

Supplementary Materials:

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Table S1. The Relative Score (RS) of each climate model (in descending order) in representing the frequency distribution of daily mean near-surface wind speed over the South Asian Ocean and Land (Note: Here RS is out of 1, which is the summation of historical time slice RS and present time slice RS).

South Asian Ocean			South Asian Land		
Model ID	Model Acronym	RS	Model ID	Model Acronym	RS
14	GFDL-ESM2M	1	10_RegCM	CSIRO-QCCCE-CSIRO-Mk3-6-0(RegCM4-4)	0.9999
15	HadGEM2-AO	0.9785	10_RCA	CSIRO-QCCCE-CSIRO-Mk3-6-0(RCA4)	0.9923
19	IPSL-CM5A-LR	0.9760	14_RegCM	NOAA-GFDL-GFDL-ESM2M(RegCM4-4)	0.9742
26	MPI-ESM-LR	0.9680	26_REMO	MPI-M-MPI-ESM-LR(REMO2009)	0.9697
20	IPSL-CM5A-MR	0.9669	23	MIROC5	0.9686
27	MPI-ESM-MR	0.9600	6_RegCM	CCCma-CanESM2(RegCM4-4)	0.9676
9	CNRM-CM5	0.9585	19_RegCM	IPSL-IPSL-CM5A-LR(RegCM4-4)	0.9580
26_REMO	MPI-M-MPI-ESM-LR(REMO2009)	0.9585	27_RegCM	MPI-M-MPI-ESM-MR(RegCM4-4)	0.9549
18	INM-CM4	0.9519	17_RCA	MOHC-HadGEM2-ES(RCA4)	0.9530
21	IPSL-CM5B-LR	0.9429	26	MPI-ESM-LR	0.9479
14_RCA	NOAA-GFDL-GFDL-ESM2M(RCA4)	0.9392	25	MIROC-ESM-CHEM	0.9375
26_RCA	MPI-M-MPI-ESM-LR(RCA4)	0.9370	9_RegCM	CNRM-CERFACS-CNRM-CM5(RegCM4-4)	0.9358
12	GFDL-CM3	0.9363	27	MPI-ESM-MR	0.9278
16	HadGEM2-CC	0.9318	23_RCA	MIROC-MI-ROC5(RCA4)	0.9212
9_RCA	CNRM-CERFACS-CNRM-CM5(RCA4)	0.9313	7	CMCC-CM	0.9189
17	HadGEM2-ES	0.9265	6	CanESM2	0.9149

Continued...

...Table S1 continued

7	CMCC-CM	0.9194	14_R CA	c NOAA-GFDL- GFDL- ESM2M(RCA4)	0.9143
13	GFDL-ESM2G	0.9175	26_R CA	MPI-M-MPI-ESM- LR(RCA4)	0.9121
17_RCA	MOHC- HadGEM2- ES(RCA4)	0.9172	22	MIROC4h	0.9113
23_RCA	MIROC-MI- ROC5(RCA4)	0.9137	6_RC A	CCCma- CanESM2(RCA4)	0.9103
6_RCA	CCCma- CanESM2(RCA4)	0.9033	31_R CA	NCC-NorESM1- M(RCA4)	0.9076
5	CanCM4	0.9011	24	MIROC-ESM	0.9060
22	MIROC4h	0.8973	12	GFDL-CM3	0.9049
31_RCA	NCC-NorESM1- M(RCA4)	0.8870	17	HadGEM2-ES	0.8908
10_RCA	CSIRO-QCCCE- CSIRO-Mk3-6- 0(RCA4)	0.8856	2	ACCESS1.3	0.8895
8	CMCC-CMS	0.8855	8	CMCC-CMS	0.8880
10_RegC M	CSIRO-QCCCE- CSIRO-Mk3-6- 0(RegCM4-4)	0.8853	20	IPSL-CM5A-MR	0.8880
6	CanESM2	0.8850	1	ACCESS1.0	0.8838
2	ACCESS1.3	0.8700	21	IPSL-CM5B-LR	0.8825
20_RCA	IPSL-IPSL- CM5A- MR(RCA4)	0.8645	20_R CA	IPSL-IPSL-CM5A- MR(RCA4)	0.8821
1	ACCESS1.0	0.8626	5	CanCM4	0.8754
10	CSIRO-Mk3.6.0	0.8498	15	HadGEM2-AO	0.8726
23	MIROC5	0.8467	9_RC A	CNRM-CERFACS- CNRM-CM5(RCA4)	0.8682
4	BNU-ESM	0.8324	18	INM-CM4	0.8606
28	MRI-CGCM3	0.8286	19	IPSL-CM5A-LR	0.8605
24	MIROC-ESM	0.8178	11	FGOALS-s2	0.8601
25	MIROC-ESM- CHEM	0.8099	16	HadGEM2-CC	0.8521
3	BCC	0.8045	4	BNU-ESM	0.8164
19_RegC M	IPSL-IPSL- CM5A- LR(RegCM4-4)	0.7791	3	BCC	0.7916
27_RegC M	MPI-M-MPI- ESM- MR(RegCM4-4)	0.7355	9	CNRM-CM5	0.7805
6_RegCM	CCCma- CanESM2(RegCM 4-4)	0.7019	14	GFDL-ESM2M	0.7783

Continued...

...Table S1 continued

11	FGOALS-s2	0.6891	13	GFDL-ESM2G	0.7723
14_RegC M	NOAA-GFDL- GFDL- ESM2M(RegCM4- 4)	0.6851	28	MRI-CGCM3	0.7453
9_RegCM	CNRM-CER- FACS-CNRM- CM5(RegCM4-4)	0.5359	10	CSIRO-Mk3.6.0	0.7325
32	MME_CORDEX	0.2350	32	MME_CORDEX	0.1998
29	MME_CMIP5	0.0000	29	MME_CMIP5	0.0000

Table S2. The Relative Score (RS) of each climate model (in descending order) in representing spatio-temporal variability of the monthly mean near-surface wind speed over the South Asian Ocean and Land (Note: Here RS is out of 8, which is the summation of climate model RS in representing EOF1 variance and pattern, and PC1 magnitude and pattern for both study time slices)

South Asian Ocean			South Asian Land		
Model ID	Model Acronym	RS	Model ID	Model Acronym	RS
15	HadGEM2-AO	6.8729	15	HadGEM2-AO	6.7945
29	MME_CMIP5	6.6269	1	ACCESS1.0	6.6357
17	HadGEM2-ES	6.5302	17	HadGEM2-ES	6.5389
27	MPI-ESM-MR	6.5125	22	MIROC4h	6.5300
10	CSIRO-Mk3.6.0	6.4398	10_RegC M	CSIRO-QCCCE- CSIRO-Mk3-6- 0(RegCM4-4)	6.4845
7	CMCC-CM	6.2973	20	IPSL-CM5A-MR	6.4577
16	HadGEM2-CC	6.0918	26_REM O	MPI-M-MPI-ESM- LR(REMO2009)	6.4071
12	GFDL-CM3	5.9636	23_RCA	MIROC-MI- ROC5(RCA4)	6.3490
32	MME_CORDEX	5.9346	26_RCA	MPI-M-MPI-ESM- LR(RCA4)	6.2951
10_RCA	CSIRO-QCCCE- CSIRO-Mk3-6- 0(RCA4)	5.8965	16	HadGEM2-CC	6.1672
8	CMCC-CMS	5.8123	9_RegC M	CNRM-CER- FACS-CNRM- CM5(RegCM4-4)	6.1491
9	CNRM-CM5	5.7588	7	CMCC-CM	6.0627
3	BCC	5.7316	8	CMCC-CMS	6.0279
20	IPSL-CM5A-MR	5.6877	29	MME_CMIP5	5.9776
1	ACCESS1.0	5.6872	6_RegC M	CCCma- CanESM2(RegCM 4-4)	5.9734
13	GFDL-ESM2G	5.5853	27_RegC M	MPI-M-MPI-ESM- MR(RegCM4-4)	5.9660

Continued...

