Supporting Information for

Evaluating boreal summer circulation patterns of CMIP6 climate models over the Asian region

Lulei Bu1, Zhiyan Zuo1,3, Ning An2

1 Department of Atmospheric and Oceanic Sciences, Institute of Atmospheric Sciences, IRDR International Center of Excellence on Risk Interconnectivity and Governance on Weather/Climate Extremes Impact and Public Health, Fudan University, Shanghai, China

2 State Key Laboratory of Severe Weather, Chinese Academy of Meteorological Sciences, Beijing, China

3 Collaborative Innovation Center on Forecast and Evaluation of Meteorological Disasters, Nanjing University of Information Science and Technology, Nanjing, China

Supplementary Table 1. Same as Table 2, but for JRA-55 reanalysis data.

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| --- | --- | --- | --- | --- | --- |
| Model | Ensemble | Frequency ranking | Persistence ranking | Transition ranking | MR ranking |
| MIROC6 | r8i1p1f1 | 13 | 3 | 9 | 1 |
| CanESM5 | r10i1p1f1 | 11 | 15 | 7 | 2 |
| CanESM5 | r5i1p1f1 | 3 | 4 | 27 | 3 |
| CanESM5 | r11i1p1f1 | 1 | 24 | 14 | 4 |
| MPI-ESM1-2-HR | r1i1p1f1 | 21 | 22 | 2 | 5 |
| MIROC6 | r9i1p1f1 | 10 | 30 | 13 | 6 |
| CanESM5 | r7i1p1f1 | 20 | 21 | 21 | 7 |
| CanESM5 | r6i1p1f1 | 29 | 16 | 18 | 8 |
| CanESM5 | r23i1p1f1 | 5 | 17 | 41 | 9 |
| CanESM5 | r2i1p1f1 | 38 | 25 | 1 | 10 |
| MIROC6 | r4i1p1f1 | 6 | 46 | 16 | 11 |
| CanESM5 | r1i1p1f1 | 19 | 28 | 26 | 12 |
| CanESM5 | r25i1p1f1 | 9 | 59 | 6 | 13 |
| CanESM5 | r12i1p1f1 | 7 | 66 | 3 | 14 |
| MIROC6 | r7i1p1f1 | 2 | 55 | 20 | 15 |
| CanESM5 | r17i1p1f1 | 31 | 19 | 30 | 16 |
| CanESM5 | r8i1p1f1 | 18 | 45 | 19 | 17 |
| CanESM5 | r19i1p1f1 | 26 | 6 | 50 | 18 |
| CanESM5 | r18i1p1f1 | 12 | 54 | 17 | 19 |
| MIROC6 | r5i1p1f1 | 53 | 18 | 24 | 20 |
| BCC-CSM2-MR | r1i1p1f1 | 57 | 10 | 32 | 21 |
| CESM2-WACCM-FV2 | r1i1p1f1 | 77 | 12 | 12 | 22 |
| MRI-ESM2-0 | r4i1p1f1 | 67 | 1 | 33 | 23 |
| MIROC6 | r10i1p1f1 | 4 | 88 | 11 | 24 |
| MIROC6 | r2i1p1f1 | 15 | 62 | 28 | 25 |
| CanESM5 | r22i1p1f1 | 25 | 57 | 25 | 26 |
| MRI-ESM2-0 | r3i1p1f1 | 79 | 9 | 22 | 27 |
| MPI-ESM1-2-HR | r2i1p1f1 | 28 | 5 | 78 | 28 |
| MPI-ESM1-2-LR | r6i1p1f1 | 52 | 8 | 53 | 29 |
| MPI-ESM1-2-HR | r5i1p1f1 | 40 | 29 | 51 | 30 |
| NorESM2-LM | r2i1p1f1 | 41 | 27 | 59 | 31 |
| GFDL-CM4 | r1i1p1f1 | 89 | 2 | 37 | 32 |
| MPI-ESM1-2-HR | r9i1p1f1 | 34 | 36 | 61 | 33 |
| NorESM2-MM | r1i1p1f1 | 49 | 41 | 43 | 34 |
| MPI-ESM1-2-HR | r8i1p1f1 | 35 | 32 | 69 | 35 |
| MPI-ESM1-2-HR | r10i1p1f1 | 17 | 58 | 62 | 36 |
