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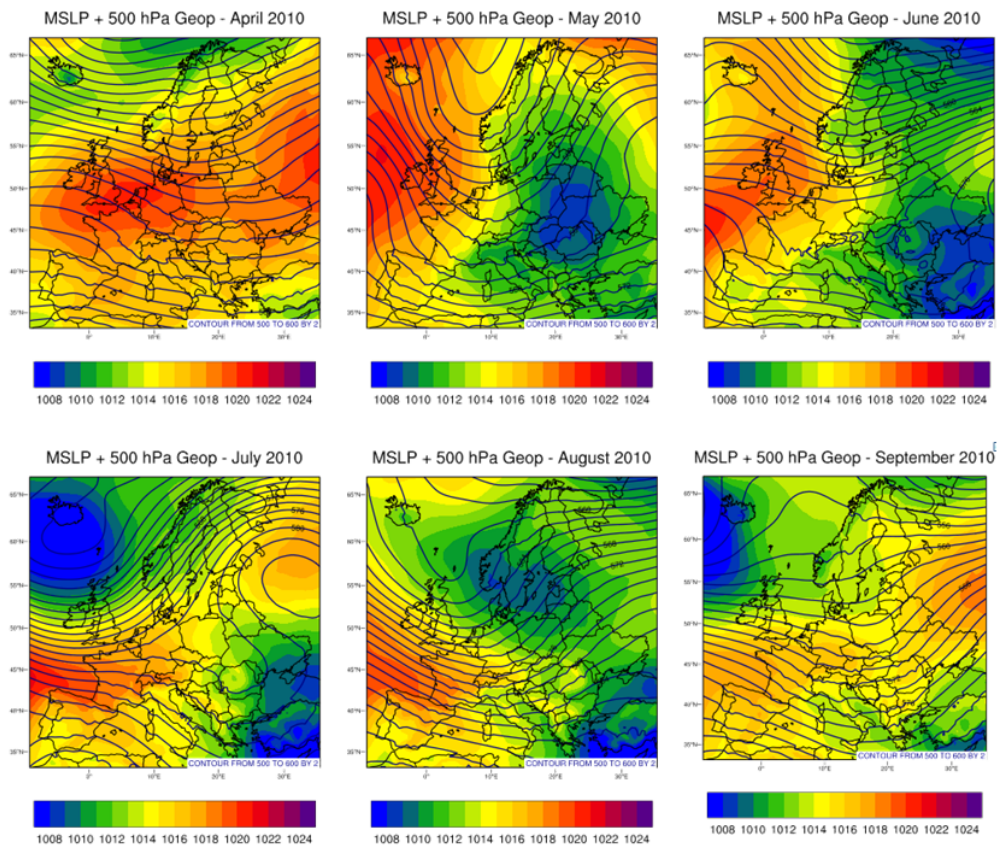
*Supplement of*

## **Source attribution of European surface O<sub>3</sub> using a tagged O<sub>3</sub> mechanism**

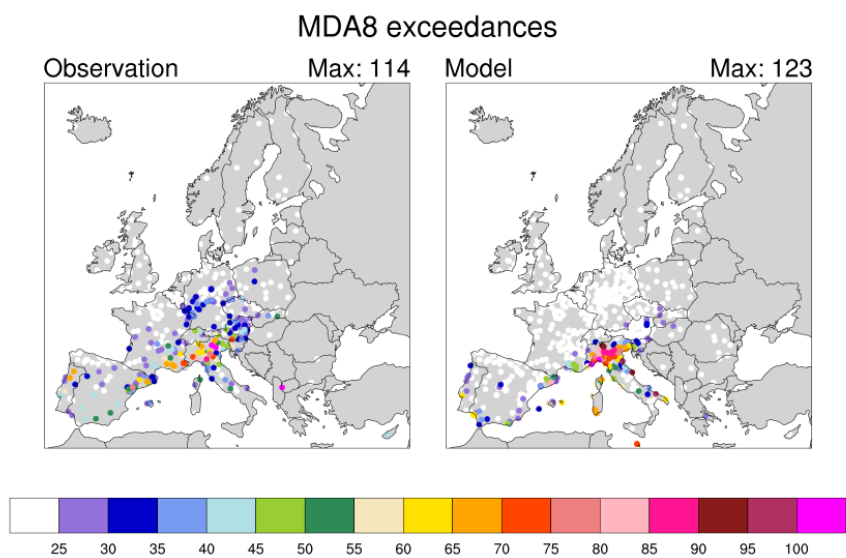
**Aurelia Lupaaşcu and Tim Butler**

*Correspondence to:* Aurelia Lupaaşcu (aurelia.lupascu@iass-potsdam.de)

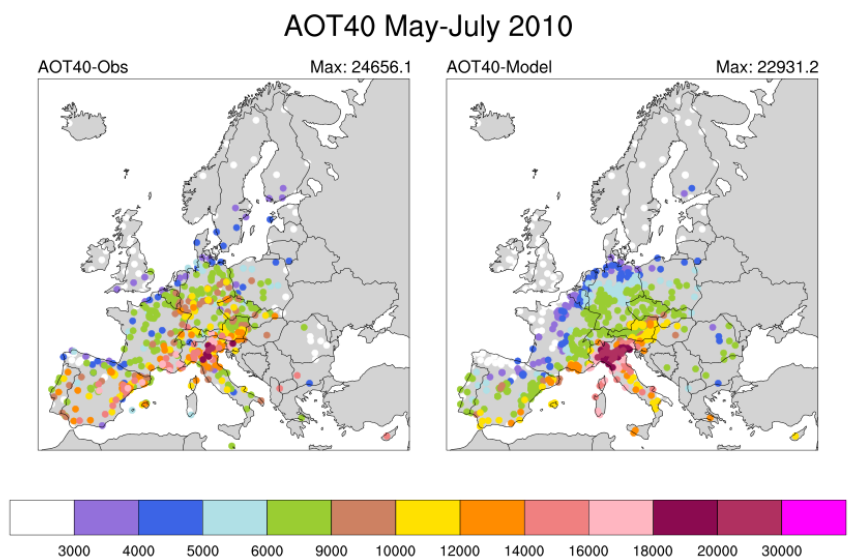
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**Figure S1.** Averaged mean sea level pressure (filled colors) and geopotential heights (contours) at 500 hPa for May-September 2010 period from the WRF-Chem simulation. The contour interval is 2 hPa



**Figure S2.** Distribution of observed (left) and modelled (right) MDA8 ozone air quality exceedance during April-September 2010 period. Model results are shown at the locations of the rural AirBase stations.



**Figure S3.** Distribution of observed (left) and modelled (right) AOT40 vegetation metrics during May-July 2010 period. Model results are shown at the locations of the rural AirBase stations. The unit is ppb – hours

**Table S1.** Percent contribution of local, European, long range transported (LRT) and natural emissions sources to MDA8 O<sub>3</sub> (ppb) at each receptor region during late spring, summer and early autumn 2010

SR region	Late Spring				Summer				Early Autumn			
