

CHAPEL

Regional climate change projection based on the RCP2.6 and RCP8.5 emissions scenarios for the Greater Region.



INSPIRATION

A general consensus within the scientific community is that climate change will not only manifest in increasing air temperatures, but also through an intensification of extreme events, which are in turn of key importance to society due to their impact on several strategic economic sectors. In this framework, there is a pressing need for high-resolution (<3 km) numerical climate simulations, reducing the major source of inaccuracies and uncertainties in climate models, especially for highly relevant extreme events.

INNOVATION

CHAPEL has the ambition to provide climate information at impact-relevant spatial and temporal scales for Luxembourg and the Greater Region based on current scientific knowledge. LIST researchers will therefore perform long-term climate simulations of past and future conditions at spatial resolutions that allows physical processes (e.g. convective extremes) to be resolved. As such, LIST will refer to the Representative Concentration Pathways (RCPs), namely RCP2.6 and RCP8.5, as a basis for near-term and long-term future climate conditions. The radiative forcing trajectories in the RCPs explicitly explore the impact of various possible combinations of economic, technological, demographic, and policy developments.

IMPACT

The large amount of information contained in this model output will be efficiently summarised in order to provide a clear insight on the performance of model simulations in reproducing the present-day climate, as well as the model sensitivity in detecting climate change signals for the Greater Region. Special emphasis will be given for socio-economic strategic sectors of Luxembourg, e.g. agriculture & viticulture, water management, and human health. Overall, CHAPEL will deliver detailed information in accordance with ongoing initiatives within the climate scientific community, providing the foundation for further research and assessment, including emission mitigation and impact analysis.

Financial Support

Ministère de l'Environnement, du Climat et de la Biodiversité

Contact

5, avenue des Hauts-Fourneaux
L-4362 Esch-sur-Alzette
phone: +352 275 888 - 1 | LIST.lu

Jürgen JUNK (juergen.junk@list.lu)
Mauro SULIS (mauro.sulis@list.lu)
© Copyright July 2025 LIST

LUXEMBOURG
INSTITUTE OF SCIENCE
AND TECHNOLOGY

