63rd IHC ACTION ITEMS

NHOP-Related Action Items		
1	**Title**	**Changes to NHOP**
	Submitter	CARCAH and 53rd WRS
	Discussion	There are many editorial changes recommended to the NHOP. [Note: all changes reference the 2008 NHOP.]
	Recommen-dation	Incorporate the following changes to the NHOP: 1. Page 2-5, para 2.6. Remove "Error! Bookmark not defined" from title. RE: Erroneous text. 2. Page 2-5, para 2.6. Replace "teletype communications" with "electronic communications" in the last sentence. RE: Update content 3. Page 5-6, table 5-1. In the box corresponding to RECCO and Invest Area change the last word from "NA" to "INOP." RE: Clearer language. 4. Page 5-8, Figure 5-4. In Remarks delete "MAX Outbound and max flight level wind_____KT____QUAD _____Z" RE: The current ARWO software does not allow us to create this remark. We anticipate the software update for 2010 to allow this remark. 5. Page 5-11, Figure 5-5. Need to replace this old VDM with an example that includes the latest VDM characteristics. Suggested replacement below. RE: VDM example needs updating URNT12 KNHC 072030 VORTEX DATA MESSAGE AL092008 A. 07/20:09:20Z B. 21 deg 01 min N 074 deg 26 min W C. 700 mb 2624 m D. 90 kt E. 045 deg 13 nm F. 147 deg 106 kt G. 047 deg 016 nm H. 945 mb I. 10 C/ 3045 m J. 16 C/ 3057 m K. 13 C/ NA L. CLOSED WALL M. CO16-48 N. 12345/7 O. 0.02 / 1 nm P. AF307 0909A IKE OB 11 MAX FL WIND 107 KT NW QUAD 18:21:10 Z

6. Page 5-15, para 5.5.3.2. Note. Change the note to read "[NOTE: The TCPOD is disseminated under the header "MIAREPRPD" for AWIPS users and "NOUS42 KNHC" for AWDS users. The TCPOD can be accessed via the Internet at the Tropical Prediction Center/National Hurricane Center homepage at www.nhc.noaa.gov, then click on aircraft reconnaissance and then on Plan of the Day.]

RE: Clarify how to access the TCPOD.

7. Page 5-17, List of aircraft call signs. Change NOAA AOC to "NOAA 42 through 49."

RE: The current description excludes the G-IV, which is NOAA 49.

8. Page 5-18, para 5.5.5.1.3. Delete "or uncontrolled" in the second to last sentence. The second to last sentence now reads "53WRS crews will not conduct flight operations under the military provisions of "Due Regard" or declare "Operational" in FAA controlled airspace."

RE: Correct wording to agree with operational procedures.

9. Page 5-19, para 5.5.5.1.6 NOTE. Delete the entire NOTE.

RE: The 53 WRS has Satellite Phones for use on operational missions.

10. Page 5-19, para 5.5.5.1.7. Delete in its entirety and replace with "**5.5.5.1.7. Backup ARTCC Communications Procedures.** The 53WRS, CARCAH, NOAA, NASA, and NRL operation centers are responsible for ensuring that air traffic clearances and messages relayed by them to/from the FAA are relayed in an accurate manner. Only use this method when the aircraft is unable to directly contact ATC to request a revised or en route clearance.

   a. TEAL aircraft will send their requests by SATCOM data link to the 53 WRS operations center. The operations center will print this message and fax it directly to the primary ARTCC Missions Desk providing mission clearance. The operations center will also phone the Mission Desk. The ARTCC will issue a revised clearance. The 53 WRS operations center will transmit the approval via SATCOM back to the aircraft.
   b. 53 WRS and NOAA flights may also request that a clearance be relayed through CARCAH.

RE: Updated backup ARTCC communication procedures

11. Page 5-21, para 5.5.5.1.11. Change the last sentence to read "Examples of weather instruments are dropwindsondes and Oceanographic Profilers (OP))."

RE: Dr. Peter Black said that the generic name for the small buoys is OP not AXBT.

12. Page 5-22, para 5.5.5.3.3. Change last sentence to read "TEAL aircraft are certified for RVSM operations."

RE: WC-130Js are all RVSM equipped.