...Table S2 continued

17_RCA	MOHC-HadGEM2-ES(RCA4)	5.5081	3	BCC	5.9416
23	MIROC5	5.4972	23	MIROC5	5.8655
26_REMO	MPI-M-MPI-ESM-LR(REMO2009)	5.4283	9_RCA	CNRM-CER-FACS-CNRM-CM5(RCA4)	5.8270
26	MPI-ESM-LR	5.4091	13	GFDL-ESM2G	5.7378
6	CanESM2	5.3886	27	MPI-ESM-MR	5.7009
22	MIROC4h	5.2362	14	GFDL-ESM2M	5.6934
6_RCA	CCCma-CanESM2(RCA4)	5.2308	32	MME_CORDEX	5.6481
14	GFDL-ESM2M	5.1756	6	CanESM2	5.5247
19	IPSL-CM5A-LR	5.1378	19	IPSL-CM5A-LR	5.5221
10_RegCM	CSIRO-QCCCE-CSIRO-Mk3-6-0(RegCM4-4)	5.0386	6_RCA	CCCma-CanESM2(RCA4)	5.4167
14_RCA	NOAA-GFDL-GFDL-ESM2M(RCA4)	4.4049	17_RCA	MOHC-HadGEM2-ES(RCA4)	5.4120
25	MIROC-ESM-CHEM	4.3373	18	INM-CM4	5.2778
18	INM-CM4	4.2603	26	MPI-ESM-LR	5.1054
2	ACCESS1.3	4.1571	10	CSIRO-Mk3.6.0	5.0997
28	MRI-CGCM3	4.1161	14_RCA	NOAA-GFDL-GFDL-ESM2M(RCA4)	5.0910
20_RCA	IPSL-IPSL-CM5A-MR(RCA4)	4.0603	2	ACCESS1.3	5.0235
4	BNU-ESM	3.9645	12	GFDL-CM3	4.9744
24	MIROC-ESM	3.9587	20_RCA	IPSL-IPSL-CM5A-MR(RCA4)	4.9691
5	CanCM4	3.9076	10_RCA	CSIRO-QCCCE-CSIRO-Mk3-6-0(RCA4)	4.8798
26_RCA	MPI-M-MPI-ESM-LR(RCA4)	3.8568	14_RegCM	NOAA-GFDL-GFDL-ESM2M(RegCM4-4)	4.8475
9_RCA	CNRM-CERFACS-CNRM-CM5(RCA4)	3.6516	11	FGOALS-s2	4.6573
23_RCA	MIROC-MIROC5(RCA4)	3.5940	31_RCA	NCC-NorESM1-M(RCA4)	4.6123
14_RegCM	NOAA-GFDL-GFDL-ESM2M(RegCM4-4)	3.2586	9	CNRM-CM5	4.5479
21	IPSL-CM5B-LR	3.2175	28	MRI-CGCM3	4.4270

Continued...

...Table S2 continued

11	FGOALS-s2	2.8217	21	IPSL-CM5B-LR	4.2980
19_Reg CM	IPSL-IPSL-CM5A- LR(RegCM4-4)	2.5595	4	BNU-ESM	3.9604
9_RegC M	CNRM-CERFACS- CNRM- CM5(RegCM4-4)	2.5408	19_RegC M	IPSL-IPSL-CM5A- LR(RegCM4-4)	3.8483
31_RCA	NCC-NorESM1- M(RCA4)	2.4622	25	MIROC-ESM- CHEM	3.3424
27_Reg CM	MPI-M-MPI-ESM- MR(RegCM4-4)	2.4333	5	CanCM4	2.6336
6_RegC M	CCCma- CanESM2(RegCM4 -4)	2.3125	24	MIROC-ESM	2.4210

Table S3. The Relative Score (RS) of each climate model (in descending order) in capturing the annual cycle variation over the South Asian Ocean and Land (Note: Here RS is out of 2, which is the summation of historical time slice RS and present time slice RS)

South Asian Ocean			South Asian Land		
Model ID	Model Acronym	RS	Model ID	Model Acronym	RS
26_REM O	MPI-M-MPI-ESM- LR(REMO2009)	2.0000	26_REM O	MPI-M-MPI-ESM- LR(REMO2009)	1.9937
26	MPI-ESM-LR	1.8761	32	MME_CORDEX	1.9700
27	MPI-ESM-MR	1.7137	29	MME_CMIP5	1.8126
32	MME_CORDEX	1.6619	26_RCA	MPI-M-MPI-ESM- LR(RCA4)	1.7923
13	GFDL-ESM2G	1.6558	9	CNRM-CM5	1.6756
3	BCC	1.6468	10_RCA	CSIRO-QCCCE- CSIRO-Mk3-6- 0(RCA4)	1.5505
29	MME_CMIP5	1.5870	17_RCA	MOHC- HadGEM2- ES(RCA4)	1.5095
12	GFDL-CM3	1.5816	9_RCA	CNRM-CER- FACS-CNRM- CM5(RCA4)	1.4459
10	CSIRO-Mk3.6.0	1.5430	7	CMCC-CM	1.4350
10_RCA	CSIRO-QCCCE- CSIRO-Mk3-6- 0(RCA4)	1.5259	31_RCA	NCC-NorESM1- M(RCA4)	1.4141
4	BNU-ESM	1.4894	20_RCA	IPSL-IPSL-CM5A- MR(RCA4)	1.4047
10_Reg CM	CSIRO-QCCCE- CSIRO-Mk3-6- 0(RegCM4-4)	1.4781	23_RCA	MIROC-MI- ROC5(RCA4)	1.3938

Continued...

...Table S3 continued

23	MIROC5	1.4600	14_RCA	NOAA-GFDL- GFDL- ESM2M(RCA4)	1.3871
14	GFDL-ESM2M	1.4516	26	MPI-ESM-LR	1.3821
6_RCA	CCCma- CanESM2(RCA4)	1.4468	6_RCA	CCCma- CanESM2(RCA4)	1.3521
9_RCA	CNRM-CERFACS- CNRM- CM5(RCA4)	1.4150	27	MPI-ESM-MR	1.3333
7	CMCC-CM	1.4115	23	MIROC5	1.3291
9	CNRM-CM5	1.4094	22	MIROC4h	1.3260
19	IPSL-CM5A-LR	1.3550	15	HadGEM2-AO	1.3041
14_Reg CM	NOAA-GFDL- GFDL- ESM2M(RegCM4- 4)	1.3287	17	HadGEM2-ES	1.2638
6	CanESM2	1.3219	8	CMCC-CMS	1.2545
8	CMCC-CMS	1.2753	16	HadGEM2-CC	1.2457
20	IPSL-CM5A-MR	1.2670	1	ACCESS1.0	1.1775
14_RCA	NOAA-GFDL- GFDL- ESM2M(RCA4)	1.2400	6	CanESM2	1.1491
1	ACCESS1.0	1.2255	20	IPSL-CM5A-MR	1.1442
11	FGOALS-s2	1.2241	9_RegC M	CNRM-CER- FACS-CNRM- CM5(RegCM4-4)	1.0877
17_RCA	MOHC-HadGEM2- ES(RCA4)	1.2120	10_RegC M	CSIRO-QCCCE- CSIRO-Mk3-6- 0(RegCM4-4)	1.0640
15	HadGEM2-AO	1.1999	3	BCC	1.0416
28	MRI-CGCM3	1.1896	13	GFDL-ESM2G	1.0031
17	HadGEM2-ES	1.1075	14	GFDL-ESM2M	0.9839
16	HadGEM2-CC	1.0273	12	GFDL-CM3	0.9719
26_RCA	MPI-M-MPI-ESM- LR(RCA4)	0.9814	6_RegC M	CCCma- CanESM2(RegCM 4-4)	0.8786
18	INM-CM4	0.9810	27_RegC M	MPI-M-MPI-ESM- MR(RegCM4-4)	0.8375
9_RegC M	CNRM-CERFACS- CNRM- CM5(RegCM4-4)	0.8692	14_RegC M	NOAA-GFDL- GFDL- ESM2M(RegCM4- 4)	0.7925
22	MIROC4h	0.8406	5	CanCM4	0.7914
5	CanCM4	0.7672	19	IPSL-CM5A-LR	0.7075
19_Reg CM	IPSL-IPSL-CM5A- LR(RegCM4-4)	0.6885	21	IPSL-CM5B-LR	0.6348
25	MIROC-ESM- CHEM	0.5994	10	CSIRO-Mk3.6.0	0.6022

Continued...

