

INACTIVE PROTOCOL KEPT FOR ARCHIVE PURPOSES

Explanation:

The Consumer Option for an Alternative System to Allocate Losses (COASTAL) Act of 2012 (**COASTAL Act of 2012**) funding has lapsed. This protocol will be kept in case funding is restored.

For all responses not included in the other Annexes, including land-impacting hurricanes, use Annex 1 for the response protocol.

COASTAL ACT INTERAGENCY DATA COLLECTION PROTOCOL

Purpose

This annex supplements the **National Plan for Disaster Impact Assessments: Weather and Water Data (NPDIA)**. The Consumer Option for an Alternative System to Allocate Losses (COASTAL) Act of 2012 (**COASTAL Act of 2012**), signed into law July 6, 2012, but not fully funded; outlines the procedures for capturing storm data. The data is integrated into NOAA's **Coastal Weather and Water Event Database (CWWED)** and used in the **Named Storm Event Model (NSEM)**. These datasets are provided to FEMA, government agencies, insurance adjusters, and the public to help evaluate indeterminate losses and determine insurance coverage responsibilities.

This annex addresses those requirements and will be maintained as part of the National Plan for Disaster Impact and Assessments: Weather and Water Data, the COASTAL Act Capabilities Development Plan (CACDP), NOAA/NWS policy directives and technical references, and other national plan participant agency policy directives addressing COASTAL Act Data collection.

Requirement, Directives, and References

As directed in the Consumer Option for an Alternative System to Allocate Losses (COASTAL) Act of 2012, the Capabilities Development Plan (CACDP) was developed and established by NOAA and its interagency partners in April of 2013. Related legislation, directives, references, and webpages:

Reference NPDIA paragraph 1.2.1: The role each Federal entity assumes during a storm event period is determined by the individual agency's authority and mission requirements. Any response by a Federal entity to an event deemed to be covered by this plan and its annexed Data Collection Protocols shall be at the discretion and within the mission authority and resources of that entity.

Definitions

The following definitions that shall be used exclusively for this protocol:

Airborne sensor: Data collection sensor onboard aircraft.

Affiliate Members: A non-federal entity that directly supports the COASTAL Act data collection effort and has entered a data sharing agreement with the NWS.

Collection Team: The COASTAL Act Data Collection Team described in Phase I, Paragraph 2 of this protocol.

Covered data: Data useful for COASTAL Act purposes, as defined by the COASTAL Act of 2012, Section 12312(a) [126 Stat. 970; to be codified at 33 U.S.C. § 3611].

Data Collection Phase (or Phase I): The period during which NWS formally prepares for the collection of covered data and collects covered data in anticipation of a possible post-storm assessment.

Deployment deadline: The time by which NWS must authorize deployment of a pre-arranged contract with a Collection Team member with mobile sensor capabilities if said mobile sensors are to be deployed at the locations in the expected impact zone desired by NWS. This deadline will vary for each Collection Team member, based on the origin of the mobile sensors and location of the deployment zone. Deployment deadlines are outlined in Section 3.

Member: A federal agency or auxiliary partner that is part of the Collection Team.

Mobile sensor: Non-permanent data collection sensor that can be repositioned before, during or after a storm's landfall. Only those mobile sensors that are being deployed in accordance with a pre-arranged contract with NWS are subject to this protocol.

NWS Assessment Lead: The e NWS manages coordination of post-storm data acquisition, as determined by NWSI 10-16 "POST-STORM DATA ACQUISITION".

Post-storm assessment: Stationary sensor: Non-mobile data collection sensor that is positioned at a fixed location unrelated to a specific storm landfall.

Storm: A tropical cyclone, as defined by NWS Instruction 10-604 under NWSPD 10-6.

Team assets: Stationary sensors, mobile sensors and airborne sensors that are operated by Collection Team members and whose data are available for connection to the CWWED and assimilation into the NSEM.

PHASE I – DATA COLLECTION AND DISSEMINATION

1. Activation Criteria

The NWS collection of storm damage survey information, including the Damage Assessment Toolkit (DAT), is found in Data Collection Phase will be activated by NWS following the criteria and procedures established in the [NWSI 10-1605](#) “Storm Data Preparation” for post-event data collection and criteria.

Pre-activation preparation activities by the Collection Team can occur prior to the activation of this phase².

