Beyond Radars: Designing a Network for Diverse Services

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For a Meteorological Service radars provide an opportunity to deliver a service that saves lives and property.

Australia has a population that is highly urbanized and concentrated on the E and SE coastal fringe, distant from major agricultural and mining projects.

Hazardous weather (tropical cyclones, severe storms, floods and wild fires) occur across a wide geographic and seasonal range, independent of where the population is concentrated.

Although it is the fourth largest radar network in the world, and the densest radar network in the world in terms of radars per capita, the Australian radar network needs an upgrade of technology and functionality to enable the delivery of enhanced services. A uniform radar network at a density required to meet all needs would be prohibitively expensive. The Australian approach is to plan for a heterogeneous network, to serve different needs of different users, based on population centres, the resources sector and hazardous phenomena.

This paper presents the actions taken by the Bureau's radar and services experts to identify current and future needs to be addressed in planning the service delivery based on radar data. Progress has been made in addressing not only geographical and climatological issues, but also socio-economic needs in planning the development of the network.

The service will transition from qualitative to quantitative, using QPE as input to high resolution NWP and for hydrological and severe weather forecasts and warnings in the major cities. As part of this process a Forecast Demonstration Project will be held in Sydney to test the new systems and tools. Significant assets for the natural resources sector (eg rail, mines, and ports) are found in areas where the population is very sparse. How to design a radar network to service these needs is still needs to be developed and refined.