MT_ANT2 - Magnetotelluric Measurements Around Neumayer Station III, Antarctica

Report on the magnetotelluric data in the project/repository folder: ANTARCTICA.2019
(http://doi.org/10.5880/GIPP-MT.201922.1)

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Ritter, O., Fromm, T., Weckmann, U., 2019c. Magnetotelluric measurements from the Grunehogna Craton of East Antarctica. In: *The 28th Schmucker-Weidelt-Colloquium on Deep Electromagnetic Sounding, 23 to 27 September 2019, Haltern am See, Germany*.

Ritter, O., Fromm, T., Weckmann, U., Kütter, S., 2019b. Magnetotelluric measurements from the Grunehogna Craton of East Antarctica. In: *IUGG General Assembly, Montreal, Canada*.

Abstract

Magnetotellurics (MT) is a geophysical deep sounding tool that can help decipher the deep hydrology and geology of Antarctica, in concert with more established and already applied geophysical methods, such as seismology, gravity, and magnetics. Electrical conductivity is an important physical parameter to identify properties of rocks and, perhaps more importantly, constituents within, such as fluids or mineralisation.

The unique conditions of Antarctica, which is largely covered with ice cause technical issues, particularly with the electric field recordings, as highly resistive snow and ice at surface of Antarctica hampers contact of the E-field sensors (telluric electrodes) with the ground. The project was a feasibility study to address this principal problem and to test modified MT equipment of the Geophysical Instrument Pool Potsdam (GIPP) in the vicinity of the Neumayer Station III (NMIII) on the Ekström Ice Shelfon.

Central Coordinates: *-70.766796 N, -8.163838 E*
Experiment time frame: *from 21 January 2019 to 17 February 2019*
Keywords: *Magnetotelluric, Feasibility Study, Antarctica, Ekström Ice Shelf, Grunehogna craton*

1. Method

Electromagnetic (EM) methods form a discipline of geophysics, applied to study the electrical conductivity structure within Earth in a wide depth range. EM measurements depend on recordings of magnetic and electric field variations. These electromagnetic fields penetrate Earth and depending on the electric properties within, secondary fields are induced that can be measured at the Earth's surface by magnetometers and telluric electrodes.

The depth of investigation depends on the so-called skin effect, which describes that for a given conductivity (or its inverse electrical resistivity) low frequency EM fields penetrate deeper into the Earth than their higher frequency counterparts. Magnetotelluric measurements are based on naturally occurring EM field variations and can cover a frequency range from 10kHz to 0.1 mHz. As MT recordings contain the lowest frequency signals, they provide the largest sounding depths of all EM methods. MT is therefore routinely used for regional scale investigations, such as plate boundaries, mountain ranges, and large fault systems.

The electrical conductivity of rocks is generally less controlled by its rock matrix but by constituents which can conduct electrical currents and as a minor effect by temperature. The bulk conductivity of a rock increases if conductive constituents form interconnected networks containing for instance brines, fluids, melts, graphite or other (metallic) mineralization.

The original publications which originated from these data are: Ritter et al. 2019b, 2019c.

2. Experimental setup and schedule

Magnetotelluric (MT) data was collected between 21 January 2019 and 17 February 2019. Fig. 1 shows a site map.

In the field season ANT-Land 2018/19, we recorded magnetotelluric data at 14 locations in the vicinity of the Neumayer Station III (NMIII, see Fig.1) with an average spacing of 10 km. Most of the sites close to NMIII are located on the Ekström shelf ice which is underlain by sea water.

This project was a follow-on of earlier work by Kuetter (2017), who installed 10 MT stations along two 20 km long, EW trending profiles close to Neumayer Station III (NMIII) for the first time in 2015/16. Some of theses stations were reoccupied in MT-ANT2. Fig. 2 shows a summary of the stations collected in both experiments.

A description of the equipment used is provided in section 4. More details on a per site basis on instruments, serial numbers, hardware and recording settings, and available data are given in Appendix 1.

3. Station locations

The table below provides a complete listing of all measured stations. The columns give site number, start and end times of the measurements, station locations (latitude, longitude and altitude) and available data sets (time series).

						level 0
Site	**Start date**	**End date**	**Latitude**	**Longitude**	**Altitude**	**spam4**
0001	2019-01-22	2019-01-28	-70.663778	-8.271824	49	✓
0004	2019-02-07	2019-02-12	-70.670178	-8.702236	44	✓
0005	2019-02-04	2019-02-10	-70.754777	-8.189626	-28	✓
0021	2019-01-31	2019-02-07	-70.623015	-8.425780	53	✓
0022	2019-01-21	2019-01-27	-70.669003	-8.432526	58	✓
0023	2019-01-24	2019-01-28	-70.713556	-8.438179	48	✓
0024	2019-02-13	2019-02-16	-70.756286	-8.441615	61	✓
0025	2019-02-10	2019-02-15	-70.804774	-8.448300	61	✓
0026	2019-02-15	2019-02-17	-70.853869	-8.455287	66	✓
0031	2019-01-31	2019-02-03	-70.913722	-7.199833	351	✓
0032	2019-01-30	2019-02-02	-70.875247	-7.444578	331	✓
0033	2019-01-30	2019-02-02	-70.835673	-7.690860	163	✓
0034	2019-02-05	2019-02-10	-70.796543	-7.934226	53	✓
0035	2019-02-14	2019-02-17	-70.804726	-8.218856	57	✓

4. Instrumentation

4.1 Data acquisition systems: SPAM4.

S.P.A.M. Mk.IV systems (SPAM4 for short) are Short- Period Automatic Magnetotelluric instruments developed by the University of Edinburgh and GFZ Potsdam. SPAM4 uses a 24-Bit sigma-delta analogue-to-digital converter, with sampling rates between 25 kHz and 1 Hz. A range of low- and high- pass filters in the analogue signal path can be combined to match the sampling rates and sensors used. The time series data is subjected to a continuous filter and decimation scheme. Many combinations of low-pass and/or high-pass filtered data streams can be viewed in real-time and stored on the internal hard disk. The SPAM 4 instruments are GPS synchronized and provide real-time frequency domain processing for data quality control in the field.

Since 2010 the data files of the SPAM4 instruments are stored in the EMERALD data format; a proprietary data format was used before.

The following **SPAM4** loggers were used: 30, 54, 58, 61.

4.2 Sensor boxes: SPAM4 and CASTLE

SPAM4 sensor boxes provide the hardware interface between sensors (electrodes and induction coil magnetometers) and the SPAM4 or EDL data acquisition systems. Up to 5 sensors can be connected to a SPAM4 sensor box.

SPAM4 sensor boxes provide programmable amplifiers with high input impedances (> 10 MOhm) and two adjustable low-pass filters. They contain control logic to measure contact resistances between electrodes, generate test signals for the induction coils, toggle induction coils between low- and high frequency modes, and test the analogue signals for overloads.

CASTLE sensor boxes provide the hardware interface between sensors (electrodes and induction coil magnetometers) and the SPAM3, SPAM4 and EDL data acquisition systems. Up to 3 sensors can be connected to a CASTLE sensor box. CASTLE sensor boxes are therefore usually used in pairs, with one sensor box receiving signals from magnetic field sensors and another one capturing electric field signals.

CASTLE sensor boxes provide programmable amplifiers with high input impedances (> 1 GOhm) and two adjustable low-pass filters. They contain control logic to measure contact resistances between electrodes, remove DC offsets from channels, generate test signals for the induction coils, toggle induction coils between low- and high frequency modes, and test the analogue signals for overloads.

The following **SPAM4** sensor boxes were used: 122.

The following **CASTLE** sensor boxes were used: 30, 78, 81, 82, 84, 86, 89.

4.3 Magnetic field sensors: MFS-06 induction coils and MFS-10 induction coilss

The induction coil magnetometers MFS-05/06/07/10 (METRONIX, Germany) measure variations of the Earth´s magnetic field over a wide frequency band (broadband sensor). The sensor coil consists of a highly permeable ferrite core with several thousand copper turns and the magnetometer contains electronics for pre-amplification of the sensor signal. Since induction coil sensors do not measure the magnetic field directly but it's time derivative, their response is highly frequency dependent. The MFSxx sensors cover wide frequency ranges: from approximately 1 mHz to 8 kHz for the MFS06, 1 mHz to 1 kHz for the MFS05, 0.01 Hz to 50 kHz for the MFS07, and 1 mHz to 1 kHz for the MFS10.