13. Page 5-22, para 5.5.5.3.4. Change "at least 10 minutes" to "about 10 minutes."

RE: Required lead time for dropsonde release is flexible.

14. Page 5-27, para 5.7.8 Example. Change last part of example to read "DPTD AF306 WXWXA AT 05/1235Z"

RE: Tail numbers need to match in this example remark.

15. Page 5-29, para 5.9.1. Change first sentence to read "The 53 WRS WC-130 and NOAA WP-3D aircraft will normally transmit reconnaissance observations via the

Air Force Satellite communications System (AFSATCOM), or commercial SATCOM.
RE: HF radio is not a normal trans mission method.

16. Page 5-29, para 5.9.2. Replace entire paragraph with "**5.9.2. Backup Air-to-Ground Communications.** The weather reconnaissance crew may relay weather data via SATPHONE or HF phone patch to the weather data monitor. Monitors will evaluate these reports and disseminate them through the Air Force's Automated Weather Network (AWN) or to the weather communications facility at Suitland, Maryland. Specific radio procedures and terminology will comply with Allied Communications Publication 125, Standard Telephone and Radio Procedures."
RE: Updated backup communication procedures.

17. Page 5-30, para 5.9.3. Delete entire paragraph. Renumber subsequent paragraphs.
RE: This information is located elsewhere in the NHOP.

18. Page 5-30, para 5.9.5., first paragraph bullet. Replace the first stand-alone paragraph that starts with "Satellite antenna communications" with "Satellite antenna communications failure at NHC: CARCAH will coordinate with the 53 WRS to have a temporary operator man the ground station located at the backup site. The Alternate CARCAH backup site ground station will be configured to relay aircraft data to the CARCAH ground station. If the outage at CARCAH is expected to be temporary, the 53WRS will provide operators to man the Alternate CARCAH ground station. For long-term outages, CARCAH will send operators to the 53 WRS, and those operators will ensure the aircraft data are transmitted to the WPMDS, NWS servers, and external users via the NWS Gateway."
RE: Minor corrections to paragraph.

19. Page 5-31, para 5.9.5. second paragraph bullet. In the para that begins with "In the event" delete "at AFWA" at the end of the first sentence.
RE: WPMDS is not at AFWA.

20. Page 7-4, para 7.3.3. Change "AFOS" to "AWIPS."
RE: correct terminology.

21. Page 8-2, para 8.2.1. Change "TPC/NHC forecasters" to "CARCAH"
RE: Correct error

22. Page 8-2, para 8.2.2. change "dropsonde operators (DSO) to "Loadmasters (LM)"
RE: correct terminology

23. Page G-15, figure G-3. Update example of temp drop message. Replace the temp drop example with this updated one.
RE: This message contains the latest content.

UZNT13 KNHC 080839
XXAA 58088 99192 70803 04590 99964 21676 20581 00814 ///// /////
92359 20476 22611 85085 18876 24614 88999 77999
31313 09608 80747
51515 10190 70752
61616 AF302 0617A PALOMA OB 16
62626 EYEWALL 225 SPL 1925N08021W 0750 MBL WND 22112 AEV 20800 DL
M WND 23107 964833 WL150 21611 079 REL 1920N08030W 074700 SPG 192
6N08021W 075012 =
XXBB 58088 99192 70803 04590 00964 21676 11850 18876 22811 18476