...Table S3 continued

2	ACCESS1.3	0.5759	2	ACCESS1.3	0.5687
24	MIROC-ESM	0.5357	28	MRI-CGCM3	0.5684
6_RegC M	CCCma- CanESM2(RegCM4-4)	0.4534	11	FGOALS-s2	0.5066
23_RCA	MIROC-MI- ROC5(RCA4)	0.2713	19_RegC M	IPSL-IPSL-CM5A- LR(RegCM4-4)	0.5022
21	IPSL-CM5B-LR	0.2627	4	BNU-ESM	0.4409
31_RCA	NCC-NorESM1- M(RCA4)	0.2619	18	INM-CM4	0.4056
27_Reg CM	MPI-M-MPI-ESM- MR(RegCM4-4)	0.1574	24	MIROC-ESM	0.0163
20_RCA	IPSL-IPSL-CM5A- MR(RCA4)	0.0000	25	MIROC-ESM- CHEM	0.0142

Table S4. The Relative Score (RS) of each climate model (in descending order) in reproducing the seasonal mean wind speed over the South Asian Ocean and Land (Note: Here RS is out of 6, which is the summation of RS of a climate model in pre-monsoon, monsoon and post-monsoon seasons for both study time slices)

South Asian Ocean			South Asian Land		
Model ID	Model Acronym	RS	Model ID	Model Acronym	RS
26_REMO	MPI-M-MPI-ESM- LR(REMO2009)	5.4010	26_REMO	MPI-M-MPI-ESM- LR(REMO2009)	5.0275
27	MPI-ESM-MR	5.1247	1	ACCESS1.0	4.8711
23	MIROC5	4.9814	14_RCA	NOAA-GFDL- GFDL-ESM2M(RCA4)	4.3954
10_RCA	CSIRO-QCCCE- CSIRO-Mk3-6-0(RCA4)	4.6964	9_RCA	CNRM-CER- FACS-CNRM-CM5(RCA4)	4.1852
22	MIROC4h	4.6950	31_RCA	NCC-NorESM1- M(RCA4)	3.8425
9_RCA	CNRM-CER- FACS-CNRM-CM5(RCA4)	4.6491	26_RCA	MPI-M-MPI-ESM-LR(RCA4)	3.8233
13	GFDL-ESM2G	4.6011	10_RegC M	CSIRO-QCCCE- CSIRO-Mk3-6-0(RegCM4-4)	3.7045
11	FGOALS-s2	4.5132	20_RCA	IPSL-IPSL-CM5A- MR(RCA4)	3.6376
3	BCC	4.4556	23_RCA	MIROC-MI- ROC5(RCA4)	3.6165

Continued...

...Table S4 continued					
9	CNRM-CM5	4.3804	10_RCA	CSIRO-QCCCE- CSIRO-Mk3-6- 0(RCA4)	3.6006
20	IPSL-CM5A-MR	4.3426	7	CMCC-CM	3.4297
6_RCA	CCCma- CanESM2(RCA4)	4.3250	8	CMCC-CMS	3.4270
6	CanESM2	4.2806	9	CNRM-CM5	3.3693
26	MPI-ESM-LR	4.2571	6_RCA	CCCma- CanESM2(RCA4)	3.3503
10	CSIRO-Mk3.6.0	4.2506	27	MPI-ESM-MR	3.3276
8	CMCC-CMS	4.2261	9_RegC M	CNRM-CER- FACS-CNRM- CM5(RegCM4-4)	3.1510
1	ACCESS1.0	4.0990	22	MIROC4h	3.1306
19	IPSL-CM5A-LR	4.0371	6_RegC M	CCCma- CanESM2(RegC M4-4)	3.0985
14	GFDL-ESM2M	3.9793	23	MIROC5	2.9932
14_RCA	NOAA-GFDL- GFDL- ESM2M(RCA4)	3.8914	21	IPSL-CM5B-LR	2.9374
6_RegCM	CCCma- CanESM2(RegC M4-4)	3.8905	26	MPI-ESM-LR	2.9290
10_RegC M	CSIRO-QCCCE- CSIRO-Mk3-6- 0(RegCM4-4)	3.8532	6	CanESM2	2.9097
7	CMCC-CM	3.7844	32	MME_CORDEX	2.8564
5	CanCM4	3.7362	20	IPSL-CM5A-MR	2.8197
4	BNU-ESM	3.5684	17_RCA	MOHC- HadGEM2- ES(RCA4)	2.7505
26_RCA	MPI-M-MPI- ESM-LR(RCA4)	3.4856	12	GFDL-CM3	2.6916
32	MME_CORDEX	3.4498	19_RegC M	IPSL-IPSL- CM5A- LR(RegCM4-4)	2.5254
15	HadGEM2-AO	3.4336	5	CanCM4	2.5048
29	MME_CMIP5	3.4081	27_RegC M	MPI-M-MPI- ESM- MR(RegCM4-4)	2.5011
18	INM-CM4	3.3706	15	HadGEM2-AO	2.4823
12	GFDL-CM3	3.1035	16	HadGEM2-CC	2.4778
14_RegC M	NOAA-GFDL- GFDL- ESM2M(RegCM4 -4)	3.0517	3	BCC	2.2773

Continued...

...Table S4 continued

19_RegC M	IPSL-IPSL- CM5A- LR(RegCM4-4)	2.9942	17	HadGEM2-ES	2.2428
9_RegCM	CNRM-CER- FACS-CNRM- CM5(RegCM4-4)	2.8730	19	IPSL-CM5A-LR	2.1325
16	HadGEM2-CC	2.8625	14	GFDL-ESM2M	2.0944
17	HadGEM2-ES	2.8082	13	GFDL-ESM2G	2.0523
17_RCA	MOHC- HadGEM2- ES(RCA4)	2.6034	14_RegC M	NOAA-GFDL- GFDL- ESM2M(RegCM4 -4)	1.9739
21	IPSL-CM5B-LR	2.4070	2	ACCESS1.3	1.8545
23_RCA	MIROC-MI- ROC5(RCA4)	2.3801	28	MRI-CGCM3	1.7458
31_RCA	NCC-NorESM1- M(RCA4)	2.3135	29	MME_CMIP5	1.6798
2	ACCESS1.3	2.1883	4	BNU-ESM	1.6176
27_RegC M	MPI-M-MPI- ESM- MR(RegCM4-4)	2.0572	10	CSIRO-Mk3.6.0	1.5171
24	MIROC-ESM	1.9160	11	FGOALS-s2	1.3876
25	MIROC-ESM- CHEM	1.7528	18	INM-CM4	1.3640
28	MRI-CGCM3	1.6570	24	MIROC-ESM	0.7100
20_RCA	IPSL-IPSL- CM5A- MR(RCA4)	1.4209	25	MIROC-ESM- CHEM	0.6496

Table S5. The Relative Score (RS) of each climate model (in descending order) in reproducing the pre-monsoon mean wind speed trend over the South Asian Ocean and Land (Note: Here RS is out of 2, which is the summation of the historical time slice RS and present time slice RS)

South Asian Ocean			South Asian Land		
Model ID	Model Acronym	RS	Model ID	Model Acronym	RS
12	GFDL-CM3	1.7426	29	MME_CMIP5	1.8277
9	CNRM-CM5	1.6763	32	MME_CORDEX	1.7381
1	ACCESS1.0	1.5314	14_RegC M	NOAA-GFDL- GFDL- ESM2M(RegCM 4-4)	1.5862
29	MME_CMIP5	1.5288	2	ACCESS1.3	1.4444
5	CanCM4	1.5079	14_RCA	NOAA-GFDL- GFDL- ESM2M(RCA4)	1.4357
8	CMCC-CMS	1.5063	14	GFDL-ESM2M	1.4199

Continued...

