

Key comparison CCPR-K1.a

MEASURAND : Spectral irradiance

WAVELENGTH : 250 nm to 2500 nm

The comparison was carried out independently at each wavelength.

At any one wavelength, the analysis is based on a model that regards each lamp as having a stable spectral irradiance and the measurement results provided by a participant as systematically influenced by a common factor. The value measured by a participant is an estimate of the lamp irradiance multiplied by the systematic factor of this participant.

Each lamp was measured on one or two occasions by a participant (considered as one or two rounds) and on one or two occasions (rounds) by the pilot. Each measurement of a lamp is described by the model equation $x_{irk} = E_k S_i e_{irk}$, where x_{irk} is the measurement result of participant i in round r of lamp k , E_k the irradiance of lamp k , S_i the systematic factor associated with all measurements by participant i , and e_{irk} the random and round-dependent effects associated with this measurement of this lamp.

The aim of the analysis is to provide the best estimate of the systematic factor, S_i , for each participant. This is achieved by solving, by least squares adjustment, a set of linked equations relating the participant's measured values to the lamp irradiances and systematic factors under a constraint, which defines the key comparison reference value. Since the comparison consists of many separate artefacts, the key comparison reference value is itself unrelated to a physical artefact.

The key comparison reference value is calculated as the weighted geometric mean (with a cut-off) of the estimated systematic factors. It is stipulated to be unity by a special choice of the constraint equation. The method is described in the Final Report.

The degree of equivalence of laboratory i with respect to the key comparison reference value is given by a pair of terms: D_i , the difference between the estimated systematic factor for that participant and the key comparison reference value, being unity, and U_i , its expanded uncertainty at a 95 % level of confidence (see section 17.6.2 of the Final Report). D_i and U_i are expressed in relative units.

Key comparison CCPR-K1.a.1

MEASURAND : Spectral irradiance

WAVELENGTH : 250 nm to 1600 nm

CCPR-K1.a.1 is a subsequent bilateral key comparison to CCPR-K1.a, between NMIA and SPRING Singapore.

At any one common wavelength to both comparisons, the degree of equivalence of SPRING Singapore relative to the CCPR-K1.a reference value is computed using the NMIA results obtained in both comparisons, as explained in Section 9 of the CCPR-K1.a.1 Final Report (pages 20 to 24). This makes it possible to extend the CCPR-K1.a graphs of equivalence with one additional point from SPRING Singapore.

Key comparison EURAMET.PR-K1.a.1

MEASURAND : Spectral irradiance

WAVELENGTH : 290 nm to 900 nm

EURAMET.PR-K1.a.1 is a subsequent bilateral key comparison to CCPR-K1.a, between MIKES and NIMT.

At any one common wavelength to both comparisons, the degree of equivalence of NIMT relative to the CCPR-K1.a reference value is computed using the MIKES (referred to as "HUT" at the time of the CCPR-K1.a key comparison) results obtained in both comparisons, as explained in the Appendix A on page 12 of the EURAMET.PR-K1.a.1 Final Report. This makes it possible to extend the CCPR-K1.a graphs of equivalence with one additional point from NIMT.

Key comparison APMP.PR-K1.a.1

MEASURAND : Spectral irradiance

WAVELENGTH : 250 nm to 2500 nm

APMP.PR-K1.a.1 is a subsequent bilateral key comparison to CCPR-K1.a, between KRISS and VNIIOFI.

At any one common wavelength to both comparisons, the degree of equivalence of KRISS relative to the CCPR-K1.a reference value is computed using the VNIIOFI results obtained in both comparisons, as explained in Section 6.2 and in Appendix C of the APMP.PR-K1.a.1 Final Report. This makes it possible to extend the CCPR-K1.a graphs of equivalence with one additional point from KRISS.

Key comparison EURAMET.PR-K1.a

MEASURAND : Spectral irradiance

WAVELENGTH : 250 nm to 2500 nm

EURAMET.PR-K1.a is a subsequent key comparison to CCPR-K1.a, between the NPL, PTB, INM-RO, METAS, SP, VNIIOFI and the VSL.

At any one common wavelength to both comparisons, the degree of equivalence of the NMIs relative to the CCPR-K1.a reference value is computed using the NPL and PTB results obtained in both comparisons, as explained in Section 4 of the EURAMET.PR-K1.a Final Report (pages 8 to 13). This makes it possible to extend the CCPR-K1.a graphs of equivalence with the results obtained by the EURAMET.PR-K1.a comparison.

Degrees of Equivalence for CCPR-K1.a, CCPR-K1.a.1, APMP.PR-K1.a.1, EURAMET.PR-K1.a and EURAMET.PR-K1.a

D_i and U_i are given in %.

	250 nm		260 nm		270 nm		280 nm		290 nm		300 nm		310 nm		320 nm	
	D_i	U_i	D_i	U_i	D_i	U_i	D_i	U_i	D_i	U_i	D_i	U_i	D_i	U_i	D_i	U_i
LNE-INM	-	-	-	-	-	-	-	-	-	-	-3.80	3.70	-0.50	3.80	0.80	3.90
CENAM	-1.30	13.70	-1.20	9.60	-0.70	7.80	-2.40	7.40	-0.90	7.30	-1.30	7.10	-0.90	7.00	-0.30	6.90
NMIA	0.40	3.40	0.50	2.10	0.40	1.80	1.50	1.80	0.60	1.60	0.80	1.50	0.60	1.50	0.80	1.40
HUT (MIKES)	-	-	-	-	-	-	-	-	1.80	2.40	1.10	1.60	0.50	1.60	0.20	1.40
IFA-CSIC (IO CSIC)	-	-	-	-	-	-	-	-	-	-	0.10	5.00	-0.60	4.30	0.20	4.10
MSL	-0.20	2.70	0.30	2.40	0.40	2.30	0.40	2.20	0.10	2.10	0.20	2.00	0.20	2.00	0.20	1.90
NIM	0.90	2.10	-1.20	1.50	-0.80	1.40	-0.20	1.40	-0.60	1.40	-0.90	1.30	-0.80	1.40	-1.00	1.30
NIST	-0.70	2.00	0.00	1.80	0.00	1.70	-0.30	1.70	0.00	1.60	0.00	1.50	0.20	1.50	-0.10	1.40
NMIJ	2.70	3.50	1.90	3.20	1.20	3.10	1.50	3.10	1.30	3.10	1.30	3.10	1.30	3.10	1.20	3.00
NRC	-1.30	8.20	-3.90	5.50	-2.70	4.70	-3.40	3.80	-2.60	3.20	-1.60	19.90	-2.20	14.00	-3.40	11.90
PTB	-0.60	1.70	0.00	1.40	0.00	1.30	-0.80	1.40	-0.10	1.40	-0.10	1.30	0.00	1.20	-0.20	1.20
SPRING (A*STAR)	-1.40	4.00	-0.10	3.30	-0.30	3.20	1.00	3.30	-0.10	3.10	0.10	2.80	-0.10	2.70	0.00	2.70
NIMT	-	-	-	-	-	-	-	-	6.20	6.60	5.80	5.60	4.30	5.60	3.20	5.60
KRISS	-0.20	4.40	1.20	3.10	0.50	2.60	0.70	2.40	0.10	2.10	0.50	2.00	-0.30	2.00	0.10	1.90
NPL 2010	-0.76	2.85	-0.74	2.56	-1.02	2.51	-1.76	2.50	-0.90	2.46	-0.75	2.37	-0.80	2.31	-1.03	2.32
INM-RO	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
METAS	-2.28	6.52	-3.75	4.24	-3.83	4.18	-3.84	4.07	-2.94	4.11	-2.58	4.01	-2.21	3.89	-1.66	3.78
SP	2.95	4.20	3.22	3.71	3.00	3.37	3.23	3.19	2.98	2.95	3.16	2.78	2.69	2.60	3.00	2.53
VNIOFI	-1.00	2.91	-0.73	2.42	-0.64	2.19	0.56	2.19	-0.80	2.10	-0.72	2.04	-0.45	1.94	-0.70	1.89
VSL	-1.42	3.81	-0.93	3.15	-0.86	3.33	-1.85	2.99	-1.40	2.92	-1.50	2.78	-1.66	2.70	-1.57	2.63

