

Report of the IAGA Division V Business Meeting

Monday 4th July 2011, Melbourne Conference Centre, Australia. 18:10-19:20

Chair: Monika Korte

Co-Chair (Minutes): Alan Thomson

Agenda

- 1. Report from Division V Chair: Monika Korte**
- 2. Report from WG V-OBS: Pieter Kotze**
- 3. Report from WG V-DAT: Mita Rajaram**
- 4. Report from WG V-MOD: Stefan Maus**
- 5. IAGA 2013 Session Proposals from Division V**
- 6. Proposal of Resolutions from Division V**
- 7. Election of New Division Chair and Co-Chair**
- 8. Any Other Business**

Report from Division V Chair

Presented by Monika Korte.

Division-related Meetings and Workshops

- The XIVth IAGA Workshop on Geomagnetic Observatory Instruments, Data Acquisition and Processing was hosted by the China Earthquake Administration and took place in Changchun, Jilin Province, China from September 13 to 23, 2010. The very well organised workshop consisted of measurement sessions at the Changchun geomagnetic observatory and scientific sessions and was attended by over 80 participants from 20 countries.
- A Workshop entitled "Artificial Intelligence in the Earth's Magnetic Field Study. INTERMAGNET Russian Segment" was held in Uglich, Russia from January 26 to 28 2011. It brought together scientists from Canada, France, Germany, Hungary, Russia, USA and Ukraine and was aimed towards strengthening the Russian contribution to the INTERMAGNET observatory network.
- The European magnetic repeat station network MagNetE held its 5th workshop in Rome, Italy, kindly hosted by the Istituto Nazionale di Geofisica e Vulcanologia, from May 9 to 11, 2011. The workshop was attended by 40 participants from 20 countries.

Publications

- The Proceedings of the XIV IAGA Workshop on Geomagnetic Observatory Instruments, Data Acquisition and Processing will soon be published as special issue of Data Science Journal.
- Within the IAGA Special Sopron Book Series by Springer the Division V book, “Geomagnetic Observations and Models”, ed. M. Manda and M. Korte, was published in 2011. It consists of 13 topical papers with contributions from 41 authors.
- Publication by the International Association of Geomagnetism and Aeronomy, Working Group V-MOD. Participating members: C. C. Finlay, S. Maus, C. D. Beggan, T. N. Bondar, A. Chambodut, T. A. Chernova, A. Chulliat, V. P. Golovkov, B. Hamilton, M. Hamoudi, R. Holme, G. Hulot, W. Kuang, B. Langlais, V. Lesur, F. J. Lowes, H. Luhr, S. Macmillan, M. Manda, S. McLean, C. Manoj, M. Menvielle, I. Michaelis, N. Olsen, J. Rauberg, M. Rother, T. J. Sabaka, A. Tangborn, L. Toffner-Clausen, E. Thebault, A. W. P. Thomson, I. Wardinski Z. Wei, T. I. Zvereva: International Geomagnetic Reference Field; the eleventh generation. *Geophys. J. Int.*, Vol 183, Issue 3, pp 1216-1230, December 2010. DOI: 10.1111/j.1365-246X.2010.04804.x.
- A special issue of *Earth Planets Space* (Vol. 62, No. 10) on the International Geomagnetic Reference Field—The Eleventh Generation was published in 2010, consisting of 14 papers dealing with IGRF candidate models and related topics.
- Publication by H. McCreadie and M. Menvielle: The PC Index: Review of methods. *Ann. Geophys.*, 28, 1887–1903, 2010.
- The Proceedings of the XIII IAGA Workshop on Geomagnetic Observatory Instruments, Data Acquisition and Processing was published as Open File Report 2009-1226, ed. J. Love, by the U.S. Geological Survey in 2009.

