**Best Track Committee Re-Analysis Comments for 1939**

General comment: There are some typos in the transcription of quotes from the Monthly Weather Review (MWR) and elsewhere. The first is in the 12 June metadata section for storm #1, where connectino” should be “connection”. The second is in the 11 August metadata section for storm #2, where “10th an 11th” should be “10th and 11th”. The third is in the 13 October metadata section for storm #5, where “shop” should be “ship”. The fourth is in the 16 October metadata section for storm #5, where “form” should be “from”.

**Thanks. These are corrected.**

1939 Storm #1:

 1. While the committee generally occurs with the proposed genesis, it is a little difficult to reconcile with the E wind 25 kt at Cabo Gracias a Dios on the 12 June Historical Weather Map (HWM). Please include binder analyses on 10-11 June to ensure that the proposed genesis is correct and that some other system over the Western Caribbean was not missed.

**Done. These additional dates do not suggest that genesis was before the 12th.**

 2. Given the lack of evidence, the committee does not concur with the removal of the loop that is currently in HURDAT. However, it might desirable to adjust the positions in the loop to smooth out the forward speed issues.

**Agreed.**

 3. Please provide a better justification of the proposed 55 kt peak intensity. Would 50 kt be more appropriate given the data?

**The 55 kt peak intensity is supported by the peripheral pressure measurement (giving an intensity greater than 49 kt) in conjunction with the near average forward speed, size, and environmental pressure.**

 4. Is there a minimum pressure available from Mobile? Are the Mobile and Pensacola OMRs available? This information could provide more information about the landfall intensity. The committee notes that the maximum wind in Pensacola appears to be about 50 n mi from the center, leaving the possibility that stronger winds existed closer to the center.

**The OMRs are now available. Mobile reported a peak 1 min wind of 29 kt S at 23Z on the 16th with and minimum pressure of 1005 mb at 15Z on the 16th. Pensacola to the east of the landfall point experienced a peak 1 min wind of SE 48 kt at 1330Z and minimum pressure of 1004 mb at 1130Z. Given the increased time resolution of data available and the analysis in the OMR suggesting the center went just east of Mobile, the landfall point is adjusted slightly closer to Pensacola – about 30 nm away at time of landfall (and time of the peak winds in Pensacola). Thus the 50 kt intensity at landfall as suggested in the revision is retained (up from 35 kt in HURDAT originally).**

 5. While not in unanimous agreement, the committee concurs with the proposed extratropical transition.

**Agreed.**

1939 Storm #2:

 1. Were the proposed changes for this system properly included on the track map that highlights the changes?

**The track changes were inadvertently left off of the revised track map. They are now included in the new map.**

 2. The landfall intensity for the Florida Peninsula requires re-examination. First, the origin of the 987 mb landfall pressure is uncertain. Ft. Pierce reported 991 mb and 54 mph winds, but it is unclear if these were simultaneous. It is also unclear whether Ft. Pierce was inside the RMW and what direction the maximum winds were from. Please examine all the local OMRs and other available data (i. e. local newspaper accounts) to resolve this. Second, if the landfall pressure was 987 mb, would 65 kt be a better landfall intensity than 70 kt?

**All of the OMRs for Florida are now available, but Ft. Pierce did not have one, as it was not a U.S. Weather Bureau station. The Florida Climatological Data publication was obtained which had the same information regarding Ft. Pierce as was obtained from MWR. Agreed that the 987 mb is too uncertain, and we have now focused upon the 991 mb as being either a peripheral or central pressure. Given this uncertainty, it is also agreed to go with a 65 kt landfall intensity (down from 70 kt shown in HURDAT originally).**

 3. The time of the minimum pressure in Tampa suggests that the original track may be more accurate, or a blend of the original and proposed tracks.

**Agreed.**

 4. The landfall intensity in the Florida Panhandle also requires re-examination. The winds at Apalachicola were well short of hurricane force, and since the winds inside the RMW fell to 20 mph this suggests the central pressure at the time would be at most a couple of millibars lower than the recorded 991 mb. The data from St. Andrews supports a slightly lower central pressure. However, during the passage from Apalachicola to St. Andrews the right side of the RMW appears to have been over land, which calls into question whether the normal use of the wind-pressure relationships are appropriate here. Please re-examine this situation and see if this system ever regained hurricane strength over the Gulf of Mexico.

**It is agreed that the RMW remaining near the coast or just overland would reduce the intensity implied by the pressure-wind relationship alone. It is also noted that new information obtained from the Florida Climatological Data indicate a bigger impact from the wind in the panhandle landfall compared to the peninsula landfall. The intensity at landfall is thus reduced down to 65 kt, down from the 70 kt originally shown in HURDAT and that proposed in the first round of the reanalysis.**

4a. What is the relevance of the comment about the size of the cyclone during the Apalachicola landfall? Please clarify this or remove it.

