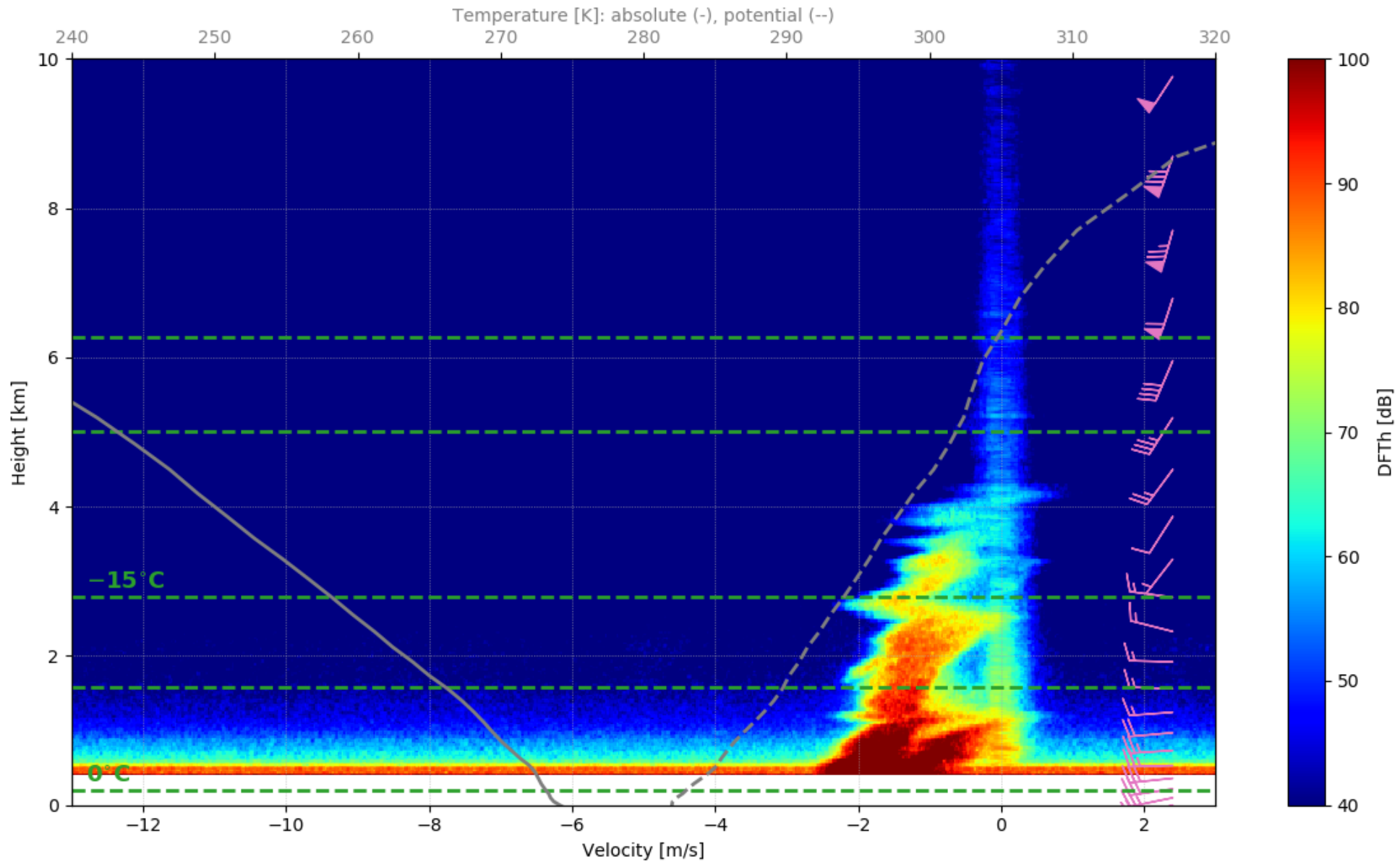


A seamless profile of the precipitation process of mixed-phase clouds employing data from a polarimetric C-band radar, a Micro Rain Radar and disdrometers

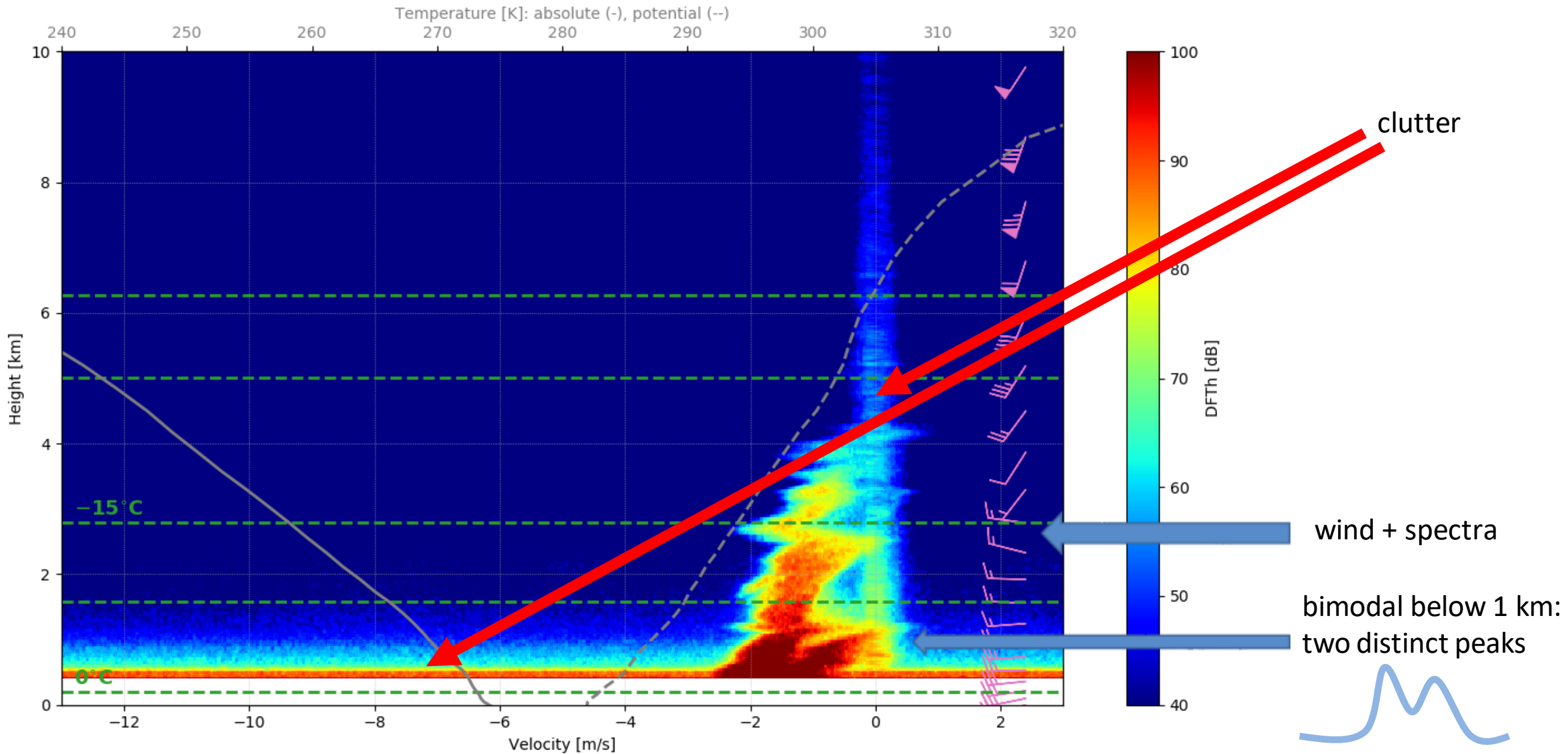
Mathias Gergely, Michael Frech (PI)
Deutscher Wetterdienst

