

**Table S1: coordinates of GPS stations (latGPS, lonGPS, altGPS), altitudes of ERA-Interim grid points surrounding each station (alt1 to alt4), height difference between GPS and nearest grid point, number of months with valid GPS data (NP)**

nameGPS	latGPS (deg)	lonGPS (deg)	altGPS (m)	alt1 (m)	alt2 (m)	alt3 (m)	alt4 (m)	Δh nearest (m)	NP
albh	48.4	236.5	51	255	273	218	251	-204	192
algo	46.0	281.9	237	338	362	342	338	-101	192
alic	-23.7	133.9	588	719	621	662	547	41	162
ankr	39.9	32.8	939	1072	1055	1144	1054	-115	136
areq	-16.5	288.5	2447	3692	1803	4273	3109	-662	155
auck	-36.6	174.8	98	24	29	10	30	69	174
blyt	33.6	245.3	119	341	209	424	256	-222	189
bor1	52.3	17.1	89	78	124	88	119	1	191
braz	-15.9	312.1	1119	976	921	874	839	143	153
brmu	32.4	295.3	23	0	0	0	0	23	184
brus	50.8	4.4	104	40	120	68	186	36	180
cagl	39.1	9.0	192	134	39	265	73	119	172
cas1	-66.3	110.5	39	106	538	372	628	-67	171
ccjm	27.1	142.2	161	0	0	-1	1	160	178
cedu	-31.9	133.8	154	145	26	175	106	9	133
cfag	-31.6	291.8	680	995	859	675	522	-315	162
chat	-44.0	183.4	48	1	1	1	1	47	173
chur	58.8	265.9	29	8	50	-1	19	10	186
coco	-12.2	96.8	5	0	0	0	0	5	154
coso	36.0	242.2	1485	1327	967	1322	1014	163	161
crfp	34.0	242.9	721	788	558	885	794	-73	186
cro1	17.8	295.4	13	15	5	-1	-2	14	149
darw	-12.8	131.1	75	64	108	99	154	-24	128
dav1	-68.6	78.0	27	3	323	56	686	-29	147
dgar	-7.3	72.4	10	0	0	0	0	10	113
dhlg	33.4	244.2	-49	677	508	447	313	-496	169
drao	49.3	240.4	558	1314	1292	1277	1132	-719	192
dubo	50.3	264.1	275	273	278	324	321	-3	165
ebre	40.8	0.5	58	467	475	334	111	-53	174
fair	65.0	212.5	308	391	487	468	548	-83	169
fale	-13.8	188.0	14	40	22	36	20	-22	132
flin	54.7	258.0	343	307	302	295	284	36	167
gode	39.0	283.2	48	193	111	126	46	2	169
gold	35.4	243.1	1018	1025	877	961	847	141	138
gope	49.9	14.8	547	371	494	349	482	198	165
gras	43.8	6.9	1269	1137	665	785	164	604	161
graz	47.1	15.5	491	883	673	601	436	-110	184
guam	13.6	144.9	147	2	3	0	1	144	144
hers	50.9	0.3	32	35	7	29	33	-3	163
hob2	-42.8	147.4	45	365	74	249	53	-204	167

holb	50.6	231.9	576	55	61	145	271	521	172
holp	33.9	241.8	29	678	293	788	558	-264	188
hrao	-25.9	27.7	1389	1239	1442	1245	1472	-83	150
iisc	13.0	77.6	930	767	787	725	717	143	125
irkt	52.2	104.3	541	627	958	655	849	-86	179
joze	52.1	21.0	110	120	158	136	161	-48	191
karr	-21.0	117.1	117	-1	122	2	143	-5	170
kely	67.0	309.1	198	447	673	618	806	-475	94
kerg	-49.4	70.3	33	27	84	12	34	-1	164
kiru	67.9	21.0	362	634	523	557	429	-67	183
kit3	39.1	66.9	659	863	1178	1250	1928	-519	166
kokb	22.1	200.3	1153	22	24	11	12	1131	156
kosg	52.2	5.8	53	-2	10	9	27	44	179
kour	5.3	307.2	8	4	43	-1	9	-1	163
lama	53.9	20.7	158	93	123	110	132	48	176
leep	34.1	241.7	520	678	293	788	558	-158	186
lpgs	-34.9	302.1	14	19	14	22	9	5	150
mac1	-54.5	158.9	14	1	0	0	1	14	167
madr	40.4	355.8	777	854	684	851	715	-77	156
mas1	27.8	344.4	155	65	53	7	13	102	175
mate	40.6	16.7	490	112	303	17	85	187	176
maw1	-67.6	62.9	30	536	1238	497	1182	-467	169
mcm4	-77.8	166.7	151	117	187	48	112	-36	146
mdo1	30.7	256.0	2027	1319	1298	1176	1182	708	171
medi	44.5	11.6	10	176	253	112	270	-260	175
mets	60.2	24.4	76	88	31	82	31	46	168
mkea	19.8	204.5	3730	221	496	176	563	3167	149
monp	32.9	243.6	1875	539	389	508	561	1367	180
nano	49.3	235.9	24	385	226	405	255	-381	183
nlib	41.8	268.4	240	275	248	257	222	-17	160
nrc1	45.5	284.4	116	198	144	206	178	-82	176
onsa	57.4	11.9	9	9	13	70	38	-61	170
penc	47.8	19.3	248	247	151	276	126	-28	173
pert	-31.8	115.9	45	62	48	212	205	-167	177
pie1	34.3	251.9	2370	2184	2178	2193	2161	177	164
pin1	33.6	243.5	1289	794	539	677	508	612	191
pol2	42.7	74.7	1755	1793	2502	1865	2605	-110	152
pots	52.4	13.1	104	55	112	51	110	50	186
quin	40.0	239.1	1129	1197	820	1554	1369	-240	137
reyk	64.1	338.0	27	71	25	245	41	-218	169
sant	-33.1	289.3	696	671	566	2153	1980	-1457	152
shao	31.1	121.2	12	3	20	0	12	0	118
sio3	32.9	242.8	70	149	15	539	389	-469	189
sni1	33.2	240.5	277	44	-14	118	-20	297	139
stjo	47.6	307.3	143	63	52	17	17	126	190
svtl	60.5	29.8	61	33	31	30	34	31	169
syog	-69.0	39.6	28	157	412	429	698	-401	173
tabl	34.4	242.3	2261	788	558	885	794	1473	174

tidb	-35.4	149.0	646	655	863	682	774	-36	158
tow2	-19.3	147.1	30	37	177	-4	26	-147	182
trak	33.6	242.2	151	293	-8	558	149	-407	189
tskb	36.1	140.1	28	585	362	344	109	-81	174
uclu	48.9	234.5	29	343	79	351	119	-90	184
usud	36.1	138.4	1466	774	990	739	765	476	164
vill	40.4	356.0	595	854	684	851	715	-256	181
vndp	34.6	239.4	25	259	88	369	398	-63	178
wes2	42.6	288.5	114	250	149	113	60	1	165
whit	60.8	224.8	1420	1045	1132	1060	1108	313	168
will	52.2	237.8	1110	1046	1175	1150	1128	64	184
wslr	50.1	237.1	926	1344	593	1347	832	-418	170
wtzt	49.1	12.9	619	507	477	507	533	112	174
wuhn	30.5	114.4	40	57	95	102	140	-17	173
yell	62.5	245.5	207	243	184	273	217	23	192
zimm	46.9	7.5	907	615	1100	777	1378	130	192

**Table S2: Statistics of seasonal IWV time series from GPS and ERA-Interim (mean IWV, relative standard deviation of IWV, and comparison of IWV times series). The p-values for the means are computed from a t-test. The p-values for the relative standard deviations are computed from a F-test.**