	Local	rest of Europe	LRT	natural sources	Local	rest of Europe	LRT	natural sources	Local	rest of Europe	LRT	natural sources
IBE	19.96	20.37	41.09	18.57	31.10	21.84	27.69	19.36	31.15	15.35	33.74	19.75
ITA	11.43	45.76	29.46	13.34	16.75	53.63	15.53	14.08	12.17	46.66	24.6	16.56
SEE	15.96	38.22	28.84	16.97	22.27	40.35	14.18	23.19	17.41	37.11	21.84	23.64
TCA	20.19	24.68	33.96	21.16	24.57	26.62	22.69	26.1	22.99	23.16	26.92	26.92
UKI	10.35	13.52	53.65	22.46	17.38	15.28	44.84	22.48	7.80	19.83	44.96	27.41
FRA	14.37	33.91	34.22	17.48	25.45	35.09	23.66	15.78	21.81	28.26	29.63	20.29
Po Valley	20.71	41.42	23.52	15.10	35.72	40.61	10.95	14.03	28.08	37.37	19.02	17.59
High Alps	16.81	37.69	28.07	18.29	27.19	38.52	17.12	19.03	20.39	29.40	28.45	25.00
GEN	14.23	28.66	37.8	19.29	32.01	33.89	19.26	14.82	15.00	31.89	30.45	22.63
CEE	15.42	36.12	30.33	18.11	26.14	41.01	15.27	17.56	17.10	34.22	25.70	22.97
SCA	8.50	17.81	49.25	24.35	14.67	29.00	31.38	24.94	7.88	23.31	38.40	30.42
RBU	21.15	14.21	38.61	26.02	27.12	14.73	21.01	37.14	25.31	17.75	27.38	29.55

**Table S2.** Percent contribution of different emission sources and types to total O<sub>3</sub> at each receptor region as calculated for health and vegetation metrics. The metrics analysed are mean, MDA8 and 95<sup>th</sup> percentile (ppb) for the early "F" and late "S" simulation period, W126 (ppm – hours), SOMO35 and AOT40 (ppb – hours).