The following **MFS-06 induction coil** magnetometers were used: 130, 133, 400, 408, 417, 418, 421, 423, 430.

The following **MFS-10 induction coils** magnetometers were used: 15, 16, 17, 19.

4.4 Electric field sensors: AgAgCl electrodes.

Non-polarizing electrodes are used to measure electric potentials in the ground. The electrode design consists of a metal immersed in a saturated solution of its own salt. It is contained in a porous pot to allow the solution leak slowly, thereby making contact with the ground. We use a silver silver-chloride (Ag/AgCl) electrode, which is submersed in a saturated solution of potassium-chloride (KCl). The electrodes are designed and manufactured by the GIPP-MT.

5. Data acquisition

Data recording times typically varied between 3 to 5 days per station. Longer recording times were usually due to adverse weather conditions. Fig. 3 lists details of the recording times per station. Data recovery rate was above 90%.

For the field work in MT-ANT2, we used MT instruments provided by the Geophysical Instrument Pool Potsdam (GIPP), which were originally not designed to work under the extreme conditions of Antarctica. Problems are generally caused by the low temperatures. But the highly resistive snow at surface of Antarctica hampers the ground contact of the E-field sensors (telluric electrodes). To overcome these principal problems, we used pre-amplifiers with very high input impedances and we modified the electrolyte within the Ag/AgCl electrode container to comprise 1/3 glycerine, thereby lowering their freezing temperature to around -25°C. With this configuration we typically obtained contact resistances in the range between several hundred kOhm to a few MOhm, which remained stable for several days of recording.

Figures 4, 5, and 6 illustrate installation of sensors and and deployment of sites.

Details on recording times, sampling frequencies, and actual hardware configurations are summarized for each site in Appendix 1.

6. Data quality

Scattering data points in both apparent resistivity curves in Fig. 7 suggest the influence of noise. The data quality appears to improve towards the longer periods, however, which is unexpected, as it requires long recording times to acquire long period data with good statistical properties. While the high data quality at long periods proves that the electrodes and instruments worked in principal, it remains an open question what causes the noise at the shorter periods.

The magnetic field data, on the other hand, are of superb quality. The observed induction vectors inf Fig. 8 are among the largest recorded anywhere in the world and they clearly map the transition from the Ekström Ice Shelf to the adjacent land masses (Ritter et al., 2019). Site 33 is located close to the grounding line, where the ice shelf sits above Archean basement rocks (e.g. Mieth et al., 2014).

Fig. 9 shows time-series examples of stations 31 and 32. The dashed ellipse marks a natural event (a lighting discharge) in the magnetic field recordings, which is recorded at exactly the same time at both stations. The electric field recordings on the other hand, are dominated by saw-tooth shaped signals, which are clearly not of natural origin. On closer inspection, the natural event is still visible on top of the noise (black arrows). The noise signal has similar periodicity (~4 Hz) but slightly different shapes when compared between the two sites and the Ex- and Ey- electric field channels. Most importantly, the noise signal is asynchronous between the stations (red arrow), which strongly suggests a local, probably instrumentation related origin. Subsequent investigations after the field work suggested that the problem was caused by cross-talk of digital communication between instrument components (data logger and sensor box) and the analogue signal paths. The measurements are only affected in conditions where the electric field cables effectively act as open antennas due to the very high contact resistances. As the problem is absent under normal field conditions, it was not recognized beforehand.

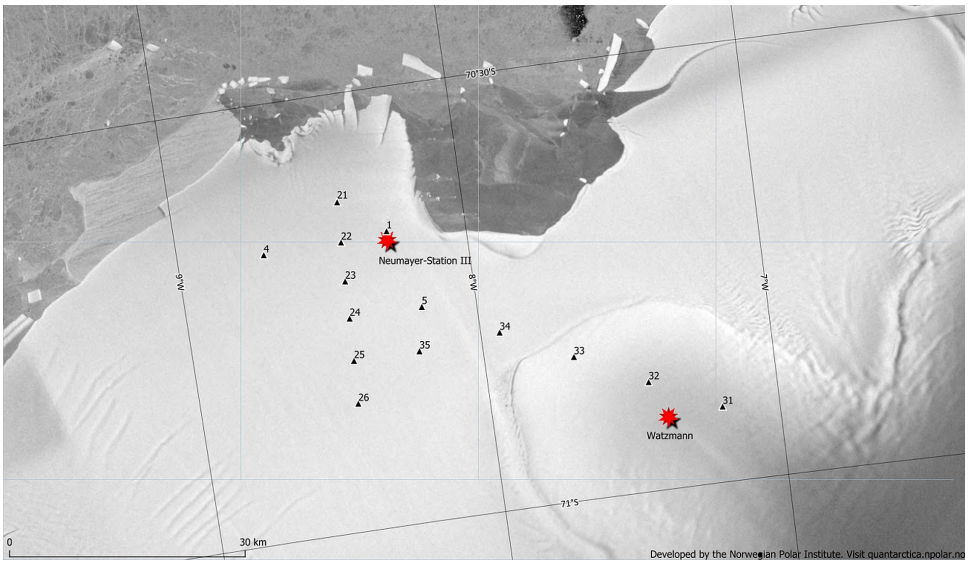

Figure 1: *Location of the MT stations of project MT-ANT2 (black triangles).*

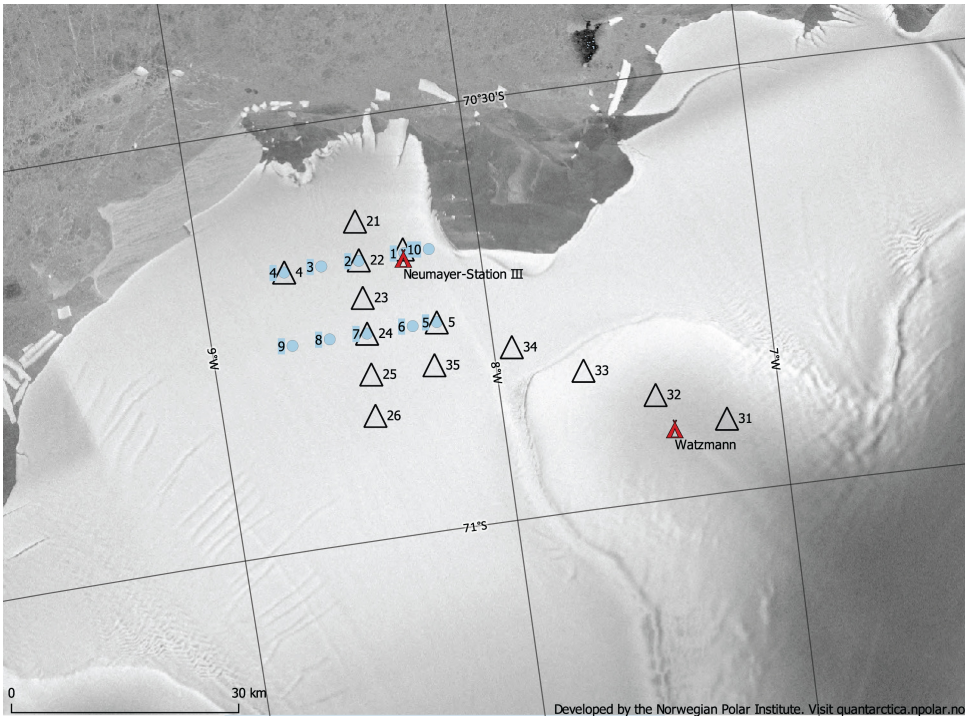

Figure 2: *Location of the MT stations of projects MT-ANT (blue dots) and MT-ANT2 (black triangles)*

	day of the year																												
site no.	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	
22																													
1																													
23																													
21																													
32																													
33																													
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24																													
35																													
26																													
	21	22	23	24	25	26	27	28	29	30	31	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	
	January 2019											February 2019																	