nom_sta	flag	Mean IWV					Rel. Std. IWV				Comparison		
		GPS (kg m <sup>-2</sup> )	ERA-I (kg m <sup>-2</sup> )	Diff. (kg m <sup>-2</sup> )	Diff. (%)	p-value	GPS (%)	ERA-I (%)	Diff. (%)	p-value	Std.Diff. (%)	Corr. coef.	NP
albh	DJF	11.45	12.66	1.21	10.6	0.000032	5.4	6.0	0.6	0.435720	1.8	0.975	16
albh	JJA	20.23	20.67	0.44	2.2	0.186798	4.2	4.7	0.5	0.605813	1.7	0.937	16
algo	DJF	6.17	6.45	0.28	4.5	0.236027	10.2	10.5	0.3	0.776764	2.6	0.974	16
algo	JJA	24.35	25.27	0.93	3.8	0.028864	4.7	4.6	-0.1	0.974366	1.3	0.962	16
alic	DJF	27.55	26.74	-0.82	-3.0	0.637161	16.1	14.6	-1.5	0.676762	4.0	0.974	12
alic	JJA	10.51	10.73	0.22	2.1	0.808161	23.2	21.6	-1.6	0.855723	4.0	0.986	14
ankr	DJF	8.28	8.78	0.51	6.2	0.180797	12.4	9.6	-2.9	0.492067	5.3	0.908	13
ankr	JJA	18.28	19.29	1.01	5.5	0.211489	9.4	10.1	0.7	0.696833	4.8	0.895	11
areq	DJF	18.39	18.01	-0.38	-2.1	0.450112	7.6	5.6	-2.0	0.286538	5.2	0.736	12
areq	JJA	6.35	6.78	0.43	6.8	0.340432	17.2	18.4	1.3	0.635203	12.6	0.776	14
auck	DJF	23.11	23.34	0.23	1.0	0.655255	5.8	5.7	-0.2	0.942102	0.9	0.988	14
auck	JJA	14.59	15.11	0.52	3.6	0.186888	6.9	7.2	0.4	0.755911	1.6	0.980	15
blyt	DJF	10.50	11.25	0.75	7.1	0.258014	15.7	18.0	2.2	0.438743	5.5	0.970	16
blyt	JJA	24.93	23.74	-1.18	-4.7	0.171564	9.8	9.9	0.1	0.868385	3.7	0.926	16
bor1	DJF	8.65	9.33	0.68	7.9	0.161254	15.4	14.5	-0.9	0.944336	2.8	0.984	16
bor1	JJA	23.59	24.57	0.98	4.2	0.031035	5.2	5.0	-0.2	0.975787	1.1	0.976	16
braz	DJF	34.70	33.51	-1.19	-3.4	0.130370	4.8	6.1	1.3	0.490270	2.6	0.899	12
braz	JJA	16.61	17.02	0.40	2.4	0.487946	8.9	7.9	-1.0	0.771802	2.2	0.970	12
brmu	DJF	21.15	21.63	0.48	2.3	0.185454	4.3	4.3	-0.1	0.950711	0.7	0.988	14
brmu	JJA	40.62	40.55	-0.08	-0.2	0.883465	3.4	3.8	0.3	0.734905	1.2	0.954	16
brus	DJF	10.14	11.04	0.90	8.9	0.018255	8.9	8.9	0.0	0.761414	1.9	0.983	14
brus	JJA	22.46	23.31	0.85	3.8	0.030357	4.5	4.4	-0.1	0.938822	0.9	0.981	15
cagl	DJF	12.38	12.90	0.52	4.2	0.226792	8.4	8.6	0.2	0.828466	1.2	0.992	13
cagl	JJA	22.69	22.59	-0.10	-0.4	0.792600	4.4	4.8	0.5	0.720178	2.2	0.889	15
cas1	DJF	6.17	6.24	0.07	1.1	0.727397	7.8	10.1	2.3	0.320171	4.4	0.922	14
cas1	JJA	3.23	3.25	0.03	0.9	0.854603	10.8	12.3	1.5	0.648041	9.3	0.684	14
ccjm	DJF	22.05	21.81	-0.24	-1.1	0.785890	11.2	10.4	-0.8	0.753321	6.0	0.847	15
ccjm	JJA	45.35	44.63	-0.72	-1.6	0.321971	4.9	3.9	-1.0	0.348422	3.3	0.744	16
cedu	DJF	21.14	20.68	-0.46	-2.2	0.628323	10.5	9.4	-1.1	0.697566	2.1	0.986	10
cedu	JJA	12.08	12.51	0.43	3.6	0.300535	7.7	7.9	0.2	0.844769	1.7	0.977	11
cfag	DJF	24.51	31.02	6.51	26.6	0.000000	5.3	4.9	-0.4	0.590295	5.5	0.551	13
cfag	JJA	9.11	13.00	3.89	42.7	0.000006	14.1	16.0	1.9	0.092003	11.2	0.924	14
chat	DJF	19.51	19.61	0.10	0.5	0.841692	6.7	6.7	0.0	0.982653	1.4	0.979	14
chat	JJA	12.13	12.46	0.33	2.7	0.244995	6.2	6.0	-0.2	0.993118	1.2	0.980	15
chur	DJF	2.75	3.15	0.40	14.5	0.012057	12.7	14.6	1.9	0.316049	6.5	0.940	15
chur	JJA	17.88	18.75	0.87	4.9	0.014357	5.0	5.3	0.3	0.662252	1.3	0.975	16
coco	DJF	43.18	42.78	-0.40	-0.9	0.824033	10.7	10.4	-0.3	0.903591	1.5	0.990	13
coco	JJA	41.36	40.94	-0.42	-1.0	0.727328	7.1	7.7	0.6	0.828830	1.1	0.990	13
coso	DJF	5.79	6.95	1.16	20.0	0.000150	11.1	9.8	-1.3	0.858747	5.2	0.896	13
coso	JJA	11.30	13.11	1.81	16.0	0.000013	8.6	6.0	-2.6	0.467811	4.0	0.889	14
crfp	DJF	8.93	9.27	0.35	3.9	0.360138	10.2	12.0	1.8	0.460453	4.6	0.938	15
crfp	JJA	18.32	16.89	-1.43	-7.8	0.008808	8.2	8.2	0.0	0.785628	2.6	0.949	16
cro1	DJF	31.58	31.86	0.28	0.9	0.651861	4.7	5.4	0.6	0.636230	1.8	0.946	14

cro1	JJA	42.12	43.41	1.29	3.1	0.154993	5.1	4.5	-0.5	0.814527	1.5	0.957	11
darw	DJF	53.79	53.54	-0.24	-0.4	0.828058	4.0	4.3	0.3	0.858645	1.4	0.945	8
darw	JJA	23.80	23.94	0.14	0.6	0.910788	13.4	13.9	0.5	0.890479	2.1	0.989	13
dav1	DJF	5.87	5.75	-0.12	-2.0	0.332270	4.9	5.2	0.3	0.907463	3.6	0.746	11
dav1	JJA	2.48	2.29	-0.20	-8.1	0.041381	7.7	11.8	4.1	0.269899	12.1	0.193	13
dgar	DJF	52.81	52.02	-0.79	-1.5	0.450975	3.6	4.6	0.9	0.554063	1.1	0.987	9
dgar	JJA	43.92	43.45	-0.46	-1.0	0.650990	5.0	5.4	0.4	0.844728	0.9	0.988	10
dhlg	DJF	10.61	12.09	1.48	13.9	0.042549	15.8	15.2	-0.6	0.765688	3.8	0.978	13
dhlg	JJA	24.68	23.75	-0.93	-3.8	0.240326	8.9	8.7	-0.2	0.815857	3.4	0.924	15
drao	DJF	8.31	8.84	0.53	6.4	0.009096	6.3	6.3	0.1	0.805351	1.9	0.959	16
drao	JJA	17.71	18.38	0.67	3.8	0.111137	6.4	6.3	-0.2	0.962503	3.4	0.863	16
dubo	DJF	4.76	5.35	0.59	12.4	0.050852	14.3	14.4	0.1	0.663908	5.9	0.933	13
dubo	JJA	23.17	24.59	1.42	6.1	0.006823	5.4	5.3	-0.1	0.872419	1.7	0.954	14
ebre	DJF	12.01	13.11	1.10	9.2	0.023063	10.3	9.0	-1.3	0.868368	1.7	0.986	14
ebre	JJA	28.23	28.38	0.16	0.6	0.746484	4.4	4.5	0.1	0.939253	2.2	0.883	14
fair	DJF	3.77	4.56	0.79	21.0	0.002867	15.4	14.9	-0.5	0.578955	6.6	0.932	14
fair	JJA	17.60	18.61	1.01	5.7	0.029679	6.0	6.8	0.7	0.558961	1.6	0.981	14
fale	DJF	53.17	53.40	0.24	0.5	0.785161	3.7	3.8	0.1	0.913491	1.0	0.966	11
fale	JJA	41.04	40.96	-0.08	-0.2	0.943898	6.6	6.6	0.1	0.984110	0.9	0.991	11
flin	DJF	4.09	4.66	0.57	13.9	0.036203	13.7	15.7	2.0	0.373084	6.4	0.952	13
flin	JJA	20.17	21.07	0.90	4.5	0.012407	4.5	4.5	-0.1	0.907486	2.3	0.876	15
gode	DJF	10.16	11.14	0.98	9.6	0.031447	10.6	10.6	-0.0	0.759287	2.0	0.988	14
gode	JJA	33.79	34.34	0.54	1.6	0.366575	5.1	4.4	-0.6	0.675991	1.1	0.982	15
gold	DJF	7.20	7.92	0.71	9.9	0.068236	12.1	11.0	-1.1	0.993483	2.2	0.984	11
gold	JJA	13.86	14.86	1.00	7.2	0.107159	10.8	9.6	-1.3	0.859642	1.9	0.986	12
gope	DJF	7.81	8.00	0.20	2.6	0.614718	13.6	11.3	-2.3	0.574914	5.5	0.916	13
gope	JJA	21.30	21.58	0.27	1.3	0.449815	3.6	5.1	1.5	0.210519	3.1	0.812	14
gras	DJF	5.40	6.32	0.92	17.0	0.005907	15.6	11.2	-4.3	0.556147	3.7	0.981	13
gras	JJA	15.67	15.77	0.10	0.6	0.788355	6.5	5.8	-0.7	0.693138	1.5	0.974	14
graz	DJF	7.58	8.47	0.89	11.7	0.004291	9.9	10.4	0.5	0.546176	3.2	0.970	16
graz	JJA	23.90	25.51	1.62	6.8	0.000869	4.9	5.1	0.3	0.649038	1.6	0.957	16
guam	DJF	37.18	36.34	-0.84	-2.3	0.342399	5.6	5.9	0.2	0.948784	1.0	0.983	12
guam	JJA	50.76	50.47	-0.29	-0.6	0.713509	3.7	3.8	0.0	0.989398	1.1	0.960	12
hers	DJF	11.00	11.80	0.80	7.3	0.031878	7.8	7.9	0.1	0.793379	1.7	0.980	13
hers	JJA	22.44	23.25	0.82	3.7	0.059104	5.0	4.6	-0.4	0.884367	1.2	0.968	14
hob2	DJF	18.53	19.22	0.69	3.7	0.086656	5.0	5.0	-0.0	0.892653	1.3	0.966	12
hob2	JJA	11.78	12.98	1.20	10.2	0.000004	5.1	4.2	-0.9	0.680642	1.4	0.962	15
holb	DJF	8.80	9.10	0.30	3.4	0.198061	7.5	6.2	-1.3	0.563000	1.9	0.974	14
holb	JJA	16.03	16.16	0.12	0.7	0.683760	5.1	4.7	-0.4	0.801933	1.4	0.963	14
holp	DJF	12.69	13.04	0.34	2.7	0.543695	12.6	11.2	-1.4	0.746541	2.4	0.984	15
holp	JJA	21.96	21.79	-0.18	-0.8	0.742012	7.0	6.7	-0.2	0.876506	1.5	0.975	16
hrao	DJF	26.53	26.41	-0.11	-0.4	0.865151	5.2	5.9	0.6	0.752993	2.2	0.926	10
hrao	JJA	8.08	8.69	0.61	7.5	0.071429	9.7	9.9	0.2	0.742728	3.3	0.951	13
iisc	DJF	19.01	20.06	1.04	5.5	0.478762	16.5	16.5	-0.0	0.873556	3.3	0.982	10
iisc	JJA	41.08	40.13	-0.95	-2.3	0.237027	3.9	5.0	1.2	0.466611	2.6	0.855	11
irkt	DJF	2.75	3.23	0.47	17.1	0.015133	18.2	15.5	-2.7	0.999907	12.0	0.784	15
irkt	JJA	22.91	24.50	1.60	7.0	0.000579	4.8	4.7	-0.2	0.887361	1.9	0.929	15
joze	DJF	8.32	8.95	0.63	7.6	0.095621	11.9	12.0	0.1	0.744347	2.4	0.984	16