S/R region	Metric	UKI	FRA	GEN	ITA	CEE	ALP	IBE	RBU	SEE	SCA	TCA	BNS	MBS	BIO	BMB	LGT	STR	OCN	NAM	NAF	ASI	RST
UK	MeanF	11.4	1.6	1.2	0.0	0.2	0.0	0.2	3.2	0.0	1.3	0.0	5.1	0.0	4.2	2.6	4.7	9.9	19.3	12.7	0.6	9.0	12.7
	MeanS	10.2	1.4	1.9	0.0	0.5	0.0	0.1	3.0	0.1	1.5	0.0	4.8	0.0	9.7	8.1	5.9	3.9	20.1	13.4	0.1	4.5	10.8
	MDA8F	13.9	1.9	1.4	0.0	0.3	0.0	0.2	3.0	0.0	1.4	0.0	5.8	0.0	4.1	2.5	4.5	9.6	17.8	12.0	0.5	8.7	12.1
	MDA8S	12.8	1.7	2.2	0.0	0.6	0.0	0.1	2.9	0.1	1.5	0.0	5.6	0.0	9.4	7.8	5.7	3.8	18.3	12.9	0.1	4.4	10.2
	95 <sup>th</sup> F	18.0	2.8	2.7	0.0	0.6	0.1	0.3	2.7	0.0	2.3	0.0	8.9	0.0	3.3	2.2	4.3	9.7	13.0	9.4	0.5	8.5	10.5
	95 <sup>th</sup> S	20.1	3.4	6.6	0.0	0.8	0.0	0.1	2.1	0.0	3.8	0.0	10.2	0.0	7.6	6.7	5.0	3.5	11.4	8.1	0.1	3.9	6.6
	W126	19.4	4.4	4.2	0.0	0.8	0.1	0.3	2.4	0.1	1.9	0.0	7.2	0.0	3.3	2.2	4.1	9.2	12.2	9.7	0.5	7.8	10.1
	SOMO35	17.7	4.3	4.6	0.0	0.8	0.1	0.3	2.6	0.0	2.3	0.0	8.7	0.0	3.9	2.5	4.8	9.0	11.3	8.7	0.5	7.8	10.0
	AOT40	21.4	5.7	5.9	0.0	0.9	0.1	0.4	2.1	0.0	2.5	0.0	10.0	0.0	3.5	2.4	4.2	8.0	9.7	7.5	0.4	6.7	8.4
FRA	MeanF	4.0	15.3	10.5	0.6	2.0	2.4	3.7	2.5	0.6	1.4	0.1	4.6	3.7	3.7	2.4	3.3	6.9	9.8	7.9	0.9	5.6	8.1
	MeanS	5.3	22.7	5.2	0.4	0.4	2.8	4.2	1.5	0.2	0.9	0.0	4.4	4.0	7.3	4.6	4.4	2.9	10.7	8.4	0.4	3.3	6.1
	MDA8F	4.0	17.2	11.0	0.5	2.0	2.5	3.7	2.4	0.6	1.3	0.1	4.6	3.9	3.6	2.3	3.2	6.6	8.8	7.5	0.9	5.4	7.7
	MDA8S	5.3	25.2	5.3	0.4	0.4	2.8	4.3	1.4	0.2	0.9	0.0	4.6	4.4	7.1	4.4	4.2	2.9	9.2	7.9	0.4	3.1	5.7
	95 <sup>th</sup> F	3.3	20.6	15.7	0.8	3.1	4.4	3.8	3.2	1.2	1.7	0.2	4.0	4.8	3.6	2.7	2.5	4.9	4.2	5.4	0.8	3.8	5.6
	95 <sup>th</sup> S	5.2	31.2	9.9	0.5	0.7	4.8	5.2	0.8	0.3	1.0	0.0	4.4	5.7	6.0	3.1	3.3	2.3	3.9	5.2	0.3	2.5	3.6
	W126	2.5	23.9	17.2	0.8	2.6	5.7	3.6	2.0	0.8	1.0	0.1	2.8	4.9	4.5	2.8	2.4	4.1	3.8	5.3	0.9	3.3	5.0
	SOMO35	3.3	23.7	10.9	0.8	1.9	4.7	4.7	1.8	0.7	1.1	0.1	3.4	7.1	4.7	2.8	3.1	4.4	4.9	5.9	0.9	3.7	5.5
