

meetingnotes

NRCM - Meeting Notes

July 18, 2007

1. **Status of Columbia Run** (Cindy Bruyere)

We are currently busy with the Columbia analysis. 2000 is done and 2001 is almost done. Estimated time to get all this done is end August. The major delays at the moment is due to missing data files for this run. There is not a lot of data missing, but since the data got moved from computer to computer before we got the data on the mass store, some of the files got corrupt in the process. As it is hard to tell which files got damaged, we only find this out during the analysis run. In which case we must stop and interpolate to the missing file before moving forward. The majority of the work is done by Stefan, Vincent and Yan.

2. **Demonstration of Vapor software by Alan North and Victor Snyder**

Vapor web address: <http://www.vapor.ucar.edu/>

3. **Science presentations by Chidong Zhang:**

- **Double ITCZ:**

We compared the distributions of the ITCZ in surface wind divergence and precipitation from satellite observations, global reanalyses, and NRCM simulations. It is found that a double ITCZ in wind convergence exists most of the time in both observations and simulations. Meanwhile, a double ITCZ in precipitation exists only in boreal spring (March - May) in observations but may exist in other months in simulations. The location of the southern branch of the ITCZ in surface wind is south of the equatorial cold tongue, which can be interpreted as a result of changes in surface stability as air in the southerly trades moves from relatively warm to cold water. It is hypothesized that this wind convergence is shallow because of the decoupling between the surface mixed layer (or subcloud layer) and cloud layer above. In models, this decoupling may not be resolved due to coarse vertical resolution or deficiencies in boundary-layer parameterizations and a deeper wind convergence layer may result. Consequently, parameterized precipitation may respond to this erroneously deep wind (and moisture) convergence and hence the double ITCZ bias in the model.

- **The MJO**

Simulations and sensitivity tests of a tropical channel model based on MM5 indicated that lateral boundary conditions are critical to MJO initiations. This result has led to an expectation that the NRCM would produce reasonable MJO statistics in its 5 year simulations with prescribed lateral boundary conditions from the NCEP reanalysis. The fact that the NRCM does not produce the MJO statistics any better than some GCMs is puzzling. A case study with cold start immediately prior to the May 1997 MJO event reproduced that MJO event very well, indicating that the cumulus parameterization scheme (Kain-Fritsch) is capable of carrying the information from the initial condition forward for at least a month or so. Notice that another MJO event following the May event was not reproduced by the case study. This leads to the following hypothesis: Biases in the mean state developed in the model at the speed that it reached the level of 5-year statistics in about a month. Such biases prevented the reproduction of MJO events in spite of the influences from the lateral boundaries.