	330 nm		340 nm		350 nm		360 nm		370 nm		380 nm		390 nm		400 nm	
	D_i	U_i	D_i	U_i	D_i	U_i	D_i	U_i	D_i	U_i	D_i	U_i	D_i	U_i	D_i	U_i
LNE-INM	0.90	2.60	1.20	2.60	0.20	2.60	0.80	2.60	0.60	2.60	0.70	2.60	0.50	2.60	0.40	2.10
CENAM	-0.40	6.70	-0.50	6.60	-0.50	6.50	-0.50	6.40	-0.60	6.40	-0.60	6.20	-0.60	5.60	-0.70	5.10
NMIA	0.70	1.30	0.80	1.20	0.70	1.20	0.70	1.10	0.60	1.00	0.60	1.00	0.50	0.90	0.60	0.90
HUT (MIKES)	0.00	1.30	-0.20	1.30	-0.20	1.30	-0.30	1.30	-0.40	1.20	-0.50	1.20	-0.50	1.20	-0.50	1.10
IFA-CSIC (IO CSIC)	-0.10	3.70	-0.30	3.80	-0.40	3.40	-0.60	3.40	-0.70	3.30	-0.70	3.40	-0.70	3.40	-0.60	3.30
MSL	0.30	1.80	0.20	1.70	0.20	1.60	0.30	1.50	0.20	1.50	0.50	1.50	0.50	1.50	0.30	1.50
NIM	-0.80	1.20	-0.90	1.20	-1.00	1.20	-0.90	1.10	-0.90	1.10	-1.00	1.10	-0.80	1.10	-0.90	1.10
NIST	-0.20	1.40	-0.30	1.30	-0.30	1.30	-0.40	1.20	-0.30	1.20	-0.50	1.20	-0.20	1.20	-0.10	1.10
NMIJ	1.20	3.00	1.10	3.00	1.20	3.00	1.20	3.00	1.20	3.00	1.40	3.00	1.80	3.00	1.20	2.90
NRC	-4.80	9.70	-5.00	7.80	-0.40	6.20	-0.80	6.10	-0.10	6.20	1.30	6.30	0.10	6.20	0.30	4.30
PTB	-0.30	1.10	-0.30	1.10	-0.10	1.10	-0.10	1.00	-0.10	1.00	-0.10	0.90	-0.10	0.90	-0.10	0.90
SPRING (A*STAR)	0.00	2.70	0.20	2.70	0.20	2.20	0.00	2.10	-0.10	2.10	-0.10	2.10	-0.10	2.10	0.00	1.90
NIMT	2.30	5.60	1.90	5.60	2.10	5.50	2.00	5.50	2.50	5.60	2.80	5.50	3.30	5.50	3.50	5.40
KRISS	0.00	1.70	0.00	1.60	0.30	1.50	0.50	1.40	-	-	0.70	1.40	-	-	0.40	1.30
NPL 2010	-1.16	2.29	-1.02	2.25	-0.78	2.30	-0.96	2.12	-1.05	2.12	-1.08	2.17	-1.20	2.13	-0.93	2.11
INM-RO	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3.21	2.70
METAS	-1.95	3.77	-2.01	3.76	-1.18	3.76	-1.29	3.19	-1.13	3.18	-1.15	3.18	-1.34	3.09	-1.21	3.09
SP	2.77	2.46	2.63	2.40	2.58	2.34	2.30	2.22	2.23	2.19	1.88	2.18	1.73	2.15	1.89	2.15
VNIOFI	-0.57	1.83	-0.34	1.79	-0.24	1.77	-0.05	1.59	-0.16	1.55	0.07	1.54	0.17	1.50	0.02	1.49
VSL	-1.26	2.55	-1.49	2.51	-1.35	2.19	-2.18	2.06	-2.00	2.10	-1.99	2.62	-2.03	2.00	-1.92	2.00

Degrees of Equivalence for CCPR-K1.a, CCPR-K1.a.1, APMP.PR-K1.a.1, EURAMET.PR-K1.a and EURAMET.PR-K1.a

D_i and U_i are given in %.

	450 nm		500 nm		550 nm		555 nm		600 nm		650 nm		700 nm		750 nm	
	D_i	U_i	D_i	U_i	D_i	U_i	D_i	U_i	D_i	U_i	D_i	U_i	D_i	U_i	D_i	U_i
LNE-INM	1.20	2.20	0.60	2.00	0.40	2.00	0.80	2.00	0.10	2.00	-0.20	2.00	-0.20	2.00	0.00	2.00
CENAM	-0.50	4.70	-0.90	4.20	-0.90	3.90	-0.90	3.90	-0.90	3.80	-0.90	3.50	-1.00	3.40	-0.80	3.20
NMIA	0.30	0.80	0.40	0.70	0.30	0.70	0.20	0.60	0.00	0.70	0.00	0.70	-0.20	0.70	-0.10	0.80
HUT (MIKES)	-0.30	0.80	-0.10	0.80	0.00	0.80	0.00	0.70	-0.10	0.70	-0.10	0.70	0.00	0.70	0.20	0.70
IFA-CSIC (IO CSIC)	-0.60	3.30	-0.50	3.40	-0.40	3.50	-0.20	3.70	-0.70	3.50	-0.90	3.70	-0.80	3.30	-0.90	3.10
MSL	0.10	1.50	-0.10	1.50	0.30	1.50	-0.10	1.40	0.40	1.40	0.20	1.50	0.00	1.40	0.10	1.50
NIM	0.40	1.10	0.10	1.00	0.10	1.00	0.20	1.00	0.70	1.00	0.60	0.90	0.80	0.90	-0.30	1.00
NIST	-0.30	1.00	-0.20	1.00	-0.40	0.90	-0.10	0.90	-0.30	0.80	-0.10	0.80	-0.20	0.70	-0.30	0.70
NMIJ	0.80	2.90	0.80	2.90	0.80	2.90	-	-	0.50	2.90	0.40	2.90	-0.40	2.90	-0.10	2.90
NRC	1.30	4.40	0.70	3.60	-0.20	3.60	-	-	0.50	3.60	-0.80	3.50	0.10	1.90	0.00	1.80
PTB	-0.40	0.90	-0.30	0.80	-0.20	0.80	-0.30	0.80	-0.30	0.80	-0.30	0.80	-0.40	0.80	-0.30	0.80
SPRING (A*STAR)	-0.30	1.80	-0.10	1.70	-0.10	1.80	-	-	-0.50	1.60	-0.40	1.60	-0.70	1.60	-0.40	1.60
NIMT	4.50	3.20	3.70	3.20	3.10	3.20	-	-	2.20	3.90	2.20	3.90	2.30	3.90	2.20	3.80
KRISS	0.20	1.30	0.40	1.20	0.40	1.10	-	-	0.30	1.10	0.40	1.00	0.50	1.00	-	-
NPL 2010	-0.50	1.40	-0.39	1.31	-0.18	1.29	-0.24	1.29	-0.27	1.26	-0.32	1.26	-0.40	1.23	-0.33	1.21
INM-RO	5.01	2.25	3.94	2.22	2.98	2.22	2.74	2.22	2.84	2.20	2.93	2.21	3.02	2.19	3.17	2.18
METAS	-0.88	2.85	-0.83	2.74	-0.74	2.74	-0.71	2.70	-0.64	2.64	-0.62	2.57	-0.53	2.56	-0.35	2.47
SP	1.81	1.97	2.23	1.92	2.64	1.88	2.60	1.88	2.51	1.84	2.14	1.85	1.74	1.82	1.75	1.79
VNIOFI	-0.34	1.29	-0.03	1.21	0.24	1.17	0.16	1.17	0.12	1.13	-0.03	1.12	0.02	1.08	-0.02	1.05
VSL	-1.36	1.71	-1.08	1.65	-0.82	1.69	-0.95	1.53	-0.97	1.40	-0.83	1.38	-1.06	1.19	-0.98	1.26

