Supporting Information for "Local magnetic anomalies explain bias in paleomagnetic data: consequences for sampling"

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Introduction The supporting information includes a paleomagnetic data set of declination and inclination (Supp. Table S1) and intensity records (Supp. Table S2) from lava flows of Mt. Etna, Italy, emplaced after 1850CE reported by various previous studies. Supp. Tables S3 to S7 provide detailed information about the AnomalyMapper measurement sites and the (median) results. Supp. Table S8 gives the Pearson's correlation coefficients between the topography and declination, inclination and intensity measurements for each site and each path. The GPS locations of the AnomalyMapper paths are shown in Supp. Fig. S1 and the median and standard deviation for each of the paths is in Supp. Fig. S2. All measurements of site FLUX1 to FLUX5 for each path at different heights above the surface of the lava flow are shown in Supp. Fig. S3 - S16.

Supplementary Tables.

Supplementary Table S1: Declination and inclination results of previous studies. For each site, the age of the flow is given and if known the GPS location, elevation (Elv) number of samples (N), declination (°), inclination (°), precision parameter (k), 95 percent confidence interval $\alpha95$, method used (thermal or alternating field demagnetization, Th/AF). All used a sun compass for orientation in the field.

Paper	Age	Lat (N)	Long (E)	Elv (m)	N	Dec (°)	Inc (°)	k	a95	Th/Af
Tanguy et al. 1985, 1999	1910				11	-6.9	50.7	760	1.5	AF
Tanguy et al. 1985, 1999	1865				18	-9.5	51.9	583	1.4	AF
Rolph et al. 1986, 1987	1853				5	-9.8	55.7		2.5	AF
Rolph et al. 1986, 1987	1865				5	-12.5	52		3.5	AF
Rolph et al. 1986, 1987	1886				5	-9	49.8		0.9	AF
Rolph et al. 1986, 1987	1892				5	-6.2	50.5		4.3	AF
Rolph et al. 1986, 1987	1910				5	-4.2	50.7		2.5	AF
Rolph et al. 1986, 1987	1911				5	0.7	52.3		3.8	AF
Rolph et al. 1986, 1987	1923				5	-2.8	50.9		3.2	AF
Rolph et al. 1986, 1987	1947				5	0.2	49.8		3.4	AF
Rolph et al. 1986, 1987	1950				5	-1	49.3		3.5	AF
Rolph et al. 1986, 1987	1971				5	-4.1	51.1		3.5	AF
Rolph et al. 1986, 1987	1979				5	1.9	48		3.2	AF
Rolph et al. 1986, 1987	1981				5	-0.2	45.6		2.6	AF
Rolph et al. 1997	1971	37.747	15.099	1015	19	-0.2	51.1	163.7	2.6	AF
Calvo et al. 2002	1910	37.648	14.992	1034	9	-1.6	50.1	36.7	8.6	AF
Calvo et al. 2002	1910	37.648	14.992	1034	9	5.2	49.5	19	12.1	AF
Calvo et al. 2002	1910	37.648	14.992	1034	22	-7.2	49.2	80.1	3.5	AF
Calvo et al. 2002	1928	37.763	15.124	852	22	0.4	49.7	157.1	2.5	AF
Calvo et al. 2002	1928	37.763	15.124	852	51	1.7	49.2	49.9	2.9	AF
Calvo et al. 2002	1928	37.762	15.164	- 852	35	-2.5	50.6	436	1.2	AF
Incoronato et al. 2002	1886	37.62	15.01	906	10	-11.5	51.7	467.9	2.2	Th
Incoronato et al. 2002	1910	37.63	15.00	890	7	-8.1	51.6	481.6	2.8	Th
Incoronato et al. 2002	1983	37.67	14.99	1296	10	-1.1	49	594.6	2.5	Th
Tanguy et al. 2003	1910				10	-7.5	51.3	1070	1.35	AF
Tanguy et al. 2003	1865				14	-10	51.5	824	1.3	AF

Supplementary Table S2: Intensity results of previous studies. If known the following parameters are given: the site, age of the flow, GPS location, elevation (Elv) distance to the top (Top) and bottom (Base) of the flow, number of samples (N), paleointensity measured (PI), standard deviation (s.d.), method used. CONV: conventional Coe-modified Thellier protocol, AFD: identical as CONV but with a single AF demagnetisation treatment to a peak field of 5mT, QP: quasi-perpendicular single-heating approach.

Paper	Site	Age	Lat (N)	Long (E)	Elv (m)	Top	Base	N	PI (μT)	s.d.	Method
Rolph et al. 1986, 1987		1853						5	47.7	4.4	Shaw
Rolph et al. 1986, 1987		1879						5	41.3	1.8	Shaw
Rolph et al. 1986, 1987		1886						5	43	2.9	Shaw
Rolph et al. 1986, 1987		1923						5	48.2	5.8	Shaw
Rolph et al. 1986, 1987		1928						5	44.0	11.6	Shaw
Rolph et al. 1986, 1987		1942						5	45.4	5.5	Shaw
Rolph et al. 1986, 1987		1947						5	38.5	5.7	Shaw
Rolph et al. 1986, 1987		1949						5	40.1	1.5	Shaw
Rolph et al. 1986, 1987		1950						5	42.6	3.8	Shaw
Rolph et al. 1986, 1987		1964						5	39.4	1.6	Shaw
Rolph et al. 1986, 1987		1974						5	40.2	4.3	Shaw
Rolph et al. 1986, 1987		1981						5	43.5	2.5	Shaw
Rolph et al. 1986, 1987		1983						5	41.9	2.4	Shaw
Rolph et al. 1997		1971	37.747	15.099	1015			19	39.2	9	Shaw
Sherwood, 1991		1879						10	37.3	5.3	MSP
Sherwood, 1991		1886						10	46.9	0.9	MSP
Sherwood, 1991		1911						10	44.0	0.9	MSP
Sherwood, 1991		1928						10	39.2	0.3	MSP
Sherwood, 1991		1983						10	40.6	1.6	MSP
Hill and Shaw, 1999	1853-1	1853						3	32.0	3.4	Microwave
Hill and Shaw, 1999	1886-5	1886						2	34.0	4.3	Microwave
Hill and Shaw, 1999	1892-5	1892						3	36.2	3.1	Microwave
Hill and Shaw, 1999	1911-3	1911						2	37	4.5	Microwave
Hill and Shaw, 1999	1911-7	1911						3	40.5	0.6	Microwave
Hill and Shaw, 1999	1923-4	1923						2	28.7	4.4	Microwave
Hill and Shaw, 1999	1923-8	1923						3	47.3	0.6	Microwave
Hill and Shaw, 1999	1947-1	1947						3	43.2	0.7	Microwave
Hill and Shaw, 1999	1947-3	1947						2	47.6	4.8	Microwave
Hill and Shaw, 1999	1950-11	1950						2	30.7	1.2	Microwave
Hill and Shaw, 1999	1950-12	1950						3	37.6	3.5	Microwave
Hill and Shaw, 1999	1971-9	1971						2	39.8	10.6	Microwave
Hill and Shaw, 1999	1983-10	1983						3	69.1	2.8	Microwave
Hill and Shaw, 1999	1983-2	1983						2	31.2	9.3	Microwave

Paper	Site	Age	Lat (N)	Long (E)	Elv (m)	Top	Base	N	PI (μT)	s.d.	Method
Calvo et al. 2002		1928	37.763	15.124	852			6	52.1	6.7	Thellier
Biggin et al. 2007		1979						2	40.9	5.5	CONV
Biggin et al. 2007		1950						1	55.1	-	CONV
Biggin et al. 2007		1983						7	40.8	14.46	AFD
Biggin et al. 2007		1979						5	40.5	2.53	AFD
Biggin et al. 2007		1950						2	42.5	1.55	AFD
Biggin et al. 2007		1983						22	40.4	7.19	QP
Biggin et al. 2007		1979						19	37.2	4.41	QP
Biggin et al. 2007		1950						9	39.1	8.56	QP
De Groot et al. 2012	23-2	1923	37.854	15.114	640			5	29.5	25.2-33.2	MSP-DB
De Groot et al. 2012	23-2	1923	37.854	15.114	640			5	24.3	9.8-32.2	MSP-DSC
De Groot et al. 2012	71-3C	1971	37.753	15.087	1193			15	31.2	28.2-34.1	MSP-DB
De Groot et al. 2012	71-3C	1971	37.753	15.087	1193			15	25.8	22.4-29.0	MSP-DSC
De Groot et al. 2012	79-1	1979	37.741	15.099	970			18	32.4	30.3-34.5	MSP-DB
De Groot et al. 2012	79-1	1979	37.741	15.099	970			5	30.6	12.9-40.5	MSP-DSC
De Groot et al. 2012	83-4A	1983	37.695	14.991	1832			16	34.3	26.5-44.2	MSP-DB
De Groot et al. 2012	83-4A	1983	37.695	14.991	1832			16	28.5	21.0-36.4	MSP-DSC
De Groot et al. 2013	23-1A	1923	37.845	15.018	1115	0.25	1.35	7	28.3	2.4	Thellier
De Groot et al. 2013	23-1B	1923	37.845	15.018	1115	0.93	0.68	15	30.3	26.3-33.7	MSP-DB
De Groot et al. 2013	23-1B	1923	37.845	15.018	1115	0.93	0.68	5	26.0	20.6-30.3	MSP-DSC
De Groot et al. 2013	23-1C	1923	37.845	15.018	1115	1.5	0.2	6	27.2	3	Thellier
De Groot et al. 2013	23-1C	1923	37.845	15.018	1115	1.5	0.2	11	33.4	24.8-41	MSP-DB(air)
De Groot et al. 2013	23-1C	1923	37.845	15.018	1115	1.5	0.2	11	36.9	29.7-44.6	MSP-DB(argon)
De Groot et al. 2013	23-2	1923	37.854	15.114	640	0.95	0.65	8	45.9	6.9	Thellier
De Groot et al. 2013	71-1	1971	37.752	15.087	1186	0.5	1.2	8	32.3	4.3	Thellier
De Groot et al. 2013	71-1	1971	37.752	15.087	1186	0.5	1.2	23	32.7	30-35.1	MSP-DB
De Groot et al. 2013	71-1	1971	37.752	15.087	1186	0.5	1.2	18	28.3	23.9-31.9	MSP-DB 160°C
De Groot et al. 2013	71-1	1971	37.752	15.087	1186	0.5	1.2	5	28.8	1.5-40.5	MSP-DSC
De Groot et al. 2013	71-2A	1971	37.748	15.099	1015	0.33	1.22	8	38.8	5.2	Thellier
De Groot et al. 2013	71-2A	1971	37.748	15.099	1015	0.33	1.22	18	29.8	26.7-32.6	MSP-DB
De Groot et al. 2013	71-2A	1971	37.748	15.099	1015	0.33	1.22	5	24.9	19.6-28.9	MSP-DSC

