Minutes of ORAC Meeting
15th January 2009, 10 am, RAL

Present: *Chris Arnold, Elisa Carboni, Don Grainger, Haiyan Huang, Caroline Poulsen, Andy Sayer, Richard Siddans, Gareth Thomas*

1. A discussion was made on the future of the GRAPE cluster … require clarity on what is provided through NCEO (ie support for the cluster) or use of large RAL cluster (Neither Don nor Anu (for IASI) where aware RAL offered any processing support as part of NCEO!). Also raised later was whether part of the money saved by the Oxford waiving overheads on the joint Oxford-RAL post could be used to support the cluster. Richard suggested he discuss the mater with Brian and Chris to clarify.

2. GEWEX/GRAPE current status and results (AS/CP/CA)

    -   GRAPE level 3 code. Andy has got this running on Oxford machines (does not work on RAL machines due to HDF library problems). Takes a little under 12 hours to run at both 2.5 degree and 1 degree resolutions. There were assorted problems with this code (incorrect averaging, funny names, negative variance, one albedo dataset repeated/one missing), some of which he has now fixed. Aim to fix problems and process a complete set of level 3 data by the next meeting.

    -   GEWEX results. Chris has shown some comparisons with MODIS. GRAPE looks like it is missing high cloud and seems to have a seasonal negative bias in cloud fraction. Some problems with the plots; will circulate fixed versions by the end of the week. Both MIPAS and GRAPE data need to be submitted to GEWEX by the end of the month.

    -   Machines (present and future). Have decided to buy a 9 TB disk to add to the RAL cluster. Caroline has a quote somewhere; Andy will talk to Mark to see if we can buy one cheaper.

3. Algorithm development:

    -   BRDF forward model expression (GT). Gareth identified small approximation we hadn't been aware we were making after discussion with Alex Kokhanovsky (relating to direct radiation of diffusely-scattered light). Minor influence on forward model, but perhaps something to improve in the future. Has circulated a document detailing this.

    -   Sea BRDF integration (AS). Following Richard's observations, Andy notes the Cox-Munk routine requires a lot of quadrature points to calculate well using Gaussian quadrature, and oscillates depending on whether an even or odd number are used. Rabau quadrature seems to converge roughly twice as fast without oscillations, but still need ~150-200 points for extreme cases. Andy to investigate building a LUT of the integrated glint contribution as a function of wind speed to speed it up (as whitecaps and underlight integrate quickly).

4. Student progress:

    -   Haiyan (HH). Some plots linking wind speed and direction to aerosol optical depth. For a case off New Zealand, seemed to be a positive link when far away from the coast. Also showed some global correlation maps of optical depth and wind speed for different wind directions. Interesting results, but some questions as to whether e.g. trade winds really always come from the same direction, every single day. Possible ECMWF data issue (resolution?).

    -   Chris (CA). See GEWEX above. For the next meeting, Chris will produce some plots of areas where GRAPE cloud could be improved, and use these to decide which improvements he will aim to make over the course of his DPhil.

5. Progress on EUMETSAT cloud RT model (RS/CP/EC)

    -   Caroline and Richard showed some comparisons between SEVIRI and CALIPSO. Thought that there

could be problems in imaging instrument retrievals from a thin layer of high cirrus which they don't see well and is quite prevalent (i.e. there may be a lot of multi-layer cloud), as seen in e.g. CALIPSO data. Also had some plots of residuals; different quality control thresholds change distribution. Residuals could be indicator of multi-layer cloud.

- Elisa working out terms for IR multi-layer forward model.

6. Attendance at Locarno meeting (Feb 2009)

   - Chris Arnold to probably go; Oxford to discuss internally by end of week.

7. Discussion on extension options for Globaerosol (RS/DG)

   - RS/DG discussing with Simon Pinnock. RS to send Simon email asking about extensions.

8. Discussion on Earthcare MSI algorithm ITT (RS/CP)

   - Instrument will be AVHRR-like with a 2.2 micron channel. ITT is for algorithm study: definition and comparisons (some test cases?) as opposed to lots of code. 15 month project. Oxford to discuss internally: would be a good thing to do, but who would do it? Already all busy.

9. Publications:
   - Grape aerosol algorithm. With reviewers.
   - Grape aerosol validation. No progress.
   - Grape cloud algorithm. No progress.
   - Grape cloud validation. No progress.
   - Elisa's SEVIRI IR retrieval. Added dust estimates to paper draft.
   - Elisa's dust comparison. Submitted abstract to EGU.
   - Andy's thesis papers. To work on after viva (16th Feb); surface reflectance first (for RSE special issue).
   - Kokhanovsky's book. Off to publishers, following forward model clarification.
   - RSE Special Issue on ATSR. Send working titles to David Llewellyn-Jones by end of week. One on cloud, one on aerosol, one on surface reflectance.

10. Date of next meeting
   - Wednesday 25th February, 10:15 am, Oxford. Andy to book Brewer Room.