

Highlights of the INTERMAGNET Meeting in Canada

The 2019 INTERMAGNET meeting was held between 20th and 22nd July. It was hosted by Natural Resources Canada and held at the Four Points Sheraton Hotel in Gatineau, Canada



INTERMAGNET meeting participants on the Alexandra Bridge between Gatineau and Ottawa. Photo copyright: Kirsten Elger

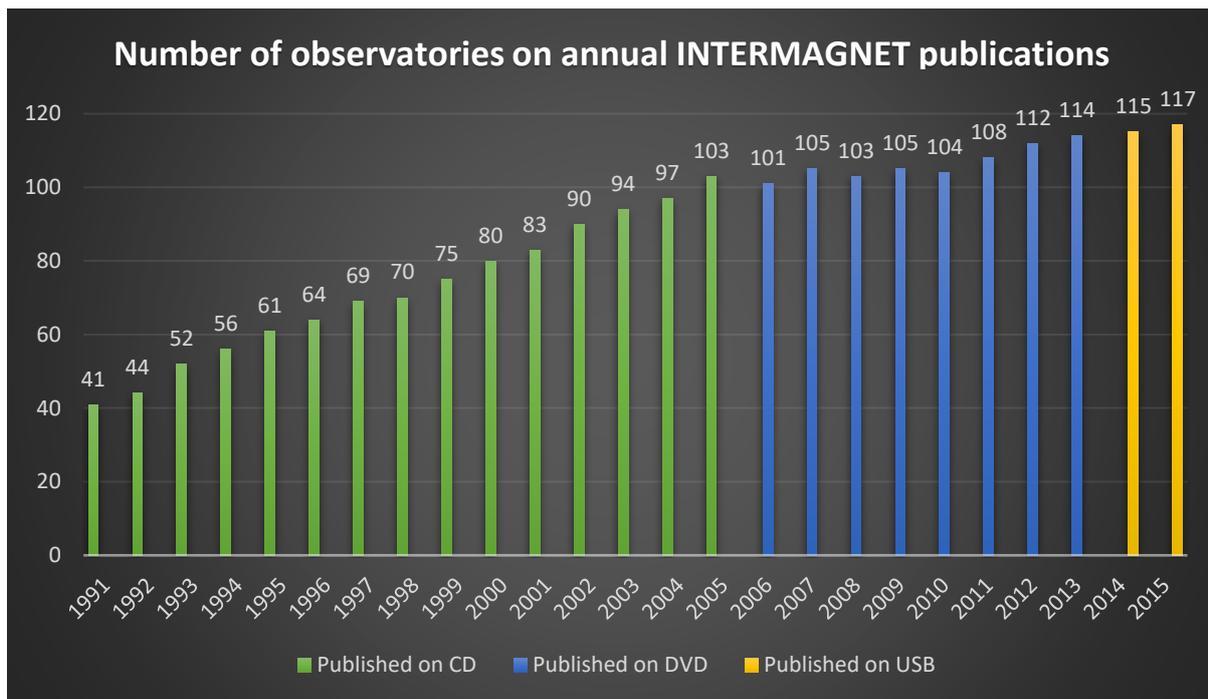
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The minutes of the meeting are available at <https://intermagnet.github.io/meetings/2019-Ottawa/Lewis-IMAGMinutesOttawa-public-20191220.pdf>, though material relating to individual observatories, institutes or people has been removed from this public copy of the minutes.

Data publication and a 25th birthday

The 2015 definitive minute-mean data set was published at the end of 2019. This is the 25th such data set that INTERMAGNET has published. To celebrate we have included all previous 24 years of data on the 2015 publication. Many thanks to all the diligent work from INTERMAGNET observatories and institutes over a quarter of a century. This is a great record and something we can all be proud of.



As described in a previous report, this will be the last publication on a physical medium that INTERMAGNET will make. The 2016 publication will be the first in the “INTERMAGNET Reference Data Set” (IRDS), which will again comprise all data from previous years (including any corrections) plus new data from 2016. The 2016 data set will be published as a Digital Object Identifier (DOI) only. Two previous definitive data sets from INTERMAGNET are already available as DOIs:

<https://doi.org/10.5880/INTERMAGNET.2013>

<https://doi.org/10.5880/INTERMAGNET.2014>

A DOI for the 2015 data set is being prepared and should be available soon. As well as metadata about the publication, the DOIs give access to the full data set as a download from the DOI’s landing page.

As described in a previous report, INTERMAGNET data is now distributed under Creative Commons licences. Details are here: https://intermagnet.github.io/data_conditions.html

[The INTERMAGNET Web Site and Archive](#)

Natural Resources Canada (NRCan) has hosted the INTERMAGNET web site and the INTERMAGNET data archive since the early days of INTERMAGNET. Through a combination of circumstances, including centralised government security policies in Canada and internal charging mechanisms for web sites and web service provision, NRCan are no longer able to host these facilities. Work is being done within INTERMAGNET to resolve this, by moving the INTERMAGNET web site, the INTERMAGNET data archive and the INTERMAGNET web service to new facilities.

A draft INTERMAGNET web site has already been created, here: <https://intermagnet.github.io>

One advantage of the new site is that it based on the Git version control system, meaning that it is easy for people to collaborate on updates to the site. This will spread the burden of maintaining the site over a wider range of people and institutes in the future. If you have comments, or are willing to get involved in the ongoing development of the site (including web-based applications that are needed for data and metadata display) please contact the chair of the INTERMAGNET “WWW, GINS, and Data Format” subcommittee, Charles Blais (charles.blais@canada.ca).

