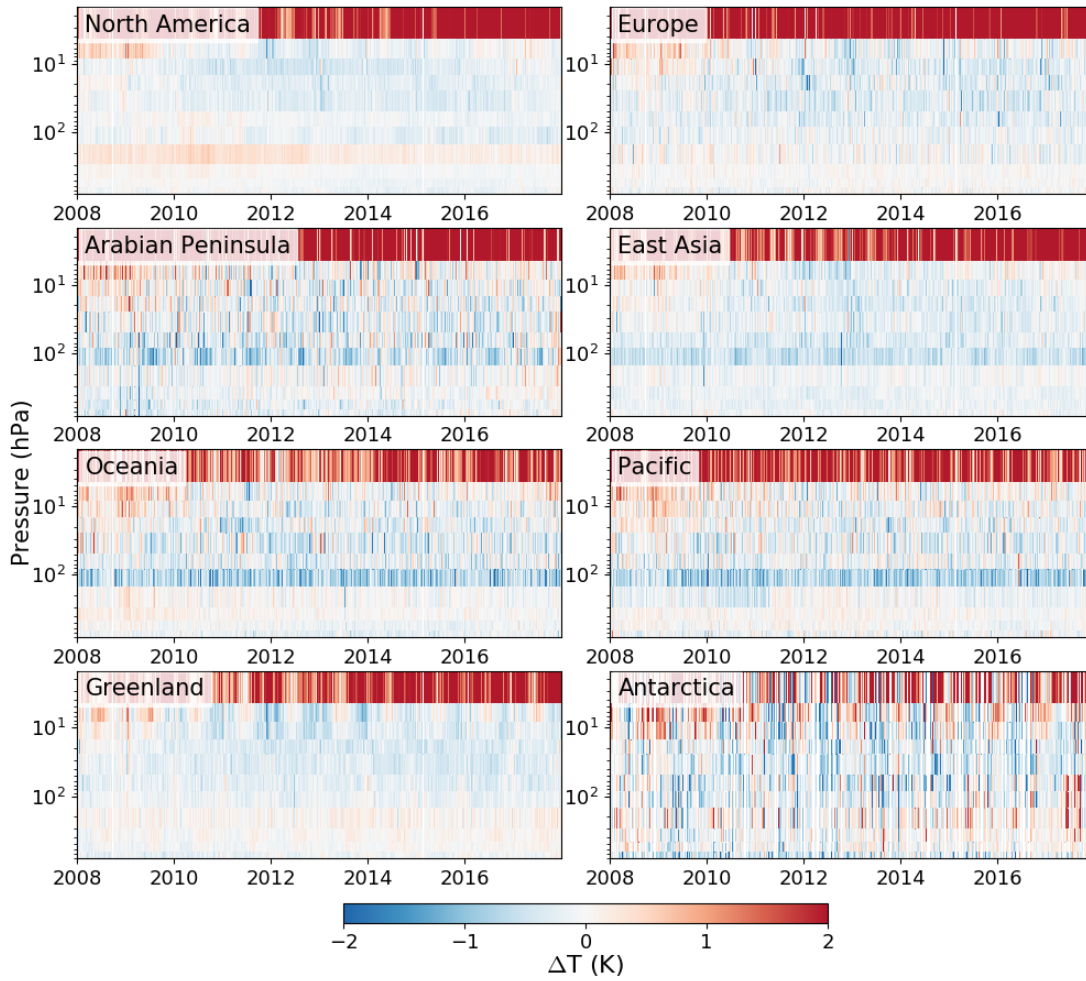


Supplementary materials

Channel number	Wavenumber	Channel number	Wavenumber	Channel number	Wavenumber	Channel number	Wavenumber
15	648.5	172	687.75	258	709.25	349	732.0
16	648.75	173	688.0	259	709.5	350	732.25
70	662.25	174	688.25	261	710.0	351	732.5
71	662.5	176	688.75	262	710.25	352	732.75
72	662.75	177	689.0	264	710.75	354	733.25
73	663.0	179	689.5	265	711.0	355	733.5
86	666.25	180	689.75	266	711.25	356	733.75
87	666.5	181	690.0	267	711.5	357	734.0
88	666.75	183	690.5	268	711.75	358	734.25
89	667.0	185	691.0	271	712.5	362	735.25
90	667.25	186	691.25	272	712.75	363	735.5
91	667.5	187	691.5	273	713.0	364	735.75
92	667.75	189	692.0	274	713.25	368	736.75
93	668.0	192	692.75	275	713.5	369	737.0
94	668.25	193	693.0	278	714.25	370	737.25
95	668.5	194	693.25	279	714.5	372	737.75
96	668.75	195	693.5	280	714.75	374	738.25
97	669.0	196	693.75	281	715.0	375	738.5
98	669.25	198	694.25	284	715.75	376	738.75
99	669.5	199	694.5	285	716.0	378	739.25
100	669.75	200	694.75	286	716.25	380	739.75
104	670.75	202	695.25	287	716.5	381	740.0
105	671.0	205	696.0	290	717.25	382	740.25
109	672.0	206	696.25	291	717.5	385	741.0
119	674.5	207	696.5	292	717.75	386	741.25
122	675.25	211	697.5	293	718.0	387	741.5
124	675.75	212	697.75	296	718.75	389	742.0
125	676.0	213	698.0	297	719.0	393	743.0

