2018 Atlantic Hurricane Season

Near, to slightly above normal Atlantic hurricane season

Alberto
Beryl
Chris
Debby
Ernesto
Florence
Gordon
Helene
Isaac
Joyce
Kirk
Leslie
Michael
Nadine
Oscar
Patty
Rafael
Sara
Tony
Valerie
William
Influence of El Niño / La Niña

Typical influence of El Niño and La Niña on Pacific and Atlantic seasonal hurricane activity. Map by NOAA Climate.gov, based on originals by Gerry Bell.
NDBC maintains the Tropical Atmosphere Ocean Array (TAO) in the tropical Pacific.
NOAA’s “Weather Buoys”

NDBBC operates & maintains over 100 weather-ocean buoys and 45 Coastal-Marine stations
Hurricane Gustav August 2008

Buoy 42003 measured 85 mph winds and 34 ft seas - 65 mile east of Storm

Buoy 42040 measured 63 mph winds and 33 ft seas - 120 mile east of Storm

Buoy 42059 measured 50 mph winds and barometric pressure drop just prior to forming TS

Wind and barometric pressure observations from NOAA buoy 42059 advised the Hurricane Center of the intensity of TD Gustav on Aug 25 prior to launch of the Hurricane Hunters into the Storm
March 11, 2011 - Initial Assessment
Tsunami Inundation forecast
Tsunami Assessment

After ingest of DART data and re-running Tsunami Inundation model
NDBBC’s Observing Network
National Data Buoy Center
Facilities at SSC, MS

- MCC Operates 24/7/365
- High Bay Fabrication
- Wind Tunnel & Environmental Chambers
- Machine Shops
- Electronics Labs
- Sensor Testing & Cal
- Paint & Sandblasting
- In-Water Testing

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NDBC Staff

NDBC Federal staff - 40 FTE’s
USCG Liaison Office - 4 Officers and 1 Civilian
NOAA Corps Officer
Tech Services Contract currently with PAE through 4/30/19
Broad SOW across all NDBC activities
Level of Effort is about 130 FTE’s including subcontractors
To provide a **real-time**, end-to-end capability beginning with the **collection** of marine atmospheric and oceanographic data and ending with its transmission, **quality control and distribution**.
Challenge - Cost of Buoy Ops

NDBC Weather Buoy “Refresh” Underway
Self Contained Ocean Observing Payload (SCOOP)

- Less labor intensive assembly, and at-sea servicing
- Allows use of ships with less lift capacity
- Requires less time on station
- Has expanded observing capabilities
Challenge - Power for Autonomous Operations

- Efficient solar power generation, even in very high latitudes
- Wind power generation
- Wave or ocean current power generation
- Power storage, including Lithium battery technologies
Challenge - Ship Time

NDBC requires about 650 days at sea annually on large Global Class Vessels or Buoy Tenders to maintain the buoys.

About 30% comes from the USCG; Remainder is on commercial charters.
Challenge - Vandalism & Collision Damage
**NDBC BuoyCAM**

*BuoyCam Gen 2 under development at NDBC*
- Wider field of view
- Longer service life - solar power

*BuoyCam “Next”*
- Night time and low light images
Expanding use of *BuoyCAM* Images

Cameras can monitor:
- Ice, snow cap
- Vessel traffic
- Marine debris
- Algae blooms
- Marine life

Future development of image recognition:
- Sea state
- Visibility
- Precipitation
- Clouds
Hurricane Jose - September 2017
Outsourcing of Technical Expertise, Services & Buoy Components

- Services - logistics, engineering, technician, etc.
- Buoy structure - hulls, masts, racks
- COTS ready to deploy buoy systems
- Circuit boards
- Common and Specialized parts and materials
- Sensors
- Power generation and storage technologies
- Communications technologies
- Materials analysis and testing
- Destructive and non-destructive testing
- Buoy deployment - vessel services

……and on and on...
What questions do you have?

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