...Table S5 continued

10_RegC M	CSIRO-QCCCE- CSIRO-Mk3-6- 0(RegCM4-4)	1.5060	27	MPI-ESM-MR	1.4083
20_RCA	IPSL-IPSL- CM5A- MR(RCA4)	1.5036	3	BCC	1.4009
4	BNU-ESM	1.4933	7	CMCC-CM	1.3784
14	GFDL-ESM2M	1.4783	4	BNU-ESM	1.3748
6_RegCM	CCCma- CanESM2(RegC M4-4)	1.4503	13	GFDL-ESM2G	1.3662
10	CSIRO-Mk3.6.0	1.3807	26_REM O	MPI-M-MPI- ESM- LR(REMO2009)	1.3086
13	GFDL-ESM2G	1.3774	9	CNRM-CM5	1.3083
3	BCC	1.3664	15	HadGEM2-AO	1.2727
9_RCA	CNRM-CER- FACS-CNRM- CM5(RCA4)	1.3662	6	CanESM2	1.2349
26	MPI-ESM-LR	1.3091	28	MRI-CGCM3	1.2285
28	MRI-CGCM3	1.3056	9_RCA	CNRM-CER- FACS-CNRM- CM5(RCA4)	1.2107
32	MME_CORDEX	1.3015	10_RCA	CSIRO-QCCCE- CSIRO-Mk3-6- 0(RCA4)	1.2050
7	CMCC-CM	1.2960	5	CanCM4	1.2036
22	MIROC4h	1.2769	6_RegC M	CCCma- CanESM2(RegC M4-4)	1.1979
27	MPI-ESM-MR	1.2762	18	INM-CM4	1.1820
15	HadGEM2-AO	1.2514	17	HadGEM2-ES	1.1718
9_RegCM	CNRM-CER- FACS-CNRM- CM5(RegCM4-4)	1.2503	20_RCA	IPSL-IPSL- CM5A- MR(RCA4)	1.1567
20	IPSL-CM5A-MR	1.2486	12	GFDL-CM3	1.1560
10_RCA	CSIRO-QCCCE- CSIRO-Mk3-6- 0(RCA4)	1.2364	21	IPSL-CM5B-LR	1.1472
21	IPSL-CM5B-LR	1.2097	17_RCA	MOHC- HadGEM2- ES(RCA4)	1.1410
6_RCA	CCCma- CanESM2(RCA4)	1.1939	10	CSIRO-Mk3.6.0	1.1315
14_RegC M	NOAA-GFDL- GFDL- ESM2M(RegCM4 -4)	1.1875	31_RCA	NCC-NorESM1- M(RCA4)	1.1064

Continued...

...Table S5 continued

14_RCA	NOAA-GFDL- GFDL- ESM2M(RCA4)	1.1830	26_RCA	MPI-M-MPI- ESM-LR(RCA4)	1.1052
18	INM-CM4	1.1576	8	CMCC-CMS	1.0981
2	ACCESS1.3	1.0992	10_RegC M	CSIRO-QCCCE- CSIRO-Mk3-6- 0(RegCM4-4)	1.0728
17	HadGEM2-ES	1.0656	27_RegC M	MPI-M-MPI- ESM- MR(RegCM4-4)	1.0291
16	HadGEM2-CC	1.0292	19_RegC M	IPSL-IPSL- CM5A- LR(RegCM4-4)	1.0036
31_RCA	NCC-NorESM1- M(RCA4)	1.0289	6_RCA	CCCma- CanESM2(RCA4)	0.9950
19_RegC M	IPSL-IPSL- CM5A- LR(RegCM4-4)	1.0253	22	MIROC4h	0.9933
26_RCA	MPI-M-MPI- ESM-LR(RCA4)	1.0139	9_RegC M	CNRM-CER- FACS-CNRM- CM5(RegCM4-4)	0.9687
6	CanESM2	0.9663	20	IPSL-CM5A-MR	0.9483
23	MIROC5	0.9498	1	ACCESS1.0	0.9032
27_RegC M	MPI-M-MPI- ESM- MR(RegCM4-4)	0.9387	26	MPI-ESM-LR	0.8637
27_RegC M	MPI-M-MPI- ESM- MR(RegCM4-4)	0.9387	26	MPI-ESM-LR	0.8637
26_REMO	MPI-M-MPI- ESM- LR(REMO2009)	0.8048	19	IPSL-CM5A-LR	0.7435
25	MIROC-ESM- CHEM	0.7958	16	HadGEM2-CC	0.7433
17_RCA	MOHC- HadGEM2- ES(RCA4)	0.7728	23_RCA	MIROC-MI- ROC5(RCA4)	0.6866
24	MIROC-ESM	0.7518	11	FGOALS-s2	0.6025
19	IPSL-CM5A-LR	0.7500	23	MIROC5	0.4536
23_RCA	MIROC-MI- ROC5(RCA4)	0.6928	24	MIROC-ESM	0.3169
11	FGOALS-s2	0.6839	25	MIROC-ESM- CHEM	0.1800

Table S6. The Relative Score (RS) of each climate model (in descending order) in reproducing the monsoon mean wind speed trend over the South Asian Ocean and Land (Note: Here RS is out of 2, which is the summation of historical time slice RS and present time slice RS)

South Asian Ocean			South Asian Land		
Model ID	Model Acronym	RS	Model ID	Model Acronym	RS
14	GFDL-ESM2M	1.9361	29	MME_CMIP5	2.0000
29	MME_CMIP5	1.7733	32	MME_CORDEX	1.7871
19	IPSL-CM5A-LR	1.7589	19_RegC M	IPSL-IPSL- CM5A- LR(RegCM4-4)	1.6416
6_RCA	CCCma- CanESM2(RCA4)	1.7107	26	MPI-ESM-LR	1.6213
12	GFDL-CM3	1.7099	27_RegC M	MPI-M-MPI- ESM- MR(RegCM4-4)	1.6206
27	MPI-ESM-MR	1.6960	6	CanESM2	1.5316
10	CSIRO-Mk3.6.0	1.6794	15	HadGEM2-AO	1.5255
13	GFDL-ESM2G	1.6717	26_REM O	MPI-M-MPI- ESM- LR(REMO2009)	1.5243
27_RegC M	MPI-M-MPI- ESM- MR(RegCM4-4)	1.6432	14_RegC M	NOAA-GFDL- GFDL- ESM2M(RegCM4-4)	1.5094
15	HadGEM2-AO	1.6231	14	GFDL-ESM2M	1.4960
2	ACCESS1.3	1.5760	26_RCA	MPI-M-MPI- ESM-LR(RCA4)	1.4598
7	CMCC-CM	1.5750	2	ACCESS1.3	1.4429
6	CanESM2	1.5605	27	MPI-ESM-MR	1.4344
32	MME_CORDEX	1.5473	12	GFDL-CM3	1.4145
9_RCA	CNRM-CER- FACS-CNRM- CM5(RCA4)	1.5384	6_RegC M	CCCma- CanESM2(RegC M4-4)	1.4140
3	BCC	1.5283	1	ACCESS1.0	1.3976
17	HadGEM2-ES	1.4497	6_RCA	CCCma- CanESM2(RCA4)	1.3710
31_RCA	NCC-NorESM1- M(RCA4)	1.4479	14_RCA	NOAA-GFDL- GFDL- ESM2M(RCA4)	1.3202
10_RCA	CSIRO-QCCCE- CSIRO-Mk3-6- 0(RCA4)	1.4310	20_RCA	IPSL-IPSL- CM5A- MR(RCA4)	1.3136
1	ACCESS1.0	1.4245	4	BNU-ESM	1.2824
21	IPSL-CM5B-LR	1.4142	9_RCA	CNRM-CER- FACS-CNRM- CM5(RCA4)	1.2820
28	MRI-CGCM3	1.3934	13	GFDL-ESM2G	1.2578
9	CNRM-CM5	1.3511	11	FGOALS-s2	1.2482

