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The Added Value of Seasonal Climate Forecasting for Integrated Risk Assessment (SECLI-FIRM) EU H2020 project

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The central objective of The Added Value of Seasonal Climate Forecasts for Integrated Risk Management Decisions (SECLI-FIRM, www.secli-firm.eu) European Union H2020 project (Feb 2018 – July 2021) is to demonstrate how the use of improved climate forecasts, out to several months ahead, can add practical and economic value to decision-making processes and outcomes, primarily in the energy sector, but also in the water sector. Specifically, for the energy sector, SECLI-FIRM will assess the impact on operational planning and portfolio management, such as hedging and asset optimization, thus enabling quantification of the value-add provided by seasonal forecasts which have been calibrated, evaluated and tailored for each specific application. Improvements in management decisions will ultimately lead to an improved supply-demand balance and therefore to a more efficient energy system, particularly with respect to renewable energy, with corresponding benefits for climate change mitigation.

The evaluation of the added value of the seasonal climate forecast is divided into two distinct phases: i) an objective validation and ii) an evaluation of the economic impact. The objective validation consists of a statistical comparison of the forecasted industry parameters obtained through the application of seasonal forecasts applied to existing models (e.g. econometric models), and a comparison of their output with that generated when historical climatological data is used instead. In the second phase, the estimation of how the business cycle could be improved when seasonal forecasts are applied to past real cases is investigated. This will be measured mainly in terms of estimated increase of margin and reduction of risk. This approach is being applied to nine case studies for Europe and South America. These case studies focus on recent seasons with anomalous/extreme climate conditions which have had problematic and quantifiable impacts for the energy and water industry. Crucially, the case studies are being co-designed by both industrial and research partners.

A key objective of the project is the optimisation of the performance of seasonal climate forecasts produced by many global dynamical models, in a multi-model approach, for predictands relevant for the specific case studies considered in SECLI-FIRM. The role of major phenomena such as the North Atlantic Oscillation (NAO), the Arctic Oscillation (AO), El Niño Southern Oscillation (ENSO) and Indian Ocean Dipole (IOD) on some of the selected predictands will also be identified. Then a model ensemble will aim to effectively represent both the prediction systems ability to maximize the skill coming from teleconnections and those able to make the most of the skill coming from local processes (soil moisture, snow and vegetation). A critical additional aspect of this work is the development and use of a multi-model (i.e. probabilistic) seasonal prediction dataset from independent sources.

This paper will present results from the first phase of this multi-million euros project led by the University of East Anglia (UK) in collaboration with eight European partners. The presentation will also include a discussion about stakeholder engagement activities and the potential for establishing external collaborations with the project team.