The second HFIP–Biweekly teleconference in June 2017 was held 2:00 PM – 3:00 PM ET Wednesday June 28th online from the NWS Headquarters OSTI, Silver Spring, MD. Following roll call (see back for list of participants), Shane Forsythe-Newell (HFIP/PO) welcomed everyone onboard, and along with Gopalakrishnan Sundararaman (HRD/HWRF) shared opening remarks noting the purpose of the meeting was two-fold. The first part of this meeting was for the RDHPCS (Jet) facility to provide help for Principal Investigators and Techs' in getting their project reservations submitted. The second part was to address any potential issues, concerns, and/or questions associated with the real-time (RT) demonstration (DEMO) for this upcoming 2017 hurricane season. Major highlights of the meeting were the following potential issues for the 2017 hurricane season:

Jet Real-Time (RT) Reservation Allocations for the 2017 hurricane season: Timothy Brown and Forrest Hobbs (RDHPCS, Boulder, CO) provided a short presentation entitled *HFIP 2017 Real-time Reservations* noting July 5th, 2017 is the deadline for all reservations being put in place. All projects will have been allocated standing reservations with no preemption this year. 00Z July 6th, 2017 (or sooner) is the expected start time and date for the 2017 HFIP RT DEMO. It was announced that any issues that may come up could be resolved by submitting a trouble ticket to rdhpcs.jet.help@noaa.gov including "HFIP RT:" in the subject line and referencing the reservation name and job ID# in the ticket. A list of RT projects (Fig. 1) was presented in the RT Reservations briefing (slide-3) as follows:

PI	Reservation	Partition
Christopher Rozoff	hwrf-anen	tJet
Tiruvalam Krishnamurti	rtmmse	tJet
Vijay Tallapragada	hwrf-hyc	uJet
Zhaoxia Pu	rtutah	uJet
Avichal Mehra	rthmon-ens	uJet
Edward Myers	surge	sJet
Shian-Jiann Lin	fvgfs3km	sJet

PI	Reservation	Partition
Xuejin Zhang	basin-hwrf	vJet
Gregory Tripoli	wisc	vJet
Vijay Tallapragada	rthwrf-ens	xJet
Xuejin Zhang	basin-da	xJet
Avichal Mehra	rthwrf-awo	xJet

Figure 1: 2017 RT DEMO Projects, PI's, Titles, and Jet Partitions

HYCOM was noted an example of a project last year that was unable to run in RT and was forced to use *unallocated computational resources and windfall* and the question that followed was whether this problem had been resolved for 2017. Timothy Brown noted that this year users need to submit their jobs across all partitions and let the system decide which Jet partition each project will actually use since one may not know who has or who has not released their reservations. The Jet partition that has the least amount of reservations is t-Jet but it was noted that the system will figure out automatically on how to spread out reservations in 2017 based upon who releases reservations. Consensus was this would not likely be an issue this year. The bandwidth issue between WCOS and Jet was also not anticipated to be an issue in 2017. That said Dr. Hua Chen was introduced as today's speaker.

Presentation by Dr. Hua Chen on: "*Azimuthal distribution of deep convection, environmental factors and tropical cyclone rapid intensification: A perspective from HWRF ensemble forecasts of Hurricane Edouard (2014)*[1]" was shown via Go-To-Meeting, and also made available to all 32 participants via HFIP's anonymous FTP temporary link for those who might have a problem using Go-To-Meeting.

A GFS 20-member ensemble forecast was shown in the first slide of forecasts of Hurricane Edouard (2014) time series of central pressure, maximum winds, and track. Following slides illustrated RI onset factors:

- Radius of Maximum Wind (RMW), Maximum wind speeds, Central pressures, seas surface temperatures (SSTs), 700-500 hPa relative humidity middle level (RHMD), and vertical wind shear
- Composite of convective burst (CB) statistics in shear-oriented quadrants i.e., rapid intensifying inflow (RI) and non-intensifying inflow (NI)
- Histograms of CBs and evolution during RI
- Reflectivity (shaded) and storm relative (SR) flow for RI and NI
- Budget calculation of tangential wind
- Relative humidity (RH), storm relative environment flow (SREF), RMW, and shear (RI and NI)
- Composite of tangential component of SREF

Conclusions were:

- Deep convection spirals inward from down shear (DS) for RI members yet stays trapped at DS for NI members;
- Eddy vorticity flux in RI member help spinning up the middle-and-upper level and bring the vortex to alignment yet plays a negative role in spinning up the middle-and-upper level for the NI member.
- The SREF in the left-of-shear hemisphere at upper level is important for determining if deep convection can spiral inward or not.
- The SREF in the left-of-shear hemisphere is an important factor that determines if eddy vorticity flux will spin up the vortex or not.