		33760 19677 44739 21077 55719 23261 66701 11430 21212 00964 20581 11963 20585 22960 20604 33958 21120 44955 21626 55949 22107 66939 22621 77933 22614 88917 22611 99900 23099 11874 23604 22867 24098 33864 24100 44859 24117 55850 24614 66701 26123 31313 09608 80747 51515 10190 70752 61616 AF302 0617A PALOMA OB 16 62626 EYEWALL 225 SPL 1925N08021W 0750 MBL WND 22112 AEV 20800 DL M WND 23107 964833 WL150 21611 079 REL 1920N08030W 074700 SPG 192 6N08021W 075012 = 24. Page I-2 Change the 53 WRS (Alternate CARCAH) phone numbers to "228-377-9060" and "597-9060" RE: Update phone numbers.
	Action	*Accept recommendation. Will be CLOSED once NHOP is updated.*
2	**Title**	**Change to the Tropical Cyclone Public Advisories**
	Submitter	NOAA
	Discussion	The current format of the Tropical Cyclone Public Advisory product (TCP) issued by NHC and CPHC is not easily decoded by automated programs. NHC and CPHC will modify the "repeat" section of the TCP to aid in the parsing of critical advisory information for the 2009 season. The following change was made by the NWS: Example of old format: REPEATING THE 1100 PM AST POSITION…23.7 DEGREES N…72.2 DEGREES WEST...MOVEMENT TOWARD…NORTH-NORTHEAST AT 12 MPH. MAXIMUM SUSTAINED WINDS …75 MPH. MINIMUM CENTRAL PRESSURE…997 MB. Example of new format: …SUMMARY OF THE 1100 PM AST POSITION… LOCATION…23.7 N 72.2W MAXIMUM SUSTAINED WINDS…75 MPH PRESENT MOVEMENT…NORTH-NORTHEAST OR 025 DEGREES AT 12 MPH MINIMUM CENTRAL PRESSURE…997 MB
	Recommen-dation	Informational. Amend NHOP as needed in Figure 4-2. IHC to forward to RA-IV Committee.
	Action	*Accept recommendation. Will be CLOSED once NHOP is updated.*

3	**Title**	**Discontinue Special Tropical Disturbance Statement Products and Begin Issuance of Special Tropical Weather Outlooks for 2009.**
	Submitter	NOAA
	Discussion	The NHC and CPHC will discontinue the issuance of Special Tropical Disturbance Statement (DSA) products in 2009. The information formerly provided in the DSA products will be available through the issuance of Special Tropical Weather Outlooks (TWOs). This will result in no degradation of service, but provide a more efficient delivery of the same information.
	Recommen-dation	Informational. Amend NHOP as needed in Sections 3.2.1 and 3.2.8. Forward to RA-IV Committee.
	Action	*Accept recommendation. Will be CLOSED once NHOP is updated.*
4	**Title**	**Change in Organizational Name *(Pending as of Jan 26)***
	Submitter	NOAA
	Discussion	The approval process changing the name of the Tropical Prediction Center/National Hurricane Center to National Hurricane Center is underway.
	Recommen-dation	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.
	Action	*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.*
5	**Title**	**Changes to the Saffir Simpson Hurricane Scale (SSHS) for the Atlantic and East Pacific Hurricane Basins**
	Submitter	NOAA
	Discussion	Hurricane Ike was an example of the failure of the SSHS to represent the potential for loss of life and property. The large wind field constituted a severe storm surge threat despite a relatively modest SSHS Category 2 maximum sustained surface wind speed. The NWS decided to remove all references to storm surge from the Saffir-Simpson scale. A team led by NWS Headquarters is working to revise the text impacts in the scale and to remove surge and flooding references. The team is revising the scale only for the SSHS as it relates to the continental United States.
	Recommen-dation	Informational. The latest effort of the team will be shared with the IHC. Comments to the team are welcomed but required before April 1, 2009, to allow NWS to implement changes for the 2009 hurricane season. Amend NHOP (Appendix E) if the team reaches a final decision before NHOP goes to printer (~ May 15, 2009). Forward to RA-IV Committee.
	Action	*Continue to track effort of the team. If the team reaches a final decision in time before NHOP goes to printer, this item will be CLOSED once the NHOP (Appendix E) is updated.*

