

NATIONAL WEATHER SERVICE INSTRUCTION 10-602

AUGUST 25, 2017

Operations and Services

Tropical Cyclone Weather Services Program, NWSPD 10-6

TROPICAL CYCLONE COORDINATION AND EMERGENCY OPERATIONS

NOTICE: This publication is available at: <http://www.nws.noaa.gov/directives/>.

OPR: W/AFS26 (J. Schauer)

Certified by: W/AFS26 (A. Allen)

Type of Issuance: Routine

SUMMARY OF REVISIONS: This directive supersedes NWS Instruction 10-602, *Tropical Cyclone Coordination and Emergency Operations*, dated November 21, 2016. Changes include:

Major Revisions:

- Addition of coordination procedures for tropical cyclones that move into inland portions of the NWS Western Region from the eastern North Pacific basin. These updated procedures replace the instructions in the Western Region Supplement (WRS) 02-2009, Tropical Cyclone Operations Coordination which will be rescinded at the posting of this instruction update.
- Updates to the coordination procedures for eastern North Pacific tropical cyclones that necessitate coastal watches and warnings in the NWS Western Region. These updated procedures replace the instructions in the Western Region Supplement (WRS) 02-2009, Tropical Cyclone Operations Coordination which will be rescinded at the posting of this instruction update.
- Addition of the capability of issuing tropical cyclone watches/warnings for wind and/or storm surge conditions prior to the formation of a tropical cyclone.
- Inclusion of the Climate Prediction Center (CPC) as an invited contributor to the medium-range cyclone coordination calls.
- Removal of the mention of the National Environmental, Satellite, and Data Information Service (NESDIS) Satellite Analysis Branch (SAB) satellite rainfall estimates. NESDIS SAB no longer performs this function.
- Replacement of the mentions of the Geophysical Fluid Dynamics (GFDL) model with the Hurricanes in a Multi-scale Ocean-coupled Non-hydrostatic (HMON) model.

Minor Revisions:

- Replacement of the references to “handsets” used for the Hurricane Coordination Hotline (HCH) with “equipment” to account for the next generation HCH hardware setup.
- Specifying that the Tropical Analysis and Forecast Branch (TAFB) will supply the Ocean Prediction Center (OPC) with tropical cyclone positions via the AWIPS Collaborate tool.

Signed

8/11/2017

Andrew D. Stern

Date

Director

Analyze, Forecast and Support Office

Tropical Cyclone Coordination and Emergency Operation

<u>Table of Contents</u>	<u>Page</u>
1 Coordination	2
1.1 Tropical Cyclone Forecasts and Advisories	4
1.2 Other Advisories	5
1.3 Flooding	5
1.4 Tornadoes.....	5
1.5 Military Services.....	6
1.6 Requesting GFDL / HWRF Model Guidance.....	6
2 Transfer of Responsibility for Issuing Advisories	6
3 Emergency Operating Instructions	7
3.1 Exercises	7
3.2 Emergency Action When Warning Not Received or Considered Inadequate	8

1 Coordination

For the purposes of this directive, all references to tropical cyclones are inclusive of potential tropical cyclones, post-tropical cyclones, and subtropical cyclones.

Atlantic basin: The National Oceanic and Atmospheric Administration (NOAA) Hurricane Coordination Hotline (HCH) telephone and the electronic worksheet are the primary means of coordination for tropical cyclones by the National Hurricane Center (NHC). NHC conducts meteorological and operational watch / warning decisions during tropical cyclone situations on the HCH with coastal (Atlantic and Gulf of Mexico) Weather Forecast Offices (WFOs) and other national centers (Storm Prediction Center [SPC], Weather Prediction Center [WPC], and the Ocean Prediction Center [OPC]). HCH calls will be initiated and conducted by the NHC at 0200, 0800, 1400, 2000 Coordinated Universal Time (UTC) for the 0300, 0900, 1500, and 2100 UTC advisories, respectively, on tropical cyclones with analysis or forecast points located within an area south of 20°N and west of 60°W, or anywhere west of 70°W. HCH calls are also conducted before the first advisory of all tropical cyclones, before the issuance of special advisories, or upon request. In addition, NHC and WPC conduct a medium-range tropical cyclone coordination call at 1700 UTC. The Climate Prediction Center (CPC) is also invited to regularly participate in the medium-range cyclone coordination call. Any HCH participant can initiate calls at any time.

An electronic worksheet, providing draft forecast positions, intensity, and wind radii will normally be available to conference call participants for all tropical cyclones by one hour before the regularly scheduled advisory issuance time. A coordination call is required if the advisory

information is not available on the electronic worksheet for any tropical cyclone by the deadline noted above.

