

**NEW ACTION ITEMS: 64<sup>th</sup> IHC ACTION ITEMS**

<b>NHOP Related Action Items</b>										
<b>1</b>	<p><b>Title</b></p> <p><b>Submitter</b></p> <p><b>Discussion</b></p> <p><b>Recommendation</b></p>	<p><b>Changes to NHOP</b></p> <p>CARCAH and 53<sup>rd</sup> WRS</p> <p>There are some recommended editorial changes to the NHOP. [Note: all changes reference the 2009 NHOP.]</p> <p>Incorporate the following changes to the NHOP:</p> <ol style="list-style-type: none"> <li>1. Page 2-5, para 2.5.2., line 3. Change “its mission” to “their mission”. RE: plural, refers to two different agencies, SOUTHCOM and NORTHCOM.</li> <li>2. Page 2-5, para 2.5.3., line 2. Delete last word on line, “is”. RE: orphaned word, nonsense.</li> <li>3. Page 3-6, para. 3.5.2., Change commercial number for Keesler AFB Command Post to 228-377-4181. RE: Correct phone number.</li> <li>4. Page 5-5, Table 5-1. Change Enroute Vertical Data from “Every 400 nm over water” to “Approx every 400 nm over water, or fewer/relocated per request or sonde conservation”. RE: Conservation of dropsondes, multiple on-going missions, and other reasons sometimes make it advisable to withhold or relocate sonde releases enroute to a storm. This rewording makes the requirement flexible.</li> <li>5. Page 5-23, Table 5-13. Provide better descriptions for the mission identifier examples (see recommended content below). RE: Current explanations have some errors and omissions.</li> </ol> <p align="center">-EXAMPLES-</p> <table border="0"> <tr> <td style="vertical-align: top;">AF306 0201C CYCLONE</td> <td style="vertical-align: top;">USAF aircraft 5306 on the second mission for Tropical or Subtropical Depression One in the Central Pacific. Mission type can be fix or surveillance, as specified in the TCPOD.</td> </tr> <tr> <td style="vertical-align: top;">AF307 0403E CARLOS</td> <td style="vertical-align: top;">USAF aircraft 5307 on the fourth mission for the third classified tropical or subtropical system that formed in the Eastern Pacific and acquired the name Carlos.</td> </tr> <tr> <td style="vertical-align: top;">NOAA2 01BBA INVEST</td> <td style="vertical-align: top;">NOAA aircraft 42RF on the first mission to investigate the second unclassified suspect area in the Atlantic, Gulf of Mexico, or Caribbean.</td> </tr> <tr> <td style="vertical-align: top;">NOAA3 WX01A AGNES</td> <td style="vertical-align: top;">NOAA aircraft 43RF on a non-tasked mission into the first tropical or subtropical system that formed in the</td> </tr> </table>	AF306 0201C CYCLONE	USAF aircraft 5306 on the second mission for Tropical or Subtropical Depression One in the Central Pacific. Mission type can be fix or surveillance, as specified in the TCPOD.	AF307 0403E CARLOS	USAF aircraft 5307 on the fourth mission for the third classified tropical or subtropical system that formed in the Eastern Pacific and acquired the name Carlos.	NOAA2 01BBA INVEST	NOAA aircraft 42RF on the first mission to investigate the second unclassified suspect area in the Atlantic, Gulf of Mexico, or Caribbean.	NOAA3 WX01A AGNES	NOAA aircraft 43RF on a non-tasked mission into the first tropical or subtropical system that formed in the
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		<p>Atlantic basin and acquired the name Agnes.</p> <p>6. Page 5-19, para 5.5.5.2.4., line 3. Change “5.5.5.1.6.” to “5.5.5.1.7”. RE: Refers to new paragraph added last year, which clarifies the relay procedure.</p> <p>7. Page 5-23, Para 5.8.4.2. Change “17 soundings” to “19 soundings, including center drops”. RE: Assuming center drops will be made on this profile, this corrects the math.</p> <p><b>Action</b> <i>Accept recommendation. Will be CLOSED once NHOP is updated.</i></p>
2	<p><b>Title</b> <b>Changes to the HDOB Message Format – Switchover Date</b></p> <p><b>Submitter</b> CARCAH and 53<sup>rd</sup> WRS</p> <p><b>Discussion</b> The most significant change to the code for the high-density data from both the NOAA and AF aircraft is to replace missing data with “///” instead of “999”. This change will take place during the 2010 hurricane season, likely in mid-July. This code is ingested into numerous software programs. All users of this code need to be prepared for this change.</p> <p><b>Recommendation</b> Propose 15 Jul 2010 as the date to switch over to the new HDOB format. The NHC should publish a news release on their website announcing this change. CARCAH will inform the NHC public affairs office if the switchover date is changed.</p> <p><b>Action</b> <i>Accept recommendation. During the 64<sup>th</sup> IHC, members checked to ensure there wasn’t any impact to FNMOC and AFWA operations. On March 8, 2010, NWS issued SERVICE CHANGE NOTICE 10-17. CLOSED.</i></p>	
3	<p><b>Title</b> <b>Changes to the HDOB Message Format – Code</b></p> <p><b>Submitter</b> CARCAH and 53<sup>rd</sup> WRS</p> <p><b>Discussion</b> The most significant change to the code for the high-density data from both the NOAA and AF aircraft is to replace missing data with “///” instead of “999”. Since this change will take place during the 2010 hurricane season, the NHOP should show both formats.</p> <p><b>Recommendation</b> Incorporate the following changes to the NHOP:</p> <ol style="list-style-type: none"> <li>1. Page G-8, Table G-5. Line 5 (bottom line of data in the sample): Change the “999” under the “ppp” group to “///”.</li> <li>2. Page G-8, Table G-5. After each of the explanations for the following groups, XXXX, sTTT, and sddd, add: “/// indicates missing value.”</li> <li>2. Page G-8 and G-9, Table G-5. In each of the explanations for the www, SSS, MMMM, KKK, and ppp groups, change: “999 indicates missing value” to “999 or /// indicates missing value*”</li> <li>3. Page G-9, Table G-5. At the bottom of the table, add a footnote: “* The HDOB message will change on 15 Jul 2010 to display missing data as /// instead of 999”</li> </ol> <p><b>Action</b> <i>Accept recommendation. Will be CLOSED once NHOP is updated.</i></p>	

4	<p><b>Title</b></p> <p><b>Submitter</b></p> <p><b>Discussion</b></p> <p><b>Recommendation</b></p> <p><b>Action</b></p>	<p><b>Miscellaneous Aviation Procedures</b></p> <p>53<sup>rd</sup> WRS</p> <p>Editorial changes and clarification of transponder codes, and operations in uncontrolled airspace.</p> <p>Make the following changes to the NHOP:</p> <p>1. Para 5.5.4.2., page 5-15, change second-to-last sentence: Change “aircraft” to “mission”, and “that” to “its”. Add after NORAD: “mode 3/A”. Sentence should now read: Each mission will have a designated reserved NORAD mode 3/A transponder code associated with its call sign. RE: Clarifies that transponder codes are specific to a mission, not linked to an aircraft, and specifies which mode on the transponder.</p> <p>2. Para 5.5.4.2., page 5-15, replace last sentence, “This code is reserved by ARTCC”, with the following: “These codes are for CONUS (FAA controlled airspace) only use and do not include Hawaii operations. They are issued by AF North Airspace (CONR) and are renewed on an annual basis; contact CONR at [add contact info here - TBD] to renew these codes. Aircrews will either request to be assigned their designated mode 3/A code on the ground or request to squawk their dedicated mode 3/A code after airborne.” RE: Clarifies assignment of transponder codes.</p> <p>3. Para 5.5.5.1.3, page 5-16, change last sentence: Replace “However this does” with “These procedures do”. RE: Clearer language</p> <p>4. Para 5.5.5.1.4, page 5-16, EXAMPLE. Change first sentence: Enclose sentence in quotes. Add at the beginning, “JAX Center”. After “requests” delete “the”. After “FL100” add “, and clearance to exit controlled airspace.” Sentence now reads: <b>EXAMPLE:</b> “JAX Center, Teal 70 requests block altitude surface to FL100, and clearance to exit controlled airspace.” RE: Changes example from a paraphrase to a clearer, sample radio transmission initiated by the aircrew.</p> <p>5. Para 5.5.5.1.8., page 5-17, second sentence (line 4). Add to the beginning of the sentence “Non-participating” in front of the first word, “aircraft”. RE: Emphasizes the concern is with non-participating aircraft.</p> <p><i>Small team (Miami/Jacksonville ARTCC, FAA/ATL OPS Support, 53rd WRS, and NOAA AOC) drafting proposed update regarding Action Items 4-6. Draft changes being further coordinated and, if received in time for inclusion into 2010 NHOP, Action Items 4-6 will be CLOSED once NHOP is updated.</i></p>
5	<p><b>Title</b></p> <p><b>Submitter</b></p> <p><b>Discussion</b></p>	<p><b>Airspace Use During Tropical Cyclone Missions</b></p> <p>53<sup>rd</sup> WRS</p> <p>Open item submitted by NOAA last year (Agenda item 11 at the 63<sup>rd</sup> IHC). To summarize: Air traffic control (ATC) is reluctant at times to allow NOAA aircraft to fly at altitudes deemed necessary to avoid safety-of-flight issues, and, in many cases, necessary to accomplish research objectives. This occurs when the TEAL aircraft have blocked the airspace from the surface to 10,000 ft. when flying tropical cyclone</p>

