

# X-WALD

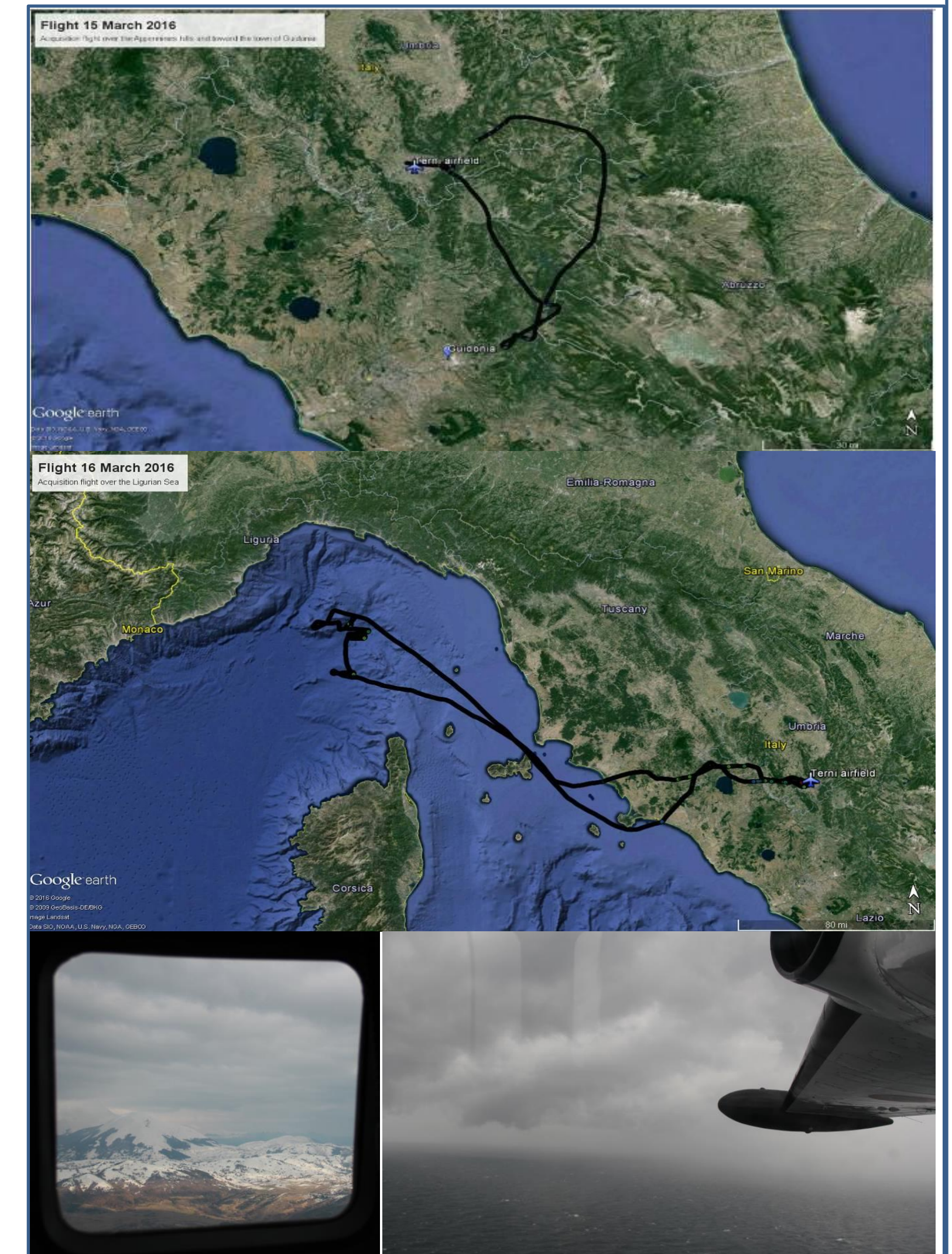
## Avionic X-band Weather signal modeling and processing vALidation through real Data acquisition and analysis



