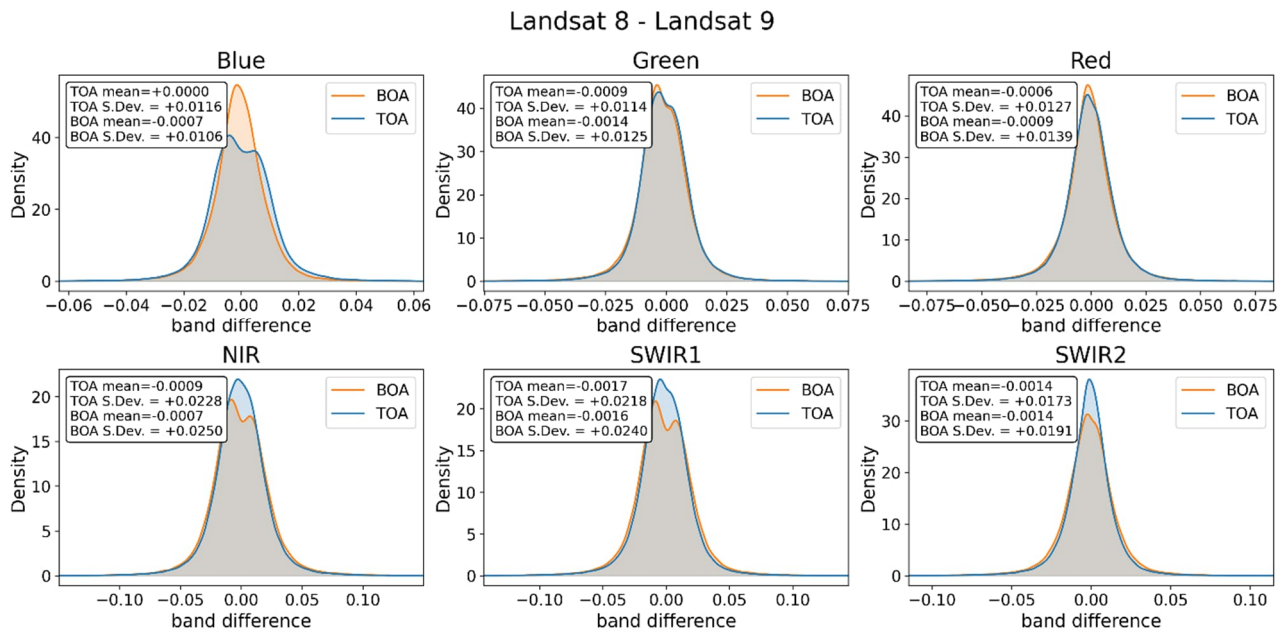


# Supplementary materials

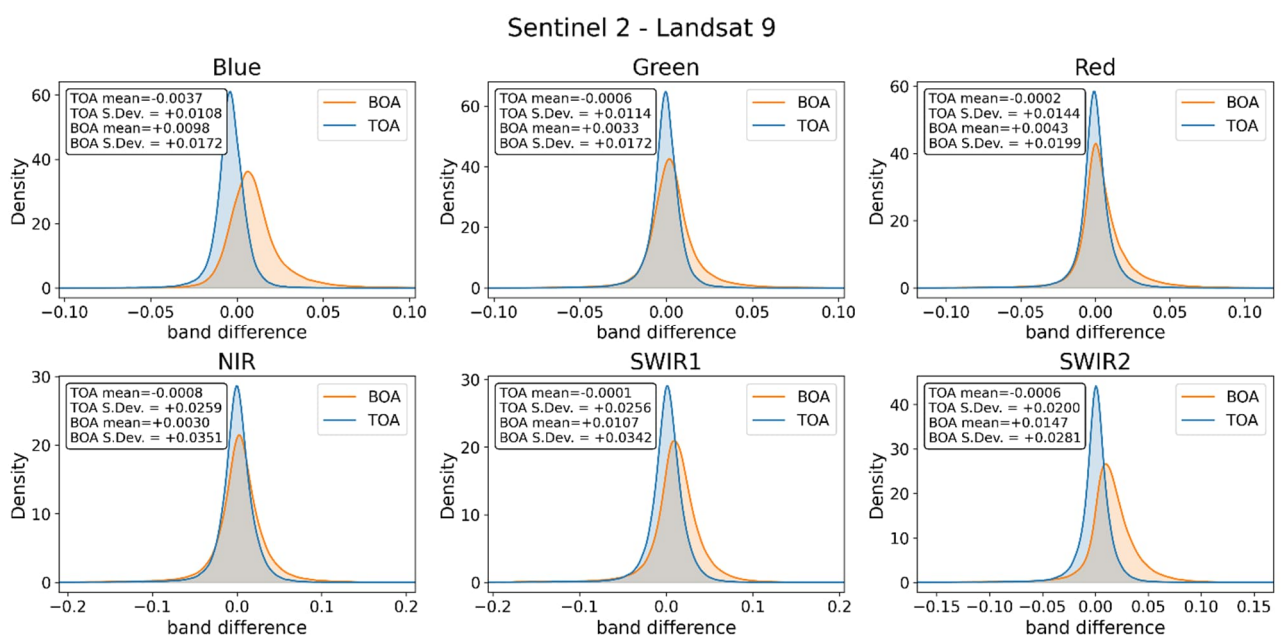
## Evaluation of Landsat-9 interoperability with Sentinel-2 and Landsat-8 over Europe and local comparison with field surveys