Figure 3: *Run times of MT stations of project MT-ANT2*

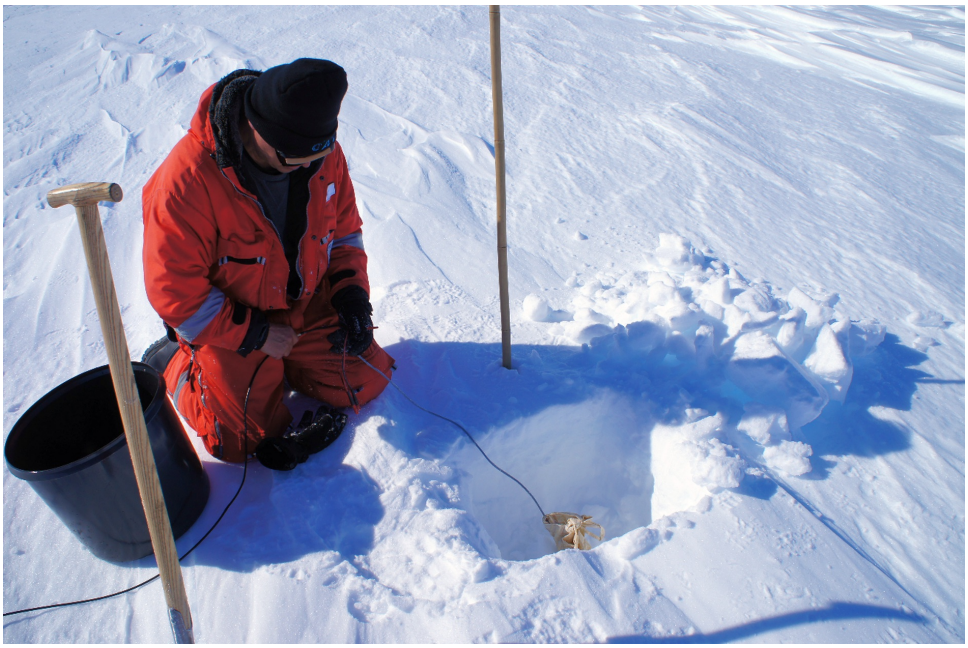

Figure 4: *Deployment of magnetotelluric station: Telluric electrodes were wrapped in cotton bags and buried in approximately 50 cm deep holes in the snow. At each station, two horizontal electric dipoles were installed in the EW and NS directions. Distance between electrodes was approximately 50 m*

Figure 5: *Deployment of magnetotelluric station: Induction coil magnetometers were buried in approximately 50 cm deep holes in the snow. Two of these induction coils were installed horizontally, another one in the vertical direction.*

Figure 6: *Deployment of magnetotelluric station: After installation, the positions of sensors (electrodes and induction coils) were marked with bamboo sticks. The red box contains the data logger. Typically after 3-5 days of recording all components were recovered and taken to the next station.*

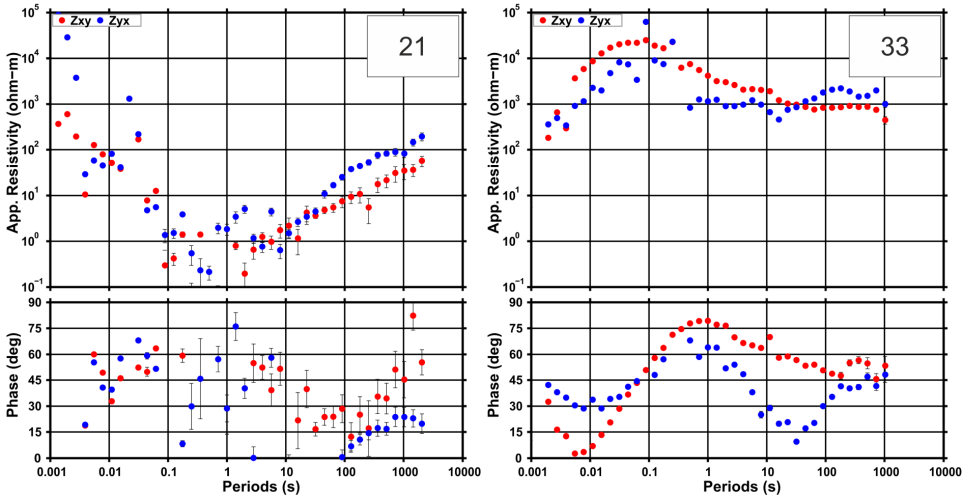

Figure 7: *Exemplary apparent resistivity and phase curves of sites 21 (on the shelf ice) and 33 (on grounded ice).*

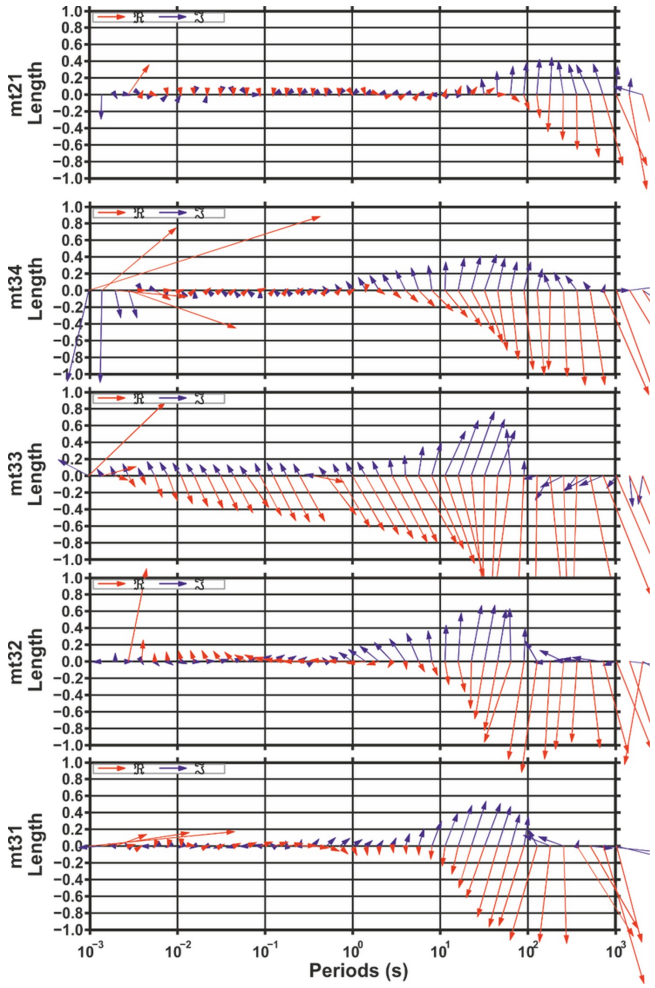

Figure 8: *Induction vectors (in the Wiese convention). Red arrows indicate the real parts, blue arrows the imaginary parts. At long periods, the induction vectors generally point southwards, away from the conductive deep ocean. The sites along the so-called "Watzmann" traverse (sites 31 to 34) indicate in addition a nearby electrical conductivity contrast with larger real induction vectors at shorter periods, with site 33 being closest to the contact. The northernmost site 21 shows a different behaviour with small (vanishing) induction vectors for most of the period range.*

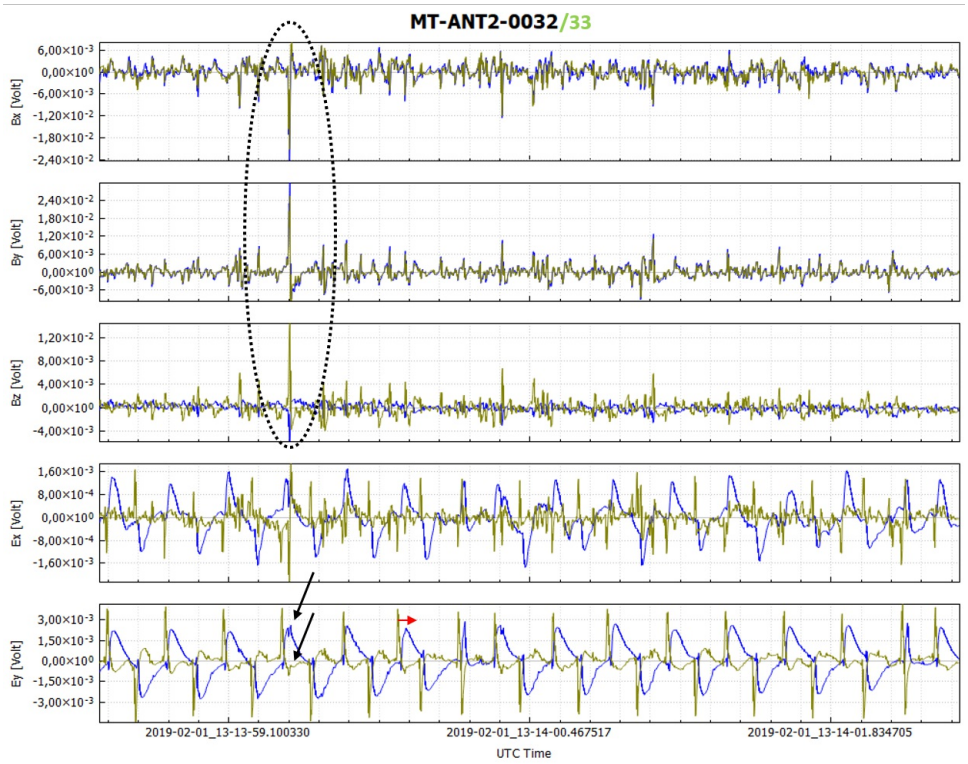

Figure 9: *Time-series examples of stations 32 and 33 of project MT-ANT2, which were recording at the same time. The entire length of the segment is approximately 2 s. B indicates magnetic field, and E an electric field component. X,y, and z indicate north-south, east-west, and the vertical direction respectively. The dashed ellipse marks a natural event (a lighting discharge) in the magnetic field recordings, which is recorded at exactly the same time at both stations. The electric field recordings on the other hand, are dominated by saw-tooth shaped signals, which are clearly not of natural origin.*