joze	JJA	23.64	24.90	1.26	5.3	0.022086	6.2	6.0	-0.2	0.915626	1.0	0.988	16
karr	DJF	36.42	36.03	-0.38	-1.0	0.802984	11.1	10.4	-0.7	0.791667	1.3	0.995	13
karr	JJA	14.94	15.09	0.15	1.0	0.838906	13.1	12.9	-0.2	0.972941	1.5	0.994	14
kely	DJF	3.35	3.69	0.34	10.1	0.346271	13.7	16.0	2.3	0.658898	6.6	0.939	5
kely	JJA	12.72	13.84	1.12	8.8	0.096499	9.8	10.3	0.5	0.710548	2.6	0.978	9
kerf	DJF	12.52	13.24	0.72	5.8	0.008610	5.0	5.0	-0.0	0.855635	3.8	0.721	13
kerf	JJA	8.23	9.00	0.77	9.4	0.008373	10.0	6.1	-3.9	0.167314	6.7	0.742	14
kiru	DJF	4.68	5.45	0.77	16.5	0.000137	9.6	9.2	-0.4	0.726242	7.3	0.753	15
kiru	JJA	16.07	17.43	1.37	8.5	0.000014	4.5	4.4	-0.2	0.895724	1.2	0.966	16
kit3	DJF	8.62	8.95	0.34	3.9	0.429461	14.3	11.7	-2.5	0.544369	4.5	0.954	15
kit3	JJA	17.94	24.17	6.24	34.8	0.000000	9.9	6.6	-3.3	0.710484	6.8	0.746	15
kokb	DJF	12.41	12.23	-0.19	-1.5	0.788734	14.1	14.2	0.1	0.972456	3.0	0.978	13
kokb	JJA	16.00	16.14	0.15	0.9	0.774272	8.4	7.6	-0.8	0.745125	2.6	0.951	13
kosg	DJF	10.29	10.83	0.54	5.2	0.100435	8.6	8.4	-0.2	0.961545	1.9	0.975	16
kosg	JJA	22.73	23.24	0.51	2.2	0.180730	4.5	4.6	0.1	0.872711	0.9	0.980	16
kour	DJF	47.52	47.28	-0.24	-0.5	0.845484	6.7	6.6	-0.2	0.912847	1.2	0.983	13
kour	JJA	49.62	48.74	-0.87	-1.8	0.158438	3.1	3.6	0.5	0.637091	2.1	0.813	15
lama	DJF	8.08	8.59	0.50	6.2	0.164898	11.0	11.3	0.3	0.756064	3.0	0.970	14
lama	JJA	22.46	23.29	0.83	3.7	0.142678	6.8	6.4	-0.4	0.933096	1.7	0.968	15
leep	DJF	9.54	10.17	0.63	6.6	0.153723	12.4	11.7	-0.7	0.966681	1.3	0.995	15
leep	JJA	16.82	17.23	0.41	2.4	0.388409	8.1	7.5	-0.6	0.846613	2.4	0.956	16
lpgs	DJF	26.65	27.24	0.59	2.2	0.336090	5.1	6.2	1.1	0.454542	2.5	0.930	13
lpgs	JJA	15.38	16.06	0.68	4.4	0.376133	13.1	11.4	-1.7	0.744317	2.3	0.988	13
mac1	DJF	13.14	13.48	0.33	2.5	0.323446	6.6	6.1	-0.5	0.838785	1.0	0.990	13
mac1	JJA	9.31	9.68	0.38	4.1	0.043382	4.8	5.4	0.5	0.591802	1.4	0.974	15
madr	DJF	9.47	10.19	0.72	7.6	0.118130	12.2	10.7	-1.6	0.830942	3.7	0.953	13
madr	JJA	17.73	18.40	0.66	3.7	0.078668	5.3	5.3	0.0	0.909933	2.9	0.861	14
mas1	DJF	14.26	15.28	1.03	7.2	0.186875	14.9	13.3	-1.7	0.865321	3.4	0.975	15
mas1	JJA	20.07	20.55	0.47	2.3	0.291171	6.1	5.7	-0.3	0.923818	1.1	0.982	15
mate	DJF	10.03	10.54	0.51	5.1	0.183820	9.4	9.8	0.4	0.765714	2.0	0.983	14
mate	JJA	21.59	22.14	0.56	2.6	0.282161	6.2	6.5	0.3	0.760418	2.2	0.947	15
maw1	DJF	4.49	5.19	0.70	15.6	0.001417	12.2	9.2	-3.0	0.632001	4.2	0.943	14
maw1	JJA	1.35	1.77	0.42	31.1	0.000013	17.0	12.4	-4.6	0.809070	16.3	0.509	16
mcm4	DJF	4.55	4.02	-0.53	-11.6	0.000536	7.7	7.5	-0.2	0.613241	9.9	0.010	12
mcm4	JJA	1.37	1.22	-0.15	-10.9	0.490336	56.9	17.2	-39.7	0.000036	51.8	0.440	14
mdo1	DJF	5.07	5.47	0.41	8.1	0.057086	10.7	9.9	-0.8	0.960871	3.7	0.938	14
mdo1	JJA	19.42	19.75	0.34	1.8	0.500613	6.8	7.0	0.1	0.899048	2.3	0.946	15
medi	DJF	11.16	11.86	0.70	6.3	0.120176	10.1	9.9	-0.3	0.916395	3.4	0.947	14
medi	JJA	28.29	29.25	0.96	3.4	0.066083	4.8	4.8	-0.1	0.916485	2.3	0.889	15
mets	DJF	6.91	7.37	0.46	6.7	0.180598	12.2	11.8	-0.4	0.908193	2.9	0.974	13
mets	JJA	20.29	20.89	0.61	3.0	0.069807	4.3	3.6	-0.7	0.631611	1.3	0.956	13
mkea	DJF	2.41	2.70	0.29	12.0	0.466097	41.5	30.0	-11.5	0.522990	10.0	0.987	11
mkea	JJA	2.78	3.05	0.27	9.7	0.311246	23.4	22.0	-1.4	0.895240	4.7	0.982	13
monp	DJF	4.75	4.93	0.18	3.8	0.407670	12.0	11.8	-0.2	0.956381	4.2	0.943	15
monp	JJA	11.75	11.34	-0.41	-3.5	0.304407	9.2	9.5	0.3	0.995744	3.2	0.937	15
nano	DJF	11.22	12.17	0.95	8.5	0.001661	6.0	6.2	0.3	0.644386	2.3	0.943	14
nano	JJA	21.22	21.34	0.12	0.6	0.724293	4.2	4.7	0.5	0.635851	2.0	0.912	16
nlib	DJF	7.98	8.28	0.30	3.8	0.373369	9.8	10.7	1.0	0.632378	3.4	0.959	13

