Subseasonal forecasting for fault rate management in the telecommunication network

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Telecommunication networks are integral part of secure and competitive societies where commercial enterprise and essential services depend on low-cost and reliable communications. In the UK, an estimated net economic contribution of £3bn/year (or 1.5% of GDP) is attributable to telecommunications infrastructure, however, as with many other aspects of infrastructure, the exposed nature of the network leads to weather risk, dependent on a complex compound of meteorological properties. The quantification, prediction and management of weather-related line fault rates is therefore an important problem, with each aspect – quantification, prediction and management – presenting distinct challenges.

With unique access to observational records for the UK telecommunications infrastructure, this presentation will address all three aspects outlined above, providing an end-to-end demonstration of how subseasonal meteorological forecasts might be used in an important practical setting, assessing forecast value to the end user on both short term 'operational' (days, weeks) and longer term 'planning' timeframes (months, years). The user applications discussed – the latter of which involves simulating operational decision-making as well as the weather - shares similarities with other end-user applications in energy-meteorology. On this basis, it is suggested that there is a need for new techniques in assessing the quality of s2s forecasts going beyond the traditional "cost-loss" framework.