The Analyze, Forecast and Support Office, Marine, Tropical and Tsunami Services Branch (AFS26) is responsible for assessing all requests for offices / other agencies to be added to the HCH. Requests for access are evaluated against the following criteria:

- (1) An office or federal agency actively coordinating in the preparations of NHC advisory products, or
- (2) An office or federal agency requiring access to pre-decisional advisory information in order to issue their own hurricane-related official products in a timely manner.

The Office of Dissemination provides configuration management and control for the HCH network and associated equipment.

There is a requirement that any addition of NOAA or non-NOAA offices to the existing HCH network must be accompanied by a written agreement for the office to pay for the installation of the HCH circuit, the HCH equipment, and all ongoing operations and maintenance for the service.

Since forecast positions, intensity, wind radii, forecast reasoning, watches and warnings, etc., are discussed approximately one hour before official products are issued, no outside users or the public are permitted to listen to the call or access the electronic worksheet. National Weather Service (NWS) staff members will not provide tropical cyclone related information discussed or coordinated via the HCH or electronic worksheet to any user or the public prior to the official release of this information by NHC. This provides for the issuance of information to all users at the same time on an equal basis. State and local emergency management officials can be briefed prior to the release of the official products regarding watches and warnings so these officials will be prepared to answer inquiries when the package is officially issued.

Eastern North Pacific basin: Telephone and the electronic worksheets are the primary means of coordination. The electronic worksheet will normally be available one hour before the regularly scheduled issuance time for all tropical cyclones.

Coastal Tropical Cyclone Coordination: NHC will coordinate with Western Region (WR) WFOs, River Forecast Centers (RFCs), OPC, WPC, SPC, and the WR Regional Operations Center (ROC) when any 0-72 hour tropical cyclone forecast point falls within Western Region land or marine boundaries or OPC offshore waters boundaries. NHC will notify the WR ROC (or WFO Tucson as a backup) of the initial need for a conference call, and the WR ROC will notify the remainder of the WR WFOs and RFCs that are to be included on the call. NHC will notify WPC, OPC, and SPC of the need for an initial call. NHC will log onto these calls as the leader. Conference calls will be conducted by conventional telephone and will normally occur at 0200, 0800, 1400, and 2000 UTC, which is one hour prior to the scheduled release of the advisory package. The call times may be adjusted if there are active tropical cyclones in the Atlantic

basin. NHC will provide expertise regarding the tropical cyclone's movement, intensity, and expected winds. RFCs and WPC will be prepared to discuss expected precipitation amounts and potential for flash flooding. SPC will be prepared to discuss potential for severe weather.

Inland-only Tropical Cyclone Coordination: It is possible for a tropical cyclone to affect certain inland WR land areas *without* affecting WR coastal land zones or marine areas (e.g., a system moving across Mexico from the Gulf of California). For these scenarios, the following procedures will apply. NHC will contact the WR ROC (or WFO Tucson as a backup) and coordinate on the need for an initial conference call when any 0-72 hour tropical cyclone forecast point falls within Western Region land boundaries. This call will normally occur at approximately 2000 UTC, but it can be adjusted by mutual agreement if needed. Conventional conference call methods will be used. WR ROC will notify affected WFOs and RFCs of the conference call information, and NHC will notify WPC and SPC. NHC will log onto these calls as the leader. Calls will normally be limited to one per day, with an option for a second call, if needed. Normally this will be decided during the previous call, but may also be requested by WR WFO(s) or the WR ROC. If a second call is conducted, it will normally occur at approximately 0200 UTC. Daily calls will continue as long as an active tropical cyclone continues (analyzed or forecast) in any WR WFO's area(s) of responsibility. NHC will provide expertise regarding the tropical cyclone's movement, intensity, and expected winds. RFCs and WPC will be prepared to discuss expected precipitation amounts and potential for flash flooding. SPC will be prepared to discuss potential for severe weather. If the WR ROC or WFOs feel a need to coordinate with NHC prior to the period when a 0-72 hour forecast point lies in WR, they will call NHC.

1.1 Tropical Cyclone Forecasts and Advisories

1.1.1 Atlantic and U.S. Mainland West Coast. NHC will discuss forecast issues on the HCH call prior to the issuance of each advisory. OPC will provide NHC their estimates for the time of extratropical transition, intensity, and wind radii for the anticipated extratropical portion of the track for storms initially north of 25°N.

WPC and NHC will conduct discussions each day at 1700 UTC (1300 Eastern Daylight Time and 1200 Eastern Standard Time) to coordinate tropical cyclone positions for days 6 and 7 and positions of disturbances that have a high potential of becoming a tropical cyclone during the 3 to 7 day time period.

The Tropical Analysis and Forecast Branch (TAFB) will provide OPC with positions of tropical cyclones in the north central, northwest and south Pacific for the area covered by the unified surface analysis via the AWIPS Collaborate tool.