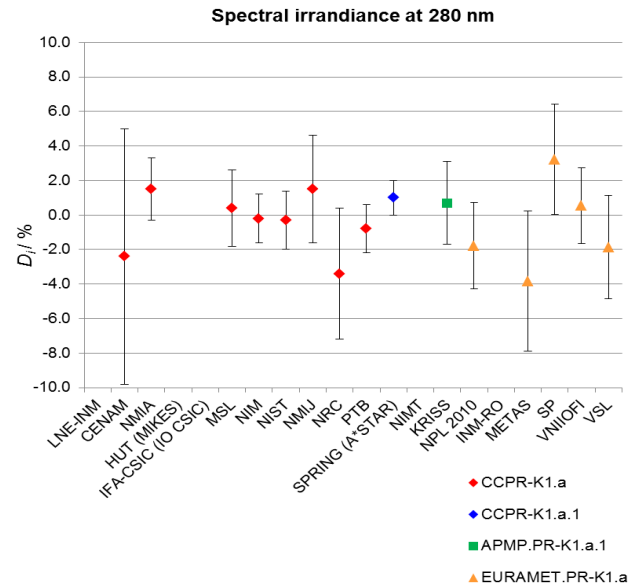
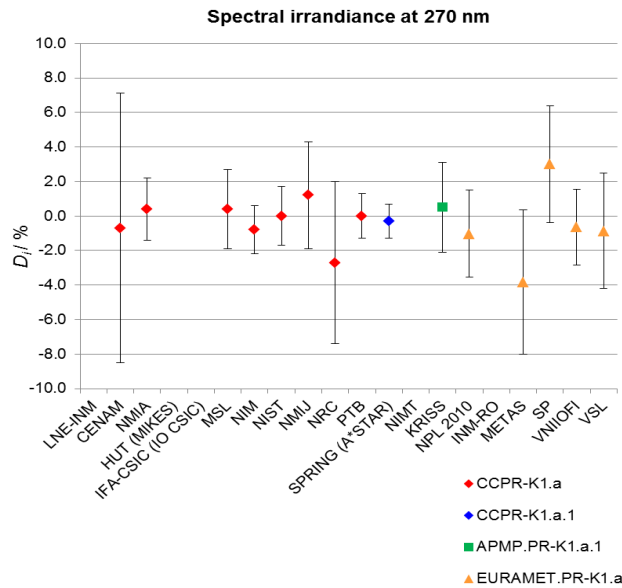
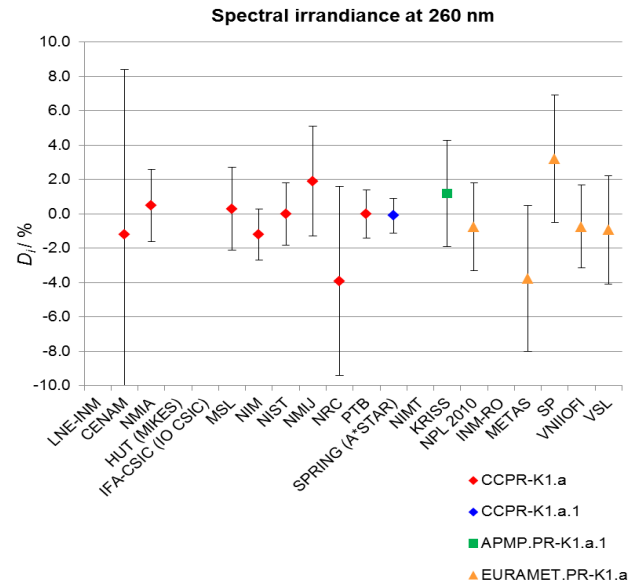
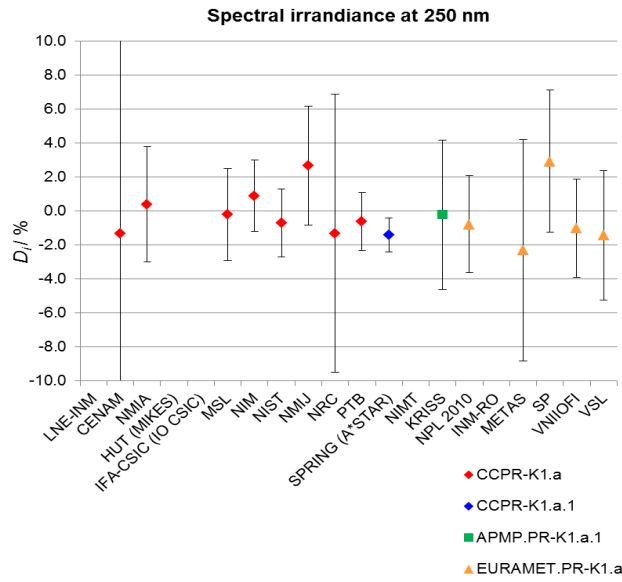
	800 nm		850 nm		900 nm		950 nm		1000 nm		1100 nm		1200 nm		1300 nm	
	D_i	U_i	D_i	U_i	D_i	U_i	D_i	U_i	D_i	U_i	D_i	U_i	D_i	U_i	D_i	U_i
LNE-INM	-0.80	2.00	-0.40	1.90	-0.10	1.90	0.00	1.90	0.20	1.90	-0.40	2.20	0.30	2.10	0.20	2.10
CENAM	-0.90	4.00	-1.50	4.00	-2.10	3.90	-2.50	3.80	-2.90	4.10	-3.60	4.00	-3.90	4.00	-3.80	3.90
NMIA	-0.10	0.80	0.00	1.00	0.00	1.00	-0.10	1.00	-0.10	1.10	-0.40	1.20	-0.70	1.30	-0.50	1.40
HUT (MIKES)	0.20	0.70	0.30	0.70	0.10	0.70	-	-	-	-	-	-	-	-	-	-
IFA-CSIC (IO CSIC)	-0.80	3.10	-1.00	3.90	-1.10	3.80	-1.40	3.80	-1.40	3.80	-1.40	4.70	-1.70	4.50	-2.00	4.00
MSL	0.00	1.40	0.20	1.60	-	-	-	-	-	-	-	-	-	-	-	-
NIM	-0.20	1.00	-1.30	1.00	-1.70	1.00	-1.20	1.00	-1.40	1.00	-1.20	0.90	-0.40	0.80	-0.60	0.80
NIST	-0.10	0.60	-0.20	0.70	-0.10	0.60	-0.10	0.60	-0.10	0.60	-0.20	0.50	-0.50	0.50	-0.40	0.50
NMIJ	-0.10	2.90	0.10	2.90	0.30	2.90	0.30	2.90	0.10	2.90	-0.20	2.90	-1.10	2.90	-1.00	2.90
NRC	-0.20	1.80	-0.20	1.90	-0.20	1.80	-0.40	1.80	-0.40	1.80	-0.50	1.60	-1.20	2.30	-1.10	2.30
PTB	-0.40	0.80	-0.30	0.70	-0.40	0.70	-0.20	0.70	-0.40	0.70	-0.40	1.00	-0.40	1.00	-0.70	1.00
SPRING (A*STAR)	-0.60	1.50	-0.50	1.80	0.30	1.70	0.00	1.80	0.00	1.80	-0.10	1.80	-0.50	1.70	-0.40	1.70
NIMT	-0.20	3.80	-2.30	6.20	-3.70	6.10	-	-	-	-	-	-	-	-	-	-
KRISS	0.80	1.10	-	-	1.00	1.00	1.00	1.10	1.10	1.10	1.30	1.30	1.10	1.30	1.20	1.20
NPL 2010	-0.51	1.21	-0.27	0.91	-0.32	0.84	-0.15	0.85	-0.22	0.82	-0.24	0.90	-0.36	0.95	-0.35	0.90
INM-RO	3.24	2.18	3.52	2.14	3.53	2.11	-	-	-	-	-	-	-	-	-	-
METAS	-0.38	2.40	-0.09	2.35	-0.01	2.33	-0.02	2.34	0.00	2.33	-0.03	2.35	-	-	-	-
SP	1.99	1.90	2.15	2.21	2.17	2.28	2.60	2.34	2.73	2.36	2.71	2.28	3.02	2.30	2.49	2.30
VNIOFI	-0.17	1.03	-0.06	0.92	-0.08	0.85	0.02	0.87	0.02	0.85	0.21	0.88	0.05	0.93	0.17	0.90
VSL	-0.99	1.26	-0.88	1.25	-0.95	1.04	-0.99	1.04	-0.93	1.17	-0.93	2.54	-0.89	2.22	-1.02	3.05