Paper	Site	Age	Lat (N)	Long (E)	Elv (m)	Top	Base	N	PI (μT)	s.d.	Method
De Groot et al. 2013	71-2B	1971	37.748	15.099	1015	0.8	0.72	8	37.7	3.9	Thellier
De Groot et al. 2013	71-2B	1971	37.748	15.099	1015	0.8	0.72	10	35.3	30.8-40.2	MSP-DB
De Groot et al. 2013	71-2B	1971	37.748	15.099	1015	0.8	0.72	12	38.0	31.2-45	MSP-DB(argon)
De Groot et al. 2013	71-2C	1971	37.748	15.099	1015	1.25	0.09	9	35.4	3	Thellier
De Groot et al. 2013	71-3A	1971	37.753	15.087	1193	0.95	0.1	9	29.2	3	Thellier
De Groot et al. 2013	71-3B	1971	37.753	15.087	1193	0.5	0.55	8	34.0	3.5	Thellier
De Groot et al. 2013	71-3C	1971	37.753	15.087	1193	0.15	0.55	9	24.1	2.1	Thellier
De Groot et al. 2013	71-3C	1971	37.753	15.087	1193	0.15	0.55	20	29.2	27.2-31.2	MSP-DB
De Groot et al. 2013	79-1A	1979	37.741	15.099	970	0.15	1.4	6	17.5	1.7	Thellier
De Groot et al. 2013	79-1B	1979	37.741	15.099	970	0.75	0.75	8	30.0	2.4	Thellier
De Groot et al. 2013	79-1C	1979	37.741	15.099	970	1.4	0.1	9	33.2	2.8	Thellier
De Groot et al. 2013	83-1B	1983	37.676	14.982	1472	0.45	1.35	15	27	24.2-31.5	MSP-fast
De Groot et al. 2013	83-1B	1983	37.676	14.982	1472	0.45	1.35	7	25.4	15.9-31.8	MSP-slow
De Groot et al. 2013	83-1C	1983	37.676	14.982	1472	0.9	0.9	9	29.1	27.1-31.5	MSP-fast
De Groot et al. 2013	83-1C	1983	37.676	14.982	1472	0.9	0.9	7	25.4	15.9-31.8	MSP-slow
De Groot et al. 2013	83-1D	1983	37.676	14.982	1472	1.33	0.47	15	29.1	26.4-32	MSP-fast
De Groot et al. 2013	83-1D	1983	37.676	14.982	1472	1.33	0.47	9	25.6	13.5-32.6	MSP-slow
De Groot et al. 2013	83-1E	1983	37.676	14.982	1472	1.68	0.12	15	24.4	22-26.8	MSP-fast
De Groot et al. 2013	83-1E	1983	37.676	14.982	1472	1.68	0.12	7	18.5	0.9-27.4	MSP-slow
De Groot et al, 2013	83-2	1983	37.676	14.982	1472			9	28.3	4.7	Thellier
De Groot et al, 2013	83-3	1983	37.845	15.081	864			7	35.3	8.3	Thellier
De Groot et al, 2013	83-3	1983	37.845	15.081	864			23	35.0	30.6-37.4	MSP-DB
De Groot et al, 2013	83-3	1983	37.845	15.081	864			18	27.9	24.4-31	MSP-DB
De Groot et al, 2013	83-3	1983	37.845	15.081	864			5	25.2	0-42.2	MSP-DSC

Paper	Site	Age	Lat (N)	Long (E)	Elv (m)	Top	Base	N	PI (μT)	s.d.	Method
De Groot et al, 2013	83-4A	1983	37.695	14.991	1832	1.6	0.15	7	25.6	5.3	Thellier
De Groot et al, 2013	83-4A	1983	37.695	14.991	1832	1.6	0.15	20	25.7	18.4-32.5	MSP-DB
De Groot et al, 2013	83-4B	1983	37.695	14.991	1832	1.1	0.95	7	27.0	7.7	Thellier
De Groot et al, 2013	83-4B	1983	37.695	14.991	1832	1.1	0.95	12	30.8	26.3-35	MSP-DB
De Groot et al, 2013	83-4C	1983	37.695	14.991	1832	0.28	1.2	6	15.3	1.8	Thellier
De Groot et al, 2013	83-5	1983	37.695	14.991	1832	0.26	0.25	6	15.5	2.4	Thellier
De Groot et al, 2013	83-6	1983	37.688	14.987	1667	0.9	-	6	15.5	2.4	Thellier
De Groot et al, 2013	83-6	1983	37.688	14.987	1667	0.9	-	15	30.6	26.3-34.3	MSP-DB
De Groot et al, 2013	83-6	1983	37.688	14.987	1667	0.9		5	20.2	0-36	MSP-DSC
De Groot et al, 2013	02-1C	2002	37.796	15.062	1541	1.8	0.2	7	42.8	5.3	Thellier
De Groot et al, 2013	02-1C	2002	37.796	15.062	1541	1.8	0.2	5	27.2	0-43.9	MSP-DB
De Groot et al, 2013	02-1C	2002	37.796	15.062	1541	1.8	0.2	5	24.5	0-37.9	MSP-DSC
De Groot et al, 2013	02-2	2002	37.795	15.057	1603	1.3	-	8	31.0	3.7	Thellier
De Groot et al, 2013	02-2	2002	37.795	15.057	1603	1.3	-	10	29.8	23.8-34.7	MSP-DB
De Groot et al, 2013	02-2	2002	37.795	15.057	1603	1.3	-	5	26.8	18.7-32.7	MSP-DSC

Supplementary Table S3: Details of AnomalyMapper measurements

Site	Age	Pmag site	Path	Length (m)	Topography (m)	Heights (cm)	N measurements
FLUX1	1892	-	1	65	1620-1627	100 & 180	78
			2	54	1618-1624	100 & 180	54
			3	60	1615-1619	100 & 180	72
FLUX2	1983	ET12	1	69	1825-1830	100 & 180	60
			2	68	1830-1834	100 & 180	78
			3	64	1836-1841	100 & 180	84
FLUX3	1923	ET6	1	53	876-886	100 & 180	78
			2	58	857-865	100 & 180	110
			3	49	852-862	100 & 180	80
FLUX4	2002	ET4	1	56	1510-1523	100 & 180	76
			2	69	1537-1548	100 & 180	112
			3	71	1550-1556	100 & 180	108
FLUX5	1983	ET12	1	22	1824-1829	25, 75, 125 & 175	112
			2	26	1822-1830	25, 75, 125 & 175	120
			3	23	1821-1830	25, 75, 125 & 175	112

For each FLUX-site (Site), the age of the flow (Age) and the corresponding paleomagnetic sampling site (Pmag site) and paths (Path) are given. For each path its length (Length), the lowest and highest point in the path (Topography), the heights above the ground at which measurements were made (Heights), and the total number of measurements (N measurements) are specified.

Supplementary Table S4: AnomalyMapper measurements. Median declination (°), inclination (°) and intensity (μT) with the standard deviation per site at 100 and 180cm above the surface.

Site	Path	dec 100	dec 180	inc 100	inc 180	int 100	int 180
FLUX1	Path 1	0.03 ± 2.37	0.34 ± 1.76	53.08 ± 1.66	53.44 ± 1.38	44.62 ± 1.62	44.68 ± 1.09
	Path 2	0.76 ± 1.74	1.96 ± 1.33	54.43 ± 1.96	54.00 ± 1.53	44.56 ± 1.68	44.44 ± 1.23
	Path 3	0.83 ± 2.23	1.80 ± 1.68	54.49 ± 1.34	54.89 ± 1.05	45.28 ± 1.32	45.29 ± 0.93
FLUX2	Path 1	0.87 ± 3.96	-0.33 ± 2.61	53.27 ± 1.73	52.59 ± 1.19	44.24 ± 1.54	44.44 ± 1.02
	Path 2	1.58 ± 3.75	0.37 ± 2.23	52.82 ± 1.39	52.26 ± 0.80	43.64 ± 1.37	43.70 ± 0.99
	Path 3	0.33 ± 3.76	0.11 ± 1.33	52.40 ± 1.89	52.30 ± 1.29	44.25 ± 1.83	44.57 ± 1.33
FLUX3	Path 1	-0.97 ± 3.28	-2.69 ± 2.18	53.85 ± 1.79	53.82 ± 1.14	44.25 ± 1.22	44.21 ± 0.80
	Path 2	0.13 ± 3.41	-1.70 ± 2.66	52.06 ± 2.56	52.80 ± 1.81	44.34 ± 1.28	44.25 ± 0.99
	Path 3	-1.45 ± 3.39	-2.61 ± 2.66	52.70 ± 2.44	53.04 ± 1.79	44.59 ± 1.39	45.04 ± 1.04
FLUX4	Path 1	0.39 ± 4.92	-0.49 ± 1.13	53.38 ± 2.22	53.47 ± 1.89	43.20 ± 1.66	43.02 ± 1.25
	Path 2	-1.85 ± 5.96	-1.55 ± 1.51	51.37 ± 2.76	51.96 ± 2.04	42.98 ± 2.51	42.87 ± 1.89
	Path 3	-1.21 ± 2.69	-3.13 ± 1.86	52.38 ± 3.35	52.79 ± 2.32	43.68 ± 2.46	44.03 ± 1.90

Supplementary Table S5: AnomalyMapper measurements of FLUX5. Median declination (°), inclination (°) and intensity (μT) with the standard deviation per path at 25, 75, 125 and 175cm above the surface.

Path		Dec 25	Dec 75	Dec 125	Dec 175	Inc 25	Inc 75	Inc 125	Inc 175	Int 25	Int 75	Int 125	Int 175
Path 1	Average	3.01	1.75	2.40	1.32	51.09	51.62	52.14	52.16	43.27	43.28	43.61	43.77
	S.d.	5.22	4.36	3.55	2.96	2.43	1.61	1.33	1.23	2.74	1.99	1.43	1.15
Path 2	Average	0.52	0.37	0.95	-0.94	52.03	52.15	52.78	53.34	43.54	43.41	43.26	43.29
	S.d.	6.00	5.51	4.64	4.47	3.96	2.68	2.06	1.90	2.93	2.13	1.90	1.72
Path 3	Average	0.08	-0.02	-2.57	-2.59	52.26	52.44	53.16	53.40	44.26	44.89	44.97	45.13
	S.d.	6.39	5.97	5.35	4.57	2.56	2.55	1.45	1.27	3.10	2.82	2.53	2.12

Supplementary Table S6: Difference of the median with the IGRF-value for AnomalyMapper measurement sites FLUX1-4 and their different paths. $\widetilde{\Delta}$ declination (°), inclination (°) and intensity (μT) at 100 and 180cm above the surface.

