Weather radar network design as a function of benefits analysis

Dawn Harrison
Met Office, United Kingdom

E-mail: dawn.harrison@metoffice.gov.uk

Within Europe, many national weather radar networks have been established over several decades, some being planned and developed as complete networks while others developed in a more ad hoc manner. Despite the maturity of many of these networks there are still opportunities for further expansion and sometimes moves necessitated by proposed construction projects at existing sites or land lease issues.

It is therefore important that a methodology exists to quantify the quality of coverage and the associated benefits delivered by both individual weather radars and entire networks. This enables key stakeholders to ensure that networks develop in the most beneficial way. Further, it provides a negotiating tool when weather radar coverage is threatened (for example by construction projects) and can be used to ensure that mitigation offered in these cases does not lead to degradation in the overall effectiveness of the network.

This paper presents a methodology to aid weather radar network design by linking quality of radar coverage to the key benefits delivered. Benefits are specified in terms of damage avoided through improved hazardous weather and flood forecasting and warning, thus enabling radar networks to evolve through cost-benefit analysis.