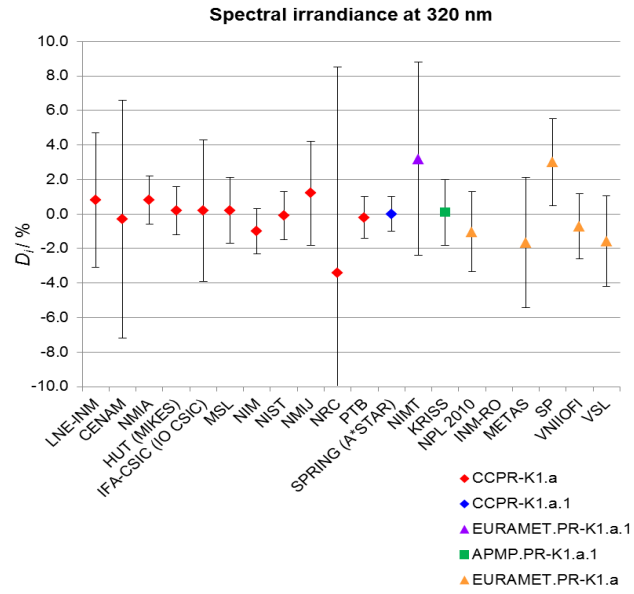
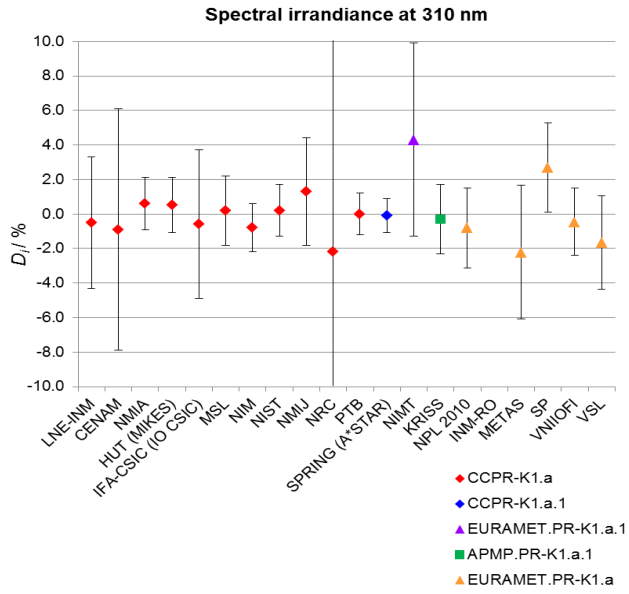
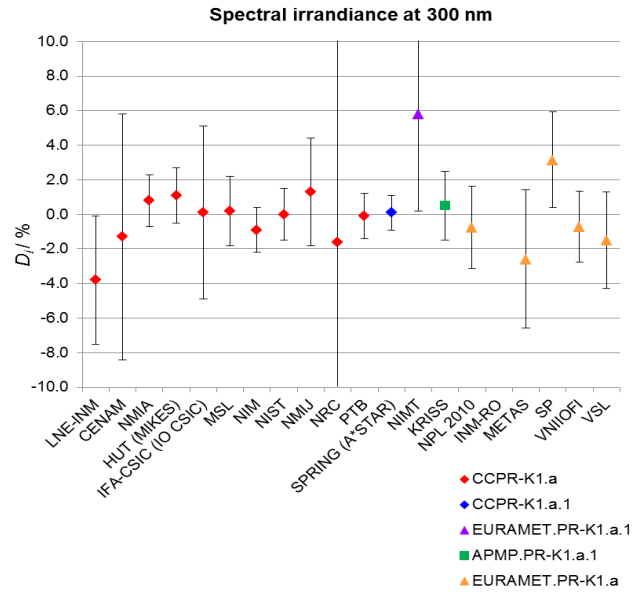
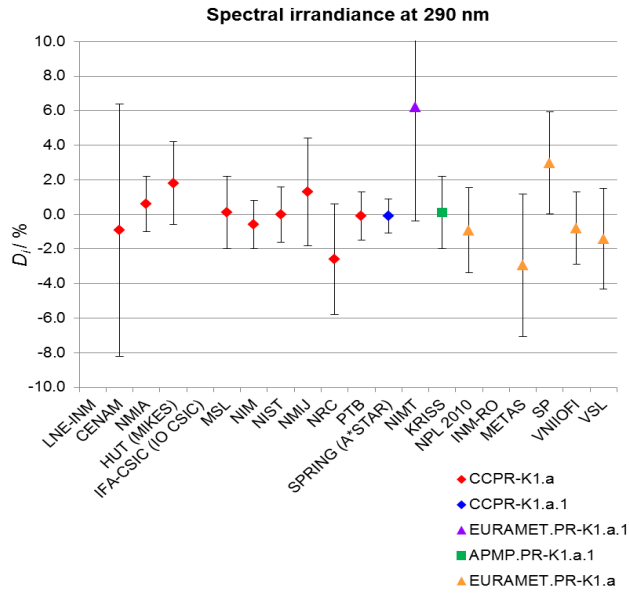
Degrees of Equivalence for CCPR-K1.a, CCPR-K1.a.1, APMP.PR-K1.a.1, EURAMET.PR-K1.a and EURAMET.PR-K1.a

D_i and U_i are given in %.

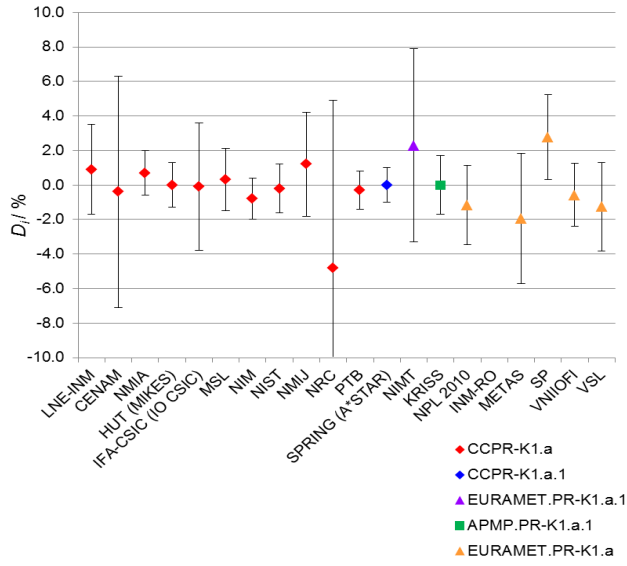
	1400 nm		1500 nm		1600 nm		1700 nm		1800 nm		1900 nm		2000 nm		2100 nm	
	D_i	U_i	D_i	U_i	D_i	U_i	D_i	U_i	D_i	U_i	D_i	U_i	D_i	U_i	D_i	U_i
LNE-INM	-0.10	2.10	-0.10	2.60	0.10	2.60	0.10	2.60	-0.10	3.00	-0.70	2.90	-0.40	2.10	-1.10	2.00
CENAM	-2.80	3.90	-2.20	3.90	-0.90	4.00	-0.50	4.00	0.00	4.00	0.50	4.00	0.50	5.60	-0.10	5.60
NMIA	-0.60	1.50	-0.40	1.50	-0.20	1.90	-0.60	2.10	-0.60	2.80	-0.20	2.50	0.50	2.80	0.30	2.80
HUT (MIKES)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
IFA-CSIC (IO CSIC)	-2.30	4.20	-2.40	4.20	-2.60	4.00	-4.50	4.50	-3.70	4.40	-3.40	4.20	-3.00	4.20	-3.10	4.30
MSL	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
NIM	-1.60	0.90	-0.90	0.90	-1.00	0.90	-1.10	0.90	-1.50	0.90	-1.30	1.00	-1.20	1.00	-0.70	1.00
NIST	-0.30	0.50	-0.20	0.50	-0.20	0.50	-0.10	0.50	-0.10	0.50	-0.10	0.60	-0.10	0.60	-0.40	0.60
NMIJ	0.50	2.90	-1.30	2.90	-1.20	2.90	-1.20	2.80	-0.90	2.90	0.90	2.90	0.30	3.00	-0.20	3.10
NRC	-0.90	2.40	-1.20	2.30	-1.40	2.30	-1.90	2.90	-1.90	2.80	-2.80	4.20	-2.30	3.40	-2.40	3.90
PTB	0.60	2.20	-0.70	2.20	-0.50	2.20	-0.60	2.20	0.00	2.20	0.70	2.30	-0.60	2.30	-0.60	2.70
SPRING (A*STAR)	-1.00	2.10	-0.90	2.10	-0.10	2.00	-	-	-	-	-	-	-	-	-	-
NIMT	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KRISS	-	-	1.40	1.30	1.40	1.50	1.00	1.60	-	-	-	-	1.60	1.80	2.20	2.20
NPL 2010	0.39	2.09	-0.10	0.94	0.10	0.98	0.07	1.60	0.34	1.63	0.37	1.73	0.04	1.86	0.06	1.96
INM-RO	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
METAS	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
SP	2.91	2.79	2.61	2.43	2.71	2.52	2.82	2.82	2.89	2.97	2.41	3.16	2.59	3.37	2.60	3.76
VNIOFI	0.38	1.76	0.24	0.96	0.49	1.02	0.27	1.41	0.11	1.46	0.27	1.60	-0.59	1.75	-0.51	1.84
VSL	-0.96	3.91	-0.64	3.25	-0.41	2.56	-0.70	3.10	-1.06	3.22	-0.71	3.83	-1.13	4.47	-	-