[Connections with other producers and distributors of geomagnetic data](#)

During the meeting, a presentation was made about the magnetic variometer installations that are current or proposed in Canada as part of studies into Geomagnetically Induced Currents (GICs). A proposal was put forward that the INTERMAGNET web site should include lists and information about variometer sites and networks. This would be a new direction for INTERMAGNET, which has until now been exclusively concerned with data recorded to observatory standards. However there could be an advantage to providing a central location for information about variometer networks around the world. If you have thoughts on this proposal, please get in touch.

On a similar topic, the USGS is creating a survey that will be used to gather information about co-located geophysical instruments at geomagnetic observatories, with particular interest in electric field and higher frequency measurements. The motivation for this work includes the possible future development of standards in these areas by INTERMAGNET. Watch this space for more news!

Our colleagues at SuperMag have been in touch with regard to using one-second data for pulsation studies. SuperMAG are most interested in the high frequency component of magnetic data. They process data and correct obvious errors but do not provide further information about data quality. SuperMag data are rotated into a magnetic coordinate system (and are therefore different from the INTERMAGNET data in XYZ components). SuperMAG facilitate easy access to data for a particular event and can be considered more as a processing tool with plotting/animation and dataset integration capabilities than a data repository.

INTERMAGNET has agreed to the SuperMAG request for permission to download 1-second data to compute pulsation activity indices. SuperMAG will not redistribute INTERMAGNET 1-second data and will pass any requests they receive from their user group for this data to INTERMAGNET or individual observatories/institutes.

[Satellite measurements](#)

Each of the current Swarm constellation satellites carries an absolute scalar magnetometer (ASM) at the tip of a boom about 2 m from its star cameras. The ASM was designed and built in France and has proven suitable for high quality monitoring of the geomagnetic field, secular variation and secular acceleration, as well as enabling measurement of higher frequency magnetic phenomena such as whistlers to provide information on the state of the ionosphere.

The Institut de Physique du Globe de Paris, in collaboration with an industrial partner, is working on a proposal to submit to the European Space Agency (ESA) as part of a call that ESA has issued, to include design, launch and operation of nanosatellites projects with both scientific and non-scientific applications. Total available funds are 30 million Euro. The proposal will include a cube satellite carrying an ASM, GPS, Langmuir probe and 1 kHz vector magnetometer.

There is an opportunity for the community to set standards for nanosatellites and this could involve INTERMAGNET. A letter from INTERMAGNET has been requested to indicate the community will be interested in magnetic data produced by the proposed project.

[Technical manual V5](#)

All the information required to produce version 5.0.0 of the Technical Manual has been collected and reviewed by the workgroup session organized during the last day of the meeting and during the online subcommittee meeting that took place at the end of 2019. Delivery of the manual has been delayed by the work necessitated by the Covid-19 pandemic, which has changed the priorities for many

people's work. The manual is currently going through its final edition review and will be available through the WEB site.

[INTERMAGNET structure](#)

A number of volunteers across many institutes have given generously of their time over the years to check INTERMAGNET definitive data before it is published. This Data Checking Task team is now listed on the (new) INTERMAGNET website, so you can see who is involved: https://intermagnet.github.io/data_checkers.html. Many thanks to our team of data checkers for their hard work and dedication to producing high quality data.

[Intermagnet officers](#)

Carol Finn from USGS left the INTERMAGNET Executive Council having served since 2014. We wish Carol well in her retirement. Jeff Love kindly joined us to cover this meeting. Krissy Lewis, Geomagnetism Group leader at USGS, attended the meeting and has now joined the Executive Council to replace Carol. Welcome Krissy!

Achim Morschhauser joined the INTERMAGNET Operations Committee and will work on the Definitive Data and WWW, GINS, and Data Format subcommittees. Welcome Achim!

The current organisational structure can be seen on the new INTERMAGNET website: <https://intermagnet.github.io/structure.html>

[Ole Rasmussen](#)

During the meeting we were led by Jan Reda in remembrance of our former colleague Ole Rasmussen, who sadly passed away 23rd of February, 2018. Amongst his many other accomplishments and positions, Ole served on the INTERMAGNET Operations Committee from its inception until he retired in 2006. He is remembered with great affection by those who knew and worked with him.

[Next meeting](#)

The next INTERMAGNET meeting was to have been held in Kazan in July 2020 following the IAGA Observatories Workshop. However the situation around the global Covid-19 pandemic has prevented travel. A limited online meeting will take place on the dates set aside for the meeting in Kazan, and at this meeting a decision will be made about the next face-to-face INTERMAGNET meeting. Because of the difficulties of holding an online meeting across a number of time zones, we will not invite guests to this meeting, however we will publish a record of the meeting in the usual way and we look forward to seeing guests as soon as we are able to arrange a face-to-face meeting.

[Thanks to...](#)

The meeting was organized by the Natural Resource Canada, who as well as making arrangements for the meeting, funded the costs of the meeting venue. Staff from the institute provided invaluable support for the meeting including much needed facilities and help for the participants in the preparation and execution of their tasks. Many thanks to David Boteler, Benoit St-Louis, Charles Blais and other staff at NRCAN for organising a successful meeting.

Simon Flower (INTERMAGNET Operations Committee Chair), smf@bgs.ac.uk, 11th May 2020