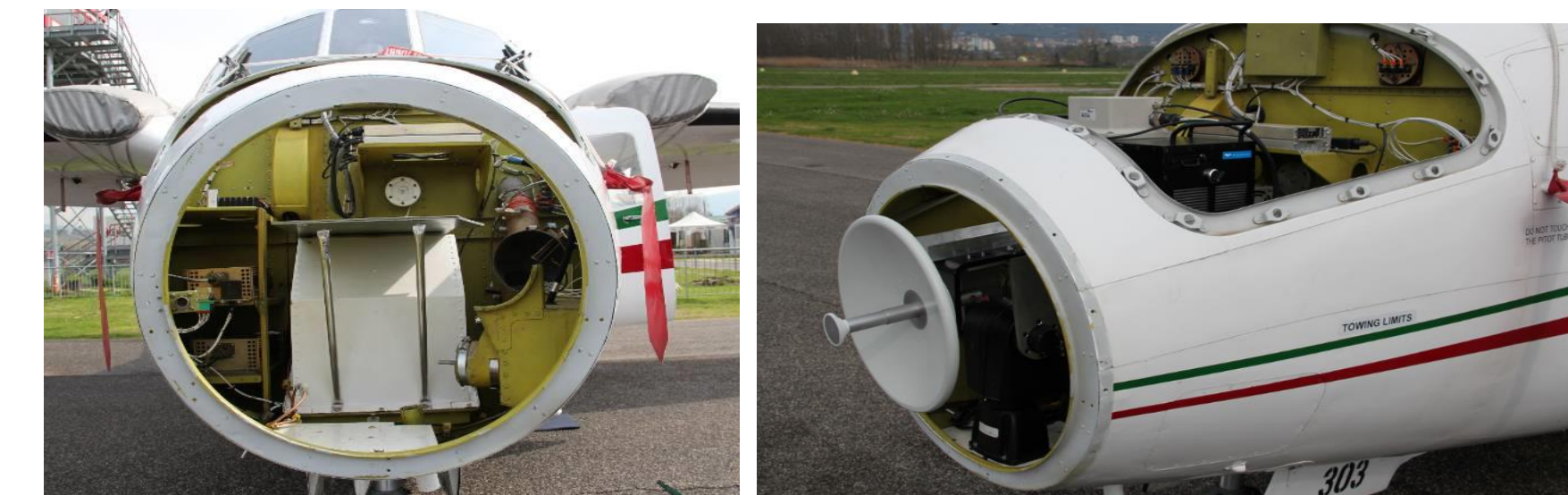
Netherlands campaign  
DA42 MPP and radar

