BCMT Scientific Council meeting, May 3, 2016:
Observations and Recommendations

The new Scientific Council (SC) first had a private session where new members were briefed. SC members present were
Kusumita Arora
Jean-Paul Boy
Gauthier Hulot
Dominique Jault
Monika Korte
Susan Macmillan
Aurélie Marchaudon
Two SC members, Alexey Kuvshinov and Jeffrey Love, were excused. In order to have one of the SC members from abroad chair the SC, Monika Korte accepted to become Chair of the **BCMT Scientific Council**.

The SC had been provided with written information prior to the meeting, and was informed about the activities and progress during the past 2.5 years by BCMT according to the attached agenda. Additional information was provided during discussions instigated by questions from SC members during the presentations. At the end of the day the SC had another private meeting where a preliminary version of the following observations and recommendations was worked out and provided as feedback to the BCMT. This final version of observations and recommendations was arrived at by consensus, including the two SC members who could not be present in person at the meeting. All slides from the BCMT presentations had been made available in addition to the written progress report to the SC for this purpose.

BCMT reporting to SC, BCMT tasks in general

- The SC **thanks** Marc Chaussidon, head of IPGP and BCMT, Vincent Lesur, BCMT executive director, and the other representatives of the BCMT from IPGP and EOST for the quality of their presentations and for providing clear replies and additional information to any questions by the SC members. The SC appreciates the time and effort spent by BCMT staff in their preparations for the meeting.
- The new SC is impressed by the network of geomagnetic observatories operated by the BCMT. The SC notes that all the observatories are very valuable contributions to the international network, provide highly relevant information to the geomagnetism community and that many of them have been running for many decades. The SC moreover notes that many of the BCMT observatories lie in very remote and/or politically difficult regions, making their operation a particular challenge while highlighting their particular importance in filling regional gaps in a global network. The SC **recommends** maintaining the existing network.
- The SC **recognises** that the main task of the BCMT is to provide geomagnetic data of high quality over long time scales over a large area of the world.
- The SC **welcomes** the 2014 - 2018 strategic plan, which includes a clear timeline and priorities, and considers its modifications resulting mainly from unforeseen circumstances appropriate.
- The SC **appreciates** the way BCMT managed hazards and maintained schedule as best as they could and responded in an appropriate way.

- The SC **encourages** the BCMT to provide the SC with brief (annual or ad-hoc) reports between the SC meetings in case major unforeseen changes to the timeline become necessary.

Acknowledgement of funding agencies

- The SC **thanks** INSU for the ongoing good support of the BCMT.
- The SC **thanks** CNES for their support of KOU observatory.
- The SC **thanks** IPGP for additional support toward the BCMT and the IPGP geomagnetic observatories.
- The SC **thanks** IPEV for their support regarding the southern Indian Ocean and Antarctic observatories. Considering these extremely valuable locations for the global network the SC highlights the importance of enabling the BCMT to carry out regular on-site visits and the necessity of having some flexibility to react to unforeseen occurrences at the observatories.

Personnel situation at BCMT

- The SC strongly **recommends** the maintenance of the position to be vacated by Xavier Lalanne, technical director of the IPGP observatories, on his retirement and the appointment of a suitable successor at IPGP as early as possible. In this context, SC additionally **recommends** a plan for further development of magnetometers, which is currently being spearheaded by Xavier Lalanne at CLF.
- The SC **acknowledges** the importance of geomagnetic observatory instrument development at BCMT, given the fact that a very limited number of suppliers of such instruments exists. The SC notes the change of priority being now given to the development of a scalar helium magnetometer over a new vector magnetometer.
- The SC notes with concern an ongoing decline of BCMT staff at EOST and **strongly recommends** the recruitment of an engineer in EOST in order to ensure quality and timely deliverance of data from the EOST operated observatories.