	AOT40	2.6	24.1	11.8	1.1	2.2	6.0	4.8	1.8	0.9	1.0	0.1	2.8	8.5	4.6	2.7	2.9	3.9	3.9	5.3	0.9	3.3	4.9
GEN	MeanF	5.5	3.7	17.8	0.2	3.4	1.7	0.7	3.0	0.2	3.5	0.0	7.7	0.5	3.8	2.6	3.7	7.6	9.3	9.0	0.6	6.6	8.9
	MeanS	6.7	8.6	24.4	0.1	4.2	2.5	0.7	1.9	0.3	2.0	0.0	7.2	0.3	6.8	4.8	4.0	2.7	6.5	7.4	0.1	3.0	5.7
	MDA8F	5.3	4.0	20.5	0.2	3.4	1.8	0.7	2.8	0.2	3.4	0.0	7.5	0.5	3.7	2.6	3.6	7.4	8.5	8.6	0.6	6.4	8.5
	MDA8S	6.4	8.8	27.2	0.1	4.0	2.6	0.7	1.8	0.3	1.9	0.0	7.1	0.3	6.5	4.6	3.8	2.6	5.8	7.0	0.1	2.9	5.4
	95 <sup>th</sup> F	4.7	4.8	26.9	0.3	3.9	3.1	0.9	2.8	0.4	2.8	0.1	6.7	0.8	3.5	3.0	3.1	6.4	5.8	6.9	0.6	5.5	7.0
	95 <sup>th</sup> S	3.4	11.9	35.5	0.2	7.3	5.0	0.9	1.1	0.5	1.4	0.0	5.0	0.6	5.7	3.3	2.8	1.9	2.9	5.1	0.1	2.2	3.1
	W126	2.8	9.8	45.9	0.2	5.8	4.4	1.1	0.7	0.3	0.7	0.0	3.4	0.7	5.6	3.0	1.9	1.9	2.4	4.7	0.3	1.9	2.7
	SOMO35	3.9	8.3	34.2	0.2	5.5	4.0	1.0	1.5	0.4	1.7	0.0	5.1	0.7	4.8	3.1	2.8	3.8	4.3	6.0	0.4	3.5	4.7
	AOT40	3.1	9.0	38.2	0.3	6.3	4.9	1.1	1.2	0.5	1.1	0.0	4.0	0.8	5.0	3.0	2.5	3.1	3.3	5.5	0.4	2.9	3.9
ITA	MeanF	1.1	5.8	5.1	10.8	5.6	4.4	2.5	2.5	4.0	0.9	0.3	1.5	14.6	3.4	1.7	2.8	5.4	4.5	5.2	4.2	4.0	9.7
	MeanS	2.1	8.3	4.6	13.3	4.1	6.0	2.8	1.4	4.3	0.5	0.1	1.7	15.4	5.8	4.8	3.4	2.4	2.7	4.9	3.0	2.5	5.9
	MDA8F	1.0	5.6	4.9	12.9	5.4	4.5	2.4	2.3	4.0	0.8	0.3	1.4	16.0	3.3	1.6	2.7	5.1	4.1	4.9	4.1	3.8	8.9
	MDA8S	1.9	7.5	4.4	15.6	3.9	6.4	2.6	1.3	4.2	0.5	0.1	1.6	16.8	5.5	4.9	3.1	2.3	2.3	4.5	3.0	2.3	5.4
	95 <sup>th</sup> F	0.6	4.7	5.0	16.2	6.8	8.0	1.3	3.1	5.6	0.8	0.6	1.0	16.9	3.3	1.8	2.1	3.9	2.1	3.7	3.1	2.8	6.7
	95 <sup>th</sup> S	1.3	5.9	4.9	19.4	4.9	10.0	1.8	1.2	4.4	0.3	0.1	1.0	17.3	5.1	5.3	2.4	1.8	1.3	3.4	2.4	1.8	3.9
	W126	1.0	6.5	5.0	20.2	5.5	9.1	2.6	1.5	3.7	0.5	0.1	1.1	12.2	5.8	4.7	2.5	2.7	1.8	4.2	2.5	2.3	4.5
	SOMO35	1.4	6.4	4.7	15.0	4.7	6.1	2.3	1.8	4.2	0.6	0.2	1.4	17.0	4.4	3.3	2.7	3.5	2.8	4.4	3.4	2.8	6.8
	AOT40	1.3	6.5	4.8	15.0	4.9	6.3	2.3	1.9	4.3	0.6	0.2	1.4	16.6	4.4	3.3	2.7	3.4	2.7	4.3	3.3	2.8	6.8
