

V-MOD business meeting IAGA 2009 (Tuesday 25th August)

Chair S. Maus; Co-chair: C. Finlay

The agenda was approved without amendment. The meeting started at 12:00. E. Thébault writes the minutes.

1. IGRF report: previous IGRF and IGRF-11

a. Previous IGRF (S. Maus)

S. Maus discussed the accuracy of IGRF-10 candidate models in view of newly acquired satellite data and recent satellite-based models. They proved to be good (RMS against CHAOS 2) for the static field (~20 nT). The accuracy at which we are able to predict the secular variation (SV) over a few years reaches 29 nT/yr on average. Predicting the SV remains the main challenge.

Data availability: Available observatory data for the next IGRF were presented. S. Macmillan says that data will be available soon for 2009 (up to July)... they are not yet all available online. A request by E-mail should be sent to Susan in order to get the most recent data. Monthly means are not available. We may ask M. Mandaia to get the monthly means. H. Lühr says that a new CHAMP dataset named Level 2x has been prepared, extending up to the end of July. This new dataset includes the Euler angle correction and some jumps have been removed. S. Maus summarizes by saying that mainly attitude errors were corrected for. OERSTED data from 1999 up to July were presented. N. Olsen stresses that the quality of OERSTED scalar data is still very good (no more vector data from 2008). The delay to get the data could be made shorter on request. The question of the CHAMP lifetime has been raised. It is expected that CHAMP will operate until July of next year. This question was deemed important for planning the next generation of IGRF.

b. Progress towards IGRF-11 (C. Finlay):

C. Finlay summarized the draft call made for the IGRF-11. The major change compared to IGRF-10 is that each team should now officially propose only one candidate to facilitate evaluation. However, teams are encouraged to post online different trial candidate models that could be tested against real data for the next generation of IGRF. The chairs are thus asking the teams to provide some test models for this future assessment. Confirmed teams for IGRF-11 candidate models are:

CHAOS 2 Team (Leader Nils Olsen - DTU Space)
GFZ Team (Leader Vincent Lesur - GFZ)
NGDC/GFZ Team (Leader Stefan Maus - NGDC).
IPGP Team (Leader Erwan Thébault - IPGP)
BGS Team (Leader Brian Hamilton - BGS)
IZMIRAN Team (Leader Vadim Golokov - IZMIRAN)
ELLI Team (Leader Aude Chambudot - EOST)
MoSST-DAS Team (Leader Weijia Kuang - NASA) (SV only)

The evaluations will be carried out in collaboration with the candidate institutes. Any plausible method of testing/validation will be accepted.

The main question was related to a possible increase of the SH degree expansion for the SV. There was a vote about this question. It was voted that the SV model should not be extended beyond SH degree 8. Some people pointed out that it is important that IGRF moves forward and makes progress. This requires more investigation. C. Finlay discussed the presentation of Luis Da Silva et al. (IAGA contribution) showing some tests towards the feasibility of improving the data fit by including higher SV degrees (up to 13).

H. Lühr stressed that in view of ESA and the forthcoming Swarm mission it is important to have an official product (IGRF) doing as “good” a job as a scientific product (models reaching higher resolution but based on more subjective criteria). G. Hulot says that it might be interesting to release an official “trial” product even though C. Finlay underlines the confusion that could follow such a release. S. Macmillan recalls that five years ago the same question was raised and it comes out that users require stability over time. P. Taylor stresses that this question is a long-standing one dating back to the 70’s. This change could lead to annoying offsets in processing of old near-surface data (like WDMAM). S. Maus says that the question to address is: “shall we do as good as we can or not”. The transition would anyway be done smoothly after careful testing and checking that such improvement would indeed be useful. It was pointed out by someone that, if higher SV degrees were released, we might have to step back if we do not have any more satellite data in the near future. This would be difficult for the user community to understand these successive changes.

C. Finlay completed his talk with some deadlines: The IGRF candidates should be sent by the 1st of October, evaluation will be by the 15th of November and candidate could be published in a special EPS issue after the review process. The publication should be done by the end of 2009. The IGRF will be available from the IAGA website sooner (as soon as the model is approved).

2. World Digital Magnetic Anomaly Map

The WDMAM business meeting took place on Monday 24th (12h-13h). There is now a call for new WDMAM candidates. Team registration and data submission deadline is now between January and April next year. Candidate submission should be done by October 2010. The evaluation should be ready at fall AGU, San Francisco. The manuscript submission should be ready for EGU 2011 and the final manuscript and the grid for IUGG 2011. Minutes of the WDMAM business meeting will be available online.

3. Proposed ISO norm for the main field

The ISO committee ISO TC20/SC14/WG4 passed Resolution 263 in 2007 stating that “... IAGA Div V WG-MOD continues to be the organization that provides scientific leadership in the effort to develop an Earth main magnetic field standard.” It was agreed that WG-V-MOD should come up with a draft. The major complication is to define correctly the different magnetic field sources. In particular, it is difficult to define what a main field is. S. Maus suggests not to use the term “main field”. For such an ISO Standard we should simply define a file format for the static field and its secular variation, not more. Another complication is the degree to which the field is resolved. It was decided to call the Standard

“ISO Standard for an Internal Geomagnetic Reference Field”. H. Lühr suggests to have a closer look to the experience gained by the magnetospheric field community. More technical questions followed concerning the output format of such ISO – IGRF.

A question raised by V. Lesur was: “do we need to set 0 for $H_{0,n}$ ” ? This “detail” may be important for models reaching very high SH degrees (too much space). Strictly speaking, it is not correct to put 0 to something that is not defined (comment from R. Holme).

The first line of the file should specify “ISO model...”.

N. Olsen stresses that the number of header lines should be fixed. G. Hulot suggests including a website link in order to have access to the ISO standard description. In addition, keeping the same number of line (and not characters) would allow changing the comments if necessary in the future.

Other parameters should be fixed in the related ISO document, like reference radius, it should be specified that the ISO-IGRF model is defined by Gauss coefficients with quasi Schmidt normalization. The mathematical equation should be added for more clarity, probably on a web site or some kind of documentation. It was pointed out that it is anyway the ISO board who decides whether a model is ISO-compliant or not. Therefore, there is no special need for referring to a peer-reviewed publication in the ISO data file.

4. Preparation of IUGG 2011

Suggestions were made about the possible sessions that we would like to see during the next IUGG meeting:

- ❖ Geomagnetic secular variation on annual to centennial scales (convener: Finlay and ?)
Action: For this session C. Finaly should see with Div I for avoiding possible overlap.
- ❖ Modelling of lithospheric, induced and external magnetic fields (convener: M. Hamoudi ; co-convener: ?).
- ❖ Tectonic interpretation of magnetic, gravity and seismic data: (convener: ? ; co-convener: D. Ravat. He will identify the convener).
Action: Contact someone for gravity/ seismic for a joint session ?
- ❖ Results from the decade of geopotential research and future prospects (convener: C. Beggan TBC).
- ❖ WDMAM-2011 (convener: E. Thebault co-c: ?)

The meeting ended at 13:35 (1:35 PM)

E. Thébault, IUGG, Sopron, Hungaria.