Development of BCMT observatory network

- The SC **commends** the BCMT for having taken appropriate action to mitigate the recurrent flooding of the historical variometer vault at CLF by building three new fully equipped variometer huts at relevant magnetically controlled locations.
- Noting the general scarcity of equatorial observatories highly relevant for studying the equatorial electrojet and the general sparsity of geomagnetic observatories in the African region the SC **welcomes** the BCMT activities to establish a new observatory in Cameroon to replace BNG as well as the activities to re-establish the TAN observatory. For the same reasons the SC **recommends** finding a new site to replace the AAE observatory where data quality has become strongly degraded by artificial noise. This site should ideally be to the south of the present site so as to be useful for equatorial electrojet studies. The new site may be best achieved by a personal visit of a BCMT representative to the observatory.The SC **encourages** the BCMT to get the local institutes responsible for BOX and TAM to do more data processing and become self-sufficient
- The SC **encourages** the development of geomagnetic observatories into more general geophysical observatories, where possible and when the opportunity arises. In particular, the SC recognizes the value of GNSS receivers in combination with geomagnetic data for ionospheric studies. However, managing the acquisition of such data cannot presently be considered a priority task for the BCMT and the SC

acknowledges the decision to presently cancel the installation of GNSS receivers at the geomagnetic observatories it runs.

- In contrast, the SC **approves** the decision of BCMT to rather look into the possibility of collaborating and installing variometers under the equatorial electrojet at locations, such as N'Djamena airport (Tchad), where GNSS data are already acquired by other organizations.
- The SC **acknowledges** the utility of measuring geoelectric data at geomagnetic observatories, in particular regarding studies on magnetic-storm induction hazards for electric power grids. Long-term monitoring of the geoelectric at CLF would complement similar long-term monitoring projects in other countries (e.g. Japan, UK).
- The SC **regrets** the withdrawal of IRD from geomagnetism work but **thanks** IRD for ongoing logistical support at MBO observatory. The SC notes the potential possibility of using IRD to make contacts with universities in developing countries to bring forward good scientists who may in the future get involved in operating observatories in these countries.
- The SC **encourages** BCMT to build links with SuperDarn scientists at DMC as one of the main interests in magnetic data there is for external field studies. However regular absolute observations in this remote region are particularly important for internal field studies.
- The SC **welcomes** maintenance of the present repeat station network, which requires low resources and allows for accurate mapping of the magnetic field throughout France and through time.
- The SC encourages BCMT to build relationships with IGN (topographic mapping) and SHOM (marine mapping) to provide additional documentation of the value of the repeat station work and the observatories.

Data dissemination

- The SC **appreciates** efforts made thus far concerning the availability of Near-Real-Time data.
- The SC **recommends** that BCMT distributes data acquired from variometers not only through its own website but additionally through international plateforms (e.g. SuperMag)."
- The SC **encourages** the BCMT to build a relationship with SuperMag to ensure proper recognition of BCMT data provided through this platform (which includes all INTERMAGNET observatories).
- The SC realizes the difficulty to get measureable credit for geomagnetic observatory data which traditionally and have been freely available to the great benefit of the whole international scientific community. It **encourages** BCMT to stay informed about national and international initiatives regarding data DOIs consistent with BCMT needs. In the meantime the SC considers download statistics a suitable documentation of data usage.
- The SC acknowledges the value of active participation of BCMT representatives in INTERMAGNET and **recommends** BCMT keep up these activities.
- The SC appreciates the transfer of the IRD archive material to CLF and the work of scanning historical bulletins and **recommends** that the BCMT makes the scanned material available online for users as early as possible.

- The SC welcomes the development of the Sudden Impulse service but **recommends** further connection with space weather scientists in order to better meet the needs of potential users of the service.
- The Council **suggests** that BCMT look into the possibilities of collaboration with BRGM on issues of mutual interest, for example the World Digital Magnetic Anomaly Map. The making of such a map depends on observatory data for accurately tracking core field changes.