	<p><b>Recommendation</b></p>	<p>reconnaissance. NOAA aircraft are precluded from operating in this block.</p> <p>The changes below, suggested by 53 WRS, suggest using “Due Regard” procedures judiciously, when necessary, to allow participating aircraft to enter, exit, and operate in the reserved airspace block. This will only be used until normal IFR operations can be resumed.</p> <p>AF and NOAA aircraft have safely operated together for decades in the storm environment simultaneously. Air-to-air TACAN and radio contact together provide ample awareness of the other aircraft’s location and intent. The addition of TCAS has further enhanced safety.</p> <p>Also used “participating” or “State aircraft” rather than specific references to “NOAA” and “Teal”, in order to include NRL and NASA aircraft in these procedures, as well.</p> <p>Old Recommendation: ATC agree to allow participating aircraft to maintain their own separation while operating in controlled air space in tropical cyclones and the NHOP be updated to so indicate.</p> <p>New Recommendation: Relieve ATC liability to deconflict between participating aircraft while exercising “Due Regard” in the operations area. Make the following changes to the NHOP:</p> <p>1. Para 5.5.5.1.3, page 5-16, line 4. Change to read “Aircrews will conduct flight operations to the max extent possible utilizing IFR procedures and will not normally conduct flight operations under the provisions of "Due Regard" or declare “Operational” in FAA airspace.”  RE: Changes “53WRS crews to “aircrews”, makes this paragraph generic to any participating aircraft. Allows aircrew to exercise due regard/operational procedures for this purpose, but not as a routine procedure.</p> <p>2. Para 5.5.5.1.3, page 5-16, prior to last sentence add: “While entering, within, or exiting the operations area, if the aircraft commander determines mission, weather or safety requirements make it necessary to change altitude, then they may exercise their operational prerogative and declare “Due Regard” operations with another participating “State” aircraft. They will notify ATC of their intentions (for example: what their new altitude block will be) before declaring “Due Regard” if possible; if unable to notify ATC beforehand they will inform them when able. As soon as practical, the aircrew will notify ATC when they are terminating “Due Regard” operations and are resuming normal IFR operations. “Due Regard” will be used only for the limited time it takes to deconflict with participating aircraft, change altitude, establish a new segregated altitude, and resume IFR operations with ATC. Reference additional procedures for exercising “Due Regard” in paragraphs 5.5.5.1.8 and 5.5.5.1.9.”  RE: Expands guidance on Due Regard procedure.</p> <p>3. Para 5.5.5.1.8., page 5-17, line 6. Add to the end of the paragraph: “If a participating “State” aircraft declares “Due Regard” operations with another participating aircraft in the operational area (ref. paragraph 5.5.5.1.3) ATC will not cancel their IFR clearance, and will continue to provide normal IFR separation from other known non-participating aircraft. ATC will notify a participating “State” aircraft exercising “Due Regard” of any non-participating aircraft transiting the operational area. As soon as practical, the aircrew will notify ATC when they are terminating “Due Regard” operations and are resuming normal IFR operations.  EXAMPLE: “New York Center, Teal 70 is “Due Regard” with NOAA 42, climbing to Flight Level 090 block 110”. When complete: “New York Center, Teal 70 is established in the block, Flight Level 090 to 110, ready to resume IFR operations.” New York</p>
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		<p>Center: “Teal 70, New York Center, cleared IFR, Flight Level 090 block 110 within the operations area”.</p> <p>RE: Requires ATC continue to provide IFR separation with non-participating aircraft, and notification of non-participating aircraft transiting the operational area, regardless if the State aircraft are operating under “due regard” with each other.</p> <p>4. Para 5.5.5.1.9, page 5-18, change fourth bullet: After “uncontrolled airspace” add “aircrew are their own clearance limit authority”. Change “TEAL and NOAA” to “participating”.</p> <p>RE: Clarifies uncontrolled airspace clearance authority, and includes all participating aircraft in the procedure.</p> <p>5. Para 5.5.5.1.9., page 5-18, after fourth bullet add: “While conducting “Due Regard” operations with another participating aircraft within, entering or exiting the operational area, participating aircrews will maintain situational awareness and ensure separation by utilizing one or more of the following: “see and avoid” operations, operating in a different operational area sector (NW, NE, SW, SE), using airplane-to-airplane communication, air-to-air TACAN, and/or TCAS.</p> <p>RE: The NHOP already specifies methods by which participating aircraft will deconflict while in uncontrolled airspace; this adds the situation in controlled airspace where the participating aircraft are operating under “Due Regard”. It also eliminates the reference to “Teal and NOAA” aircraft, and uses the generic “participating” aircraft/aircrews, to allow for NASA and NRL participation.</p> <p><i>Small team (Miami/Jacksonville ARTCC, FAA/ATL OPS Support, 53rd WRS, and NOAA AOC) drafting proposed update regarding Action Items 4-6. Draft changes being further coordinated and, if received in time for inclusion into 2010 NHOP, Action Items 4-6 will be CLOSED once NHOP is updated.</i></p>
6	<p><b>Title</b></p> <p><b>Submitter</b></p> <p><b>Discussion</b></p> <p><b>Recommendation</b></p>	<p><b>MSL, AGL, or FL</b></p> <p>53<sup>rd</sup> WRS</p> <p>Need to clarify what altitude aircrews are cleared to fly in reference to ATC airspace structure (Class A vs. Class E): Above Ground Level (AGL), Mean Sea Level (MSL), or Flight Level (FL).</p> <p>Aircraft flying in a hurricane at a specific Flight Level, with reference to 29.92 in-Hg, may experience a change in absolute altitude (Above Ground Level) of several thousand feet near the storm center. It is vital all aircraft and ATC are using the same altitude references, in order to deconflict from other aircraft. Since local altimeter settings are impractical in this situation, Flight Levels are the preferred standard. One exception is flight near the surface, at or below 1500 feet, in which the radar altimeter is used as the primary altitude reference (AGL).</p> <p>ATC structure is often defined with reference to AGL, and clearances are sometimes given with respect to MSL. This is not practical in the storm environment.</p> <p>Add or change language to the NHOP to standardize and clarify terminology and procedures. Conduct operations above 1500 feet in the storm environment with reference to Flight Level (reference to 29.92 in-Hg).</p> <p>Para 5.5.4.1.2., page 5-14, sixth bullet: change “altitudes (AGL)” to “flight levels (FL).</p> <p>Para 5.5.4.2., page 5-15, fourth bullet: “Requested AGL or MSL altitude(s)”. Don’t change, okay as is.</p>

	<b>Action</b>	<p>Para 5.5.5.1.4., page 5-16. Change both cases of “(AGL)” to “(FL)”, and change “radar altitude to “pressure altitude with reference to 29.92 in-Hg”.</p> <p>Para 5.5.5.1.4., page 5-16, first bullet, change both cases of “(altitude)” to “(flight level)”.</p> <p>Para 5.5.5.1.9., page 5-18, second bullet, change “(AGL)” to “(FL).”</p> <p><i>Small team (Miami/Jacksonville ARTCC, FAA/ATL OPS Support, 53rd WRS, and NOAA AOC) drafting proposed update regarding Action Items 4-6. Draft changes being further coordinated and, if received in time for inclusion into 2010 NHOP, Action Items 4-6 will be CLOSED once NHOP is updated.</i></p>
7	<b>Title</b>  <b>Submitter</b>  <b>Discussion</b>  <b>Recommendation</b>	<p><b>Changes to NHOP</b></p> <p>USNORTHCOM</p> <p>There are some recommended changes to the NHOP. [Note: all changes reference the 2009 NHOP.]</p> <p>Incorporate the following changes to the NHOP:</p> <ol style="list-style-type: none"> <li>1. Page 2-4, para 2.3. Add new dot bullet to read, “Consider the Tropical Cyclone Plan of the Day (TCPOD) as a request for assistance (RFA) from NOAA.” RE: Clarify that the TCPOD is the lead agency’s (NOAA) official request for DOD assistance as required for Defense Support of Civil Agencies.</li> <li>2. Page 2-4, para 2.3. Add new dot bullet to read, “Provide command and control of forces supporting weather reconnaissance support to NOAA through the appropriate combatant commander whose area of responsibility the mission is being conducted.” RE: Clarify which combatant command has authority of the forces supporting the agency’s request.</li> <li>3. Page 5-9, Change second to last sentence of paragraph to read, “This coordinated request will be considered the agency’s request for assistance (RFA) to DOD and will be provided to CARCAH as soon as possible, but no later than 1630 UTC each day in the format of Figure 5-6.” RE: Clarify that the TCPOD is the agency’s RFA to DOD.</li> <li>4. Page 5-13, para 5.5.3.1.1.1. Add new paragraph to read, “5.5.3.1.1.1. The coordinated TCPOD is the agency’s RFA to DOD. Since DOD’s support to NOAA is congressionally mandated and funded through the DOD Appropriations Act, the coordinated TCPOD is considered a validated and approved RFA.” RE: Clarify that the TCPOD is a valid and approved RFA negating the need for the combatant commander to validate and approve the RFA.</li> <li>5. Page 5-13, para 5.5.3.1.1.2. Add new paragraph to read, “5.5.3.1.1.2. Combatant command headquarters and their air component command headquarters will coordinate on missions by reviewing the proposed TCPOD posted at <a href="http://www.ngc.noaa.gov/reconlist.shtml">http://www.ngc.noaa.gov/reconlist.shtml</a> link, then click ‘For Tomorrow’ under ‘Plan of the Day.’” RE: To clarify and codify that the appropriate combatant command and their air component command must coordinate and be aware of potential DOD missions by pulling the information from the NHC portal page.</li> <li>6. Page 5-13, para 5.5.3.1.1.3. Add new paragraph to read, “5.5.3.1.1.3. Combatant</li> </ol>