Other topics related to activities within the three WGs

Magnetic observatories

- Denmark: The geomagnetic observatories formerly operated by the Danish Meteorological Institute (DMI) and threatened by closure in 2009 have been taken over by the Technical University of Denmark (DTU Space) in December 2009. All geomagnetic observations, instrument production and the World Data Centre for Geomagnetism, Copenhagen are continued by DTU Space.
 - Newly established geomagnetic observatories:
 - Observatories that obtained IAGA codes from WG V-OBS:
 - Isla de Pascua (Easter Island): IPM (started 22-05-2009)
 - Tristan de Cunha: TDC (started 01-01-2009)
 - Dome C in Antarctica: DMC (started 2005, but continuous since 01-01-2009)
 - Cheongyang-Gun, Korea: CYG (started 04- 2009)

Dalat, Vietnam: DLT (started 20-04-2011)
Deadhorse, Alaska: DED (preliminary, to be confirmed when it functions continuously)
King Edward Point, South Georgia (KEP) (started 01-03-2011)

Magnetic satellites

- The end of the CHAMP satellite mission occurred on September 19 2010, after ten years, two month and four days, and after 58,277 orbits.
- Strong contributions are being made by several groups for the ESA mission Swarm, a constellation of three satellites to measure the magnetic field. The launch is anticipated in July 2012.

Geomagnetic indices

The document “Index Criteria for endorsement of indices by IAGA” (produced for the Sopron IAGA meeting) was accepted by the Executive Committee and is now published on the IAGA Website.

The classification of rapid variations as SC and the automated detection method proposed by J.J. Curto was accepted by voting at the WG V-DAT business meeting in 2009.

However the issue as to whether the PC index can be adopted as official IAGA index has not yet been resolved. New reports by the task group around M. Menvielle and H. McCreadie were given at the WG V-DAT business meeting in Melbourne (below).

New IGRF model

The 11th generation IGRF model for the year 2010, with predictive secular variation up to 2015, was released in December 2009, produced by a task group of WG V-MOD and has been published in the literature and on the WG V-MOD website together with updated software (see Publications).

ISO standard for geomagnetic field models

A draft ISO standard was prepared by S. Maus according to the discussion in the WG V-MOD Business Meeting in 2009 and circulated for comments to members of V-MOD and other members of the geomagnetic community. A revised version was submitted to ISO in April 2010 by S. Maus. According to the information from S. Maus, ISO standard submissions can only be made by individuals, not organisations.

Following comments of ISO delegates, S. Maus updated the draft and asked WG V-MOD members for comments. A revised draft version obtained the status of Working Draft (WD)

passing an ISO committee and was assigned project number ISO 16695. A deadline of August 2011 was set to identify and address remaining shortcomings, before it becomes a committee draft (CD).

As it has been stated in ISO TC20/SC14/WG4 Resolution 263 in 2007 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." a vote should be held to seek the majority support of WG V-MOD and IAGA for the draft version that will be submitted by S. Maus.

(The draft ISO standard was a topic of discussion at the WG V-MOD meeting in Melbourne and this is reported below. We also note that there has not been a final IAGA vote on the draft and its submission within WG V-MOD, or within the EC, and the draft therefore remains not formally supported by IAGA at the present time.)

WDMAM update

The CGMW General Assembly 2008 encouraged the WDMAM team to update the First Edition of the WDMAM (2007) and a plan to provide an update to the First Edition was accepted at the WG V-MOD Business Meeting in 2009. The team is registered to produce candidate models and a WDMAM update is planned to be presented at the CGMW General Assembly 2012 in Brisbane during the IGC34. Incoming Task Force members will be nominated at WG V-MOD business meeting in Melbourne July 2 2011.

The chair finished by thanking the IGRF11 task force members and the efforts of the IAGA workshop and special book series editors and contributors.

Comments in open discussion: None

Report from Working Group V-OBS

Presented by Pieter Kotze.