nlib	JJA	30.74	30.81	0.07	0.2	0.912775	6.1	5.1	-1.0	0.528284	2.6	0.907	14
nrc1	DJF	6.57	7.03	0.45	6.8	0.107177	10.5	10.5	0.0	0.784247	2.0	0.985	14
nrc1	JJA	25.90	26.86	0.96	3.7	0.040405	4.7	4.6	-0.1	0.939646	1.1	0.972	15
onsa	DJF	8.65	9.40	0.75	8.7	0.099526	13.3	12.4	-0.8	0.957342	3.1	0.973	14
onsa	JJA	21.36	22.27	0.91	4.3	0.040235	4.9	5.3	0.4	0.678386	1.2	0.981	14
penc	DJF	8.99	9.41	0.42	4.7	0.223397	9.7	9.7	-0.0	0.862460	2.6	0.969	14
penc	JJA	24.83	25.60	0.77	3.1	0.119946	5.5	4.5	-1.0	0.521445	1.2	0.987	14
pert	DJF	20.94	21.72	0.77	3.7	0.222901	7.8	8.1	0.4	0.755825	2.5	0.955	15
pert	JJA	14.00	15.07	1.08	7.7	0.000838	5.6	5.2	-0.4	0.978887	2.3	0.917	15
pie1	DJF	4.26	4.55	0.30	7.0	0.118806	11.5	9.7	-1.8	0.742506	4.2	0.931	13
pie1	JJA	15.55	15.71	0.16	1.0	0.802608	11.1	11.1	0.0	0.974584	3.9	0.941	15
pin1	DJF	6.33	6.91	0.58	9.2	0.092701	14.1	14.3	0.3	0.676081	7.6	0.876	16
pin1	JJA	14.46	13.77	-0.69	-4.8	0.189509	10.7	9.8	-0.9	0.600916	5.1	0.879	16
pol2	DJF	3.65	4.46	0.80	21.9	0.000962	15.1	12.1	-3.0	0.972403	7.1	0.888	13
pol2	JJA	15.84	18.99	3.15	19.9	0.000000	6.3	4.4	-1.9	0.574524	5.1	0.627	12
pots	DJF	8.56	9.39	0.82	9.6	0.055157	13.0	12.1	-0.8	0.927909	2.6	0.981	15
pots	JJA	22.60	23.67	1.07	4.7	0.015853	5.4	4.8	-0.6	0.771192	1.7	0.953	16
quin	DJF	8.72	8.48	-0.23	-2.6	0.416592	7.5	8.6	1.2	0.723564	4.5	0.842	12
quin	JJA	13.71	13.53	-0.18	-1.3	0.628982	5.9	6.9	1.0	0.644973	2.3	0.944	11
reyk	DJF	7.95	8.56	0.60	7.5	0.032163	8.7	8.4	-0.3	0.865275	3.4	0.926	14
reyk	JJA	16.64	17.38	0.74	4.4	0.019143	4.9	4.7	-0.1	0.981765	2.3	0.892	15
sant	DJF	16.12	13.73	-2.40	-14.9	0.000042	6.5	8.1	1.6	0.830880	4.0	0.821	11
sant	JJA	9.22	8.56	-0.66	-7.2	0.145443	12.9	13.2	0.3	0.842844	5.1	0.919	14
shao	DJF	12.19	13.13	0.94	7.7	0.079421	10.3	9.5	-0.7	0.983577	3.6	0.939	12
shao	JJA	50.15	50.85	0.70	1.4	0.462934	5.0	3.6	-1.3	0.369933	1.8	0.950	11
sio3	DJF	12.25	13.08	0.83	6.8	0.184964	13.4	13.8	0.4	0.716239	3.8	0.969	16
sio3	JJA	22.41	22.39	-0.02	-0.1	0.976204	10.1	9.6	-0.5	0.849432	2.4	0.972	16
sni1	DJF	10.40	10.74	0.34	3.3	0.471534	11.4	10.1	-1.4	0.771490	2.5	0.978	12
sni1	JJA	15.80	17.11	1.31	8.3	0.036770	9.1	8.5	-0.6	0.986409	2.0	0.976	12
stjo	DJF	7.84	8.28	0.44	5.6	0.051388	7.5	7.6	0.1	0.811780	2.3	0.960	16
stjo	JJA	22.60	23.40	0.80	3.5	0.072524	5.4	5.2	-0.1	0.967630	0.8	0.991	16
svtl	DJF	6.69	7.09	0.40	6.0	0.172525	10.9	10.9	-0.1	0.841918	3.4	0.955	14
svtl	JJA	21.47	22.40	0.93	4.3	0.032755	5.0	5.0	-0.0	0.918955	1.9	0.931	14
syog	DJF	4.79	5.63	0.84	17.5	0.000876	12.5	7.8	-4.7	0.304899	9.6	0.646	12
syog	JJA	1.85	2.44	0.59	31.9	0.000378	22.7	15.2	-7.5	0.629945	20.0	0.574	15
tabl	DJF	4.33	4.25	-0.08	-1.8	0.616960	10.2	10.1	-0.0	0.920648	2.1	0.980	15
tabl	JJA	8.69	8.27	-0.42	-4.8	0.215736	10.4	10.3	-0.1	0.834031	2.3	0.975	14
tidb	DJF	20.07	20.48	0.41	2.0	0.391223	5.6	5.8	0.2	0.863283	1.4	0.971	12
tidb	JJA	9.15	10.04	0.88	9.6	0.002281	7.9	7.2	-0.7	0.982776	1.5	0.980	15
tow2	DJF	46.10	45.59	-0.51	-1.1	0.707302	7.6	8.4	0.8	0.743166	1.3	0.990	15
tow2	JJA	22.77	23.33	0.56	2.5	0.546535	10.8	11.2	0.4	0.822908	1.5	0.992	15
trak	DJF	11.41	12.51	1.10	9.6	0.075417	14.2	14.0	-0.2	0.756766	6.0	0.922	16
trak	JJA	20.34	20.76	0.43	2.1	0.446285	8.2	7.1	-1.1	0.651467	3.4	0.908	16
tskb	DJF	7.77	9.63	1.86	23.9	0.000006	11.6	8.7	-2.9	0.816714	2.7	0.973	14
tskb	JJA	42.82	43.84	1.02	2.4	0.122056	4.3	4.0	-0.3	0.849883	1.3	0.952	16
uclu	DJF	11.80	12.53	0.73	6.2	0.026642	6.9	7.2	0.3	0.706360	1.9	0.968	15
uclu	JJA	20.49	20.60	0.11	0.5	0.757721	4.6	4.7	0.1	0.908303	1.2	0.968	15
usud	DJF	4.32	4.50	0.18	4.2	0.283848	9.7	10.0	0.3	0.809263	6.5	0.798	14

usud	JJA	25.49	25.75	0.26	1.0	0.536394	4.4	4.3	-0.0	0.996345	1.3	0.956	14
vill	DJF	10.37	11.21	0.84	8.1	0.072007	12.9	10.7	-2.2	0.661703	2.9	0.978	16
vill	JJA	18.99	19.81	0.82	4.3	0.032757	5.6	5.0	-0.5	0.810437	2.1	0.927	16
vndp	DJF	13.02	13.99	0.96	7.4	0.107046	11.6	11.9	0.3	0.720292	2.5	0.983	15
vndp	JJA	17.95	18.70	0.75	4.2	0.086167	6.1	6.5	0.4	0.694147	2.6	0.925	15
wes2	DJF	8.42	8.84	0.41	4.9	0.238093	9.5	11.3	1.8	0.442528	3.6	0.969	14
wes2	JJA	29.00	29.35	0.35	1.2	0.581408	5.8	5.0	-0.8	0.666007	1.5	0.972	13
whit	DJF	3.32	3.98	0.66	19.9	0.000463	11.1	10.6	-0.6	0.680075	3.0	0.976	12
whit	JJA	11.12	11.89	0.76	6.8	0.000639	4.9	4.5	-0.4	0.910316	1.2	0.973	15
will	DJF	5.54	6.28	0.73	13.2	0.000088	7.8	7.2	-0.6	0.885402	2.0	0.967	15
will	JJA	14.41	15.00	0.58	4.0	0.085185	6.5	6.1	-0.5	0.879700	1.5	0.975	16
wslr	DJF	7.86	7.63	-0.23	-2.9	0.319990	8.7	6.7	-2.0	0.328446	5.5	0.772	14
wslr	JJA	17.01	15.96	-1.06	-6.2	0.000695	3.6	5.1	1.4	0.352369	3.6	0.653	14
wtzr	DJF	7.59	8.13	0.54	7.1	0.083172	9.9	10.2	0.3	0.725459	2.5	0.977	14
wtzr	JJA	20.90	21.34	0.44	2.1	0.183081	4.4	4.0	-0.4	0.782411	1.1	0.968	15
wuhn	DJF	12.72	13.99	1.27	10.0	0.007893	9.4	8.1	-1.3	0.842277	5.7	0.810	14
wuhn	JJA	51.35	52.56	1.21	2.4	0.101809	4.0	3.5	-0.5	0.712523	2.5	0.789	15
yell	DJF	3.48	4.04	0.56	16.1	0.001732	13.2	11.4	-1.8	0.968905	5.5	0.910	16
yell	JJA	17.26	18.31	1.06	6.1	0.016795	6.8	6.4	-0.4	0.990662	1.7	0.969	16
zimm	DJF	7.15	7.50	0.35	4.9	0.133757	8.8	8.8	-0.0	0.851534	2.2	0.972	16
zimm	JJA	19.64	19.98	0.34	1.7	0.228121	3.5	4.3	0.8	0.428792	2.0	0.886	16



