

## **OPERATIONS AND PROCEDURES**

### **2.1 General**

An agency response to an event deemed to be under this plan shall be at the discretion and within the mission authority and resources of that agency. The OFCM serves as the executive agent to coordinate multiple agency responses. The agencies participating in this effort typically have overlapping requirements for the event responses and data types. Agencies often acquire the same data type following an event but may use the data for substantially different purposes. For example, inundation data following a coastal storm may be used by one agency for flood hazard risk assessment purposes while another agency may use the same data for structural performance evaluation purposes. There may be events where some agencies have little or no interest and no mission authority. An example would be a severe tornado outbreak. Unless the event directly affected a DOD installation, the DOD probably would have no justification for a response within the scope of this plan.

### **2.2 Intent**

The plan of operations described herein is formulated to ensure that agency responses to mutually examined events are adequate, while minimizing the expenditure of resources on events of interest to a single agency or events of no common interest. Moreover, the plan has been organized to allow for changes in the scope of responses to particular types of events and for adoption or implementation of emerging technology, without requiring a revision of the entire plan.

### **2.3 Activation Criteria**

Activation criteria for initiating agency responses to a particular event depend upon the event. Events for which there is typically adequate warning such as land-falling storms and inland floods permit evaluation of the situation as it develops. For other events, such as tsunamis and tornadoes, there may be little or no warning and little time to assess the initial effects of the event. A timely response therefore requires that activation criteria be based upon the presumption of occurrence of a significant event. Table 2.1 shows most of the common activation criteria that would initiate a team or individual-agency effort. Links to the Saffir-Simpson and Enhanced Fujita (EF) scales are as follows:

- Saffir-Simpson Hurricane Wind Scale: <http://www.nhc.noaa.gov/aboutsshws.shtml>
- Enhanced Fujita Tornado Intensity Scale: <http://www.spc.noaa.gov/efscale/ef-scale.html>

<b>Table 2.1 Event Activation Criteria</b>
5-Day tropical forecast indicates land-falling hurricane
NWS Deployment of a Quick Response Team (QRT) (see section 2.4.3 and appendix D)
An unusually high surge (in an historical context) at a particular coastal location
An unusually prolonged period (e.g., several days) of elevated coastal water levels
An extended reach (hundreds of miles) of affected coastline
Prolonged and/or unusually high surface wind speeds
Unusually long (> 16s) wind-generated wave periods along the Atlantic and Gulf of Mexico coasts
Precipitation rates resulting in total rainfall that could cause potential flooding or flash-flooding
Freezing and/or precipitation to the extent that accumulation of snow/ice on roadways, railways, airports, or walkways is expected to cause such modes of transportation to become inoperative
Accumulation of snow/ice on the built environment is expected to become a hazard due to structural failure
Severe convective wind damage
Tornado outbreak
Tsunami reported
Tsunami warning issued based on seismic data of sub-sea earthquake
Ice jamming
Dam or levee failure or potential failure
Flash floods

## 2.4 Collaboration and Communications

### 2.4.1 Disaster Event Notification and Response Coordination Procedures

**2.4.1.a Notification.** The first member to recognize or foresee a significant event and identify the need for a coordinated disaster impact assessment should alert the rest of the team. The alert notification mechanism for all event types is by group email: [diap.alerts@noaa.gov](mailto:diap.alerts@noaa.gov). The initial alert email may be sent by any member. The group email account includes all WG/DIAP members and will automatically disseminate the alert email to them. The initial email should contain a brief description of the event, the source of the event information, any planned data collection and timelines, and a proposed date/time for the first response coordination teleconference. Depending on the urgency and lead time, the initiator may need to follow up with phone calls to key team members. The member list with contact information is located on the WG/DIAP web site <http://www.ofcm.gov/wg-diap/index.htm> and is maintained by OFCM. Follow-up email replies may be sent by any member. *(Note: to reply to all members when replying to group emails, the group email address must be added as an addressee).*

**2.4.1.b Response Coordination Teleconferences.** Response coordination teleconferences will be initiated by OFCM or any lead agency. They will be convened as needed prior to, during, and after response activities to discuss and coordinate response activities. These may be supplemented by web-based capabilities such as GoToMeeting and Chat services. Teleconference, GoToMeeting, and Chat services may be initiated by OFCM or any member agency having these or similar capabilities.

