

ICAMS

INTERAGENCY COUNCIL FOR ADVANCING METEOROLOGICAL SERVICES

NATIONAL PLAN FOR DISASTER IMPACT ASSESSMENTS: WEATHER AND WATER DATA

Annex 1

FCM-P33-2026



Washington, DC
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Left Image: Lukas Medo, a USGS hydrologic technician, installs a water-level sensor in Levy County, Florida, September 26, ahead of Hurricane Ian's landfall. The sensors being deployed are housed in vented steel pipes a few inches wide and range from about a foot to several feet long. They will be installed on bridges, piers, and other structures that have a good chance of surviving the storm. Photo by Patrick Marasco, USGS.

Right Image: Sentinel sensor in Cedar Key, FL, on 25 Sep 2024 at 1:15 pm Eastern

Part 1: GENERIC DATA COLLECTION PROTOCOL

1.1 Overview

The Generic Data Collection Protocol, is part of the Annex structure of the “National Plan for Disaster Impact Assessments: Weather and Water Data” (NPDIA), and provides is an overarching template and supporting documents for responding to data call environmental events for events with no specific data collection protocols in place. A checklist is provided in [Appendix A](#) with supporting information in [Appendix B](#) (Activation Guidance), [Appendix C](#) (Data Collection Guidance), [Appendix D](#) (Post-Event Resources for the data), and [Appendix E](#) (DATA Collection Resources).

Under this protocol, the ICAMS, through the Working Group on Disaster Impacts and Plans (WG-DIAP), serves as the executive agent to coordinate information related to planned sensor deployment across Federal agencies and affiliates.

The Annexes lie externally to the NPDIA for maximum flexibility. Shifts in response types or the integration of new technologies can be incorporated in an Annex without requiring formal revisions and review processes of the whole NPDIA.

1.1.1 Purpose and Scope.

This guidance outlines a generic protocol to ensure multi-agency/entity responses to events are effective and resource-efficient. Agencies and external entities, such as Universities, often need to collect the same type of data and deploy similar sensors prior to an event. Communication of planned placement of sensors is essential to avoid duplication, unnecessary expenditures on incidents, and ensure the greatest data coverage as quickly as possible. These types of events require efficient execution due to the short time-lines prior to an event.

1.1.2 Operational Coordination.

Response strategies are determined by the specific nature of each event. While individual member agencies maintain their own internal procedures, this protocol provides a framework for coordination. Roles, responsibilities, and specific activities are finalized through various communication channels, such as the Slack channel, email, and coordination calls, if needed

1.1.3 Authority.

Participation in any event response remains at the sole discretion of each agency, consistent with its specific mission, authority, and available resources.

1.2. Activation Criteria

Activation steps are outlined in [Appendix A](#). NWS and partner agency products related to various environmental hazards are identified in [Appendix B](#). The most common activation is for a hurricane with multiple hazards expected to impact land. Short duration timeline weather events, such as heavy rain that could cause flash flooding, may require decisions to place sensors

well in advance of an event with the understanding the potential impact may not occur. For example, heavy rain and high stream/river flows may stress a levee or a dam, but that doesn't mean a break is inevitable. Placing a sensor and/or collecting imagery in advance of an event ensures the most comprehensive data collection.

Some data collection protocols, such as those managed by the NWS, occur after an event has happened. You can find those instructions in [NWSI 10-1604 "Post-Storm Data Acquisition"](#) within the overarching [NWS Directives](#).

1.3 Data Collection and Continuing Coordination/Communication

1.3.1 Implementing and Updating the Event-Specific Data Collection Plan

The lead agency may draft a Data Collection Plan for the event, if needed. This plan would incorporate specifics of the activities of the lead agency and other participants

1.3.2 Data Archiving and Retrieval

The data collected by each participant should be stored and backed up by the agency/organization that collects the data. [Appendix E](#) to this protocol includes agency-specific Internet links to access the collected data or other instructions for how to access the data.

Part 2: Generic Response Protocol

2.1. Initiating a Response

Any member of the WG-DIAP may initiate a response by sending an email to the group. The member list is maintained by the ICAMS, and the most current version can be obtained from the WG-DIAP Co-Chairs and Executive Secretary.