Site	Path	$\widetilde{\Delta}$dec 100	$\widetilde{\Delta}$dec 180	$\widetilde{\Delta}$inc 100	$\widetilde{\Delta}$inc 180	$\widetilde{\Delta}$int 100	$\widetilde{\Delta}$int 180
FLUX1	Path 1	-3.30	-2.98	-0.30	0.06	-0.57	-0.51
	Path 2	-2.56	-1.37	1.04	0.62	-0.63	-0.75
	Path 3	-2.50	-1.53	1.10	1.50	0.09	0.10
FLUX2	Path 1	-2.45	-3.65	-0.12	-0.80	-0.91	-0.71
	Path 2	-1.74	-2.94	-0.57	-1.14	-1.51	-1.45
	Path 3	-2.98	-3.20	-1.00	-1.09	-0.90	-0.58
FLUX3	Path 1	-4.32	-6.03	0.25	0.22	-0.99	-1.03
	Path 2	-3.21	-5.05	-1.53	-0.79	-0.89	-0.99
	Path 3	-4.79	-5.95	-0.89	-0.55	-0.65	-0.20
FLUX4	Path 1	-2.95	-3.83	-0.15	-0.06	-2.00	-2.18
	Path 2	-5.19	-4.88	-2.16	-1.57	-2.22	-2.33
	Path 3	-4.54	-6.46	-1.15	-0.73	-1.52	-1.17

Supplementary Table S7: Difference of the median with the IGRF-value for AnomalyMapper measurement site FLUX5. Given are the Δ declination, inclination and intensity for each path (dec1 is the declination difference for path 1) at four heights above the surface.

Height	$\widetilde{\Delta \text{dec}}$ 1	$\widetilde{\Delta \text{dec}}$ 2	$\widetilde{\Delta \text{dec}}$ 3	$\widetilde{\Delta \text{inc}}$ 1	$\widetilde{\Delta \text{inc}}$ 2	$\widetilde{\Delta \text{inc}}$ 3	$\widetilde{\Delta \text{int}}$ 1	$\widetilde{\Delta \text{int}}$ 2	$\widetilde{\Delta \text{int}}$ 3
25cm	-0.30	-2.79	-3.24	-2.30	-1.36	-1.13	-1.88	-1.61	-0.89
75cm	-1.57	-2.95	-3.33	-1.77	-1.24	-0.95	-1.87	-1.74	-0.26
125cm	-0.92	-2.37	-5.88	-1.25	-0.62	-0.23	-1.54	-1.89	-0.18
175cm	-2.00	-4.25	-5.90	-1.23	-0.05	0.01	-1.38	-1.86	-0.02

Supplementary Table S8: Pearson's correlation coefficient for the fluxgate measurements. Given are the inclination, declination and intensity (Inc, Dec, Int) at 100 and 180cm height above the surface for FLUX1-4 and at 25, 75, 125 and 175cm above the surface for FLUX5.

FLUX 1	Dec100	Inc100	Int100	Dec180	Inc180	Int180
Path1	-0.1023	0.6705	0.5546	-0.1301	0.8062	0.5825
Path2	-0.3833	0.6333	0.7416	0.0223	0.1229	0.8780
Path3	0.2472	0.2807	0.4483	0.3709	0.2484	0.5161

FLUX 2	Dec100	Inc100	Int100	Dec180	Inc180	Int180
Path1	0.3859	0.6942	0.4446	0.3986	0.7188	0.5166
Path2	-0.0601	0.7551	0.4406	-0.0416	0.8108	0.5625
Path3	-0.1797	0.3319	0.6179	-0.2443	0.2713	0.7660

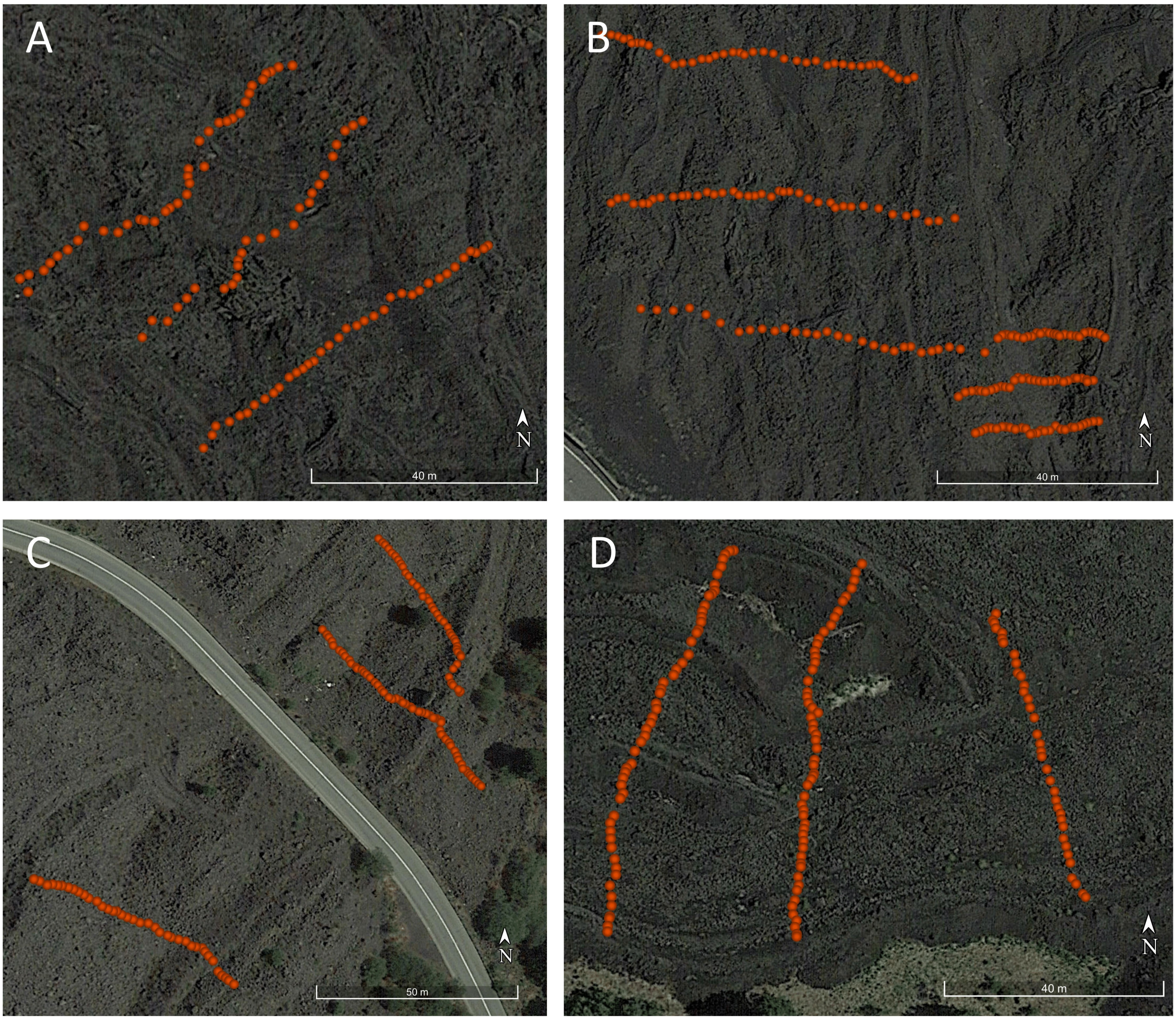
FLUX 3	Dec100	Inc100	Int100	Dec180	Inc180	Int180
Path1	-0.1015	0.6052	0.5387	-0.1609	0.7671	0.7582
Path2	0.0362	0.7405	0.2956	0.0552	0.8747	0.4281
Path3	0.3422	0.6424	-0.0150	0.3512	0.6373	-0.0860

FLUX 4	Dec100	Inc100	Int100	Dec180	Inc180	Int180
Path1	0.1069	0.5553	0.5530	-0.4833	0.5412	0.6129
Path2	0.8004	0.0810	-0.6172	0.6925	0.1697	-0.6295
Path3	-0.2765	0.5733	0.2586	-0.5143	0.7197	0.0316

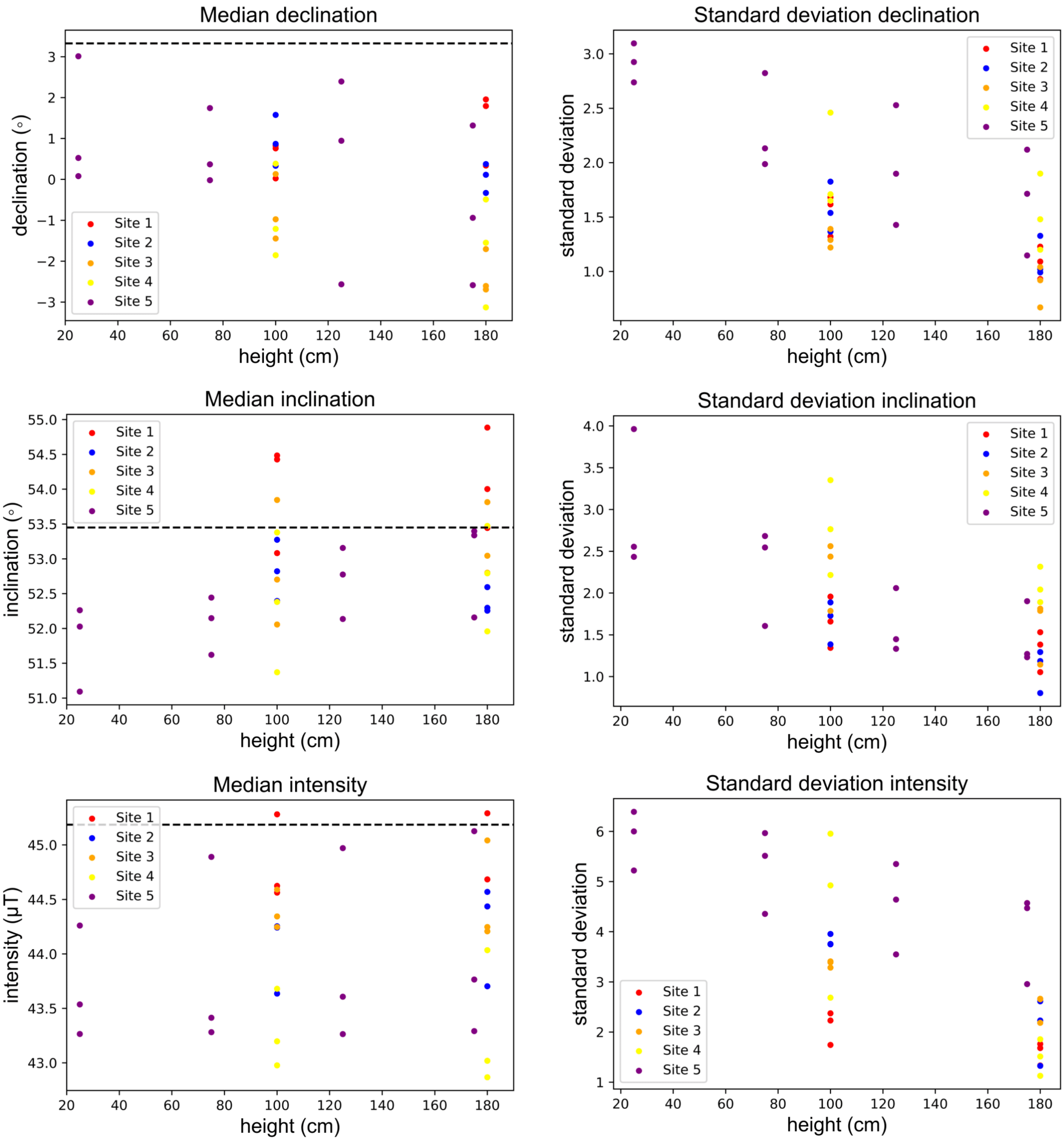
FLUX 5	Dec25	Inc25	Int25	Dec75	Inc75	Int75
Path1	-0.0567	0.7111	0.4885	-0.0108	0.8559	0.6259
Path2	-0.4028	0.8333	0.4604	-0.3791	0.9335	0.7663
Path3	-0.6067	0.5623	0.5939	-0.6385	0.4592	0.6857