6	**Title**	**Changes to Breakpoints for 2009 Season**
	Submitter	NOAA
	Discussion	Based on operational needs the following breakpoint changes are effective for the 2009 season: a. Port Mansfield, Texas breakpoint. Change latitude to 26.60N. Rest same. b. Brownsville, Texas breakpoint. Delete this breakpoint. Replace with "Mouth of the Rio Grande River" with location 25.96N 97.15W. c. Currituck Beach Light, North Carolina breakpoint. Delete this breakpoint. Replace with "Duck" with location 36.23N 75.77W. d. Add new breakpoint, Lake Maurepas, Louisiana with location 30.25N 90.50W e. Corpus Christi, Texas breakpoint. Change this from a primary to a secondary breakpoint. Add a new breakpoint, "North Entrance of the Padre Island National Seashore" with location 27.47N 97.29W.
	Recommen-dation	Informational. Amend NHOP Appendix B as necessary. IHC to forward decisions to RA-IV Committee
	Action	*Accept recommendation. Will be CLOSED once NHOP is updated.*
7	**Title**	**Inclusion of examples for Corrected Recco, Vortex, and Tempdrop Data Messages in NHOP**
	Submitter	NOAA
	Discussion	Currently the NHOP does provide examples of recco, vortex data and tempdrop messages but no examples for corrected versions. Those onboard the NOAA aircraft during tropical cyclone missions do sometimes make mistakes that require transmitting a corrected message to NHC. A copy of the latest NHOP is aboard the aircraft for reference purposes. Including these examples of corrections will help minimize any delay in transmitting the corrected version.
	Recommen-dation	Include examples of corrected recco, vortex and tempdrop data messages in the NHOP for 2009. IHC to forward decision to RA-IV Committee.
	Action	*Accept recommendation. CARCAH/53 WRS provided example on 3/17/09. Will be CLOSED once NHOP is updated.*
8	**Title**	**A Standardized Fix Format for Tropical Cyclone Fix Bulletins**
	Submitter	NOAA
	Discussion	CPHC, JTWC, and SAB currently issue tropical cyclone fix bulletins with slightly different formats. This makes it difficult for users and Automated Tropical Cyclone Forecasting System (ATCF) to automatically ingest these tropical cyclone fixes. CPHC worked with Chris Sisko to propose a standard format for consistency and to facilitate automatic ingest. This standard has been coordinated with JTWC and SAB and has been approved and will be implemented in 2009.
	Recommen-dation	Informational. Amend NHOP, as necessary. IHC to forward to RA-II, IV, V Committees.
	Action	*Accept recommendation. Will be CLOSED once NHOP is updated.*

9	**Title**	**New Tropical Cyclone Fix Bulletin Products**
	Submitter	NOAA
	Discussion	CPHC currently has two products used for tropical cyclone fixes, one each for the north and south Pacific Ocean. When there is more than one active system in either basin, multiple fix messages are placed within a single product. Software developers for the ATCF have requested fix messages be limited to one fix per product to simplify future programming to support automatic ingest of the fix messages into ATCF. CPHC submitted a NWS Request for Change to the Data Review Group and has received approval. The change will take effect on or about 2 December 2008. Recipients of these fix products should make the appropriate changes to their software systems prior to the implementation date to ensure delivery. CURRENT TROPICAL CYCLONE FIX PRODUCTS WMO Header AWIPS ID Product Description TXPN40 PHFO HFOTCSCP Tropical Cyclone Summary – Fixes North Pacific TXPN41 PHFO HFOTCSNP1 Tropical Cyclone Summary – Fixes South Pacific REQUESTED TROPICAL CYCLONE FIX PRODUCTS WMO Header AWIPS ID Product Description TXPN41 PHFO HFOTCSNP1 Tropical Cyclone Summary – Fixes North Pacific TXPN42 PHFO HFOTCSNP2 Tropical Cyclone Summary – Fixes North Pacific TXPN43 PHFO HFOTCSNP3 Tropical Cyclone Summary – Fixes North Pacific TXPN44 PHFO HFOTCSNP4 Tropical Cyclone Summary – Fixes North Pacific TXPN45 PHFO HFOTCSNP5 Tropical Cyclone Summary – Fixes North Pacific TXPS41 PHFO HFOTCSSP1 Tropical Cyclone Summary – Fixes South Pacific TXPS42 PHFO HFOTCSSP2 Tropical Cyclone Summary – Fixes South Pacific TXPS43 PHFO HFOTCSSP3 Tropical Cyclone Summary – Fixes South Pacific TXPS44 PHFO HFOTCSSP4 Tropical Cyclone Summary – Fixes South Pacific TXPS45 PHFO HFOTCSSP5 Tropical Cyclone Summary – Fixes South Pacific
	Recommen-dation	Informational. Amend NHOP Section 3.6.2. Forward to RA-V Committee.
	Action	*Accept recommendation. Will be CLOSED once NHOP is updated.*
10	**Title**	**HPC Tropical Cyclone Forecast Points**
	Submitter	NOAA
	Discussion	Effective with the 2009 hurricane season, HPC will no longer issue a set of tropical cyclone forecast points, and will participate on the hotline call only for QPF statements, unless forecast input is specifically requested by NHC. HPC will continue to provide QPF support and statements for the advisories, and will continue to maintain responsibility for advisories over land after hand-off from NHC and remain the backup office for NHC hurricane operations according to present guidelines.
	Recommen-dation	Informational. Amend NHOP Section 3.2.9 and Figure 3-1. Forward to RA-IV Committee.
	Action	*Accept recommendation. Will be CLOSED once NHOP is updated.*