- (zenith-pointing) Doppler spectra processing
- Doppler spectra + QVPs (+ NWP + in situ)

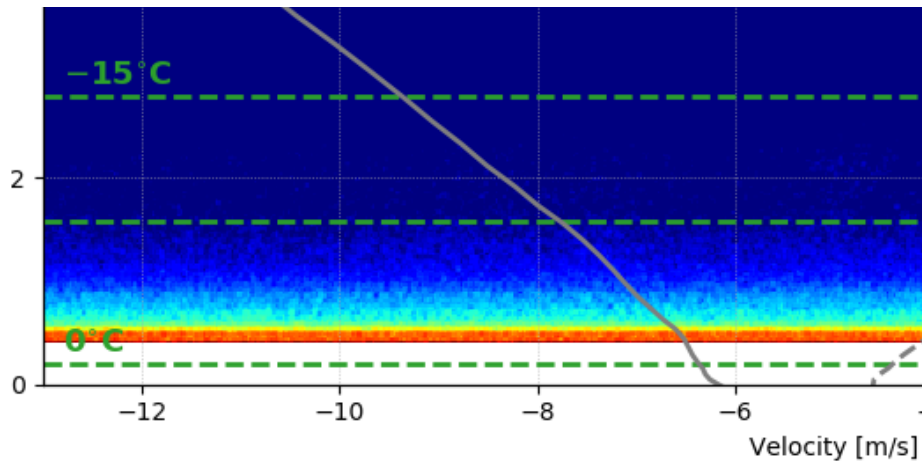
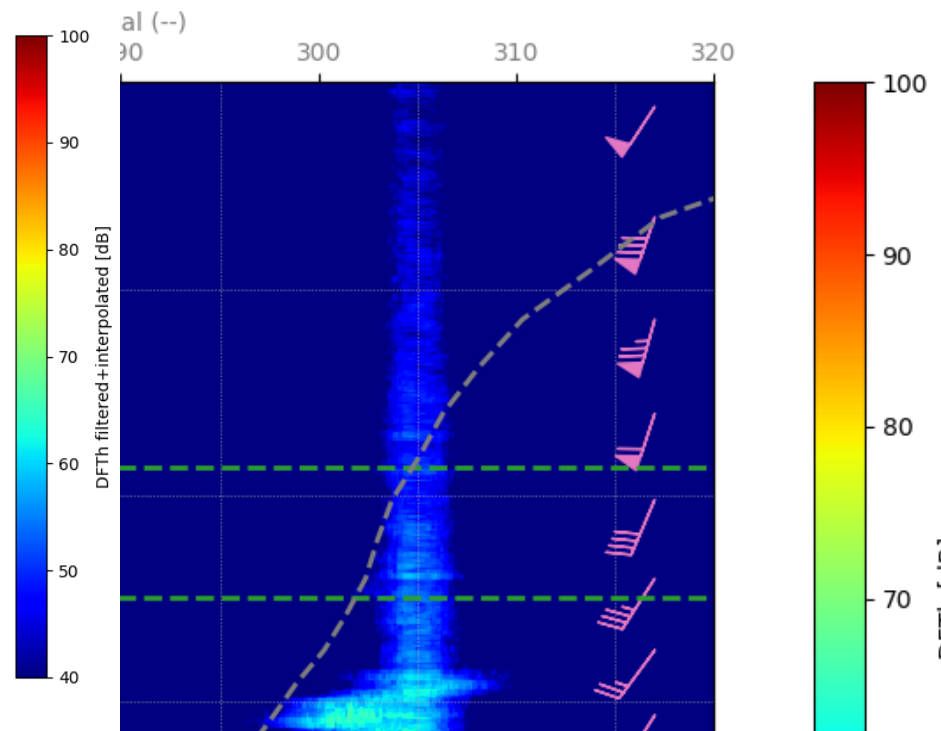
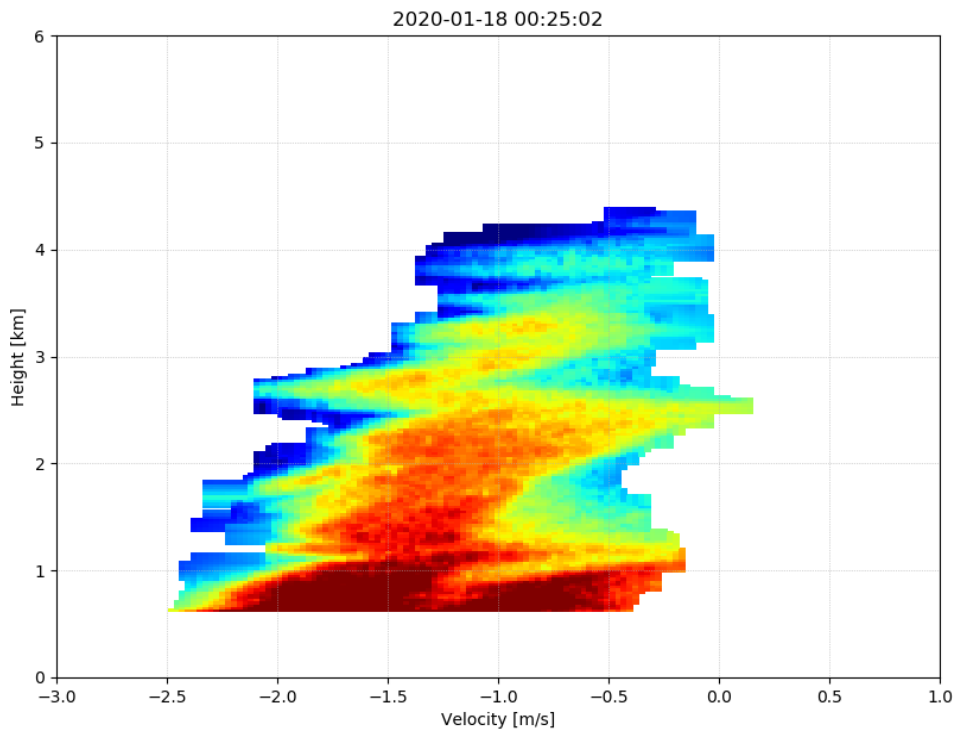
Doppler spectra processing: isolate weather signal