**Table S3: Monthly and seasonal IWV trends from GPS and ERA-Interim. The p-values are computed from a modified Mann-Kendall trend test accounting for serial correlation in the data (Hamed and Rao, 1998).**

nameGPS	flag	Trends (kg m <sup>-2</sup> decade <sup>-1</sup> )			Relative trends (% decade <sup>-1</sup> )			p-values	
		GPS	ERA1	Diff.	GPS	ERA1	Diff.	GPS	ERA1
albh	monthly	-0.04	-0.03	+0.00	-0.2	-0.2	+0.0	0.8556027	0.8936617
albh	DJF	+0.09	+0.16	+0.07	+0.8	+1.3	+0.5	0.9640894	0.8218917
albh	JJA	-0.28	-0.80	-0.51	-1.4	-3.8	-2.5	0.7526420	0.4440436
algo	monthly	+0.25	+0.18	-0.07	+1.8	+1.2	-0.5	0.3334646	0.4996112
algo	DJF	-0.16	-0.45	-0.29	-2.7	-7.0	-4.4	0.3923143	0.1916706
algo	JJA	+0.77	+0.71	-0.06	+3.2	+2.8	-0.4	0.2241343	0.3923143
alic	monthly	-1.17	-0.90	+0.27	-6.4	-5.0	+1.4	0.1257972	0.2281989
alic	DJF	-0.97	-1.62	-0.64	-3.5	-6.1	-2.5	0.8370115	0.6312218
alic	JJA	-0.69	-0.15	+0.54	-6.6	-1.4	+5.2	0.9128140	0.9128140
ankr	monthly	+1.38	+0.52	-0.87	+10.8	+3.8	-7.0	0.0000127	0.1089617
ankr	DJF	+1.32	+0.59	-0.73	+15.9	+6.7	-9.2	0.0585876	0.6693340
ankr	JJA	+1.23	+0.42	-0.80	+6.7	+2.2	-4.5	0.7554969	0.7554969
areq	monthly	-0.65	-0.08	+0.57	-5.6	-0.7	+4.8	0.0423601	0.8297161
areq	DJF	+0.14	-0.40	-0.53	+0.7	-2.2	-2.9	0.9453299	0.8370115
areq	JJA	-1.40	-0.70	+0.70	-22.1	-10.3	+11.7	0.0626981	0.3810745
auck	monthly	+0.00	-0.12	-0.13	+0.0	-0.7	-0.7	0.9906540	0.7165113
auck	DJF	+0.38	+0.06	-0.32	+1.6	+0.2	-1.4	0.8266660	0.9563417
auck	JJA	+0.31	+0.44	+0.12	+2.1	+2.9	+0.7	0.6921808	0.6556472
blyt	monthly	-0.24	-0.37	-0.14	-1.5	-2.4	-0.9	0.5429266	0.3666264
blyt	DJF	-0.88	-1.14	-0.26	-8.4	-10.2	-1.8	0.2603506	0.1628054
blyt	JJA	+1.12	+1.56	+0.43	+4.5	+6.6	+2.0	0.2241343	0.0957467
bor1	monthly	+0.62	+0.23	-0.39	+4.1	+1.4	-2.7	0.0322883	0.4195544
bor1	DJF	+0.22	-0.14	-0.36	+2.6	-1.5	-4.1	0.8925585	0.8925585
bor1	JJA	+1.19	+0.60	-0.59	+5.0	+2.5	-2.6	0.1628054	0.2603506
braz	monthly	+0.23	+0.94	+0.71	+0.8	+3.5	+2.7	0.7167233	0.1125034
braz	DJF	+0.79	+1.43	+0.64	+2.3	+4.3	+2.0	0.3726915	0.1926163
braz	JJA	-1.78	-1.21	+0.57	-10.7	-7.1	+3.6	0.3036732	0.4506703
brmu	monthly	-0.36	-0.62	-0.27	-1.2	-2.1	-0.9	0.3322013	0.0721587
brmu	DJF	-0.60	-0.73	-0.12	-2.9	-3.4	-0.5	0.3244237	0.2735614
brmu	JJA	-0.15	-0.43	-0.29	-0.4	-1.1	-0.7	0.8218917	0.6204253
brus	monthly	-0.05	+0.07	+0.11	-0.3	+0.4	+0.7	0.8508380	0.8276310
brus	DJF	-1.12	-0.83	+0.30	-11.1	-7.5	+3.6	0.1888875	0.1546298
brus	JJA	+0.97	+0.91	-0.06	+4.3	+3.9	-0.4	0.1658567	0.1982106
cagl	monthly	+0.37	+0.84	+0.47	+2.1	+4.6	+2.6	0.2045796	0.0019265
cagl	DJF	+1.03	+1.30	+0.27	+8.4	+10.1	+1.7	0.2463874	0.1605559
cagl	JJA	-0.75	+0.16	+0.91	-3.3	+0.7	+4.0	0.3996123	0.9211587
cas1	monthly	+0.20	+0.08	-0.12	+4.7	+1.9	-2.8	0.0717503	0.5084613
cas1	DJF	+0.51	+0.95	+0.44	+8.3	+15.2	+7.0	0.2284398	0.0285391
cas1	JJA	-0.05	-0.32	-0.27	-1.4	-9.8	-8.4	0.9563417	0.1253111
ccjm	monthly	-1.40	+0.98	+2.38	-4.0	+2.9	+6.9	0.0056683	0.0388601
ccjm	DJF	-0.94	+1.88	+2.82	-4.3	+8.6	+12.9	0.5526151	0.1376458
ccjm	JJA	-1.20	+1.07	+2.27	-2.6	+2.4	+5.0	0.1628054	0.1628054
cedu	monthly	+0.14	+0.10	-0.04	+0.9	+0.6	-0.3	0.7160588	0.8245161

cedu	DJF	-1.52	-1.66	-0.15	-7.2	-8.0	-0.9	0.5915050	0.4742744
cedu	JJA	+0.59	+0.17	-0.43	+4.9	+1.3	-3.6	0.6404288	0.6404288
cfag	monthly	-0.62	-1.68	-1.06	-3.8	-7.5	-3.8	0.0819554	0.0000260
cfag	DJF	+0.30	-0.20	-0.50	+1.2	-0.7	-1.9	0.6693340	0.9513521
cfag	JJA	-0.67	-2.16	-1.49	-7.4	-16.6	-9.2	0.3244237	0.1253111
chat	monthly	-0.49	-0.35	+0.14	-3.2	-2.2	+0.9	0.0864359	0.1991708
chat	DJF	-0.14	+0.05	+0.19	-0.7	+0.2	+1.0	0.7425568	0.9125526
chat	JJA	-0.36	-0.44	-0.08	-3.0	-3.5	-0.6	0.6921808	0.4884223
chur	monthly	+0.18	+0.12	-0.06	+1.9	+1.2	-0.7	0.3846715	0.5622199
chur	DJF	-0.21	-0.19	+0.03	-7.8	-5.9	+1.9	0.5526151	0.7665253
chur	JJA	-0.52	-0.54	-0.03	-2.9	-2.9	-0.0	0.1628054	0.1373471
coco	monthly	-1.20	-0.42	+0.79	-2.8	-1.0	+1.8	0.2350973	0.7007412
coco	DJF	-7.08	-5.91	+1.18	-16.4	-13.8	+2.6	0.0327356	0.0768509
coco	JJA	-3.58	-3.48	+0.10	-8.7	-8.5	+0.2	0.0995087	0.2001281
coso	monthly	+0.08	-0.34	-0.42	+1.0	-3.6	-4.6	0.7834539	0.2140390
coso	DJF	-0.45	-0.93	-0.48	-7.8	-13.3	-5.6	0.2996654	0.0995087
coso	JJA	+0.71	+0.09	-0.62	+6.3	+0.7	-5.6	0.2735614	0.9128140
crfp	monthly	-0.14	-0.45	-0.31	-1.1	-3.6	-2.6	0.6324758	0.1428223
crfp	DJF	-0.47	-1.10	-0.63	-5.3	-11.9	-6.6	0.2349548	0.2349548
crfp	JJA	+1.12	+0.59	-0.54	+6.1	+3.5	-2.6	0.1628054	0.6853286
cro1	monthly	+1.69	+0.61	-1.08	+4.5	+1.6	-2.9	0.0010405	0.2226567
cro1	DJF	+0.17	-0.48	-0.65	+0.5	-1.5	-2.0	0.9128140	0.8266660
cro1	JJA	+3.64	+2.10	-1.54	+8.6	+4.8	-3.8	0.0867682	0.1611249
darw	monthly	+0.69	+0.64	-0.05	+1.8	+1.7	-0.1	0.5298625	0.5711054
darw	DJF	+1.54	+3.85	+2.31	+2.9	+7.2	+4.3	0.5361868	0.2655104
darw	JJA	-0.50	-0.69	-0.19	-2.1	-2.9	-0.8	0.7603323	0.6693340
dav1	monthly	+0.06	-0.04	-0.10	+1.6	-1.2	-2.8	0.5136354	0.6487108
dav1	DJF	-0.42	-0.66	-0.24	-7.1	-11.4	-4.3	0.1611249	0.0617067
dav1	JJA	+0.03	-0.19	-0.22	+1.2	-8.4	-9.6	0.9513521	0.5829506
dgar	monthly	+1.62	+2.19	+0.57	+3.4	+4.6	+1.3	0.0520318	0.0112954
dgar	DJF	+3.68	+4.50	+0.82	+7.0	+8.7	+1.7	0.0164887	0.0164887
dgar	JJA	+0.55	+1.08	+0.54	+1.2	+2.5	+1.2	0.8580277	0.7205148
dhlg	monthly	-0.09	-0.10	-0.02	-0.5	-0.6	-0.1	0.8779033	0.8373448
dhlg	DJF	-0.23	-0.54	-0.31	-2.1	-4.5	-2.3	0.6693340	0.8547771
dhlg	JJA	+1.01	+0.94	-0.07	+4.1	+3.9	-0.1	0.6206907	0.3730531
drao	monthly	-0.15	+0.07	+0.22	-1.2	+0.5	+1.7	0.4611938	0.7616688
drao	DJF	-0.06	+0.14	+0.20	-0.7	+1.6	+2.3	0.8925585	0.6853286
drao	JJA	-0.50	-0.08	+0.42	-2.8	-0.4	+2.4	0.6204253	0.8218917
dubo	monthly	+0.46	-0.04	-0.50	+3.6	-0.3	-4.0	0.1103675	0.8846001
dubo	DJF	+0.01	-0.51	-0.52	+0.2	-9.5	-9.7	0.9513521	0.2996654
dubo	JJA	+0.64	+0.07	-0.58	+2.8	+0.3	-2.5	0.6614159	0.9563417
ebre	monthly	+0.43	+0.50	+0.07	+2.2	+2.5	+0.3	0.1877912	0.1126133
ebre	DJF	+0.23	-0.00	-0.24	+1.9	-0.0	-2.0	0.7425568	0.9563417
ebre	JJA	+1.16	+1.67	+0.51	+4.1	+5.9	+1.8	0.2284398	0.1253111
fair	monthly	+0.43	+0.33	-0.10	+4.9	+3.4	-1.5	0.0604462	0.1423906
fair	DJF	-0.19	-0.20	-0.01	-5.0	-4.4	+0.6	0.9128140	0.7425568
fair	JJA	+0.45	+0.51	+0.06	+2.6	+2.7	+0.2	0.5112203	0.6614159
fale	monthly	+1.50	+1.80	+0.30	+3.1	+3.8	+0.6	0.0505417	0.0147169

