

TCI Science Meeting Oct 18-19, 2016

Discussion Session – Minutes

- Jim will request having a TCI “special collection” with the AMS journals
 - An email has been sent requesting paper counts and titles
 - Potential hard copy collection at the end

- TCI BAMS paper deadline is end of Oct. Jim will request an extension, but would like to wrap up by mid-Dec
 - Rather than just a summary of the campaign, we would like to have figures and preliminary results to highlight
 - A telecon discussing coordination of the article will be planned at a later date
 - Look into coupling with R. Rogers Patricia paper

Next Steps

Model inter-comparisons:

1. Same ICs / BCs, different model
2. Multi-model comparisons with different ICs/ BCs, but with similar or identical physics
 - Doing these inter-comparisons requires a lot of effort and may not lead to conclusive results. TCI may not be equipped to handle such a comparison. Several attendants questioned its viability.
 - Suggestion was made that it is easier to do and usually interpret results of examining good versus bad ensemble members
 - If ICs / global model analyses differ, then why?
 - Sharan will check if we can distribute ECMWF fields for analyses or model initialization. However, we currently only have 12 vertical levels available
 - Note that the ECMWF forecast was not always correct with Joaquin, but was only the first one to catch on to the correct track

Data Assimilation

- It is easier to compare, e.g. 3D-var to 4D-var within the same system than to compare DA systems across platforms

Data synthesis and TCI model evaluation

- Ron emphasizes that we need to move beyond only verifying track and intensity forecasts; need to look at structure and whether track and intensity are right for the right reasons
- For structure verification, a “final analysis” using all in-situ data sources and a system such as SAMURAI from Michael Bell can be generated, then we can all agree to verify against a common analysis (or two). This will make it easier to compare results from different groups
 - These analyses (and change in analyses as a function of time) can then be used to examine physical processes
 - Incorporate P3 radar data
- It will be interesting to compare our high-resolution dropsonde cross sections through Patricia and Joaquin to horizontal cross sections of model forecasts for these storms

SHOUT

- Analyses of SHOUT data with TCI objectives in mind will also be valuable
 - Primarily Matthew
- Gary Wick and Jason Dunion are points of contact, and are willing to share data
- We plan to share a summary to SHOUT missions and data available on the TCI website

Some final comments on TCI

- We are currently in year 4 of 5 for funding
- Can we get TCI data into re-analysis?
 - ECMWF may be more willing due to greater confidence in their QC system
 - Changes in staffing at NCEP may make them more willing to ingest our data than they have been in the past

Future directions of TC research

- Can we sample “PV lenses”, Kelvin waves or the MJO a week or more in advance in order to improve genesis and/or the early (shortly after genesis) TC track and intensity forecast?
- PISTON is a DRI focused on the large scale and downstream consequences. Perhaps we can leverage some of their data or findings?
- Michael Bell: no recent TC field campaigns focused on heavy rainfall or microphysics, despite the fact that freshwater flooding is a major cause of damage and casualties in TCs. Possible future proposals:
 - PRECIP 2020: Prediction of Rainfall Extremes Campaign in the Pacific (NSF)
 - NOAA P-3 in Okinawa
 - Tough to get in midst of hurricane season

- DOWS, S-POL in Taiwan
 - NCAR water vapor DIALs
 - TCC 2020: Tropical Cyclone Convection (ONR)
 - WB-57 & C-130 in Okinawa
 - Either or both of these experiments would likely be proposed in Jan 2018 to begin summer 2020
- Pete Black: The Southern China Monsoon Rainfall Experiment with similar objectives has been ongoing since 2014
- Jim Doyle: Navy wants to know where to position ships for humanitarian relief, primarily for EVAC.
- IR-based techniques for estimating precipitation are not very good. We need more polar orbiters / microwave instruments, but many have already failed or will fail by 2020
- A difference of ~ 1 g/kg moisture is well within the uncertainty bounds in model analyses (or forecasts), but can make a difference in terms of rainfall
- The DC-8 can perhaps handle flying into heavy convection in order to sample the microphysics
- SHOUT is no longer interested in TCs – moving towards heavy rainfall events
- Ron makes final note that we need to first have a clear science objective before deciding the type(s) of aircraft we need and where to fly from