Doppler spectra processing: isolate weather signal

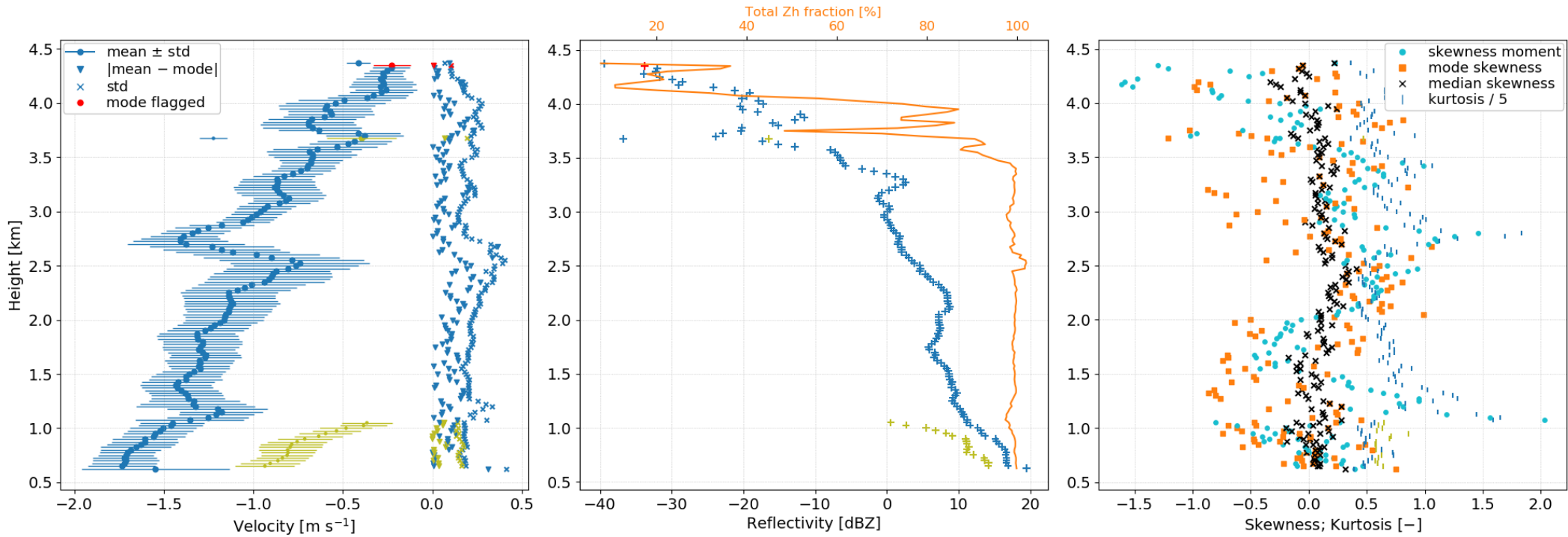


Doppler spectra processing: isolate weather signal



- 1) Smoothing
- 2) Polarimetric filter by clustering
- 3) Interpolation

Doppler spectra processing: calculate (multi-)modal properties