	<b>Action</b>	<p>command headquarters and their air component command headquarters will pull current DOD missions from <a href="http://www.ngc.noaa.gov/reconlist.shtml">http://www.ngc.noaa.gov/reconlist.shtml</a> link, then click 'For Today' under 'Plan of the Day.'" Additionally, the 403<sup>rd</sup> Current Operations provides mission setup sheet with reason of deviation from TCPOD, as required, to combatant command and their air component operations/command centers."</p> <p>RE: To clarify and codify that the combatant commands and their air component commands will pull TCPOD data from the NHC portal for information on DOD missions. Also, the 403<sup>rd</sup> Current Ops provides DOD headquarters with a mission setup sheet on the days of DOD missions that will specify reason of any changes from the TCPOD.</p> <p><i>Accept changes 1, 3-6 above and replace 2 above with:</i></p> <p>2. Page 2-4, para 2.3. Add new dot bullet to read, "At a minimum, maintain situational awareness of hurricane hunter operational missions conducted in applicable combatant command areas of responsibility."</p> <p>RE: Consensus among all representatives (NC/J35, AFNORTH/A3, AFRC/A33/A58, 403<sup>rd</sup> WG, 53<sup>rd</sup> WRS, CARCAH) indicates the best way forward at this time for "command and control" of hurricane hunter (53<sup>rd</sup> WRS) assets is to maintain situational awareness of their operations through direct coordination with AFRC, 403<sup>rd</sup> WG, and 53<sup>rd</sup> WRS, as needed and by accessing the NOAA web link that contains the "Plan of the Day."</p> <p><i>Will be CLOSED once NHOP is updated.</i></p>
8	<b>Title</b>  <b>Submitter</b>  <b>Discussion</b>   <b>Recommendation</b>  <b>Action</b>	<p><b>Changes to the Saffir-Simpson Hurricane Scale for the Atlantic, Eastern Pacific, and Central Pacific Hurricane Basins effective May 15, 2010</b></p> <p>NOAA/NWS</p> <p>Following the 63<sup>rd</sup> IHC, a decision was made by NWS leadership to widely solicit comments before making changes to the scale. The comment period closed on November 30, 2009. The scale was reviewed by, and recommendations were received from, a panel of wind engineers and wind science experts from industry and academia and assessed by an NWS team. The final result is a Saffir-Simpson Hurricane Wind Scale effective May 15, 2010.</p> <p>Details for the Atlantic and Eastern Pacific Hurricane basins:  <a href="http://www.nhc.noaa.gov/aboutsshs.shtml">http://www.nhc.noaa.gov/aboutsshs.shtml</a></p> <p>Details for the Central Pacific Hurricane basin:  <a href="http://www.prh.noaa.gov/cphc/pages/aboutsshs.php">http://www.prh.noaa.gov/cphc/pages/aboutsshs.php</a></p> <p>Informational. IHC to forward to RA-IV and RA-V Committees.</p> <p><i>Accept recommendation. Update NHOP, Appendix E, to include both web links sited above. Will be CLOSED once NHOP is updated.</i></p>
9	<b>Title</b>  <b>Submitter</b>  <b>Discussion</b>	<p><b>Extend Issuance Times for NHC Watches and Warnings</b></p> <p>NOAA/NWS</p> <p>NHC forecast track accuracy has improved steadily over the past two decades. However, the current issuance criteria (see below) for tropical cyclone watches and warnings, in contrast, have not changed for decades.</p> <ul style="list-style-type: none"> <li>• Tropical Cyclone Watch Issuance Criteria - conditions are possible along the</li> </ul>

		<p>coast within 36 hours.</p> <ul style="list-style-type: none"> <li>• Tropical Cyclone Warning Criteria - conditions along the coast are expected within 24 hours.</li> </ul> <p>Effective May 15, 2010 the issuance criteria for tropical cyclone watches and warnings by the National Hurricane Center is revised as follows:</p> <p>Tropical Storm Watch - An announcement that tropical storm conditions (sustained winds of 39 to 73 mph) are <i>possible</i> within the specified coastal area within 48 hours.</p> <p>Tropical Storm Warning - An announcement that tropical storm conditions (sustained winds of 39 to 73 mph) are <i>expected</i> somewhere within the specified coastal area within 36 hours.</p> <p>Hurricane Watch - An announcement that hurricane conditions (sustained winds of 74 mph or higher) are <i>possible</i> within the specified coastal area. Because hurricane preparedness activities become difficult once winds reach tropical storm force, the hurricane watch is issued 48 hours in advance of the anticipated onset of tropical-storm-force winds.</p> <p>Hurricane Warning - An announcement that hurricane conditions (sustained winds of 74 mph or higher) are <i>expected</i> somewhere within the specified coastal area. Because hurricane preparedness activities become difficult once winds reach tropical storm force, the hurricane warning is issued 36 hours in advance of the anticipated onset of tropical-storm-force winds.</p> <p>The increase in watch and warning lead times was implemented by the CPHC in 2009.</p> <p><b>Recommendation</b> Informational. Amend NHOP Glossary and Section 3.2.2 as needed. IHC to forward to RA-IV and RA-V Committee.</p> <p><b>Action</b> <i>Accept recommendation. Will be CLOSED once NHOP is updated.</i></p>
10	<p><b>Title</b></p> <p><b>Submitter</b></p> <p><b>Discussion</b></p> <p><b>Recommendation</b></p>	<p><b>Advanced Tasking of Reconnaissance and Surveillance Missions</b></p> <p>NOAA/NWS</p> <p>By prior agreement among the WMO RA-IV, NHC, the 53WRS, and AOC, the eastern boundary to initiate tropical cyclone reconnaissance has been moved, requiring a modification to the NHOP, page 5-9, paragraph 5.5.1.3.1. Change the eastern boundary of Atlantic reconnaissance fix requests from 55°W to 52.5°W. This change is consistent with the recent change to extend the watch and warning lead times.</p> <p>Surveillance missions conducted by NOAA/AOC and the 53WRS are intended to provide environmental data to the numerical guidance and to NHC forecasters in time to influence the watch/warning decision process for potential land-falling hurricanes. The 12-h increases in lead time associated with the new watch/warning definitions mean that surveillance missions will generally need to be tasked 12 h earlier than in previous years.</p> <p>A tasking for a mission takeoff for the following afternoon can be expected when the storm at 1200 UTC is within about 102 h of projected landfall. This timeline gets the mission data into the models that the forecaster sees roughly 42 h later, or 60 h prior to landfall. While this is a general guideline, actual requests for surveillance flights in any particular situation may occur either earlier or later than this, as conditions warrant.</p> <p>Informational. Change NHOP, page 5-9, paragraph 5.5.1.3.1 as indicated above.</p>



	<p><b>Action</b></p> <p><b>Status</b> <b>(03/22/2010)</b></p>	<p><i>Two actions resulted from discussions:</i></p> <p>- NHC will use climatological data to estimate the average annual additional support that would be levied on the 53<sup>rd</sup> WRS to support the Atlantic reconnaissance fix requests if the eastern boundary moved from 55°W to 52.5°W. Forward the information as follows:  <i>TO: Col Brian “Bear” Kraemer (22 AF A5A8) (<a href="mailto:Brian.Kraemer@dobbins.af.mil">Brian.Kraemer@dobbins.af.mil</a>)</i>  <i>CC: Lt Col Rob Stanton (403 OG/CD) (<a href="mailto:Robert.Stanton@keesler.af.mil">Robert.Stanton@keesler.af.mil</a>)</i>  <i>Mark Welshinger (OFCM) (<a href="mailto:Mark.Welshinger@noaa.gov">Mark.Welshinger@noaa.gov</a>)</i></p> <p>- Col Kraemer will forward the information provided by NHC to Higher Headquarters to determine if moving the eastern boundary from 55°W to 52.5°W is supportable.</p> <p>NHC forwarded the climatological data to Col Kraemer and the other addressees on 3/15/2010.</p>																				
<p><b>11</b></p>	<p><b>Title</b></p> <p><b>Submitter</b></p> <p><b>Discussion</b></p>	<p><b>Adoption of “Post-Tropical” Terminology by the NWS</b></p> <p>NOAA/NWS</p> <p>Some tropical cyclones lose their status as tropical cyclones before becoming extratropical, generally by failing the "organized deep convection" requirement. We already have the term "remnant low," but to some this implies a weak system. The Canadian Hurricane Centre has long used the term "post-tropical," and in April 2009 the WMO RA-IV adopted the following definition:</p> <p>Post-tropical cyclone: A cyclone that no longer possesses sufficient tropical characteristics to be considered a tropical cyclone. Post-tropical cyclones can continue carrying intense rainfalls (sic) and high winds. [Note that former tropical cyclones that have become fully extra-tropical, as well as remnant lows, are two classes of post-tropical cyclones. The term "post-tropical" is predominantly a convenient communications term to permit the ongoing use of the storm name.]  Through 2009, these systems were misleadingly described on the last NHC advisory as being “extratropical.” In order to improve scientific accuracy and consistency with Canadian and WMO RA-IV practice, we recommend that the NWS adopt the post-tropical terminology.</p> <p>NWS changes for 2010 are as follows:</p> <p>1. Use the term “post-tropical” in NWS products to describe systems that are no longer tropical cyclones. Allow the continued use of the more specific terms “remnant low” and “extratropical” when applicable as defined below. Note that this change in terminology will have no bearing on when the NHC discontinues advisories – it simply provides a better way to describe what is happening when those advisories are discontinued.</p> <p>An example of how this might appear in the table section of an NHC TCD (in this case on a final advisory):</p> <p>FORECAST POSITIONS AND MAX WINDS</p> <table border="0"> <tr> <td>INITIAL</td> <td>01/1500Z</td> <td>46.5N</td> <td>46.5W</td> <td>40 KT...POST-TROPICAL</td> </tr> <tr> <td>12HR VT</td> <td>02/0000Z</td> <td>48.9N</td> <td>45.6W</td> <td>40 KT...POST-TROPICAL</td> </tr> <tr> <td>24HR VT</td> <td>02/1200Z</td> <td>52.2N</td> <td>43.5W</td> <td>40 KT...POST-TROP/EXTRATROP</td> </tr> <tr> <td>36HR VT</td> <td>03/0000Z</td> <td>55.0N</td> <td>39.8W</td> <td>40 KT...POST-TROP/EXTRATROP</td> </tr> </table>	INITIAL	01/1500Z	46.5N	46.5W	40 KT...POST-TROPICAL	12HR VT	02/0000Z	48.9N	45.6W	40 KT...POST-TROPICAL	24HR VT	02/1200Z	52.2N	43.5W	40 KT...POST-TROP/EXTRATROP	36HR VT	03/0000Z	55.0N	39.8W	40 KT...POST-TROP/EXTRATROP
INITIAL	01/1500Z	46.5N	46.5W	40 KT...POST-TROPICAL																		
12HR VT	02/0000Z	48.9N	45.6W	40 KT...POST-TROPICAL																		
24HR VT	02/1200Z	52.2N	43.5W	40 KT...POST-TROP/EXTRATROP																		
36HR VT	03/0000Z	55.0N	39.8W	40 KT...POST-TROP/EXTRATROP																		

