

**WORKING GROUP FOR HURRICANE AND WINTER STORM  
OPERATIONS AND RESEARCH (WG/HWSOR)**

**MEETING AGENDA (draft)  
March 6, 2008**

62d Interdepartmental Hurricane Conference  
Charleston, South Carolina

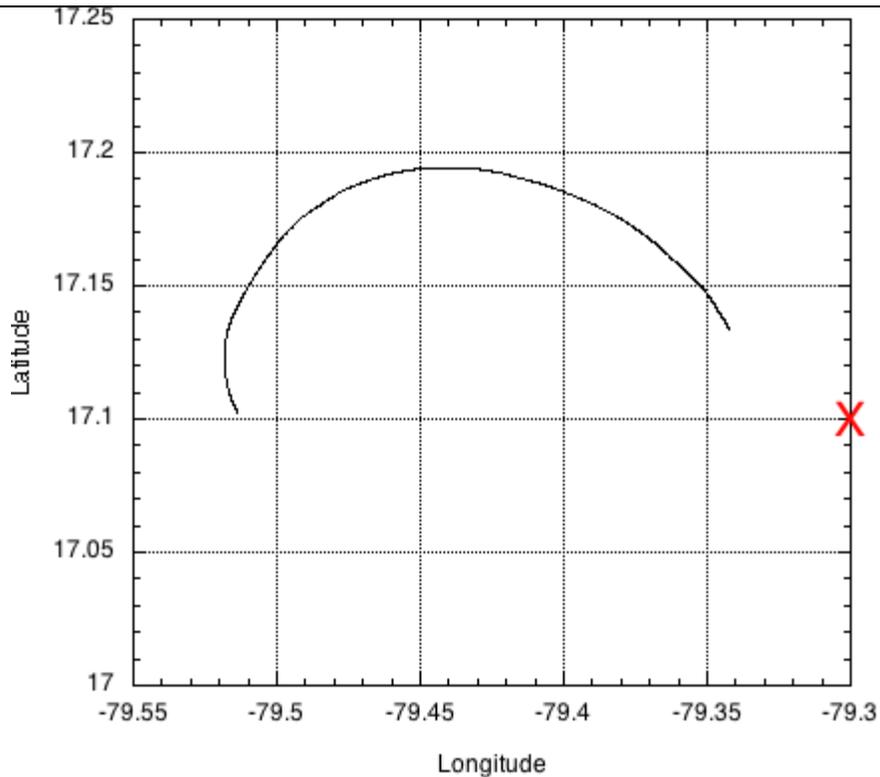
Carolina Ballroom  
1:30 p.m.

1. Opening remarks Mr. Mark Welshinger, Executive Secretary
2. New Action Items: Dr. Ed Rappaport, Chairperson (will lead discussion)
  - (1) **Moving the Tropical Weather Outlook (TWO) Issuance Times and Enhancement of Experimental graphical TWO (GTWO) (NOAA)**
  - (2) **Amend Product Description of the Tropical Cyclone Danger Graphic (TCDG) (NOAA)**
  - (3) **Averaging Time of Flight-Level Winds in Vortex Message (NOAA)**
  - (4) **Changes to TEMPDROP Message (NOAA)**
  - (5) **Reference on P-3 Availability (NOAA)**
  - (6) **Requirement for Core Doppler Radar (NOAA)**
  - (7) **Format for Hurricane Hotline Conference Calls—Informational (NOAA)**
  - (8) **International Civil Aviation Organization (ICAO) Tropical Cyclone Advisory (TCA) Bulletin—Informational (NOAA)**
  - (9) **Dual Tasking of P-3 Aircraft (NOAA)**
  - (10) **Update Memorandum of Agreement between United States Air Force Reserves and NOAA (NOAA)**
  - (11) **Standardization of the Tropical Cyclone Fix Messages (NOAA)**
  - (12) **Change to NHOP Section 2.5 (NOAA)**
  - (13) **Change of Issuance Criteria for East Pacific Tropical Cyclone Public Advisories (NOAA)**
  - (14) **Changes to NHOP (CARCAH and 53<sup>rd</sup> WRS)**
  - (15) **AFRC SATCOM Ground Station Software Update**
3. Old Action Items: Dr. Ed Rappaport, Chairperson (will lead discussion)
  - (1) **Satellite Ocean Surface Vector Winds Operational Impacts and Requirements**
  - (2) **Operational Tropical Cyclone Forecast and Advisory Products in a GIS-Ready Format in Real Time.**
  - (3) **Expendable Bathythermograph (AXBT) Observations on Tasked Reconnaissance Missions.**
  - (4) **Access to Operational Storm Surge SLOSH Output**
4. Other Discussion Items (All)
5. Review Action Items Mr. Mark Welshinger, Executive Secretary
6. Adjourn