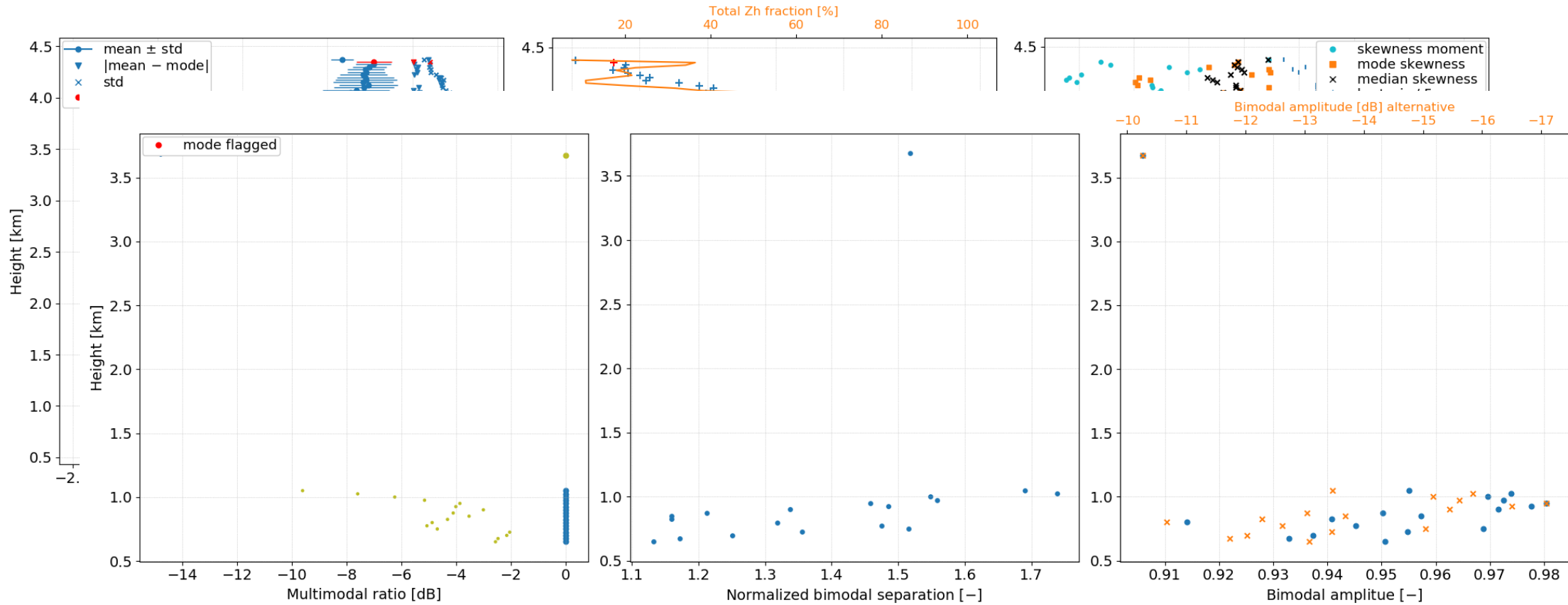


Mean, standard deviation

Reflectivity

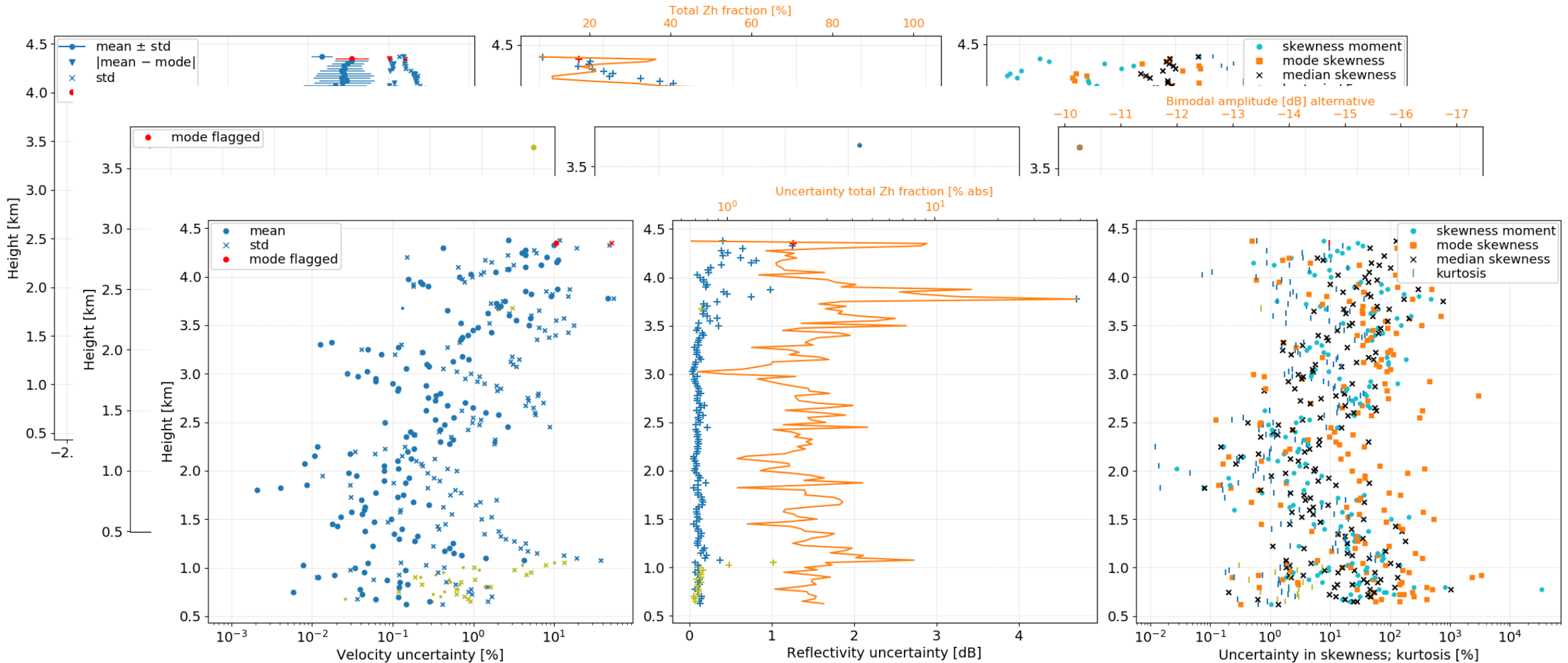
Higher-order moments

Doppler spectra processing: calculate (multi-)modal properties



Mode strength and separation (if multiple modes)