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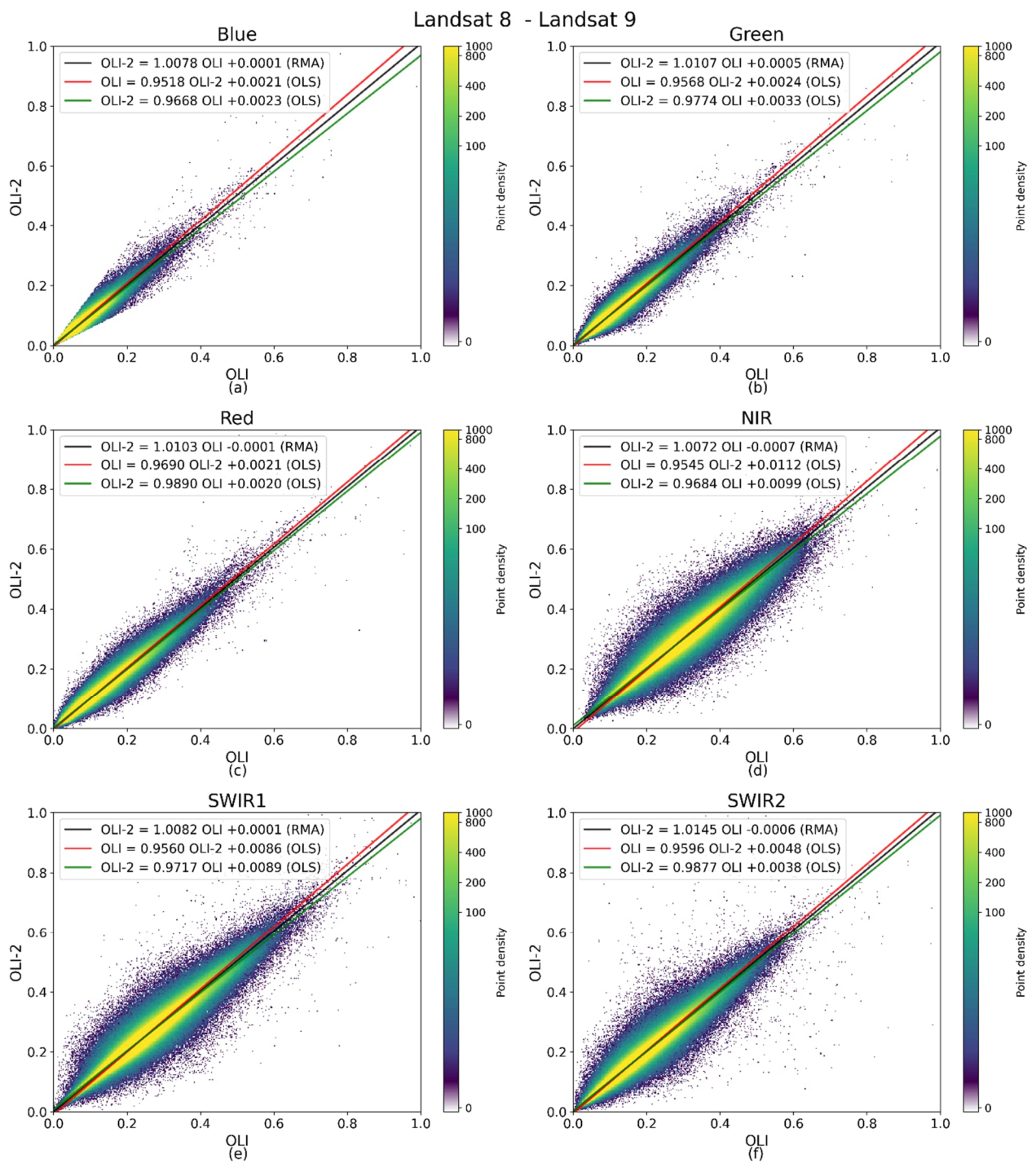
SM1: Histograms of the differences in reflectance between L8 and L9 for all the common bands.