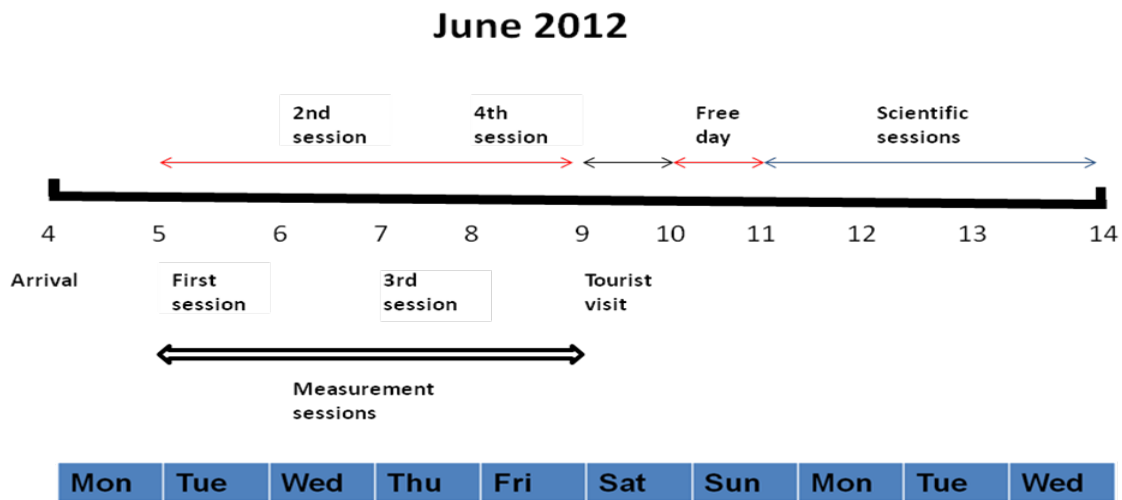
V-OBS Business Meeting: Saturday 2nd July 18:00-19:00.

Agenda

1. Next Observatory workshop in Spain 2012
2. Proposals for sessions/conveners – IAGA Meeting, Mexico, 2013
3. Proposal for IAGA resolution
4. Election of new chair & co-chair

1. Short discussion of the agenda and organisation of the San Fernando workshop in 2012:

San Fernando Observatory



2. Session proposals for 2013

1. Advances towards an improved global geomagnetic observatory network (J Matzka, P Hejda)
2. Modern magnetic surveys for regional and global characterization of the geomagnetic field (B Leichter, A Chambodaut)
3. Magnetic observatory data as applied in space weather/climate (J Love, K Mursula)

3. Proposal for IAGA resolutions

IAGA, noting

the importance of the Dst index in its various applications such as geomagnetic field modeling, space weather and -climate study, detection of local anomalous variation, etc.,

recognizing that

the absolute accuracy of the data from the contributing observatories, Kakioka, Honolulu, San Juan, Hermanus and Alibag, is essential,

recommends

that all agencies operating these geomagnetic observatories continue to support both absolute and variation measurements to maintain an acceptable and required level of accuracy.

4. New working group chairs

- Chair: Pavel Hejda (Czech Republic)
- Co-chair: Arnaud Chulliat (France)

Report from Working Group V-DAT

Presented by Mita Rajaram.

V-DAT Business Meeting: Monday 4th July 2011, 12:10-13:30

Agenda:

1. Update from 2009 Meeting (Dr. Mita Rajaram)
2. Discussion items related to IAGA indices :
 - A. Report on status of PC index endorsement by 'Task Force for the Endorsement of PC as an IAGA index' (Dr. Menvielle)
 - B. Presentation of the DTU Space proposal for PCN indices (Dr. Juergen Matzka, DTU)
 - C. Overview on New indices suggested during last 2-4 yr. And statistics of publications on the geomagnetic products(Dr. R. Lukianova)
3. Status of IAGA indices and other reports
 - A. Brief reports on IAGA indices (Drs. Nose, Menvielle, Linthe,)
 - B. Intermagnet Q Format (Dr. J. Linthe)
4. Elections of New Office Bearers
5. Sessions for IAGA2013
6. IAGA Resolutions

1. Update since IAGA 2009

The report on Criteria for index endorsement by IAGA was put to vote and adopted by a great majority at IAGA 2009.