FLUX 5	Dec125	Inc125	Int125	Dec175	Inc175	Int175
Path1	-0.0324	0.9356	0.6673	-0.0477	0.8601	0.6980
Path2	-0.4008	0.9646	0.8423	-0.5063	0.9633	0.8572
Path3	-0.6193	0.7923	0.7276	-0.6606	0.8252	0.7672

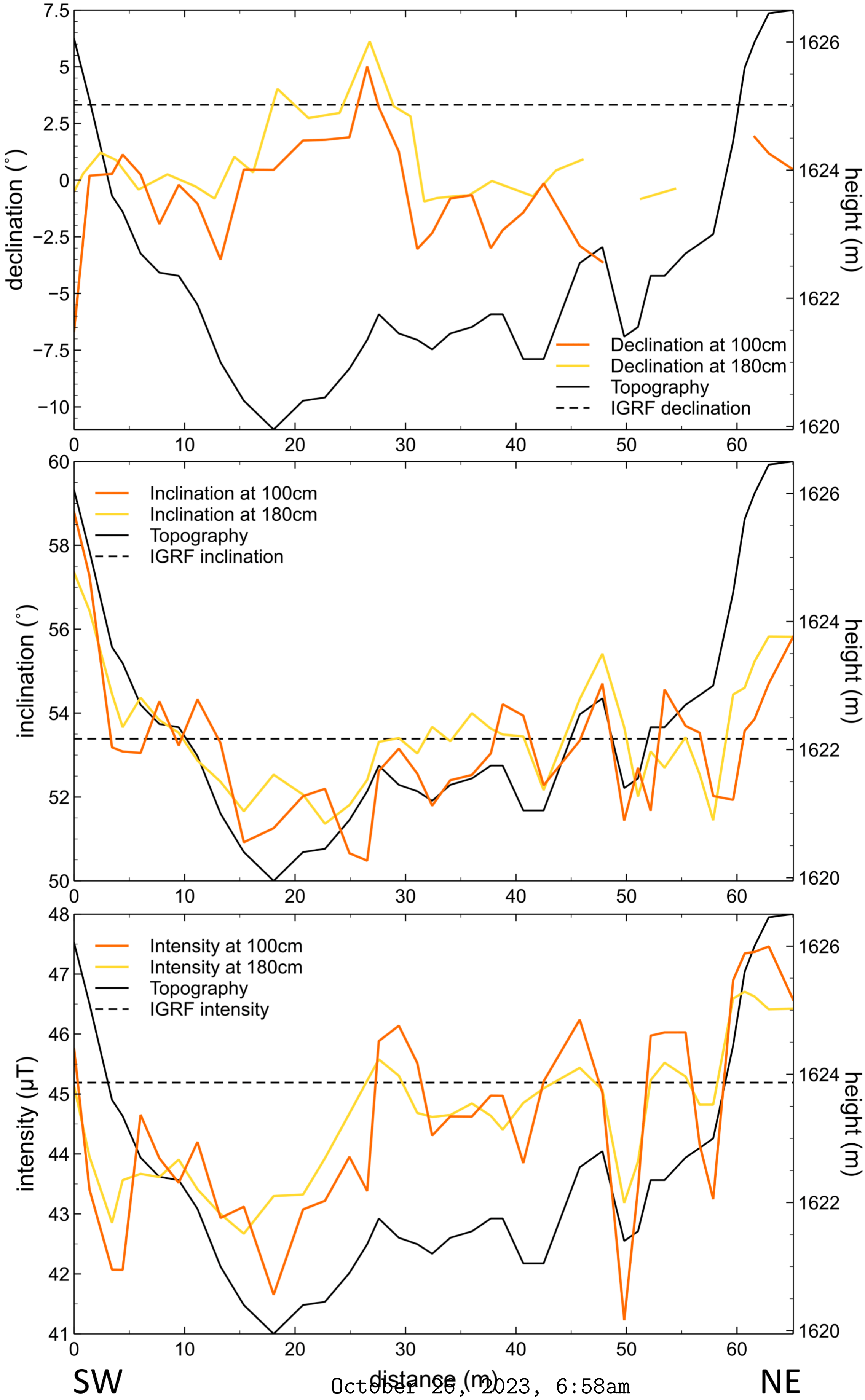
Supplementary Figures.



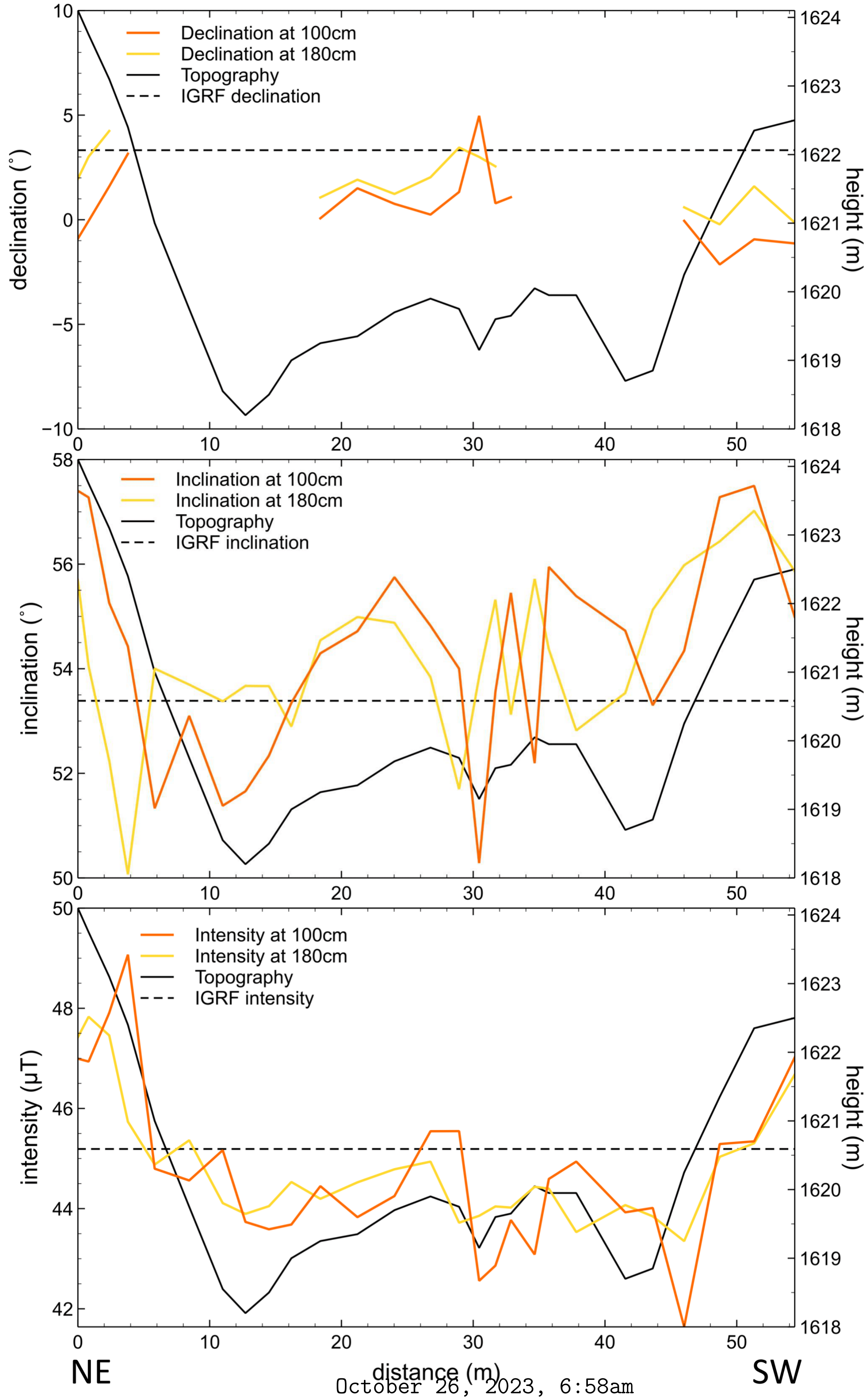
Supplementary Figure S1: Locations of the AnomalyMapper measurements for the three different paths. A) site FLUX1, B) site FLUX2 and FLUX5 (right corner), C) site FLUX3, and D) site FLUX4



Supplementary Figure S2: Median declination, inclination and intensity and their standard deviations for each site and path against the measuring height above the lava flow. Dotted line is the expected IGRF value