## 62<sup>nd</sup> IHC ACTION ITEMS

<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>Action</b></p>	<p><b>NHOP Related - Moving the Tropical Weather Outlook (TWO) Issuance Times and Enhancement of Experimental graphical TWO (GTWO)</b></p> <p>NOAA</p> <p>This item proposes to move the issuance times for both the Atlantic and East Pacific basin TWOs to 00Z, 06Z, 12Z and 18Z, and to include a categorical forecast of genesis probability for each system mentioned in the experimental GTWO.</p> <p>Workload/workflow considerations suggest the issuance time of the new enhanced TWOs be adjusted to 00Z, 06Z, 12Z and 18Z.</p> <p>In 2007, TPC conducted in-house testing of quantitative genesis probability forecasts for systems mentioned in the TWO. The verification of these forecasts strongly suggested an ability to distinguish between three categories of likelihood in both basins. It is proposed to enhance the existing experimental GTWO by including three-tiered public categorical genesis probability forecasts in 2008.</p> <p>The following decisions were made by the NWS:</p> <ol style="list-style-type: none"> <li>(1) Move TWO issuance times for both the Atlantic and East Pacific basins to 00Z, 06Z, 12Z and 18Z. IHC to forward decision to RA-IV Committee.</li> <li>(2) Add 3-tiered experimental genesis probability forecast for each system mentioned in the GTWO beginning in 2008. Categories would be designated “low”, “medium”, and “high”, and correspond to the probabilities of less than 20%, 20-50%, and greater than 50%, respectively. Include this information in experimental GTWO in 2008 through the use of three colors.</li> </ol> <p>IHC to forward decision to RA-IV Committee. Amend NHOP as needed.</p>
<b>2</b>	<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>NHOP Related - Amend Product Description of the Tropical Cyclone Danger Graphic (TCDG)</b></p> <p>NOAA</p> <p>TPC/TAFB has been including areas of “possible” tropical cyclone formation on the TCDG during the past several years. Recently, the time period for possible formation shown on the TCDG was extended from 36 to 48 hour to be consistent with the time period referenced in the NHC Tropical Weather Outlooks.</p> <p>Update NHOP Chapter 3.2.13 to extend TCDG from 36 to 48 hours.</p>

3	<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>NHOP Related - Averaging Time of Flight-Level Winds in Vortex Message</b></p> <p>NOAA</p> <p>The National Hurricane Operations Plan (NHOP) does not specify an averaging time for the peak flight-level winds reported in item F of the Vortex message. NHC has long considered a 10-s wind from a reconnaissance aircraft penetration to be roughly comparable to a 1-min Eulerian average. Current practice on the Air Force C-130 is to provide 10-s averages in both the HDOB and Vortex messages, and the NOAA aircraft also report 10-s winds in their HDOB messages. However, NOAA currently generally reports a 5-s peak wind in their Vortex messages.</p> <p>All winds reported in the Vortex message should be 10-s averages. Modify NHOP Table 5-2.</p>
4	<p><b>Title</b></p> <p><b>Submitter</b></p> <p><b>Discussion</b></p>	<p><b>Changes to TEMPDROP Message</b></p> <p>NOAA</p> <p>Dropwindsondes released in the tropical cyclone core may make more than one orbit around the center and travel more than 50 km from their initial position, depending on the height of their release. The TEMPDROP code used to transmit the data from the aircraft provides only one location with one-tenth of a degree latitude/longitude (about 10 km) resolution. This may result in data assimilation schemes attempting to utilize data more than 180 degrees azimuthally from its correct location relative to the tropical cyclone center (see Figure). Assimilation of accurate dropwindsonde data in the tropical cyclone core can therefore lead to unrepresentative structures in the model initial conditions.</p> <p>Example: 62626 REL XXXXNXXXXXXW hhmm SPL XXXXNXXXXXXW hhmm LAST WIND etc. (No set order to the 62626 string)</p> <p>This item proposes to add another group to the 62626 line in the tempdrop message. Currently, a splash location and time (SPL) is provided, with the time and location to hundredths of a degree (1km). A release (REL) location and time can be added with the same format. Using the wind information in the TEMPDROP message, the location of the observation at each level can then be calculated. The programming to make this happen is done by NCAR for the ASPEN code, and by HRD for the editsonde code. Operational centers would need to add this to their decoders if they want to assimilate the inner-core data.</p>



[Trajectory of a dropwindsonde released in the eyewall of Hurricane Emily 16 July 2005. The 'X' marks the release location provided on the TEMPDROP message and represents the only location available for assimilation of the dropwindsonde data.]

**Recommendation**

Make two changes to the 62626 message. Edit NHOP Table G-6.

1. Addition of a release location/time designator (REL) written as REL XXXXNXXXXXW hhmss.
2. Addition of a new splash location/time designator (SPG) written as SPG XXXXNXXXXXW hhmss. The former splash location/time designator (SPL) will be retained but likely not be used.