CEE	MeanF	2.6	2.1	7.7	1.1	16.3	1.5	0.8	6.9	2.9	5.3	0.1	5.1	1.1	4.4	3.0	3.4	6.9	6.7	7.4	0.9	5.8	8.1
	MeanS	3.6	2.7	10.3	0.4	21.8	1.5	0.4	7.8	3.5	4.4	0.1	5.1	0.5	8.3	6.0	3.6	2.6	3.6	5.9	0.2	2.7	5.1
	MDA8F	2.4	2.2	7.9	1.1	18.6	1.7	0.9	6.8	3.0	5.0	0.1	4.8	1.1	4.3	3.0	3.3	6.6	6.1	7.0	0.9	5.5	7.7
	MDA8S	3.3	2.7	10.6	0.4	23.9	1.6	0.4	7.7	3.6	4.0	0.1	4.8	0.5	8.1	5.8	3.4	2.5	3.3	5.5	0.2	2.6	4.8
	95 <sup>th</sup> F	1.2	2.8	9.8	1.8	23.8	2.7	1.3	8.3	4.4	2.5	0.2	2.9	1.7	4.5	4.3	2.7	5.3	3.6	5.0	0.9	4.2	6.2
	95 <sup>th</sup> S	1.3	2.6	11.1	0.7	31.5	2.1	0.7	9.3	6.1	1.1	0.1	2.2	0.8	8.6	6.4	2.5	1.8	1.7	3.9	0.4	1.9	3.3
	W126	1.4	2.8	11.1	1.1	35.6	3.1	1.0	5.5	6.1	1.2	0.1	1.9	1.2	8.3	5.3	2.0	1.9	1.6	3.6	0.4	1.8	2.9
	SOMO35	2.1	2.8	10.1	1.1	26.8	2.4	0.8	7.2	4.8	2.7	0.1	3.4	1.2	6.5	4.8	2.7	3.7	3.2	5.0	0.6	3.2	4.8
	AOT40	1.7	2.8	10.3	1.3	29.3	2.8	0.9	7.0	5.6	2.0	0.1	2.8	1.3	7.0	5.0	2.5	3.2	2.5	4.4	0.6	2.7	4.2

**Table S3.** Table S2. continuation

S/R region	Metric	UKI	FRA	GEN	ITA	CEE	ALP	IBE	RBU	SEE	SCA	TCA	BNS	MBS	BIO	BMB	LGT	STR	OCN	NAM	NAF	ASI	RST
High Alps	MeanF	1.8	6.5	11.7	2.1	4.9	15.4	2.2	2.7	1.8	1.5	0.3	2.0	4.0	3.7	2.3	3.6	7.0	5.1	7.0	1.7	5.1	7.6
	MeanS	2.6	8.7	11.8	0.9	2.7	24.3	1.7	1.2	1.3	0.7	0.0	2.5	2.4	6.4	4.3	4.6	3.3	3.9	7.5	0.5	3.6	5.0
	MDA8F	1.7	6.4	11.0	1.9	4.6	18.2	2.2	2.5	1.7	1.3	0.3	1.8	3.8	3.7	2.3	3.6	7.0	4.7	6.9	1.7	5.1	7.5
	MDA8S	2.3	7.9	11.0	0.9	2.5	27.2	1.7	1.2	1.3	0.7	0.1	2.3	2.5	6.3	4.2	4.7	3.4	3.5	7.4	0.5	3.6	4.9
	Perc.95F	0.5	6.6	8.1	3.4	6.2	24.2	2.2	3.3	2.5	0.7	0.4	0.8	6.0	3.8	2.7	3.0	5.5	2.5	5.0	2.2	3.8	6.5
	Perc.95S	1.0	7.4	6.9	1.3	2.5	38.9	1.9	0.9	2.0	0.4	0.1	1.2	4.4	5.6	3.4	3.9	2.8	2.1	5.6	0.5	3.3	4.0
	W126	0.9	6.2	9.5	1.9	3.8	32.8	2.3	1.7	1.5	0.7	0.2	1.1	4.7	4.7	3.1	2.9	4.3	2.5	5.2	1.5	3.3	4.9
	SOMO35	1.4	6.5	10.2	1.6	4.0	26.6	2.1	1.9	1.8	0.8	0.2	1.6	3.6	4.7	3.1	3.8	5.2	3.4	6.4	1.2	4.2	5.9