		<p>48HR VT 03/1200Z 56.0N 33.0W 40 KT...POST-TROP/EXTRATROP  72HR VT 04/1200Z 56.5N 20.0W 40 KT...POST-TROP/EXTRATROP  96HR VT 05/1200Z...ABSORBED</p> <p>2. Add post-tropical cyclone to definitions in NWSI 10-604. Update remnant low and extratropical cyclone definitions in NWSI 10-604.</p> <p>Post-tropical cyclone: A former tropical cyclone. This generic term describes a cyclone that no longer possesses sufficient tropical characteristics to be considered a tropical cyclone. Post-tropical cyclones can continue carrying heavy rains and high winds. Note that former tropical cyclones that have become fully extratropical, as well as remnant lows, are two specific classes of post-tropical cyclones</p> <p>Remnant Low: A post-tropical cyclone that no longer possesses the convective organization required of a tropical cyclone and has maximum sustained winds of less than 34 kts. The term is most commonly applied to the nearly deep-convection-free swirls of stratocumulus in the eastern North Pacific.</p> <p>Extratropical Cyclone: A cyclone (of any intensity) for which the primary energy source is baroclinic (i.e., results from the temperature contrast between warm and cold air masses).</p> <p><b>Recommendation</b> Informational. Amend NHOP Glossary with addition of post-tropical cyclone. Also, revise definitions for remnant low and extratropical cyclone. IHC to forward to RA-IV and RA-V Committees.</p> <p><b>Action</b> <i>Accept recommendation. Will be CLOSED once NHOP is updated.</i></p>
12	<p><b>Title</b></p> <p><b>Submitter</b></p> <p><b>Discussion</b></p>	<p><b>Replace Backup Tropical Cyclone “Greek Alphabet” Name List with Secondary Atlantic Tropical Cyclone Name List</b></p> <p>NOAA/NWS</p> <p>Since 1953, NHC has utilized a naming protocol for Atlantic tropical cyclones that use commonly known, short, distinctive names understood by the general public and media. The name lists, which have been agreed upon at international meetings of the WMO, have a French, Spanish, Dutch and English due to the geographical coverage of the storms throughout the Atlantic and Caribbean.</p> <p>If a name is retired, it can be easily replaced with another common name that is understood and well known throughout the tropical basin.</p> <p>However, if the primary name list is exhausted, as it was in 2005, NHC ceases the simple and well understood naming protocol and resorts to use of the less understood and inconsistent Greek Alphabet as the backup list. Feedback received from the general public, media and EM community about the practice of using the Greek Alphabet for naming tropical cyclones was generally unfavorable with comments such as “ludicrous,” “idiotic” to “ridiculous.”</p> <p>The use of the Greek Alphabet as a backup list to the primary list of Atlantic tropical cyclone names has several disadvantages:</p> <ul style="list-style-type: none"> <li>● Generally unknown and confusing to the public.</li> <li>● Inconsistent with the standard naming convention used for tropical cyclones.</li> <li>● If a Greek letter has to be retired, it cannot be replaced.</li> <li>● Defeats the purpose of using commonly known, short distinctive names</li> </ul>

understood by the public and media (ex: The Greek Alphabet jumps from a “B” storm to a “G” storm then back to a “D” storm. If you expect an “F” storm instead you will jump to “Z”).



**Recommendation**

Develop a secondary name list, utilizing conventions of the primary name list, that could be placed into service if the primary Atlantic Cyclone name list is exhausted. Named storms from the secondary or alternate list that require retirement could easily be replenished based on recommendations from the WMO. IHC to forward to RA-IV Committee.

**Action**

*Accept recommendation. Further action on this item is dependent on whether the RA-IV Committee approves the recommendation.*

**Status (3/22/10)**

The WMO RA IV Hurricane Committee met from 8-12 March 2010 and did not approve this recommendation. **CLOSED**

13

**Title**

**Changes to the Tropical Cyclone Public Advisories**

**Submitter**

NOAA/NWS

**Discussion**

Customer feedback suggests that there is a need for a more user-friendly format to the NHC Public Advisory. Users have expressed difficulty in finding pertinent warning, storm and impact information in the public advisory.

The following changes will be made to the TCP products for 2010 from NHC and the CPHC. These changes are also detailed on line at: <http://www.nhc.noaa.gov/help/tcp.shtml>

The most significant changes are:

The TCP will be organized into sections. Within these sections, keywords will be used to assist the human eye and computer software to find specific information more readily.

The summary (or “repeat”) section of the advisory will move to the top of the product, immediately following the headline. The summary section will contain more information than it did previously.

Watch and warning information will be organized differently and be presented in list or bullet form.

Specific changes to the TCP format are outlined below, and followed by examples of the new format. Characteristics of the TCP not mentioned here are unchanged.

The TCP will contain the following sections: summary, watches and warnings, discussion and outlook, hazards, and next advisory. Each section of the TCP begins with a specific header text string. Each header is preceded by two blank lines, and is followed by a line of dashes (to give the appearance of an underline).

**Summary.** This section summarizes the essential facts of the tropical cyclone (location, intensity, etc.) in a fixed format.

Header (example): SUMMARY OF 500 AM EDT...0900 UTC...INFORMATION

In the summary section header, UTC time will always be given with four characters (e.g., 0300 UTC). No other numerical values in this section will appear with leading zeros.

The summary section follows a fixed format, containing lines for the location, geographical reference(s), maximum winds, direction of movement, and minimum pressure. The section will always contain at least one geographical reference, but not more than two. Geographical reference lines begin with the keyword ABOUT. In the summary section, all directions are abbreviated (e.g., N, NNE, NE, ENE, E, etc.) If the forward speed is zero, the motion will be given as STATIONARY.

**Watches and Warnings.** This is a free text section that makes use of keywords to identify specific content regarding watches and warnings. Watch/warning definitions and call to action statements may also appear in this section.

Header: WATCHES AND WARNINGS

Whenever watches or warnings are issued, continue in effect, or are discontinued, the watch/warning section will contain the following two keyword strings:

CHANGES WITH THIS ADVISORY...

SUMMARY OF WATCHES AND WARNINGS IN EFFECT...

Changes to watches and warnings since the last TCP or Tropical Cyclone Update (TCU) will be listed in paragraph form, one change per paragraph.

The summary of active watches and warnings will appear as a bulleted list, grouped by warning type. Each grouping will begin with a statement such as A HURRICANE WARNING IS IN EFFECT FOR... Each watch or warning segment that follows will appear on a separate line beginning with an asterisk. However, watches or warnings that encompass entire islands or jurisdictions may be grouped together as a single segment, e.g.:

A TROPICAL STORM WARNING IS IN EFFECT FOR...

\* ANTIGUA...BARBUDA...ANGUILLA...AND ST. MARTIN

A TROPICAL STORM WARNING IS IN EFFECT FOR...

\* THE CUBAN PROVINCES OF GUANTANAMO AND HOLGUIN

When a watch or warning is introduced for a new major geographical area, the watch/warning section should contain a definition of the watch or warning. These definitions may also be included at other times. The definitions will appear after the list of active watches and warnings in effect. Other statements (e.g., "INTERESTS IN THE LEEWARD ISLANDS SHOULD MONITOR THE PROGRESS OF BILL.") may also appear in this location.

**Discussion and outlook.** This is a free text section with no keywords. It will describe the current location and motion, maximum winds, extent of hurricane and tropical storm winds, and minimum pressure. It will provide a general outlook for the track and intensity of the cyclone over the next 24-48 hours.

Header: DISCUSSION AND 48-HOUR OUTLOOK

**Hazards.** A free text section that uses keywords to identify the typical threats of a tropical cyclone.

Header: HAZARDS AFFECTING LAND

Most paragraphs in this section will begin with one of the following keywords: STORM SURGE, WIND, RAINFALL, TORNADOES, SURF, or OTHER.

**Next advisory:** This free text section will indicate the time of the next complete advisory, and intermediate advisory(ies), if any. If this is the last advisory, and the system will be discussed subsequently in another NWS product, that product will be identified.

Header: NEXT ADVISORY

**TCP EXAMPLE 1**

ZCZC MIATCPAT4 ALL  
TTAA00 KNHC DDHHMM  
BULLETIN  
HURRICANE IKE ADVISORY NUMBER 42  
NWS TPC/NATIONAL HURRICANE CENTER MIAMI FL AL092008  
1000 PM CDT THU SEP 11 2008

...IKE CONTINUES TO GROW IN SIZE BUT HAS NOT STRENGTHENED  
YET...  
...HURRICANE WARNING ISSUED FOR NORTHWESTERN GULF COAST...

SUMMARY OF 1000 PM CDT...0300 UTC...INFORMATION

-----  
LOCATION...25.5N 88.4W  
ABOUT 580 MI...930 KM ESE OF CORPUS CHRISTI TEXAS  
ABOUT 470 MI...760 KM ESE OF GALVESTON TEXAS  
MAXIMUM SUSTAINED WINDS...100 MPH...160 KM/HR  
PRESENT MOVEMENT...WNW OR 290 DEGREES AT 10 MPH...17 KM/HR  
MINIMUM CENTRAL PRESSURE...945 MB...27.91 INCHES

WATCHES AND WARNINGS

-----  
CHANGES WITH THIS ADVISORY...

A HURRICANE WARNING HAS BEEN ISSUED FROM MORGAN CITY  
LOUISIANA TO BAFFIN BAY TEXAS.

A TROPICAL STORM WARNING HAS BEEN ISSUED FROM SOUTH OF  
BAFFIN BAY TO  
PORT MANSFIELD TEXAS.

SUMMARY OF WATCHES AND WARNINGS IN EFFECT...