### Main X-WALD achievements:

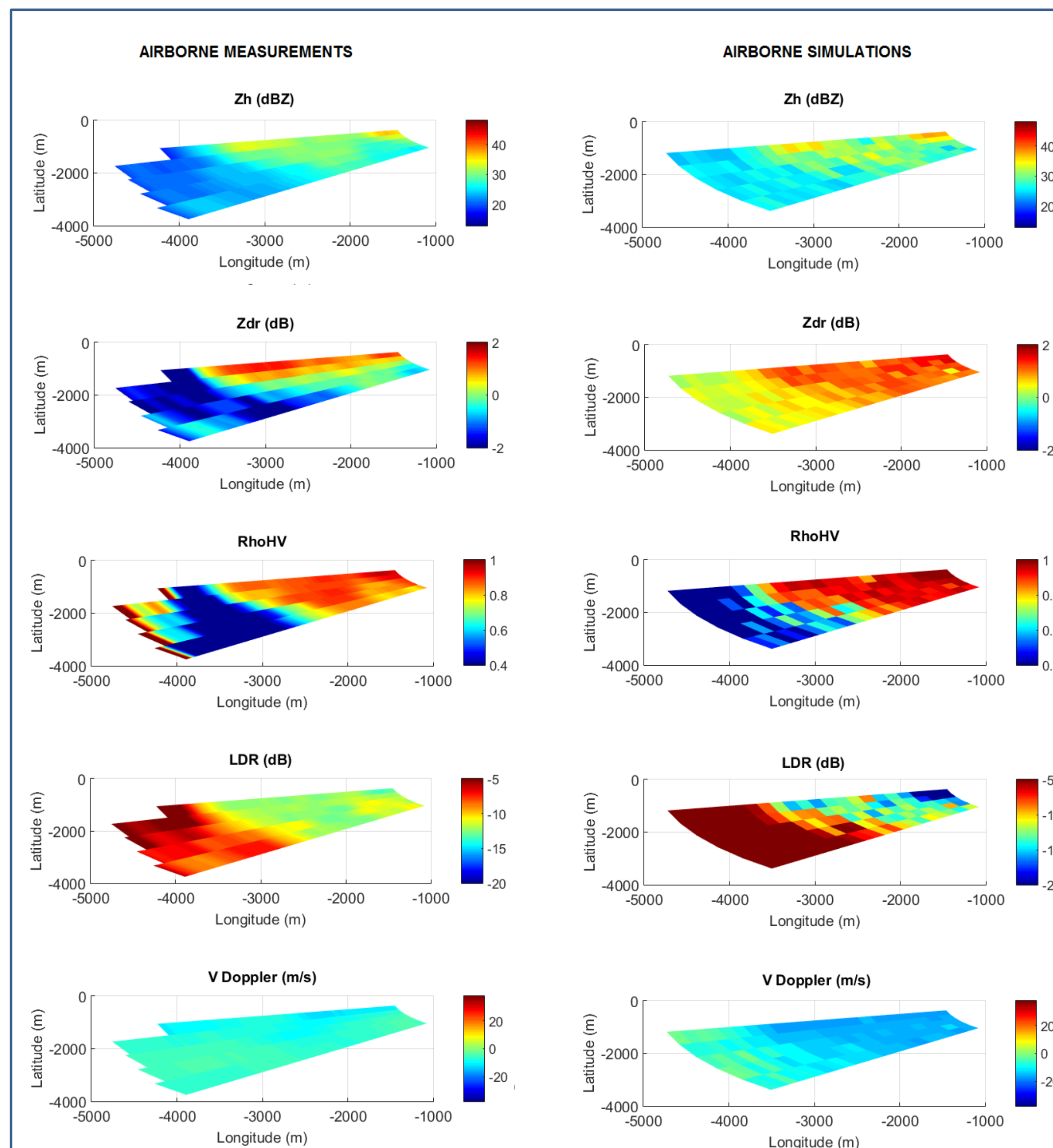
- ✓ first European measurement campaigns with polarimetric radar (Netherlands: Dec. 2015 – Italy: Mar. 2016)
- ✓ two different aircrafts
- ✓ radar selection and upgrade
- ✓ polarimetric radar data processing
- ✓ optimization and validation of the avionic polarimetric radar signal simulator (CleoSim),
- ✓ Refinement and validation of the EFB weather radar signal processing and trajectory optimization algorithms
- ✓ EFB GUI upgrade and SW refinement