Doppler spectra processing: calculate (multi-)modal properties

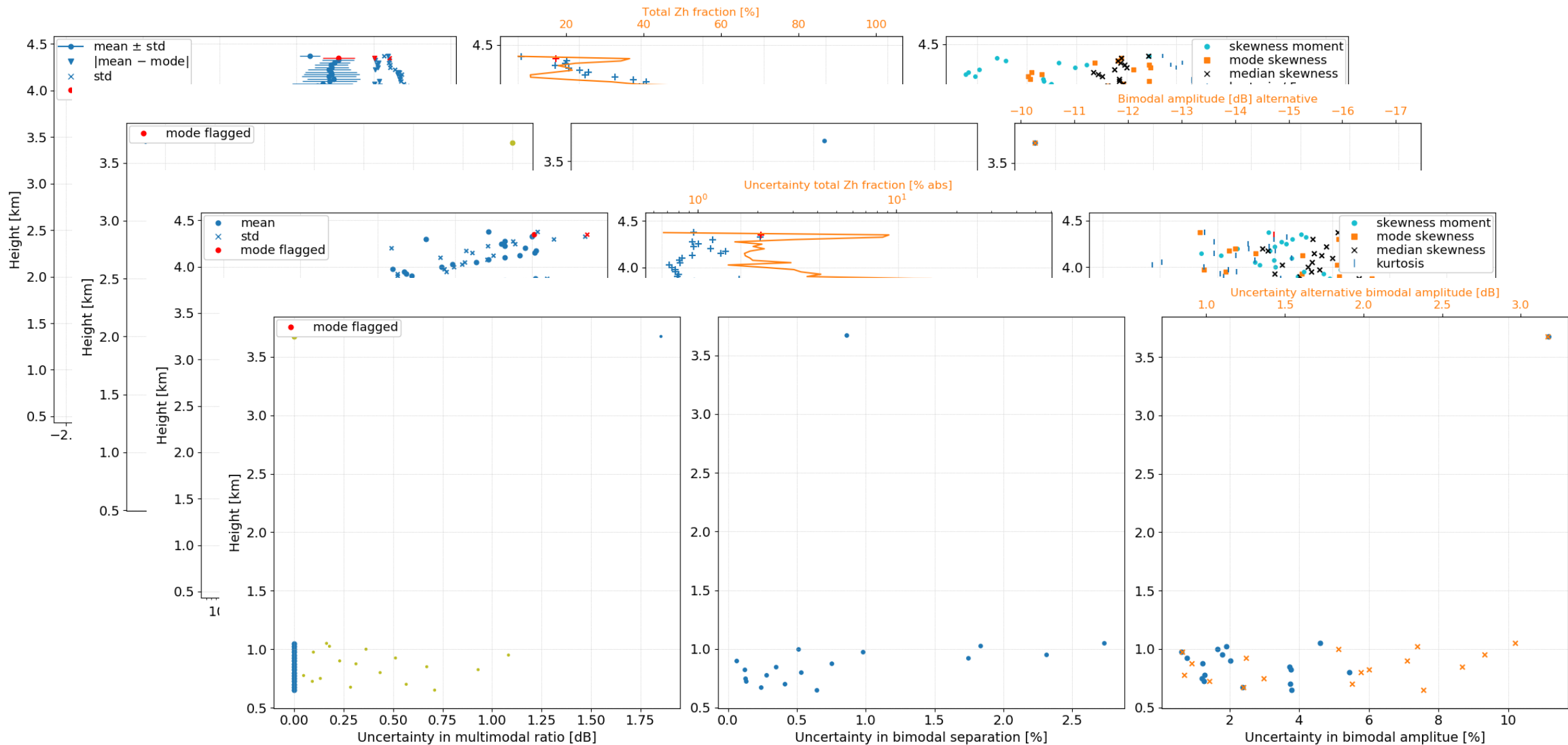


Uncertainty estimates: difference between processing applied to smoothed and unsmoothed signals

relative uncertainty $<, \ll 10\%$

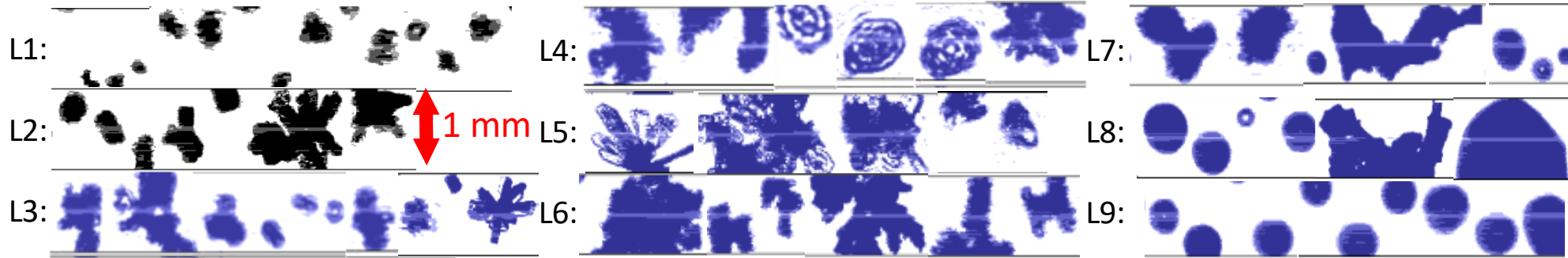
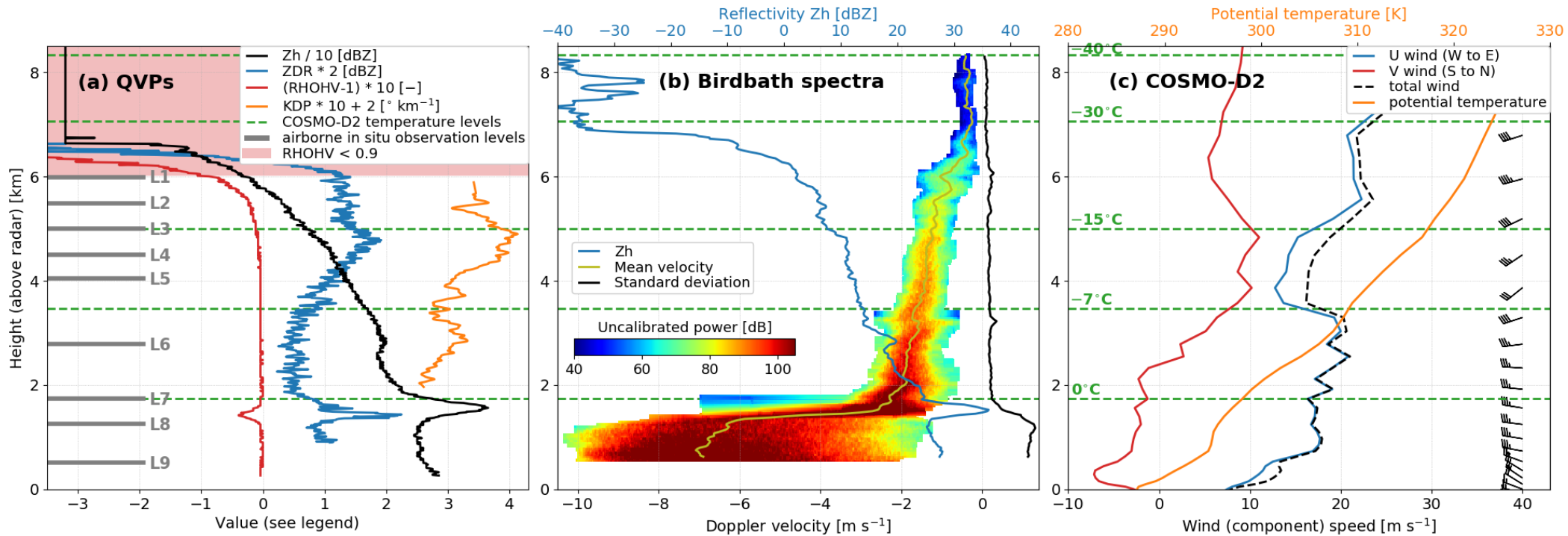
$>, \gg 10\%$

