

# YOTC MJO Task Force – 11th Telecon

**Meeting time:** 21:00 GMT, 15<sup>th</sup> December 2011.

## **Participants**

Task Force:

Matt, Eric, Duane, Steve, Hai, Jon, Prince, Rich, Joshua, Augustin

Others:

Jim Benedict (CSU), Harry Hendon (ABOM)

## **Proposed Agenda**

1. Briefly mention the people changes (Matt/Eric)
2. Pan-GASS meeting and next face-to-face meeting of the TF (Matt/Eric)
3. Results of the Kim et al. model ranking survey and comparison with new Sperber and Kim paper (Matt)
4. Process-oriented diagnostics - the Jim Benedict work (Eric/Jim Benedict)
5. Vertical Structure and Diabatic Processes Model Intercomparison Project (Steve, Prince, Duane)

## **Meeting Minutes** (by Matt and Eric)

### **1. People changes**

Eric has replace Duane as a co-chair. Duane is still a member. Thanks to Duane for his leadership for many years!

Dave and Harry volunteered to step down from the TF to allow space for June-Yi and Steve to become members. However, we hope to still have the participation and input of Dave and Harry when we can (such as having Harry on today's telecon).

### **2. Pan-GASS meeting and next face-to-face meeting of the TF**

In Denver we discussed possibilities for our next face-to-face meeting. The option which has gained the most support and interest is to hold it in conjunction with the Pan-GASS meeting in Boulder in September 2012. The Pan-GASS meeting is being held at NCAR from 10<sup>th</sup>-14<sup>th</sup> Sept. The head of the organising committee is Chris Bretherton, and Steve is on the committee (Steve is also a member of the GASS SSG).

The plan is that we could help co-organise some scientific sessions on the MJO during the Pan-GASS meeting, including a session for discussion of our joint activity with GASS on the vertical structure and diabatic heating MIP. We are pushing to have the MJO relevant sessions later in the week of the 10<sup>th</sup>-14<sup>th</sup>. We could then have our MJO-TF 'business' meeting on Monday 17<sup>th</sup> Sept at NCAR. The advantage of holding the TF meeting on the 17<sup>th</sup> is that it would allow time for Ken (and perhaps

Harry, June-Yi, and Masaki) to get to Boulder from China the week before. Rich and Eric have tentatively booked a suitable room at NCAR Mesa Lab for this meeting.

The telecon discussion confirmed that having our next face-to-face meeting in Boulder on 17<sup>th</sup> September was our best option.

Augustin asked if there could be a DYNAMO/CINDY session at the Pan-GASS. Steve thought that these talks could fit within the more general MJO sessions.

**ACTION:** Matt to contact Jim Caughey and perhaps others at WMO to ask for travel funding for the MJO-TF members to attend this meeting.

**ACTION:** Steve to keep us informed about the Pan-GASS meeting, including the development of the agenda.

Other future meetings of interest (e.g. DYNAMO, Subseasonal Planning Group) were discussed. A number of the TF will attend the upcoming AMS tropical meeting and will take the opportunity to meet. A CINDY/DYNAMO session is also proposed for the WPGM/AOGS meeting in Singapore in August, which might be another opportunity for at least a subset of the TF to meet.

### **3. Results of the Kim et al. model ranking survey and comparison with new Sperber and Kim paper**

Matt reported on his survey of the TF members on their “expert” ranking of the 8 models that were analysed in the Kim et al. (2009) J. Climate paper. The full results were sent to the TF in an e-mail with attached spreadsheet. This survey was conducted as a result of our discussions in Denver on the selection of a MJO metric to give to the Climate Metrics Panel. Knowing what our collective “expert” wisdom is with a set of models for which we already have experience with (and a full set of MJO diagnostics to look at) should be useful for selecting a single (or limited set of) metrics for the Climate Metrics Panel. Comparison with the results of the recently submitted paper by Ken and Daehyun is also of interest.

Duane suggested that it might be useful to post the results of this survey, with some explanation, on the MJO-TF web-site. Then a link could be made to Ken and Daehyun’s paper and their results. Eric suggested waiting until after the review of their paper.

**ACTION:** Matt to think about putting these results on the MJO-TF web-site.

### **4. Process-oriented diagnostics of Moist Static Energy/Entropy Jim Benedict and Eric Maloney**

Jim Benedict reported on progress regarding process-oriented diagnostic work involving calculation of a quantity called “gross moist stability (GMS)”. Using the moist static energy or moist entropy budget, GMS is defined as the column-integrated moist static energy (or entropy) export per unit convective activity. For the tropical atmosphere that is dominated by weak temperature gradients, this is tantamount to an

assessment of how efficiently convection dries (or moistens) the column per unit convective activity. This quantity can be plotted in the mean or as a function of MJO phase. For example, Pat Haertel recently showed that in the shallow convective period before MJO deep convection, GMS was negative, corresponding to shallow convection moistening the column. Essentially, the moisture convergence driven by shallow convection is greater than the condensational drying, hence leading to a column moistening. The cancelation between these two terms is implicitly accounted for in the calculation of GMS. It is hypothesized that models with lower GMS in the mean, or models having the ability to correctly simulate periods of low or negative GMS (such as would be the case if shallow convection were realistic), are models that are better able to sustain strong moisture anomalies associated with MJO convection.

Jim Benedict is conducting an initial demonstration with the NCAR CAM3, SP-CAM, GFDL AM2, and several versions of the GFDL AM3 to determine whether this GMS diagnostic can discern why some model produce good MJO activity and why some do not. The calculations follow a method of Dave Raymond's. Initial results will be ready for a meeting in January, and reported at our next telecon. Harry urged that the recipe for making these calculations and possible code be made available to modelling groups to aid in dissemination. Steve and Prince urged that the results from this diagnostic be cross-compared with those being developed by Prince and others related to moisture and diabatic heating. Eric stated that these GMS diagnostics are highly complementary to the others and hence such a comparison would be an excellent idea. Some previous work by Eric's graduate student Walter Hannah supports the complementary nature of such a comparison.

**ACTION:** Eric and Jim to present the initial results of the GMS diagnosis at the next telecon.

## **5. Vertical Structure and Diabatic Processes Model Intercomparison Project (Steve, Prince, Duane)**

An update on the diabatic process intercomparison project was presented. The response from the community to this effort has been outstanding, with most modelling centers already supplying the promised model runs that will feed into this intercomparison. The number of participating modeling centers/groups differs depending on the type of simulation comparison (e.g. long climatological integration v.s. hindcast). In total, there are 38 different groups that have promised data, and the flow of data from ECMWF (through Frederic) has started.

Some modelling centers have expressed concern about the netcdf data standard of the project, since many operational modelling centers (e.g. NCEP) operate with GRIB2 data. Conversion of data to netcdf might be prohibitively difficult due to time constraints. Steve argued that for such a large intercomparison project such as this to work, such a standard needs to be implemented to make the model intercomparison code and workload manageable. Augustin and Steve will talk offline to address some of these format concerns. Steve emphasized that it was important for centers that could not comply with the netcdf data format to contact them to arrange a suitable compromise or workaround.

**ACTION:** Duane/Steve/Prince to send out new e-mail to those that have promised data reminding them of the significant data and format requirements.

**ACTION:** Augustin to talk to Steve about how to overcome the data format issues for the case of NCEP.