7. Archive structure and data formats

The principle form of data in the repository are time-series of electromagnetic field components acquired with heterogeneous sets of sensors, recording instruments, and sampling rates. The repository provides the links between the data and their physical meaning by means of meta-data. The repository is organized as a combination of data files and associated meta-data in a defined folder (directory) structure, with the data files being sorted into sub-folders. Meta-data are provided as XML (Extensible Markup Language) formatted files.

The times series data are available in the so-called EMERALD format. EMERALD data files typically come in pairs of two files with the same name but differing file name extensions, e.g. RAW and XTR files. XTR (extract) files are plain ASCII files, EMERALD- type data files are in most cases binary. The EMERALD- type data files store data in matrix form (any number of channels), but do not contain any description of the data. This information is stored in the according .XTR files. In 2015 the original .XTR files were replaced by a modernized version based on the Extensible Markup Language (XML). The new files have the extension .XTRX. The EMERALD format is described in detail in Ritter et al. (2015).

Sample code to read and write the EMERALD data format can be obtained from GFZ's Gitlab repository (as supplementary data of Rittter et al., 2019). Other low-level data formats can be provided on request, including time series data of EDL data loggers in Mini-Seed format or time series data of SPAM3 and SPAM4 data loggers in proprietary format.

7.1 Compilation history of this report

This report was generated semi-automatically from the metadata of this project. The table below summarizes the metadata (xml files) and scripts (powershell) used to compile this document.

xml file	File version	Script	Version	Script date

report.xml	1.10	ArchiveCreateReport.ps1	1.23	13.12.2019
project.xml	2.20	ArchiveCreateXMLs.ps1	N.A.	manually edited
maps.xml	1.40	ArchiveCreateXMLs.ps1	2.37	11.04.2019
sites.xml	2.20	ArchiveCreateXMLs.ps1	2.38	11.04.2019
instrumentation.xml	1.10	ArchiveCreateXMLs.ps1	2.38	11.04.2019
publications.xml	1.20	ArchiveQueryPublications.ps1	2.0	06.06.2019
revisions.xml	1.10	ArchiveCreateXMLs.ps1	2.38	11.04.2019
config.xml	2.00	ArchiveCreateConfig.ps1	2.51	28.03.2019

8. Acknowledgements

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9. References

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Ritter, O., Fromm, T., Weckmann, U., Kütter, S., 2019b. Magnetotelluric measurements from the Grunehogna Craton of East Antarctica. In: *IUGG General Assembly, Montreal, Canada*.

Ritter, O., Muñoz, G., Barth, R., Tietze, K., Rulff, P., Stephan, S., 2019d. MT Repository : user manual. 67 pp. doi: 10.2312/GFZ.b103-19065.

Appendix 1

This appendix provides a summary of the recording configurations for each site, including sampling frequencies, frequency bands, scheduled recording times, filter settings, sensors used, etc.

Internally the configurations are organized as runs. Each run corresponds with a particular set of instruments or hardware settings. If, for example, inductions coils were switched between low frequency (LF) and high frequency (HF) modes, their frequency response changes. Therefore, they count as different instruments, which is reflected in different runs.

The headers of the tables summarize for how long a particular configuration was active. A recording period consists of an uninterrupted set of time series data, described by start and end dates. Numbers in brackets after the dates specify the corresponding day of the year. Recordings can be continuous over longer time spans or shorter time segments can be repeated a number of times.

Each table contains seven columns defining types and serial numbers of data loggers, sensor boxes, sampling frequencies, the number of recorded channels, and their physical meaning, e.g. if electric- or magnetic field sensors

were attached. Electric sensors (i.e. electrodes) usually have sensor number 0 as their IDs are not accounted for. The tables provide one row for each channel, if information extends for more than one row, it applies to all encompassed channels.

Site 0001

Run: 001

Recording Period 22 Jan 2019 (22) 11:49:59 - 22 Jan 2019 (22) 11:50:39 (40.83s once) 22 Jan 2019 (22) 11:52:42 - 26 Jan 2019 (26) 23:38:55 (continuous 1h) 26 Jan 2019 (26) 23:39:07 - 27 Jan 2019 (27) 04:59:10 (continuous 1h) 27 Jan 2019 (27) 05:04:39 - 27 Jan 2019 (27) 05:06:13 (1min 34.04s once)						
Logger (SPAM4)	**SBx (CASTLE)**	**Sampling Frequency**	**Channel Nr.**	**Name**	**Sensor Type**	**Sensor Number**
061	030	625.00 Hz	001	Bx	Metronix_Coil-----TYPE-006_LF	400
			002	By	Metronix_Coil-----TYPE-006_LF	408
			003	Bz	Metronix_Coil-----TYPE-010_LF	019
	089		004	Ex	TelluricElectrode-TYPE-AgAgCl	000
			005	Ey	TelluricElectrode-TYPE-AgAgCl	000

Recording Period 22 Jan 2019 (22) 12:00:00 - 27 Jan 2019 (27) 04:09:59 (For 10min every 2h)						
Logger (SPAM4)	**SBx (CASTLE)**	**Sampling Frequency**	**Channel Nr.**	**Name**	**Sensor Type**	**Sensor Number**
061	030	6250.00 Hz	001	Bx	Metronix_Coil-----TYPE-006_LF	400
			002	By	Metronix_Coil-----TYPE-006_LF	408
			003	Bz	Metronix_Coil-----TYPE-010_LF	019
	089		004	Ex	TelluricElectrode-TYPE-AgAgCl	000
			005	Ey	TelluricElectrode-TYPE-AgAgCl	000

Run: 002

Recording Period 27 Jan 2019 (27) 17:07:15 - 28 Jan 2019 (28) 16:18:32 (continuous 1h)						
Logger (SPAM4)	**SBx (CASTLE)**	**Sampling Frequency**	**Channel Nr.**	**Name**	**Sensor Type**	**Sensor Number**
061	030	625.00 Hz	001	Bx	Metronix_Coil-----TYPE-006_LF	400
			002	By	Metronix_Coil-----TYPE-006_LF	408
			003	Bz	Metronix_Coil-----TYPE-010_LF	019
	078		004	Ex	TelluricElectrode-TYPE-AgAgCl	000
			005	Ey	TelluricElectrode-TYPE-AgAgCl	000

Recording Period 27 Jan 2019 (27) 18:00:00 - 28 Jan 2019 (28) 16:09:59 (For 10min every 2h)						
Logger (SPAM4)	**SBx (CASTLE)**	**Sampling Frequency**	**Channel Nr.**	**Name**	**Sensor Type**	**Sensor Number**
061	030	6250.00 Hz	001	Bx	Metronix_Coil-----TYPE-006_LF	400
			002	By	Metronix_Coil-----TYPE-006_LF	408
			003	Bz	Metronix_Coil-----TYPE-010_LF	019
	078		004	Ex	TelluricElectrode-TYPE-AgAgCl	000
			005	Ey	TelluricElectrode-TYPE-AgAgCl	000

