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## Summer Heatwaves in Present and Future Climate simulated with global models participating in CMIP6

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Heat waves lead to major impacts on human health, food production and ecosystems, and are projected to increase with climate change. This study evaluates global climate models participating in the Coupled Model Intercomparison Project phase 6 (CMIP6) for their performance in simulating the present climate characteristics of summer heat waves. The analysis exploits the available global datasets (reanalyses, satellite products, gridded in-situ observations) to assess the realism of variables impacting the energy and water balance at the surface during heatwave events. The role of the underlying processes affecting the occurrence and intensity of the heat waves characteristics in present and future climate is also investigated based on the multi-model analysis. A sensitivity study performed with the coupled atmospheric and land-surface modules of the IPSL climate model helps to support the multi-model analysis. A robust impact of the soil moisture on the dispersion of the heat-wave characteristics is diagnosed. For 2 models it is possible to analyse the moist heat waves whose intensity and frequency is dramatically increased with respect to the dry heat waves at the end of the 21th century.