Doppler spectra processing: calculate (multi-)modal properties



Doppler spectra + QVPs + NWP + in situ

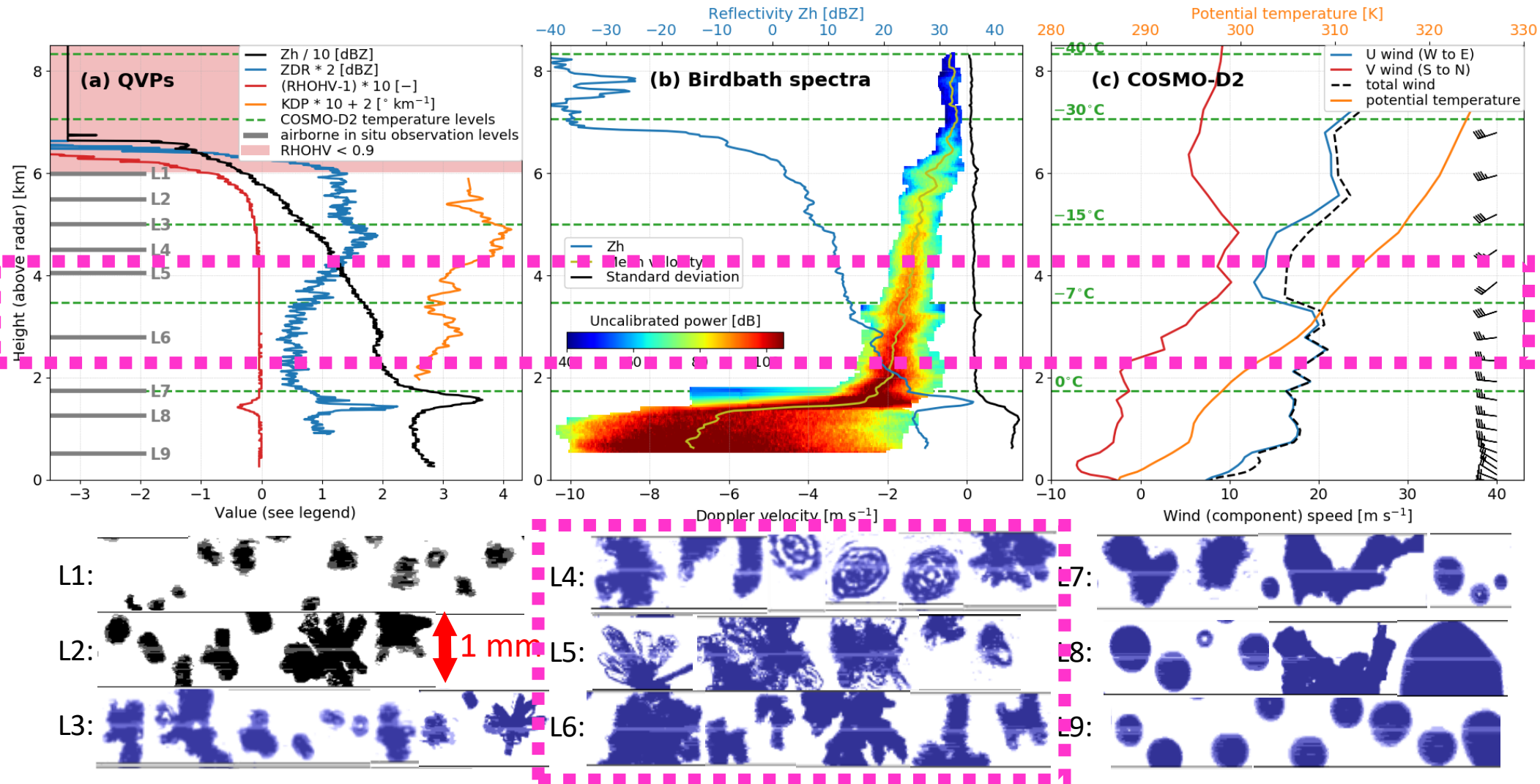
- May 2020, rain rate at ground ~ 3 mm/h, melting layer ~ 1800 m above radar, NO MULTIMODAL spectra



