

SCENIC-DynAI – AI supported climate model downscaling for storyline-based impact analyses

As part of the Helmholtz Innovation Pool of the Research Field Earth and Environment project SCENIC (Storyline Scenarios of Extreme Weather, Climate, and Environmental Events along with their Impacts in a Warmer World) the objective of the SCENIC-DynAI subproject is to create artificial intelligence supported regionally downscaled storyline-based climate simulations for Central Europe and Germany. The overarching research question is how recent weather, climate and environmental extreme events might unfold in future scenarios compared to present and pre-industrial climates. The storyline approach is based on a selective nudging of observed atmospheric winds in climate models, particularly the jet stream as a major driver of extreme events in the extratropics. In SCENIC-DynAI, we investigate whether machine learning techniques like Generative Adversarial Networks are equally suitable for spatial and temporal downscaling of global storyline based simulations as compared to the classical dynamical methods with respect to impact analysis.