Continued...

...Table S6 continued

20_RCA	IPSL-IPSL-CM5A-MR(RCA4)	1.3431	20	IPSL-CM5A-MR	1.2120
18	INM-CM4	1.3245	7	CMCC-CM	1.2003
8	CMCC-CMS	1.3078	19	IPSL-CM5A-LR	1.2001
26	MPI-ESM-LR	1.3017	9	CNRM-CM5	1.1745
6_RegCM	CCCma-CanESM2(RegCM4-4)	1.2785	28	MRI-CGCM3	1.1718
14_RCA	NOAA-GFDL-GFDL-ESM2M(RCA4)	1.2711	5	CanCM4	1.1046
20	IPSL-CM5A-MR	1.2551	17_RCA	MOHC-HadGEM2-ES(RCA4)	1.0933
19_RegCM	IPSL-IPSL-CM5A-LR(RegCM4-4)	1.2372	23_RCA	MIROC-MIROC5(RCA4)	1.0800
10_RegCM	CSIRO-QCCCE-CSIRO-Mk3-6-0(RegCM4-4)	1.2291	10	CSIRO-Mk3.6.0	1.0794
5	CanCM4	1.2273	17	HadGEM2-ES	1.0516
23_RCA	MIROC-MIROC5(RCA4)	1.1784	3	BCC	1.0353
25	MIROC-ESM-CHEM	1.1608	8	CMCC-CMS	1.0243
14_RegCM	NOAA-GFDL-GFDL-ESM2M(RegCM4-4)	1.1174	18	INM-CM4	1.0239
11	FGOALS-s2	1.0306	9_RegCM	CNRM-CER-FACS-CNRM-CM5(RegCM4-4)	1.0230
9_RegCM	CNRM-CER-FACS-CNRM-CM5(RegCM4-4)	1.0304	10_RCA	CSIRO-QCCCE-CSIRO-Mk3-6-0(RCA4)	1.0048
4	BNU-ESM	1.0258	31_RCA	NCC-NorESM1-M(RCA4)	0.9265
23	MIROC5	1.0175	21	IPSL-CM5B-LR	0.9006
16	HadGEM2-CC	0.9701	22	MIROC4h	0.8976
17_RCA	MOHC-HadGEM2-ES(RCA4)	0.9699	25	MIROC-ESM-CHEM	0.7224
26_RCA	MPI-M-MPI-ESM-LR(RCA4)	0.8828	10_RegCM	CSIRO-QCCCE-CSIRO-Mk3-6-0(RegCM4-4)	0.7221

Continued...

...Table S6 continued

22	MIROC4h	0.8330	23	MIROC5	0.7151
26_REMO	MPI-M-MPI-ESM-LR(REMO2009)	0.6750	16	HadGEM2-CC	0.5126
24	MIROC-ESM	0.2391	24	MIROC-ESM	0.2466

Table S7. The Relative Score (RS) of each climate model (in descending order) in reproducing the post-monsoon mean wind speed trend over the South Asian Ocean and Land (Note: Here RS is out of 2, which is the summation of the historical time slice RS and present time slice RS)

South Asian Ocean			South Asian Land		
Model ID	Model Acronym	RS	Model ID	Model Acronym	RS
26	MPI-ESM-LR	1.7734	29	MME_CMIP5	1.8432
29	MME_CMIP5	1.7174	32	MME_CORDEX	1.5694
13	GFDL-ESM2G	1.5775	9_Reg CM	CNRM-CERFACS-CNRM-CM5(RegCM4-4)	1.5285
4	BNU-ESM	1.5669	26_R CA	MPI-M-MPI-ESM-LR(RCA4)	1.4971
26_R CA	MPI-M-MPI-ESM-LR(RCA4)	1.5635	4	BNU-ESM	1.4659
27	MPI-ESM-MR	1.4954	8	CMCC-CMS	1.4604
20	IPSL-CM5A-MR	1.4525	2	ACCESS1.3	1.4246
7	CMCC-CM	1.4331	14_Reg CM	NOAA-GFDL-GFDL-ESM2M(RegCM4-4)	1.4112
15	HadGEM2-AO	1.4241	27_Reg CM	MPI-M-MPI-ESM-MR(RegCM4-4)	1.3966
28	MRI-CGCM3	1.4186	27	MPI-ESM-MR	1.3719
32	MME_CORDEX	1.4049	14_R CA	NOAA-GFDL-GFDL-ESM2M(RCA4)	1.3583
20_R CA	IPSL-IPSL-CM5A-MR(RCA4)	1.3637	14	GFDL-ESM2M	1.3577
10_R CA	CSIRO-QCCCE-CSIRO-Mk3-6-0(RCA4)	1.3567	15	HadGEM2-AO	1.3488
3	BCC	1.3531	13	GFDL-ESM2G	1.3388
26_R EMO	MPI-M-MPI-ESM-LR(REMO2009)	1.3238	9	CNRM-CM5	1.3179
10	CSIRO-Mk3.6.0	1.3221	28	MRI-CGCM3	1.2899
2	ACCESS1.3	1.2960	9_RC A	CNRM-CERFACS-CNRM-CM5(RCA4)	1.2792
14_R CA	NOAA-GFDL-GFDL-ESM2M(RCA4)	1.2500	3	BCC	1.2734

Continued...