COASTAL Act Data Collection Team

The Collection Team membership currently includes the following federal agencies and affiliate members:

NOAA/National Weather Service (NWS) – Lead Agency

NOAA/Office of Oceanic and Atmospheric Research (OAR)

NOAA/National Ocean Service (NOS)

NOAA/National Environmental Satellite Data and Information Service (NESDIS)

NOAA/Aircraft Operations Center (AOC)

USGS/Office of Surface Water (OSW)

USGS/Natural Hazards Mission Area (NHMA)

DHS/Federal Emergency Management Agency (FEMA)

DOD/U.S. Army Corps of Engineers (USACE)

DOD/Air Force Reserve Command/53d Weather Reconnaissance Squadron (53d WRS)

DOT/Federal Highway Administration (FHWA)

U.S. Department of Agriculture (USDA)

Office of the Federal Coordinator for Meteorological Services and Supporting Research (ICAMS)

Digital Hurricane Consortium (DHC) – Affiliate Member

- University of Colorado
- Center for Severe Weather Research
- Louisiana State University

- University of Notre Dame
- Oklahoma University
- Texas Tech University
- University of Alabama-Huntsville
- University of Florida
- University of South Alabama

3. Operations and Procedures

3.1 Collection Team Notification and Coordination

a. Notification. To initiate the data collection phase, the NWS Deployment Lead alerts the rest of the Collection Team by the WG/DIAP group email list: diap.alerts@noaa.gov (this email list includes all WG/DIAP members). The initial email should contain: a brief description of the event; the source of the event information; any preliminary data collection plans and timelines; and a date/time for the first response coordination teleconference. Depending on the urgency and lead time, the NWS Deployment Lead may need to follow up with phone calls to key members. The addressee list with contact information is located on the WG/DIAP web site <http://www.ICAMS.gov/wg-diap/index.htm> and is maintained by ICAMS. Email replies may be sent by any member. (**Important Note:** *to reply to all members, the group email address must be added as an addressee*).

b. Coordination Conference Calls. Collection coordination conference calls will be initiated by ICAMS or the NWS Deployment Lead. Conference calls will be convened as needed prior to, during, and after collection activities to discuss and coordinate activities. These may be supplemented by web-based capabilities such as GoToMeeting and Chat services. Conference Calls, GoToMeeting, and Chat services may be initiated by ICAMS or any member having these or similar capabilities. Standard conference call agendas include the following:

- Target deployment zone and timeline for pre-positioning of mobile sensors
- Positioning/tracking of both mobile and stationary sensors
 - o The positioning and tracking of sensors is expected to be accomplished by leveraging existing mapping capabilities available within the WG/DIAP.
- Deployment issues that may arise (e.g. mobile sensor positioning clearance/authorization, transportation, sensor recovery)

3.2 Timeline and Decisions

NWS National Hurricane Center (NHC) produces text and graphical products on whether a tropical cyclone storm could pose a surge and/or wind threat to a U.S. state or territory, using the criteria and processes established in NWSI 10-607. Upon this determination, the activates the Data Collection Phase via a deployment execution notice. ICAMS and the Digital Hurricane Consortium coordinate information related to the deployment of mobile sensors. An NWS-directed deployment of mobile sensors is contingent upon the availability of dedicated funding, which to date has never been allocated through the COASTAL Act, and the ability to contract

with mobile sensor operators prior to their respective deployment deadlines. If funding is not available or deployment deadlines are not met, then NWS will have to rely on mobile sensor data collected at the prerogative of the mobile sensor operators, as well as data collected by stationary and airborne sensors. The execution of this protocol will continue, regardless of whether a NWS-controlled mobile sensor deployment occurs.

The deployment of airborne sensors will be governed by the National Hurricane Operations Plan (NHOP). **Timeline:**

-7 to -5 days prior to forecast onset of damaging wind and water conditions in the expected impact zone

- on the probability of a specific tropical disturbance or tropical cyclone meeting the Data Collection Phase activation criteria set in NWSPD XXXX, and the possible impact zones.
- NWS Deployment Lead and NWS Assessment Lead brief the NCEP Director on the state of COASTAL Act-related assets/resources and the possible need for a post-storm assessment.
- Collection Team members responsible for deploying mobile assets will have begun tropical activity evaluations and pre-planning.
- Collection Team members will notify DIAP Working Group of the equipment type(s), location, and timeline for the deployment.

the following:

- 5 day to -3 days prior to forecast onset of damaging wind and water conditions in the expected impact zone

NWS Deployment Lead sends a diap.alerts@noaa.gov email to alert Collection Team members of a potential storm, announce the date/time of the first conference call, describe possible deployment zones.

First conference call:

- NHC presents a synopsis of pending landfall
- NWS Deployment lead facilitates discussion with Collection Team members to share common situational pictures and discuss deployment plans.

