Test of a combined X-band Doppler polarimetric radar & Doppler lidar system for all-weather wind shear detection at Nice Airport
Clotilde Augros, Dominique Davrinche, Stéphanie Desbios, Pierre Tabary - METEO FRANCE

Nice 2011 experimentation

March 2011 : installation of a Doppler lidar (Leosphere) at Nice airport
Mai 2011 : installation of an X-band radar (SELEX) - for 6 months

Aim : evaluate the contribution of these instruments, in association with the « traditional » systems like the wind ground stations, to detect (and predict?) low level wind-shear affecting the airport and to help forecasters anticipate the change of wind direction that is a determining factor in the choice of airplane approach by the air-traffic controllers

Scanning strategy of the instruments

Lidar : 1 scan at 3° per 5’ + 3 RHI (2 in runways directions + 1 toward the Var valley)
Radar : different scanning strategy have been tested and test of different values of PRF have been done to optimize radial velocity quality

Last proposition :
- Good quality for radial velocity with the PRF and rotation velocity proposed
- SELEX clutter filter seems to work well and the quality is good even close to the radar
- The position of the radar on the airport seems to be fine
- No sea clutter observed yet

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<th>PRF1 (Hz)</th>
<th>PRF2 (Hz)</th>
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- 10 scans between (runways and Var valley)
- repeated twice
- 2 RHI (runways and Var valley)

Acknowledgements
Thanks to Eric Schwartz and Philippe Canova from Nice forecasting team for their active collaboration!
Thanks to Pierre Chaduteau and Nice maintenance team for their help during installation and maintenance phase of both lidar and lidar.

Correspondent Address: Clotilde Augros
Meteo France/DSO/CMR
42 Av. Coriolis, 31057 Toulouse, France
Tel: +33 567698738 Email: clotilde.augros@meteo.fr

Case of 08/08/2011

- Anticipation by the lidar of the wind rotation coming from the East, north-east of the airport
- At the ground stations, the change is seen only at 1915 UTC (seen at 1900 by the lidar)

- At 2000 UTC (just after the change of wind direction), the quality of lidar data is improved : more aerosols coming from the East?
- clear air signal seen by the radar and coherent with the lidar

Case of 05/06/2011

- On this case, the convergence and the south-westerly wind component (south-west of the airport) can be anticipated thanks to the radar : the wind rotation is seen at Cape Antibes at 1125 UTC (more than 15 min after the radar signature)