Site 0004

Run: 001

Recording Period 07 Feb 2019 (38) 14:46:54 - 09 Feb 2019 (40) 13:41:38 (continuous 1h) 09 Feb 2019 (40) 13:45:06 - 09 Feb 2019 (40) 13:45:28 (22.98s once) 09 Feb 2019 (40) 13:47:42 - 12 Feb 2019 (43) 10:59:59 (continuous 1h)						
Logger (SPAM4)	**SBx (CASTLE)**	**Sampling Frequency**	**Channel Nr.**	**Name**	**Sensor Type**	**Sensor Number**
058	086	625.00 Hz	001	Bx	Metronix_Coil-----TYPE-006_LF	133
			002	By	Metronix_Coil-----TYPE-006_LF	418
			003	Bz	Metronix_Coil-----TYPE-010_LF	017
	081		004	Ex	TelluricElectrode-TYPE-AgAgCl	000
			005	Ey	TelluricElectrode-TYPE-AgAgCl	000

Recording Period 07 Feb 2019 (38) 16:00:00 - 11 Feb 2019 (42) 22:09:59 (For 10min every 2h)						
Logger (SPAM4)	**SBx (CASTLE)**	**Sampling Frequency**	**Channel Nr.**	**Name**	**Sensor Type**	**Sensor Number**
058	086	6250.00 Hz	001	Bx	Metronix_Coil-----TYPE-006_LF	133
			002	By	Metronix_Coil-----TYPE-006_LF	418
			003	Bz	Metronix_Coil-----TYPE-010_LF	017
	081		004	Ex	TelluricElectrode-TYPE-AgAgCl	000
			005	Ey	TelluricElectrode-TYPE-AgAgCl	000

Site 0005

Run: 001

Recording Period 04 Feb 2019 (35) 15:04:36 - 04 Feb 2019 (35) 15:29:45 (25min 9.25s once) 04 Feb 2019 (35) 15:29:59 - 08 Feb 2019 (39) 12:31:43 (continuous 1h) 08 Feb 2019 (39) 12:32:29 - 08 Feb 2019 (39) 12:36:06 (3min 37.15s once) 08 Feb 2019 (39) 12:47:52 - 10 Feb 2019 (41) 09:52:57 (continuous 1h)						
Logger (SPAM4)	**SBx (CASTLE)**	**Sampling Frequency**	**Channel Nr.**	**Name**	**Sensor Type**	**Sensor Number**
030	030	625.00 Hz	001	Bx	Metronix_Coil-----TYPE-006_LF	421
			002	By	Metronix_Coil-----TYPE-006_LF	417
			003	Bz	Metronix_Coil-----TYPE-010_LF	016
	078		004	Ex	TelluricElectrode-TYPE-AgAgCl	000
			005	Ey	TelluricElectrode-TYPE-AgAgCl	000

Recording Period 04 Feb 2019 (35) 16:00:00 - 10 Feb 2019 (41) 08:09:59 (For 10min every 2h)						
Logger (SPAM4)	**SBx (CASTLE)**	**Sampling Frequency**	**Channel Nr.**	**Name**	**Sensor Type**	**Sensor Number**
030	030	6250.00 Hz	001	Bx	Metronix_Coil-----TYPE-006_LF	421
			002	By	Metronix_Coil-----TYPE-006_LF	417
			003	Bz	Metronix_Coil-----TYPE-010_LF	016
	078		004	Ex	TelluricElectrode-TYPE-AgAgCl	000
			005	Ey	TelluricElectrode-TYPE-AgAgCl	000

Site 0021

Run: 001

Recording Period 27 Jan 2019 (27) 16:10:14 - 27 Jan 2019 (27) 16:35:32 (25min 18.90s once) 27 Jan 2019 (27) 16:35:45 - 29 Jan 2019 (29) 11:25:10 (For 11h 25min 10.13s every 11h 25min 10.13s) 29 Jan 2019 (29) 11:39:51 - 02 Feb 2019 (33) 16:16:27 (For 24h every 24h) 02 Feb 2019 (33) 16:16:51 - 03 Feb 2019 (34) 17:03:41 (For 17h 3min 41.28s every 17h 3min 41.28s)						
Logger (SPAM4)	**SBx (SPAM4)**	**Sampling Frequency**	**Channel Nr.**	**Name**	**Sensor Type**	**Sensor Number**
054	122	625.00 Hz	001	Bx	Metronix_Coil-----TYPE-006_LF	133
			002	By	Metronix_Coil-----TYPE-006_LF	418
			003	Bz	Metronix_Coil-----TYPE-010_LF	017
			004	Ex	TelluricElectrode-TYPE-AgAgCl	000
			005	Ey	TelluricElectrode-TYPE-AgAgCl	000

Recording Period 27 Jan 2019 (27) 18:00:00 - 03 Feb 2019 (34) 16:10:00 (For 10min every 2h)						
Logger (SPAM4)	**SBx (SPAM4)**	**Sampling Frequency**	**Channel Nr.**	**Name**	**Sensor Type**	**Sensor Number**
054	122	6250.00 Hz	001	Bx	Metronix_Coil-----TYPE-006_LF	133
			002	By	Metronix_Coil-----TYPE-006_LF	418
			003	Bz	Metronix_Coil-----TYPE-010_LF	017
			004	Ex	TelluricElectrode-TYPE-AgAgCl	000
			005	Ey	TelluricElectrode-TYPE-AgAgCl	000

Run: 002

Recording Period 03 Feb 2019 (34) 17:24:07 - 05 Feb 2019 (36) 09:59:59 (For 1h every 1h)						
Logger (SPAM4)	**SBx (CASTLE)**	**Sampling Frequency**	**Channel Nr.**	**Name**	**Sensor Type**	**Sensor Number**
054	086	625.00 Hz	001	Bx	Metronix_Coil-----TYPE-006_LF	133
			002	By	Metronix_Coil-----TYPE-006_LF	418
			003	Bz	Metronix_Coil-----TYPE-010_LF	017
	081		004	Ex	TelluricElectrode-TYPE-AgAgCl	000
			005	Ey	TelluricElectrode-TYPE-AgAgCl	000

Recording Period 03 Feb 2019 (34) 18:00:00 - 05 Feb 2019 (36) 10:10:00 (For 10min every 2h)						
Logger (SPAM4)	**SBx (CASTLE)**	**Sampling Frequency**	**Channel Nr.**	**Name**	**Sensor Type**	**Sensor Number**
054	086	6250.00 Hz	001	Bx	Metronix_Coil-----TYPE-006_LF	133
			002	By	Metronix_Coil-----TYPE-006_LF	418
			003	Bz	Metronix_Coil-----TYPE-010_LF	017
	081		004	Ex	TelluricElectrode-TYPE-AgAgCl	000
			005	Ey	TelluricElectrode-TYPE-AgAgCl	000

Run: 003

Recording Period 06 Feb 2019 (37) 20:57:13 - 06 Feb 2019 (37) 21:22:28 (For 22min 28.67s every 22min 28.67s) 06 Feb 2019 (37) 21:22:47 - 07 Feb 2019 (38) 11:45:57 (For 1h every 1h)						
Logger (SPAM4)	**SBx (CASTLE)**	**Sampling Frequency**	**Channel Nr.**	**Name**	**Sensor Type**	**Sensor Number**
058	086	625.00 Hz	001	Bx	Metronix_Coil-----TYPE-006_LF	133
			002	By	Metronix_Coil-----TYPE-006_LF	418
			003	Bz	Metronix_Coil-----TYPE-010_LF	017
	081		004	Ex	TelluricElectrode-TYPE-AgAgCl	000
			005	Ey	TelluricElectrode-TYPE-AgAgCl	000

Recording Period 06 Feb 2019 (37) 22:00:00 - 07 Feb 2019 (38) 10:10:00 (For 10min every 2h)						
Logger (SPAM4)	**SBx (CASTLE)**	**Sampling Frequency**	**Channel Nr.**	**Name**	**Sensor Type**	**Sensor Number**
058	086	6250.00 Hz	001	Bx	Metronix_Coil-----TYPE-006_LF	133
			002	By	Metronix_Coil-----TYPE-006_LF	418
			003	Bz	Metronix_Coil-----TYPE-010_LF	017
	081		004	Ex	TelluricElectrode-TYPE-AgAgCl	000
			005	Ey	TelluricElectrode-TYPE-AgAgCl	000