**This comment has been removed.**

 5. The committee notes that there are no observations of hurricane-force winds in this system, and that its status as a hurricane is based entirely on measured or estimated central pressures.

**This point is now made in the metadata writeup.**

 6. The committee has concerns about the apparent re-intensification on 16 August. The OMR for the Pensacola Naval Air Station shows 20-25 kt or higher winds for most of 14-16 August. Perhaps 30 kt winds were present over the water south of Pensacola during this time?

**Agreed.**

 7. Is it possible that the position for 1200 UTC 18 August is too far east? The HWM shows multiple south winds west of the original and proposed location.

**Agreed.**

1939 Storm #3 (new):

 1. The committee concurs with the addition of this system.

**Thank you.**

 2. Please consider delaying the time of extratropical transition based on the HWM, which suggest the storm was not fully embedded in the baroclinic zone at that time.

**Agreed. Extratropical transition now indicated to have occurred around 00Z on the 20th.**

1939 Storm #4 (originally #3):

 1. Please re-examine the data for 22 September to see if the genesis time can be moved to that day near 19N 95W. The HWM suggests the possibility of a low pressure area over the southwestern Gulf of Mexico on that day, and the MWR states a tropical disturbance developed about 100 miles east of Veracruz “between September 20-22”.

**Unfortunately, there are zero ships available in the southwestern Gulf of Mexico on the 22nd. The system may have formed on this date, but without evidence the genesis time is not adjusted back a day.**

 2. The committee would like to see more data from the landfall area on the northern Gulf coast, especially pressure data. Was the 1005 mb pressure at New Orleans the lowest reported during the event? Ditto for the 1007 mb at Port Eads? What was the minimum pressure at Mobile?

**With the new availability of the Original Monthly Records, these questions were able to be addressed. The 1005 mb in New Orleans and 1007 mb in Port Eads were the lowest recorded for those locations for this cyclone (and the entire month). The minimum pressure in Mobile was 1008 mb at 2020Z on the 26th.**

 3. Is the Pensacola OMR available to help determine how representative the 43 kt wind is? The committee notes that the Land Station Highlights section shows this wind as southwest, while the MWR quote says it was northwest. Please clarify this.

**The MWR writeup was incorrect, as the winds were southwesterly. The Pensacola OMR was obtained, which did indicate that the winds were likely representative of the cyclone’s circulation. These did, however, need to be adjusted down to 10 m from the 56 m anemometer elevation above the ground. This gave 38 kt. Because of these winds, landfall is adjusted upward slightly to 45 kt, weakening to a tropical storm delayed six hours, and final dissipation delayed (another) six hours.**

 4. Please re-examine the data to determine if this cyclone underwent extratropical transition near 0000 UTC 27 September, and whether the low show on the 1200 UTC 27 September HWM is actually the remains of the cyclone.

**While a low is shown on HWM, the winds from numerous stations around the low do not indicate a closed circulation. Moreover, the MWR Tracks of Centers of Lows for September also indicates dissipation of the cyclone soon after landfall. Dissipation is indicated in the reanalysis after 06Z on the 27th with the last position as a tropical depression.**

1939 Storm #5 (originally #4):

 1. The committee concurs with the proposed significant increases in intensity, although there are three areas of concern noted below.

 1a. When the minimum pressure was reported on 15 October, the system was very large in size. When this is combined with its late-season nature, is it possible that 120 kt might be better for the peak intensity give the estimates from the wind-pressure relationships. On the other hand, it is unclear from the ship data what size the RMW was and how far below 941 mb the central pressure was.

**Agreed to indicate an intensity of 120 kt on the 15th.**

 1b. What is known about the station that measured the 87 kt gusting to 114 kt on Bermuda? Did this station have a significant elevation? This information could impact the intensity assessment near the island.

**An email has been sent to Kimberley Zuill, the Meteorologist-in-Charge in Bermuda for possible metadata on this station.**

 1c. A 90 kt intensity after extratropical transition appears too high. Please re-evaluate the intensities from the time the system passed Bermuda until extratropical transition.

**Agreed. Winds are dropped by 5 kt at 00Z (to 85 kt) and 06Z (to 75 kt) on the 18th.**

 2. The committee notes what looks like a 942 mb observation on the HWM for 15 October, buried under the isobars.

**Agreed. This undoubtedly is the same observation mentioned in the Monthly Weather Review for the F.W. Abrams ship.**

 3. A record from Montserrat in the back of the binder indicates the island had NW winds on 10 October. Does this allow genesis to be moved up a day?