fale	DJF	+4.18	+4.51	+0.33	+7.9	+8.4	+0.6	0.0429601	0.0429601
fale	JJA	-0.44	+0.28	+0.72	-1.1	+0.7	+1.8	0.9379475	0.8762697
flin	monthly	+0.53	-0.04	-0.57	+4.8	-0.3	-5.1	0.0134968	0.8691867
flin	DJF	-0.33	-0.73	-0.40	-8.1	-15.8	-7.7	0.6693340	0.2463874
flin	JJA	+0.54	-0.36	-0.90	+2.7	-1.7	-4.4	0.1658567	0.4273463
gode	monthly	+0.61	+0.42	-0.20	+3.0	+2.0	-1.0	0.1739759	0.3645056
gode	DJF	-0.92	-1.13	-0.21	-9.1	-10.1	-1.1	0.2735614	0.1888875
gode	JJA	+1.84	+1.43	-0.40	+5.4	+4.2	-1.3	0.0376669	0.0294481
gold	monthly	-0.30	-0.45	-0.15	-3.1	-4.2	-1.2	0.4785271	0.2898709
gold	DJF	-0.28	-0.11	+0.16	-3.8	-1.4	+2.4	0.7554969	0.6404288
gold	JJA	+0.98	+0.65	-0.33	+7.1	+4.4	-2.7	0.3036732	0.4506703
gope	monthly	-0.20	+0.49	+0.70	-1.5	+3.5	+5.0	0.4251213	0.0562144
gope	DJF	-0.57	+0.08	+0.65	-7.3	+0.9	+8.3	0.5021583	0.9513521
gope	JJA	+0.10	+1.09	+0.99	+0.5	+5.1	+4.6	0.7425568	0.0798019
gras	monthly	+0.26	+0.27	+0.01	+2.6	+2.6	+0.0	0.1570592	0.1631457
gras	DJF	+0.05	+0.08	+0.03	+1.0	+1.3	+0.3	0.9513521	0.9513521
gras	JJA	-0.37	-0.17	+0.20	-2.4	-1.1	+1.3	0.6614159	0.7425568
graz	monthly	+0.56	+0.54	-0.03	+3.8	+3.4	-0.4	0.0191385	0.0294349
graz	DJF	+0.24	-0.16	-0.40	+3.1	-1.9	-5.0	0.6204253	0.8218917
graz	JJA	+1.06	+1.66	+0.59	+4.4	+6.5	+2.0	0.0649034	0.0343399
guam	monthly	+0.50	+0.97	+0.47	+1.1	+2.2	+1.1	0.3563453	0.1378883
guam	DJF	-1.54	-0.11	+1.43	-4.1	-0.3	+3.8	0.7317017	0.9453299
guam	JJA	-0.06	+0.25	+0.31	-0.1	+0.5	+0.6	0.9453299	0.6312218
hers	monthly	+0.32	+0.14	-0.17	+1.9	+0.8	-1.1	0.3348643	0.6814920
hers	DJF	-0.82	-1.37	-0.55	-7.4	-11.6	-4.2	0.2996654	0.0995087
hers	JJA	+0.66	-0.01	-0.66	+2.9	-0.0	-3.0	0.8266660	0.9563417
hob2	monthly	+0.19	+0.45	+0.27	+1.3	+2.8	+1.6	0.4473767	0.0417695
hob2	DJF	-0.22	+0.23	+0.45	-1.2	+1.2	+2.4	0.8370115	0.6312218
hob2	JJA	-0.22	+0.02	+0.25	-1.9	+0.2	+2.1	0.5526151	0.9605311
holb	monthly	+0.30	+0.17	-0.13	+2.5	+1.4	-1.1	0.1061902	0.3123112
holb	DJF	+0.05	+0.02	-0.03	+0.5	+0.2	-0.3	0.9563417	0.9563417
holb	JJA	-0.14	+0.03	+0.17	-0.9	+0.2	+1.1	0.9128140	0.9563417
holp	monthly	-0.70	-0.34	+0.35	-4.2	-2.1	+2.1	0.0755489	0.3609885
holp	DJF	-1.92	-1.37	+0.55	-15.1	-10.5	+4.6	0.1132872	0.2762784
holp	JJA	+1.28	+1.14	-0.14	+5.8	+5.2	-0.6	0.1916706	0.3004271
hrao	monthly	+0.49	+0.59	+0.10	+2.9	+3.4	+0.5	0.2210993	0.1545957
hrao	DJF	+2.67	+3.07	+0.40	+10.1	+11.6	+1.6	0.1074046	0.0490980
hrao	JJA	-0.08	-0.46	-0.38	-1.0	-5.3	-4.3	0.9513521	0.4277105
iisc	monthly	+0.89	+1.37	+0.48	+2.8	+4.3	+1.5	0.1966733	0.0304712
iisc	DJF	-5.27	-5.03	+0.24	-27.7	-25.1	+2.6	0.1524063	0.1074046
iisc	JJA	+1.53	+2.45	+0.92	+3.7	+6.1	+2.4	0.4362749	0.2129119
irkt	monthly	+0.60	-0.04	-0.64	+5.9	-0.3	-6.3	0.0016538	0.8447193
irkt	DJF	+0.33	-0.29	-0.63	+12.1	-9.1	-21.2	0.3222996	0.4284804
irkt	JJA	+1.16	+0.40	-0.75	+5.1	+1.7	-3.4	0.3730531	0.9211587
joze	monthly	+0.57	+0.49	-0.08	+3.8	+3.1	-0.7	0.0430654	0.1244718
joze	DJF	+0.31	+0.31	-0.00	+3.8	+3.5	-0.3	0.4994612	0.4440436
joze	JJA	+0.69	+0.52	-0.17	+2.9	+2.1	-0.8	0.4994612	0.4994612
karr	monthly	-1.72	-1.51	+0.21	-7.0	-6.1	+0.9	0.0177032	0.0366071

