Table S1. Supplementary information on the equipment used for the various methods.

Method	Description of equipment	Comments on method uncertainty
Magnetic measurements	GEM GSMV-19	Absolute accuracy of instrument is of the order of +/-0.1nT (*http://www.gemsys.ca/pdf/GSM-19-Overhauser.pdf*). However, at the Linköping site, uncertainty in the measurements is likely to be larger due to survey noise. This could include the effect of manmade metallic objects which has not been fully removed from the data or inaccuracies in the diurnal correction etc.
Ground VLF measurements	GEM GSMV-19	Instrument resolution of 0.1% of the total field (http://www.gemsys.ca/pdf/GSM-19-Overhauser.pdf). Efforts were made to remove noise from the data due to manmade sources (such as power lines, electric fences, and metallic objects). However, in places the uncertainty will be larger in the data because of these noise sources.
Ground magnetic susceptibility measurements	SM-20 susceptibility meter	Sensitivity of 10-6 SI units. To obtain a representative measurement, at least 10 measurements were made at different points on each outcrop location where susceptibility was measured. (http://www.gfinstruments.cz/index.php?menu=gi&cont=sm_ov)
Ground gamma ray spectrometer measurements	RS-125/230	Measurements taken using the ASSAY mode with a measurement interval of 300s. Three measurements were made on different parts of the outcrop, when making measurements. Instrument calibrated on a yearly basis. For further details on accuracy and uncertainty see (https://www.aseg.org.au/sites/default/files/RS-125%20RS-230_User_Manual%20%28GR%29.pdf)
Lab Thermal conductivity measurements	Thermal conductivity scanner (Lippmann and Rauen GbR)	Accuracy of thermal conductivity measurements (3%). Accuracy of thermal diffusivity measurements (5%). For more information see (http://www.geophysik-dr-rauen.de/tcscan/)
Lab magnetic susceptibility measurements	GTK K4/GSF-93	standard deviation of measurements about 5kg/m3
Lab density measurements	Water and precision scale (FX-3200)	standard deviation of measurements about 20x10-6 SI
Drone photography	Mavic 2 pro	20-megapixel hasselblad camera used to capture images. Accuracy of GPS positioning during flight +/- about 5m. Positions of orthographic images were re-positioned in GIS software after generation, if required.
Wireline logging	<u>Probes and data acquisition systems manufactured by Robertsson Geologging</u> <u>Focused electric /guard log) probe</u> Specification: Diameter:42 mm Length: 2.82 m Weight: 8 kg Max. temperature: 70 ºC Max. pressure: 3000 psi / 20 MPa Guard Log sense electrode: 10 cms Guard electrodes: 2 x 1 m Current drive: 200 Hz bi-directional Current return: Cable armour	The uncertainty of the geophysical logs is essentially related to the borehole conditions. Significantly larger borehole diameter will render a suppressed and smoothened signal for most logs. The resolution is also affected by the logging speed. The resolution of the Caliper log is +/- 6mm. The Linköping boreholes did not show any significant poor borehole condition that decreases the quality according to the prerequisites given for the various probes.

	Voltage reference: Surface earth stake (fish) Measurement range: 1 to 10,000 ohm-m Natural-gamma detector: 50 mm x 25 mm NaI(Tl) scintillation crystal <u>3-arm Caliper with Natural Gamma ray</u> Specification: Diameter: 38 mm Length: 2.39 m (two sections) Weight:9.2 kg Range:40-300 mm/1.6-12" (40-710mm/1.6-28" with extension arms) Max. temperature: 70 ºC Max. pressure: 3000 psi / 20MPa Accuracy: +/-6mm Natural-gamma detector: 50 mm x 25 mm NaI (Tl) scintillation crystal <u>Electrical log probe</u> • <u>16" Normal Resistivity</u> • <u>64" Normal Resistivity</u> • <u>Single Point Resistivity</u> • <u>Self Potential</u> • <u>Natural Gamma</u> • <u>Temperature</u> Specification: Diameter:44mm Length: 2775 mm Weight: 11 kg Temperature Rating:125 ºC Max Pressure Rating: 5000 psi <u>Borehole Acoustic Televiewer probe</u> Specification: Sonde Diameter 42mm Length: 1.62m (2.06m with natural-gamma option) Transducer type: 1.5MHz piezo-composite Rotation rate: 5 – 20rev/s Sample rate: up to 360/rev Length: 1.62 m Weight: Temperature Rating 70c Max Pressure Rating - 20Mpa	Repeated sections were run to check that the values are repetitive
Distributed temperature measurements with optical fiber	<u>Logger:</u> Type: HALO DTS, 2 channels Manufacturer: Sensornet https://www.sensornet.co.uk/wp-content/uploads/2020/07/Halo-DTS-data-sheet-v3.pdf <u>Cable</u>: Type: Brussens MMF 50/125 4F LLK-BSTE 85°C 3.8 mm (i.e. a fiber optic cable, type 50/125, having four graded index multimode fibers protected by a thin stainless tube with an outside diameter of 3.8 mm)	The uncertainty of this type is installation dependent and depends on aspects such as integration time, integration length as well as location of the cable section to be measured. Other systematic aspects such as presence of fiber splices (welding points) are also of influence. So called single ended (the laser pulses are sent in one direction along the fiber) measurements and calibration with the help of external reference points were performed in the tests presented in this paper. More about this type of calibration can be found in: *Hausner, M.B.; Suárez, F.; Glander, K.E.; Giesen, N.v.d.; Selker, J.S.; Tyler, S.W. Calibrating Single-Ended Fiber-Optic Raman Spectra Distributed*

