The second HFIP–Biweekly teleconference in September 2017 was held 2:00 PM – 3:00 PM ET Wednesday September 20th online from the NWS Headquarters OSTI, Silver Spring, MD. Following roll call (see back for list of participants), Shane Forsythe-Newell welcomed everyone onboard then along with Gopalakrishnan Sundararaman sharing opening remarks noting the purpose of the meeting is to deliver any HFIP Program Office and RDHPCS announcements and to gather updates/input from principal investigator (PI)s and team leads regarding their HFIP-funded projects. First item of business was eliciting input from applicants supporting the RT Demo Model runs for this hurricane season:

Evaluation of GfsFV[3] on Hurricane prediction[1] (rtgfsfv3): PI: Shian-Jiann Lin (Princeton), Technical Leads: Morris Bender (GFDL) and Andy Hazelton (GFDL). This real-time experiment's purpose running on x-jet is to test if 3km-nested current microphysics yields realistic results. 12-hr interpolation is being used in the RT DEMO as 6-hr interpolation required doubling the cores. This experiment uses the *Vortex Tracker* to provide extended Automated Tropical Cyclone Forecasting (ATCF) data. Two configurations were presented: (1) 2017 Basin-Scale HWRF (HB17) and (2) 2017 Operational HWRF (H217). Configurations for both models use the same physics schemes, 18/06/02-km (different 18/06-km grids) resolutions, tops at 10-hPa, 75 vertical levels and vortex initialization at 2-km resolution. The only differences were data assimilation (DA), ocean-coupling, and multi-storm interaction. H217 uses hybrid-DA (vs. 3d-Var-DA in HB17), 18/6/2-km Princeton Ocean Model coupling (vs. no coupling), with no multi-storm interaction (vs. up to 3-storm interaction). It was noted that HB17 performed very well for Hurricane *Harvey* and Hurricane *Irma*. Fig. 1 illustrates low track errors for Hurricane Harvey and low 120-h track error for Hurricane Irma. Despite having no ocean coupling, Fig. 2 shows that intensity forecasts were reasonable for hurricanes Harvey & Irma. Additionally, the initial evaluation of the potential utility of HB17 forecasts supports a variety of applications such as rapid intensification (RI), rainfall, severe weather, and vortex tilt. It was noted that HB17 intensity is expected to be on par with operational Hurricane Weather Research & Forecasting (HWRF) after ocean coupling has been integrated. Sensitivity testing may help to determine the impact of Tail Doppler
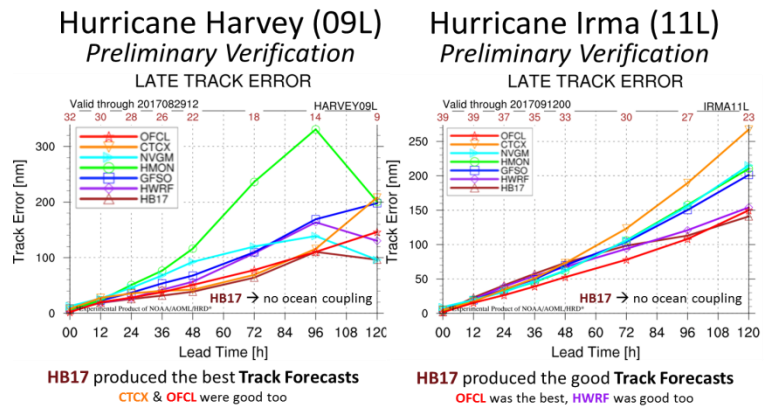

Figure 1. Preliminary Verification of Late Track Error for Hurricanes Harvey and Irma using Basin-scale HWRF.
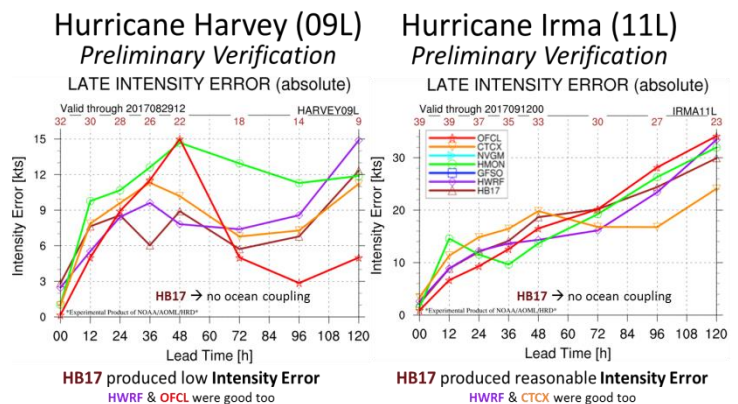

Figure 2. Preliminary Verification of Absolute Late Intensity Error for Hurricanes Harvey and Irma using Basin-scale HWRF.