A HURRICANE WARNING IS IN EFFECT FOR...  
\* MORGAN CITY LOUISIANA TO BAFFIN BAY TEXAS

A TROPICAL STORM WARNING IS IN EFFECT FOR...  
\* EAST OF MORGAN CITY TO THE MISSISSIPPI-ALABAMA  
BORDER...INCLUDING THE CITY OF NEW ORLEANS AND LAKE  
PONTCHARTRAIN  
\* SOUTH OF BAFFIN BAY TO PORT MANSFIELD

A HURRICANE WARNING MEANS THAT HURRICANE CONDITIONS ARE  
EXPECTED SOMEWHERE WITHIN THE WARNING AREA. A WARNING IS  
TYPICALLY ISSUED 36 HOURS BEFORE  
THE ANTICIPATED FIRST OCCURRENCE OF TROPICAL-STORM-FORCE  
WINDS... CONDITIONS THAT MAKE OUTSIDE PREPARATIONS  
DIFFICULT OR DANGEROUS. PREPARATIONS TO PROTECT LIFE AND  
PROPERTY SHOULD BE RUSHED TO COMPLETION.

A TROPICAL STORM WARNING MEANS THAT TROPICAL STORM  
CONDITIONS ARE EXPECTED SOMEWHERE WITHIN THE WARNING AREA  
WITHIN THE NEXT 36 HOURS.

FOR STORM INFORMATION SPECIFIC TO YOUR AREA...INCLUDING  
POSSIBLE  
INLAND WATCHES AND WARNINGS...PLEASE MONITOR PRODUCTS  
ISSUED  
BY YOUR LOCAL WEATHER OFFICE.

DISCUSSION AND 48-HOUR OUTLOOK  
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AT 1000 PM CDT...0300Z...THE CENTER OF HURRICANE IKE WAS  
LOCATED  
NEAR LATITUDE 25.5 NORTH...LONGITUDE 88.4 WEST. IKE IS  
MOVING TOWARD  
THE WEST-NORTHWEST NEAR 10 MPH...17 KM/HR. A GENERAL WEST-  
NORTHWESTWARD MOTION IS EXPECTED OVER THE NEXT DAY OR  
SO...AND THE  
CENTER OF IKE SHOULD BE VERY NEAR THE COAST BY LATE FRIDAY.

MAXIMUM SUSTAINED WINDS ARE NEAR 100 MPH...160 KM/HR...WITH  
HIGHER  
GUSTS. IKE IS A CATEGORY TWO HURRICANE ON THE SAFFIR-  
SIMPSON SCALE.  
IKE IS FORECAST TO BECOME A MAJOR HURRICANE PRIOR TO  
REACHING THE  
COASTLINE.

IKE REMAINS A VERY LARGE TROPICAL CYCLONE. HURRICANE FORCE  
WINDS  
EXTEND OUTWARD UP TO 115 MILES...185 KM...FROM THE  
CENTER...AND  
TROPICAL STORM FORCE WINDS EXTEND OUTWARD UP TO 275  
MILES...445 KM.

THE LATEST MINIMUM CENTRAL PRESSURE REPORTED BY A NOAA  
HURRICANE

HUNTER AIRCRAFT WAS 945 MB...27.91 INCHES.

HAZARDS AFFECTING LAND

-----  
STORM SURGE...STORM SURGE WILL RAISE WATER LEVELS AS MUCH AS 10 TO 15 FT ABOVE GROUND LEVEL ALONG THE COAST WITHIN THE HURRICANE WARNING AREA... WITH LARGE AND DANGEROUS BATTERING WAVES...NEAR AND TO THE EAST OF WHERE THE CENTER OF IKE MAKES LANDFALL. STORM SURGE WILL RAISE WATER LEVELS AS MUCH AS 5 TO 7 FEET ABOVE GROUND LEVEL ALONG THE COAST WITHIN THE TROPICAL STORM WARNING AREA ALONG THE NORTHERN GULF COAST. THE SURGE COULD PENETRATE AS FAR INLAND AS ABOUT 10 MILES FROM THE SHORE WITH DEPTH GRADUALLY DECREASING AS THE WATER MOVES INLAND.

WIND...BECAUSE IKE IS A VERY LARGE TROPICAL CYCLONE...WEATHER WILL DETERIORATE ALONG THE COASTLINE LONG BEFORE THE CENTER REACHES THE COAST. HURRICANE CONDITIONS ARE EXPECTED TO REACH NORTHWESTERN GULF COAST WITHIN THE WARNING AREA FRIDAY AFTERNOON. WINDS ARE EXPECTED TO FIRST REACH TROPICAL STORM STRENGTH FRIDAY MORNING...MAKING OUTSIDE PREPARATIONS DIFFICULT OR DANGEROUS. PREPARATIONS TO PROTECT LIFE AND PROPERTY SHOULD BE RUSHED TO COMPLETION.

RAINFALL...IKE IS EXPECTED TO PRODUCE RAINFALL AMOUNTS OF 5 TO 10 INCHES ALONG THE CENTRAL AND UPPER TEXAS COAST AND OVER PORTIONS OF SOUTHWESTERN LOUISIANA...WITH ISOLATED MAXIMUM AMOUNTS OF 15 INCHES POSSIBLE. RAINFALL AMOUNTS OF 1 TO 2 INCHES ARE POSSIBLE OVER PORTIONS OF THE YUCATAN PENINSULA.

NEXT ADVISORY

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NEXT INTERMEDIATE ADVISORY...100 AM CDT.  
NEXT COMPLETE ADVISORY...400 AM CDT.

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FORECASTER FRANKLIN

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Informational. Amend NHOP Figure 4-2 as needed. IHC to forward to RA-IV and RA-

	<b>Recommendation</b>  <b>Action</b>	V Committees.  <i>Accept recommendation. Will be CLOSED once NHOP is updated.</i>
<b>14</b>	<b>Title</b>  <b>Submitter</b>  <b>Discussion</b>	<p><b>Add Storm Summary Information in the Tropical Cyclone Update (TCU) Product when Storm Information has Changes Since the Previous NHC or CPHC Public Advisory</b></p> <p>NOAA/NWS</p> <p>The Tropical Cyclone Update (TCU) is an event-driven product that provides users with information on changes to tropical cyclones. TCUs are sometimes issued to convey a change in the intensity and/or status of a tropical cyclone. If the change in intensity was anticipated in the previous advisory, a Special Advisory package is not required. For example, if a tropical storm is forecast to become a hurricane within the first 12 h of the forecast and new data indicate that the system has become a hurricane, NHC would issue a TCU to upgrade the cyclone. Currently, this information is provided in a narrative format that is not easily parsed by NHC or external customers. This makes it difficult for NHC and its users to update automated graphics and web applications.</p> <p>NHC and CPHC changes for the TCU product follow:</p> <ol style="list-style-type: none"> <li>1. When a TCU is issued to change the status of a tropical cyclone (e.g., from a tropical storm to a hurricane), or to update storm intensity, location, or motion information, the TCU will include a storm summary section identical in format to the storm summary section found in the TCP.</li> <li>2. A TCU may continue to be issued without a storm summary section to provide advance notice that significant changes to storm information will be conveyed shortly, either through a subsequent TCU or through a Special Advisory. This could occur, for example, when new data arrive indicating that a tropical storm has become a hurricane, but the forecaster is not quite prepared to update all of the intensity, location, and motion information. In such cases, the upgrade would not become official until the second TCU or Special Advisory is issued.</li> <li>3. TCUs issued to convey changes to watches or warnings will not require a storm summary section.</li> </ol> <p>Example of the various types of TCUs follow.</p> <p><b><u>Example 1 - TCU to change the status of a tropical cyclone</u></b></p> <pre>ZCZC MIATCUAT4 ALL TTAA00 KNHC DDHMM TROPICAL STORM CLAUDETTE TROPICAL CYCLONE UPDATE NWS TPC/NATIONAL HURRICANE CENTER MIAMI FL AL042009 1215 PM EDT SUN AUG 16 2009  ...DEPRESSION BECOMES TROPICAL STORM CLAUDETTE...  DATA FROM THE NOAA DOPPLER RADAR IN TALLAHASSEE FLORIDA INDICATE THAT SURFACE WINDS ASSOCIATED WITH THE DEPRESSION HAVE INCREASED TO 40 MPH...65 KM/HR...INDICATING THAT THE DEPRESSION HAS</pre>



BECOME A TROPICAL STORM.

...SUMMARY OF 1215 PM EDT INFORMATION...

LOCATION...28.7N 84.6W

MAXIMUM SUSTAINED WINDS...40 MPH

PRESENT MOVEMENT...NORTHWEST OR 320 DEGREES AT 14 MPH

MINIMUM CENTRAL PRESSURE...1011 MB

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FORECASTER ROBERTS/BRENNAN

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**Example 2 - TCU to notify users that change in status is forthcoming**

ZCZC MIATCUAT2 ALL

TTAA00 KNHC DDHHMM

TROPICAL DEPRESSION SEVEN TROPICAL CYCLONE UPDATE

NWS TPC/NATIONAL HURRICANE CENTER MIAMI FL AL072008

200 PM EDT MON AUG 25 2008

PRELIMINARY REPORTS FROM AN AIR FORCE HURRICANE HUNTER AIRCRAFT INDICATE THAT TROPICAL DEPRESSION SEVEN HAS STRENGTHENED. A SPECIAL ADVISORY WILL BE ISSUED WITHIN THE NEXT 30 MINUTES TO UPGRADE THE DEPRESSION TO A TROPICAL STORM...TO UPDATE THE INTENSITY FORECAST...AND TO ISSUE NEW WATCHES AND WARNINGS FOR HISPANIOLA.

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FORECASTER PASCH

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**Example 3 - TCU to update watches or warnings (no change in storm summary information)**

ZCZC MIATCUAT4 ALL

TTAA00 KNHC DDHHMM

HURRICANE IKE TROPICAL CYCLONE UPDATE

NWS TPC/NATIONAL HURRICANE CENTER MIAMI FL AL092008

600 PM AST FRI SEP 05 2008

AT 6 PM AST...2200 UTC...THE GOVERNMENT OF THE BAHAMAS HAS ISSUED A

HURRICANE WATCH FOR THE SOUTHEASTERN BAHAMAS...INCLUDING THE

ACKLINS...CROOKED ISLAND...THE INAGUAS...MAYAGUANA...AND THE RAGGED

ISLANDS...AS WELL AS FOR THE TURKS AND CAICOS ISLANDS.