11	**Title**	**Airspace Use During Tropical Cyclone Missions**
	Submitter	NOAA
	Discussion	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.
	Recommen-dation	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. Also recommend extending ATC priority handling to NOAA aircraft as currently offered to TEAL aircraft as indicated in Sec. 5.5.5.2.6.
	Action	*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.*

12	**Title**	**Extend issuance times for NHC and CPHC Watches and Warnings**
	Submitter	NOAA
	Discussion	NHC forecast track accuracy has improved steadily over the past two decades. However, the current issuance criteria for tropical cyclone watches and warnings have not changed for decades. **Current Issuance Criteria:** Tropical Cyclone Watch: conditions are possible along the coast within 36 hours Tropical Cyclone Warning: conditions along the coast are expected within 24 hours Effective May 15, 2010, the NWS proposes new issuance criteria (see below) for tropical cyclone watches and warnings that are issued by the National Hurricane Center and Central Pacific Hurricane Center. The proposed change will be preceded by an extensive education campaign prior to the start of the 2010 season, to include updates to web sites and brochures, outreach from Warning Coordination Meteorologists, briefings at user and national hurricane conferences in 2010, and the issuance of a national Service Change Notice. **Proposed New Issuance Criteria:** Tropical Storm Warning: An announcement that sustained winds of 34 to 63 knots (39 to 73 mph or 63 to 118 km/hr) are expected somewhere within the specified coastal area within 36 hours. Tropical Storm Watch: An announcement that sustained winds of 34 to 63 knots (39 to 73 mph or 63 to 118 km/hr) are possible within the specified coastal area within 48 hours. Hurricane/Typhoon Warning: An announcement that sustained winds of 64 knots (74 mph or 119 km/hr) or higher are expected somewhere within the specified coastal area. The warning is issued 36 hours in advance of the anticipated onset of tropical-storm-force winds (39 to 73 mph or 63 to 118 km/hr). A hurricane or typhoon warning can remain in effect when dangerously high water or a combination of dangerously high water and exceptionally high waves continue even though winds may be less than hurricane or typhoon force. Hurricane/Typhoon Watch: An announcement that sustained winds of 64 knots (74 mph or 119 km/hr) or higher are possible within the specified coastal area. The watch is issued 48 hours in advance of the anticipated onset of tropical-storm-force winds (39 to 73 mph or 63 to 118 km/hr).
	Recommen-dation	Obtain IHC concurrence. IHC to forward decision to RA-IV and V Committees.
	Action	*Accept recommendation. Update applicable portions of NHOP as it applies to CPHC operations (i.e., NHC will not implement the new criteria for the upcoming season).*
Non-NHOP Related Action Items		