126	676.25	216	698.75	299	719.5	394	743.25
128	676.75	217	699.0	300	719.75	398	744.25
129	677.0	218	699.25	301	720.0	399	744.5
131	677.5	219	699.5	302	720.25	400	744.75
132	677.75	220	699.75	303	720.5	401	745.0
134	678.25	222	700.25	304	720.75	405	746.0
135	678.5	223	700.5	306	721.25	406	746.25
137	679.0	224	700.75	308	721.75	407	746.5
138	679.25	225	701.0	309	722.0	411	747.5
141	680.0	226	701.25	312	722.75	412	747.75
142	680.25	229	702.0	313	723.0	417	749.0
144	680.75	230	702.25	314	723.25	418	749.25
145	681.0	231	702.5	319	724.5	428	751.75
147	681.5	232	702.75	320	724.75	438	754.25
148	681.75	233	703.0	321	725.0	439	754.5
150	682.25	236	703.75	325	726.0	6204	2195.75
151	682.5	237	704.0	326	726.25	6209	2197.0
153	683.0	238	704.25	327	726.5	6211	2197.5
154	683.25	239	704.5	329	727.0	6213	2198.0
155	683.5	242	705.25	331	727.5	6229	2202.0
157	684.0	243	705.5	332	727.75	6231	2202.5
160	684.75	244	705.75	333	728.0	6237	2204.0
161	685.0	245	706.0	337	729.0	6238	2204.25
163	685.5	246	706.25	338	729.25	6249	2207.0
164	685.75	249	707.0	339	729.5	6250	2207.25
166	686.25	250	707.25	343	730.5	6253	2208.0
167	686.5	252	707.75	344	730.75	6254	2208.25
168	686.75	253	708.0	345	731.0	6261	2210.0
170	687.25	255	708.5	346	731.25	6265	2211.0
171	687.5	256	708.75	348	731.75		

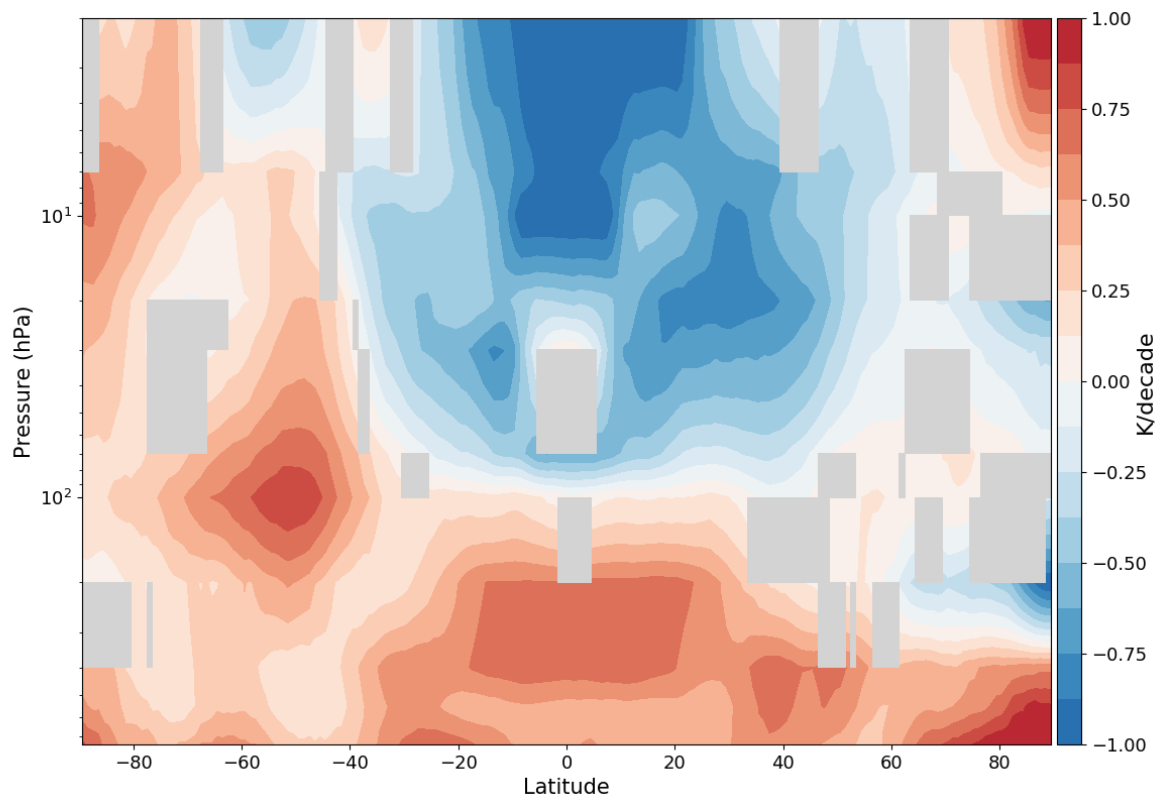
Table S1: List of the 231 IASI channels used in the ANN.