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FORECASTER BLAKE/BEVEN

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**Recommen-**

Informational. Amend NHOP Section 3.2.5 by adding the following sentence after the

	<b>dition</b>	current, second sentence in the paragraph: “When a TCU is issued to change the status of a tropical cyclone (e.g., from a tropical storm to a hurricane), or to update storm intensity, location, or motion information, the TCU will include a storm summary section identical in format to the storm summary section found in the TCP.” IHC to forward decision to RA-IV and RA-V Committees.
	<b>Action</b>	<i>Accept recommendation. Will be CLOSED once NHOP is updated.</i>
<b>15</b>	<b>Title</b>	<b>USAF Reconnaissance Ground Station Status</b>
	<b>Submitter</b>	NOAANWS
	<b>Discussion</b>	For the past several years, the standard configuration of the USAF reconnaissance ground station contained two pathways to disseminate data to the Air Force Weather Agency (AFWA). Recently, AFWA eliminated one of these pathways due to major security concerns and issues with maintainability of that circuit which uses a direct modem path to AFWA. For the upcoming hurricane season, there will only be one path for all recon data to be transmitted to AFWA for dissemination to external users. If problems are experienced on that circuit, there is no backup communications line that can be utilized; hence, no data will be distributed until that service can be restored. Data delivery to NHC is not expected to impact local forecast operations since the receiver and ground station unit are located locally in NHC’s facility.
	<b>Recommendation</b>	Informational. Update NHOP Section 5.9.4 as required.
	<b>Action</b>	<i>Accept recommendation. Will be CLOSED once NHOP is updated.</i>
<b>16</b>	<b>Title</b>	<b>Modification of Section 5.5.5 of NHOP</b>
	<b>Submitter</b>	NOAA/AOC
	<b>Discussion</b>	During the 2010 hurricane season NASA, NOAA and NSF will jointly participate in multiple research missions as part of the NASA GRIP mission, the NOAA IFEX program and the NSF PREDICT effort. In addition to the NOAA P-3s and G-IV, NASA will utilize its DCX-8 and Global Hawk and NSF will employ its G-V from NCAR. All of these, of course, will fly in the same airspace with the USAF Reserve C-130s.  The NHOP, in Section 5.5.5 recognizes all of these aircraft with the exception of the NSF G-V and the NASA Global Hawk. In keeping with the NHOP protocol, these two aircraft should be recognized in this document.
	<b>Recommendation</b>	Make changes to the NHOP Section 5.5.5 reflecting the addition of these two aircraft.
	<b>Action</b>	<i>Accept recommendation. In addition to adding the above information into the NHOP, there were two additional items that were discussed:</i>  <i>- Add aircraft identifier information in the NHOP for the NSF G-V and the NASA Global Hawk. NOAA/AOC (Jim McFadden) agreed to supply the aircraft identifier information for inclusion in the NHOP.</i>  <i>- There was a suggestion to add a general statement in the NHOP that indicates if agencies plan/want to use other aircraft to support tropical cyclone reconnaissance needs, the applicable agencies/organizations shall follow guidance contained in the NHOP. After reviewing the NHOP, the first sentence in Chapter 5 already alluded to</i>

		<p><i>this: “All Department of Commerce (DOC) tropical and subtropical cyclone aircraft reconnaissance needs will be requested and provided in accordance with the procedures of this chapter.”</i></p> <p><i>Will be CLOSED once NHOP is updated.</i></p>
17	<p><b>Title</b></p> <p><b>Submitter</b></p> <p><b>Discussion</b></p> <p><b>Recommendation</b></p>	<p><b>Updates to Chapter 6 of the National Hurricane Operations Plan</b></p> <p>NOAA/NWS</p> <p>There are changes to NOAA satellite operations that will occur before the start of the 2010 hurricane season that require updating in the NHOP. There are also omissions and a few typographical errors in the chapter that need correcting. Additional revisions may be necessary if GOES-P is successfully launched before the start of the 2010 season.</p> <p>Make the following changes to Chapter 6 of the National Hurricane Operations Plan:</p> <ol style="list-style-type: none"> <li>1. Section 6.1.1, page 6-11: GOES-13 is scheduled to replace GOES-12 before the start of the 2010 hurricane season. All references to GOES-12 as the operational satellite in this section should be replaced with references to GOES-13.</li> <li>2. Section 6.1.1.1, pages 6-11 and 6-2: Replace the discussion of GOES-12 with a similar discussion of GOES-13.</li> <li>3. Section 6.1.1.3, page 6-22: Replace this discussion of GOES-13 with a discussion of GOES-12 in its new role as the South American coverage satellite.</li> <li>4. Section 6.1.1.4, pages 6-2 to 6-3: Replace this discussion of GOES-10 with a discussion of GOES-14 stating the launch date and the planned on-orbit spare status.</li> <li>5. Add section 6.1.1.5, discussion of the retirement of GOES-10.</li> <li>6. Section 6.1.3, page 6-3: MTSAT-2 is currently scheduled to replace MTSAT-1R on 1 July 2010. This section should be updated to reflect that.</li> <li>7. Section 6.1.4, page 6-3: The Equatorial crossing times are given in Table 6-2 instead of Table 6-1.</li> <li>8. Section 6.1.4, page 6-3 and Table 6-2, page 6-8: The Metop-A satellite carries the Advanced Scatterometer (ASCAT) which provides ocean surface vector winds. These sections should be updated to reflect this.</li> <li>9. Table 6-2, pages 6-7 through 6-9: Update this table for changes in the operational satellites. Correct a typographical error in the MTSAT-1R products section. Add AMSU-based tropical cyclone intensity estimates to the list of products from NOAA-19 and Metop-A.</li> <li>10. Section 6.1 and Table 6-2, pages 6-7 through 6-9: Include the NASA Aqua, Department of Defense Coriolis, NASA Jason, and European Envisat satellites that are used operationally. Include appropriate discussions in section 6.1.</li> <li>11. Table 6-2, pages 6-7 through 6-9: Several of the NOAA polar orbiting satellite series are still producing data even though they are not considered “operational”. Recommending adding them to the table.</li> <li>12. Table 6-2, pages 6-7 through 6-9: Recommend modifying the “Local Time” column to a column to with the more detailed orbital information of each satellite –</li> </ol>

		<p>geostationary, polar orbiting, and other types as well as the appropriate crossing times.</p> <p>13. Section 6.6, page 6-6, and Table 6-3, page 6-9: Add “Dvorak Technique” to the section title and table captions.</p> <p><i>Accept recommendation. Will be CLOSED once NHOP is updated.</i></p>
<b>Non-NHOP Related Action Items</b>		
<b>18</b>	<p><b>Title</b></p> <p><b>Submitter</b></p> <p><b>Discussion</b></p>	<p>Hurricane Portal Development</p> <p>U.S. Department of Agriculture</p> <p>Several Federal agencies provide beneficial information on hurricanes and related tropical systems. For example, the National Climatic Data Center (NCDC) provides maps of past hurricane tracks, the Climate Prediction Center (CPC) offers seasonal forecasts of hurricane activity, the National Hurricane Center (NHC) monitors and forecasts tropical development on shorter time scales, the Hydrometeorological Prediction Center (HPC) provides summaries of the rainfall associated with tropical systems, the National Aeronautical and Space Administration (NASA) conducts hurricane-related research, and the Federal Emergency Management Agency (FEMA) provides disaster assistance and preparedness information.</p> <p>Currently, this diverse assortment of hurricane-related products and services is provided using an agency-centric approach, requiring that customers visit the web site of each Federal agency to obtain access to the desired information. Potential customers must have prior knowledge of Federal agency responsibilities to help guide their search for this information. Without this knowledge, it can be difficult to locate existing products and services or identify new ones as they are introduced. Given that public outreach and agency coordination is critical to mitigating the impacts of hurricanes and related tropical systems, it is important to ensure that hurricane-related information is communicated using the most efficient and effective mode possible.</p> <p>A Hurricane Portal (e.g., <a href="http://www.hurricane.gov">www.hurricane.gov</a>) would help the Federal government better coordinate with partners and communicate with the Public by providing one central location where users could access all hurricane-related products, services, and other information. In addition to providing a valuable Public service, such an effort may help the hurricane community more easily identify gaps in their collective suite of products and services, enabling experts to refine future product development and outreach.</p> <p>A Hurricane Portal could be modeled after the U.S. Drought Portal (<a href="http://www.drought.gov">www.drought.gov</a>) which acknowledges agency contributions to the collaboration while providing relatively seamless access to the products and services users seek. An abundance of hurricane-related information could potentially be accessed via a Hurricane Portal, such as historical, current, forecast, research, educational, planning, and recovery information. Although the tropics are typically most active during a relatively small portion of each calendar year, hurricane research, education, planning, and education often occur year round. Thus, a Hurricane Portal could provide an ideal mechanism for emphasizing preparedness as much as response, throughout the entire year.</p>
	<b>Recommendation</b>	<p>The Office of the Federal Coordinator for Meteorology coordinate development and implementation of a Hurricane Portal. The portal should host or direct users to all hurricane-related information that is provided by Federal government agencies and partners, and the portal should be kept up-to-date to ensure users have access to the most current information available from all collaborators.</p>

