

Supplementary Information of: Using Artificial Intelligence to identify CMIP6 models from daily SLP maps

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Abstract

This document presents the supplementary information (Table and Figures) for the main manuscript of Yiou and Thao (2025).

Keywords: CMIP6 models, Schematic, SLP patterns

1 Figures

The supplementary figures summarize the classification endeavor of the paper (Figure 1) and the model SLP and standard deviations in the summer (Figure 2) for the ERA5 reanalysis and 16 reference CMIP6 models.

2 Tables

The references to all CMIP6 simulations are given in Table AII.5 of [1].

References

- [1] Intergovernmental Panel On Climate Change (IPCC). in *Annex II: Models* 1 edn, (ed. Gutiérrez, J M., A.-M. Tréguier) *Climate Change 2021 – The Physical Science*

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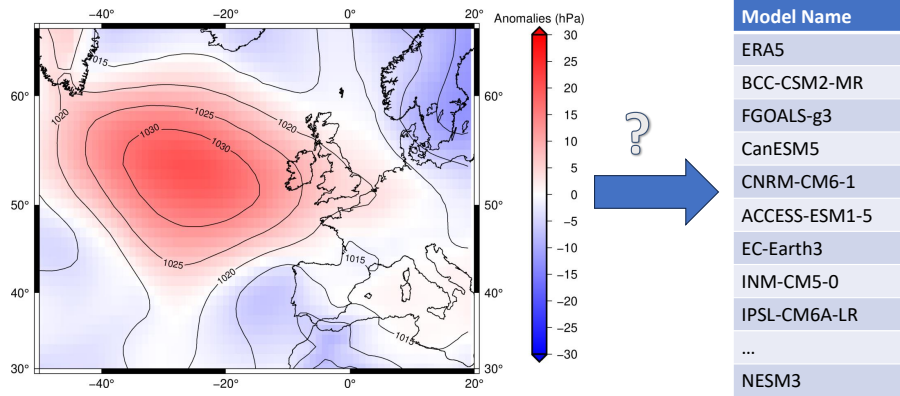


Fig. 1 Can an arbitrary SLP field in JJA from one CMIP6 simulations (left) be attributed to the ERA5 reanalysis or a CMIP6 model (right) from Table 1 (below)? The left panel shows the SLP field (isolines in hPa) and the SLP seasonal anomaly (colors). Computations are performed on the SLP fields.

Basis: Working Group I Contribution to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change. 2087–2138 (Cambridge University Press, 2023). URL <https://www.cambridge.org/core/product/identifier/9781009157896/type/book>.

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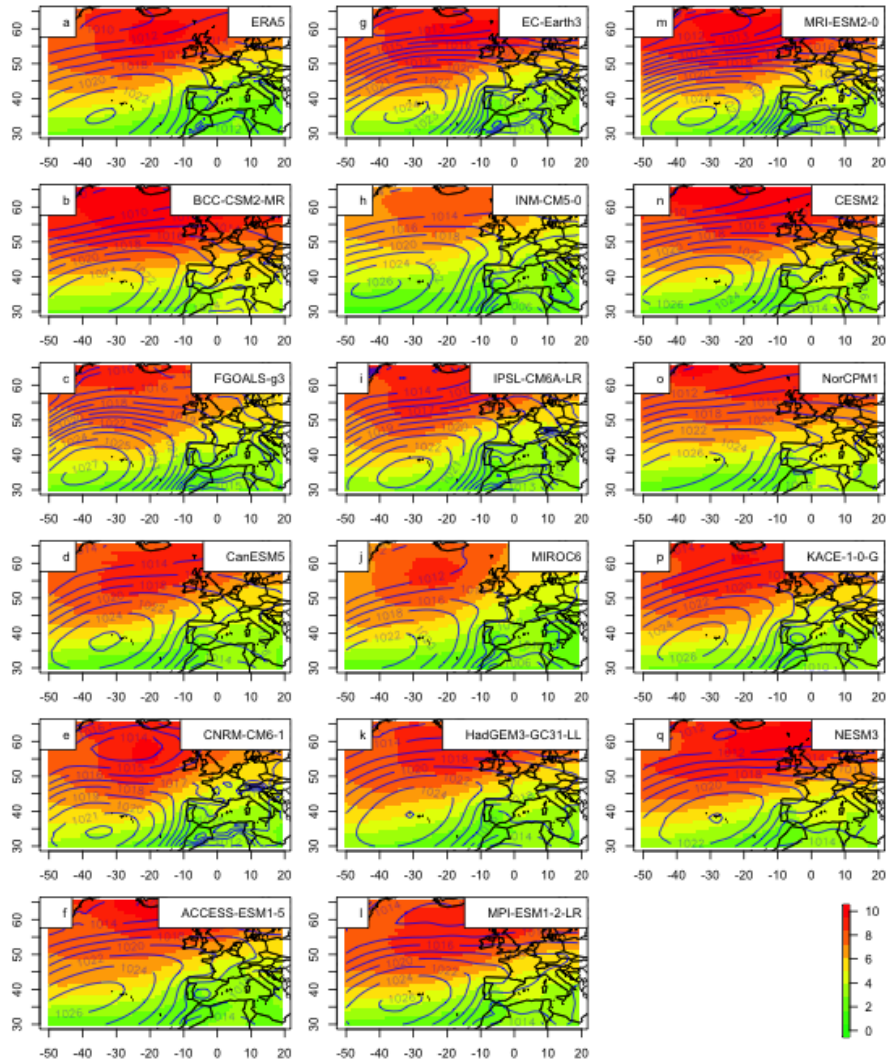