	AOT40D	1.2	6.3	9.7	1.8	4.3	27.7	2.1	1.9	1.9	0.8	0.2	1.3	3.9	4.6	3.1	3.6	5.1	3.1	6.1	1.3	4.1	5.7
Po Valley	MeanF	1.4	7.1	8.1	3.7	5.2	20.4	2.4	2.2	3.0	1.1	0.3	1.6	8.5	3.3	2.1	2.7	5.4	4.2	5.3	1.7	4.0	6.2
	MeanS	2.2	8.8	8.2	2.5	3.4	30.0	1.7	0.9	2.9	0.7	0.0	2.1	7.7	5.4	3.8	3.1	2.2	2.8	5.0	0.6	2.3	3.7
	MDA8F	1.3	6.6	7.6	3.6	4.9	24.8	2.3	2.1	3.0	1.0	0.3	1.5	8.2	3.2	2.1	2.5	5.2	3.8	5.0	1.6	3.7	5.8
	MDA8S	2.0	8.0	7.8	2.5	3.1	34.7	1.6	0.8	2.8	0.6	0.0	1.9	7.5	5.1	3.7	2.9	2.1	2.4	4.6	0.6	2.1	3.3
	Perc.95F	0.6	5.4	7.2	3.0	6.0	34.8	1.4	2.7	3.8	0.9	0.3	0.9	8.0	3.4	2.5	2.0	3.7	1.8	3.4	1.2	2.6	4.5
	Perc.95S	0.9	5.8	5.9	2.5	2.5	47.0	0.7	0.6	3.3	0.4	0.0	0.8	7.3	4.9	3.6	2.2	1.6	1.4	3.7	0.4	1.8	2.5
	W126	0.8	6.2	6.4	3.2	3.2	45.4	1.5	0.8	1.8	0.5	0.1	0.9	7.9	4.8	3.6	1.7	1.8	1.3	3.1	1.0	1.5	2.6
	SOMO35	1.3	6.8	7.2	3.2	4.1	33.8	1.8	1.4	3.0	0.7	0.2	1.4	8.5	4.1	2.9	2.4	3.1	2.5	4.1	1.1	2.5	4.0
	AOT40D	1.1	6.6	7.0	3.4	4.2	35.0	1.7	1.4	3.1	0.7	0.2	1.3	8.8	4.2	3.0	2.2	2.9	2.2	3.9	1.1	2.4	3.8
IBE	MeanF	2.3	5.2	2.5	0.4	0.8	0.9	19.8	1.8	0.3	0.5	0.1	1.8	6.4	4.2	1.9	4.0	7.6	11.5	9.0	2.4	6.0	10.6
	MeanS	1.5	5.0	0.6	0.2	0.1	0.4	28.2	0.9	0.0	0.2	0.0	1.0	9.6	7.3	5.3	5.1	3.2	10.0	8.8	2.8	3.7	6.0
	MDA8F	2.1	4.8	2.4	0.4	0.7	0.9	22.8	1.7	0.3	0.5	0.1	1.7	6.7	4.3	1.9	3.9	7.5	10.5	8.6	2.4	5.8	10.1
	MDA8S	1.3	4.2	0.5	0.2	0.1	0.3	31.9	0.9	0.0	0.2	0.0	0.9	9.7	7.2	5.4	5.0	3.1	8.8	8.2	2.8	3.6	5.6
	95 <sup>th</sup> F	1.1	6.8	3.0	0.7	1.3	1.7	28.4	2.3	0.5	0.7	0.2	1.3	9.3	4.7	2.0	3.3	6.1	5.6	6.4	3.2	4.3	6.8
	95 <sup>th</sup> S	1.1	3.9	0.8	0.3	0.1	0.4	37.6	0.6	0.0	0.2	0.0	0.8	12.5	7.1	6.3	4.1	2.6	5.0	5.6	3.8	2.9	4.3
	W126	0.8	4.0	1.4	0.3	0.4	0.6	36.1	0.9	0.1	0.2	0.0	0.7	10.1	7.0	5.8	3.9	3.9	4.9	6.6	3.1	3.6	5.4
	SOMO35	1.4	4.9	1.6	0.4	0.5	0.8	29.3	1.2	0.2	0.3	0.0	1.2	10.8	5.6	3.7	4.1	5.0	7.2	7.0	3.2	4.3	7.1
	AOT40	1.2	5.4	1.8	0.5	0.7	1.1	29.4	1.2	0.3	0.4	0.1	1.0	12.4	5.5	3.5	3.9	4.8	6.2	6.5	3.4	4.0	6.7