13	**Title**	**Replacement of the Term "Sea State" with "Significant Wave Height" in Tropical Cyclone Related Documents.**
	Submitter	Navy
	Discussion	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" 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. 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.
	Recommen-dation	Use the term "significant wave height" in all future tropical cyclone related documents and software.
	Action	*Accept recommendation. HQ NWS representative will take forward to the National Maritime Program meeting.*
14	**Title**	**Tropical Cyclone Wind Field Graphic Becomes Operational for Atlantic and East Pacific in 2009; Remains Experimental for Central Pacific in 2009**
	Submitter	NOAA
	Discussion	After a year of experimental status, NHC has decided to designate the Tropical Cyclone Wind Field Graphic as an operational product. The CPHC will begin an experimental product for the 2009 season.
	Recommen-dation	Informational. IHC to forward to RA-IV and V Committees.
	Action	*Accept recommendation. No action required.*
15	**Title**	**Series of Probabilistic Storm Surge Products Become Operational for 2009 Season**
	Submitter	NOAA
	Discussion	For the 2009 season, the NWS will provide the probabilities of storm surge from 2 though 25 feet, at one foot intervals, when hurricane watches or warnings are in effect for the Atlantic and Gulf Coasts of the United States. The probabilities will be provided in graphical and Gridded Binary Format 2 (GRIB2) forms.
	Recommen-dation	Informational. IHC to forward to RA-IV Committee.
	Action	*Accept recommendation. No action required.*
16	**Title**	**Changes to the Graphical Tropical Weather Outlook Products for 2009**
	Submitter	NOAA
	Discussion	After two years of experimental status, NHC has decided to designate the Graphical Tropical Weather Outlook (TWO) as an operational product for 2009. The CPHC will

		continue their Graphical TWO in an experimental status for 2009 and will add Low-Med-High probability of tropical cyclone formation within 48 hours.
	Recommen-dation	Informational. IHC to forward to RA-IV and V Committees.
	Action	*Accept recommendation. No action required.*
17	**Title**	**Modification to Tropical Weather Summary Product Format for 2009**
	Submitter	NOAA
	Discussion	The Tropical Weather Summary (TWS) product, providing a summary of the tropical cyclones for the preceding month in the hurricane season, will change from a narrative to a mainly tabular format. The TWS traditionally contained a narrative summary of the life cycle of each tropical cyclone. However, because post-storm analysis is rarely complete by the end of the month, TWS products can usually only provide weather information already provided in real-time operational products. Accurate information on impacts is also generally unavailable at the normal TWS issuance times. Therefore, beginning in 2009 the NWS will limit the TWS to a table of basic meteorological statistics, such as the dates of occurrence and estimated peak intensity for all of the season's tropical cyclones to date. Narrative summaries will no longer be included, although brief descriptions of particularly noteworthy events will be provided as warranted. Users requiring comprehensive information on each tropical cyclone are encouraged to consult the end of season Tropical Cyclone Reports.
	Recommen-dation	Informational. Forward to RA-IV and V Committees.
	Action	*Accept recommendation. No action required.*

18	**Title**	**Referencing Storm Surge Information/Forecasts as Height above Ground Level (Inundation)**
	Submitter	NOAA
	Discussion	NHC and WFOs currently articulate potential storm surge flooding in reference to a marine datum (NGVD 29 or NAVD 88) in both its text and graphical products. For most users, the use of a datum as a reference level introduces significant confusion and often leads to misunderstanding of storm surge forecast information. For example, during Hurricane Ike, many users wrongly interpreted the NWS surge forecast of 20-25 ft as the depth above ground, versus 20-25 feet above the appropriate datum. This led some media outlets, emergency managers, high-level public officials, and the public to wrongly interpret the storm surge hazard/vulnerability in their area. Given the confusion associated with reporting storm surge in reference to a datum, MDL is currently developing the capability to display SLOSH products as height above ground level, or inundation. As a first step, the SLOSH display program is being modified to subtract the average elevation of each SLOSH grid cell from the total water level computed by the SLOSH model. Users of the SLOSH display program will be able to select or "toggle" between inundation and height above a datum. Higher-resolution ground elevation data, such as 30-meter digital information model information, will be explored in future years, possibly allowing estimates of inundation at sub-grid resolution. Starting in 2009, the NHC will make the output of the operational SLOSH runs (animated gifs and still images of envelope of high water) available as height above ground level (inundation) in addition to the standard height above the appropriate datum. Additionally, the NHC will change the wording in the public advisory text products to provide inundation heights. NHC will provide wording options as follows in 2009: STORM SURGE WILL RAISE WATER LEVELS BY AS MUCH AS XX FEET ABOVE GROUND LEVEL ALONG THE COAST…WITH LARGE AND DANGEROUS BATTERING WAVES…NEAR AND TO THE ZZZZ /DIRECTION/ OF WHERE THE CENTER MAKES LANDFALL. THE SURGE COULD PENETRATE AS FAR INLAND AS ABOUT XX MILES FROM THE SHORE WITH DEPTH GENERALLY DECREASING AS THE WATER MOVES INLAND; OR STORM TIDE WILL RAISE WATER LEVELS BY AS MUCH AS XX FEET ABOVE GROUND LEVEL ALONG THE COAST…WITH LARGE AND DANGEROUS BATTERING WAVES…NEAR AND TO THE ZZZ /DIRECTION/ OF WHERE THE CENTER MAKES LANDFALL. STORM TIDE COULD PENETRATE AS FAR INLAND AS ABOUT XX MILES FROM THE SHORE WITH DEPTH GENERALLY DECREASING AS THE WATER MOVES INLAND. WFOs will provide similar wording in their text products.
	Recommen-dation	Informational. Forward to RA-IV Committee.
	Action	*Accept recommendation. No action required.*

