Co-creation of sub-seasonal prediction service for tyre companies in Finland

Andrea Vajda¹, Otto Hyvärinen¹, Mika Rantanen¹, Andreas Tack², and Markus Mellin³

¹Finnish Meteorological Institute, Weather and Climate Change Impact Research, Helsinki, Finland (andrea.vajda@fmi.fi)
²Finnish Meteorological Institute, ICT and Data Production, Helsinki, Finland
³Finnish Meteorological Institute, Arctic Space Centre, Sodankylä, Finland

Driving safety is strongly weather dependent during the winter season, thus timely installation of winter tyres is essential when temperature falls to near 0 °C and the surface of the roads becomes slippery due to ice and snow. Sub-seasonal forecasts might provide useful information for tyre companies for operational planning of their logistic activities and preparedness. In the EU H2020 E-SHAPE project we co-created a user-oriented climate service providing tailored sub-seasonal predictions for the tyre companies in Finland. To increase the usability and uptake of the forecast products the service was co-created with the tyre and car service chain, Vianor Oy, through an iterative approach. In this study, we provide a short overview of the new sub-seasonal prediction service, emphasizing the challenges emerged during the creation and uptake by the user.

The end-user was engaged through dialog from the beginning of the design and development process to scope and explore their needs in terms of forecast products, and to align the complexity of visualization design and delivery method with their expertise. The user’s purpose was to apply the tailored sub-seasonal forecasts in the operational preparation for the high season, in marketing and in customer communication to facilitate safer driving. Taking this into consideration, a set of sub-seasonal forecast products relevant for winter driving safety were selected and designed with the user, i.e., winter tyre season (onset and offset), probability of snow cover, snow depth and probability of freezing temperature. Air temperature and snow depth variables from the ensemble prediction system from ECMWF were used as input data in the development of the sub-seasonal outlooks. The forecast model data was quality assessed and bias-adjusted using the ERA5 reanalysis as reference. The sub-seasonal outlooks are produced in operational runs, visualized through weekly maps, and disseminated to the users through an online user interface two times a week, on Tuesday and Friday. The service was piloted with Vianor for two winter seasons and improvements are being made based on user’s feedback and forecast product evaluation.

Although the user found beneficial the created climate service in decision making, their capacity and capability to incorporate the sub-seasonal climate information in their line of business proved to be more challenging. This was partly due to the longer time required to understand the potential value of using the forecast products but also in the difficulties of incorporating the new climate information to their workflow. The lessons learnt from this collaboration will contribute to better understanding of users’ engagement and co-production of sustainable and operational climate services.