| MIROC6 | r6i1p1f1 | 14 | 70 | 56 | 37 |
| CESM2-WACCM-FV2 | r3i1p1f1 | 75 | 13 | 55 | 38 |
| CanESM5 | r13i1p1f1 | 43 | 63 | 38 | 39 |
| MRI-ESM2-0 | r1i1p1f1 | 84 | 52 | 10 | 40 |
| AWI-ESM-1-1-LR | r1i1p1f1 | 81 | 23 | 42 | 41 |
| MIROC6 | r1i1p1f1 | 61 | 71 | 15 | 42 |
| MPI-ESM1-2-LR | r7i1p1f1 | 46 | 44 | 57 | 43 |
| CESM2-WACCM | r3i1p1f1 | 65 | 75 | 8 | 44 |
| CESM2 | r10i1p1f1 | 56 | 7 | 86 | 45 |
| MPI-ESM1-2-LR | r3i1p1f1 | 47 | 76 | 29 | 46 |
| CanESM5 | r9i1p1f1 | 8 | 95 | 49 | 47 |
| CESM2-WACCM | r2i1p1f1 | 50 | 33 | 73 | 48 |
| MPI-ESM1-2-HR | r3i1p1f1 | 16 | 94 | 47 | 49 |
| CanESM5 | r15i1p1f1 | 39 | 43 | 76 | 50 |
| MPI-ESM1-2-LR | r8i1p1f1 | 66 | 89 | 5 | 51 |
| MPI-ESM1-2-HR | r7i1p1f1 | 23 | 105 | 34 | 52 |
| MRI-ESM2-0 | r5i1p1f1 | 87 | 53 | 23 | 53 |
| CESM2-WACCM-FV2 | r2i1p1f1 | 83 | 26 | 54 | 54 |
| CanESM5 | r3i1p1f1 | 36 | 69 | 58 | 55 |
| MPI-ESM1-2-LR | r4i1p1f1 | 51 | 31 | 81 | 56 |
| MPI-ESM1-2-LR | r10i1p1f1 | 62 | 20 | 84 | 57 |
| CanESM5 | r4i1p1f1 | 30 | 102 | 35 | 58 |
| NorESM2-MM | r2i1p1f1 | 64 | 38 | 65 | 59 |
| MPI-ESM1-2-HR | r6i1p1f1 | 22 | 80 | 66 | 60 |
| CanESM5 | r20i1p1f1 | 33 | 93 | 45 | 61 |
| MPI-ESM1-2-LR | r1i1p1f1 | 70 | 35 | 67 | 62 |
| CESM2 | r3i1p1f1 | 45 | 37 | 92 | 63 |
| MPI-ESM1-2-LR | r5i1p1f1 | 60 | 115 | 4 | 64 |
| NorESM2-LM | r1i1p1f1 | 37 | 73 | 70 | 65 |
| MPI-ESM1-2-LR | r9i1p1f1 | 44 | 48 | 88 | 66 |
| CanESM5 | r16i1p1f1 | 55 | 101 | 31 | 67 |
| CanESM5 | r14i1p1f1 | 42 | 98 | 48 | 68 |
| BCC-ESM1 | r1i1p1f1 | 32 | 117 | 46 | 69 |
| CanESM5 | r21i1p1f1 | 24 | 134 | 39 | 70 |
| TaiESM1 | r1i1p1f1 | 72 | 91 | 36 | 71 |
| MPI-ESM1-2-LR | r2i1p1f1 | 59 | 92 | 64 | 72 |
| MIROC6 | r3i1p1f1 | 48 | 124 | 44 | 73 |
| CanESM5 | r24i1p1f1 | 58 | 85 | 80 | 74 |
| IPSL-CM6A-LR | r12i1p1f1 | 105 | 34 | 87 | 75 |
| MRI-ESM2-0 | r2i1p1f1 | 85 | 103 | 40 | 76 |
| MPI-ESM1-2-HR | r4i1p1f1 | 27 | 126 | 83 | 77 |
| CESM2 | r7i1p1f1 | 63 | 84 | 89 | 78 |
| NorESM2-MM | r3i1p1f1 | 68 | 112 | 63 | 79 |
| NorESM2-LM | r3i1p1f1 | 73 | 100 | 71 | 80 |
| CESM2 | r8i1p1f1 | 76 | 138 | 52 | 81 |
| CESM2 | r9i1p1f1 | 71 | 140 | 68 | 82 |
| CESM2 | r4i1p1f1 | 74 | 135 | 77 | 83 |
| INM-CM5-0 | r10i1p1f1 | 91 | 122 | 79 | 84 |
| CNRM-ESM2-1 | r1i1p1f2 | 135 | 67 | 90 | 85 |
| CNRM-ESM2-1 | r3i1p1f2 | 126 | 107 | 60 | 86 |
| IPSL-CM6A-LR | r21i1p1f1 | 111 | 108 | 74 | 87 |
| CESM2 | r5i1p1f1 | 82 | 139 | 75 | 88 |
| INM-CM5-0 | r6i1p1f1 | 90 | 131 | 82 | 89 |
| ACCESS-CM2 | r1i1p1f1 | 117 | 96 | 93 | 90 |