RBU	MeanF	0.9	0.6	1.5	0.2	3.4	0.3	22.2	1.6	3.0	0.5	1.5	0.6	7.3	5.4	4.5	8.8	6.6	8.3	0.7	8.2	13.7	
	MeanS	1.7	0.7	2.3	0.1	4.0	0.2	25.6	0.9	3.3	0.2	2.1	0.2	13.4	16.3	4.7	3.4	2.9	5.7	0.1	3.9	8.4	
	MDA8F	0.9	0.7	1.6	0.2	3.6	0.3	23.0	1.7	2.8	0.5	1.5	0.6	7.3	5.8	4.4	8.6	6.3	8.0	0.7	7.9	13.2	
	MDA8S	1.6	0.7	2.3	0.1	4.0	0.2	26.6	1.0	3.1	0.2	2.0	0.2	12.9	17.6	4.5	3.3	2.7	5.4	0.1	3.7	7.9	
	95 <sup>th</sup> F	0.9	1.0	2.3	0.3	3.8	0.5	0.4	24.4	2.2	1.5	0.5	1.1	0.7	6.3	10.9	4.1	8.3	5.3	6.6	0.7	6.9	11.3
	95 <sup>th</sup> S	0.8	0.5	1.6	0.1	3.0	0.2	0.1	29.3	1.1	1.4	0.2	1.0	0.2	12.1	28.8	3.5	2.6	1.4	3.7	0.1	2.8	5.6
	W126	0.3	0.3	0.9	0.1	2.1	0.1	0.1	29.3	0.8	0.7	0.1	0.5	0.1	12.4	33.8	3.2	2.8	0.9	3.2	0.1	2.8	5.1
	SOMO35	0.7	0.6	1.7	0.2	3.7	0.3	0.3	28.6	1.6	1.3	0.4	1.0	0.5	10.2	20.3	3.7	4.8	2.6	4.8	0.4	4.4	7.9
	AOT40	0.5	0.6	1.4	0.2	3.3	0.3	0.2	29.6	1.6	0.9	0.4	0.7	0.5	11.0	24.1	3.5	4.1	1.9	4.1	0.3	3.8	7.0
SEE	MeanF	0.9	1.9	3.7	3.5	7.4	1.7	1.2	6.9	16.4	0.9	3.2	1.2	6.7	5.2	2.3	3.4	6.4	4.3	5.9	2.1	4.9	9.9
	MeanS	1.2	1.5	3.4	2.4	7.5	1.8	0.6	9.7	19.0	1.2	3.7	1.5	4.8	9.3	9.9	3.8	2.8	2.0	4.6	0.8	2.9	5.6
	MDA8F	0.9	1.9	3.6	3.5	7.2	1.9	1.2	6.5	18.2	0.9	3.4	1.1	7.1	5.1	2.2	3.3	6.2	4.0	5.6	2.0	4.7	9.4
	MDA8S	1.2	1.5	3.2	2.4	7.1	2.0	0.6	9.3	20.6	1.1	4.1	1.4	5.2	9.1	10.0	3.6	2.7	1.8	4.4	0.8	2.8	5.3
	95 <sup>th</sup> F	0.5	2.2	4.3	4.9	7.6	3.1	0.9	4.9	21.4	0.5	4.1	0.8	7.7	5.5	2.5	3.0	5.3	2.6	4.8	1.6	3.9	7.9
	95 <sup>th</sup> S	0.4	0.8	2.1	2.3	5.4	2.2	0.4	9.1	25.3	0.3	4.3	0.5	4.9	10.2	14.2	3.2	2.3	1.0	3.4	0.7	2.5	4.6
	W126	0.7	1.3	2.9	2.1	7.2	2.8	0.6	9.6	23.6	0.6	1.1	0.8	2.6	10.8	13.9	3.3	2.7	1.3	3.9	0.6	2.7	4.7
	SOMO35	0.8	1.7	3.2	3.1	6.5	2.2	0.8	7.5	20.5	0.7	4.4	1.0	7.0	7.3	6.9	3.3	4.1	2.6	4.6	1.3	3.5	7.0
	AOT40	0.7	1.6	3.1	3.1	6.2	2.2	0.8	7.5	20.7	0.6	4.9	0.9	7.4	7.5	7.1	3.2	4.0	2.4	4.4	1.3	3.4	7.0
SCA	MeanF	2.2	0.6	1.6	0.0	1.5	0.1	7.1	0.1	9.3	0.0	4.3	0.1	5.5	2.8	5.0	10.8	12.4	11.0	0.7	10.1	14.6	