- Email content:
 - A brief description of the event and the source of the event information
 - Planned data collection and timelines for the initiator's agency/organization
 - Proposed date/time for the Initial Response Coordination Teleconference, if needed
- Email distribution:
 - [WG-DIAP group email list](#)
 - WG-DIAP Co-Chairs
 - Executive Secretary and the rest of the working group.

2.2 Response Coordination

- SLACK chatrooms and email are the primary communication methods.
 - Email: A spreadsheet of sensor types and planned deployment locations is emailed to the group.
 - When a SLACK chatroom is activated, that link will be included in the spreadsheet.
 - SLACK: The SLACK event chatroom is generated by the DHC and is shared via the #general chatroom in the Design Safe Slack chat.
- Accessing the Design Safe Slack chatrooms
 - Who can add people to the Design Safe Slack chats?
 - Anyone who currently has access, including WG-DIAP Leadership.
 - Process to add people:
 - Click on the drop-down menu connected with the DesignSafe-CI name in the top left corner of the page to the right of the Home icon.
 - Select "Invite people to DesignSafe-CI"
 - Type in the email of the member you wish to add
 - Add the following minimum team channels:
 - #general
 - #announce_emails
 - #designsafe-operations
 - Click "Send Request" and a notification will be sent to the DesignSafe-CI Admin who will approve the request.

2.3 Response Protocol

2.3.1. Response Timeline - BEFORE AN EVENT

- 5 to 7 days ahead of an expected/forecasted event
 - Collection Team members responsible for deploying mobile assets will have begun tropical activity evaluations and pre-planning.
 - A DesignSafe event Slack channel may be created
 - Notifications of planned equipment deployments may begin via Slack and/or the DIAP Working Group via the email list.
- 3 to 5 days ahead of an expected/forecasted event
 - NWS Deployment Lead sends an [email](#) to alert Collection Team members of a potential storm, announce the date/time of the first conference call, describe possible deployment zones.
- 1 to 3 days ahead of an expected/forecasted event
 - Mobile sensors deployed by Collection Team members.
 - Members confirm deployment and deployment locations.

2.4: Response Protocol

2.4.1 Response Timeline - AFTER AN EVENT

- + 1 to + 10 days following an event
 - 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 found in [Appendix D](#)
- + 10 to + 30 days following an event
 - NWS may run the Nationwide Seamless Digital Elevation Model (NSEM)

Appendix A: WG/DIAP Response Procedures/Checklist

Event: _____ Date : _____

Initiator Name/Office: _____

Event Location: _____

Send initial email inquiry to WG/DIAP Response Team: diap.alerts@noaa.gov

- Please reply to this email to share your response plans for {environmental event}
_____ (yes, standby, no).

