TEC.P07



Measurements

- Kumpula Radar (C-band)
- Snowfall in March 2012
- Elevations 0.5°, 2.0° & 6.0°
- Triple-PRT pulsing scheme



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Adaptive Clutter Removal in Operational Dual-Polarization Measurements

Mimicking operational scans

Operational scanning



 Antenna speed 10°/s • Distance 262.5 km Velocity up to 53.5 m/s • Effective ground clutter mitigation Real-time processing

Pictures illustrate Strong urban clutter echoes Low-altitude melting layer (0 °C) Low velocity Low spectral width

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Adaptive filter decision varies from bin to bin and from scan to scan.

Example: filter choice is displayed (transparent) no filtering (blue) 0 dB filter (green) 10 dB filter (yellow) 30 dB filter (orange) 50 dB filter

Strong clutter filtering often causes reflectivity artifacts especially in zero-velocity regions. Using the adaptive scheme unnecessary filtering can be avoided.

Example: **Difference in reflectivity** with adaptive and 50 dB filter

Even low levels of ground clutter may deteriorate polarimetric products. The adaptive method can remove also weak clutter components.

Example: ρ_{HV} with 6.0° elevation

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Adaptive Clutter Removal in Operational Dual-Polarization Measurements



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up to 25 dB difference in Z at 0 m/s

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artifacts due to urban clutter sources in Helsinki elevation °0 *ation* elev

° 0







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weather signal destroyed by the strong filter