# IAGA WG VDAT
# Minutes of meeting

| **Meeting:** | **IAGA WG V-DAT meeting** | | |
|---|---|---|---|
| **Date:** | 22 August 2021 | **Venue:** | Joint Scientific Assembly<br>IAGA-IASPEI 2021<br>VIRTUAL CONFERENCE |
| **Participants** | | | |
| **Chair: Ellen Clarke, co-chair: Anna Willer** | | | |
| Alan Thomson<br>Alexandre Gonsette<br>Andrew Lewis<br>Asari Seiki<br>Ashley Smith<br>Aude Chambodut<br>Ayako Matsuoka<br>Bill Jones<br>Ciaran Beggan | Claudia Stolle<br>Gerhard Schwarz<br>Guanren Wang<br>Juan José Curto<br>Jürgen Matzka<br>Katia Pinheiro<br>Manjula Lingala<br>Masahito Nosé<br>Matthew Gard | | Mioara Mandea<br>M. A Ameen<br>Natalia Sergeyeva<br>Nils Olsen<br>Patrik Johansson<br>Phani Chandrasekhar<br>Pierdavide Coisson<br>Sarah Reay<br>Shun Imajo<br>Vincent Lesur |

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    - Rapid variations SC, sfe (Juan José Curto)
    - PCN, PCS (Anna Naemi Willer)
3. Polar Cap (PC) Index discussion
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# 1 Welcome

Ellen Clarke welcomed the meeting participants and presented the agenda. There was no objections or additions to the agenda.

# 2 Status of the IAGA indices

All the IAGA indices and repositories are in very good shape – a few improvements are highlighted here:

ISGI: Set up of download statistics to be transmitted towards each of the 6 ISGI-Collaborating Institutes

SC and sfe: improved processing and automated detection

Kp index: Improved nowcast Kp implemented August 2020

Dst and AE – good progress from new staff and back to normal service soon

PC index: PCS index is now available in a definitive form and improvements made to the PCN/PCS definitive/provisional/quick-look versions and to the documentation

# 3 Polar Cap (PC) Index discussion

Agenda item rationale

- Various points raised at the V-DAT business meeting in Montreal in 2019
- Summarise the actions taken and the results obtained over the past 2 years
- Discuss a possible change to the 2013 resolution

On behalf of Peter Stauning, that could not attend this meeting, the chair notified the meeting participants that he has written a report on the index that he will be making available for all to access online soon – anyone interested can contact him and get a copy.

| Summary of the key Concerns and statements | Actions/notes | Conclusions |
|---|---|---|
| *"The Definitive PC index does not follow the IAGA endorsed documentation"* | At the IAGA assembly in 2019 it was concluded to investigate possible discrepancies between the algorithm description (Appendix A) and the actual method used in practice for calculation. | AARI and DTU confirm agreement between documentation and algorithm implementation. |
| *"Large differences between the Definitive and Quick-Look PC index"* | The index providers have worked on improving the Quick-Look and Provisional PC index | The results of an analysis show that the error of the Provisional version<br>is now below 2% on average and the corresponding error of Quick-Look version is below 5% on average |
| *"There are a lack of proper documentation of derivation methods"* | The index providers has worked on re-structuring and harmonizing the code and documentation, available at<br>https://www.space.dtu.dk/wdc/PCN-index | The method is now better described and the index providers will start to work on a publication |
| *"It is suggested to update the reference epoch for the coefficients due to the geomagnetic secular variation and the decreasing solar cycle related activity"* | DTU will restructure and optimize the coefficients code, and analyse the effect of a change in the reference epoch | The result will be presented at the V-DAT BM 2023 |
| *"The IAGA endorsed PC index is available in real-time"* | While IAGA recommends the use of near real-time PC index, similar to all other IAGA endorsed indices, it does not official recognize the real-time version. The documentation describing the algorithm prepared for IAGA **only** describes the definitive PC index algorithms | Propose a clarification to the resolution No. 3 (2013): Polar Cap (PC) index |
| | | |

The WG realise that there remains confusion regarding the different versions of the PC index and the official recognition by IAGA. While IAGA recommends the use of near real-time PC index, similar to all other IAGA endorsed indices, it does not official recognize the real-time version. The documentation describing the algorithm prepared for IAGA only describes the definitive PC index algorithms. To avoid future confusion, the WG are proposing a clarification to the resolution no. 3 (2013), by removing the wording regarding the versions of the index (proposed changes in red):

**Resolution No. 3 (2013): Polar Cap (PC) index**

IAGA, noting that polar cap magnetic activity is not yet described by existing IAGA geomagnetic indices, considering that the Polar Cap (PC) index constitutes a quantitative estimate of geomagnetic activity at polar latitudes and serves as a proxy for energy that enters into the magnetosphere during solar wind-magnetosphere coupling, emphasising that the usefulness of such an index is dependent on having a continuous data series, recognising that the PC index is derived in partnership between the Arctic and Antarctic Research Institute (AARI, Russian Federation) and the National Space Institute, Technical University of Denmark (DTU, Denmark) recommends use of the PC index by the international scientific community ~~in its near-real time and definitive forms~~, and urges that all possible efforts be made to maintain continuous operation of all geomagnetic observatories contributing to the PC index.

[Note: Renewal of Resolution No.4 (1997) after a long-term dispute about the method to derive the PC index has been settled]

[Note 2: Renewal of Resolution No. 3 (2013) for clarification

# 4 Data DOI Task Force

The WG concludes considerable improvements since 2017. The report is available on the IAGA V-DAT web site. The WG agreed the importance of a continued data DOI Task Force. New chairperson tbd.

# 5 Other Status Reports

## 5.1 INTERMAGNET

New data publication, webportal and technical manual available. Major revision over the previous version and includes specification for recording 1-second data to meet standards and details of new data formats

## 5.2 WDCs for Geomagnetism

Presentations from Edinburgh, Moscow, Copenhagen and Kyoto. Some highlights: All groups are very active, WDC Edinburgh 122 new data sets added since the last meeting.

# 6 Digitised historical (magnetogram) data

Discussion on collaborating, harmonising and establishing common format, metadata and storage for digitised historical data.

# 7 Sessions and conveners for IUGG 2023

The following sessions and conveners were suggested:

**Joint V-DAT and V-OBS (IAGA Div 5)**

*Geomagnetic observations, indices and products for space science, space weather and space climate applications* Convenors: Anna Willer, Jürgen Matzka, Tanja Petersen, Phani Chandrasekhar

**Joint or cross associations session and perhaps with UCDI**

*FAIR data and TRUST repositories in the Geosciences: licensing, data publication, citation (Title tbc)*

Convenors: Masahito Nosé, Aude Chambodut and Kirsten Elger (tbc)

**Cross association or Union session**

*Extracting, processing and archiving analogue, historic and ancient data records: tools, improved techniques and best practices* Convenors: Ciarán Beggan, Hisashi Hayakawa

# 8 Any other business

There were no AOB.

Ellen Clarke thanked the presenters and the participants and closed the meeting.