...Table S7 continued

16	HadGEM2-CC	1.2443	26_R EMO	MPI-M-MPI-ESM- LR(REMO2009)	1.2615
9_RC A	CNRM-CERFACS- CNRM-CM5(RCA4)	1.2347	10_R CA	CSIRO-QCCCE- CSIRO-Mk3-6- 0(RCA4)	1.2378
21	IPSL-CM5B-LR	1.2204	19_Re gCM	IPSL-IPSL-CM5A- LR(RegCM4-4)	1.2186
1	ACCESS1.0	1.2084	20_R CA	IPSL-IPSL-CM5A- MR(RCA4)	1.2049
14_Re gCM	NOAA-GFDL- GFDL- ESM2M(RegCM4-4)	1.1743	23_R CA	MIROC-MI- ROC5(RCA4)	1.1999
8	CMCC-CMS	1.1678	26	MPI-ESM-LR	1.1495
9_Reg CM	CNRM-CERFACS- CNRM- CM5(RegCM4-4)	1.1234	17	HadGEM2-ES	1.1466
22	MIROC4h	1.0649	20	IPSL-CM5A-MR	1.1085
9	CNRM-CM5	1.0386	10	CSIRO-Mk3.6.0	1.1084
23_R CA	MIROC-MI- ROC5(RCA4)	1.0311	23	MIROC5	1.0887
24	MIROC-ESM	1.0155	7	CMCC-CM	0.9861
6_RC A	CCCma- CanESM2(RCA4)	0.9859	10_Re gCM	CSIRO-QCCCE- CSIRO-Mk3-6- 0(RegCM4-4)	0.9638
12	GFDL-CM3	0.9817	21	IPSL-CM5B-LR	0.9574
19_Re gCM	IPSL-IPSL-CM5A- LR(RegCM4-4)	0.9208	6_Reg CM	CCCma- CanESM2(RegCM4- 4)	0.9420
25	MIROC-ESM-CHEM	0.9095	1	ACCESS1.0	0.9263
11	FGOALS-s2	0.8818	6	CanESM2	0.8730
6	CanESM2	0.8659	17_R CA	MOHC-HadGEM2- ES(RCA4)	0.8537
18	INM-CM4	0.8192	19	IPSL-CM5A-LR	0.8103
17	HadGEM2-ES	0.8169	22	MIROC4h	0.8089
23	MIROC5	0.7829	6_RC A	CCCma- CanESM2(RCA4)	0.7978
14	GFDL-ESM2M	0.7392	11	FGOALS-s2	0.7664
19	IPSL-CM5A-LR	0.7239	12	GFDL-CM3	0.6662
5	CanCM4	0.6536	16	HadGEM2-CC	0.6434
17_R CA	MOHC-HadGEM2- ES(RCA4)	0.6436	18	INM-CM4	0.6367
31_R CA	NCC-NorESM1- M(RCA4)	0.6219	31_R CA	NCC-NorESM1- M(RCA4)	0.6278
6_Reg CM	CCCma- CanESM2(RegCM4-4)	0.5954	5	CanCM4	0.5403
10_Re gCM	CSIRO-QCCCE- CSIRO-Mk3-6- 0(RegCM4-4)	0.5671	25	MIROC-ESM-CHEM	0.5345

27_Re gCM	MPI-M-MPI-ESM- MR(RegCM4-4)	0.4760	24	MIROC-ESM	0.0131
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Table S8. The Relative Score (RS) of each climate model (in descending order) in reproducing the seasonal mean wind speed trend over the South Asian Ocean and Land (Note: Here RS is out of 6, which is the summation of RS of a climate model in pre-monsoon, monsoon and post-monsoon seasons for both study time slices)

South Asian Ocean			South Asian Land		
Model ID	Model Acronym	RS	Model ID	Model Acronym	RS
29	MME_CMIP5	5.0195	29	MME_CMIP5	5.6709
13	GFDL-ESM2G	4.6266	32	MME_CORDEX	5.0947
27	MPI-ESM-MR	4.4676	14_RegC M	NOAA-GFDL- GFDL- ESM2M(RegCM4- 4)	4.5068
12	GFDL-CM3	4.4343	2	ACCESS1.3	4.3119
26	MPI-ESM-LR	4.3842	14	GFDL-ESM2M	4.2736
10	CSIRO-Mk3.6.0	4.3822	27	MPI-ESM-MR	4.2146
7	CMCC-CM	4.3041	15	HadGEM2-AO	4.1470
15	HadGEM2-AO	4.2986	4	BNU-ESM	4.1231
32	MME_CORDEX	4.2537	14_RCA	NOAA-GFDL- GFDL- ESM2M(RCA4)	4.1142
3	BCC	4.2478	26_REM O	MPI-M-MPI-ESM- LR(REMO2009)	4.0944
20_RCA	IPSL-IPSL-CM5A- MR(RCA4)	4.2104	26_RCA	MPI-M-MPI-ESM- LR(RCA4)	4.0622
1	ACCESS1.0	4.1643	27_RegC M	MPI-M-MPI-ESM- MR(RegCM4-4)	4.0463
14	GFDL-ESM2M	4.1536	13	GFDL-ESM2G	3.9629
9_RCA	CNRM-CER- FACS-CNRM- CM5(RCA4)	4.1393	19_RegC M	IPSL-IPSL-CM5A- LR(RegCM4-4)	3.8638
28	MRI-CGCM3	4.1176	9	CNRM-CM5	3.8006
4	BNU-ESM	4.0860	9_RCA	CNRM-CERFACS- CNRM- CM5(RCA4)	3.7719
9	CNRM-CM5	4.0660	3	BCC	3.7097
10_RCA	CSIRO-QCCCE- CSIRO-Mk3-6- 0(RCA4)	4.0241	28	MRI-CGCM3	3.6903
8	CMCC-CMS	3.9819	20_RCA	IPSL-IPSL-CM5A- MR(RCA4)	3.6752
2	ACCESS1.3	3.9712	6	CanESM2	3.6395
20	IPSL-CM5A-MR	3.9561	26	MPI-ESM-LR	3.6345

Continued...

...Table S8 continued

6_RCA	CCCma- CanESM2(RCA4)	3.8906	8	CMCC-CMS	3.5828
21	IPSL-CM5B-LR	3.8443	7	CMCC-CM	3.5648
14_RCA	NOAA-GFDL- GFDL- ESM2M(RCA4)	3.7041	6_RegC M	CCCma- CanESM2(RegCM 4-4)	3.5539
14_RegC M	NOAA-GFDL- GFDL- ESM2M(RegCM4- 4)	3.4793	9_RegC M	CNRM-CERFACS- CNRM- CM5(RegCM4-4)	3.5201
26_RCA	MPI-M-MPI-ESM- LR(RCA4)	3.4603	10_RCA	CSIRO-QCCCE- CSIRO-Mk3-6- 0(RCA4)	3.4476
9_RegCM	CNRM-CER- FACS-CNRM- CM5(RegCM4-4)	3.4040	17	HadGEM2-ES	3.3700
6	CanESM2	3.3927	10	CSIRO-Mk3.6.0	3.3194
5	CanCM4	3.3888	20	IPSL-CM5A-MR	3.2688
17	HadGEM2-ES	3.3322	12	GFDL-CM3	3.2367
6_RegCM	CCCma- CanESM2(RegCM 4-4)	3.3243	1	ACCESS1.0	3.2271
10_RegC M	CSIRO-QCCCE- CSIRO-Mk3-6- 0(RegCM4-4)	3.3022	6_RCA	CCCma- CanESM2(RCA4)	3.1638
18	INM-CM4	3.3013	17_RCA	MOHC- HadGEM2- ES(RCA4)	3.0881
16	HadGEM2-CC	3.2437	21	IPSL-CM5B-LR	3.0051
19	IPSL-CM5A-LR	3.2328	23_RCA	MIROC-MI- ROC5(RCA4)	2.9666
19_RegC M	IPSL-IPSL-CM5A- LR(RegCM4-4)	3.1832	5	CanCM4	2.8486
22	MIROC4h	3.1747	18	INM-CM4	2.8426
31_RCA	NCC-NorESM1- M(RCA4)	3.0987	10_RegC M	CSIRO-QCCCE- CSIRO-Mk3-6- 0(RegCM4-4)	2.7588
27_RegC M	MPI-M-MPI-ESM- MR(RegCM4-4)	3.0579	19	IPSL-CM5A-LR	2.7540
23_RCA	MIROC-MI- ROC5(RCA4)	2.9023	22	MIROC4h	2.6998
25	MIROC-ESM- CHEM	2.8661	31_RCA	NCC-NorESM1- M(RCA4)	2.6608
26_REMO	MPI-M-MPI-ESM- LR(REMO2009)	2.8036	11	FGOALS-s2	2.6170
23	MIROC5	2.7502	23	MIROC5	2.2575
11	FGOALS-s2	2.5963	16	HadGEM2-CC	1.8993

Continued...