Supplementary Figure S3: FLUX1 path 1



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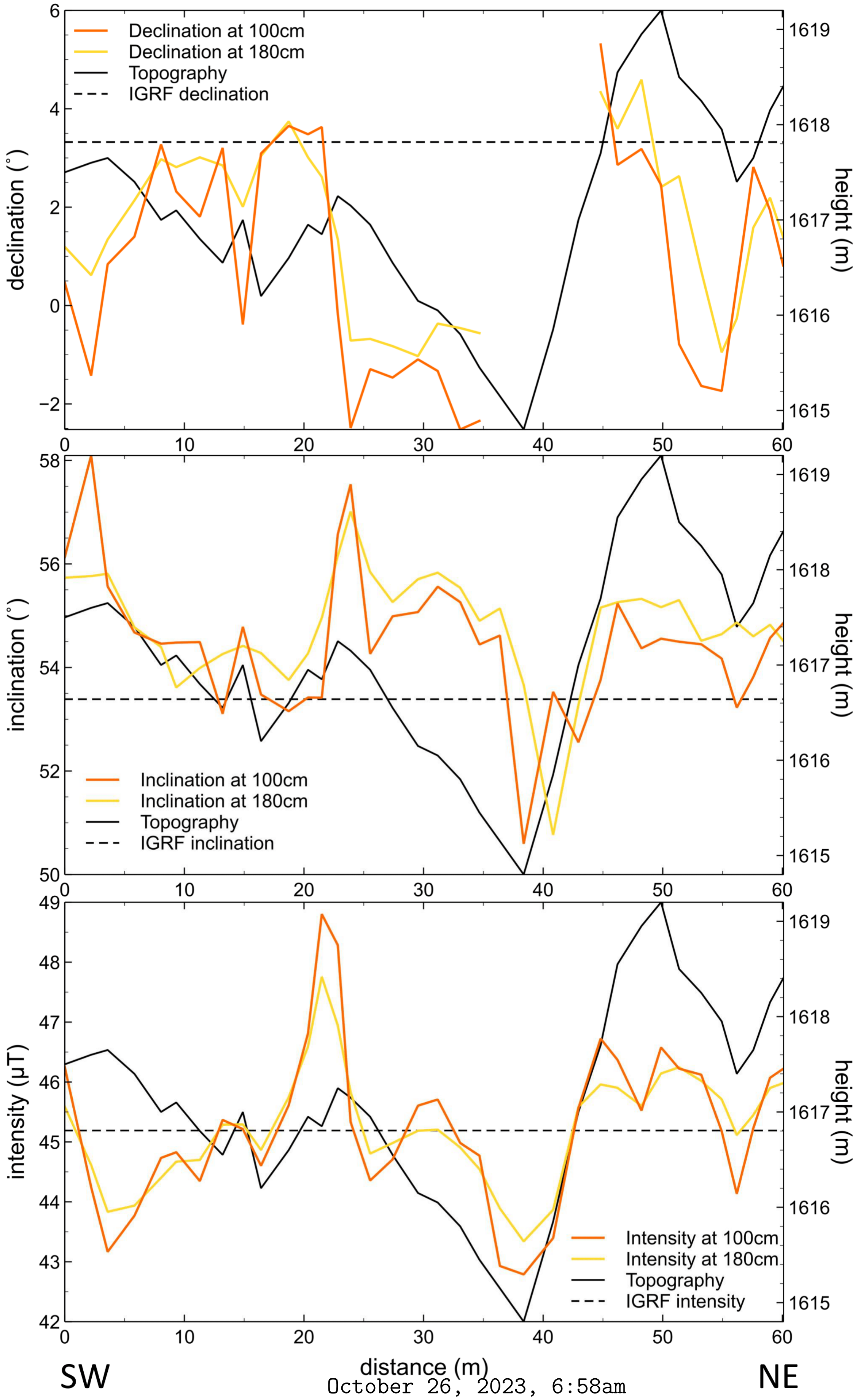
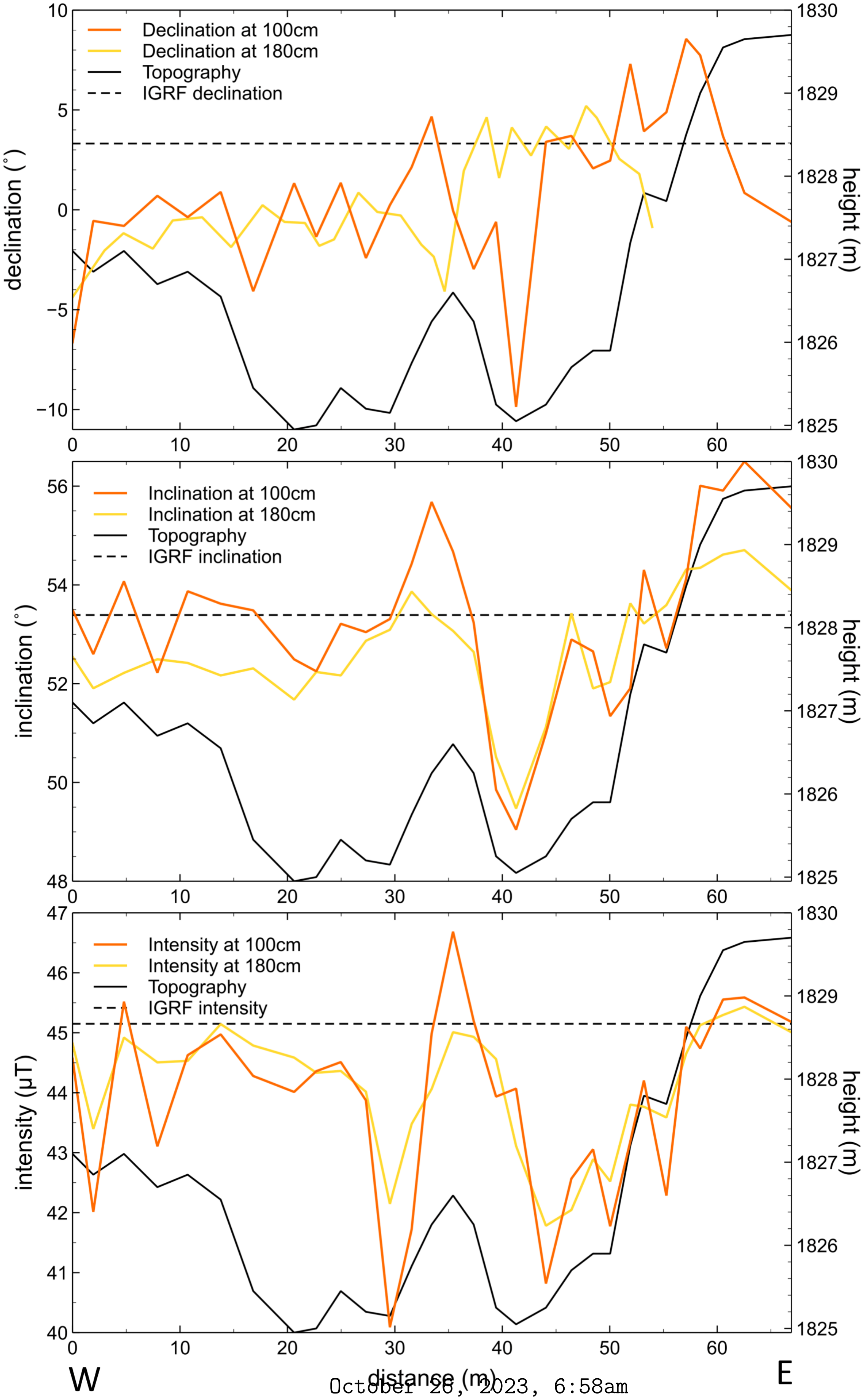
Supplementary Figure S4: FLUX1 path 2