The document includes:

Properties that a geomagnetic activity index proposed for endorsement by IAGA should possess and

Process according to which IAGA will consider endorsing the index

The document has been posted at the WG website

In 2010 the Executive Committee of IAGA decided that the adoption of new indices endorsed by IAGA is done according to the Index Criteria for endorsement of indices by IAGA as defined on the IAGA WGV.DAT web

2. Discussion items related to IAGA indices

2A. Report on status of PC index endorsement by 'Task Force for the Endorsement of PC as an IAGA index'

- The TF was appointed during the Sopron meeting. Its members are: C. Demetrescu, H. McCreadie, M. Menvielle (Chair)
- Paper “The PC index: a review of Methods” by McCreadie and Menvielle has been published in AnnGeO 2010
- The Task Force has had many email exchanges in the last two years and they will present their report.

The Task Force will be active until a decision on the PC index endorsement is made.

PC TF proposition

- Will accept applications from institutes to host the PC Index to the Task Force and WG V-DAT, before the deadline of 2011, Dec. 31st ;
- The Task Force encourages the institutes involved in deriving the PC to reach agreement on a single methodology for derivation.
- During 2012, the Task Force will organize at least one forum (i.e. at EGU) dedicated to technical discussion on the PC index and any proposals;
- Based on the results of these meetings, the PC Task Force will make a final recommendation on the PC Index to the V-DAT WG by May 30, 2013 and this recommendation will be published on the V-DAT web site.
- The Task Force will present this recommendation to the next IAGA Scientific Assembly;

2B. DTU Proposal for PCN indices:

Dr. Juergen Matzka (DTU) presented the history of the PCN calculation in Denmark and the DTU Space Letter of understanding, on working towards IAGA endorsement

2C. Overview on New indices suggested during last 2 yr. Statistics of publications on the geomagnetic indices:

Statistics of publications (2003-2010) in the main scientific journals shows the increasing number of *papers* essentially making use of geomagnetic indices in their Investigations in 2010.

Watch of the newly proposed indices

- No new indices
- Suggestions on modifications of the existing indices Dst, Kp and AE

3. Status of IAGA indices:

3A. Brief reports on IAGA indices (Drs. Nose, Menvielle, Linthe)

1) AE, Dst and SYM/ASY

Dr. Nose described current Dst derivation, provisional and final.

12 stations, including 3 Russians DIK, TIK and PEV, are used to calculate the AE
SYM/ASY is available in a digital form

2) am, aa

Dr. Menvielle presented a comparison of the provisional and definite indices. The larger time resolution (30 and 15 min) is planned.

3) Dr. Linthe reported the status of Bartels' Planetary Indices Kp, ap, Ap, Cp, C9. In particular, Definitive Data has Uninterrupted series 79.5 years long. Near Real-time Data for Quick-look is available through the web.

4) No information on the SC/SSC was presented

3B. Modification of the IAGA2002 format:

Report on behalf of the INTERMAGNET to modify the IAGA2002 Format to add G as a valid magnetic element and to add a data type for the Quasi definitive data and will work with WGV.DAT to identify a flag for the same.

New TF-2: Modification of the WG-DAT website (Drs Susan McLean & Manoj Nair)

The website has been updated; new information has been posted:

<http://www.ngdc.noaa.gov/IAGA/vdat/>

However, in its present form the website does not meet the community requirements and needs reconstructing.

4. Result of Elections of New Office Bearers

- V-DAT Chair: Dr Renata Lukianova (AARI, St Petersburg)

- V-DAT Vice-Chair: Dr. M. Nose (WDC, Kyoto).