_____ Monitor DesignSafe-CI #general chatroom for the creation of a new event chatroom

_____ **Initiate Response Matrix** – annotate response details from participants as they come in

_____ Monitor diap.alert emails and SLACK

_____ **Data Collection Matrix** – annotate data archive location and retrieval instructions

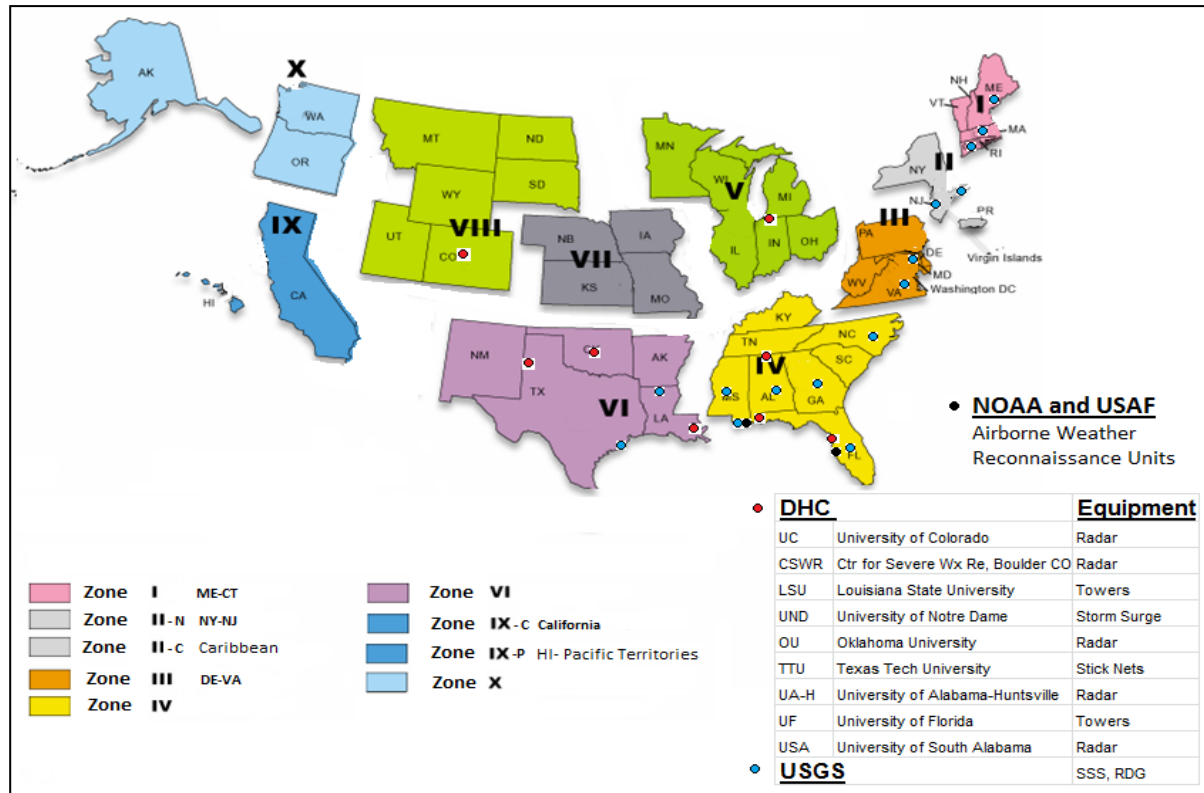
Appendix B: Potential Activation Criteria for Various Environmental Events

This table outlines matches Environmental Events with an NPDIA Annex or other data sources

Event Category	Annex	Office	Potential Activation Criteria
Tropical Weather	Annex 1	NHC	Hurricane or Tropical Storm Watch/Warning; and Particularly Dangerous Situation statements/products.
		NHC	Storm Surge Watch/Warning/Advisories; and Particularly Dangerous Situation statements/products.
		WFO	Hurricane Statements
		WPC	Outlook with a High Risk for Excessive Rain
Severe Weather	Annex 1	SPC	Moderate or High risk for severe weather, including potential for strong/long-track tornadoes and/or straight-line winds/derechos.
		NWS	Post-severe weather surveys determined by NWS Directives.
Coastal Storm	Annex 1	WFO	Coastal Flood, High Wind, Flood, or Flash Flood Watch/Warning
Flooding	Annex 1	WPC	High Risk for Excessive Rain
		NWC	Potential for catastrophic riverine flooding.
		WFO	Flood Watches/Warnings and Hydrologic Outlooks
		APRFC	River Watch program activation in Alaska
High Waves	Annex 1	WFO	Marine Products: Storm Watch/Warning.
Winter Storm	Annex 1	WPC	Outlook Product with High Risk for Heavy Snow; Winter Weather Severity Index of Major or Extreme
		WFO	Winter Storm, Lake Effect Snow, Blizzard, or Ice Storm Watch/Warning
		FEMA	Snow loading risks per FEMA Snow Load Safety Guidance.
Tsunami	Annex 4	NTWC	Completion planned in FY26/27
Glacier-dammed Lake	Annex 5	APRFC	
Riverine Ice Dams	Annex 1		• See "Flooding" criteria.
Dam or Levee Failure	Annex 1		• See "Flooding" criteria.

Appendix C: 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.