5 **Figure S1: Differences between ERA5 and ARSA temperatures between 2008 and 2020 in North America, Europe, the Arabian Peninsula, East Asia, Oceania, the Pacific, Greenland and Antarctica.**

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20 **Figure S2: ERA5 zonal temperature trends for the period 2008-2020 computed with the outputs of the ANN. Grey areas correspond to trends that are not statistically significant.**

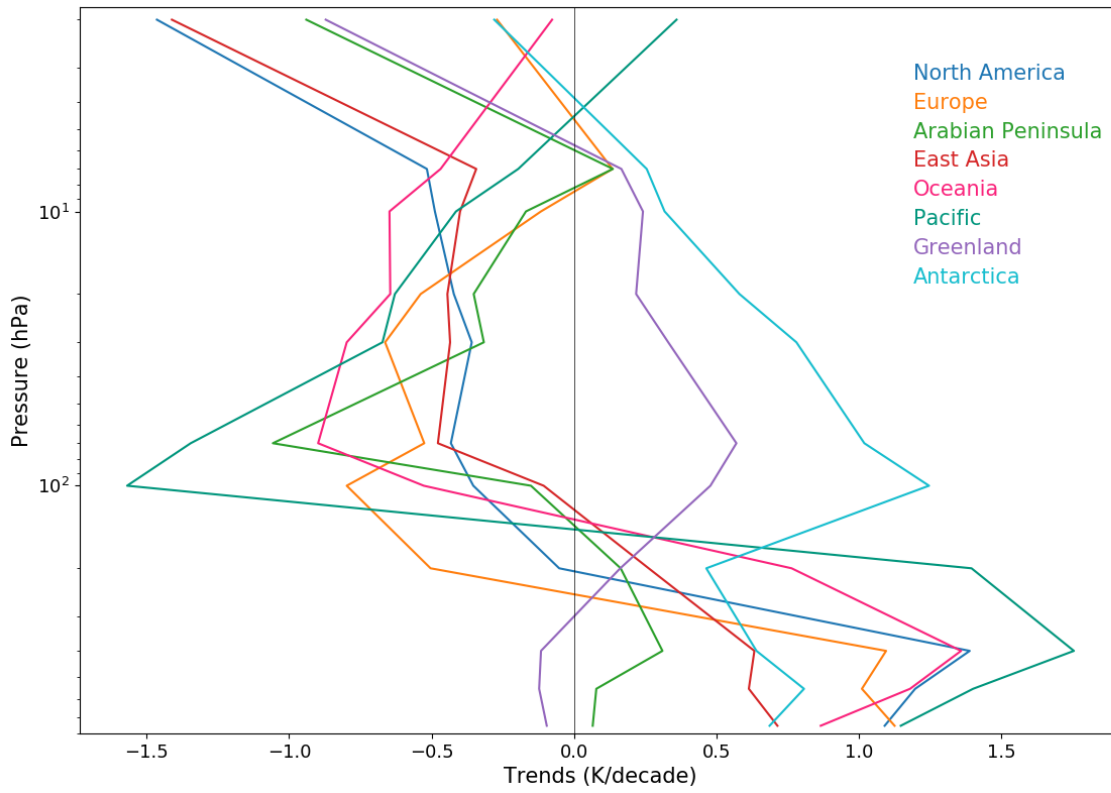


Figure S3: ARSA mean temperature trends in the 8 regions of Figure 4