An example of a new 62626 string:

62626 REL XXXXNXXXXXW hhmss SPG XXXXNXXXXXW hhmss LST WIND etc. (No set order to the 62626 string)

**Action**

5

**Title**

**NHOP Related - Reference on P-3 Availability**

**Submitter**

NOAA

**Discussion**

Paragraph 5.5.2.5 in the NHOP addresses the availability of the NOAA P-3 during the hurricane season saying it will be configured per Par. 5.4.6. The actual paragraph where this is defined is 5.4.7.

**Recommendation**

Change NHOP paragraph 5.5.2.5 to reflect the correct paragraph number.

**Action**

6	<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>NHOP Related - Requirement for Core Doppler Radar</b></p> <p>NOAA</p> <p>Paragraph 5.4.5 in the NHOP speaks to the requirement for core Doppler radar data but only defines it as only "when required." It does not specify either the aircraft or the period of the requirement, as does paragraph 5.5.2.5 for the AOC P-3. Will this requirement exist for the entire season, 1 June to 30 November and will observations be required every 6 or every 12 hours?</p> <p>In paragraph 5.4.7 of the NHOP, add a reference to Doppler radar to ensure one aircraft equipped with this radar is available for the entire season. OFCM should work with AOC and EMC regarding the requirement for frequency of observations which may also need to be added to the NHOP.</p>
7	<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>Format for Hurricane Hotline Conference Calls—Informational</b></p> <p>NOAA</p> <p>TPC will develop the technology to post HPC/OPC's latitude and longitude forecast points to Hurricane Hotline participants via an alternate electronic Tropical Cyclone Worksheet. If the electronic method is successful, neither HPC nor OPC will read their forecast points on the hotline. As a backup however, points could still be read on the call.</p> <p>Report to IHC as informational.</p> <p>No action required.</p>
8	<p><b>Title</b></p> <p><b>Submitter</b></p> <p><b>Discussion</b></p>	<p><b>International Civil Aviation Organization (ICAO) Tropical Cyclone Advisory (TCA) Bulletin—Informational</b></p> <p>NOAA</p> <p>TPC and CPHC issue the Tropical Cyclone ICAO Aviation TROPICAL CYCLONE Advisory for their respective WMO/RSMC area of responsibility. Pursuant to Amendment 74 to the International Standards and Recommended Practices, Meteorological Service for International Air Navigation (Annex 3 to the Convention on International Civil Aviation), the following ICAO Aviation message format changes will occur for May 15, 2008:</p> <ol style="list-style-type: none"> <li>1. Position and intensity information for forecast hours (+06, +12, +18 and +24) will be calculated from the routine advisory times (03, 09, 15 and 21), and not from the previous synoptic times.</li> <li>2. Position and intensity information for forecast hours (+06, +12, +18 and +24) will be derived from interpolated forecast information.</li> <li>3. Valid forecast times in the message will not change during issuance of Special advisories.</li> <li>4. A remarks section will be added to the message.</li> <li>5. A cautionary statement will be added to the product and will read: "The forecast information in this product is interpolated from official forecast data valid at 0000, 0600, 1200, and 1800Z".</li> </ol>