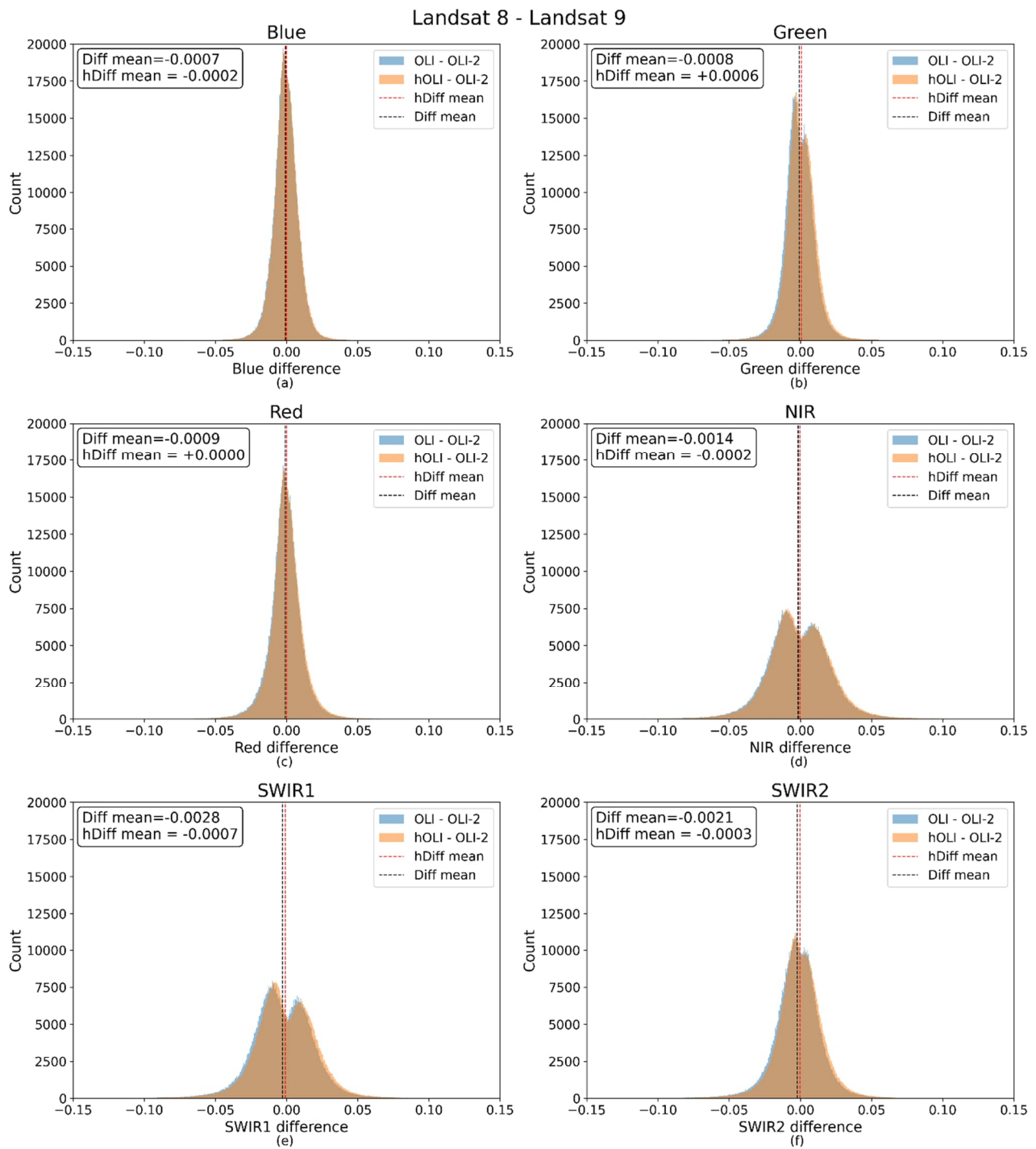
SM2: Histograms of the differences in reflectance between S2 and L9 for all the common bands.