WPC and OPC will place on their prognostic surface charts NHC's and CPHC's tropical cyclone forecast position out to 120 hours. Unnamed systems forecast to attain tropical storm or hurricane / typhoon strength during the forecast period will have their prognostic positions labeled as a tropical cyclone. All NWS offices that issue day 3 through 7 prognostic charts will

use the appropriate tropical cyclone symbols on charts through the end of the tropical cyclone advisory forecast period on day 5 and depict the cyclone as a low using the symbol “L” for days 6 through 7.

NHC, WPC, and WFOs will coordinate the issuance and discontinuance of watches and warnings, storm surge, and other storm parameters. NHC will include WPC’s Senior Branch Forecaster in coordination calls whenever NHC plans to include quantitative precipitation forecast amounts (with the issuance of a warning, usually 36-hour forecasts or less) for the United States mainland in tropical cyclone advisories. NHC will make final coordination calls one hour before advisory time. NHC will involve all affected regional offices, WFOs, and marine offshore and high seas forecast offices (OPC, Tropical Analysis Forecast Branch [TAFB]) in the coordination call with WPC. NHC will make every effort to coordinate with these offices prior to the conference call, resources permitting, if issuing or canceling watches or warnings.

1.1.2 Central Pacific Coordination. NHC and CPHC will coordinate whenever a tropical cyclone is between 137°W and 140°W. In addition, NHC will coordinate with CPHC prior to issuing a forecast / advisory when a system to the east of 140°W is expected to influence / affect Hawaii within the 5 day (120 hour) forecast period. In the event of a disagreement, the Center issuing the next advisory will make the final decision.

1.2 Other Advisories. NHC and WPC will coordinate, no later than 90 minutes before NHC’s final advisory is issued, on the downgrade of a potential tropical cyclone, a tropical cyclone, or a subtropical cyclone centered over land. WPC will also coordinate with NHC if there is a reasonable possibility advisories may again be needed. WPC will coordinate with appropriate RFCs and critical flood support office(s) regarding inland flooding threats.

1.3 Flooding. Tropical Cyclone Centers (NHC and CPHC) will discuss rainfall information on their regular coordination calls and include rainfall information in their advisories. RFCs and local NWS forecast offices will provide input to their tropical cyclone center regarding flood potential. National Precipitation Prediction Unit (NPPU) products will be consistent with advisory issuing offices.

1.4 Tornadoes. The SPC will, for continental U.S. (CONUS) areas, be the single coordinated voice of the NWS regarding tornado threats and will issue tornado watches as required for areas affected by tropical and subtropical cyclones. SPC should coordinate with NHC and WFOs before issuing a tornado watch. To assist NHC, this coordination should be done on regularly scheduled NHC coordination calls. Hurricane Local Statements (HLS) and Hurricane Local Watch/Warning (TCV) products, where applicable, will convey the level of tornadic threat forecast by SPC based upon SPC products. Tropical Cyclone Centers will include appropriate information about tornadoes in their advisories.

1.5 Military Services. The NWS is the basic source of tropical cyclone forecasts for all Department of Defense (DoD) interests in the North Pacific east of 180° longitude and for the North Atlantic as provided by interdepartmental agreements in the National Hurricane Operations Plan (NHOP). If the DoD wishes to discuss special problems concerning warnings and forecasts for the Atlantic or eastern Pacific areas, they should contact the NHC Director or the NHC hurricane specialist on duty. In the Central Pacific, the CPHC Director will provide similar services to the military. WFO Guam generally bases its tropical cyclone products on the tropical cyclone bulletins of the Joint Typhoon Warning Center (JTWC), the United States designated center for U.S. DoD interests in the western Pacific. WFO Guam coordinates directly with Air Force Weather staff at Andersen Air Force Base and with the Joint Region Emergency Managers through the Guam Homeland Security / Office of Civil Defense.

1.6 Requesting Hurricanes in a Multi-scale Ocean-coupled Non-hydrostatic (HMON)/ Hurricane Weather Research and Forecasting System (HWRF) Model Guidance. NHC will make the decision to run the HMON / HWRF hurricane model for any tropical / subtropical cyclone or tropical disturbance in the Atlantic or eastern Pacific Ocean. NHC will forward its requests to the National Centers for Environmental Prediction (NCEP) Central Operations Senior Duty Meteorologist (SDM), and the SDM executes the job run. CPHC makes requests for running the HMON / HWRF hurricane models in coordination with NHC. A maximum of five HMON/ HWRF pairs, combined between NHC and CPHC, can be run on any systems in the Atlantic, eastern North Pacific, or central North Pacific hurricane basins.