		<p><u>Affects the following ICAO Bulletins:</u></p> <table border="0"> <thead> <tr> <th>WMO ID</th> <th>CCID</th> <th>PRODUCT TYPE</th> </tr> </thead> <tbody> <tr> <td>FKNT2{1-5}</td> <td>KNHC</td> <td>North Atlantic TROPICAL CYCLONE ICAO</td> </tr> <tr> <td>FKPZ2{1-5}</td> <td>KNHC ICAO</td> <td>North East Pacific TROPICAL CYCLONE ICAO</td> </tr> <tr> <td>FKPA2{1-5}</td> <td>PHFO ICAO</td> <td>North central Pacific TROPICAL CYCLONE ICAO</td> </tr> </tbody> </table> <p><u>Example of 2008 version for ICAO Tropical Cyclone Advisory</u></p> <p>FKPA22 PHFO 140250 TCAPA2</p> <p>HURRICANE TEST ICAO ADVISORY NUMBER 22 NWS CENTRAL PACIFIC HURRICANE CENTER HONOLULU HI CP012007 0300 UTC TUE AUG 14 2008</p> <p>TC ADVISORY</p> <table border="0"> <tr> <td>DTG:</td> <td>20080814/0300Z</td> </tr> <tr> <td>TCAC:</td> <td>PHFO</td> </tr> <tr> <td>TC:</td> <td>TEST</td> </tr> <tr> <td>NR:</td> <td>012</td> </tr> <tr> <td>PSN:</td> <td>N1554 W15200</td> </tr> <tr> <td>MOV:</td> <td>WNW 14KT</td> </tr> <tr> <td>C:</td> <td>0957HPA</td> </tr> <tr> <td>MAX WIND:</td> <td>105KT</td> </tr> <tr> <td>FCST PSN + 06 HR:</td> <td>140900 N1615 W15254</td> </tr> <tr> <td>FCST MAX WIND + 06 HR:</td> <td>105KT</td> </tr> <tr> <td>FCST PSN + 12 HR:</td> <td>141500 N1636 W15348</td> </tr> <tr> <td>FCST MAX WIND + 12 HR:</td> <td>105KT</td> </tr> <tr> <td>FCST PSN + 18 HR:</td> <td>142100 N1706 W15500</td> </tr> <tr> <td>FCST MAX WIND + 18 HR:</td> <td>105KT</td> </tr> <tr> <td>FCST PSN + 24 HR:</td> <td>150300 N1736 W15612</td> </tr> <tr> <td>FCST MAX WIND + 24 HR:</td> <td>100KT</td> </tr> </table> <p>RMK The forecast position information in this product is interpolated from official forecast data valid at 0000, 0600, 1200, and 1800Z.</p> <p>NXT MSG: 20080814/0900Z</p> <p><b>Recommendation</b> Report to IHC as informational.</p> <p><b>Action</b> No action required.</p>	WMO ID	CCID	PRODUCT TYPE	FKNT2{1-5}	KNHC	North Atlantic TROPICAL CYCLONE ICAO	FKPZ2{1-5}	KNHC ICAO	North East Pacific TROPICAL CYCLONE ICAO	FKPA2{1-5}	PHFO ICAO	North central Pacific TROPICAL CYCLONE ICAO	DTG:	20080814/0300Z	TCAC:	PHFO	TC:	TEST	NR:	012	PSN:	N1554 W15200	MOV:	WNW 14KT	C:	0957HPA	MAX WIND:	105KT	FCST PSN + 06 HR:	140900 N1615 W15254	FCST MAX WIND + 06 HR:	105KT	FCST PSN + 12 HR:	141500 N1636 W15348	FCST MAX WIND + 12 HR:	105KT	FCST PSN + 18 HR:	142100 N1706 W15500	FCST MAX WIND + 18 HR:	105KT	FCST PSN + 24 HR:	150300 N1736 W15612	FCST MAX WIND + 24 HR:	100KT
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9	<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>Dual Tasking of P-3 Aircraft</b></p> <p>NOAA</p> <p>When NHC tasks the Aircraft Operations Center P-3s for Tail Doppler Radar (TDR) missions, they also are assigned fix responsibility during that time slot. On at least one occasion in 2007 the NWS canceled the TDR missions leaving CARCAH to scramble to fill the fix void with Air Force assets.</p> <p>When a TDR mission that also has fix responsibility assigned is canceled, the P-3 will fly to satisfy the reconnaissance requirement.</p> <p>Report to IHC as informational.</p> <p>No action required.</p>
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>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>
11	<p><b>Title</b></p> <p><b>Submitter</b></p> <p><b>Discussion</b></p>	<p><b>Standardization of the Tropical Cyclone Fix Messages</b></p> <p>NOAA</p> <p>JTWC, NESDIS and NWS CPHC issue fix messages. For the 2008 tropical cyclone season, CPHC will issue their fix message in a tabular format versus the old free text. With all three agencies now issuing a tabular format, the differences between them becomes more apparent. Besides these differences, some recommend changing the format in order to provide additional data.</p> <p>Potential changes could be:  Adding the ATCF storm ID to section A and dropping the name  Adding year and month to section B.  Use "H. REMARKS..." for remarks.</p> <p>JTWC format:</p> <p>A. 01W  B. 16/1430z  C. 6.7N  D. 107.1E  E. FIVE/MTSAT  F. T1.5/1.5/D0.5/24HRS  G. IR/EIR</p>