Subsequent conference calls and actions:

- NWS Deployment Lead issues “pending notice” (or “Pre Execution” phase) notice.
- NCEP Director, in consultation with NHC, NWS Deployment Lead, and NWS Assessment Lead determines that an oncoming storm meets the criteria for activating the Data Collection Phase.
- NWS Deployment Lead formally activates the Data Collection Phase.
- NWS Deployment Lead consults NHC on changes to possible impact zones.
- NWS Deployment Lead confirms, by conference call, plans to deploy/preposition mobile sensors.
- NWS Deployment Lead issues deployment execution notice.

Collection Team members confirm their plans with the NWS Deployment Lead and ICAMS.

Members with mobile sensors begin to transport their mobile sensors to expected impact zones.

-3 to -1 day (72-24 hrs.) prior to forecast onset of damaging wind and water conditions in the expected impact zone

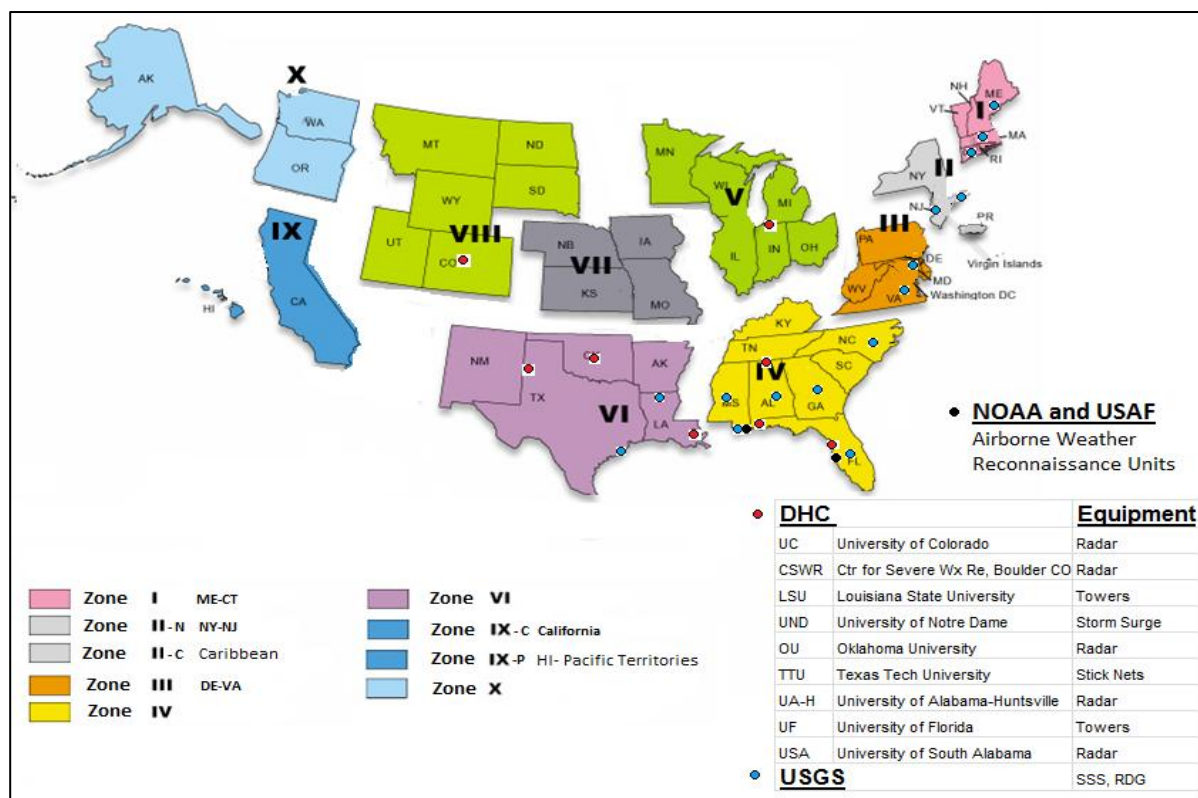
- Mobile sensors deployed by Collection Team members.
- Members confirm deployment and deployment locations.

+ 1 to + 10 days following onset of damaging wind and water conditions in the impact zone

- Mobile sensors retrieved by deployment teams.
- Mobile sensor deployment teams travel back to their respective home bases.
- Data relevant to the storm collected by team assets will be uploaded to members' online databases. Links to the databases will be provided to the NESDIS National Climatic Data Center for connection to the CWWED.