Thank you
Manuel, Christiane
at DLR/Uni Mainz

Doppler spectra + QVPs + NWP + in situ

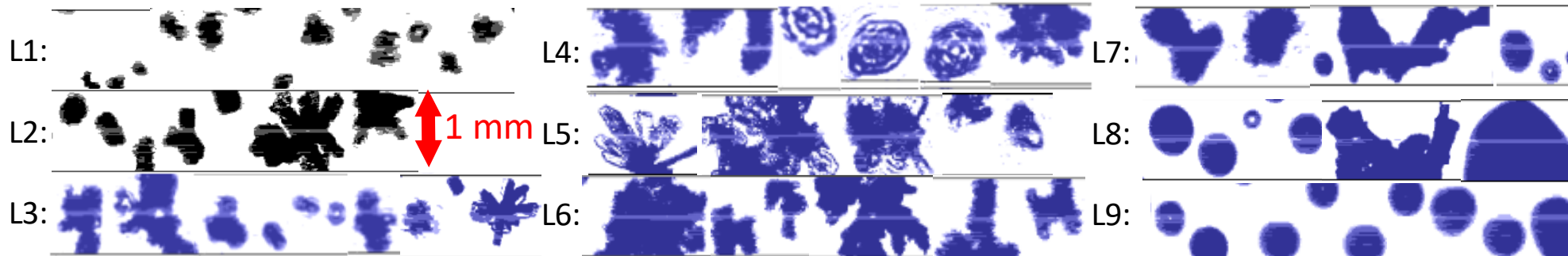
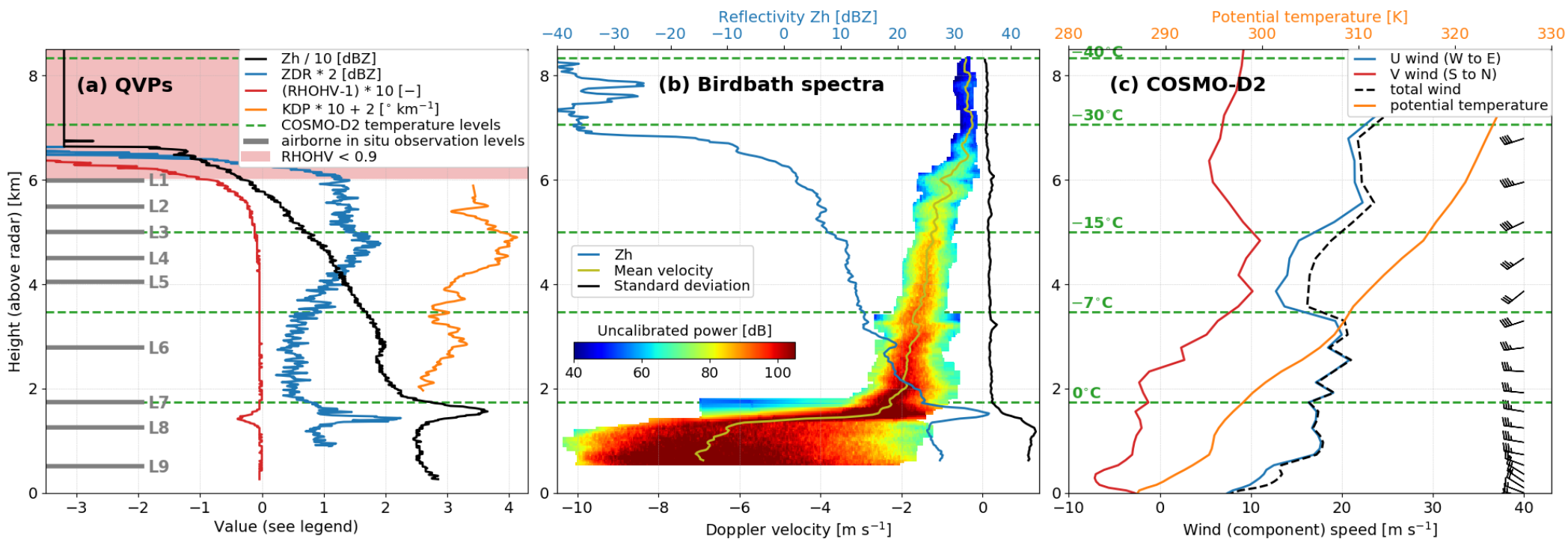
- May 2020, rain rate at ground ~ 3 mm/h, melting layer ~ 1800 m above radar, NO MULTIMODAL spectra