2 Transfer of Responsibility for Issuing Advisories. When a tropical or subtropical cyclone approaches the line of division between centers responsible for issuing advisories, the forecaster who is currently handling the storm will:

- a. Contact the center into whose area the storm is moving, to plan for transferring responsibility after the issuance of the next advisory. When a tropical cyclone is approaching 180° longitude, CPHC will coordinate with both Regional Specialized Meteorological Center (RSMC) Tokyo (the World Meteorological Organization [WMO] designated tropical cyclone center) and JTWC for transferring responsibilities, and

- b. Add a statement to the final advisory as follows:

“THE NEXT ADVISORY ON (storm name) WILL BE ISSUED BY THE (appropriate Tropical Cyclone Forecast Center) AT (time in [UTC]).”

In these situations, the Tropical Cyclone Forecast Center issuing a final advisory will also provide the Advanced Weather Interactive Processing System (AWIPS) and WMO communications headings for the advisory product to be issued by the gaining Forecast Center.

When NHC and WPC coordinate for a transfer of responsibility to WPC, the following statement will be included in the final Tropical Cyclone Public Advisory (TCP) from NHC: “THIS IS THE LAST PUBLIC ADVISORY ISSUED BY THE NATIONAL HURRICANE CENTER ON THIS SYSTEM. FUTURE INFORMATION ON THIS SYSTEM CAN BE FOUND IN PUBLIC ADVISORIES ISSUED BY THE WEATHER PREDICTION CENTER...UNDER AWIPS HEADER TCPAT_n AND WMO HEADER WTNT3_n KWNH...BEGINNING AT HHMM UTC. (Where n is 1-5). NHC will coordinate with WPC to determine the time of issuance of the first WPC Public Advisory.

For CPHC when a tropical cyclone is moving east to west across the International Dateline, the following statement will be included in the final TCP from CPHC: THIS IS THE LAST BULLETIN ISSUED BY THE CENTRAL PACIFIC HURRICANE CENTER. THE NEXT BULLETIN WILL BE ISSUED BY THE RSMC TOKYO. FOR US INTERESTS, SEE THE PUBLIC ADVISORIES ISSUED BY US NWS FORECAST OFFICE GUAM AND DOD WARNINGS ISSUED BY THE JOINT TYPHOON WARNING CENTER.

3 Emergency Operating Instructions. National Centers and WFOs with primary and backup warning and forecast responsibilities for areas within 300 miles of the Gulf and Atlantic coasts and east or south of the Appalachian ridges, in Hawaii, Puerto Rico, Guam, Commonwealth of the Northern Mariana Islands, Federated States of Micronesia, Republic of Palau, Republic of the Marshall Islands, on the California coast from Point Piedras Blancas southward, and American Samoa in the South Pacific, will prepare and keep an up-to-date local Tropical Cyclone Emergency Operations Plan. The plan should specify actions to be taken. This includes:

- a. What to do before each tropical cyclone season;
- b. What to do when a tropical cyclone constitutes a possible threat to its county warning area (CWA);
- c. What to do when a tropical storm, hurricane or typhoon watch, or inland tropical storm / hurricane wind watch is issued for its CWA;
- d. What to do when a tropical storm, hurricane or typhoon warning, or inland tropical storm/hurricane warning is issued for its CWA; and
- e. What to do immediately after the tropical cyclone has passed.

3.1 Exercises. WFOs requiring test / sample products from NHC or CPHC to support local exercises with emergency management officials or backup exercises should coordinate

in advance through their Region's tropical cyclone program manager. NHC will only provide such support before the official start of the tropical cyclone season. Any test products provided by NHC will be carefully noted with the word "EXERCISE" at the beginning and end of each test product.

3.2 Emergency Action When Warning Not Received or Considered Inadequate.

National tropical cyclone forecast centers or their backups initiate and issue tropical cyclone warnings. When tropical cyclone forecast center (or their backups) warnings are not received by WFOs, or are inadequate to cover current or imminent conditions, coastal WFOs and their backup WFOs should issue HLSs, WFO Tropical Cyclone Watch / Warning (TCV) products, or other appropriate WFO-level warnings as needed. Whenever possible, the WFO should contact the appropriate tropical cyclone forecast center (or its backup, if necessary) and advise the center tropical cyclone warnings were not received or do not adequately represent current conditions. However, if communications failure prevents contact with the appropriate tropical cyclone forecast center, or if in the discretion of the forecast office, a delay would jeopardize life or property, the WFO should immediately issue WFO-level products to communicate the hazards. WFOs should notify the appropriate tropical cyclone forecast center (or its backup, if necessary) of the actions that were taken as soon as possible. Under such circumstances, WFO Guam will issue TCPs and HLSs, when warranted, if coordination cannot be made in a timely manner with the JTWC.