	2200 nm		2300 nm		2400 nm		2500 nm	
	D_i	U_i	D_i	U_i	D_i	U_i	D_i	U_i
LNE-INM	-0.60	2.00	-0.60	2.10	-0.50	2.10	0.10	2.20
CENAM	-1.10	5.50	-0.50	5.50	0.10	5.70	0.40	5.70
NMIA	-0.70	2.70	-0.10	3.10	0.90	3.70	1.00	3.50
HUT (MIKES)	-	-	-	-	-	-	-	-
IFA-CSIC (IO CSIC)	-4.50	5.40	-	-	-	-	-	-
MSL	-	-	-	-	-	-	-	-
NIM	-0.20	1.00	-1.10	0.90	-1.40	1.10	-2.10	1.60
NIST	0.20	0.60	0.30	0.70	0.10	0.80	-0.50	1.40
NMIJ	-1.20	2.90	0.00	3.00	0.70	3.40	5.80	5.90
NRC	-2.10	4.30	-1.90	4.90	-0.90	5.50	-1.10	8.90
PTB	-1.50	2.60	-1.00	2.70	-0.10	2.60	-0.10	2.80
SPRING (A*STAR)	-	-	-	-	-	-	-	-
NIMT	-	-	-	-	-	-	-	-
KRISS	-	-	1.40	2.50	1.70	3.40	2.50	3.70
NPL 2010	-0.27	1.84	0.05	1.89	0.99	2.07	0.32	3.20
INM-RO	-	-	-	-	-	-	-	-
METAS	-	-	-	-	-	-	-	-
SP	2.44	4.15	2.57	4.60	3.42	5.19	2.84	6.15
VNIOFI	-0.77	1.84	0.03	2.00	0.40	2.29	0.17	3.13
VSL	-	-	-	-	-	-	-	-

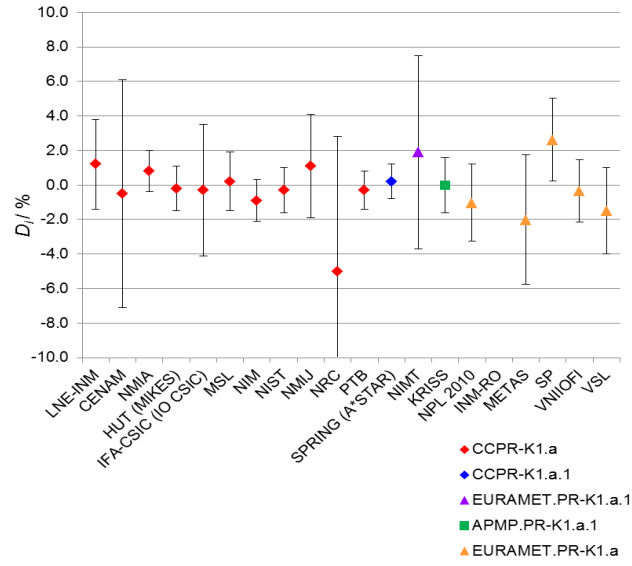




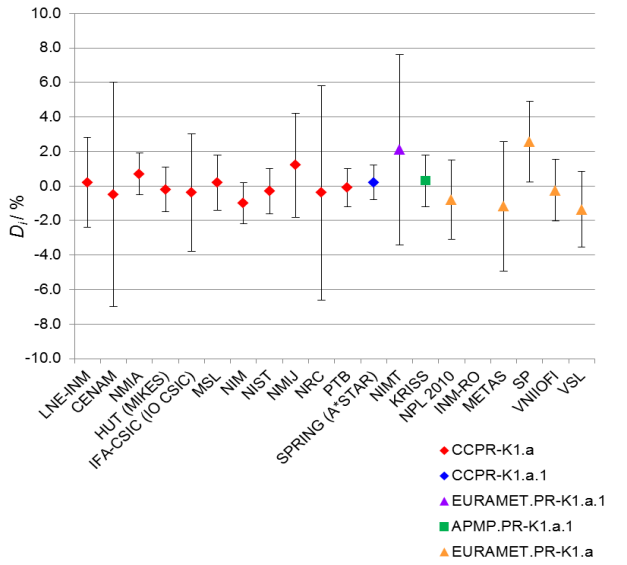
Spectral irradiance at 330 nm



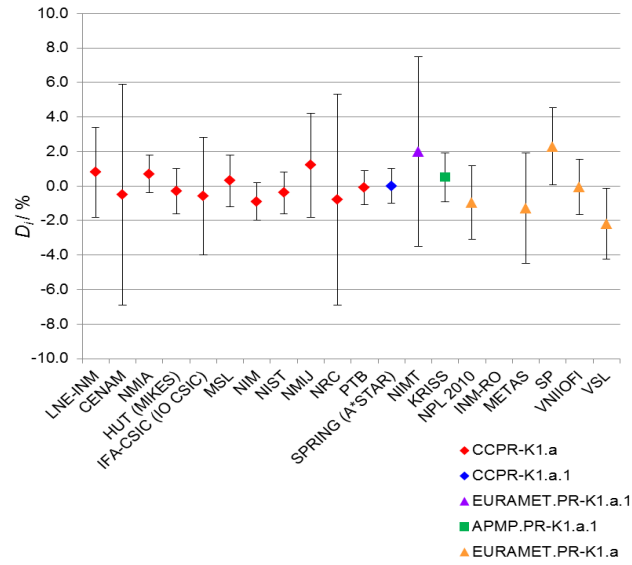
Spectral irradiance at 340 nm

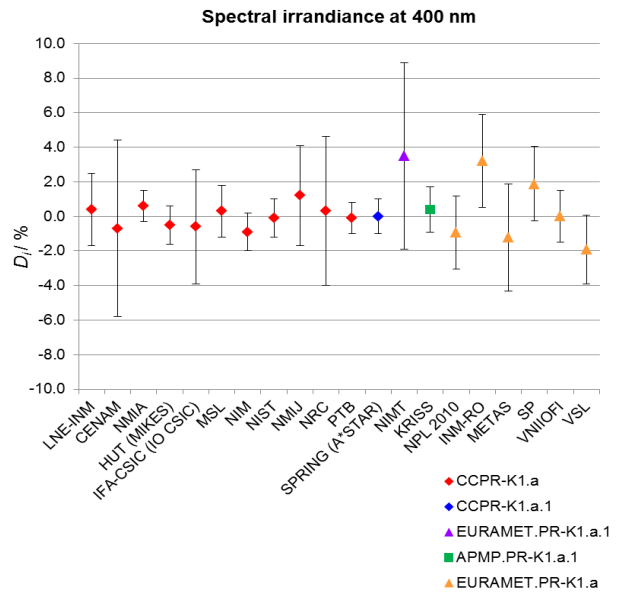
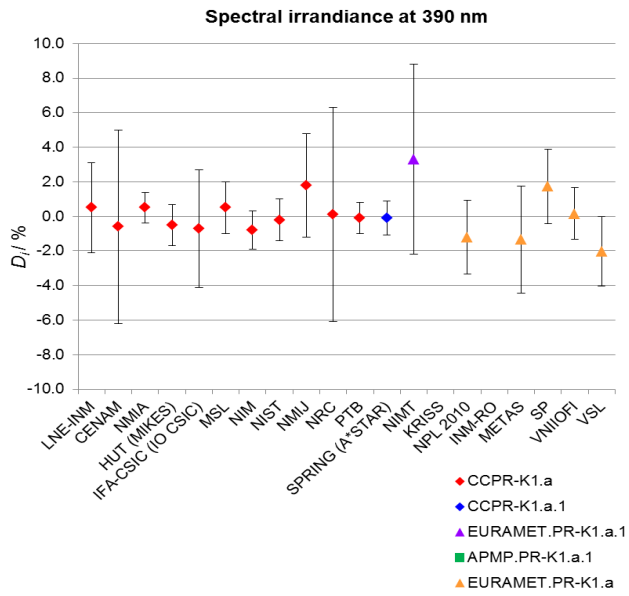
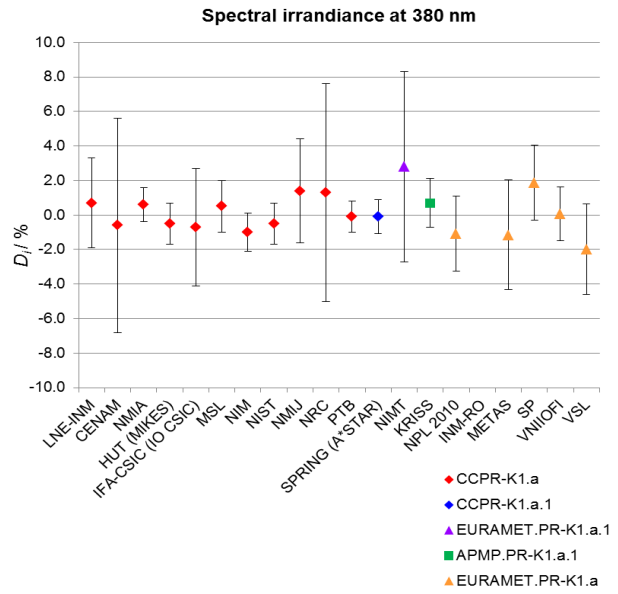
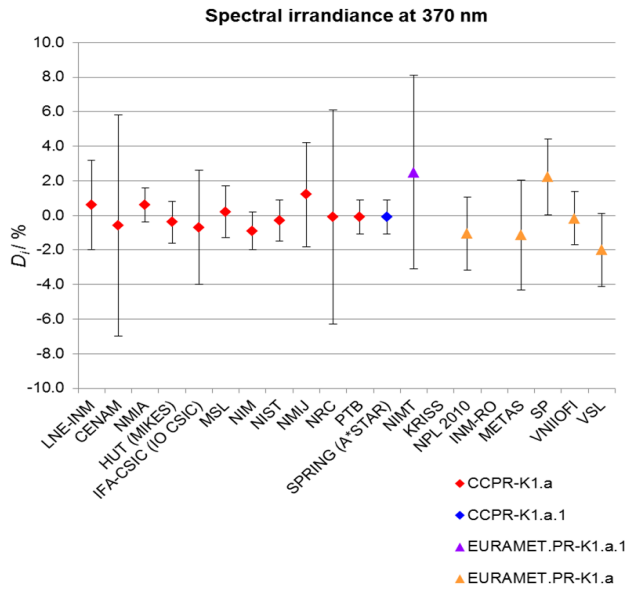


