaica Bay
<input checked="" type="checkbox"/> NC	<input checked="" type="checkbox"/> Long Island Bays
<input type="checkbox"/> NH	<input checked="" type="checkbox"/> Long Island Sound
<input checked="" type="checkbox"/> NJ	<input checked="" type="checkbox"/> Marland-Virginia Coast and Bays
<input checked="" type="checkbox"/> NY	<input checked="" type="checkbox"/> New York Bight
<input checked="" type="checkbox"/> PA	<input checked="" type="checkbox"/> NJ Atlantic Coast and Bays
<input checked="" type="checkbox"/> RI	<input checked="" type="checkbox"/> NY-NJ Harbor
<input checked="" type="checkbox"/> VA	<input checked="" type="checkbox"/> Southern New England
	<input type="checkbox"/> Other

Science Category:

<input checked="" type="checkbox"/> Bathymetic Survey - Bathymetric Data
<input checked="" type="checkbox"/> Built Environment
<input checked="" type="checkbox"/> Collect/Process Elevation Data Including LiDAR
<input type="checkbox"/> Decision Support Tools
<input type="checkbox"/> Green Infrastructure
<input checked="" type="checkbox"/> Immediate Impact Assessment
<input checked="" type="checkbox"/> Increase Monitoring Capability for Future Storms
<input type="checkbox"/> Information Management Data Portals
<input checked="" type="checkbox"/> Long-term Impact Assessment
<input checked="" type="checkbox"/> Modeling Future Impacts
<input checked="" type="checkbox"/> Monitoring Restoration and Management
<input checked="" type="checkbox"/> Resilience Research
<input type="checkbox"/> Social Science
<input checked="" type="checkbox"/> Translation/Delivery of Information to Partners
<input type="checkbox"/> Status
<input checked="" type="checkbox"/> Trends

Theme 1: Coastal topography and bathymetry.

GS1-1A - Establish a Sandy Region Coastal National Elevation Database (CoNED)

Project Partners:		Project Data:	
Federal	Other	Data Needed	Data Produced
<input checked="" type="checkbox"/> ACE	<input type="checkbox"/> AFC	<input checked="" type="checkbox"/> Bathymetric Data	<input checked="" type="checkbox"/> Bathymetric Data
<input type="checkbox"/> BIA	<input type="checkbox"/> CSC	<input type="checkbox"/> Biogeochemistry	<input type="checkbox"/> Beach-Marsh-Estuary
<input type="checkbox"/> BOEM	<input type="checkbox"/> LCC	<input type="checkbox"/> Coastal water movement	<input type="checkbox"/> Contaminants
<input type="checkbox"/> EPA	<input type="checkbox"/> MARCO	<input type="checkbox"/> Demographics	<input type="checkbox"/> Currents
<input checked="" type="checkbox"/> FEMA	<input checked="" type="checkbox"/> NROC	<input checked="" type="checkbox"/> Elevation Data	<input checked="" type="checkbox"/> Elevation Data
<input checked="" type="checkbox"/> FWS	<input type="checkbox"/> SHARP	<input type="checkbox"/> Infrastructure	<input type="checkbox"/> Developed-NonDeveloped
<input type="checkbox"/> HUD	<input checked="" type="checkbox"/> State	<input type="checkbox"/> Long-term verification Data	<input type="checkbox"/> Geology
<input checked="" type="checkbox"/> NOAA	<input checked="" type="checkbox"/> State CZM	<input type="checkbox"/> Sea Level Rise	<input type="checkbox"/> Hydrology
<input checked="" type="checkbox"/> NPS	<input type="checkbox"/> State FWS	<input checked="" type="checkbox"/> Storm Surge	<input type="checkbox"/> Information Mgmt System
<input checked="" type="checkbox"/> USGS	<input type="checkbox"/> Local	<input type="checkbox"/> Uncertainty assessment data	<input type="checkbox"/> Wind-Precip-Temp
<input checked="" type="checkbox"/> Other Federal	<input checked="" type="checkbox"/> NGO	<input checked="" type="checkbox"/> Vulnerability to storm surge	<input type="checkbox"/> Surge-Wave-Tide
	<input checked="" type="checkbox"/> University	<input type="checkbox"/> Ecosystem Response Data	<input type="checkbox"/> Water Quality
		<input type="checkbox"/> Wildlife	<input type="checkbox"/> Wildlife
			<input type="checkbox"/> Fish
			<input type="checkbox"/> Vegetation