	<b>Action</b>	<i>Recommendation not accepted. However, NHC will include a link to the firstgov.gov site on their web site. The firstgov.gov link is the same as usa.gov. The usa.gov site has the capability for users to input key words (e.g., hurricane, tropical cyclone) to obtain a listing of related government sites. CLOSED once NHC includes the usa.gov link on their web site.</i>
	<b>Status (3/22/10)</b>	The NHC has prominently posted the usa.gov link on their main page. <b>CLOSED</b>
<b>19</b>	<b>Title</b>	<b>Tropical Cyclone Wind Field Graphic becomes Operational for the Central Pacific in 2010</b>
	<b>Submitter</b>	NOAA/NWS
	<b>Discussion</b>	The CPHC has decided the product becomes operational in 2010. The product became operational for NHC in 2009.
	<b>Recommendation</b>	Informational. IHC to forward to RA-V Committee.
	<b>Action</b>	<i>Accept recommendation. No action required. CLOSED.</i>
<b>20</b>	<b>Title</b>	<b>Graphical Tropical Weather Outlook becomes Operational for the Central Pacific in 2010</b>
	<b>Submitter</b>	NOAA/NWS
	<b>Discussion</b>	The CPHC has decided the product becomes operational in 2010. The product became operational for NHC in 2009.
	<b>Recommendation</b>	Informational. IHC to forward to RA-V Committee.
	<b>Action</b>	<i>Accept recommendation. No action required. CLOSED.</i>
<b>21</b>	<b>Title</b>	<b>Experimental Probabilistic Storm Surge Exceedance Products for 2010</b>
	<b>Submitter</b>	NOAA/NWS
	<b>Discussion</b>	The NWS Meteorological Development Laboratory will provide experimental graphical storm surge exceedance products, from 10 through 90 percent at 10 percent increments, in graphical, GRIB2, and shape file formats when hurricane watches and warnings are in effect for the Atlantic or Gulf coasts. More details are available at: <a href="http://www.weather.gov/mdl/psurge">http://www.weather.gov/mdl/psurge</a>
	<b>Recommendation</b>	Informational. IHC to forward to RA-IV Committee.
	<b>Action</b>	<i>Accept recommendation. No action required. CLOSED.</i>
<b>22</b>	<b>Title</b>	<b>Hurricane Coordination Hotline (HCH)</b>
	<b>Submitter</b>	NOAA/NWS
	<b>Discussion</b>	Responsibilities and requirements for HCH subscribers will be reviewed by NWSHQ. The NWS Telecommunications Infrastructure Branch contact point is: Edward Gumkowski

		<p><a href="mailto:Edward.Gumkowski@noaa.gov">Edward.Gumkowski@noaa.gov</a> Office: 301-713-1729 x206 Cell: 240-478-7946</p>
	<p><b>Recommendation</b></p> <p>Informational.</p> <p><b>Action</b></p> <p><i>Accept recommendation. No action required. <b>CLOSED.</b></i></p>	
23	<p><b>Title</b></p> <p><b>Dropwindsonde Processing and Archiving of the Data</b></p> <p><b>Submitter</b></p> <p>NOAA/AOML/HRD</p> <p><b>Discussion</b></p> <p>The Hurricane Research Division of NOAA's Atlantic Oceanographic and Meteorological Laboratory has collected and made available to the community an archive of all dropwindsonde data obtained in and near tropical cyclones globally since 1997. The types of data that are available are: (1) raw D-files, (2) transmitted TEMPDROP messages, (3) high-resolution operationally processed data, and (4) post-processed (research-quality) data. The first and second are routinely available after each flight.</p> <p>Currently, high-resolution data are saved during NOAA P-3 flights in which EDITSONDE is used to process raw data. Many researchers use the high-resolution data in studies of small-scale features, turbulence, and air-sea interaction. The new version of ASPEN (ASPEN-QC) will have the capability of outputting high-resolution data. HRD requests that other government agencies:</p> <ol style="list-style-type: none"> <li>1. Run the new version of ASPEN, when available, so that the high-resolution data are output. The format will be agreed upon by the agencies that deploy and use dropwindsondes.</li> <li>2. Make the raw D-files and operationally processed high-resolution data available to HRD for archive. Formal mechanisms for this transfer will be agreed upon by the agencies that deploy and archive dropwindsondes.</li> </ol> <p>HRD has agreements with international agencies and NCAR for the sharing of their data.</p> <p><b>Recommendation</b></p> <p>Once the new ASPEN dropwindsonde processing software becomes operational, other Government agencies:</p> <ol style="list-style-type: none"> <li>1. Archive high resolution dropsonde data files along with the currently archived D-files, and</li> <li>2. Provide copies of both file types to HRD within two months after the end of the Atlantic Basin hurricane season.</li> </ol> <p><b>Action</b></p> <p><i>Accept recommendation. 53 WRS confirmed that they concur with this item. Other applicable agencies are also encouraged to adhere to this request. <b>CLOSED.</b></i></p>	

**OLD ACTION ITEMS: FROM 63<sup>RD</sup> IHC**

<b>4</b>	<p><b>Title</b>                    <b>Change in Organizational Name</b></p> <p><b>Submitter</b>                NOAA</p> <p><b>Discussion</b>                The approval process changing the name of the Tropical Prediction Center/National Hurricane Center to National Hurricane Center is underway.</p> <p><b>Recommendation</b>        Informational. Amend the NHOP if official approval for the name change is obtained from the Department of Commerce prior to the NHOP going to the printer (~ May 15, 2009). IHC to forward to RA-IV Committee if approval is obtained.</p> <p><b>Action</b>                      <i>Continue to track if official approval is received. If it has been received in time for updating the NHOP, it will be CLOSED once the NHOP is updated.</i></p> <p><b>Status (03/22/10)</b>        <i>The name change is still pending. Will change TPC/NHC to NHC in the NHOP when the name change is approved. <b>OPEN.</b></i></p>
<b>11</b>	<p><b>Title</b>                    <b>Airspace Use During Tropical Cyclone Missions (SEE NEW ACTION ITEM #5)</b></p> <p><b>Submitter</b>                NOAA</p> <p><b>Discussion</b>                Currently the NHOP provides guidance on airspace use by participating TEAL (USAFR) and NOAA aircraft in uncontrolled airspace (Sect. 5.5.5.1.9). Controlled airspace is another matter. Air traffic control (ATC) is reluctant at times to allow NOAA aircraft to fly at altitudes deemed necessary to avoid safety-of-flight issues, and, in many cases, necessary to accomplish research objectives. This occurs when the TEAL aircraft have blocked the airspace from the surface to 10,000 ft. when flying tropical cyclone reconnaissance. NOAA aircraft are precluded from operating in this block. The safety-of-flight issues deal with potential physical damage to the aircraft from graupel, hail and ice. NESDIS research efforts are compromised at altitudes above 8,000 ft., and some HRD research objectives also require altitudes below 10,000 ft.</p> <p><b>Recommendation</b>        ATC agrees to allow participating NOAA and TEAL aircraft to maintain their own separation while operating in controlled air space in tropical cyclones and the NHOP be updated to so indicate. Language allowing such operations exists in Sec. 5.5.5.2.5, but this only applies to cases when two TEAL aircraft are within the storm environment.</p> <p>   Also recommend extending ATC priority handling to NOAA aircraft as currently offered to TEAL aircraft as indicated in Sec. 5.5.5.2.6.</p> <p><b>Action</b>                      <i>Accept recommendation. Small team (Miami/Jacksonville ATC, 53rd WRS, and NOAA AOC) drafted proposed update to NHOP to allow participating NOAA and TEAL aircraft to maintain their own separation while operating in controlled airspace. Draft changes being further coordinated within FAA.</i></p> <p><b>Status (03/22/10)</b>        <i>This item has been replaced with Action Item #5 from the 64<sup>th</sup> IHC. <b>CLOSED.</b></i></p>
<b>13</b>	<p><b>Title</b>                    <b>Replacement of the Term “Sea State” with “Significant Wave Height” in Tropical Cyclone Related Documents.</b></p> <p><b>Submitter</b>                Navy</p> <p><b>Discussion</b>                Sea state has a wide variety of scales (i.e. Beaufort, Douglas, Pierson-Moskowitz) which can mislead a reader, user or customer. Most of these scales relate wave height to wind speed and therefore only address “seas”. According to Walter Monk, a “trained observer”</p>

		<p>sees the highest 1/3 waves (the significant wave height) when observing waves. This significant wave height is composed of both “seas” and swell waves, both are important to vessels operating in or near the vicinity of any tropical cyclone. Additionally, Wave Watch 3, the most commonly used wave model, generates fields of wave height vice sea state.</p> <p>While the above definition of “significant wave height” is the average height of the highest 1/3 of the waves, it must be noted that individual wave heights could be significantly larger than forecast, maybe twice as large.</p> <p><b>Recommendation</b> Use the term “significant wave height” in all future tropical cyclone related documents and software.</p> <p><b>Action</b> <i>Accept recommendation. HQ NWS representative will take forward to the National Maritime Program meeting.</i></p> <p><b>Status (01/26/10)</b> <i>The NWS marine program manager reports all NWS offshore/high seas products already use the “significant wave height” definition so no change to any “documents or software” is necessary. The following comment box is included with these products: “Significant wave height is shown (the average height of the highest one-third of the waves)”</i></p> <p><i>Recommend Action Item be closed.</i></p> <p><b>Status (03/22/10)</b> <i>All attendees of the WG/HWSOR meeting during the 64<sup>th</sup> IHC accepted the recommendation to close this item. <b>CLOSED.</b></i></p>
<b>OLD ACTION ITEMS: FROM 62<sup>ND</sup> IHC</b>		
10	<p><b>Title</b></p> <p><b>Submitter</b></p> <p><b>Discussion</b></p> <p><b>Recommendation</b></p> <p><b>Action</b></p> <p><b>Status</b></p>	<p><b>Update Memorandum of Agreement between United States Air Force Reserves and NOAA</b></p> <p>NOAA</p> <p>The Memorandum of Agreement (MOA) between the U.S. Air Force Reserves and NOAA was last updated in 2000, seven years ago. AOC recently received a couple of phone calls from other DOD agencies inquiring about revision and update to this MOA.</p> <p>Request Office of the Federal Coordinator for Meteorology (OFCM) to facilitate the update of the MOA.</p> <p><i>Accept recommendation.</i></p> <p><i>2/24/09: MOA has been updated and completely reorganized. NOAA/NWS has signed the MOA (Dr. Jack Hayes); AFRC is reviewing the MOA.</i></p> <p><i>01/26/10: AFRC still has not signed the MOA. <b>OPEN</b></i></p> <p><i>03/10/10: The Joint Staff is staffing a tasking to AFRC to take action on the MOA. <b>OPEN.</b></i></p>
17	<p><b>Title</b></p> <p><b>Submitter</b></p> <p><b>Discussion</b></p>	<p><b>Caribbean Hurricane Awareness Tour (CHAT)</b></p> <p>53<sup>rd</sup> WRS</p> <p>The CHAT has been flown by both the NOAA P-3 and the AFRC WC-130. Historically, the NOAA P-3 has been used for the Gulf, East Coast Awareness Tour and the WC-130 for the CHAT. These missions are important to educate the public about the threat of</p>



	hurricanes and to continue an effective liaison with the weather services of the countries/areas visited.
<b>Recommendation</b>	Discuss options where the DOD and DOC share the expense of the CHAT. Discuss options to rotate the responsibility of doing the Gulf, East Coast Hurricane Awareness Tour or CHAT between the main flying organizations—DOD and NOAA. This would enhance outreach and allow the public in both regions to see both the AFRC WC-130 and NOAA P-3.
<b>Action</b>	<i>Accept recommendation</i>
<b>Status</b>	<i>AFRC/53 WRS and NHC will explore options during 2009 CHAT.</i>  <i>01/26/10: This item will remain open, pending the signing of the MOU.</i>  <i>03/22/10: Attendees of the WG/HWSOR meeting during the 64<sup>th</sup> IHC agreed that the 53 WRS and NOAA/AOC should continue dialog on possibly alternating participation on the CHAT and HAT. Also, there may be an opportunity/need to include appropriate language in the MOU. <b>OPEN.</b></i>