5. Suggestions for IAGA2013 Sessions :

1) Polar Cap indices: uses, derivation and meaning (half day) (Task Force members)

2) The use of Geomagnetic observations in conjunction with Lidar, Radar and other measurements for ionospheric studies. (JJ Courte / Nose and Gurubaran)

3) Influence of Space Climate on Geomagnetic environment (Monika and Manoj Nair)

6. Suggestions for IAGA 2011 Resolutions:

IAGA,

recognising

the importance of the Polar Cap index (PC) to the Scientific Community and wishing to avoid confusion on any IAGA approval / endorsement

encourages

the Institutes involved in determining PC index to resolve discrepancies in methodology and

urges

the Institutes to adopt a common derivation procedure.

IAGA,

recognising

the value of quasi-definitive data from magnetic observatories for many scientific and space-weather missions adopted a resolution encouraging magnetic observatories to generate these data (Resolution 5, 11th Scientific Assembly, Sopron, Hungary, 2009),

noting

that INTERMAGNET has since adopted a recommended methodology for deriving quasi-definitive data,

encourages

magnetic observatories to produce quasi-definitive data in accordance to the INTERMAGNET-recommended methodology

Report from Working Group V-MOD

Presented by Stefan Maus.

V-MOD Business Meeting: Saturday 2nd July 2011, 12:10-13:30

Agenda:

- Production, release and publication of the 11th generation International Geomagnetic Reference Field
- Status of the World Digital Magnetic Anomaly Map
- International Standard ISO16695: Geomagnetic Reference Models
- Proposed V-MOD officers

IGRF11

- IGRF-11 was delivered on time

- Candidates (7 for DGRF-2005, 7 for IGRF-2010 and 8 for predicted SV 2010-2015) received by 7th October 2009
- Evaluations completed by 17th November 2009
- IGRF-11 agreed on 7th December 2009
- IGRF-11 coefficients posted online 24th December 2009.
- Updated IGRF software posted online January 2010
- Notice of IGRF-11 release published in EOS on 20th April 2010 and announced on various mailing lists and web sites
- IGRF-11 reference paper published in GJI on 12th Oct 2010
- Special Issue on IGRF-11 with 14 papers in EPS 2010
- Acknowledge all participants in the IGRF process, and the institutes responsible for collecting and processing the data (listed in the IGRF-11 reference paper).

WDMAM

- IAGA Scientific Assembly 2009 (WG V-MOD) accepted a plan to provide an update to the First Edition.
- New data submissions: 22 reprocessed or new sets.
- Data requests still pending: several countries, including Brazil, Chile, Ukraina, China
- Seek IAGA resolution calling for data in the southern hemisphere
- Three teams working on Version-2 WDMAM candidates
- Envisaged submission date is 31-Dec-2011
- **The final WDMAM update** is planned to be presented to the CGMW General Assembly in Brisbane during the IGC34, August 2012

ISO16695

- The IAGA leadership requested V-MOD to cooperate with ISO on a standard for the IGRF
- A draft ISO standard was prepared by S. Maus in consultation with the members of V-MOD and the geomagnetic community
- Underwent multiple rounds of review and revision
- Submitted to ISO TC14 WG4 in April 2010
- In October 2010, S. Maus was appointed ISO Project Lead, and Version 3.1 became a Working Draft (WD), ISO 16695
- NGDC produced a sample coefficient file satisfying a revised draft Version 4.3 and software to read it → Circulated for comment
- At business meeting
 - V-MOD members largely agreed on the content of the standard
 - Coefficient file format needs further revision (by Oct-2011?)
- Draft will be sent out via mailing list and posted online for comment
- New ISO review, vote and advance to committee draft (CD) stage

Proposed V-MOD Officers

WG V-MOD:

Proposed Chair: Chris Finlay (ETH Zurich)