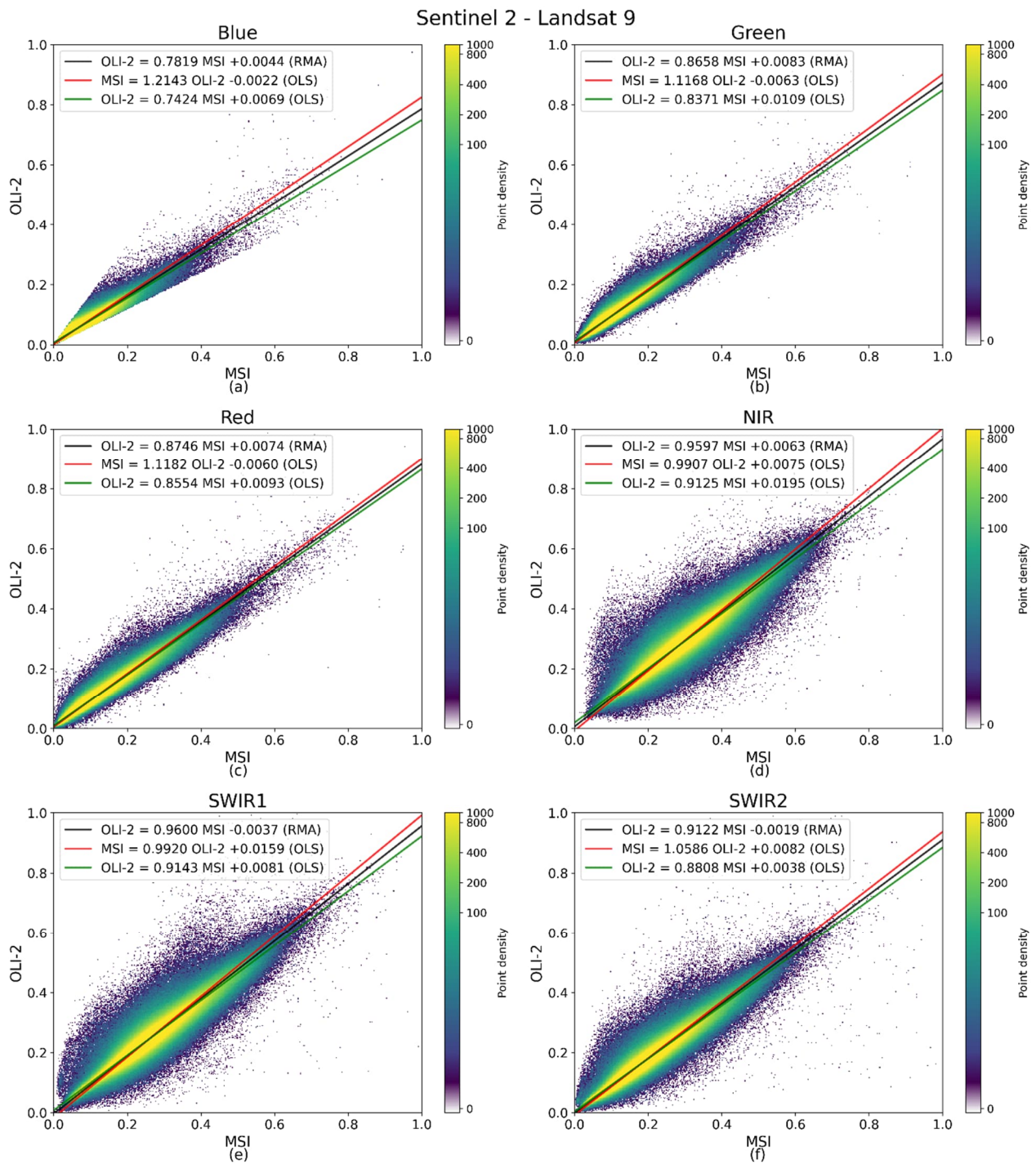
SM3: Scatterplots of the reflectance values for L9 OLI-2 (vertical axis) against L8 OLI (horizontal axis) in the a) Blue, b) Green, c) Red, d) NIR, e) SWIR1, f) SWIR2 bands. The plot colours illustrate the frequency of reflectance values with logarithmic scale. The solid lines show the three regression fits.