Appendix D: Data Acquisition Activities by Event Category

Data Acquisition Activity	Tropical Cyclone or Coastal Storm	Severe Weather	Flooding	High waves, coastal/lake	Glacial lake dam/river ice dam	Dam/levee failure	Other weather/water event
All Agencies							
For Federal, State, local, and tribal situational awareness, identify your personnel working in the field.	X	X	X	X	X	X	X
Store all information about each event (see Section 3.3.3, Data Repository/Retrieval).	X	X	X	X	X	X	X
Department of Homeland Security							
Coordinate with participating agencies for potential data collection locations.	X	X	X	X	X	X	X
Real-Time Collectors. Collect and provide real-time wind speed, wind direction, temperature, humidity, and barometric pressure data from multiple monitoring assets to the NWS and to the Hurricane Research Division of NOAA/OAR.	X	X	-	X	-	-	X

Data Acquisition Activity	Tropical Cyclone or Coastal Storm	Severe Weather	Flooding	High waves, coastal/lake	Glacial lake dam/ river ice dam	Dam/levee failure	Other weather/ water event
Non-Real-Time Collectors. Collect other non-real-time assets after it is safe to enter the collections areas and disseminate the data.	X	X	X	X	X	X	X
NOAA/National Weather Service							
Assemble and analyze damage survey findings, satellite and radar imagery, videotapes, and other information while determining the structure and organization of the event.	X	X	X	X	X	X	X
Perform post-event surveys documenting extreme conditions that led to flooding (e.g., precipitation and stream flow).	X	-	X	-	X	X	X
Perform post-event surveys documenting maximum inundation and societal impacts (e.g., document effectiveness of the warning system and mitigation measures).	X	-	X	-	X	X	X

Data Acquisition Activity	Tropical Cyclone or Coastal Storm	Severe Weather	Flooding	High waves, coastal/lake	Glacial lake dam/river ice dam	Dam/levee failure	Other weather/water event
Coordinate potential flooding areas with FEMA, USACE, and USGS.	X	-	X	X	X	X	X
NOAA/National Ocean Service							
Collect and provide real-time water level and meteorological data from coastal tide gauges to NWS and via the web.	X	-	-	X	-	-	-
USDA/Natural Resource Conservation Service							
Provide available precipitation, soil erosion, and agricultural damage data.	X	X	X	-	-	-	X
American Association for Wind Engineering							
Coordinate with Federal agencies to provide post-storm damage assessments as needed.	X	X	-	-	-	-	X
Multi-Agency Data Collection Actions							

Data Acquisition Activity	Tropical Cyclone or Coastal Storm	Severe Weather	Flooding	High waves, coastal/lake	Glacial lake dam/river ice dam	Dam/levee failure	Other weather/water event
USGS, USACE, AAWE, NIST, DHC. Collect hydrodynamic and structural effects data and available hydrographs acquired at open ocean/lake and affected coastal locations. Estimates of net sub-sea bottom changes due to the event are desirable.	X	-	-	X	-	-	-
USGS, FEMA, NWS, NIST. Form agency high-water mark collections teams and coordinate collections between agencies.	X	-	X	X	X	X	X
NIST, NOAA. For events involving high winds, provide field teams to assess the event-induced structural damage. Where possible, prepare charts depicting estimates of surface wind speeds inferred from structural effects.	X	X	-	-	-	-	X
USGS, USACE. Take discharge and current velocity measurements.	-	-	X	-	X	X	-

Appendix E: DATA Collection Resources

Status	Agency / Org	Department / Sub-Entity	Data Description / Access Info
Active	USDA	Natural Resource Conservation Service (NRCS)	NRCS National Water and Climate Center
Active	DOC (NOAA)	NWS / NCEI	Severe storm events database
Active	DOC (NOAA)	National Geodetic Survey (NGS)	Imagery data (JPEG format)
Active	DOC	NIST (Building and Fire Research Lab)	Infrastructure reconnaissance reports
Active	DOD	U.S. Army Corps of Engineers (USACE)	NCMP lidar data via OCM Digital Coast
Active	DOI (USGS)	Streamflow Monitoring	Real-time water-level and flow data
Active	DOI (USGS)	WaterWatch	Interactive flood and drought maps
Active	DOI (USGS)	Flood Measurements	Summaries of width, depth, and velocities
Active	DOI (USGS)	Flood Forensics	Indirect flow measurements (Non-published)
Active	DOI (USGS)	Storm-Tide/Rapid-Deploy Gages	Real-time surge data (State-specific URLs)
Active	AAWE	American Assoc. for Wind Engineering	Storm event data collection