karr	DJF	-3.43	-2.99	+0.44	-9.4	-8.3	+1.1	0.5021583	0.2463874
karr	JJA	-1.74	-1.49	+0.25	-11.6	-9.9	+1.7	0.1546298	0.2284398
kely	monthly	+0.84	+1.04	+0.20	+11.1	+12.6	+1.5	0.0063845	0.0078426
kely	DJF	+0.56	+0.45	-0.11	+16.8	+12.2	-4.5	0.8064959	0.8064959
kely	JJA	+2.46	+3.26	+0.80	+19.3	+23.6	+4.2	0.1753081	0.1753081
kerg	monthly	+0.58	-0.09	-0.68	+5.7	-0.9	-6.6	0.0017576	0.6287555
kerg	DJF	+0.42	-0.43	-0.85	+3.3	-3.3	-6.6	0.5021583	0.3601216
kerg	JJA	+0.90	+0.44	-0.46	+10.9	+4.9	-6.0	0.0798019	0.3244237
kiru	monthly	+0.02	+0.23	+0.21	+0.3	+2.3	+2.0	0.9317103	0.2704857
kiru	DJF	-0.50	+0.05	+0.55	-10.6	+1.0	+11.6	0.1658567	0.8430852
kiru	JJA	-0.32	-0.19	+0.13	-2.0	-1.1	+0.9	0.3444175	0.7526420
kit3	monthly	+1.42	+0.74	-0.69	+10.5	+4.5	-6.0	0.0000408	0.0113942
kit3	DJF	+1.39	+0.99	-0.41	+16.2	+11.0	-5.2	0.0376669	0.1376458
kit3	JJA	+1.14	+0.27	-0.87	+6.4	+1.1	-5.2	0.1376458	0.8430852
kokb	monthly	-0.64	+0.11	+0.75	-4.2	+0.7	+5.0	0.1706909	0.7980168
kokb	DJF	+0.06	+0.76	+0.71	+0.5	+6.3	+5.8	0.9513521	0.6693340
kokb	JJA	-0.92	-0.10	+0.82	-5.8	-0.6	+5.1	0.2463874	0.8547771
kosg	monthly	+0.07	-0.05	-0.13	+0.4	-0.3	-0.8	0.7923759	0.8859233
kosg	DJF	-0.47	-0.51	-0.04	-4.6	-4.7	-0.2	0.4994612	0.1916706
kosg	JJA	+1.03	+0.93	-0.10	+4.5	+4.0	-0.5	0.0649034	0.0649034
kour	monthly	+1.20	+0.65	-0.54	+2.5	+1.4	-1.1	0.0084549	0.1579191
kour	DJF	+1.96	+1.72	-0.24	+4.1	+3.6	-0.5	0.3601216	0.4277105
kour	JJA	+0.89	-0.37	-1.26	+1.8	-0.8	-2.5	0.4284804	0.7665253
lama	monthly	+0.55	+0.19	-0.36	+3.8	+1.3	-2.6	0.1044532	0.6159844
lama	DJF	+0.20	+0.05	-0.15	+2.5	+0.5	-1.9	0.6614159	0.9563417
lama	JJA	+1.20	+0.71	-0.49	+5.3	+3.0	-2.3	0.1376458	0.3730531
leep	monthly	-0.36	-0.36	-0.00	-2.9	-2.8	+0.1	0.3150004	0.2581285
leep	DJF	-1.31	-1.37	-0.06	-13.8	-13.5	+0.3	0.0748246	0.0924596
leep	JJA	+0.98	+0.83	-0.14	+5.8	+4.8	-1.0	0.2412879	0.3444175
lpgs	monthly	-1.19	-0.49	+0.70	-5.8	-2.3	+3.5	0.0273336	0.4137198
lpgs	DJF	+0.52	+1.82	+1.30	+2.0	+6.7	+4.7	0.7138156	0.3601216
lpgs	JJA	-1.63	-1.62	+0.01	-10.6	-10.1	+0.5	0.1605559	0.2996654
mac1	monthly	+0.44	+0.34	-0.10	+4.0	+3.0	-1.0	0.0114544	0.0513406
mac1	DJF	+0.66	+0.66	+0.01	+5.0	+4.9	-0.1	0.5829506	0.5021583
mac1	JJA	-0.22	-0.31	-0.09	-2.4	-3.2	-0.8	0.4284804	0.2762784
madr	monthly	+0.37	+0.17	-0.20	+2.7	+1.2	-1.5	0.2548732	0.6002157
madr	DJF	-0.04	-0.33	-0.29	-0.4	-3.2	-2.9	0.9513521	0.6693340
madr	JJA	+1.07	+0.36	-0.71	+6.1	+2.0	-4.1	0.1546298	0.5840704
mas1	monthly	+1.37	+1.21	-0.16	+7.6	+6.5	-1.1	0.0001351	0.0004705
mas1	DJF	+2.32	+1.73	-0.59	+16.2	+11.3	-5.0	0.1376458	0.1982106
mas1	JJA	+1.01	+0.82	-0.19	+5.0	+4.0	-1.1	0.1658567	0.2762784
mate	monthly	+0.67	+1.17	+0.50	+4.3	+7.2	+3.0	0.0128724	0.0000167
mate	DJF	+0.98	+1.23	+0.24	+9.8	+11.6	+1.8	0.1253111	0.0798019
mate	JJA	+0.24	+0.98	+0.75	+1.1	+4.4	+3.3	0.7665253	0.2349548
maw1	monthly	+0.36	+0.18	-0.18	+14.7	+6.1	-8.6	0.0000151	0.0290044
maw1	DJF	+0.42	+0.52	+0.10	+9.3	+9.9	+0.7	0.2735614	0.1546298
maw1	JJA	+0.32	-0.05	-0.37	+23.6	-3.0	-26.6	0.0170238	0.6525481
mcm4	monthly	+0.59	-0.04	-0.63	+22.9	-1.8	-24.7	0.0000030	0.5346218

mcm4	DJF	+0.49	+0.04	-0.45	+10.8	+1.0	-9.8	0.0335242	0.9453299
mcm4	JJA	+0.33	-0.19	-0.52	+24.1	-15.7	-39.8	0.4434214	0.1546298
mdo1	monthly	+0.10	+0.05	-0.05	+0.9	+0.5	-0.5	0.6277443	0.8453690
mdo1	DJF	-0.04	-0.10	-0.06	-0.8	-1.8	-1.1	0.9563417	0.6614159
mdo1	JJA	+0.43	+0.68	+0.25	+2.2	+3.4	+1.2	0.6921808	0.4884223
medi	monthly	+0.73	+0.54	-0.19	+3.8	+2.7	-1.1	0.0277959	0.0710292
medi	DJF	+1.11	+0.83	-0.28	+10.0	+7.0	-3.0	0.3244237	0.5840704
medi	JJA	+0.71	+1.02	+0.30	+2.5	+3.5	+1.0	0.4284804	0.3222996
mets	monthly	+0.21	+0.28	+0.07	+1.7	+2.2	+0.5	0.5058868	0.3726185
mets	DJF	-0.02	+0.03	+0.04	-0.2	+0.3	+0.6	0.9513521	0.9513521
mets	JJA	-0.43	-0.16	+0.26	-2.1	-0.8	+1.3	0.6693340	0.9513521
mkea	monthly	+0.08	+0.12	+0.04	+2.8	+3.8	+1.0	0.7476819	0.5723368
mkea	DJF	+0.86	+0.83	-0.03	+35.6	+30.6	-5.0	0.3502014	0.2757578
mkea	JJA	-0.50	-0.41	+0.09	-18.0	-13.3	+4.6	0.6693340	0.5021583
monp	monthly	+0.05	-0.03	-0.08	+0.8	-0.4	-1.2	0.7835845	0.8966438
monp	DJF	-0.27	-0.56	-0.28	-5.8	-11.3	-5.6	0.4884223	0.3222996
monp	JJA	+1.09	+0.78	-0.31	+9.3	+6.9	-2.4	0.2349548	0.2762784
nano	monthly	+0.18	+0.08	-0.11	+1.2	+0.5	-0.7	0.3921488	0.7803946
nano	DJF	+0.28	+0.07	-0.21	+2.5	+0.6	-1.9	0.5112203	0.6614159
nano	JJA	-0.15	-0.25	-0.11	-0.7	-1.2	-0.5	0.8218917	0.7526420
nlib	monthly	-0.13	-0.21	-0.08	-0.8	-1.2	-0.4	0.7645390	0.5881591
nlib	DJF	-0.66	-0.66	-0.00	-8.3	-8.0	+0.3	0.1605559	0.1272037
nlib	JJA	+0.13	-0.45	-0.58	+0.4	-1.5	-1.9	0.9563417	0.7425568
nrc1	monthly	+0.41	+0.41	+0.00	+2.7	+2.6	-0.1	0.1697949	0.1631326
nrc1	DJF	+0.13	-0.17	-0.30	+2.0	-2.4	-4.3	0.9563417	0.8266660
nrc1	JJA	+0.87	+0.92	+0.05	+3.4	+3.4	+0.1	0.1132872	0.0748246
onsa	monthly	+0.31	+0.30	-0.00	+2.2	+2.1	-0.2	0.3141006	0.3601828
onsa	DJF	-0.03	-0.22	-0.19	-0.4	-2.4	-2.0	0.8266660	0.7425568
onsa	JJA	+1.44	+1.47	+0.03	+6.7	+6.6	-0.2	0.1005182	0.0214887
penc	monthly	+1.07	+0.57	-0.50	+6.6	+3.4	-3.2	0.0011521	0.0723018
penc	DJF	+0.69	+0.24	-0.46	+7.7	+2.5	-5.2	0.3810745	0.9128140
penc	JJA	+1.60	+1.21	-0.40	+6.5	+4.7	-1.7	0.0626981	0.0798019
pert	monthly	-0.46	-0.71	-0.24	-2.7	-3.9	-1.2	0.1001374	0.0100864
pert	DJF	-0.11	-0.33	-0.22	-0.5	-1.5	-1.0	0.9605311	0.5526151
pert	JJA	-0.37	-0.85	-0.48	-2.6	-5.6	-3.0	0.4884223	0.1658567
pie1	monthly	+0.07	-0.08	-0.15	+0.8	-0.9	-1.7	0.7533222	0.7393244
pie1	DJF	+0.26	-0.07	-0.33	+6.2	-1.5	-7.7	0.5021583	0.7603323
pie1	JJA	+0.26	+0.69	+0.42	+1.7	+4.4	+2.7	0.7665253	0.4284804
pin1	monthly	+0.44	-0.30	-0.73	+4.7	-3.2	-7.9	0.1179482	0.2372378
pin1	DJF	-0.02	-1.05	-1.02	-0.3	-15.1	-14.8	0.9640894	0.0791092
pin1	JJA	+1.56	+0.83	-0.73	+10.8	+6.0	-4.7	0.0649034	0.3923143
pol2	monthly	+0.08	-0.34	-0.42	+0.9	-3.1	-4.0	0.6498003	0.1062190
pol2	DJF	+0.39	-0.21	-0.60	+10.6	-4.7	-15.3	0.4277105	0.7138156
pol2	JJA	-1.81	-0.80	+1.01	-11.4	-4.2	+7.2	0.0467449	0.0335242
pots	monthly	+0.57	+0.28	-0.29	+3.8	+1.8	-2.0	0.0272815	0.2561493
pots	DJF	+0.19	-0.10	-0.29	+2.2	-1.1	-3.3	0.8430852	0.9605311
pots	JJA	+1.33	+0.87	-0.46	+5.9	+3.7	-2.2	0.0216674	0.0649034
quin	monthly	-0.66	-0.25	+0.41	-6.0	-2.3	+3.7	0.0180251	0.3909819