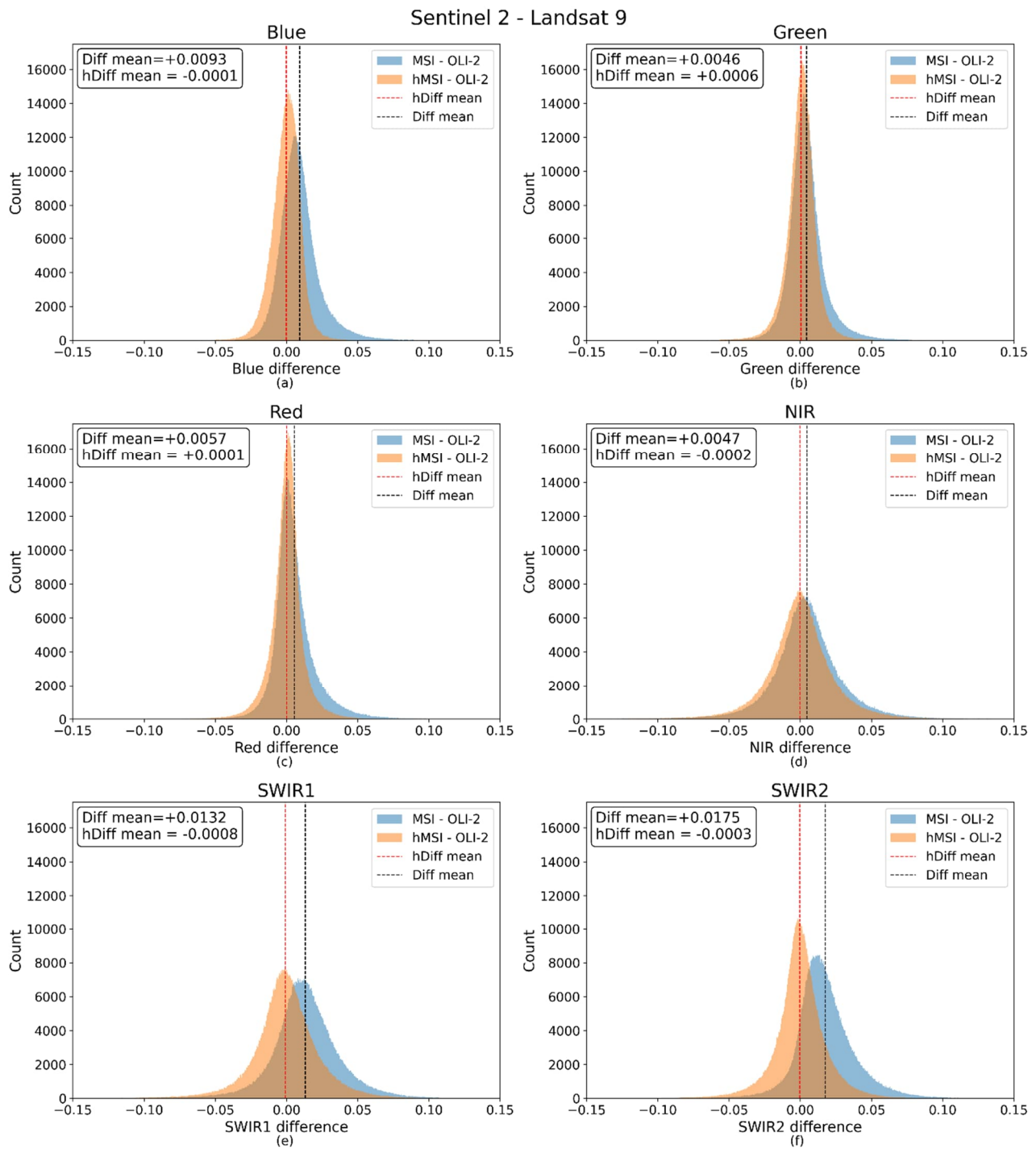
SM4: Residuals distribution of OLI-2 and OLI applying the RMA coefficients (OLI-2 independent variable) for Blue (a), Green (b), Red (c), NIR (d), SWIR1 (e) and SWIR (2) bands, compared with the original paired observation differences. Dashed lines represent the mean values.



