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Adaptive Tracking of Thunderstorm Cells at X-band

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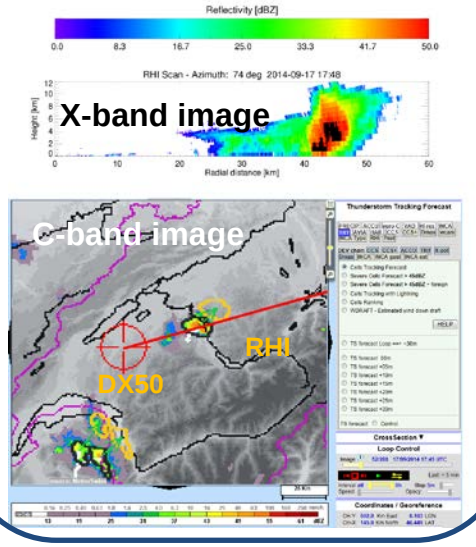
Introduction

Initial cell identification: C-band network
High resolution cell scan: X-band radar

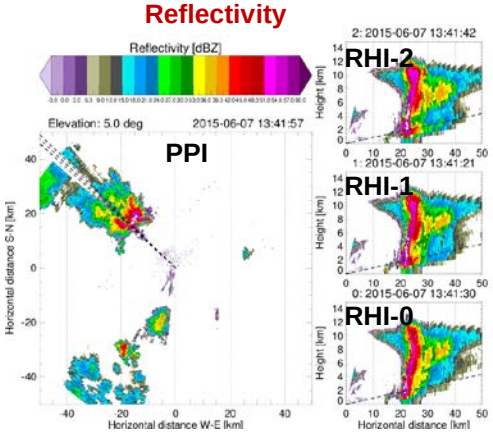


Adaptive tracking

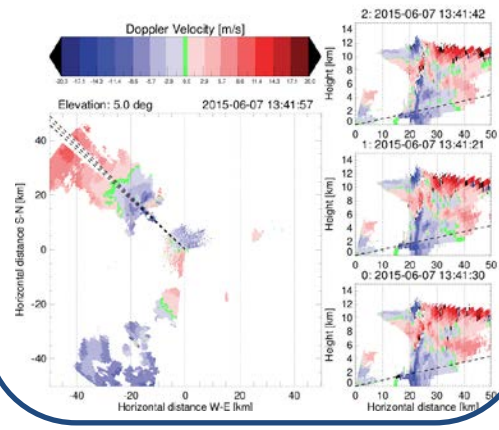
In less than 2 minutes:

- PPI scan at 4° elevation: **overview**
- 3 RHI scans towards the core of the cell
- Z_H, Z_{DR}, K_{DP}, ρ_{HV}, V , SW…

Reflectivity



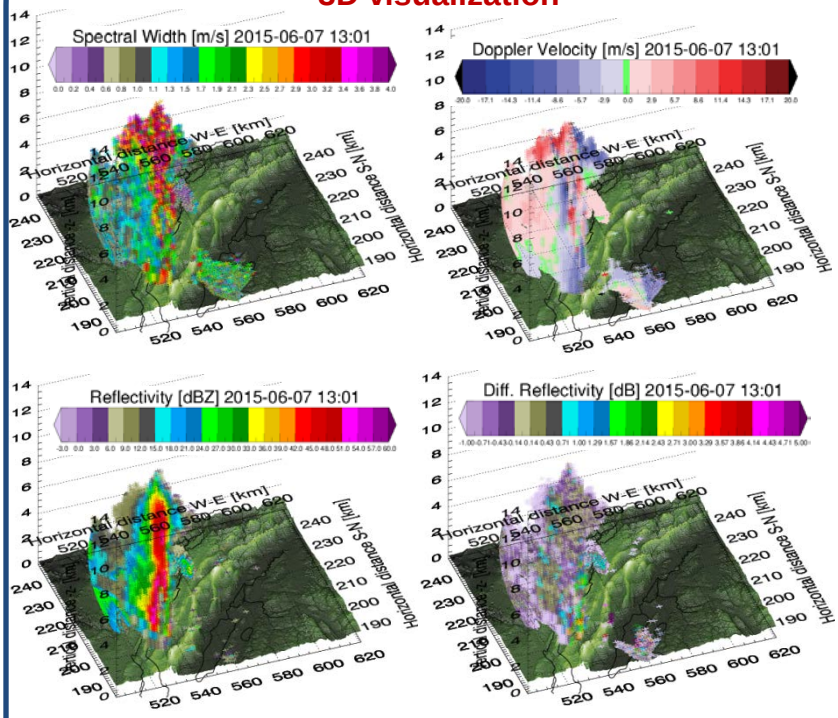
Doppler velocity



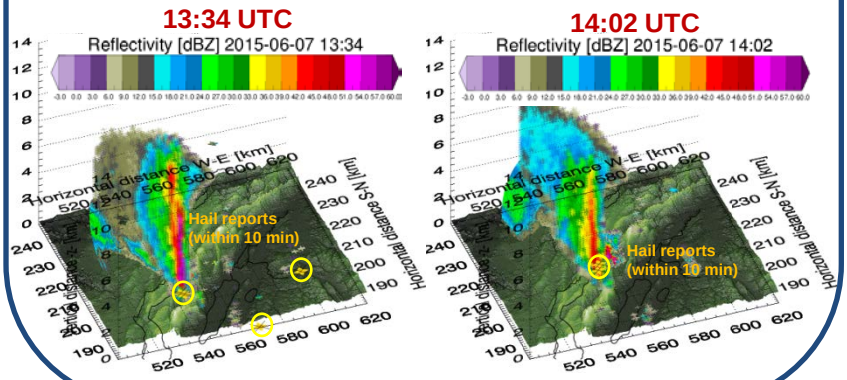
Example: 2015-06-07

Tracked (very unusual) tornado in the Jura mountains

3D visualization



Comparison with crowd-sourcing hail reports*



Conclusion

- MeteoSwiss storm-tracking at two different scales (C/X band)
- 3D sampling of convective cells (X-band)
- High resolution storm-scanning protocol: 75m, <2 min
- Unprecedented datasets

Perspectives

- Understanding + early warning of hail generating storms
- Improved operational response to severe weather

*Crowd-sourcing hail report are provided by MeteoSwiss and Mobiliar Lab/University of Berne