...Table S8 continued

17_RCA	MOHC-HadGEM2-ES(RCA4)	2.3862	25	MIROC-ESM-CHEM	1.4370
24	MIROC-ESM	2.0063	24	MIROC-ESM	0.5765

Table S9. The Relative Score (RS) of each climate model (in descending order) in reproducing the annual mean wind speed trend over the South Asian Ocean and Land (Note: Here RS is out of 2, which is the summation of the historical time slice RS and present time slice RS)

South Asian Ocean			South Asian Land		
Mode 1 ID	Model Acronym	RS	Mode 1 ID	Model Acronym	RS
14	GFDL-ESM2M	1.8178	29	MME_CMIP5	1.7765
6_RC A	CCCma-CanESM2(RCA4)	1.6469	32	MME_CORDEX	1.7279
9	CNRM-CM5	1.6409	14_Re gCM	NOAA-GFDL-GFDL-ESM2M(RegCM4-4)	1.6142
26	MPI-ESM-LR	1.6096	14	GFDL-ESM2M	1.5751
13	GFDL-ESM2G	1.5764	27	MPI-ESM-MR	1.5245
12	GFDL-CM3	1.5733	9_RC A	CNRM-CERFACS-CNRM-CM5(RCA4)	1.5158
29	MME_CMIP5	1.5662	26_R CA	MPI-M-MPI-ESM-LR(RCA4)	1.4791
27	MPI-ESM-MR	1.5581	27_Re gCM	MPI-M-MPI-ESM-MR(RegCM4-4)	1.4789
10_R CA	CSIRO-QCCCE-CSIRO-Mk3-6-0(RCA4)	1.5291	26_RE MO	MPI-M-MPI-ESM-LR(REMO2009)	1.4768
28	MRI-CGCM3	1.5165	14_R CA	NOAA-GFDL-GFDL-ESM2M(RCA4)	1.4717
20_R CA	IPSL-IPSL-CM5A-MR(RCA4)	1.4605	9	CNRM-CM5	1.4630
3	BCC	1.4288	2	ACCESS1.3	1.4412
10	CSIRO-Mk3.6.0	1.4283	4	BNU-ESM	1.4280
1	ACCESS1.0	1.4157	26	MPI-ESM-LR	1.3822
9_RC A	CNRM-CERFACS-CNRM-CM5(RCA4)	1.3678	19_Re gCM	IPSL-IPSL-CM5A-LR(RegCM4-4)	1.3646
2	ACCESS1.3	1.3379	15	HadGEM2-AO	1.3484
8	CMCC-CMS	1.3331	20_R CA	IPSL-IPSL-CM5A-MR(RCA4)	1.3466
10_Re gCM	CSIRO-QCCCE-CSIRO-Mk3-6-0(RegCM4-4)	1.3331	6_Reg CM	CCCma-CanESM2(RegCM4-4)	1.3098
32	MME_CORDEX	1.3298	13	GFDL-ESM2G	1.2858
6_Reg CM	CCCma-CanESM2(RegCM4-4)	1.3275	6_RC A	CCCma-CanESM2(RCA4)	1.2590

Continued...

...Table S9 continued

15	HadGEM2-AO	1.3265	28	MRI-CGCM3	1.2584
14_R CA	NOAA-GFDL-GFDL- ESM2M(RCA4)	1.3257	17_R CA	MOHC-HadGEM2- ES(RCA4)	1.2483
7	CMCC-CM	1.3106	9_Reg CM	CNRM-CERFACS- CNRM- CM5(RegCM4-4)	1.2421
4	BNU-ESM	1.2965	10_R CA	CSIRO-QCCCE- CSIRO-Mk3-6- 0(RCA4)	1.2000
20	IPSL-CM5A-MR	1.2962	10	CSIRO-Mk3.6.0	1.1867
21	IPSL-CM5B-LR	1.2714	20	IPSL-CM5A-MR	1.1856
14_Re gCM	NOAA-GFDL-GFDL- ESM2M(RegCM4-4)	1.2381	17	HadGEM2-ES	1.1784
26_RE MO	MPI-M-MPI-ESM- LR(REMO2009)	1.2047	12	GFDL-CM3	1.1757
6	CanESM2	1.2046	1	ACCESS1.0	1.1685
19_Re gCM	IPSL-IPSL-CM5A- LR(RegCM4-4)	1.2020	8	CMCC-CMS	1.1581
5	CanCM4	1.2019	6	CanESM2	1.1579
9_Reg CM	CNRM-CERFACS- CNRM-CM5(RegCM4- 4)	1.1980	3	BCC	1.1238
17	HadGEM2-ES	1.1969	7	CMCC-CM	1.0998
31_R CA	NCC-NorESM1- M(RCA4)	1.1559	21	IPSL-CM5B-LR	1.0596
27_Re gCM	MPI-M-MPI-ESM- MR(RegCM4-4)	1.1343	23_R CA	MIROC-MI- ROC5(RCA4)	0.9274
18	INM-CM4	1.1282	5	CanCM4	0.9251
26_R CA	MPI-M-MPI-ESM- LR(RCA4)	1.0835	11	FGOALS-s2	0.9001
22	MIROC4h	1.0299	19	IPSL-CM5A-LR	0.8987
24	MIROC-ESM	0.9470	22	MIROC4h	0.8280
25	MIROC-ESM-CHEM	0.8974	23	MIROC5	0.8257
19	IPSL-CM5A-LR	0.8681	10_Re gCM	CSIRO-QCCCE- CSIRO-Mk3-6- 0(RegCM4-4)	0.8222
23	MIROC5	0.8510	18	INM-CM4	0.8120
16	HadGEM2-CC	0.8267	31_R CA	NCC-NorESM1- M(RCA4)	0.7448
23_R CA	MIROC-MI- ROC5(RCA4)	0.7617	16	HadGEM2-CC	0.5989
17_R CA	MOHC-HadGEM2- ES(RCA4)	0.6297	25	MIROC-ESM-CHEM	0.4147
11	FGOALS-s2	0.4144	24	MIROC-ESM	0.0540