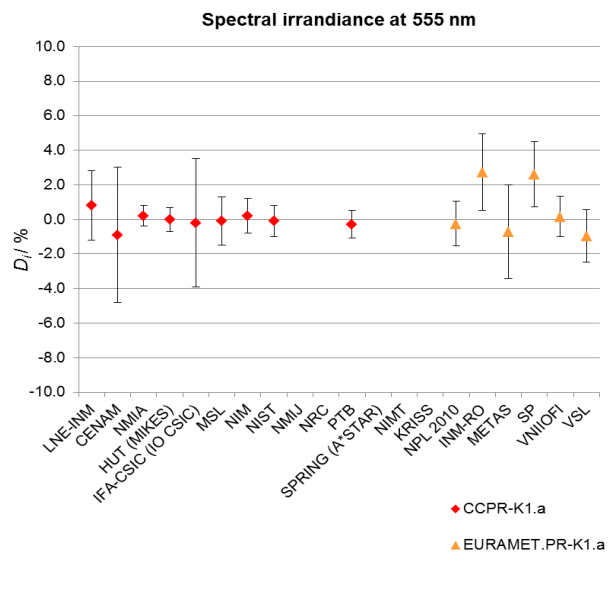
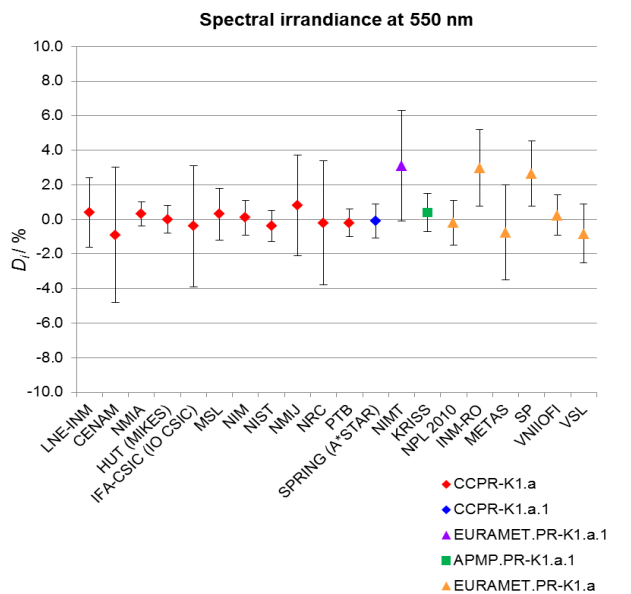
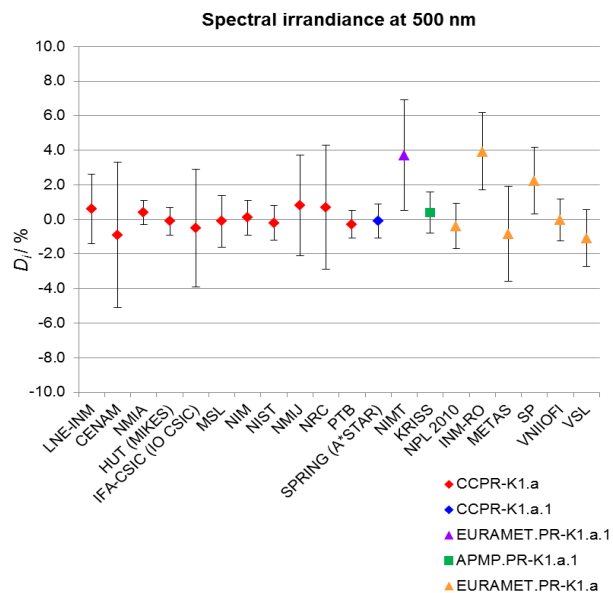
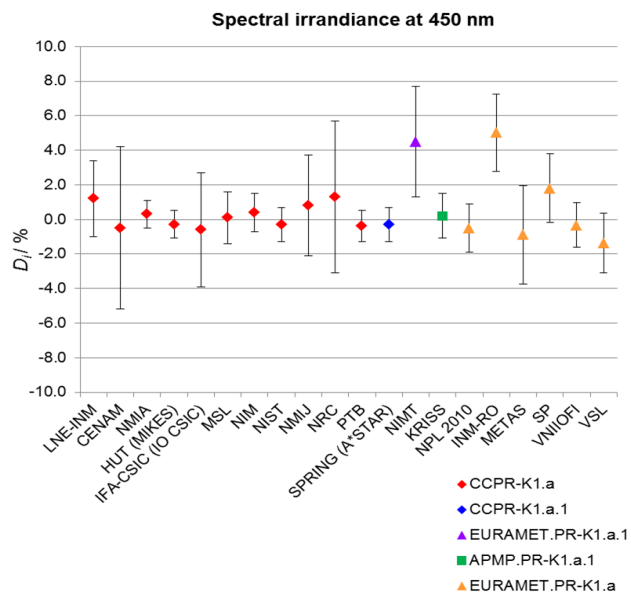
Spectral irradiance at 350 nm