		Temperature Sensing Data. Sensors 2011, 11, 10859-10879. https://doi.org/10.3390/s111110859 For this specific test, the authors estimate an absolute temperature uncertainty of ±0.5 K
DTRT	Besides the DTS equipment described in the row above in this table, in situ thermal conductivity tests have used a mechanical (propeller) flow meter of type LTFM-15-304-P-D-T and PT1000 temperature sensors. A complete documentation of each of these can be found in section 4.1 in http://kth.diva-portal.org/smash/get/diva2:1197907/FULLTEXT01.pdf	Thermal conductivity in each borehole section. The temperature difference between the fluid and the undisturbed ground was calculated as a function of time using the infinite line source model. The squared error between calculated and measured values is minimized by the value of thermal conductivity and borehole resistance, at each depth. The calculations were conducted using the temperature measurement along the downward flow shank of the borehole heat exchanger, which limits the possibility of measuring with accuracy the injected power at each section. An accurate uncertainty analysis has not been done in this case, but the thermal conductivity measurement uncertainty is from experience estimated to range between 5-15%. Full description of the DTRT method used in this type of work where more insights into measurement errors are given can be found at: (Acuna, 2013) http://kth.diva-portal.org/smash/get/diva2:602905/FULLTEXT01.pdf (Witte, 2012) http://www.groenholland.nl/download/INNOS-U08_TRTERROR_FULL.pdf) (IEA ECES ANNEX 21 Thermal Response Test FINAL REPORT, November 2013 https://iea-eces.org/wp-content/uploads/public/IEA_ECES_ANNEX_21_FINAL_REPORT.pdf)

Table S2. Mean, minimum and maximum values for each of the lab based TCS measurements performed on samples from the Distorp area. The sampling locations are given in the SWEREF99 TM coordinate system.

			TC (W/mK)			Position (SWEREF99 TM)	
Observation ID	**Measurement**	**Rock type**	**mean**	**min**	**max**	**X (m)**	**Y (m)**
DSR200001A	1	Granite	3.668	3.182	4.407	539672	6479045
DSR200001A	2	Granite	3.583	3.124	4.372	539672	6479045
DSR200003A	1	Granite	3.405	2.752	4.121	539722	6478327
DSR200003A	2	Granite	3.338	2.742	3.928	539722	6478327
DSR200007A	1	Granite	2.401	2.101	2.658	537100	6479320
DSR200007A	2	Granite	2.441	2.284	2.639	537100	6479320
DSR200008A	1	Granite	2.483	2.228	2.745	537002	6479953
DSR200008A	2	Granite	2.54	2.389	2.691	537002	6479953
mer19002	1	Granite	3.50	3.07	3.90	539726	6478343
mer19004	1	Granite	3.29	3.06	3.55	539159	6478578

mer19009	1	Granite	3.23	3.05	3.46	539532	6478573
mer19015	1	Granite	3.30	3.07	3.49	539666	6479047
mer19019	1	Granite	2.82	2.63	2.99	538116	6478717
mer19021	1	Granite	3.10	2.85	3.52	538340	6478954
DSR200005A	1	Gabbro	2.233	2	2.563	539760	6478200
DSR200005A	2	Gabbro	2.5	2.251	3.003	539760	6478200
DSR200006B	1	Granodiorite	2.283	2.035	2.653	538806	6478144
DSR200006B	2	Granodiorite	2.198	2.076	2.437	538806	6478144
mer19001	1	Gabbro	2.28	2.04	2.48	539752	6478191
mer19003	1	Gabbro	2.83	2.62	3.21	538364	6478397
mer19020	1	Gabbro	2.85	2.68	3.11	538042	6478733
mer19022	1	Gabbro	2.17	2.04	2.34	538802	6478150
dsr191001	1	Gabbro	2.44	2.18	2.85	539611	6477781

Table S3. Calculated thermal conductivity based on the modal analyses of the mineral composition, primarily the quartz content, on rock samples of various typical rock types within five-kilometer radius from the Distorp site. (Data from the Geological Survey of Sweden,https://www.sgu.se/en/products/customer-services).