| INM-CM5-0 | r1i1p1f1 | 96 | 129 | 85 | 91 |
| CNRM-ESM2-1 | r2i1p1f2 | 121 | 120 | 72 | 92 |
| IPSL-CM6A-LR | r16i1p1f1 | 124 | 121 | 91 | 93 |
| IPSL-CM6A-LR | r25i1p1f1 | 138 | 111 | 94 | 94 |
| CESM2 | r6i1p1f1 | 69 | 51 | 95 | 95 |
| CESM2 | r1i1p1f1 | 78 | 136 | 96 | 96 |
| IPSL-CM6A-LR | r22i1p1f1 | 119 | 109 | 97 | 97 |
| CESM2-WACCM | r1i1p1f1 | 54 | 72 | 98 | 98 |
| IPSL-CM6A-LR | r32i1p1f1 | 110 | 110 | 99 | 99 |
| CESM2 | r2i1p1f1 | 80 | 47 | 100 | 100 |
| IPSL-CM6A-LR | r13i1p1f1 | 127 | 119 | 101 | 101 |
| IPSL-CM6A-LR | r23i1p1f1 | 108 | 78 | 102 | 102 |
| INM-CM5-0 | r3i1p1f1 | 93 | 86 | 103 | 103 |
| INM-CM5-0 | r4i1p1f1 | 94 | 87 | 104 | 104 |
| FGOALS-f3-L | r1i1p1f1 | 137 | 81 | 105 | 105 |
| IPSL-CM6A-LR | r7i1p1f1 | 103 | 132 | 106 | 106 |
| IPSL-CM6A-LR | r29i1p1f1 | 136 | 99 | 107 | 107 |
| INM-CM5-0 | r2i1p1f1 | 98 | 104 | 108 | 108 |
| INM-CM5-0 | r5i1p1f1 | 95 | 128 | 109 | 109 |
| IPSL-CM6A-LR | r20i1p1f1 | 123 | 130 | 110 | 110 |
| IPSL-CM6A-LR | r31i1p1f1 | 112 | 114 | 111 | 111 |
| INM-CM4-8 | r1i1p1f1 | 92 | 137 | 112 | 112 |
| IPSL-CM6A-LR | r17i1p1f1 | 97 | 68 | 113 | 113 |
| IPSL-CM6A-LR | r10i1p1f1 | 125 | 64 | 114 | 114 |
| IPSL-CM6A-LR | r28i1p1f1 | 107 | 42 | 115 | 115 |
| MPI-ESM-1-2-HAM | r2i1p1f1 | 88 | 50 | 116 | 116 |
| IPSL-CM6A-LR | r1i1p1f1 | 116 | 39 | 117 | 117 |
| IPSL-CM6A-LR | r19i1p1f1 | 113 | 82 | 118 | 118 |
| IPSL-CM6A-LR | r4i1p1f1 | 115 | 61 | 119 | 119 |
| IPSL-CM6A-LR | r6i1p1f1 | 122 | 49 | 120 | 120 |
| IPSL-CM6A-LR | r15i1p1f1 | 109 | 11 | 121 | 121 |
| IPSL-CM6A-LR | r11i1p1f1 | 130 | 118 | 122 | 122 |
| IPSL-CM6A-LR | r26i1p1f1 | 104 | 77 | 123 | 123 |
| IPSL-CM6A-LR | r3i1p1f1 | 106 | 113 | 124 | 124 |
| IPSL-CM6A-LR | r27i1p1f1 | 118 | 97 | 125 | 125 |
| IPSL-CM6A-LR | r5i1p1f1 | 131 | 79 | 126 | 126 |
| IPSL-CM6A-LR | r14i1p1f1 | 128 | 90 | 127 | 127 |
| FGOALS-f3-L | r3i1p1f1 | 139 | 40 | 128 | 128 |
| INM-CM5-0 | r8i1p1f1 | 100 | 56 | 129 | 129 |
| IPSL-CM6A-LR | r24i1p1f1 | 102 | 65 | 130 | 130 |
| FGOALS-f3-L | r2i1p1f1 | 133 | 14 | 131 | 131 |
| INM-CM5-0 | r7i1p1f1 | 101 | 83 | 132 | 132 |
| IPSL-CM6A-LR | r9i1p1f1 | 129 | 106 | 133 | 133 |
| IPSL-CM6A-LR | r2i1p1f1 | 114 | 60 | 134 | 134 |
| MPI-ESM-1-2-HAM | r1i1p1f1 | 86 | 123 | 135 | 135 |
| IPSL-CM6A-LR | r8i1p1f1 | 132 | 127 | 136 | 136 |
| IPSL-CM6A-LR | r30i1p1f1 | 134 | 125 | 137 | 137 |
| IPSL-CM6A-LR | r18i1p1f1 | 120 | 74 | 138 | 138 |
| INM-CM5-0 | r9i1p1f1 | 99 | 116 | 139 | 139 |
| CNRM-CM6-1-HR | r1i1p1f2 | 140 | 133 | 140 | 140 |