Site 0022

Run: 001

Recording Period 23 Jan 2019 (23) 09:22:35 - 24 Jan 2019 (24) 18:07:41 (continuous 1h) 24 Jan 2019 (24) 18:10:17 - 25 Jan 2019 (25) 11:20:59 (continuous 1h) 25 Jan 2019 (25) 11:29:04 - 25 Jan 2019 (25) 11:35:13 (6min 9.92s once) 25 Jan 2019 (25) 11:35:38 - 25 Jan 2019 (25) 23:39:45 (continuous 1h) 25 Jan 2019 (25) 23:39:58 - 27 Jan 2019 (27) 11:09:28 (continuous 1h)						
Logger (SPAM4)	**SBx (CASTLE)**	**Sampling Frequency**	**Channel Nr.**	**Name**	**Sensor Type**	**Sensor Number**
058	086	625.00 Hz	001	Bx	Metronix_Coil-----TYPE-006_LF	421
			002	By	Metronix_Coil-----TYPE-006_LF	417
			003	Bz	Metronix_Coil-----TYPE-010_LF	016
	078		004	Ex	TelluricElectrode-TYPE-AgAgCl	000
			005	Ey	TelluricElectrode-TYPE-AgAgCl	000

Recording Period 23 Jan 2019 (23) 10:00:00 - 24 Jan 2019 (24) 18:07:41 (For 10min every 2h) 24 Jan 2019 (24) 20:00:00 - 27 Jan 2019 (27) 10:09:59 (For 10min every 2h)						
Logger (SPAM4)	**SBx (CASTLE)**	**Sampling Frequency**	**Channel Nr.**	**Name**	**Sensor Type**	**Sensor Number**
058	086	6250.00 Hz	001	Bx	Metronix_Coil-----TYPE-006_LF	421
			002	By	Metronix_Coil-----TYPE-006_LF	417
			003	Bz	Metronix_Coil-----TYPE-010_LF	016
	078		004	Ex	TelluricElectrode-TYPE-AgAgCl	000
			005	Ey	TelluricElectrode-TYPE-AgAgCl	000

Site 0023

Run: 001

Recording Period 24 Jan 2019 (24) 17:25:49 - 25 Jan 2019 (25) 10:26:16 (continuous 1h) 25 Jan 2019 (25) 10:37:48 - 26 Jan 2019 (26) 23:48:50 (continuous 1h) 26 Jan 2019 (26) 23:49:04 - 27 Jan 2019 (27) 10:06:57 (continuous 1h)						
Logger (SPAM4)	**SBx (CASTLE)**	**Sampling Frequency**	**Channel Nr.**	**Name**	**Sensor Type**	**Sensor Number**
030	084	625.00 Hz	001	Bx	Metronix_Coil-----TYPE-006_LF	423
			002	By	Metronix_Coil-----TYPE-006_LF	130
			003	Bz	Metronix_Coil-----TYPE-010_LF	015
	081		004	Ex	TelluricElectrode-TYPE-AgAgCl	000
			005	Ey	TelluricElectrode-TYPE-AgAgCl	000

Recording Period 24 Jan 2019 (24) 18:00:00 - 27 Jan 2019 (27) 10:06:57 (For 10min every 2h)						
Logger (SPAM4)	**SBx (CASTLE)**	**Sampling Frequency**	**Channel Nr.**	**Name**	**Sensor Type**	**Sensor Number**
030	084	6250.00 Hz	001	Bx	Metronix_Coil-----TYPE-006_LF	423
			002	By	Metronix_Coil-----TYPE-006_LF	130
			003	Bz	Metronix_Coil-----TYPE-010_LF	015
	081		004	Ex	TelluricElectrode-TYPE-AgAgCl	000
			005	Ey	TelluricElectrode-TYPE-AgAgCl	000

Run: 002

Recording Period 27 Jan 2019 (27) 10:29:42 - 28 Jan 2019 (28) 13:56:44 (continuous 1h)						
Logger (SPAM4)	**SBx (CASTLE)**	**Sampling Frequency**	**Channel Nr.**	**Name**	**Sensor Type**	**Sensor Number**
030	084	625.00 Hz	001	Bx	Metronix_Coil-----TYPE-006_LF	423
			002	By	Metronix_Coil-----TYPE-006_LF	130
			003	Bz	Metronix_Coil-----TYPE-010_LF	015
	082		004	Ex	TelluricElectrode-TYPE-AgAgCl	000
			005	Ey	TelluricElectrode-TYPE-AgAgCl	000

Recording Period 27 Jan 2019 (27) 12:00:00 - 28 Jan 2019 (28) 12:09:59 (For 10min every 2h)						
Logger (SPAM4)	**SBx (CASTLE)**	**Sampling Frequency**	**Channel Nr.**	**Name**	**Sensor Type**	**Sensor Number**
030	084	6250.00 Hz	001	Bx	Metronix_Coil-----TYPE-006_LF	423
			002	By	Metronix_Coil-----TYPE-006_LF	130
			003	Bz	Metronix_Coil-----TYPE-010_LF	015
	082		004	Ex	TelluricElectrode-TYPE-AgAgCl	000
			005	Ey	TelluricElectrode-TYPE-AgAgCl	000

Site 0024

Run: 001

Recording Period 13 Feb 2019 (44) 15:25:40 - 13 Feb 2019 (44) 15:27:09 (1min 29.54s once) 13 Feb 2019 (44) 15:31:52 - 15 Feb 2019 (46) 10:00:04 (continuous 1h) 15 Feb 2019 (46) 10:16:06 - 15 Feb 2019 (46) 10:20:47 (4min 41.18s once)						
Logger (SPAM4)	**SBx (CASTLE)**	**Sampling Frequency**	**Channel Nr.**	**Name**	**Sensor Type**	**Sensor Number**
061	084	625.00 Hz	001	Bx	Metronix_Coil-----TYPE-006_LF	400
			002	By	Metronix_Coil-----TYPE-006_LF	408
			003	Bz	Metronix_Coil-----TYPE-010_LF	015
	089		004	Ex	TelluricElectrode-TYPE-AgAgCl	000
			005	Ey	TelluricElectrode-TYPE-AgAgCl	000

Recording Period 13 Feb 2019 (44) 16:00:00 - 15 Feb 2019 (46) 10:00:04 (For 10min every 2h)						
Logger (SPAM4)	**SBx (CASTLE)**	**Sampling Frequency**	**Channel Nr.**	**Name**	**Sensor Type**	**Sensor Number**
061	084	6250.00 Hz	001	Bx	Metronix_Coil-----TYPE-006_LF	400
			002	By	Metronix_Coil-----TYPE-006_LF	408
			003	Bz	Metronix_Coil-----TYPE-010_LF	015
	089		004	Ex	TelluricElectrode-TYPE-AgAgCl	000
			005	Ey	TelluricElectrode-TYPE-AgAgCl	000

Run: 002

Recording Period 15 Feb 2019 (46) 10:55:14 - 15 Feb 2019 (46) 11:20:32 (4min 46.00s + 20min 32.82s once - continuous) 15 Feb 2019 (46) 11:20:45 - 16 Feb 2019 (47) 11:26:17 (continuous 1h)						
Logger (SPAM4)	**SBx (CASTLE)**	**Sampling Frequency**	**Channel Nr.**	**Name**	**Sensor Type**	**Sensor Number**
054	084	625.00 Hz	001	Bx	Metronix_Coil-----TYPE-006_LF	400
			002	By	Metronix_Coil-----TYPE-006_LF	408
			003	Bz	Metronix_Coil-----TYPE-010_LF	015
	089		004	Ex	TelluricElectrode-TYPE-AgAgCl	000
			005	Ey	TelluricElectrode-TYPE-AgAgCl	000

Recording Period 15 Feb 2019 (46) 12:00:00 - 16 Feb 2019 (47) 10:09:59 (For 10min every 2h)						
Logger (SPAM4)	**SBx (CASTLE)**	**Sampling Frequency**	**Channel Nr.**	**Name**	**Sensor Type**	**Sensor Number**
054	084	6250.00 Hz	001	Bx	Metronix_Coil-----TYPE-006_LF	400
			002	By	Metronix_Coil-----TYPE-006_LF	408
			003	Bz	Metronix_Coil-----TYPE-010_LF	015
	089		004	Ex	TelluricElectrode-TYPE-AgAgCl	000
			005	Ey	TelluricElectrode-TYPE-AgAgCl	000