### OLD ACTION ITEMS: 61<sup>st</sup> IHC

11. Title: **Operational Tropical Cyclone Forecast and Advisory Products in a GIS-Ready Format in Real Time.**

Submitter: USDA

Discussion:

The NOAA/USDA Joint Agricultural Weather Facility (JAWF) requests that the NOAA National Hurricane Center provide operational tropical cyclone forecast and advisory products in a GIS-ready format in real time.

Following are NOAA/USDA JAWF GIS data and product requirements:

1. Tropical Cyclone Track and Watch/Warning map related data:

- Potential day 1-3 track area (i.e., cone) in polygon shapefile format
- Potential day 1-5 track area (i.e., cone) in polygon shapefile format
- Shapefiles available when the GIF image is posted on the NHC web site

2. Cumulative Wind Distribution map related data:

- Tropical Storm force wind swath (34 knot) in polygon shapefile format
- Hurricane force wind swath (64 knot) in polygon shapefile format
- Shapefiles available when the GIF image is posted on the NHC web site

\* Although not currently displayed on the Cumulative Wind Distribution map, the 50 knot wind swath in polygon shapefile format would also be desirable.

3. Tropical Cyclone Surface Wind Speed Probabilities map related data:

- Probabilities of winds of at least 34 knots in polygon shapefile format
- Probabilities of winds of at least 50 knots in polygon shapefile format
- Probabilities of winds of at least 64 knots in polygon shapefile format

- Shapefiles available when the GIF images are posted on the NHC web site

4. Storm-total rainfall reports:

- Text file in a comma delimited format
- Each row contains: Station, Latitude, Longitude, Storm total rainfall, Notes
- Text file updated as new data become available or at a predefined interval

5. Maximum sustained wind speed reports:

- Text file in a comma delimited format
- Each row contains: Station, Latitude, Longitude, Max. sustained winds, Notes
- Text file updated as new data becomes available or at a predefined interval

6. Maximum wind speed (gust) reports:

- Text file in a comma delimited format
- Each row contains: Station, Latitude, Longitude, Max. wind speed (Gust), Notes
- Text file updated as new data becomes available or at a predefined interval

Justification: The first three products identified above are already produced operationally by NHC in a GIF format. The NOAA/USDA JAWF requests that these products be made available in a shapefile format as well. The shapefile format would enable USDA meteorologists to more quickly and precisely overlay NHC products on USDA agricultural data in a GIS, and hence facilitate a more accurate assessment of hurricane impacts on domestic agriculture.

The latter three data sets identified above are not available as operational NHC products. These data are sometimes contained in the Public Advisories and Discussions associated with individual storms, but are not always made available. We request that NHC provide station reports of storm-total rainfall, maximum sustained wind speed, and maximum gusts in a comma delimited text (or shapefile) format as these data become available during and immediately after a storm. We understand that these data would be considered preliminary, but it would significantly improve USDA capabilities to assess hurricane impacts on agriculture if USDA used the same data that NHC receives.

The primary motivation for our requests is to ensure that the data and products that USDA uses in preparing hurricane-related agricultural weather assessments are identical to the data and products that NHC analyzes, generates, and disseminates to their customers. We have been unable to maintain this consistency by importing NHC GIF images into a GIS, and we frequently find differences in point rainfall and wind speed measurements when comparing data from multiple data providers. Although hurricane-related data and products can be obtained from numerous sources (e.g., FEMA, private weather firms, educational institutions), we recognize that NHC is considered the Federal government authority on hurricanes and the official source for related information. Given this recognition and increasing requests for hurricane-related data and products by USDA decisions makers, USDA meteorologists would prefer to use only NHC-endorsed data and products in preparing agricultural weather assessments. This single source for information would help reduce questions about the differences, reliability, and accuracy of hurricane-related data and products, allowing USDA meteorologists to focus more

on explaining the underlying science and messages conveyed by these data and products.

Recommendation: NOAA National Hurricane Center provide operational tropical cyclone forecast and advisory products in a GIS-ready format in real time.

Action: Products 1-3 (in GIS-ready format) are under development and should be available operationally in 2008. Products 4-6 are not available through TPC/NHC. OFCM (Bob Dumont) and NWS (Scott Kiser) will work with USDA (Brad Rippey) to find an alternate source of this information.

*Current Status (as of 2/23/09): Action ongoing.*

*NHC plans on creating new real-time GIS experimental products for the upcoming 2009 season. The table below depicts new GIS products and identifies specific products that satisfy items #1 - # 3 above:*

<b>Real-Time Experimental GIS Products</b>	
<b>Product</b>	<b>Products that Satisfy 61-11, Items 1-3</b>
Forecast Cone of Uncertainty, Track, Points, Watches/Warnings	1
Working Best Track Wind Swath	2
Wind Speed Probability (Points, Interpolated Polygons)	3
Forecast Wind Radii	N/A (for information only)
Surface Wind	N/A (for information only)
Tropical Watch / Warning Break Points	N/A (for information only)
Probabilistic Storm Surge	N/A (for information only)
<b>Post-Season Experimental GIS Products</b>	
Final Best Track Wind Swath	2
Final Best Track Wind Radii	2
Final Best Track Storm Data	N/A (for information only)

Status (from WG/HWSOR meeting at 63<sup>rd</sup> IHC):

Items 1-3: **CLOSED.**

Item 4: USDA is using an alternative source/product and is also working with HPC. **CLOSED**

Items 5-6: USDA representative (Brad Rippey), in coordination with the USACE representative (Bill Birkemeier), will formalize their requirement by sending a letter of request to the HQ NWS representative (Tim Schott).

Status (03/22/10) USDA agreed that the intent of this action item has been met and the action item is **CLOSED.**

### **OTHER OLD ACTION ITEMS**

2. Title: **Expendable Bathythermograph (AXBT) Observations on Tasked Reconnaissance Missions**

Submitter: NOAA

Discussion: A need has been identified by EMC for routine AXBT data to be collected on hurricane reconnaissance and research flights. The purpose of this data is to support initial testing efforts for the new HWRF coupled hurricane model. Currently there are no real time in situ ocean observations that define the upper ocean structure. EMC would like to test the usefulness of AXBT observations in coupled HWRF model runs in 2006 and beyond, beginning initially with data from the NOAA P3's and then from the AFRC WC-130J reconnaissance aircraft after 2007, when the HWRF model is expected to become operational.

Recommendation: Request AXBT deployments (minimum of 12), using present second-hand inventory, on each WP-3D tasked reconnaissance mission.

Action:

1. NCEP/EMC, TPC/NHC, and AOC will coordinate to obtain AXBT observations on selected tasked missions during the 2006 season to help establish the requirements for upper ocean observations.
2. The NOAA HRD and AOC will investigate the development of an AXBT that can be deployed through the AVAPS system.
3. The 53 WRS will investigate the feasibility of deploying AXBT's.
4. NWS will take action to identify needed resources for upper ocean observations through the PPBES process.

*Current Status:* Action ongoing pending resources. NCEP/EMC is developing the requirements document for AXBT (upper-ocean) observations, which is the driver for actions 2-4 above. Obviously, per action #4 above, the NOAA hurricane program will need additional resources for this requirement, especially for instrument costs and additional flight hours.

*As discussed at the WG/HWSOR meeting during the 62<sup>nd</sup> IHC, the OFCM will coordinate with NWS and the 53<sup>rd</sup> WRS for AXBT and other associated equipment/system requirements to facilitate funding for this mission.*

*Status (12/22/08)* NOAA/AOML/HRD brought this issue to the 2008 NOAA Hurricane Conference. The recommendation from the conference was: "A plan for obtaining ocean data in support of operational needs should be developed in consultation with EMC and AOC."

This plan should consist of a set of requirements based on known resources.” **OPEN**

Status (from WG/HWSOR meeting at 63rd IHC):

WG/HWSOR agreed a plan for obtaining ocean data in support of operational needs to be developed. Team members to draft plan by June 1, 2009 were identified at the 63rd IHC meeting:

HRD: Eric Uhlhorn (lead)  
EMC: Hyun-Sook Kim  
NCO: Michelle Mainelli  
AFRC: Mike Ammons / Jon Talbot  
AOC: Jim McFadden  
NRL: Peter Black  
RSMAS/UM: Nick Shay

Status (01/26/10) A draft document has been developed and is being vetted by the identified representatives of key organizations. A summary and overview presentation will be provided at the 64<sup>th</sup> IHC. **OPEN.**

Status (03/22/10) Two actions resulted from the meeting of the WG/HWSOR during the 64<sup>th</sup> IHC:

- The draft document should be forwarded to NHC for their review and request for concurrence. **OPEN.**

- A team should be formed to work the funding mechanism for this requirement. **OPEN.**