Thank you
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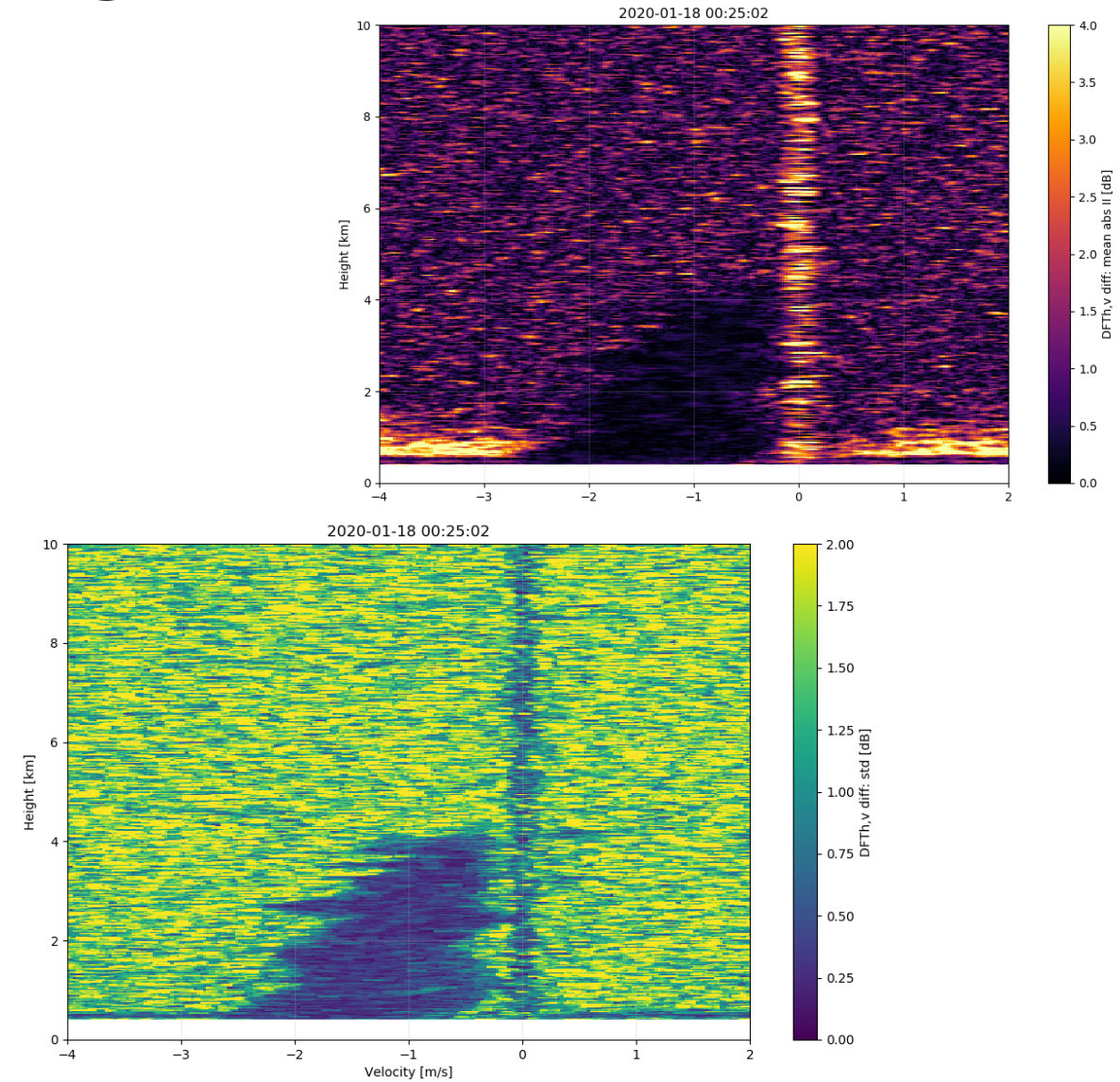
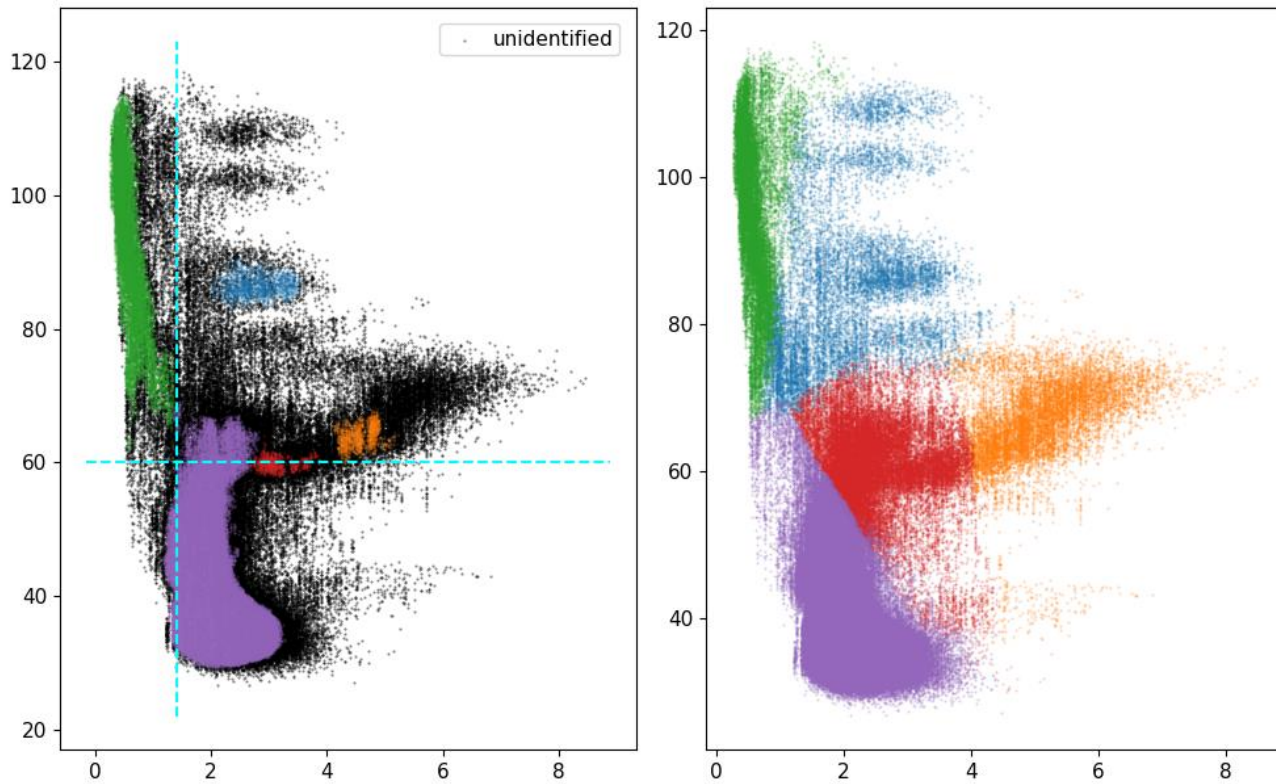
Doppler spectra + QVPs + NWP + in situ

- May 2020, rain rate at ground ~ 3 mm/h, melting layer ~ 1800 m above radar, NO MULTIMODAL spectra



Thank you
Manuel, Christiane
at DLR/Uni Mainz

Extras: clustering results



Extras: spectral peaks in linear space

