

## **US CLIVAR MJO WG**

### **Telecon Minutes**

October 16, 2006; 11:00am-12:30pm US West Coast

**Telecon Participants:** Stern, Waliser, Weickmann, Zhang, Maloney, W. Wang, Sperber, Schubert

**Revisions on MJO Simulation Metrics:** Most of the telecon was spent reviewing the near-final version of the MJO simulation metrics. Sample calculations for u850 and u200 (Maloney), OLR (Weickmann) and precipitation (Waliser) were presented and discussed. Relatively minor questions were raised on these metrics. A synopsis of these is included below. At this stage, the WG is fairly comfortable with the level 1 + 2 metrics that have been developed. Hendon and Wheeler have agreed to perform the combined EOF portion of the metrics. This, along with the calculations of some mean fields, the various composites which will be based on the combined EOF amplitude time series (i.e. to identify events for compositing), and a few other easy to compute items, indicates nearing the end of the development effort for the model validation metrics. The next big challenge is to have the metrics, data, their plots, etc. calculated in a uniform manner so that they can be posted on the web and possibly published. This also includes the ability to uniformly apply them to a couple of models. Waliser solicited the WG and some members of the community to entrain a graduate student into the project who may help with this portion of the task. In-Sik Kang has since identified a graduate student in his group working on the MJO who will help with this starting in November. This is a very important development to keep the momentum going and be able to wrap up this component of the WG objectives.

**Web Site:** Additional theme pages have been added and WG members were encouraged to review these and provide suggestions/names for additional pages.

**MJOWG Workshop:** Waliser outlined the principal workshop foci that were presented at the July 2006 US CLIVAR Summit, which participating WG members continued to support (see WG summit presentation that is posted on the WG web site). It was thought that we needed to move ahead with planning for a summer 2007 workshop that will probably be invitation only. We should have the metrics completed to try to have the participating modelers apply them in advance of the workshop, with the WG providing a uniform analysis on several models for presentation at the workshop. We would also expect to further develop forecast metrics by that time. A major goal would be to discuss model experimentation in conjunction with metrics use that would translate into model improvements and a follow-on workshop the following summer. Dates need to be considered. Conflicting meetings include IUGG (Italy), and Monsoon/Climate Change (Japan). Consideration is being given to having the workshop immediately before or after the US CLIVAR SUMMIT that is planned for next summer. Duane will look further into this possibility.

**Next Steps:** Apart from wrapping up Simulation Metrics, planning the Workshop, the next step will begin to focus our effort effort on Forecast Metrics.

## **Comments and Questions about Metrics Developed/Computed to Date** (refer to *Simulation Metrics* document)

### 1) Variance maps

No modifications.

### 2) Regional Spectra

For OLR and precipitation, Duane and Klaus have selected consistent boxes for area averaging. Duane's decay time scales are faster, and this raises issues regarding statistical significance and estimates of the degrees of freedom for calculating the rednoise level. We need to make sure that all follow the same procedure.

### 3) EOF's of individual fields

Issues regarding consistent methodology of rednoise calculation for projecting unfiltered data onto the EOFs and then computing their spectra remain, in particular estimation of number of degrees of freedom (as in item 2).

Agreed to calculate North criterion in addition to above projection method to provide multiple choices for assessing whether an EOF should be retained.

### 4) Lag regressions

a) PC-1 vs. PC-2: no modification

b) Longitude-lag, latitude-lag

Klaus: Surprisingly, phase speeds are faster than thought, at 6-7 m/s with TRMM having a faster phase speed than what we have observed in the past 4-5m/s). Is this due to a regime change or is it an unresolvable difference?

Correlation was thought to be ok instead of regression.

Boreal summer: Need to prescribe the longitude domain for latitude-lag plots. CMAP is more symmetrical about the equator than OLR. One possibility is that the different longitude domains used may have contributed to this discrepancy. Ken noted caution in using this metric as conclusive identification that northward propagation is present. He noted model data in which westward propagation at continental latitudes intersected with intensification of near-equatorial convection, thus giving rise to what appeared to be northward propagation. Ken suggested that longitude-lag plots averaged between about 15N-20N also be used to conclusively indicate the northward propagating component actually occurs from west to east movement of the tilted rainband. He noted that this was based on projecting model data onto the dominant observed boreal summer OLR pattern, and this discrepancy may be alleviated when the composite OLR, u850, u200 analysis of Wheeler and Hendon is used. Figures illustrating this will be forthcoming.

Consistent determination of phase speeds from space-lag regressions and EOFs/PCs needed.

### 5) Discussion and Caveats:

No modifications.

### 6) Future items

No modifications.

#### 7) Frequency-wavenumber plots

Freq-wave number: need to explore removal or annual cycle for seasonal calculation. Klaus raised objections of multiplication of power by frequency for these plots (which is done for the spectra discussed above), as this may not be proper(?) in wavenumber space. So for now, it was agreed we won't do this.

For the full data set, it was agreed to process the data yearly (Jan 1-Dec 31) and then average individual spectra together.

Note: nobody provided the ratio of the eastward vs. westward power. This may be important when processing models that exhibit more symmetry.

Wheeler-Kiladis spectra are an integral part of the literature, so consideration to providing these metrics should also be considered. Harry provided a revised methodology that involves computing the co-spectra that allowed one to bypass generation of a smoothed background spectra for bringing out the equatorial modal structures. For now, we are considering the inclusion of both methods.