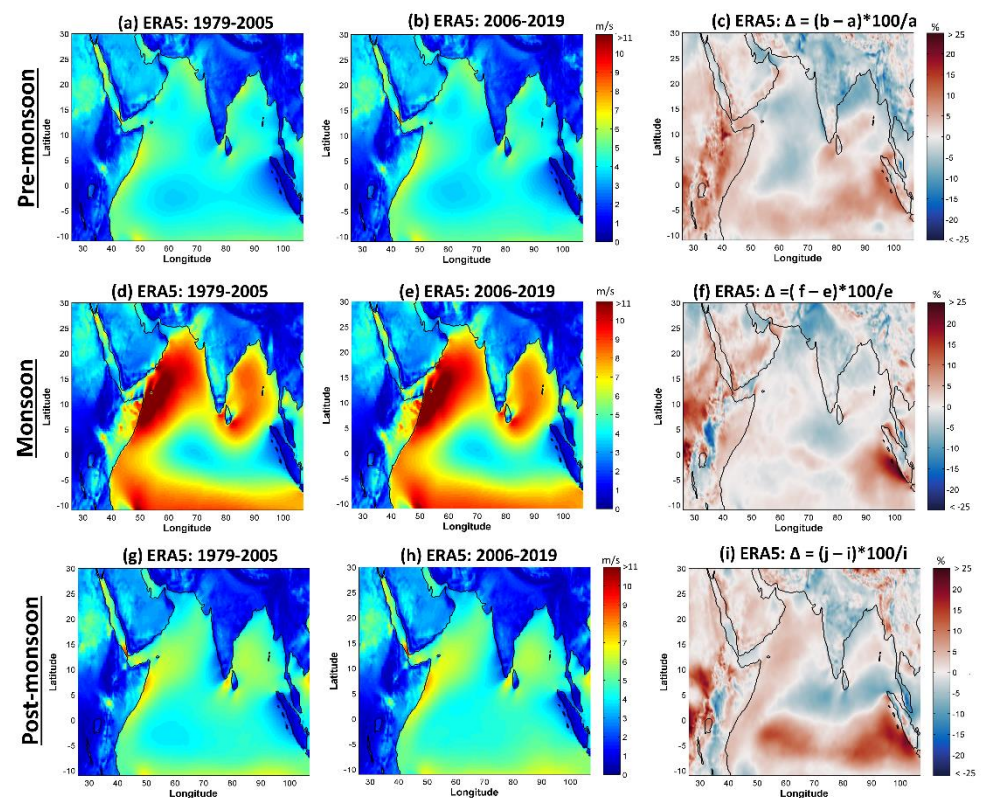


Figure S1. Pre-monsoon (February–May) mean wind speed spatial maps of ERA5 for the (a) historical (1979–2005) and (b) present time slice (2006–2019). (c) percentage change of present time slice pre-monsoon mean wind speed relative to historical time slice pre-monsoon mean wind speed (Δ , %). (d–f) As in (a–c), but for the monsoon season (June–September). (g–i) As in (a–c), but for the post-monsoon season (October–January).

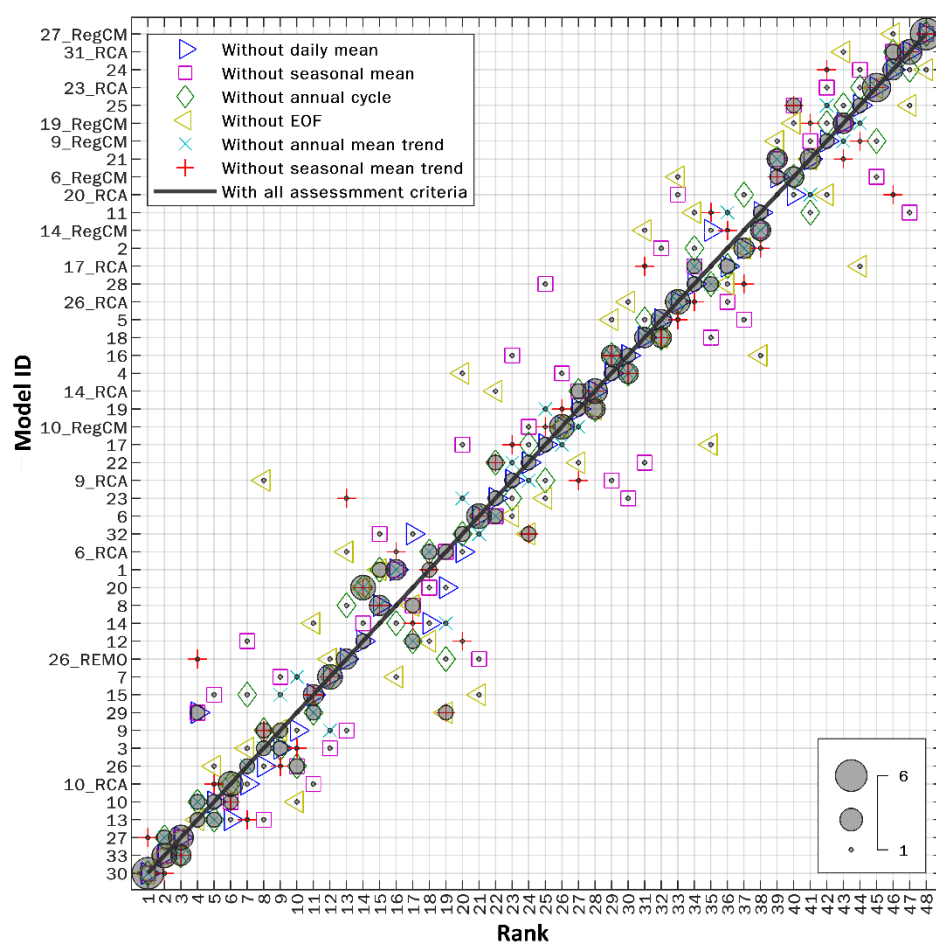


Figure S2. Sensitivity of climate model's rank with chosen assessment criteria over ocean part of South Asian domain. Climate model rank obtained by removing a specific assessment criterion are marked with, right pointed triangle markers for without evaluating daily mean wind speed, square markers for without evaluating the seasonal mean wind speed, diamond markers for without evaluating the long-term monthly mean wind speed pattern (annual cycle), left pointed triangle markers for without consideration of Empirical Orthogonal Function (EOF) analysis, cross sign markers for without evaluating annual mean wind speed trend and plus sign markers without for evaluating seasonal mean wind speed trend. The bubble size indicates, total how many cases (out of 7) have given a particular rank to the climate model. For example, Model 30 has secured the first rank in 6 cases (except, without the seasonal mean trend case). The thick black line is the result case obtained by considering all the assessment criteria and it passes through the largest bubble for 36 ranks out of 48. The interchange of rank is observed between the climate models whose total relative score is near to each other.

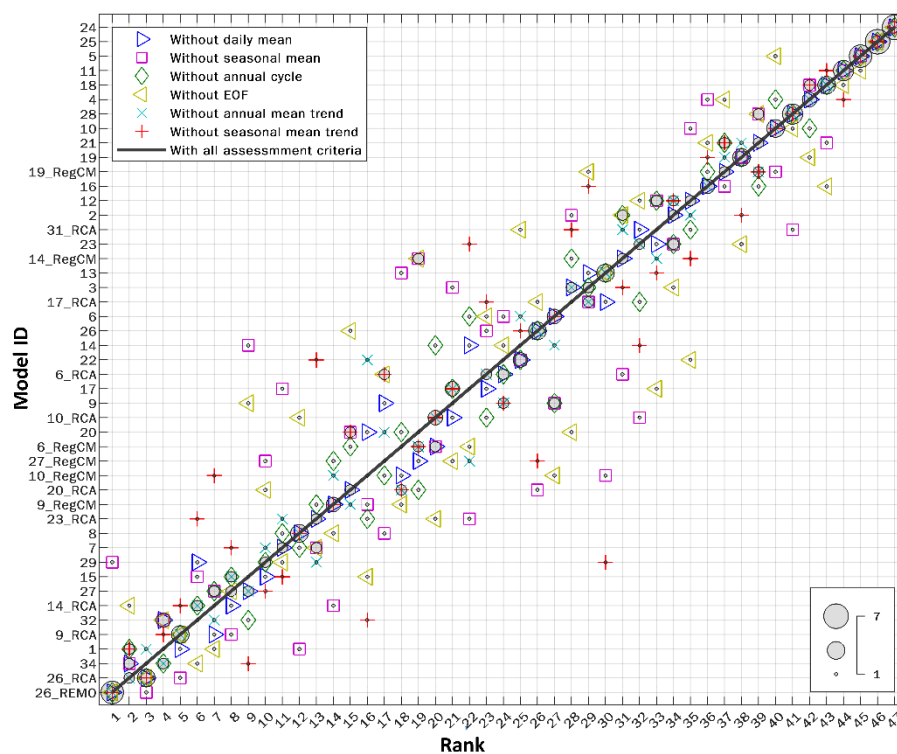


Figure S3. As in Figure S2, but for over the land part of South Asian Domain. For example, Model 26_REMO has secured the first rank in 6 cases (except, without the seasonal mean case). Whereas, Models 24 and 25 have secured 47 and 46, respectively in all 7 cases.