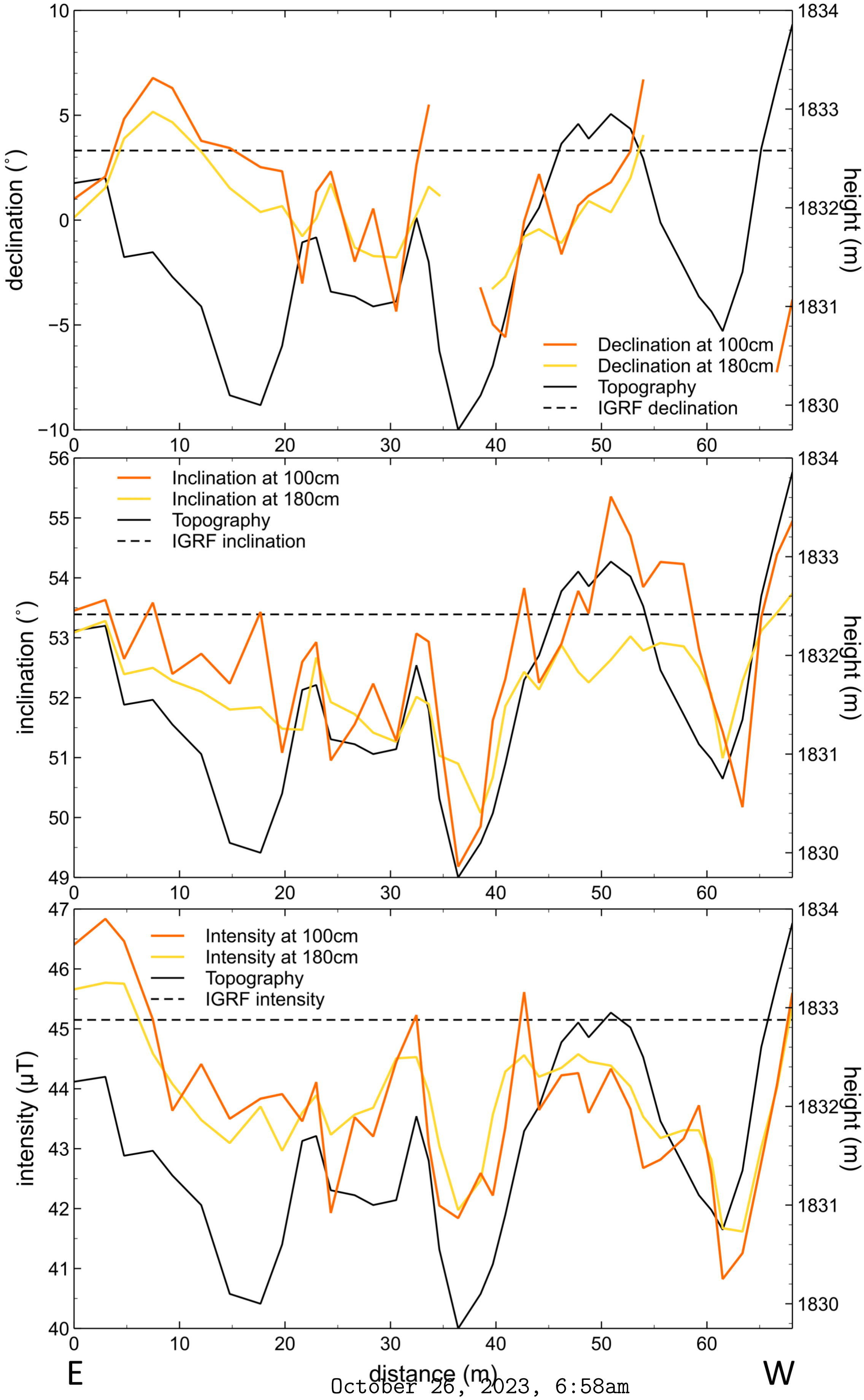


October 26, 2023, 6:58am

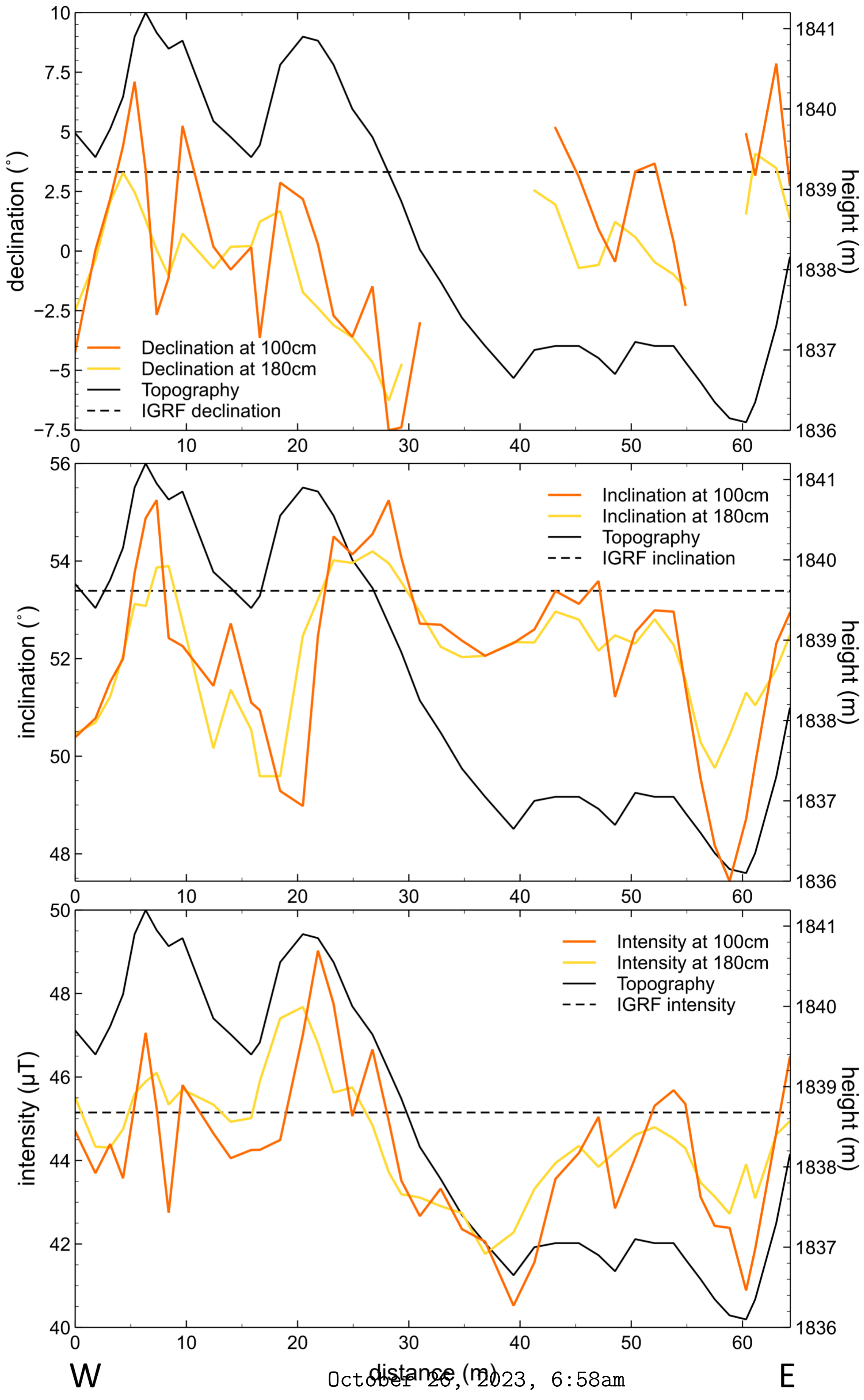
Supplementary Figure S5: FLUX1 path 3



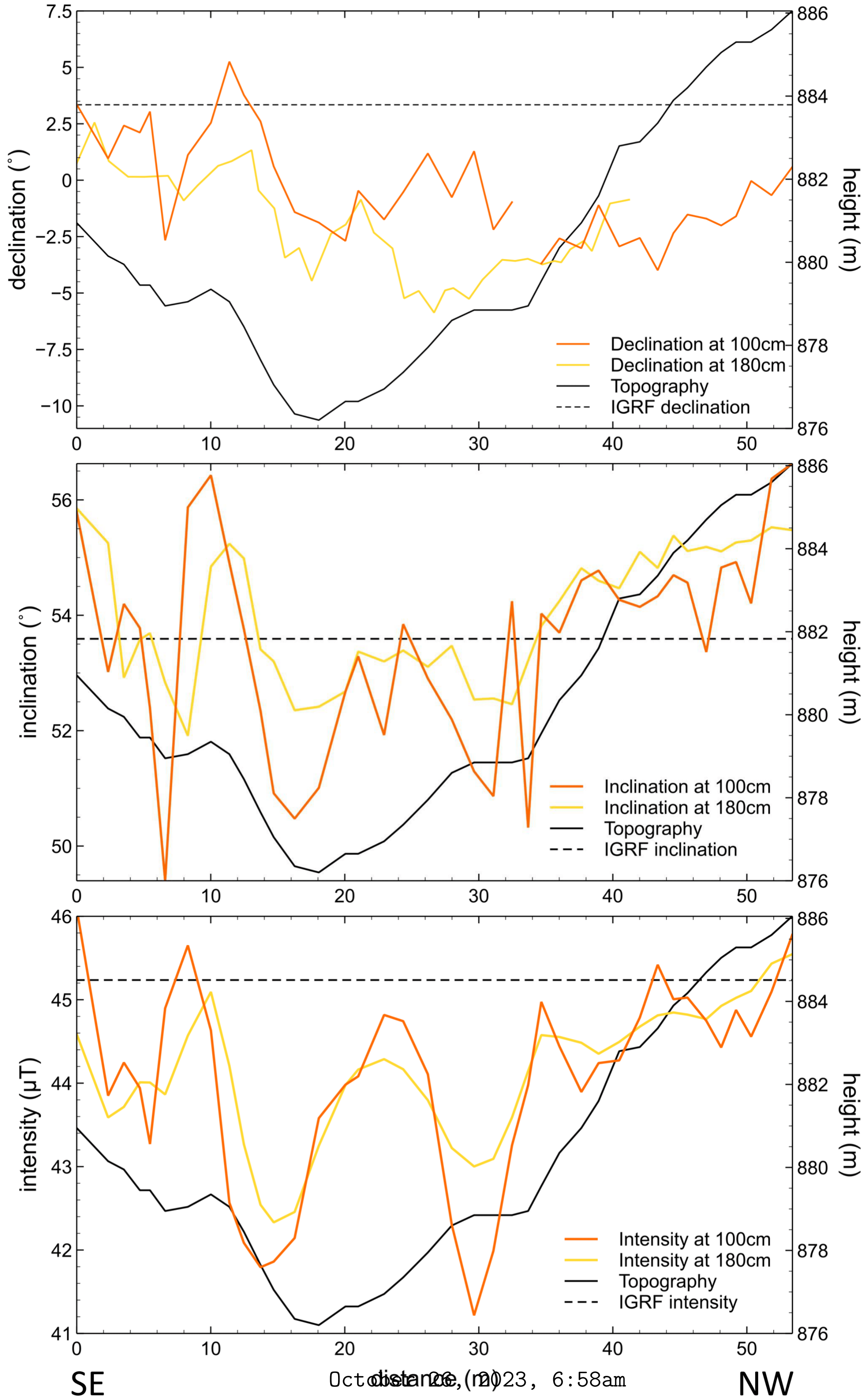
Supplementary Figure S6: FLUX2 path 1



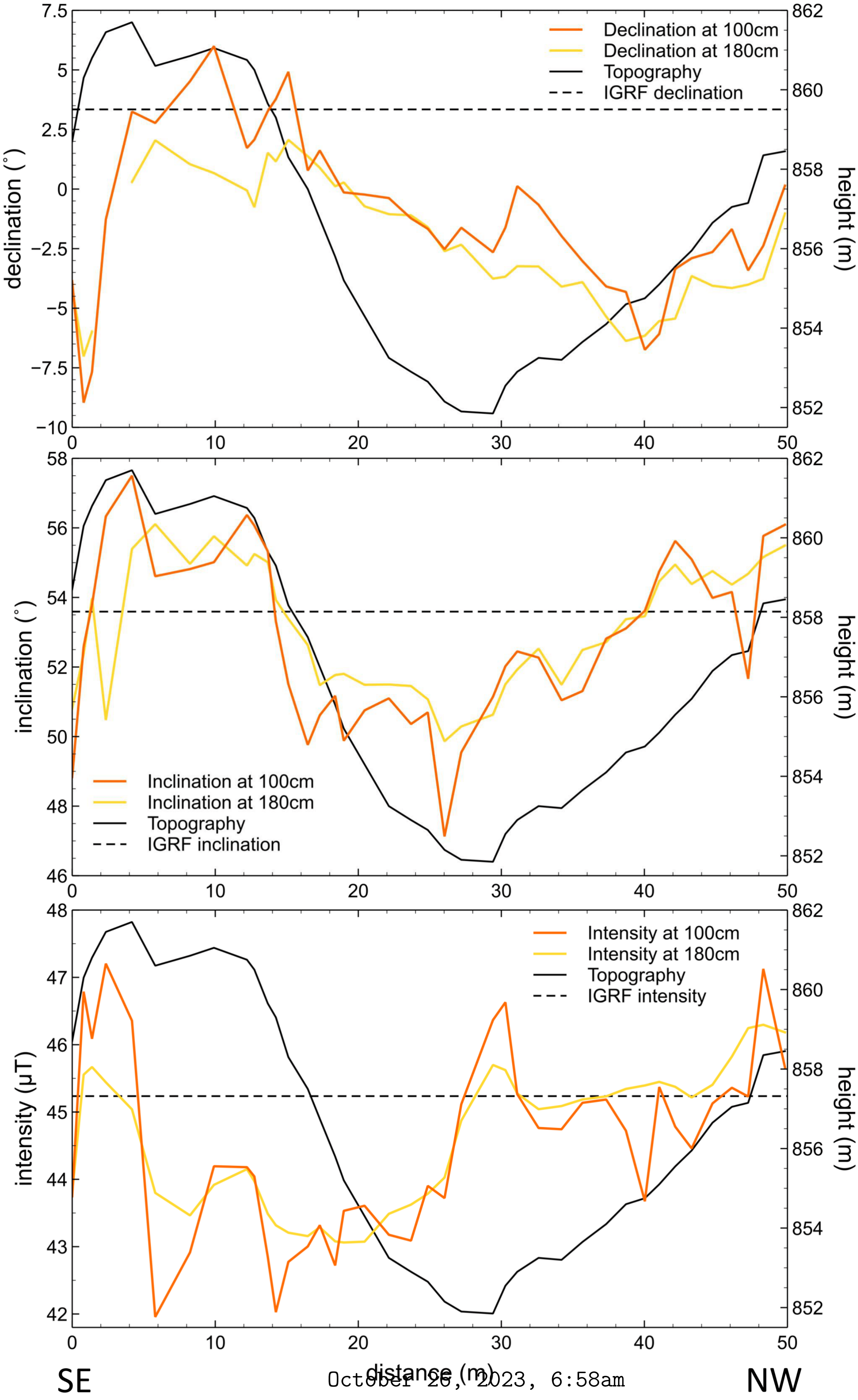
Supplementary Figure S7: FLUX2 path 2



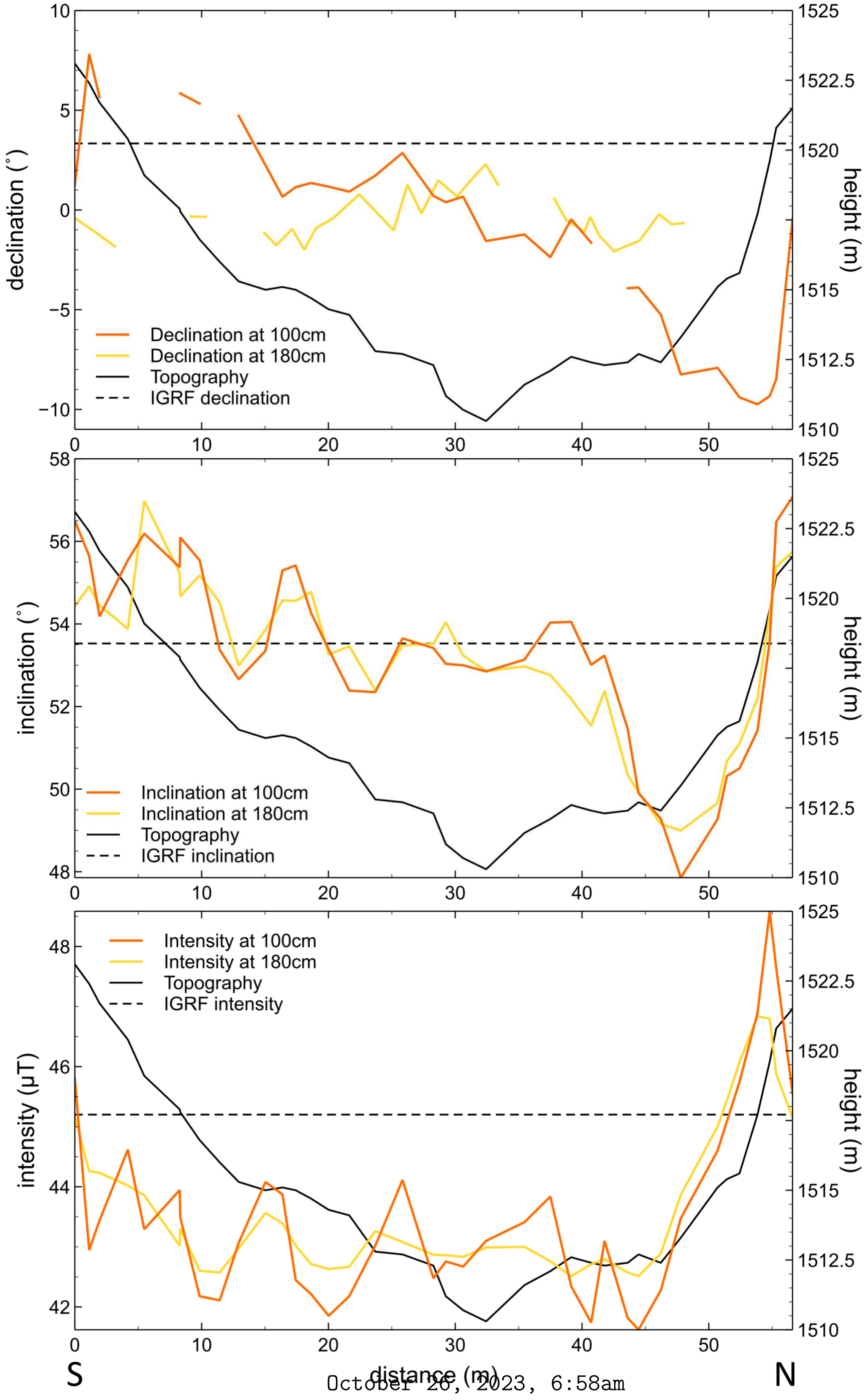