3.3 Mobile and Airborne Sensor Deployment Zones

Deployment Zones are consistent with established FEMA Regions. FEMA Regions V, VII, VIII are included in order to display the origin of mobile sensors.



3.5 Mobile and Airborne Deployment Travel Timelines

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Note: For areas outside CONUS (zone 9-P and 2-C), the existence of and leveraging possibilities of mobile resources at those locations is yet to be determined.

3.6 Data Collection

This section describes currently known, resource dependent, potential surface and airborne covered data sources. Note: Covered data are described and defined in the COASTAL Act Capabilities Development Plan (CACDP) section 4 and appendices C and E.

Mobile Sensors

Observing System	Primary Platform Type	System Description	Variable(s) Collected	Agency/ Entity
Radar	Truck mounted	Portable Doppler	Wind speed, Rain Rate	Digital Hurricane Consortium
Towers	Trailer mounted	Vertical towers with prop and UVW anemometer that are erected on site	Wind speed	Digital Hurricane Consortium
Sticknet	Tripod mounted	Anemometers	Wind speed	Digital Hurricane Consortium
Storm Surge Sensor	Surge Sensors	Near shore wave and surge, some deployed by helicopter into surf zones	Wave and Surge	Digital Hurricane Consortium
Disdrometer	Portable	Images ambient raindrops	Rain rate, droplet size distribution	Digital Hurricane Consortium
Storm Tide Sensors	Pressure sensors	mobile storm-surge network for water-level and barometric-pressure monitoring	Water level, and in some cases wave height	USGS
Streamgage	Streamgage	Rapidly Deployable Gages that provide real time water level data	Water levels	USGS

Airborne Sensors

Observing System	Primary Platform Type	System Description	Variable(s) Collected	Agency/ Entity
GPS Dropwindsonde	Aircraft WP-3D, G-IV or WC-130J	GPS Dropwindsonde	Temp, RH, Pressure, Wind speed/dir	NOAA/AOC USAFR/53d WRS
Radiometer	Aircraft WP-3D or WC-130J	Stepped Frequency Microwave Radiometer (SFMR)	Sfc Wind Speed, rainfall rate	NOAA/AOC USAFR/53d WRS
In-Situ Sensors	Aircraft WP-3D, G-IV, WC-130J	State parameters	Temp, Pres, RH, Wind speed/dir	NOAA/AOC USAFR 53d WRS

Observing System	Primary Platform Type	System Description	Variable(s) Collected	Agency/ Entity
Radar	Aircraft WP-3D, G-IV	Tail Doppler Radar (TDR)	Wind speed/dir	NOAA/AOC
Radar	Aircraft WP-3D	W-band Doppler	Sea spray backscatter, Sfc Winds	NOAA/AOC
Radar Altimeter	Aircraft WP-3D	Wide Swath Radar Altimeter (WSRA), digital beamforming	Wave spectra, Wave heights, Rain rate	NOAA/AOC
Profiler	Aircraft WP-3D	Integrated Wind and Rain Profiler (IWRAP)	Wind speed/dir, Rain rate	NOAA/AOC
AXBT	Aircraft WP-3D, G-IV	Aircraft Expendable BathyThermographs (AXBT)	Sea Sfc Temp/depth	NOAA/AOC
AXCP		Aircraft Expendable Current Probes (AXCP)	Ocean current velocity	
AXCTD		Aircraft Expendable Conductivity Temperature Depth (AXCTD)	Ocean salinity, temp	
Buoys/Floats	WC-130J	Autonomous Drifting Observing System Drifter (ADOS Drifter) Surface Velocity Program Mini Meteorological Drifter (SVP/MINIMET Drifter) Argo Sounding Oceanographic Lagrangian Observer Float (ARGO SOLO Float)	Ocean Data	USAFR/53d WRS
Topographic lidar	Aircraft	Measurements of coastal topography at ~1 meter horizontal resolution	Elevation	NOAA, USGS, DOD, FEMA
Bathymetric lidar	Aircraft	Measurements of pre- and post-event coastal bathymetry at ~5 meter horizontal resolution	Elevation	NOAA, USGS, DOD
High Resolution Imagery	Aircraft and commercial satellite procurement	Aerial photography (= .35cm) for orthoimagery of shoreline/topo; also commercial high res satellite imagery (<= 1 meter)	Elevation	NOAA, USACE, USGS; DOD/NGA
JALBTCX bathymetric and topographic LiDAR	Aircraft	Measurements of seamless nearshore bathymetry and coastal topography at ~1 meter horizontal resolution	Elevation	USACE (lead), NOAA, Navy

3.7 Deployment Funding by Pre-arranged Data Collection Contracts.

Prior to the onset of a storm, NWS may enter into contracts with Collection Team members with mobile sensor capabilities. The terms and limitations of these contracts, and the processes by which these contracts will be crafted and executed, will be governed by NWSPD XXXX.