Rock type	N (Sweref99)	E (Sweref 99)	Quartz content, %	Thermal conductivity, W/mK
Felsic metavolcanite	6475028	544182	33	3.7
Felsic metavolcanite	6481399	541699	25	3.2
Felsic metavolcanite	6477806	543740	24	3.2
Felsic metavolcanite	6477806	543745	21	3
Felsic metavolcanite	6477822	544586	19	3.5
Felsic metavolcanite	6481948	543059	15	2.7
Gneiss	6482788	541826	36	3.6
Gneiss	6478039	543987	33	3.5
Granite	6483774	545183	20	2.8
Granite	6480878	543168	19	2.9
Granite	6477028	534526	34.5	3.6
Granite	6478703	543056	34.5	3.5
Granite	6475398	544933	33.5	3.4
Granite	6476981	537010	31.5	3.4
Granite	6476668	539874	30.5	3.4
Granite	6477289	537607	29.5	3.4
Granite	6480472	540860	29	3.6
Granite	6481564	543951	28	3.3
Granite	6477506	545672	28	3.6
Granite	6475734	544208	27	3.2
Granite	6481014	545540	27	3.3
Granite	6479227	537256	26	3.2
Granite	6482119	542697	25	3.1
Monzogranite	6479620	543665	34	3.6
Metamafic rock	6483201	540824	4	2.4
Metamafic rock	6478553	540831	2	2.4
Metamafic rock	6478548	540831	1	2.5
Metamafic rock	6477355	541457	<1	2.6
Metamafic rock	6478708	541880	<1	2.6
Metamafic rock	6476461	542416	<1	2.6
Metamafic rock	6478718	541880	<1	2.8
Metamafic rock	6476970	542258	<1	2.7
Monzodiorite	6481703	544645	14	2.8
Monzodiorite	6480975	545156	8	2.6
Monzodiorite	6480569	545150	8	2.7

Table S4. Individual measurements from the gamma spectrometer for the different rock types in the Distorp area. The sampling locations are given in the SWEREF99 TM coordinate system.

Observation name	Measurement number	Potassium (%)	Uranium (ppm)	Thorium (ppm)	X (m) SWEREF99 TM	Y (m) SWEREF99 TM	Rock type
DSR200001	1	3.7	14.4	26.1	539672	6479045	Granite
DSR200001	2	4.4	13.7	19.2	539672	6479045	Granite
DSR200001	3	4.3	11.1	22.1	539672	6479045	Granite
DSR200002	1	4.1	5.6	13.2	539727	6478692	Granite
DSR200002	2	3.9	6.2	11.3	539727	6478692	Granite
DSR200002	3	3.7	9.0	14.8	539727	6478692	Granite
DSR200003	1	4.0	10.6	19.0	539722	6478327	Granite
DSR200003	2	3.6	11.0	20.3	539722	6478327	Granite
DSR200003	3	3.8	6.7	19.9	539722	6478327	Granite
DSR200004	1	3.3	2.6	12.0	539160	6478523	Granite
DSR200004	2	3.5	4.6	11.5	539160	6478523	Granite
DSR200004	3	3.1	3.2	12.7	539160	6478523	Granite
DSR200005	1	2.0	2.7	4.0	539760	6478200	Gabbro
DSR200005	2	1.7	1.8	4.5	539760	6478200	Gabbro
DSR200005	3	2.4	0.9	3.5	539760	6478200	Gabbro
DSR200006	1	4.7	2.1	19.4	538806	6478144	Granite
DSR200006	2	4.5	8.0	18.6	538806	6478144	Granite
DSR200006	3	4.6	6.9	22.8	538806	6478144	Granite
DSR200006	1	2.1	3.4	8.7	538806	6478144	Granodiorite
DSR200006	2	1.9	3.5	8.2	538806	6478144	Granodiorite
DSR200006	3	3.4	3.4	8.5	538806	6478144	Granodiorite
DSR200007	1	5.7	7.4	37.9	537100	6479320	Granite
DSR200007	2	6.6	11.7	40.8	537100	6479320	Granite
DSR200007	3	4.5	4.8	24.2	537100	6479320	Granite
DSR200008	1	3.0	2.8	15.5	537002	6479953	Granite
DSR200008	2	2.5	2.7	9.5	537002	6479953	Granite
DSR200008	3	2.3	3.3	9.9	537002	6479953	Granite