Site 0025

Run: 001

Recording Period 10 Feb 2019 (41) 13:48:35 - 11 Feb 2019 (42) 23:47:31 (continuous 1h) 11 Feb 2019 (42) 23:47:44 - 13 Feb 2019 (44) 13:22:15 (continuous 1h) 13 Feb 2019 (44) 13:23:02 - 15 Feb 2019 (46) 11:18:40 (continuous 1h)						
Logger (SPAM4)	**SBx (CASTLE)**	**Sampling Frequency**	**Channel Nr.**	**Name**	**Sensor Type**	**Sensor Number**
030	030	625.00 Hz	001	Bx	Metronix_Coil-----TYPE-006_LF	421
			002	By	Metronix_Coil-----TYPE-006_LF	417
			003	Bz	Metronix_Coil-----TYPE-010_LF	016
	078		004	Ex	TelluricElectrode-TYPE-AgAgCl	000
			005	Ey	TelluricElectrode-TYPE-AgAgCl	000

Recording Period 10 Feb 2019 (41) 14:00:00 - 15 Feb 2019 (46) 10:09:59 (For 10min every 2h)						
Logger (SPAM4)	**SBx (CASTLE)**	**Sampling Frequency**	**Channel Nr.**	**Name**	**Sensor Type**	**Sensor Number**
030	030	6250.00 Hz	001	Bx	Metronix_Coil-----TYPE-006_LF	421
			002	By	Metronix_Coil-----TYPE-006_LF	417
			003	Bz	Metronix_Coil-----TYPE-010_LF	016
	078		004	Ex	TelluricElectrode-TYPE-AgAgCl	000
			005	Ey	TelluricElectrode-TYPE-AgAgCl	000

Site 0026

Run: 001

Recording Period 15 Feb 2019 (46) 14:05:53 - 17 Feb 2019 (48) 10:27:04 (continuous 1h)						
Logger (SPAM4)	**SBx (CASTLE)**	**Sampling Frequency**	**Channel Nr.**	**Name**	**Sensor Type**	**Sensor Number**
030	030	625.00 Hz	001	Bx	Metronix_Coil-----TYPE-006_LF	421
			002	By	Metronix_Coil-----TYPE-006_LF	417
			003	Bz	Metronix_Coil-----TYPE-010_LF	016
	078		004	Ex	TelluricElectrode-TYPE-AgAgCl	000
			005	Ey	TelluricElectrode-TYPE-AgAgCl	000

Recording Period 15 Feb 2019 (46) 14:05:53 - 17 Feb 2019 (48) 10:09:59 (For 10min every 2h)						
Logger (SPAM4)	**SBx (CASTLE)**	**Sampling Frequency**	**Channel Nr.**	**Name**	**Sensor Type**	**Sensor Number**
030	030	6250.00 Hz	001	Bx	Metronix_Coil-----TYPE-006_LF	421
			002	By	Metronix_Coil-----TYPE-006_LF	417
			003	Bz	Metronix_Coil-----TYPE-010_LF	016
	078		004	Ex	TelluricElectrode-TYPE-AgAgCl	000
			005	Ey	TelluricElectrode-TYPE-AgAgCl	000

Site 0031

Run: 001

Recording Period 31 Jan 2019 (31) 11:17:37 - 31 Jan 2019 (31) 19:41:11 (continuous 1h) 31 Jan 2019 (31) 19:45:38 - 31 Jan 2019 (31) 23:52:46 (continuous 1h) 31 Jan 2019 (31) 23:57:17 - 31 Jan 2019 (31) 23:57:35 (18.92s once) 01 Feb 2019 (32) 00:26:07 - 01 Feb 2019 (32) 12:42:10 (continuous 1h) 01 Feb 2019 (32) 12:42:22 - 01 Feb 2019 (32) 12:45:47 (3min 25.52s once) 01 Feb 2019 (32) 12:56:28 - 01 Feb 2019 (32) 16:55:08 (continuous 1h) 01 Feb 2019 (32) 16:55:20 - 01 Feb 2019 (32) 16:57:08 (1min 48.13s once)						
Logger (SPAM4)	**SBx (CASTLE)**	**Sampling Frequency**	**Channel Nr.**	**Name**	**Sensor Type**	**Sensor Number**
030	084	625.00 Hz	001	Bx	Metronix_Coil-----TYPE-006_LF	417
			002	By	Metronix_Coil-----TYPE-006_LF	421
			003	Bz	Metronix_Coil-----TYPE-010_LF	016
	082		004	Ex	TelluricElectrode-TYPE-AgAgCl	000
			005	Ey	TelluricElectrode-TYPE-AgAgCl	000

Recording Period 31 Jan 2019 (31) 12:00:00 - 31 Jan 2019 (31) 22:09:59 (For 10min every 2h) 01 Feb 2019 (32) 02:00:00 - 01 Feb 2019 (32) 16:09:59 (For 10min every 2h)						
Logger (SPAM4)	**SBx (CASTLE)**	**Sampling Frequency**	**Channel Nr.**	**Name**	**Sensor Type**	**Sensor Number**
030	084	6250.00 Hz	001	Bx	Metronix_Coil-----TYPE-006_LF	417
			002	By	Metronix_Coil-----TYPE-006_LF	421
			003	Bz	Metronix_Coil-----TYPE-010_LF	016
	082		004	Ex	TelluricElectrode-TYPE-AgAgCl	000
			005	Ey	TelluricElectrode-TYPE-AgAgCl	000

Run: 002

Recording Period 01 Feb 2019 (32) 18:35:54 - 02 Feb 2019 (33) 09:24:56 (continuous 1h) 02 Feb 2019 (33) 09:25:20 - 02 Feb 2019 (33) 09:28:09 (2min 49.21s once) 02 Feb 2019 (33) 09:30:41 - 02 Feb 2019 (33) 15:19:25 (continuous 1h)						
Logger (SPAM4)	**SBx (CASTLE)**	**Sampling Frequency**	**Channel Nr.**	**Name**	**Sensor Type**	**Sensor Number**
030	084	625.00 Hz	001	Bx	Metronix_Coil-----TYPE-006_LF	417
			002	By	Metronix_Coil-----TYPE-006_LF	421
			003	Bz	Metronix_Coil-----TYPE-010_LF	016
	089		004	Ex	TelluricElectrode-TYPE-AgAgCl	000
			005	Ey	TelluricElectrode-TYPE-AgAgCl	000

Recording Period 01 Feb 2019 (32) 20:00:00 - 02 Feb 2019 (33) 08:09:59 (For 10min every 2h)						
Logger (SPAM4)	**SBx (CASTLE)**	**Sampling Frequency**	**Channel Nr.**	**Name**	**Sensor Type**	**Sensor Number**
030	084	6250.00 Hz	001	Bx	Metronix_Coil-----TYPE-006_LF	417
			002	By	Metronix_Coil-----TYPE-006_LF	421
			003	Bz	Metronix_Coil-----TYPE-010_LF	016
	089		004	Ex	TelluricElectrode-TYPE-AgAgCl	000
			005	Ey	TelluricElectrode-TYPE-AgAgCl	000

Run: 003

Recording Period 02 Feb 2019 (33) 15:34:13 - 03 Feb 2019 (34) 09:59:16 (continuous 1h)						
Logger (SPAM4)	**SBx (CASTLE)**	**Sampling Frequency**	**Channel Nr.**	**Name**	**Sensor Type**	**Sensor Number**
030	086	625.00 Hz	001	Bx	Metronix_Coil-----TYPE-006_LF	417
			002	By	Metronix_Coil-----TYPE-006_LF	421
			003	Bz	Metronix_Coil-----TYPE-010_LF	016
	081		004	Ex	TelluricElectrode-TYPE-AgAgCl	000
			005	Ey	TelluricElectrode-TYPE-AgAgCl	000

Recording Period 02 Feb 2019 (33) 16:00:00 - 03 Feb 2019 (34) 08:09:59 (For 10min every 2h)						
Logger (SPAM4)	**SBx (CASTLE)**	**Sampling Frequency**	**Channel Nr.**	**Name**	**Sensor Type**	**Sensor Number**
030	086	6250.00 Hz	001	Bx	Metronix_Coil-----TYPE-006_LF	417
			002	By	Metronix_Coil-----TYPE-006_LF	421
			003	Bz	Metronix_Coil-----TYPE-010_LF	016
	081		004	Ex	TelluricElectrode-TYPE-AgAgCl	000
			005	Ey	TelluricElectrode-TYPE-AgAgCl	000