Questions:

1. Convection relationship to RMW: Is there a relationship between where the convection is positioned radially relative to the RMW and whether you get favorable storm relative flow or not? Do you need to have the convection forming inside the RMW to get favorable storm relative flow? (Evan Kalina, DTC).
   Answer: Dr. Chen affirmed the deep convection is within the RMW. Dr. Gopal also supported Dr. Chen and referred to a slide in the presentation that showed deep

[1] Chen, H., G. Sundararaman, Z. A. Zhang, R. F. Rogers, Z. Zhang, and V. Tallapragada, 2017. *Azimuthal distribution of deep convection, environmental factors and tropical cyclone rapid intensification: A perspective from HWRF ensemble forecasts of Hurricane Edouard (2014).*

convection with the RMW. Dr. Chen noted that the RMW plays an important role in deep convection that is associated with spinning up the vortex.

2. SREF and DS relationship: In talking about the SREF and its effects, is that sort of ventilating the DS right fusion and associated moisture?
   Answer: Dr. Chen replied she did not know what relationship is because moisture is not inner-core moisture … moisture is in the vortex related environment. Dr. Chen noted that at this point she did not know the amounts of all the moisture, shear, and flow in the environment and how they are related. That said, Dr. Chen added the amount of inner-core moisture (2-6 km average) was definitely related to DS (John's talk). Relationships between down-shear and up-shear were discussed between numerous participants that involved referring back and forth to earlier slides in the presentation. General consensus was that more is required to be known in terms of specific measurements of shear and how it is related prior to RI. It was noted by Dr. Gopal that there is some other unknown environmental factor that is good for RI or not. Dr. Chen noted that inner-core is everything but this of course involves the environment; further added that shear comes from the interaction between the inner-core and the environment. A more intense discussion of vertical wind-shear and the environment among numerous participants followed. Dr. Chen suggested that what was needed is a better way to quantify multiple levels of wind-shear (integrated quantities) vs. looking at shapes and features from the model through all of the time frames. RI prediction discussion in the EPAC vs. Atlantic basins ensued that was mixed in with low, mid, and upper levels of shear as it related to RI forecasts.

Action Items (Open):

□ Shane to try to get more details for the HFIP Program Manager regarding the *h217 code* for Basin-scale HWRF not being backwards compatible (involving the new GFS/NEMSIO) so that the rtbasin-hwrf can use h217 this year. Work with the HFIP PM, EMC and DTC, as needed.

Action Items (Closed):

- Scheduled Tim Brown to talk on RT effort (Jet allocations & bandwidth) at the next HFIP Telecon
- Informed Program Manager (STI Modeling Division/HFIP) the h217 code for Basin-scale HWRF is not backwards compatible and one month's time may not be adequate to be ready for the 2017 RT DEMO. Discuss backwards compatibility of the new GFS/NEMSIO and help to determine a fall back "Plan-B" option in case the GFS/NEMSIO problem cannot be resolved in time for the RT DEMO. (Shane working with the HFIP PM, EMC and DTC to try and help determine "Plan-B" option).
- Shane coordinated RT DEMO data with Paul Kucera, HFIP website and Sheema coordinated with Paula McCaslin, GSD for the DTC.
- A summary of notes from the last HFIP-Biweekly Teleconference was posted to the HFIP Website.

Next Meeting time: 2-3 PM ET Wednesday, 12 July 2017

- Shane to send out a reminder. Following roll-call and any announcements from the HFIP Program Office, the scheduled speaker will John Kaplan (HRD) who will present "*Statistical Rapid Intensification (RI) Prediction: Implications of recent model results*" (followed by a 10-15 minutes Q&A session).

Participants (32):

Andrew Penny, Bachir Annane, Bryce Tyner, Chanh Kieu, Daniel Melendez, Edward Mifflin, Evan Kalina, Forrest Hobbs, Francise Fendell, Gopal Sundararaman, Gregory Sekoya, Hua Chen, Hui Christophersen, Hyun-Sook Kim, Jiayi Peng, Jili Dong, Jon Moskaitis, Joseph Cione, Jun Zhang, Kate Musgrove, Kathryn Newman, Mrinal Biswas, Nicole Kurkowski, Nysheema Lett, Paul Kucera, Ping Zhu, Ryan Torn, Shane Forsythe-Newell, Vijay Tallapragada, William Koronami, William Lewis, and Xu Lu.