EXPECT project

The climate system is undergoing rapid changes, with certain regions experiencing extreme weather events that surpass the predictions of existing climate models. To facilitate targeted climate adaptation strategies, EXPECT aims to develop a prototype operational capability for integrated attribution and prediction of regional climate changes, including extreme events. This initiative is in close alignment with the WCRP Lighthouse Activity on Explaining and Predicting Earth System Change.

By exploiting newly available climate simulations and Earth Observations, and by combining machine learning with traditional physical methods, EXPECT seeks to determine and quantify the mechanisms through which physical processes govern regional climate changes, including extremes, on inter-annual to multi-decadal time scales. The project focuses on addressing critical gaps in knowledge concerning atmospheric circulation and land-atmosphere interactions, which currently constrain the accuracy of climate predictions and projections, especially regarding changes in European summer extremes.

To support this research, EXPECT aims at developing tools to efficiently analyse a variety of large datasets that are hosted in different institutional repositories. Moreover, the project is committed in providing specialised training for both the current climate science community and emerging researchers.