	MeanS	5.5	1.4	4.5	0.0	3.1	0.1	5.8	0.1	11.6	0.0	7.5	0.0	10.4	8.3	5.7	3.9	7.9	9.3	0.1	4.3	10.2	
	MDA8F	2.3	0.6	1.7	0.0	1.5	0.1	7.1	0.1	10.3	0.0	4.7	0.1	5.4	2.9	5.0	10.7	11.8	10.7	0.7	9.9	14.2	
	MDA8S	5.5	1.5	5.3	0.0	3.5	0.1	6.0	0.2	12.6	0.0	7.9	0.0	10.1	8.0	5.5	3.8	7.3	8.9	0.1	4.1	9.6	
	95 <sup>th</sup> F	3.1	0.8	2.5	0.1	2.4	0.2	0.2	7.6	0.2	11.2	0.1	5.6	0.1	4.1	2.5	4.9	11.4	10.7	9.1	0.7	9.9	12.8
	95 <sup>th</sup> S	5.0	2.6	10.2	0.0	7.3	0.2	0.2	7.6	0.4	12.4	0.0	9.1	0.1	8.6	6.6	4.4	3.1	5.1	7.1	0.1	3.3	6.8
	W126	2.6	1.7	6.8	0.0	4.8	0.2	0.2	12.5	0.2	10.9	0.0	5.3	0.1	7.2	8.2	3.7	6.8	6.7	6.9	0.4	6.1	8.6
	SOMO35	3.8	1.9	7.8	0.1	5.8	0.2	0.2	8.1	0.3	12.2	0.0	8.5	0.1	5.3	4.3	3.9	7.6	7.3	7.0	0.5	6.5	8.7
	AOT40	3.5	2.4	10.6	0.1	8.3	0.3	0.2	9.9	0.4	12.5	0.0	9.4	0.1	6.1	5.4	3.1	5.5	5.2	5.7	0.4	4.7	6.4

**Table S4.** Table S2. continuation

S/R region	Metric	UKI	FRA	GEN	ITA	CEE	ALP	IBE	RBU	SEE	SCA	TCA	BNS	MBS	BIO	BMB	LGT	STR	OCN	NAM	NAF	ASI	RST
TCA	MeanF	0.4	1.0	1.7	0.7	2.4	0.7	0.7	8.0	6.8	0.4	19.7	0.6	4.5	6.0	2.1	4.4	7.7	3.7	6.0	2.4	5.4	14.8
	MeanS	0.4	0.4	0.7	0.3	1.8	0.4	0.3	13.6	4.6	0.4	20.6	0.4	4.1	10.7	8.2	5.6	4.3	1.5	5.1	1.1	4.4	11.3
	MDA8F	0.4	1.0	1.7	0.7	2.3	0.7	0.7	7.1	6.6	0.4	22.0	0.5	4.4	5.8	2.2	4.4	7.8	3.5	6.0	2.3	5.4	14.2
	MDA8S	0.3	0.3	0.7	0.3	1.6	0.3	0.3	11.8	4.4	0.4	23.6	0.4	3.7	10.4	7.9	5.8	4.5	1.4	5.2	1.0	4.5	11.1
	95 <sup>th</sup> F	0.4	1.3	2.2	0.9	3.0	1.0	0.9	4.1	8.3	0.3	25.7	0.5	4.5	5.6	2.3	4.1	7.3	2.8	5.6	1.8	4.9	12.6
	95 <sup>th</sup> S	0.2	0.2	0.4	0.2	1.3	0.2	0.2	10.4	4.2	0.3	27.6	0.2	3.0	10.4	9.4	5.7	4.8	1.1	5.0	0.6	4.4	10.4
	W126	0.2	0.3	0.6	0.3	1.2	0.3	0.3	8.4	4.0	0.2	28.0	0.2	2.5	10.4	7.5	6.0	5.5	1.3	5.3	0.9	4.7	11.7
	SOMO35	0.3	0.7	1.2	0.5	1.9	0.6	0.5	8.8	5.8	0.4	24.4	0.4	4.2	8.2	5.4	5.0	6.0	2.3	5.5	1.4	4.7	12.0
	AOT40	0.3	0.7	1.2	0.5	2.0	0.6	0.5	8.6	6.0	0.4	24.8	0.4	4.3	8.2	5.5	4.9	5.9	2.2	5.4	1.3	4.6	11.7