**2.4.1.c AAWE Unique Procedures for Tornado Response.** For tornadoes suspected by the National Weather Service (NWS) of producing greater than EF3 damage, a Quick Response Team (QRT) may be dispatched by the NWS. NWS Headquarters, Office of Climate, Water, and Weather Services (OCWWS), will notify OFCM of the QRT deployment. OFCM will then alert AAWE and all appropriate members of the WG/DIAP about the deployment and initiate coordination between AAWE and the NWS for collaborative disaster impact assessment actions.

**2.4.2 Response Procedures**

Coordination of agency responses to an event is desired when there are common activities in a common geographic area and common or overlapping data requirements. The specific agency actions in response to an event will depend to some extent on the nature and characteristics of the event. Table 2.2 lists some of the basic response procedures leading up to, during, and after an event. The choice of responses will vary from event to event.

<b>Table 2.2 Response Procedures</b>	<b>Tropical</b>	<b>Extra-tropical</b>	<b>Severe convective</b>	<b>Tsunamis</b>	<b>Riverine flooding</b>
<b>Event – 5 Days</b>					
<b>USGS:</b> Run Hurricane Response Plan (see appendix E)	X				
<b>Event – 3 Days</b>					
<b>NOAA National Geodetic Survey:</b> Consider/coordinate pre-storm baseline flights leading up to event. (See NOAA/NGS internal plans at appendix D.)	X				X
<b>DHC:</b> Coordinate sensor placement with other team members.	X				
<b>USGS, USACE, FEMA, NOAA:</b> Formulate coordinated effort for high-water mark sensor placement plan	X	X			X
<b>NOAA CSC:</b> Provide mapping support where needed to FEMA for decision briefings using NWS data in GIS formats. Have been based on mission assignments in the past. Tutorial could be used to train FEMA and NOAA staff: <a href="http://www.csc.noaa.gov/storm_info/tutorial.html">http://www.csc.noaa.gov/storm_info/tutorial.html</a>	X				X
<b>NIST, NOAA, AAWE, and DHC:</b> Begin plan for pre-event sensor placement and post-event assessment of structural damage.	X	X			X
<b>Event + 0 Days</b>					
<b>All Agencies:</b> Secure lodging near enough to affected area to deploy quickly but far enough away to be safe.	X	X	X	X	X
<b>NOAA National Geodetic Survey:</b> Plan post-storm data collection flights after event. (See NOAA/NGS internal plans at appendix D.)	X	X	X	X	X
<b>Event + 1 Day</b>					
<b>All Agencies (usually NWS Regional Offices):</b> Request CAP post-event over flight to capture photographs of damage, flooding extent, dam/levee condition etc.	X	X	X	X	X
<b>NWS:</b> If tornado is estimated at EF-3 or stronger, a Quick Response Team may be deployed. (See section 2.4.3 and NOAA internal plans at appendix D.)			X		

