# GLORIA: GLObal digital twin for RegIonal and local climate Adaptation

## Description

The GLObal digital twin for RegIonal and local climate Adaptation (GLORIA) proposal is motivated by three challenges identified in the last few years that affect climate modelling for adaptation and mitigation:

1) climate simulations are increasingly demanded but are expensive experiments in terms of computing resources, data storage and human resources, all factors that have traditionally limited their resolution and realism;

2) persistent systematic errors in climate simulations have prevented a more widespread use of climate simulations as areliable source of climate information because, among other processes, mesoscale ocean eddies and atmospheric convection are notresolved, so that to mitigate these systematic errors models with substantially increased resolution are required, models that are the basisof a digital twin of Earths climate;

3) the compartmental approach traditionally followed by climate modelling has prevented the design of adigital twin of Earth's climate that addresses the requirements of the users of climate information.

The general objective of GLORIA is todevelop a digital twin of the Earths climate based on the IFS-NEMO global model to substantially improve the quality of climate simulations and address the pressing demands for action-oriented, credible climate information.

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