quin	DJF	-0.20	-0.45	-0.25	-2.3	-5.3	-3.0	0.3726915	0.6312218
quin	JJA	-0.60	-0.10	+0.50	-4.4	-0.7	+3.6	0.6404288	0.9379475
reyk	monthly	+0.38	+0.40	+0.02	+3.3	+3.3	+0.0	0.1278379	0.1077616
reyk	DJF	+0.34	+0.53	+0.19	+4.3	+6.1	+1.9	0.4759990	0.2284398
reyk	JJA	+0.30	+0.42	+0.11	+1.8	+2.4	+0.6	0.2349548	0.6921808
sant	monthly	-0.68	-0.08	+0.60	-5.6	-0.8	+4.8	0.0180699	0.7548494
sant	DJF	+1.02	+2.07	+1.05	+6.3	+15.1	+8.7	0.4362749	0.0867682
sant	JJA	-0.91	-0.86	+0.05	-9.8	-10.0	-0.2	0.2284398	0.5112203
shao	monthly	+0.82	-0.24	-1.06	+2.9	-0.8	-3.8	0.2142224	0.6942599
shao	DJF	+0.89	+0.06	-0.83	+7.3	+0.5	-6.8	0.7317017	0.9453299
shao	JJA	+2.65	+0.97	-1.68	+5.3	+1.9	-3.4	0.0195175	0.2129119
sio3	monthly	-0.22	-0.40	-0.18	-1.4	-2.4	-1.1	0.5490460	0.2926518
sio3	DJF	-0.98	-1.97	-0.99	-8.0	-15.0	-7.0	0.2241343	0.1628054
sio3	JJA	+1.41	+1.21	-0.20	+6.3	+5.4	-0.9	0.2241343	0.4440436
sni1	monthly	+0.60	+0.52	-0.08	+4.8	+3.9	-0.9	0.2190186	0.2011417
sni1	DJF	+0.48	+0.31	-0.17	+4.6	+2.9	-1.7	0.6312218	0.7317017
sni1	JJA	+2.70	+2.34	-0.36	+17.1	+13.7	-3.4	0.0864711	0.0864711
stjo	monthly	+0.81	+0.82	+0.01	+5.7	+5.5	-0.2	0.0017832	0.0023860
stjo	DJF	+0.07	-0.16	-0.23	+1.0	-1.9	-2.9	0.8218917	0.9640894
stjo	JJA	+2.19	+2.04	-0.15	+9.7	+8.7	-1.0	0.0010139	0.0025570
svtl	monthly	+0.36	+0.57	+0.22	+2.8	+4.3	+1.5	0.2461769	0.0887281
svtl	DJF	-0.08	+0.11	+0.19	-1.2	+1.5	+2.7	0.9563417	0.7425568
svtl	JJA	-0.69	-0.62	+0.06	-3.2	-2.8	+0.4	0.3810745	0.4108455
syog	monthly	+0.12	-0.10	-0.23	+4.1	-2.8	-6.9	0.2368753	0.2368753
syog	DJF	+0.25	+0.07	-0.18	+5.2	+1.3	-3.9	0.4094783	0.8370115
syog	JJA	+0.25	-0.18	-0.43	+13.4	-7.3	-20.7	0.6921808	0.5526151
tabl	monthly	-0.05	-0.07	-0.02	-0.9	-1.3	-0.3	0.7557517	0.7155386
tabl	DJF	-0.40	-0.48	-0.08	-9.3	-11.4	-2.1	0.1658567	0.1132872
tabl	JJA	+0.97	+0.78	-0.19	+11.2	+9.4	-1.8	0.1253111	0.1888875
tidb	monthly	+0.29	+0.50	+0.22	+2.0	+3.4	+1.4	0.3152136	0.1315497
tidb	DJF	+0.51	+1.03	+0.51	+2.5	+5.0	+2.5	0.4506703	0.4506703
tidb	JJA	-0.18	+0.06	+0.24	-2.0	+0.6	+2.6	0.8430852	0.9605311
tow2	monthly	+0.93	+0.87	-0.06	+2.8	+2.6	-0.2	0.2213424	0.2718353
tow2	DJF	+2.23	+2.70	+0.47	+4.8	+5.9	+1.1	0.3730531	0.4284804
tow2	JJA	+0.42	+0.43	+0.01	+1.9	+1.8	-0.0	0.6206907	0.7665253
trak	monthly	-0.74	-0.44	+0.30	-4.8	-2.8	+2.0	0.0659187	0.2025613
trak	DJF	-2.15	-1.92	+0.23	-18.8	-15.3	+3.5	0.0343399	0.0791092
trak	JJA	+0.90	+0.71	-0.19	+4.4	+3.4	-1.0	0.3444175	0.4994612
tskb	monthly	+0.70	+0.69	-0.01	+2.9	+2.7	-0.2	0.0708385	0.0577456
tskb	DJF	+1.54	+1.65	+0.11	+19.9	+17.2	-2.7	0.0285391	0.0285391
tskb	JJA	+1.25	+0.98	-0.28	+2.9	+2.2	-0.7	0.1373471	0.3004271
uclu	monthly	-0.11	-0.07	+0.04	-0.7	-0.4	+0.3	0.6388682	0.7601580
uclu	DJF	-0.20	+0.10	+0.30	-1.7	+0.8	+2.5	0.6921808	0.8430852
uclu	JJA	-0.45	-0.36	+0.09	-2.2	-1.8	+0.4	0.4284804	0.7665253
usud	monthly	+0.24	+0.32	+0.07	+1.8	+2.3	+0.5	0.3741368	0.2594698
usud	DJF	+0.46	+0.63	+0.17	+10.6	+14.1	+3.4	0.1888875	0.1253111
usud	JJA	+0.55	+0.53	-0.02	+2.2	+2.1	-0.1	0.6614159	0.2735614
vill	monthly	+0.06	+0.19	+0.14	+0.4	+1.2	+0.9	0.8405261	0.5060450

vill	DJF	-0.23	-0.43	-0.20	-2.2	-3.8	-1.6	0.6853286	0.4994612
vill	JJA	-0.04	+0.10	+0.14	-0.2	+0.5	+0.7	0.9640894	0.8925585
vndp	monthly	-0.28	-0.66	-0.38	-1.9	-4.2	-2.3	0.3670572	0.0464325
vndp	DJF	-1.76	-2.01	-0.26	-13.5	-14.4	-0.9	0.0748246	0.0477612
vndp	JJA	+0.87	+0.40	-0.47	+4.8	+2.1	-2.7	0.2762784	0.5526151
wes2	monthly	+0.79	+0.52	-0.27	+4.7	+3.0	-1.7	0.0106695	0.1151630
wes2	DJF	-0.53	-0.82	-0.29	-6.2	-9.2	-3.0	0.5840704	0.2284398
wes2	JJA	+2.59	+1.81	-0.78	+8.9	+6.2	-2.8	0.0060437	0.0239875
whit	monthly	+0.21	+0.15	-0.06	+3.3	+2.1	-1.2	0.1143866	0.3068318
whit	DJF	+0.17	+0.03	-0.14	+5.2	+0.8	-4.4	0.8370115	0.9453299
whit	JJA	+0.01	-0.15	-0.16	+0.1	-1.3	-1.3	0.9605311	0.9211587
will	monthly	+0.02	+0.01	-0.02	+0.2	+0.1	-0.2	0.8678389	0.9694414
will	DJF	+0.35	+0.28	-0.07	+6.3	+4.5	-1.8	0.1982106	0.4284804
will	JJA	-0.47	-0.14	+0.32	-3.2	-1.0	+2.3	0.1916706	0.4994612
wslr	monthly	+0.75	-0.06	-0.81	+6.4	-0.5	-6.9	0.0002786	0.8020825
wslr	DJF	+1.04	+0.20	-0.84	+13.3	+2.7	-10.6	0.0798019	0.5112203
wslr	JJA	+0.64	-0.54	-1.17	+3.8	-3.4	-7.1	0.0626981	0.2284398
wtzr	monthly	+0.29	+0.09	-0.20	+2.1	+0.6	-1.5	0.2829321	0.7087489
wtzr	DJF	-0.53	-0.77	-0.24	-6.9	-9.4	-2.5	0.3244237	0.2284398
wtzr	JJA	+1.50	+1.17	-0.33	+7.2	+5.5	-1.7	0.0175307	0.0376669
wuhn	monthly	+0.34	-1.45	-1.80	+1.1	-4.7	-5.8	0.5132599	0.0031658
wuhn	DJF	+1.64	-0.06	-1.70	+12.9	-0.4	-13.3	0.1546298	0.9563417
wuhn	JJA	+0.58	-1.47	-2.04	+1.1	-2.8	-3.9	0.6206907	0.2349548
yell	monthly	+0.25	+0.12	-0.12	+2.7	+1.3	-1.5	0.2178531	0.5851195
yell	DJF	+0.37	-0.01	-0.37	+10.5	-0.2	-10.7	0.3214411	0.9640894
yell	JJA	+0.51	+0.45	-0.07	+3.0	+2.4	-0.5	0.7526420	0.6853286
zimm	monthly	+0.20	+0.35	+0.15	+1.5	+2.7	+1.2	0.3158105	0.0898510
zimm	DJF	-0.69	-0.68	+0.01	-9.6	-9.0	+0.6	0.0343399	0.0649034
zimm	JJA	+0.75	+1.11	+0.36	+3.8	+5.5	+1.7	0.0791092	0.0170238