Flights and aircraft view

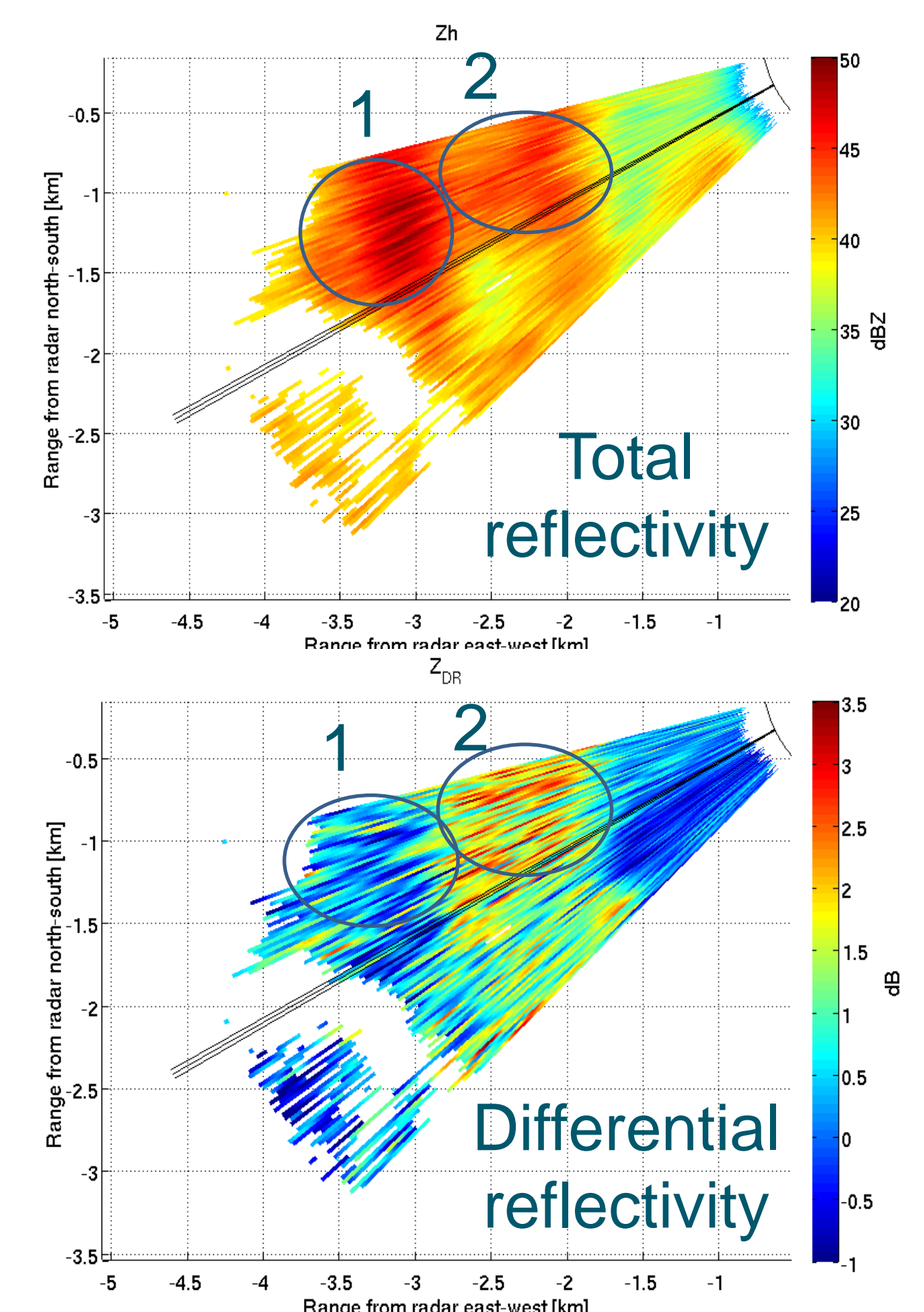


Italian campaign  
Piaggio P166 and radar



True radar measurements and simulations (CleoSim)

### Polarimetric measurements



Zones 1-2 with similar total reflectivity but different differential reflectivity  
1 - probable **iced** precipitation  
2 - probable mixed **ice-rain** precipitation  
Eyesight: medium intensity, **small rain/ice**



EFB SW upgrades: polarimetric weather classification, Q-AI proposed trajectory



**SUMMARY:** First European measurement campaigns with a polarimetric weather radar. X-BAND polarimetric radar selection, update and setup. Refinement and validation of the avionic polarimetric radar signal simulator (CleoSim). Refinement and validation of the EFB weather radar signal processing and trajectory optimization algorithms for improving hazard awareness in flight, reducing the pilot's workload and reducing the polluting emission in atmosphere.