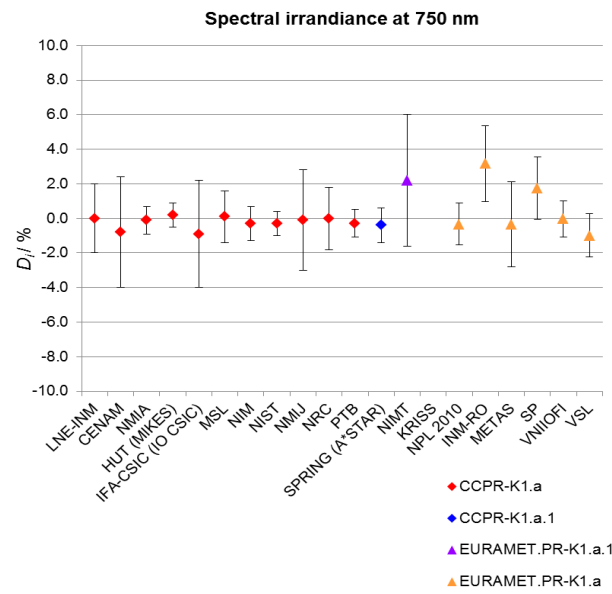
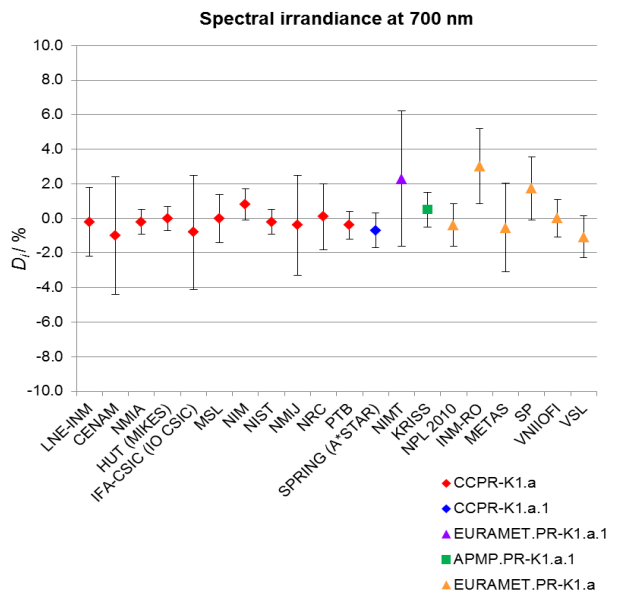
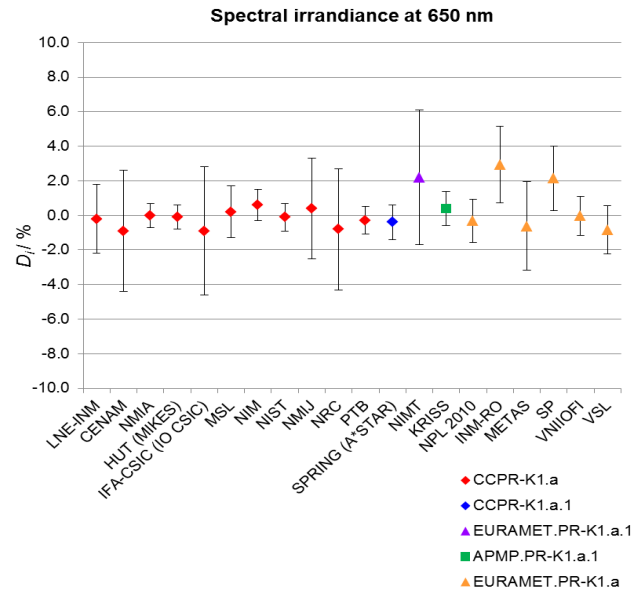
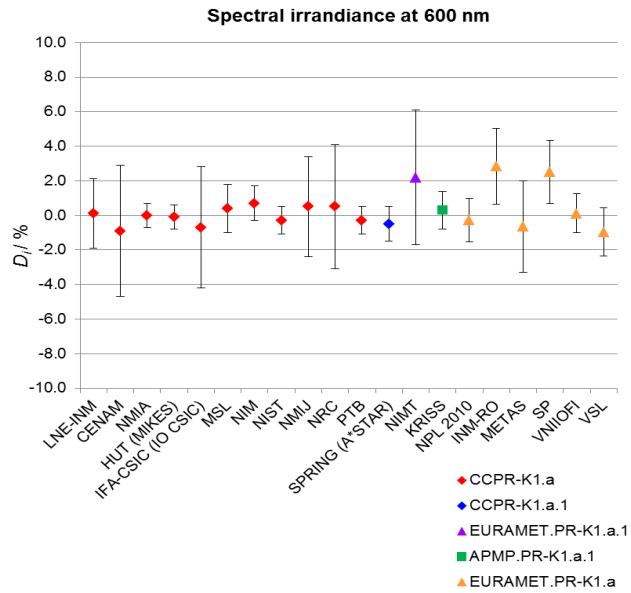