Proposed Co-Chair: Erwan Thebault (IPGP Paris)

WDMAM Task Force:

Chair/Co-Chair: J. Korhonen, M. Purucker

Members: Lesur, McLean/Maus, Thebault, Tamara, Reeves, Ravat, Hamoudi, Milligan, Ishihara, Ghidella, Gaya Piquet, Pilkington, and Catalan

The WDMAM Task Force will likely be re-organized at IAGA 2013

IGRF-12 Task Force:

To be selected at IAGA 2013

(Subsequent Sessions Proposed by WG V-MOD:

1) Results from Swarm and preceding magnetic satellite missions (K Whaler, N Olsen, V

Lesur) *suggested joint with Div 1 (e.g. T. Sabaka ?)*

2) Modeling and interpretation of geomagnetic secular variation from satellite and observatory measurements (C Finlay, R Holme, N Gillet)

(this would include time-dependent field modeling, data assimilation etc., *and maybe joint with Div 1*)

3) Modeling and interpretation of lithospheric magnetic anomalies (Dyment, D Ravat, J Korhonen) *joint with Div 1 suggested*)

Election of New Division V Chair and Co-Chair

The chair proposed Alan Thomson as the new chair of the division. This was agreed unanimously.

After a brief discussion, Manoj Nair (USA) and Pieter Kotze (South Africa) were proposed as candidates as co-chair of the division. On a vote by show of hands, Pieter Kotze was elected by 14 votes to 8.

Finalised Division V Session Proposals and Resolutions

Resolutions

1) Submitted by working group V-OBS and agreed at the division business meeting:

IGA, **noting** the importance of the Dst index for its various applications including geomagnetic field modeling, space weather and -climate study and detection of local anomalous variations,

recognizing that the absolute accuracy of the data from the contributing observatories, Kakioka, Honolulu, San Juan, Hermanus and Alibag, is essential,

recommends that all agencies operating these geomagnetic observatories continue to support both absolute and variation measurements to maintain an acceptable and required level of accuracy.

2) Submitted by working group V-MOD and agreed at the division business meeting:

IGA, **considering** the importance of homogenous magnetic anomaly data coverage for global geological studies

urges the owners of airborne and marine magnetic anomaly data sets in particular from equatorial areas and the southern hemisphere to release them into the public domain as soon as possible.

Session Proposals

Proposed by WG V-OBS:

1) Advances towards an improved global geomagnetic observatory network (J Matzka, P Hejda, K Pinheiro)

2) Modern magnetic surveys for regional and global characterization of the geomagnetic field (B Leichter, A Chambodut, Kusumita Arora)

3) Magnetic observatory data as applied in space weather/climate (J Love, K Mursula C. Di Nardin) *suggested joint with Div III and/or IV*

Proposed by WG V-DAT:

- 4) Polar Cap indices: uses, derivation and meaning (half day) (PC index Task Force members: M Menvielle, H Macreadie, C Demetrescu)
- 5) The use of Geomagnetic observations in conjunction with Lidar, Radar and other measurements for ionospheric studies. (JJ Court, M Nose and Gurubaran)

Proposed by WG V-MOD:

- 6) Results from Swarm and preceding magnetic satellite missions (K Whaler, N Olsen, V Lesur) *suggested joint with Div 1 (e.g. T. Sabaka ?)*
- 7) Modeling and interpretation of geomagnetic secular variation from satellite and observatory measurements (C Finlay, R Holme, N Gillet)
(this would include time-dependent field modeling, data assimilation etc., *and maybe joint with Div 1*)
- 8) Modeling and interpretation of lithospheric magnetic anomalies (Dyment, D Ravat, J Korhonen) *joint with Div 1 suggested*

Any Other Business

None

The chair thanked those present for their attendance and contributions and closed the meeting at 19:20.

The co-chair thanked Monika Korte for her hard work as division chair over the past four years.

Appendix: Contact Details

Division V

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