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[1] M. Bender, Hazelton, A., and Lin, S.-J. (2017). *Evaluation of GfsFV[3] on hurricane prediction*. Presentation by Dr. Morris Bender and Dr. Andy Hazelton (GFDL) at the Hurricane Forecast Improvement Project, HFIP-Biweekly Teleconference, 20 September 2017, National Weather Service HQ, Silver Spring, MD.

Radar (TDR)/High Density Observations (HDOBs) from aircraft and the impact of the multi-storm vs. the big domain.

Preliminary Evaluation of Hurricanes Harvey and Irma in the 2017 Basin-Scale HWRF[2] (rthur-aoml): PI's: Gus Alaka and Xuejin Zhang (AOML/HRD), Technical Leads: Laura Ko and Russel St. Fleur. This real-time ocean-coupled experiment could advance AOML research in multiple TC interaction. As illustrated in Fig. 3, initial evaluation shows the potential utility of HB17 forecasts for a variety of applications. In summary, it was noted that *GfsFv[3]* has made modest improvement in track guidance compared to operational GFS particularly in long lead times (8%). ECMF track errors were superior in the AL basin to any guidance with GfsFv3 having the smallest track errors in the WPAC basin. Hurricane Research Division (HRD) basin-scale (BS) HWRF performed better than operational HWRF for track guidance, particularly for TC "*Harvey*". European Centre for Medium-range Weather Forecasts model (ECMWF) and GfsFv[3] track errors were comparable for TC Harvey. ECMWF track errors were much smaller for TC "*Irma*" than any other guidance. Operational HWRF intensity guidance was superior compared to either version of GfsFv[3] or HRD BS-HWRF with very little intensity bias.
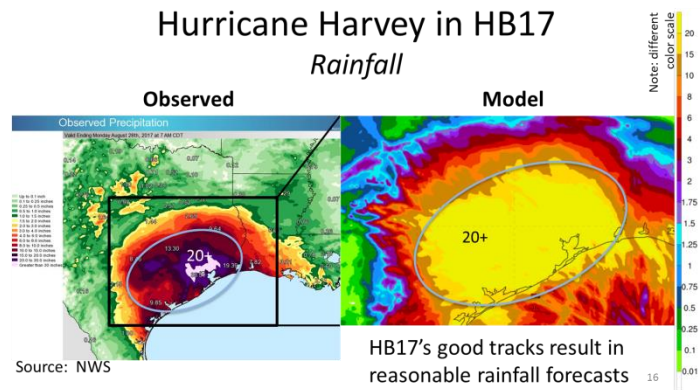

Figure 3. Preliminary verification of rainfall for Hurricane Harvey using Basin-Scale HWRF (HB17) numerical guidance.

Closing Remarks:

It was noted by Gopal Sundararaman the presentation was very good with great participation and interaction. Shane Forsythe-Newell followed up by announcing the next meeting date time, thanked everyone, and adjourned the meeting.

Announcements:
- The next HFIP Annual Meeting date will be early November and detailed information is being coordinated.
- Reminder: The AMS will hold their 97th Annual Meeting in Seattle January 22-26, 2018.

Next Meeting time – 2:00 PM – 3:00 PM Wednesday, 04 October 2017
- Shane will send out an invite and a reminder.

Participants (22):

Andrew Penny, Chanh Kieu, Daniel Melendez, Edward Mifflin, Francise Fendell, Frank Marks, Gopal Sundararaman, Hyun-Sook Kim, James Franklin, Jason Sippel, Jon Moskaitis, Kate Musgrove, Morris Bender, Nysheema Lett, Ryan Torn, Shane Forsythe-Newell, Tirthankar Ghosh, Tim Marchok, William Lewis, Xu Lu, Xuejin Zhang and Zhan Zhang.

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[2] G. Alaka, Sundararaman, G., Zhang, X., Ko, L., and St. Fleur, R. (2017). *Preliminary evaluation of hurricanes Harvey and Irma in the 2017 Basin-Scale HWRF.* Presentation by Dr. Alaka and Dr. Zhang (AOML/HRD) at the HFIP-Biweekly Teleconference, 20 September 2017, National Weather Service HQ, Silver Spring, MD.