	<p><b>Recommendation</b></p> <p><b>Action</b></p>	<p>DT OF 1.5 BASED ON 1.0 DEGREE SHEAR. MET IS 2.0 WHILE PT IS 1.5. FT BASED ON DT....LIDDICK</p> <p>SAB format:</p> <p>A. 01W B. 16/1430z  C. 6.7N  D. 107.1E  E. FIVE/MTSAT  F. T1.5/1.5/D0.5/24HRS  G. IR/EIR  H. REMARKS...DT OF 1.5 BASED ON 1.0 DEGREE SHEAR. MET IS 2.0 WHILE PT IS 1.5. FT BASED ON DT....LIDDICK</p> <p>CPHC format as of 2008:</p> <p>A. TROPICAL CYCLONE CLIFF  B. 16/1430z  C. 6.7N  D. 107.1E  E. FIVE/MTSAT  F. T1.5/1.5/D0.5/24HRS  G. IR/EIR  H. REMARKS...DT OF 1.5 BASED ON 1.0 DEGREE SHEAR. MET IS 2.0 WHILE PT IS 1.5. FT BASED ON DT....LIDDICK</p> <p>Form a small team with representation from JTWC, NESDIS and NWS to discuss possible standardization of the fix message for the 2009 hurricane season. Amend NHOP to reflect changes to the CPHC message for the 2008 season.</p>
<p>12</p>	<p><b>Title</b></p> <p><b>Submitter</b></p> <p><b>Discussion</b></p> <p><b>Recommendation</b></p>	<p><b>Change to NHOP Section 2.5</b></p> <p>NOAA</p> <p>Section 2.5 currently reads:</p> <p>2.5. Annual Liaison with Other Nations. The DOD, DOC, and DOT will cooperate in arranging an annual trip to the Caribbean and the Gulf of Mexico area to carry out a continuing and effective liaison with the directors of meteorological services, air traffic control agencies, and disaster preparedness agencies of nations in those areas, regarding the provision of tropical cyclone warning services. The Air Force Reserve Command (AFRC) and TPC/NHC jointly have the responsibility to plan and execute this mission, resources permitting. TPC/NHC will coordinate with the meteorological services in the countries to be visited. AFRC will fly the mission and will issue invitational travel orders (ITO) to the TPC/NHC Director and staff, other U.S. officials, and the media on a noninterference, non-reimbursable basis.</p> <p>Change section 2.5 to read (<b>bolded text represents the proposed new text</b>):</p> <p>Section 2.5. Annual Liaison with Other Nations.</p> <p>2.5.1 The DOD, DOC, and DOT will cooperate in arranging an annual trip to the Caribbean and the Gulf of Mexico area to carry out a continuing and effective</p>

	<p><b>Action</b></p>	<p>liaison with the directors of meteorological services, air traffic control agencies, and disaster preparedness agencies of nations in those areas, regarding the provision of tropical cyclone warning services. <b>Due to the international importance of this mission, the Air Force Reserve Command (AFRC) and TPC/NHC will jointly plan and execute this mission annually.</b> The TPC/NHC will coordinate with the meteorological services in the countries to be visited.</p> <p>2.5.2 <b>This annual liaison trip is known as the Caribbean Hurricane Awareness Tour (CHAT). It takes place in the United States Southern Command’s area of responsibility and supports its mission of promoting stability, collective security, and defending U.S. regional interests. The WC-130 aircraft flown by the 53rd Weather Reconnaissance Squadron (53WRS) “Hurricane Hunters” is the most visible symbol of this awareness program; it serves as an educational platform and as a media focus for both dignitaries and the local populous. Tours of the aircraft demonstrate the critical partnership between DOD and NOAA during the preparation of a tropical cyclone forecast. The CHAT increases public awareness of the hurricane threat and serves to recognize and strengthen national and international teamwork for storm warning and emergency response.</b></p> <p>2.5.3 <b>This diplomatic mission is unique in character and purpose. This joint AFRC and NOAA mission demonstrates the concerted U.S. effort to execute its hurricane program and is illustrative of the importance the U.S. places on hurricane forecasting, tracking, and warning. The CHAT helps communicate the U.S. responsibilities in the region and it highlights the vital roles of NOAA and 53WRS. The media’s role is to document the trip and promote the hurricane preparedness message, thus providing visibility to this important outreach activity both nationally and internationally.</b></p> <p><b>The synergy created by all participants traveling together on the 53WRS WC-130 aircraft is essential to efficiently accomplishing the overall objectives of the mission while exercising fiscal responsibility. AFRC will fly the mission and issue invitational travel orders (ITO) on a noninterference, non-reimbursable basis for: the Director of the Tropical Prediction Center (TPC)/National Hurricane Center (NHC) of the National Weather Service (NWS) National Oceanic and Atmospheric Administration (NOAA), U.S. Department of Commerce (DOC); the NHC Hurricane Warning Program staff, NWS staff, other U.S. officials, and the media.</b></p>
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13	<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>Change of Issuance Criteria for East Pacific Tropical Cyclone Public Advisories</b></p> <p>NOAA</p> <p>Discussion: Section 3.2.3.1 of the NHOP stipulates tropical cyclone public advisories for the east Pacific will be issued for tropical cyclones which are expected to affect land within 48 hours. This criterion is being dropped. For 2008, public advisories will be issued for all east Pacific tropical cyclones.</p> <p>Change section 3.2.3.1. to read: Tropical cyclone public advisories are issued by the TPC/NHC for all tropical cyclones in the Atlantic and eastern Pacific. Watch and warning break points for the Atlantic are listed in Appendix B.</p>
14	<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 many editorial changes recommended to the NHOP. [Note: all changes reference the 2007 NHOP with Change one dated 18 Sept 07 posted.]</p> <p>Incorporate the following changes to the NHOP:</p> <ol style="list-style-type: none"> <li>1. Page 2-4, para 2.3. Delete DMSP fixes from the 5<sup>th</sup> bullet. Last part of bullet 5 now reads "...this plan; ie., additional upper-air observations , etc." Re: DMSP fixes are not a CARCAH responsibility.</li> <li>2. Page 2-6, para 2.6.1 and 2.6.2. Remove "and teletype address code for Service B (Appendix I)." Re: this information is obsolete</li> <li>3. Page 3-8, para 3.5.2. Notification. Change the area code for 53 WRS SOF and Keesler CP commercial numbers from "601" to "228" Re: Area codes changed</li> <li>4. Page 5-3, Para. 5.4.1. Add "700 hPa" to the end of the second bullet. Now the end of that sentence should read "computed 925 hPa, 850hPa, or 700 hPa height." Re: SLP can be extrapolated from 700 hPa.</li> <li>5. Page 5-4, Para. 5.4.1. Add "SFMR surface wind" and "SFMR RR" bullets. Suggest adding SFMR surface wind after the "Wind data" bullet. Suggest adding the SFMR RR bullet at the end after the "Dew-Point" bullet. Re: WC-130J aircraft are now SFMR capable</li> <li>6. Page 5-5, Para. 5.4.3. add "or DValue" after extrapolated sea level pressure. Re: HD displays either Extrap SLP or DValue depending on altitude.</li> <li>7. Page 5-5, para 5.4.5. Synoptic Surveillance Data Requirements...change wording as follows: "When required, TPC/NHC will request sounding data on the periphery of systems approaching the United States. It will provide specific</li> </ol>

