

Lidars for operational meteorology. Alain Dabas, Météo-France (France).

ABSTRACT

Lidars have left research laboratories. They are now commercially available and deployed in growing numbers worldwide. They are on their way to becoming standard equipment for airport surveillance or wind farm site monitoring, but much more is to come. Following the Icelandic volcano crisis in 2010, several countries are working on the deployment of networks of backscatter lidars and develop the tools that will enable air quality models to assimilate their observations to the benefit of improved predictions of aerosol transport and dilution. Weather services are also looking at lidars for automatic measurements of the fine-scale vertical structure of the atmosphere in the lowest kilometers of the atmosphere. Lidars measuring vertical profiles of wind, temperature and humidity would be welcome. To put it shortly, lidars should have a bright future in operational meteorology. However, for this to actually happen, fully automated lidars at reasonable purchase and maintenance costs are needed. Standards also need to be defined so that weather services know what they can expect from a lidar in terms of spatial resolution, maximum range... and procedures must be acknowledged by the industry so that the proclaimed performances can be checked by customers. And at last, assimilation techniques adapted to the fine space and time resolutions of lidars must be developed to take the full benefit of their measurements.

The presentation will try and determine what applications could be usefully covered by lidars in the future, and what obstacles are preventing today the deployment of operational lidar networks.