Site 0032

Internal Site: 0031 Run: 001

Recording Period 31 Jan 2019 (31) 11:17:37 - 31 Jan 2019 (31) 19:41:11 (continuous 1h) 31 Jan 2019 (31) 19:45:38 - 31 Jan 2019 (31) 23:52:46 (continuous 1h) 31 Jan 2019 (31) 23:57:17 - 31 Jan 2019 (31) 23:57:35 (18.92s once) 01 Feb 2019 (32) 00:26:07 - 01 Feb 2019 (32) 11:59:59 (continuous 1h)						
Logger (SPAM4)	**SBx (CASTLE)**	**Sampling Frequency**	**Channel Nr.**	**Name**	**Sensor Type**	**Sensor Number**
030	084	625.00 Hz	001	Bx	Metronix_Coil-----TYPE-006_LF	417
			002	By	Metronix_Coil-----TYPE-006_LF	421
			003	Bz	Metronix_Coil-----TYPE-010_LF	016
	082		004	Ex	TelluricElectrode-TYPE-AgAgCl	000
			005	Ey	TelluricElectrode-TYPE-AgAgCl	000

Recording Period 31 Jan 2019 (31) 12:00:00 - 31 Jan 2019 (31) 22:09:59 (For 10min every 2h) 01 Feb 2019 (32) 02:00:00 - 01 Feb 2019 (32) 12:09:59 (For 10min every 2h)						
Logger (SPAM4)	**SBx (CASTLE)**	**Sampling Frequency**	**Channel Nr.**	**Name**	**Sensor Type**	**Sensor Number**
030	084	6250.00 Hz	001	Bx	Metronix_Coil-----TYPE-006_LF	417
			002	By	Metronix_Coil-----TYPE-006_LF	421
			003	Bz	Metronix_Coil-----TYPE-010_LF	016
	082		004	Ex	TelluricElectrode-TYPE-AgAgCl	000
			005	Ey	TelluricElectrode-TYPE-AgAgCl	000

Internal Site: 0032 Run: 001

Recording Period 30 Jan 2019 (30) 15:57:51 - 02 Feb 2019 (33) 11:47:11 (continuous 1h)

Logger (SPAM4)	SBx (CASTLE)	Sampling Frequency	Channel Nr.	Name	Sensor Type	Sensor Number
058	086	625.00 Hz	001	Bx	Metronix_Coil-----TYPE-006_LF	430
			002	By	Metronix_Coil-----TYPE-006_LF	423
			003	Bz	Metronix_Coil-----TYPE-010_LF	019
	081		004	Ex	TelluricElectrode-TYPE-AgAgCl	000
			005	Ey	TelluricElectrode-TYPE-AgAgCl	000

Recording Period 30 Jan 2019 (30) 16:00:00 - 02 Feb 2019 (33) 10:09:59 (For 10min every 2h)						
Logger (SPAM4)	**SBx (CASTLE)**	**Sampling Frequency**	**Channel Nr.**	**Name**	**Sensor Type**	**Sensor Number**
058	086	6250.00 Hz	001	Bx	Metronix_Coil-----TYPE-006_LF	430
			002	By	Metronix_Coil-----TYPE-006_LF	423
			003	Bz	Metronix_Coil-----TYPE-010_LF	019
	081		004	Ex	TelluricElectrode-TYPE-AgAgCl	000
			005	Ey	TelluricElectrode-TYPE-AgAgCl	000

Site 0033

Run: 001

Recording Period 30 Jan 2019 (30) 12:54:43 - 01 Feb 2019 (32) 11:15:46 (continuous 1h) 01 Feb 2019 (32) 11:15:58 - 02 Feb 2019 (33) 10:36:11 (continuous 1h) 02 Feb 2019 (33) 10:36:56 - 02 Feb 2019 (33) 10:37:33 (37.06s once)						
Logger (SPAM4)	**SBx (CASTLE)**	**Sampling Frequency**	**Channel Nr.**	**Name**	**Sensor Type**	**Sensor Number**
061	030	625.00 Hz	001	Bx	Metronix_Coil-----TYPE-006_LF	400
			002	By	Metronix_Coil-----TYPE-006_LF	408
			003	Bz	Metronix_Coil-----TYPE-010_LF	015
	078		004	Ex	TelluricElectrode-TYPE-AgAgCl	000
			005	Ey	TelluricElectrode-TYPE-AgAgCl	000

Recording Period 30 Jan 2019 (30) 14:00:00 - 02 Feb 2019 (33) 10:09:59 (For 10min every 2h)						
Logger (SPAM4)	**SBx (CASTLE)**	**Sampling Frequency**	**Channel Nr.**	**Name**	**Sensor Type**	**Sensor Number**
061	030	6250.00 Hz	001	Bx	Metronix_Coil-----TYPE-006_LF	400
			002	By	Metronix_Coil-----TYPE-006_LF	408
			003	Bz	Metronix_Coil-----TYPE-010_LF	015
	078		004	Ex	TelluricElectrode-TYPE-AgAgCl	000
			005	Ey	TelluricElectrode-TYPE-AgAgCl	000

Site 0034

Run: 001

Recording Period 05 Feb 2019 (36) 13:19:39 - 05 Feb 2019 (36) 13:20:39 (1min 0.58s once) 05 Feb 2019 (36) 13:21:31 - 05 Feb 2019 (36) 13:46:48 (25min 17.88s once) 05 Feb 2019 (36) 13:47:01 - 08 Feb 2019 (39) 10:29:07 (continuous 1h) 08 Feb 2019 (39) 10:29:52 - 10 Feb 2019 (41) 19:59:59 (continuous 1h)						
Logger (SPAM4)	**SBx (CASTLE)**	**Sampling Frequency**	**Channel Nr.**	**Name**	**Sensor Type**	**Sensor Number**
061	084	625.00 Hz	001	Bx	Metronix_Coil-----TYPE-006_LF	408
			002	By	Metronix_Coil-----TYPE-006_LF	400
			003	Bz	Metronix_Coil-----TYPE-010_LF	015
	089		004	Ex	TelluricElectrode-TYPE-AgAgCl	000
			005	Ey	TelluricElectrode-TYPE-AgAgCl	000

Recording Period 05 Feb 2019 (36) 14:00:00 - 09 Feb 2019 (40) 22:09:59 (For 10min every 2h)						
Logger (SPAM4)	**SBx (CASTLE)**	**Sampling Frequency**	**Channel Nr.**	**Name**	**Sensor Type**	**Sensor Number**
061	084	6250.00 Hz	001	Bx	Metronix_Coil-----TYPE-006_LF	408
			002	By	Metronix_Coil-----TYPE-006_LF	400
			003	Bz	Metronix_Coil-----TYPE-010_LF	015
	089		004	Ex	TelluricElectrode-TYPE-AgAgCl	000
			005	Ey	TelluricElectrode-TYPE-AgAgCl	000

Site 0035

Run: 001

Recording Period 14 Feb 2019 (45) 13:53:58 - 14 Feb 2019 (45) 14:19:11 (6min 2.00s + 19min 11.10s once - continuous) 14 Feb 2019 (45) 14:20:16 - 16 Feb 2019 (47) 10:33:48 (continuous 1h) 16 Feb 2019 (47) 10:34:12 - 17 Feb 2019 (48) 09:05:43 (continuous 1h)						
Logger (SPAM4)	**SBx (CASTLE)**	**Sampling Frequency**	**Channel Nr.**	**Name**	**Sensor Type**	**Sensor Number**
058	086	625.00 Hz	001	Bx	Metronix_Coil-----TYPE-006_LF	418
			002	By	Metronix_Coil-----TYPE-006_LF	133
			003	Bz	Metronix_Coil-----TYPE-010_LF	017
	081		004	Ex	TelluricElectrode-TYPE-AgAgCl	000
			005	Ey	TelluricElectrode-TYPE-AgAgCl	000

Recording Period 14 Feb 2019 (45) 14:00:00 - 17 Feb 2019 (48) 08:09:59 (For 10min every 2h)						
Logger (SPAM4)	**SBx (CASTLE)**	**Sampling Frequency**	**Channel Nr.**	**Name**	**Sensor Type**	**Sensor Number**
058	086	6250.00 Hz	001	Bx	Metronix_Coil-----TYPE-006_LF	418
			002	By	Metronix_Coil-----TYPE-006_LF	133
			003	Bz	Metronix_Coil-----TYPE-010_LF	017
	081		004	Ex	TelluricElectrode-TYPE-AgAgCl	000
			005	Ey	TelluricElectrode-TYPE-AgAgCl	000