		<p>tracks including control points, control times, and dropwindsonde frequency allocations to CARCAH for coordination with the reconnaissance units.”  Re: 1) sounding data is for depth of troposphere and 2) NHC is now solely involved with the planning—it’s no longer an HRD responsibility</p> <p>8. Page 5-5, para 5.4.5. Core Doppler Radar Requirements...append end of first sentence to read “...for potential storms impacting the United States, Puerto Rico, and the Virgin Islands.”  Re: expand area to match actual operations</p> <p>9. Page 5-6, Table 5-1. Requirements for Aircraft Reconnaissance Data. In the block where the RECCO column and Invest Area row intersect, change the wording to read “At major turnpoints. Also every 15 minutes if HDOBs are NA”  Re: We do not require Recco’s every 15 minutes if HDOBSs are available</p> <p>10. Page 5-6, para 5.4.6. Required Frequency and Content of Observations...eliminate reference to Figure 5-6 in third sentence.  Re: not valid</p> <p>11. Page 5-6, para 5.5.1.1 and para 5.5.1.2. Coordination and TCPOD...change references of Figures 5-7 and 5-8 to Figures 5-6 and 5-7, respectively.  Re: wrong corresponding figures</p> <p>12. Page 5-8, Figure 5-4, item papa. Add a remark “Max outbound and Max FL wind _____ KT _____Quad _____ Z”. Suggest making this the third remark.  Re: The new VDM outbound max wind remark is still a little confusing. This added remark should clarify this remark when the outbound wind is higher than all other winds reported in the other quad/octants.</p> <p>13. Page 5-8, Figure 5-4, item papa. Add a remark “SFC Wind observed visually”  Re: Clarifies how surface winds are obtained when SFMR surface winds are not available.</p> <p>14. Page 5-9, Table 5-2, item Delta. Add “SFMR” after the word maximum. Now it will read, “The maximum SFMR surface wind...”  Re: SFMR is now the primary source for surface wind information.</p> <p>15. Page 5-9, Table 5-2, item Echo. Add “SFMR” after the word maximum. Now it will read “Bearing and range of the maximum SFMR surface wind...”  Re: SFMR is now the primary source for surface wind information</p> <p>16. Page 5-11, table 5-2, item Papa. Add at the end of (3) “If the outbound max FL wind becomes the new overall max FL wind then consolidate the two max FL wind remarks into one remark.”  Re: This consolidated remark should clarify the situation when the outbound wind is higher than all other winds reported in the other quad/octants</p> <p>17. Page 5-11, table 5-2, item Papa. Add number (6) “When SFMR surface wind data is unavailable the surface wind is determined visually.”  Re: SFMR is the primary method for determining surface winds. When SFMR surface wind data is not available surface winds will be determined visually</p> <p>18. Page 5-14, Figure 5-7. Tropical Cyclone Plan of the Day format. CARCAH</p>
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requests the following changes:

Change header format from that of a memorandum (i.e., “FM:” and “TO:” lines) to:

1) The following:

NOUS42 KNHC \_\_\_\_\_ (DATE/UTC TIME)  
WEATHER RECONNAISSANCE FLIGHTS  
CARCAH, TPC/NATIONAL HURRICANE CENTER, MIAMI, FL  
\_\_\_\_ (LOCAL TIME) \_\_\_\_ (TIME ZONE) \_\_\_\_ (DAY)  
\_\_\_\_ (MONTH/DATE), \_\_\_\_ (YEAR)

2) Eliminate dash line separator and have SUBJECT line immediately follow (no space in between)

3) Put “(TCPOD)” at end of SUBJECT line

4) Add “\_\_\_\_ TEAL or NOAA \_\_\_\_ (number)” following “FLIGHT ONE (NHC PRIORITY, if applicable)”

5) In Item A, delete 2<sup>nd</sup> extraneous line

Re: 1-4) reflects current format and 5) not used

19. Page 5-15, para 5.5.3.1. In the first line change “TCPOD (Figure 5-8)” to “TCPOD (Figure 5-7)”

Re: Figure 5-7 is the correct reference.