19	**Title**	**Mandate Use of Worksheet and Streamline NHC Conference Calls**
	Submitter	NOAA
	Discussion	Over the last couple of years, NHC has provided WFOs with an online worksheet giving the 5-day forecast points, intensities of storms, and wind radii for forecast storms. This is a great service to NHC's internal WFO customers. However, occasionally the worksheet is not available and the WFOs must scramble to capture the data during the call itself. In addition, some of the participants on the NHC call do not have access to the worksheet forcing the Specialist to read the forecast points. This would not be needed if all participants on the call had access to the worksheet. By not reading the points the call could be shorter and Specialists could focus on reasoning and uncertainty for their storm track and intensity forecast.
	Recommen-dation	NHC strive toward release of electronic worksheet to Hotline participants before the conference call, and use of that worksheet by all participants on those calls, with understanding NHC retains the right to change points before official forecast is released. In general, if NHC provides an electronic worksheet prior to the call, then the forecast tropical cyclone points will not be read, except when communications outages prevent receipt of the worksheet, when NHC changes the forecast points from what is shown on the electronic worksheet, or when there is a Special Advisory where forecast data has been changed. Obtain concurrence from DoD.
	Action	*DoD concurrence obtained during the conference. Accept recommendation. No action required.*

OPEN ACTION ITEMS FROM PREVIOUS IHCs

62nd IHC ACTION ITEMS

10	**Title**	**Update Memorandum of Agreement between United States Air Force Reserves and NOAA**
	Submitter	NOAA
	Discussion	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.
	Recommen-dation	Request Office of the Federal Coordinator for Meteorology (OFCM) to facilitate the update of the MOA.
	Action	*Accept recommendation.*
	Status	*2/24/2009: MOA has been updated and completely reorganized. NOAA/NWS has signed the MOA (Dr. Jack Hayes); AFRC is reviewing the MOA.* ***OPEN***
17	**Title**	**Caribbean Hurricane Awareness Tour (CHAT)**
	Submitter	53rd WRS
	Discussion	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 hurricanes and to continue an effective liaison with the weather services of the countries/areas visited.
	Recommen-dation	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.
	Action	*Accept recommendation.* ***OPEN.***
	Status	*AFRC/53 WRS and NHC will explore options during 2009 CHAT.*

OPEN ACTION ITEMS (61st 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 2/23/2009): Action ongoing. ***OPEN***

NHC plans on creating new real-time GIS experimental products for the upcoming 2009 season. The table below depicts the new products and their relation to the GIS product requirements (#1 - # 6 above):

***Real-Time* Experimental GIS Products**	
Product	**Relation to GIS Product Requirements (#1 - #6 Above)**
Forecast Wind Radii	1
Surface Wind	1
Tropical Watch / Warning Break Points	1
Forecast Cone of Uncertainty, Track, Points, Watches/Warnings	1
Working Best Track Wind Swath	2
Probabilistic Storm Surge	N/A (for information)
Wind Speed Probability (Points, Interpolated Polygons)	3
***Post-Season* Experimental GIS Products**	
Final Best Track Storm Data	4-6
Final Best Track Wind Swath	2
Final Best Track Wind Radii	2

Status (from WG/HWSOR meeting at 63rd IHC):
Items 1-4: **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).

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.*

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

Status (12/22/2008) 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/HWSOS 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