

# Notes on CMG/NASA Tele Meeting 1

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## 1 Intro

At the CMG/NASA meeting (1st Annual Meeting, Reed College, Portland, OR 2/21/2010) we got together and all talked a bit about the capabilities and goals of our individual groups. D'Asaro suggested that we should be deliberate about inter-institutional collaborations, and it was agreed that this should be done in a revisiting of the stated goals in the proposals. This teleconference was intended to report on the updated goals and collaborations going forward.

The next teleconference is planned for late May or early June, and Baylor will do a doodle soon.

## 2 Planned Collaborations

### 2.1 WaveWatch, T/P, ERA data for Float Reanalysis

Fox-Kemper, Stevens, Webb have provided a preliminary dataset to D'Asaro & Shcherbina for reanalysis of the float observations in 2000. Fabrice Ardhuin plans a data-assimilating WW3 run for the year 2000, Fox-Kemper is contact. This data will be added to the pile when it's run. Also, ERA-Interim data will be added along with ERA-40. Stevens' thesis will serve as the baseline inter-analysis for these datasets. Including AVISO satellite data is also a possibility, but there is likely interpolation bias issues due to gridding & smoothing pre-analysis.

As soon as this data is checked by Shcherbina, other data for other obs will be similarly prepared. Time and location range of data (Papa and Lab Sea) needed would be very useful, and is promised to be delivered by UW to CU soon. Hurricane data was discussed and left to future planning.

Fox-Kemper, Stevens, Webb plan to finalize a global climatology/timeseries of Stokes drift, wave age, and Langmuir number, Kantha number,  $T_{m1}$ ,  $T_{m2}$ ,  $T_{m3}$ ,  $H_s$  from all of these data sources for the whole of the needed time interval over the summer. It will be available to the group as produced, and feedback is welcome!

### 2.2 Metrics

The Langmuir number, vertical KE, skewness, and other measures of eddy fluxes (e.g.,  $\overline{u'w'}$ ,  $\overline{u'b'}$ ) were discussed as potential comparison points between LES, theory, and OBS. This list should be lengthened and broadened.

### **2.3 Extend Asymptotic Analysis to Submesoscale**

Ongoing with Chini, Webb, Julien, Li, Zhang. Efforts at present are Langmuir formation under non-aligned wind & waves, Langmuir instability in the presence of horizontal buoyancy gradients.

### **2.4 Numerical Simulation Hierarchy?**

Brief discussion of DNS for Chini post-doc. Should be hashed out more clearly as asymptotic models develop. Chini & Julien request guidance from Harcourt as to scaling of eddy fluxes in LES runs, relevant metrics TBA.

## **3 New Projects**

### **3.1 PV, Frontogenesis, and Quasi-Balanced Dynamics of the Craik-Leibovich Equations**

Initial formulation of the PV (D'Asaro suggestion) in C-L equations with constant Stokes drift suggests that the only difference is an added advection of PV by Stokes' drift (Fox-Kemper). Further analysis including, e.g., spatiotemporally-varying Stokes drift (added rel. vorticity?), submesoscale instability dynamics of C-L (i.e., revisit Stone instability with added Stokes Drift), frontogenesis of C-L (Hoskins & Bretherton + Stokes drift), should be carried through. Team is Chini, Julien, Fox-Kemper, Van Roekel, Webb at present.

### **3.2 LES as big as the whole outdoors**

Sullivan, van Roekel, Harcourt, & Fox-Kemper are planning a first round of big LES runs using the Sullivan & Patton model. A request for NCAR/CISL GAUs is going in today. Primary goal is to have sufficient resolution for fair C-L/Langmuir dynamics over a timescale & domain size for development of submesoscale eddies. Input comparison with Harcourt results would be welcome. It is likely that this initial cpu request will be insufficient, so a DOE/INCITE (due April through July) or teragrid request (rolling application) is planned. Joint proposal for cputime with Harcourt.

## **4 Website**

A new website at:

<http://cires.colorado.edu/science/groups/foxkemper/projects/CMGNASA> is up.

### **4.1 Publications & Talks**

Please send a note to Baylor of any future publications or talks are given. Links to slides, etc. are useful to put up, and annual summaries are faster if the information is already collected.

### **4.2 Slides from Meeting and Ocean Sciences**

We are beginning to post slides from the meeting and are missing many. It is planned that most of these will be password-protected under username: fox-kemper2 password: 4group.

### 4.3 Upload/Download Sites

There is also a link to share large files through the website. Use username: fox-kemper password: 4group