20. Page 5-15, para 5.5.3.1. Delete the third bullet under Preparation. The bullet “The DOD-required tropical or subtropical.....USN or USAF requirements” is deleted.

Re: all requirements come from NWS, not USN or USAF.

21. Page 5-16, para 5.5.3.2. Dissemination...change time for TCPOD dissemination from 1900 to 1830 UTC in second sentence.

Re: updated for current procedure

22. Page 5-24, para 5.6.1.3. Synoptic Surveillance Missions change “HPC/MPC” to “HPC/OPC”

Re: MPC is now OPC

23. Page 5-24, para 5.6.2. Mission Assessment. Change the end of the first sentence from “(see Figure 5-9)” to “(see Figure 5-8)”

Re: Figure 5-8 is the correct reference.

24. Page 5-24, para 5.7.3. Delete the sentence “The Supplementary Vortex Data Message (Figure 5-5) will be encoded and reported as specified in Table 5-1.”

Re: We no longer use the SVDM.

25. Page 5-26, para 5.7.6. Change both references to tail number 966 to tail number 306. Also, change both references to tail number 984 to tail number 307.

Re: All WC-130J tail numbers are 300-309 now.

26. Page 5-26, para 5.7.8. In the forth sentence delete the word “supplemental.” The forth sentence will now read “All observations (RECCO, vortex, dropsonde) from....”

Re: We no longer use the SVDM.

27. Page 5-27, para 5.7.8. Change tail number 987 to tail number 306. Example now reads “RMK AF306 01BBA....”

	<p><b>Action</b></p>	<p>RE. All WC-130J tail numbers are 300-309 now.</p> <p>28. Page 5-27, para 5.8.1.1. In the third sentence, change 5-10 to 5-9. The end of the third sentence will now read "...in Figure 5-9."  Re. The paragraph reference was not identified correctly.</p> <p>29. Page 5-29, para 5.9.1. In the second sentence change 5-12 to 5-11 and change 5-13 to 5-12. The second sentence will now read "Figures 5-11 and 5-12 depict the ASDL...."  Re. The paragraph reference was not identified correctly.</p> <p>30. Page 5-33, Figure 5-12. Add an pictorial internet connection between Keesler AFB (Backup) and NHC (Primary) to Figure 5-12. Also, add an explanation below Figure 5-12. The explanation should read "A new internet link from Keesler AFB to NHC is operational beginning in the 2008 storm season. All observation types can be passed directly to NHC without going through Offutt."  Re. Internet connect is now available.</p> <p>31. Page G-10, Table G-6. Change reference in header from G-4 to G-3. The sentence is changed to read "See Figure G-3 for an example..."  Re. The paragraph reference was not identified correctly</p> <p>32. Page G-14, 62626 code breakdown. Change the second sentence under NATIONALLY DEVELOPED CODES: 62626 to read "If the remark EYEWALL is used it will be followed by the radian from the eye center to the sonde. Example. If the sonde is released in the NE quad of the storm the value coded is 045."  Re. This is needed to clarify conflicting guidance. The usual convention is to orient from the eye center to the phenomena, not from the phenomena to the eye center.</p> <p>33. Page I-2, Last lines. Change alternate CARCAH phones numbers to COMM 228-377-6974, DSN 597-6974.  Re. Phone number changed.</p> <p>34. Page M-3, 53 WRS number of copies. Change from 75 to 35.  Re. The 53 WRS only requires 35 copies.</p>
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15	<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>AFRC SATCOM Ground Station Software Update</b></p> <p>AFRC (53<sup>rd</sup> WRS)</p> <p>An update to the AFRC supplied ground station software will be implemented in the May 08 timeframe. This new software has a slightly different but more efficient interface for the operator. As part of this upgrade and due to restrictions in having the Ground Station on the NHC LAN, it will most likely be disconnected from the NHC LAN during the late spring. The CARCAH Ground Station will most likely need a commercial dedicated IP address and Data may be sent to the Automated Weather Network through the secure FTP protocol.</p> <p>This change in configuration may pose a few new challenges in sending data directly from the ground station to the NHC database through the current RS232 port. Also, the direct feed of Aircraft data to GS Manager monitors which reside on the forecast desk may need a new or different configuration.</p> <p>Discuss ideas/recommendations/changes to possible NHC software configurations to minimize/mitigate impacts after this upgrade.</p>
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## **OPEN ACTION ITEMS (61<sup>st</sup> IHC)**