SM5: Scatterplots of the reflectance values for L9 OLI-2 (vertical axis) against S2 MSI (horizontal axis): a) Blue, b) Green, c) Red, d) NIR, e) SWIR1, f) SWIR2. The plot colours illustrate the frequency of reflectance values with logarithmic scale. The solid lines show the three regression fits.



SM6: Residuals distribution of OLI-2 and MSI applying the RMA coefficients (OLI-2 independent variable) for Blue (a), Green (b), Red (c), NIR (d), SWIR1 (e) and SWIR (2) bands, compared with the original paired observation differences. Dashed lines represent the mean values.



SM7: Contemporary Overpass Event (COE) with location, date (dd/mm/yyyy) and time (UTC +1) of the surveys.

zone	id	Land Cover	Coordinate	COE	Survey time (UTC + 1)	Survey date
Reggio Emilia	M1	Turf	44° 33' 47.809" N 10° 46' 13.427" E	A	11:49-11:57	03/03/2022
	M2	Maize	44° 34' 21.144" N 10° 45' 41.907" E	A	12:11-12:32	03/03/2022
	P3	Asphalt	44° 43' 59.729" N 10° 38' 44.300" E	A	10:45-10:52	04/03/2022
	P4	Ploughed field	44° 39' 34.669" N 10° 44' 51.921" E	A	11:31-11:38	04/03/2022
				B	11:49-11:55	29/04/2022
	M4	Gravel	44° 35' 23.309" N 10° 46' 46.399" E	A	10:24-10:43	03/03/2022
	P6	Grass	44° 38' 15.378" N 10° 44' 23.771" E	B	11:38-11:40	29/04/2022
	P8	Canola	44° 36' 4.810" N 10° 45' 24.441" E	B	10:16-10:25	29/04/2022
	P9	Alfalfa	44° 37' 6.201" N 10° 45' 35.210" E	B	10:44-10:51	29/04/2022
	P10	Ploughed field	44° 37' 32.387" N 10° 45' 38.616" E	B	11:07-11:14	29/04/2022
	P11	Alfalfa	44° 37' 20.648" N 10° 45' 41.139" E	B	11:18-11:26	29/04/2022
Ravenna	C1	Asphalt	44° 11' 54.303" N 12° 4' 23.679" E	D	10:27-10:32	16/05/2022
	C3	Ploughed field	44° 14' 12.587" N 12° 7' 14.461" E	C	10:32-10:39	21/03/2022
				D	11:11-11:24	16/05/2022
	C4	Grass	44° 14' 10.775" N 12° 7' 14.461" E	C	10:47-10:53	21/03/2022
	C8	Sand	44° 15' 29.993" N 12° 21' 43.137" E	D	12:00-12:06	16/05/2022
	C10	Ploughed field	44° 14' 21.412" N 12° 6' 9.982" E	C	10:16-10:22	21/05/2022
D				10:51-10:56	16/05/2022	
C12	Salt marshes	44° 14' 52.927" N 12° 19' 37.731" E	C	11:34-11:49	21/05/2022	

SM8: Similarity indicators for all the measured locations.