3.8 Data Management

Each Collection Team member will store and manage covered data it collected. As of this writing, the CWWED will be a federated database system that will respond to individual data requests by dynamically accessing and obtaining requested covered data from the members' online databases, assembling the data, and providing it transparently to the requestor as though the covered data had been extracted directly from a central storage system within the CWWED. The federated database approach avoids allocating the significant resources necessary to redundantly store and maintain vast quantities of covered data and ensure 24-7 synchronization with the original data sets. A visitor to the CWWED website would not discern that the covered data they request are distributed across multiple servers. Data delivery would be initiated by an automated request from the CWWED to a data provider for specific data. Responsibility for maintaining access to the covered datasets by the CWWED, and assuring data quality and integrity, would rest with the member. This would also allow access to real and near-real-time data, if available. If the data that a member collects cannot be accessed by a federated database, that member will submit the data directly to NCDC for direct storage in the CWWED. Information (metadata) describing the covered data and methods of access will be supplied by members to the CWWED, which will develop a covered data index, compile a metadata library, and construct Application Programming Interfaces (APIs) to connect the datasets to the CWWED.

3.9 After-Action Review

Within 120 days following the activation of a Data Collection Phase, the NWS Deployment Lead will hold a teleconference with Collection Team members to evaluate the execution of the protocol and associated policies and discuss whether changes are necessary to enhance future executions. The NWS Assessment Lead will also participate, in order to help ensure this protocol is meeting the needs of the NSEM. Subsequent meetings may be necessary to develop a full evaluation. Within 30 days of this meeting, the NWS Deployment Lead will present a written report on the findings of these discussions and recommended changes to the ICAMS Director, the NOAA Assistant Administrator for Weather Services, the NCEP Director and the Chair of the WG/DIAP.

PHASE II – STORM ASSESSMENTS

The bulk of this protocol pertains mainly to activities conducted during the Data Collection Phase. There will be some data-related activities that require participation by Collection Team members during the Post-storm Assessment Phase. However, most post-storm assessments procedures and rules will be established in NWSPD XXXX.

1. Activation Criteria

The activation of the Data Collection Phase will not indicate that a post-storm assessment will be conducted for every U.S. state/territory impacted by the storm. The Post-storm Assessment Phase will be activated by the NWS Assessment Lead following the criteria and procedures established in NWSPD XXXX.

2. Data Sources

Although this protocol primarily addresses the coordination of mobile sensors, all sources of data listed in the COASTAL Act Capabilities Development Plan (CACDP) will be considered for assimilation into the NSEM by the NWS Assessment Lead. A comprehensive list of covered data sources can be found in the CACDP. The listing of possible covered data sources in coastal areas will be maintained and updated by NOAA and ICAMS.

3. Timeline and Decisions

As noted in Section 1 of Phase II, additional details regarding the Post-Storm Assessment Phase timeline and procedures will be established in NWSPD XXXX and other technical documents maintained by NOAA. The details described below pertain mainly to data collection-related activities that could assist the NWS Assessment Lead.

+ 1 to + 30 days following the onset of 34-knot winds.

- NWS will consult FEMA on the necessity of a post-storm assessment in an impacted U.S. state/territory.
- Upon meeting the activation criteria established in NWSPD XXXX, the NWS Assessment Lead will activate the Post-storm Assessment Phase for a specific state/territory.

+ 1 to + 3 days following an activation of the Post-storm Assessment Phase

- The NWS Assessment Lead will immediately notify NWS Deployment Lead and ICAMS of an activation of the Post-storm Assessment Phase and the target state/territory. The NWS Assessment Lead should take this opportunity to communicate any known concerns or specific requests related to covered data in the said state/territory.
- The NWS Deployment Lead and ICAMS will notify all members of the Collection Team of a pending post-storm assessment and solicit assistance or suggestions for answering the data concerns/requests expressed by the NWS Assessment Lead.

+ 10 to + 30 days following an activation of the Post-storm Assessment Phase

- If necessary, the NWS Assessment Lead will work with Collection Team members on resolving any data-related issues that arise.
- Anticipated NSEM run by NWS Assessment Lead.
- Data available through the CWWED will be considered for assimilation into the NSEM.