<b>Table 2.2 Response Procedures</b>	<b>Tropical</b>	<b>Extra-tropical</b>	<b>Severe convective</b>	<b>Tsunamis</b>	<b>Riverine flooding</b>
<b>USDA:</b> Provide data on precipitation effects.	X	X	X		X
<b>NIST, NOAA, AAWE, and DHC:</b> Coordinate field evaluation of structural performance if event warrants.	X	X	X	X	X
<b>NWS:</b> Consider deploying Survey Teams and notify other members.				X	X
<b>NWS:</b> Consider deploying Quick Response Team and notify other members.	X	X	X	X	X
<b>NOAA Office of Coast Survey:</b> Consider post-storm hydrographic surveys (as needed to clear waterways and re-open ports) and notify other members	X				
<b>USACE, USGS, FEMA, and NWS:</b> Collaborate on high-priority sites for flood data collection.					X
<b>USGS, USACE:</b> For riverine flooding, coordinate collection of hydrologic data and discharge rates.					X
<b>Event + 3 Days</b>					
<b>USGS, USACE, and FEMA:</b> Deploy teams to collect high-water marks no later than event + 72 hours if possible.	X				X

### 2.4.3 NWS Quick Response Team

For tornadoes suspected of producing greater than EF3 damage, a special Quick Response Team (QRT) may be dispatched by the NWS. NWS policy for disaster impact assessments, including QRTs, is located at: <http://www.nws.noaa.gov/directives/sym/pd01016004curr.pdf>. The NWS QRT enlists experienced wind damage expert(s) to determine the final EF scale rating for these events. These experts include but are not limited to members of the AAWE, other NWS personnel, members of the academic community, and other private sector wind damage experts. They possess expertise in the areas of wind and associated wind-driven water loads on buildings and structures; societal impacts of winds, hurricanes and tornadoes; risk assessment; cost-benefit analysis; codes and standards; dispersion of urban and industrial pollution; wind energy; urban aerodynamics; etc.

#### 2.4.4. Civil Air Patrol Aerial Survey Support Requests

To request CAP missions to assess storm damage events, the requester (e.g., a NWS regional headquarters or WFO) fills out a request form, which is available online at: <https://ocwww.weather.gov/intranet/psda/psda.php>. This site is maintained by NOAA/NWS, Chris Maier, 301-713-0090 x 175, NWS/CAP point of contact. During OFCM office hours, the requester sends the request to the OFCM CAP group email address: [nws.ofcm.cap@noaa.gov](mailto:nws.ofcm.cap@noaa.gov) (shown on the request form in Appendix F). This group email list includes the primary OFCM mission approval point of contact (WG/DIAP Executive Secretary)

## 2.5 Data Acquisition Procedures

Because all events covered in this plan share some common characteristics, the data acquisition procedures share some similarities. Table 2.3 provides general guidance on procedures, type, and quantity of data. Appendix E contains an example of detailed procedures to be used for high-water mark identification and recovery used by USGS.

<b>Table 2.3 Data Acquisition Procedures</b>	<b>Tropical</b>	<b>Extra-tropical</b>	<b>Severe convective</b>	<b>Tsunamis</b>	<b>Riverine flooding</b>
<b>ALL Agencies:</b> For Federal, State, local, and tribal situational awareness, identify your personnel working in the field.	X	X	X	X	X
<b>DHC:</b> Coordinate with participating agencies for potential data collections locations.	X				
<b>DHC:</b> (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.					
<b>NOAA NOS:</b> Collect and provide real-time water level and meteorological data from coastal tide gauges to NWS and via the web.	X	X	X	X	
<b>DHC:</b> (Non-Real-Time Collectors) Collect other non-real-time assets after it is safe to enter the collections areas and disseminate the data.	X				
<b>USGS, USACE, AAWE, NIST, DHC :</b> Collect hydrodynamic and structural effects data and available hydrographs acquired at open ocean and affected coastal locations. Estimates of the net sub-sea bottom displacement are desirable.	X			X	X
<b>AAWE:</b> Coordinate with federal agencies to provide post-storm damage assessments as needed.	X	X	X	X	X
<b>USGS, FEMA, NWS, and NIST:</b> Form agency high-water mark collections teams and coordinate collections between agencies.	X	X	X	X	X
<b>USDA:</b> Provide available precipitation, soil erosion, and agricultural damage data.	X			X	X
<b>NIST, NOAA:</b> Provide field teams to assess the storm-induced structural damage. Where possible, prepare charts depicting estimates of the surface wind speeds inferred from structural effects.	X	X	X	X	X
<b>NWS:</b> Assemble and analyze damage survey findings, satellite and radar imagery, videotapes, and other information while determining the structure and organization of the tornadic storm(s).			X		
<b>NWS:</b> Perform post-event surveys documenting maximum inundation and societal impacts (effectiveness of the warning system and mitigation measures).				X	
<b>NWS:</b> Coordinate potential flooding areas with FEMA, USACE, and USGS.					X
<b>NWS:</b> Perform post-storm surveys documenting extreme conditions that led to flooding (precipitation and stream flow).					X