Supplementary Figure S8: FLUX2 path 3



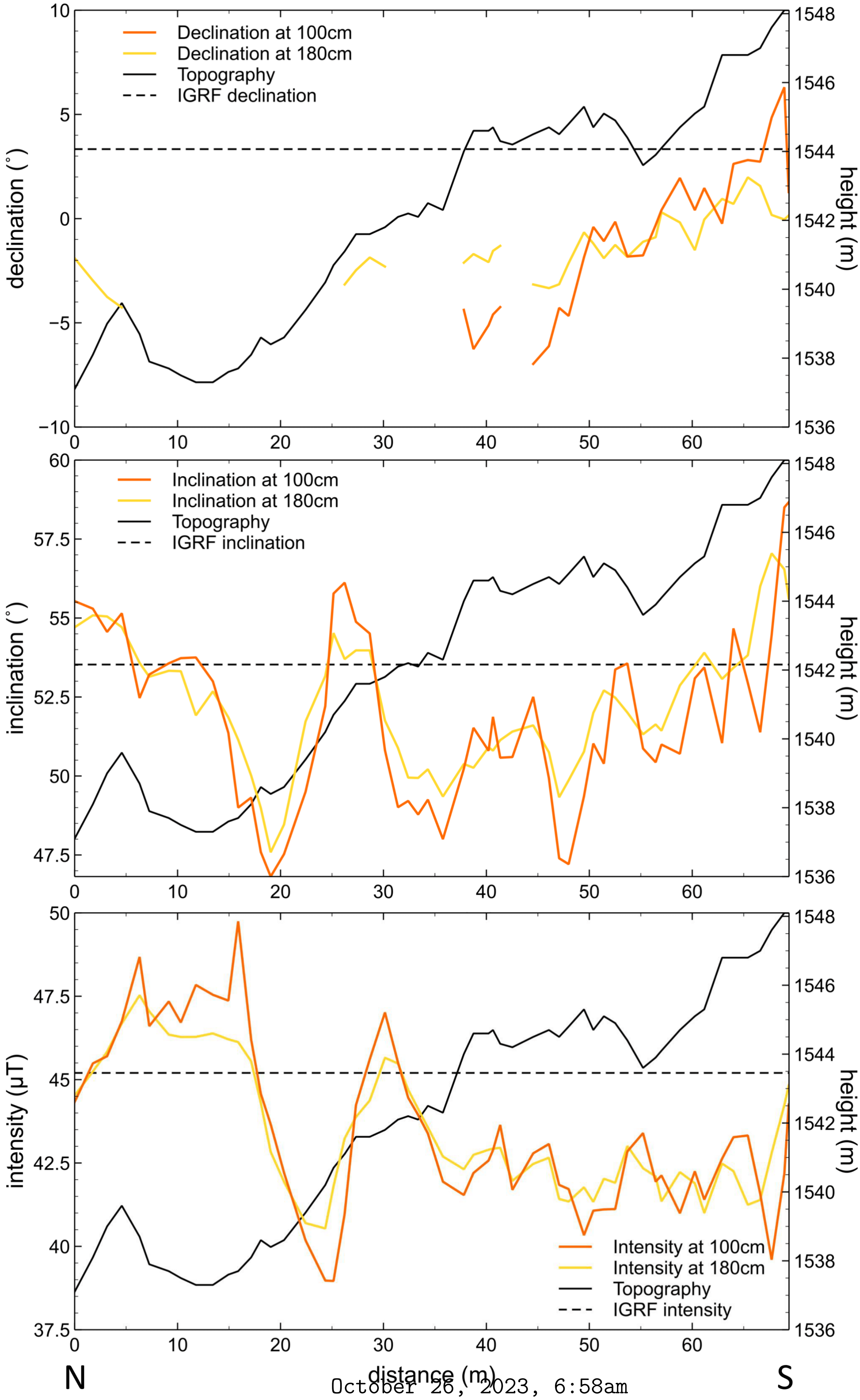
Supplementary Figure S9: FLUX3 path 1



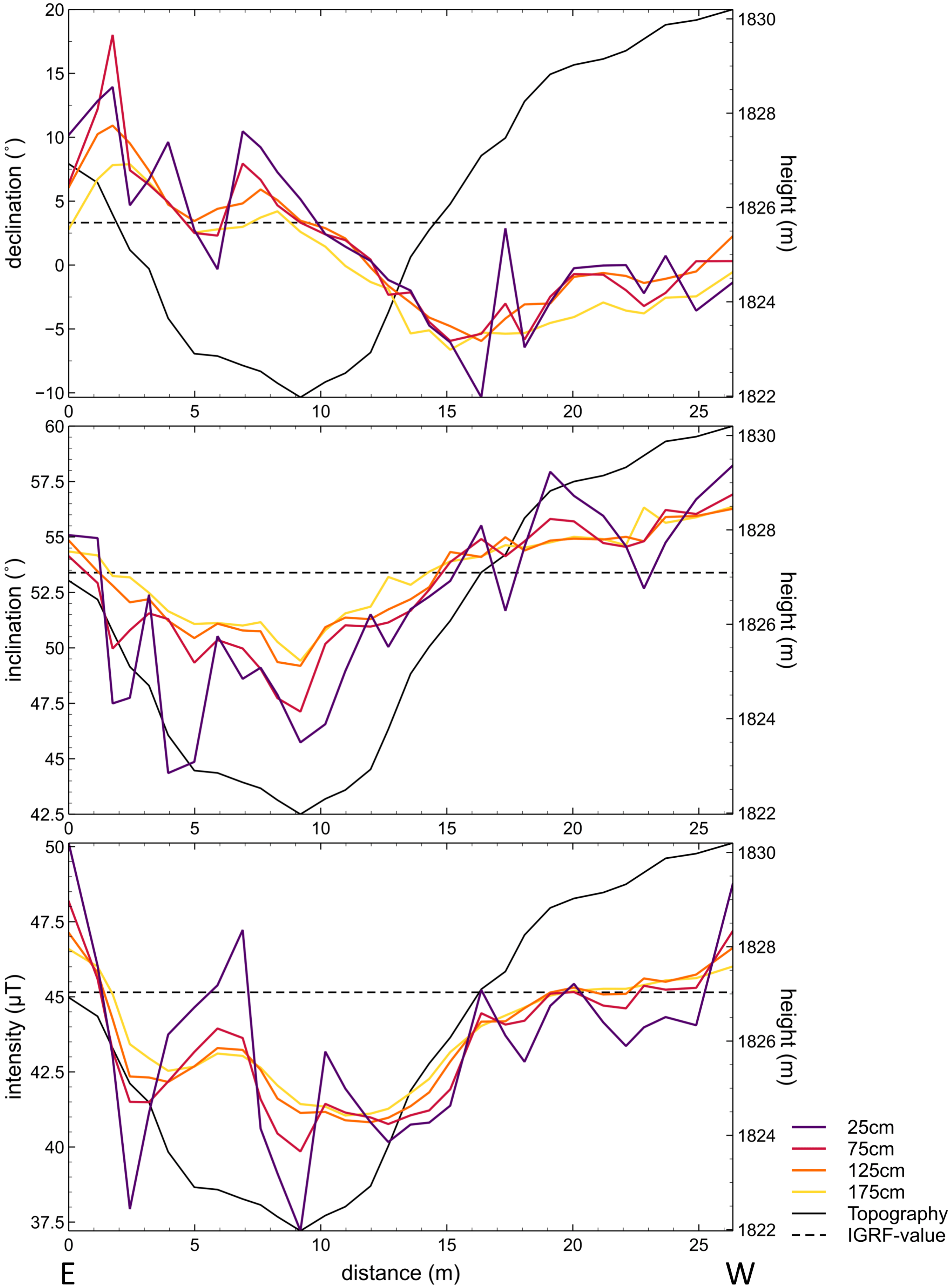
Supplementary Figure S10: FLUX3 path 3



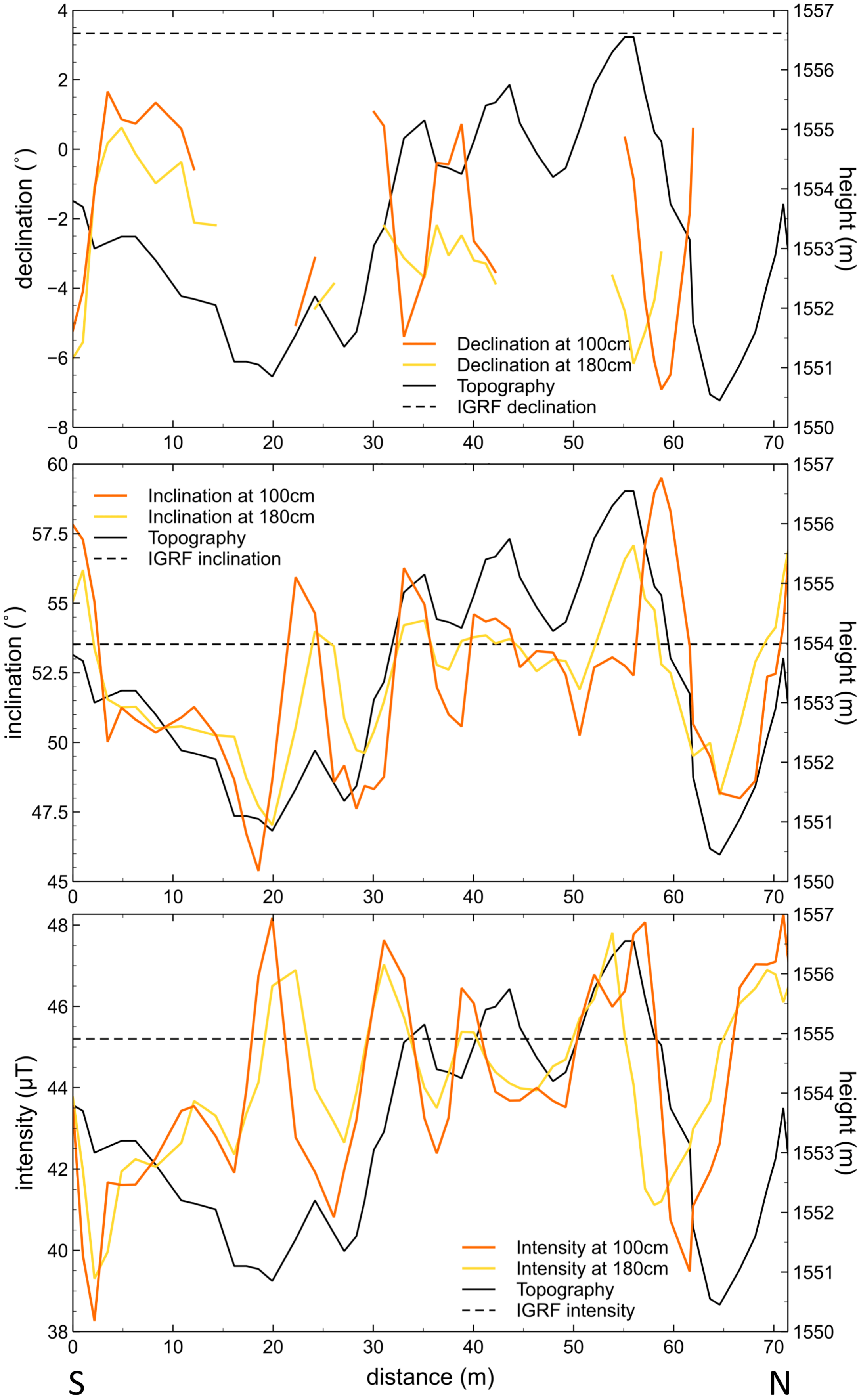
Supplementary Figure S11: FLUX4 path 1



Supplementary Figure S12: FLUX4 path 2



Supplementary Figure S15: FLUX5 path 2



