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## The Polar Regions in the Earth System (PolarRES) project

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Polar climates in a global context remain poorly understood, as does the interactions between the different components of the Polar climate system. These knowledge gaps are leading to large uncertainties in climate change projections for the Polar regions, which hampers mitigation and adaptation efforts. PolarRES, a new project funded by the European Commission under the Horizon 2020 programme, will address these knowledge gaps in the coming years. The PolarRES consortium consists of more than 50 researchers from 21 different institutions from around the world and began in September 2021. The project will zoom into the climate of both Polar regions at unprecedented resolutions with state-of-the-art regional climate models (RCMs) that will be blended with a comprehensive range of existing and novel ground-based observations (for example from the Year Of Polar Prediction (YOPP) and the MOSAiC expedition) and satellite data (e.g. ESA Earth Observation Programme) to close knowledge gaps on 1) the atmosphere-ocean-sea ice coupled system, 2) the influence of future changes in the global circulation system on the polar climate, and 3) the influence of the polar regions on the global climate system. In doing so, PolarRES will provide novel, more confident, regional climate projections of the polar regions for impact assessments. This work is being undertaken in a multidisciplinary framework that brings together climate and impact modelers to ensure that climate change projections for both Polar regions are impact relevant. This talk will introduce the PolarRES project (<https://polarres.eu>), progress to date, and the innovative approaches that will be used in the project.