Fig. 2 Summer (JJA) mean and standard deviation of SLP for ERA5 (a) and 16 CMIP6 (b–q) models from Table A1. SLP mean (in hPa) is indicated with isolines. Daily standard deviation (in hPa) is indicated in colors.

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Table 1 List of CMIP6 models and reanalysis, and ensemble information. We indicate the number of available runs on the IPSL computing cluster. The information on model references and their approximate horizontal resolution in the atmosphere is available from the World Climate Research Programme (<https://www.wdc-climate.de/>). The models that are used for classification training are indicated in **boldface**. They appear as red bars in **Figure A1**.

Model Name	Group Name	Nb runs	Horiz. res. (km)
ERA5	ECMWF		31
TaiESM1	AS-RCEC	1	100
AWI-ESM-1-1-LR	AWI	1	250
BCC-CSM2-MR	BCC	3	100
BCC-ESM1	BCC	3	250
FGOALS-f3-L	CAS	3	100
FGOALS-g3	CAS	5	250
CanESM5	CCCma	50	500
IITM-ESM	CCCR-IITM	1	250
CMCC-CM2-HR4	CMCC	1	100
CMCC-CM2-SR5	CMCC	1	100
CMCC-ESM2	CMCC	1	100
CNRM-CM6-1	CNRM-CERFACS	30	250
CNRM-CM6-1-HR	CNRM-CERFACS	1	100
CNRM-ESM2-1	CNRM-CERFACS	10	250
ACCESS-ESM1-5	CSIRO	29	250
ACCESS-CM2	CSIRO-ARCCSS	3	250
EC-Earth3	EC-Earth-Consortium	65	100
EC-Earth3-AerChem	EC-Earth-Consortium	2	100
EC-Earth3-CC	EC-Earth-Consortium	1	100
EC-Earth3-Veg	EC-Earth-Consortium	7	100
EC-Earth3-Veg-LR	EC-Earth-Consortium	3	100
MPI-ESM-1-2-HAM	HAMMOZ-Consortium	3	250
INM-CM4-8	INM	1	100
INM-CM5-0	INM	10	100
IPSL-CM5A2-INCA	IPSL	1	500
IPSL-CM6A-LR	IPSL	33	250
IPSL-CM6A-LR-INCA	IPSL	1	250
MIROC-ES2L	MIROC	31	500
MIROC6	MIROC	50	250
HadGEM3-GC31-LL	MOHC	5	250
HadGEM3-GC31-MM	MOHC	4	100
UKESM1-0-LL	MOHC	16	250
MPI-ESM1-2-HR	MPI-M	10	100
MPI-ESM1-2-LR	MPI-M	10	250
MRI-ESM2-0	MRI	7	100
CESM2	NCAR	11	100
CESM2-FV2	NCAR	3	250
CESM2-WACCM	NCAR	3	100
CESM2-WACCM-FV2	NCAR	3	250
NorCPM1	NCC	17	250
NorESM2-LM	NCC	3	250
NorESM2-MM	NCC	3	100
KACE-1-0-G	NIMS-KMA	3	250
UKESM1-0-LL	NIMS-KMA	1	250
GFDL-ESM4	NOAA-GFDL	1	100
NESM3	NUIST	5	250
SAM0-UNICON	SNU	1	100