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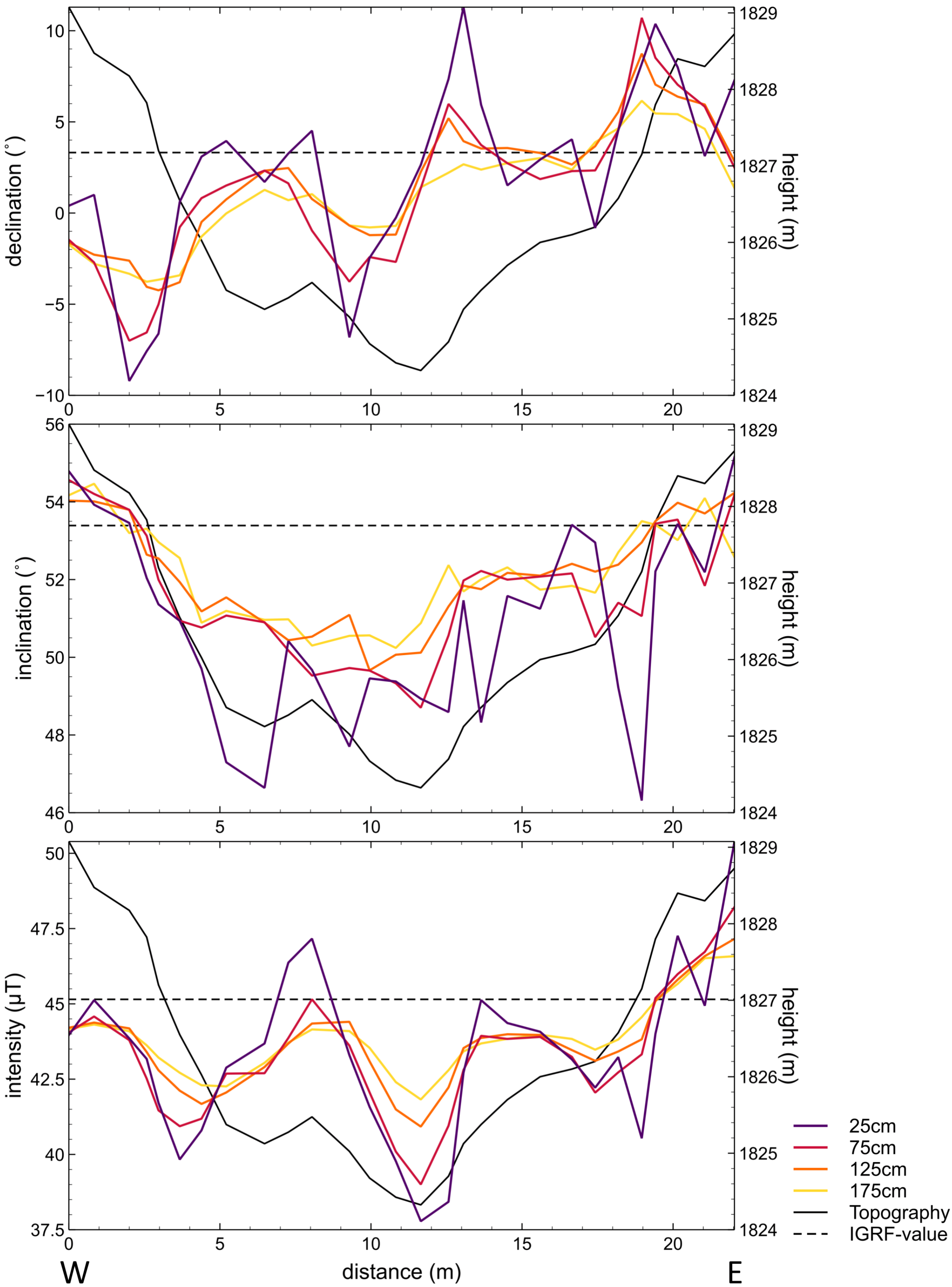
Supplementary Figure S13. FLUX4 path 3



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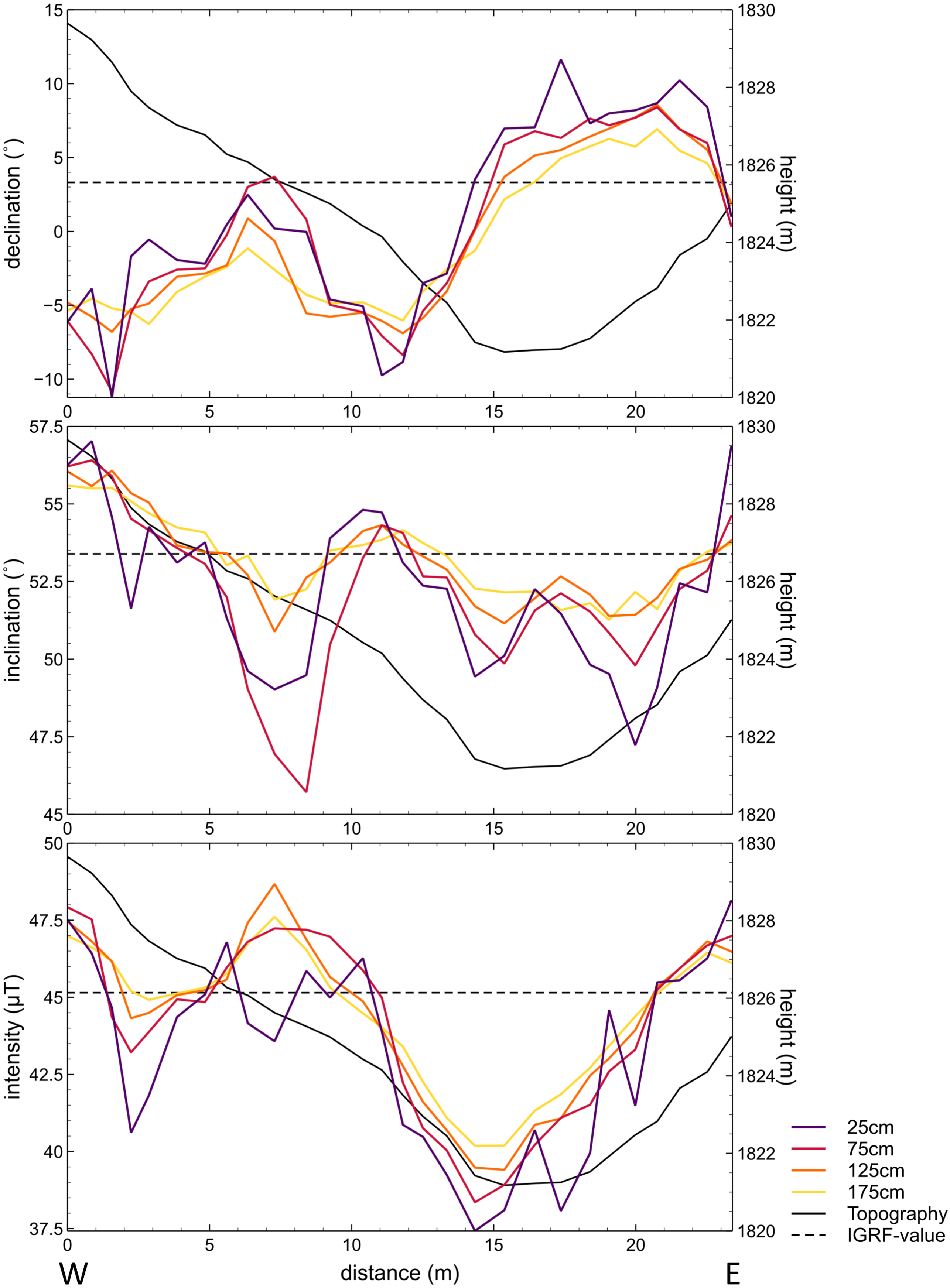
Supplementary Figure S14: FLUX5 path 1



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Supplementary Figure S16: FLUX5 path 3