**This observation was previously plotted on the 10 October map. While suggestive, having only 10 kt NW winds with 1011 mb pressure at Montserrat (and only 15 kt peak winds anywhere near the system) is not enough evidence to indicate that cyclogenesis had occurred.**

1939 Storm #6 (originally #5):

 1. The daily metadata entry for 28 October is missing. Please provide it.

**Done.**

 2. Please re-examine the genesis time. The committee is currently divided, with some thinking that the proposed genesis time is too soon and others thinking the genesis time could be earlier than currently proposed (i. e. 27 October). In the process, please explain the relevance of “pressure drops in Central America” in the determination of the genesis time.

**Genesis at 12Z on the 28th is based upon 24 hr pressure drops of 3 mb at Swan Island and of 2 mb at Cabo Gracias a Dios, Nicaragua as well as a more well-defined circulation compared with the previous day.**

 3. In the daily metadata for 29 October, should 16N 84.2W be 16N 83.2W for the center of the HWM low?

**Agreed.**

 4. Is there more information available on the observation from Grand Cayman? What was the direction of the 80 kt wind? Did it occur at the same time as the pressure? It is possible that if the center went a little south of Grand Cayman that the intensity was greater than 80 kt. Please contact the Meteorological Service of the Cayman Islands for additional data on this system.

**The Director of the Meteorological Service (Mr. Fred Sambula) has been contacted for additional information regarding these measurements.**

 5. Is any data available from Jamaica given the impacts noted there?

**The Jamaica Weather Report has recently become available on the EV2 website. This had extensive observational and impact data from that country for this system. The track and intensity of the cyclone have been modified accordingly.**

 6. What data is available from Cuba on this system? Has Perez been contacted?

**The Cuban analysis of this system agrees quite closely with the track and intensity revisions that we’ve introduced. Some additional Cuban observations of tropical storm conditions were obtained.**

 7. Please re-examine the intensity and the process of extratropical transition on 6-7 November as thoroughly as the data will allow. If the system was still a tropical cyclone late on 6 November, then the proposed intensities look good. However, of the system was undergoing or had completed transition, then they are likely too high and the original HURDAT values should be used.

**After re-examination of the limited ship observations near the center of this cyclone, it is likely that the system was undergoing transition. The original timing of ET was at 18Z on the 6th. With sparse observations near the center along with the SW 40 kt and 993 mb ship measurement at 04Z, it appears to be prudent to retain the transition time as 18Z. Because of the extratropical transition going on during the 6th, it is agreed to adjust downward the intensities from that first proposed to 55 kt at 06, 12, and 18Z on the 6th.**

 8. What is the basis for saying that the alternative scenario of the system moving across Newfoundland as an extratropical cyclone is not valid? Please provide an explanation of that statement.

**This alternative scenario was suggested in the Monthly Weather Review, but is not supported by the observations. This is now clarified in the writeup.**

 9. There are two typos in the metadata summary: “underwendt” should be “underwent” and “Caymen” should be “Cayman”.

**Fixed.**

1939 Additional Notes:

 1. In Additional Notes #1, the “7th” should be “July 7”. It is noted that the MWR shows 40 mph winds at Houston on 9 July and 37 mph winds at Port Arthur on 11 July. Please investigate to see if these winds were associated with the depression and how representative they were.

**Over land, Houston reported a peak 5 min wind of 35 kt NE (and peak 1 min wind of 40 kt NE) on the 9th, but this was a very short lived wind event – likely a pre-frontal squall line. On the 11th, Port Arthur reported a peak 5 min wind of 32 kt E (and 1 min peak wind of 35 kt) which was part of enhanced winds all day that may have been associated with this low which was centered about 200 nm to the southwest. (However, stations closer to the center of the low – Houston, Galveston, Corpus Christi and Brownsville – did not report any tropical storm force winds on this date.) With only one tropical storm force sustained wind associated (perhaps) with this system, that does not confirm it was a tropical storm and thus it is not added to HURDAT.**

 2. The MWR mentions a disturbance in the southeastern Caribbean 29-31 August. The HWM shows nothing that obviously indicates a tropical storm in the area. However, the Netherland Antilles reported southwest winds on 31 August. Please search for additional data for this system in COADS to ensure this was not a tropical cyclone.

**COADS, HWM and and MWR observations do not indicate that a tropical cyclone existed. There was tropical wave on these dates with peak observations of 30 kt E and 1009 mb from a ship on 00Z 31 August at 12N 68W. It is possible that the system was a tropical depression on the 31st, as southwest winds were reported in the Netherland Antilles. With no evidence of it reaching tropical storm intensity, this is not added into HURDAT. This system is now included to the Additional Notes section.**

 3. The committee concurs with leaving the other possible systems out of HURDAT.

**Agreed.**