From MAGIC to reality: facilitating access to sector-specific climate projection information

Dragana Bojovic (1), Alasdair Hunter (1), Nicolau Manubens (1), Louis-Philippe Caron (1), and Andreas Sterl (2)

(1) Barcelona Supercomputing Center (BSC-CNS), Spain, (2) Royal Netherlands Meteorological Institute (KNMI)

An effective climate change service should provide climate information to a wide range of stakeholders to help inform their decisions related to climate change adaptation and mitigation. Stakeholders should be able to derive relevant, sector-specific climate information at the country or regional level, without requiring a high level of expertise in either climate or computer science. The Copernicus Climate Change Service (C3S) aims to provide such a service that provides relevant information on climate projections, through the MAGIC platform. The C3S MAGIC platform allows users to compute metrics and indices using data from the Coupled Model Intercomparison Project through a user-friendly interface, after selecting appropriate input data and setting parameters. Users can define new indices and metrics or use pre-defined ones. In order to ingest the large volume of data involved and to provide the results in a reasonable amount of time, the platform implements High Performance Computing (HPC) and Big Data techniques. When users submit their requests, the portal "brings calculation to the data", i.e. the calculation is executed on HPC platforms at the data centre. The user then receives the result with full information on its provenance. The final products range from simple time series (e.g., the Nino3.4 index) to complicated metrics (e.g., the Reichler-Kim metric), and from items of general interest to those tailored for experts in a specific sector.

The C3S MAGIC platform provides tailored products for users from the coastal, energy, water and insurance sector. For example, the energy sector products include indicators for wind energy supply (the capacity factor) and energy demand (based on temperature variability), and the insurance sector product contains indicators for the change in risk arising from changes in extreme temperatures, precipitation and wind. The MAGIC service allows the users to fine-tune many of the settings, so that the final product meets their individual requirements as closely as possible. This service could make climate projection data a valuable asset for climate related decision-making in different sectors.