<b>Table 2.3 Data Acquisition Procedures</b>	<b>Tropical</b>	<b>Extra-tropical</b>	<b>Severe convective</b>	<b>Tsunamis</b>	<b>Riverine flooding</b>
<b>USGS, USACE:</b> Take discharge and current velocity measurements.					X
<b>All Agencies:</b> Store all information about each event.	X	X	X	X	X
<b>OFCM:</b> After most event actions and data collections are complete, build an event summary in accordance with guidance in chapter 4.	X	X	X	X	X

## 2.6 Data Repository and Retrieval

The data collected by each agency should be stored and backed up by the agency that collects the data. Appendix I includes agency-specific Internet links to access the collected data or other instructions for how to access the data. Additional data access information will be maintained on the WG/DIAP web site: <http://www.ofcm.gov/wg-diap/index.htm>. Metadata, information from each agency about the data types they collect, a description of the data quality for each data type, and pointers to the location of storage for the data should also be included. For all designated storm events, descriptions of current and ongoing response efforts (but not the actual data) will be stored for reference. After sufficient collection efforts have been completed for a given event, OFCM will collect all descriptive event files and consolidate them into an event summary (see chapter 4).

## 2.7 Funding

**2.7.a Funding prior to a Federal Disaster Declaration.** Leading up to an event, and before the President has declared the area a Federal disaster, funding for disaster impact assessment activities will be more difficult to obtain. FEMA uses a document called a Pre-Scripted Mission Assignment (PSMA), which allows funding for actions before declaration of disaster. During national emergencies, FEMA Federal Coordinating Officers (FCOs) must make a large number of important operations decisions in a short time under stressful conditions. The PSMA's aid the FCO by providing a prepackaged set of actions that can be executed easily and quickly. PSMA's must be validated at FEMA long before a disaster strikes to simplify the tasking and funding process. By instruction, only those actions that prevent loss of life or property can be funded by a PSMA. PSMA's may be a potential funding source for disaster impact assessment data collection activities. Appendix G includes an example of a PSMA form, as well as a NPDIA statement of work.

**2.7.b Funding after a Federal Disaster Declaration.** After the President declares an event location a Federal disaster area, FEMA can more readily release funding using Inter-Agency Agreements (IAAs). IAAs are contract agreements between two Federal agencies to exchange fees for a service. All participating agencies should consider building IAAs with DHS/FEMA to help facilitate funding. IAAs should be drafted, approved, and signed long before any disaster event requiring them.

**2.7.c Agency Funding.** For many smaller disaster events, it will be up to individual agencies to fund their disaster impact assessment activities. For example, the NWS funds the QRT in response to a tornado event. For some unusual riverine events, USGS will fund special sensing missions. For some agencies, such as NOAA, the funding for any operation must be available at the agency before work begins. This is true even if it is fairly certain that the operation will be funded at a later date from outside the agency.

**2.7.d Civil Air Patrol Aerial Survey Support Funding.** A five-year umbrella agreement among NWS, OFCM, and USAF is the funding vehicle for CAP missions to assess storm damage events for NWS units. (Limited funding may also be made available for other WG/DIAP participants.) Annual agreements under the five-year umbrella agreement provide funding for each fiscal year through OFCM.

