



Sub-Selection of CMIP6 Models tailored for Climate Impact Assessments in Greece

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Climate change impact assessments often require a manageable subset of climate models that accurately reflect regional specificities. This study harnesses the Coupled Model Intercomparison Project Phase 6 (CMIP6) to define a subset of models that represent the unique climate patterns of Greece. Our primary goal is to identify models that not only demonstrate the best performance over the recent past but also possess the capacity to reflect future climate spreads of the CMIP6 ensemble.

In our assessment we evaluate the full array of 40 CMIP6 models available in the KNMI Climate Explorer using a suite of performance metrics. The evaluation spans the accuracy of historical simulations against the CHELSA observational datasets (Karger et al., 2021). Model capacity for future climate projections is informed by recent advancements in model performance assessments specifically for Europe (Palmer et al., 2023), ensuring that selected models are robust across different climatic scenarios. We further consider model dependence based on recent concepts (Merrifield et al., 2023).

In the same context, we specifically focus on the representativeness of the selected driving models for the ongoing EURO-CORDEX CMIP6 downscaling initiative, which serves as the primary source of information for climate change impact assessment studies in Greece.

We conclude with recommendations of refined subsets of CMIP6 models meeting performance and representativeness criteria for climate model output users. This methodology not only aids in delineating between model performances but also facilitates a more nuanced understanding of their projection capabilities in the rapidly evolving climate modeling landscape.

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References

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