2. Title: **Satellite Ocean Surface Vector Winds Operational Impacts and Requirements**
- Submitter: NOAA
- Discussion: A workshop was conducted at TPC in June 2006 to assess the operational utilization and impacts of ocean surface vector winds (OSVW) retrieved by current research satellites, and to establish new NOAA operational requirements for OSVW measurements from future satellites. The workshop established satellite-derived OSVW measurements are an important tool in daily NOAA forecast and warning operations and current and planned satellite missions do not satisfy the new requirements. A workshop report has been completed and widely distributed, and high-level NWS officials have been briefed on the outcomes of the workshop and have acknowledged the needs it expresses. However, NOAA has no plans for an operational OSVW satellite mission that will meet the new requirements or even maintain capabilities provided by current research satellites (primarily the NASA QuikSCAT). Data provided to NOAA by new operational satellites operated by other countries (e.g., the EUMETSAT METOP) will also not meet the new requirements or maintain current research satellite capabilities. Therefore, the quality of NOAA operational forecasts and warnings will be compromised once QuikSCAT is no longer operating (it has already exceeded its design life span). Several workshop participants are advocating a satisfactory future OSVW satellite mission via the NOAA PPBES process and other available avenues within NOAA. Support from the Department of Defense (DOD) on such a mission could greatly increase the chances of it coming to fruition, but the level of DOD support is uncertain. The NOAA Hurricane Conference endorses the needs expressed in the report.
- Recommendation: Seek response from DOD to encourage joint NOAA/DOD advocacy for an OSVW mission.
- Action: Dr. Richard Knabb (TPC/NHC) and LCDR David Roberts (Navy Liaison to TPC/NHC) will prepare a short position statement jointly expressing the NOAA/NWS/NHC and Navy perspective, regarding the loss of required ocean surface vector winds (currently provided by NASA's QuikSCAT). With the position statement, the conference agenda item, and the new OFCM interagency strategic research plan, the Federal Coordinator will

send a letter to NOAA/NESDIS, on behalf of the Interdepartmental Hurricane Conference, expressing concern over the loss of these important data.

Status: *The Navy provided a Talking Point Paper regarding OSVWs. No further action was taken to date.*

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: Action ongoing (more details below).*

*Product 1: Should be ready for the 2008 hurricane season. **Open***

*Product 2: This data not yet available. However, it is on the requirements list for NCEP and software development queue. **Open***

*Product 3: Instructions on how to obtain this data can be found at: [www.nhc.noaa.gov/aboutgisprods.shtml](http://www.nhc.noaa.gov/aboutgisprods.shtml). **Closed***

*Products 4-6: are very difficult actions. There are some possible alternative solutions. OFCM (Mark Welshinger) and NWS (Scott Kiser) will work with USDA (Brad Rippey and Harlan Shannon) to work out amenable solutions. **Open***

### **OLD ACTION ITEM STATUS**

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.

6. Title: **Access to Operational Storm Surge SLOSH Output**

Submitter: NOAA

Discussion: When tropical cyclones are forecast to make landfall within a predetermined period, TPC produces, resources permitting, operational storm surge SLOSH model runs for potentially affected basins. The model output is stored on TPC's anonymous ftp server for partners and users to download. The anonymous ftp server is connected to the internet world via T1 lines. During the busy season of 2005, the internet traffic to TPC's ftp server for various data was so overwhelming that some agencies had to spend more than 20 minutes to download SLOSH output.

The access time by federal, state, and local government agencies could be reduced significantly if they can go to other servers outside of NCEP and TPC network to download those files.

Recommendation: DOD sets up an ftp server for DOD agencies to access SLOSH data. DHS/FEMA sets up an ftp server for all federal, state, and local emergency management offices to download SLOSH data. TPC will update the SLOSH data on both servers.

Action: OFCM will coordinate with the Air Force/AFWA, Navy, and DHS/FEMA to investigate the identification of ftp servers to speed access to SLOSH data for the individual agencies.

*Current Status: Action ongoing (more details below).*

*One of the action items from the NOAA hurricane conference this year was to place real-time SLOSH runs on the NHC web (HTTP) in addition to the NHC FTP servers. This new capability is currently being worked.*

*In addition, SLOSH data is available from two FTP sites at the current time; namely primary: <ftp://ftp.nhc.noaa.gov/surge/> and backup: <ftp://ftp.tpc.ncep.noaa.gov/surge>, which are not hosted at NHC and have magnitudes more capacity than the original NHC FTP server. It appears once the data is on the NHC web site plus the ftp sites, everyone's requirement for SLOSH data should be easily fulfilled.*

*Recommend this action item be closed.*