Spectral irradiance at 360 nm

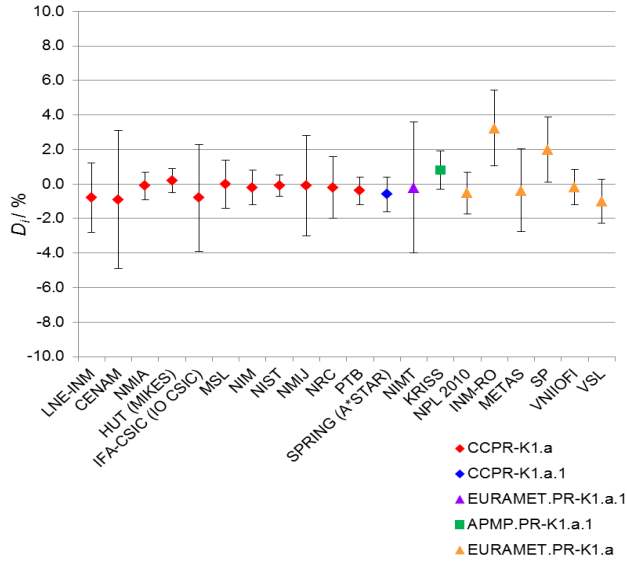




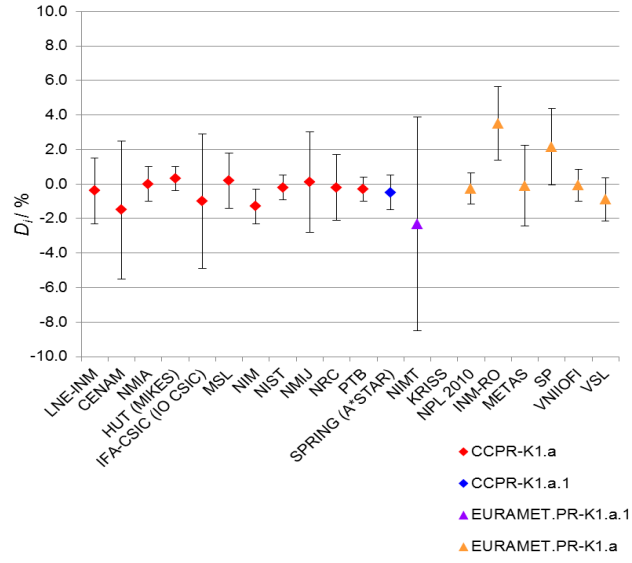




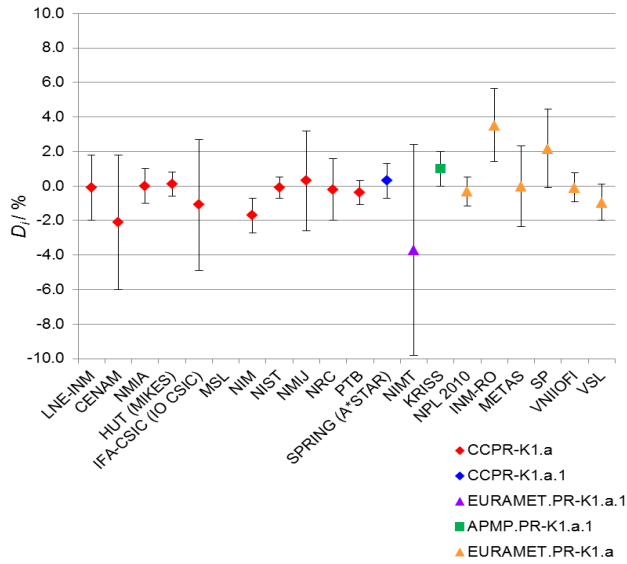
Spectral irradiance at 800 nm



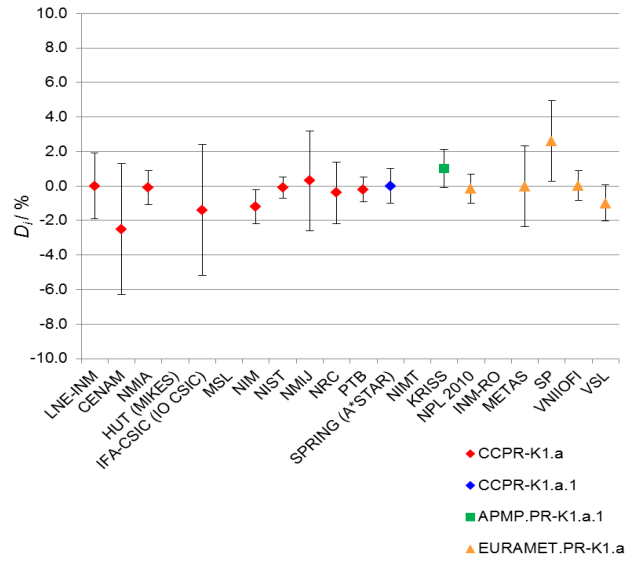
Spectral irradiance at 850 nm

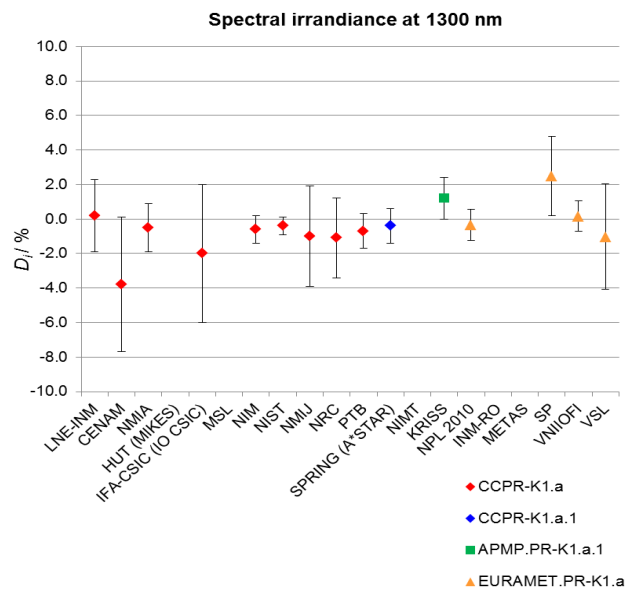
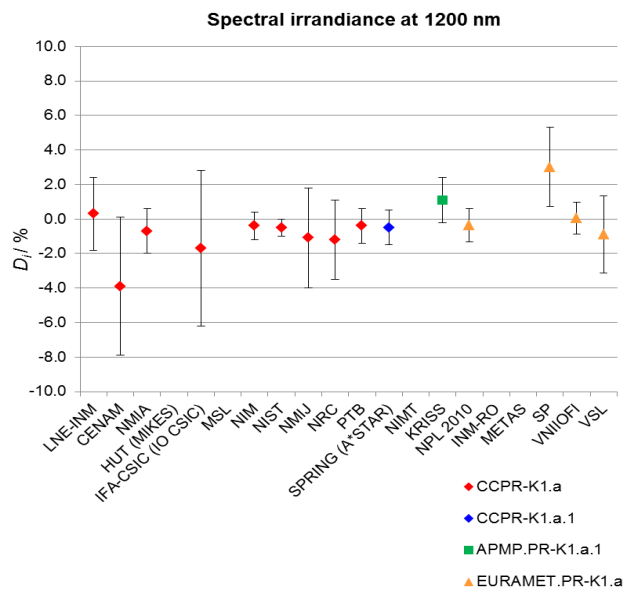
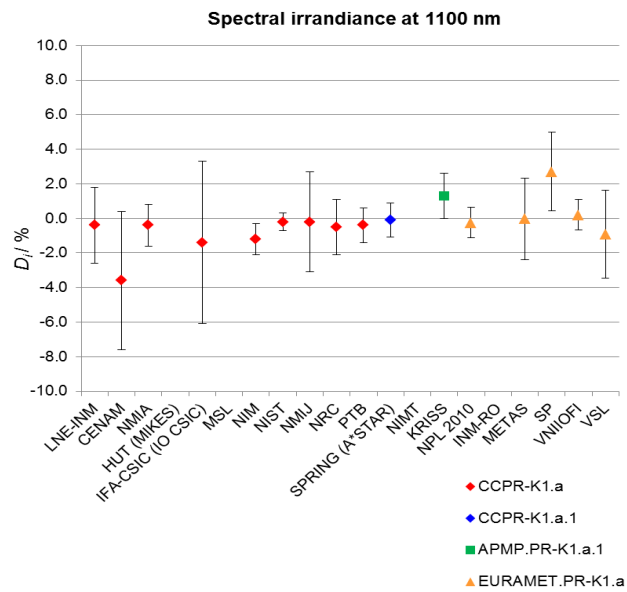
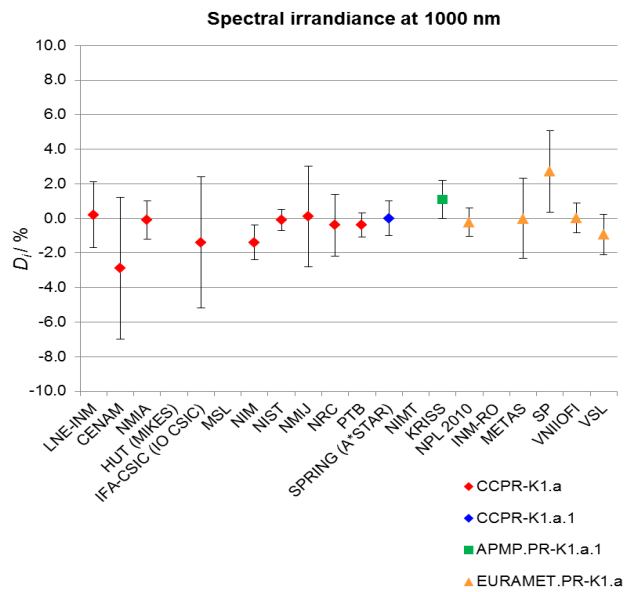


Spectral irradiance at 900 nm

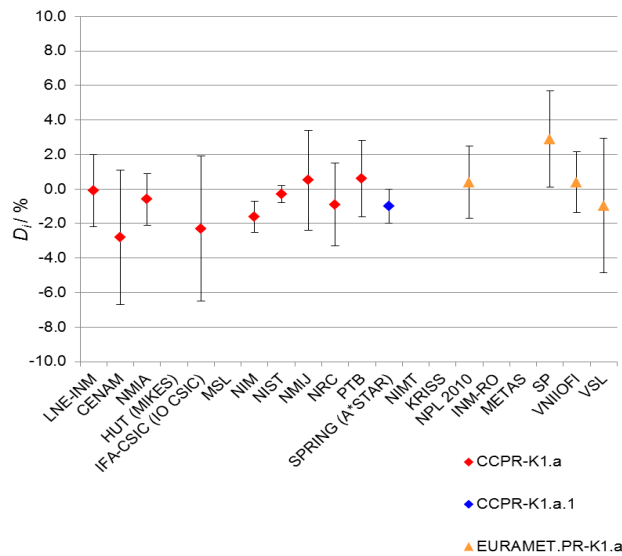


Spectral irradiance at 950 nm

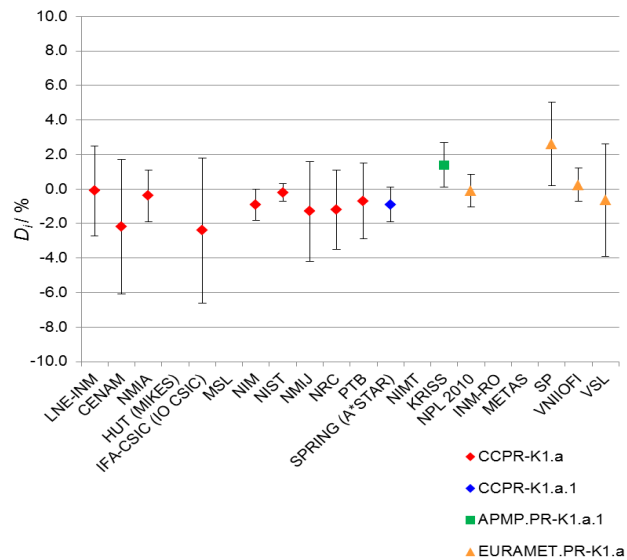




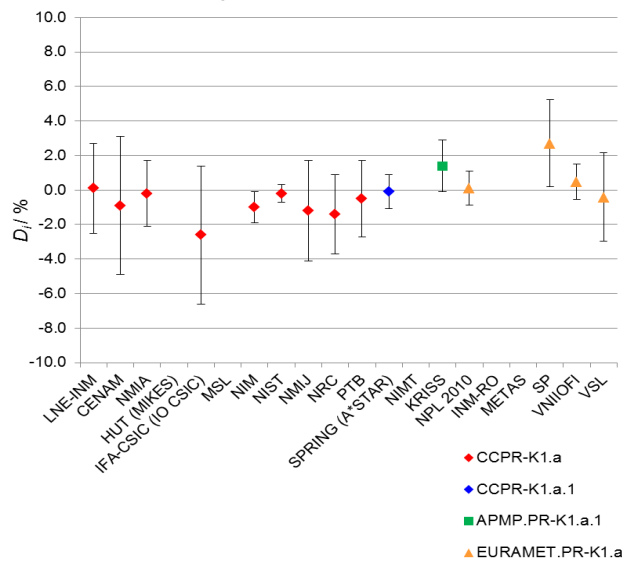
Spectral irradiance at 1400 nm



Spectral irradiance at 1500 nm



Spectral irradiance at 1600 nm



Spectral irradiance at 1700 nm

