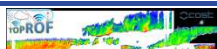




CEILOMETER OVERLAP

Frank Wagner

Deutscher Wetterdienst
Frank.Wagner@dwd.de

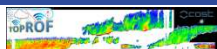
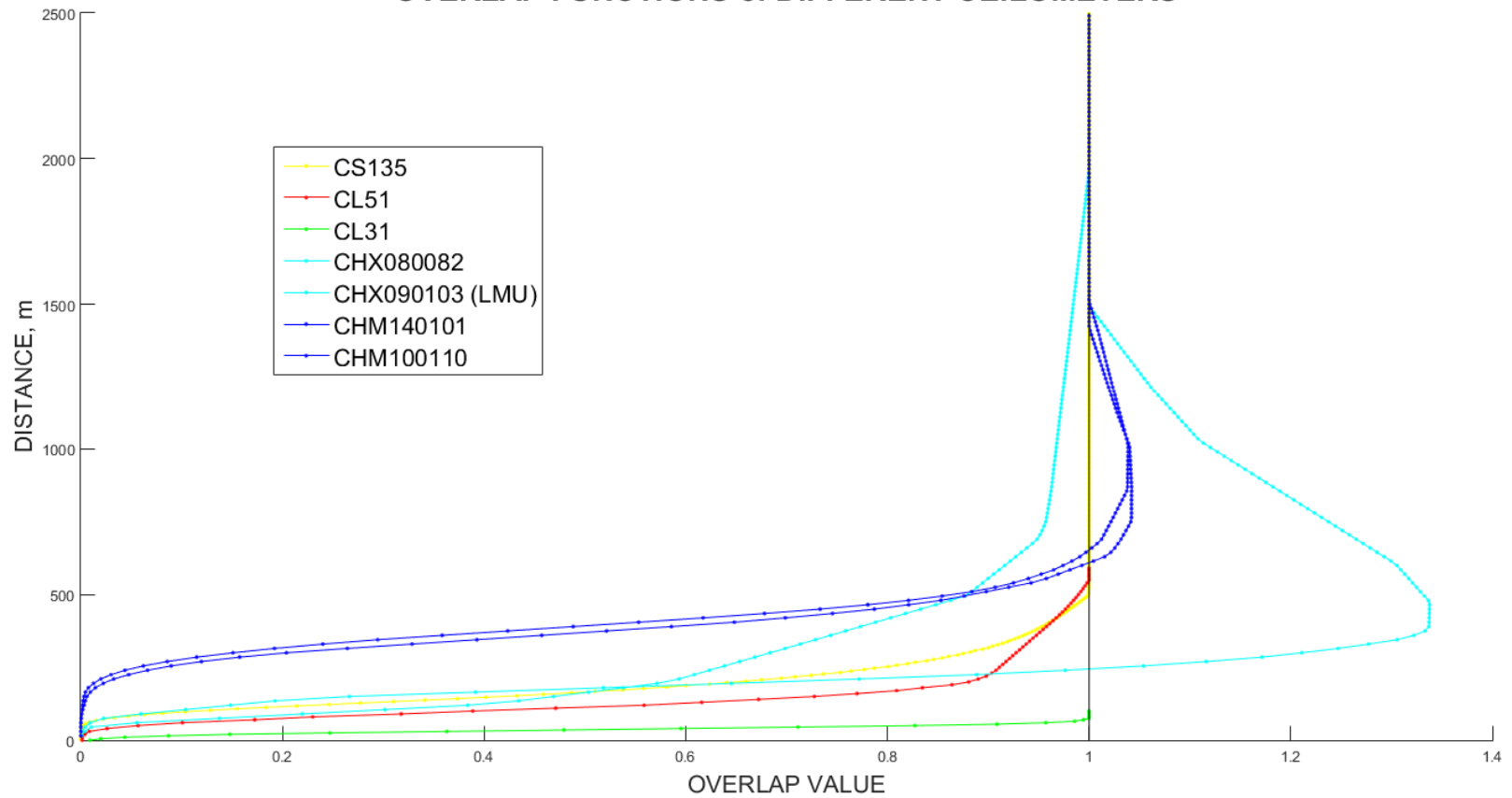


OVERLAP by MANUFACTURER

Deutscher Wetterdienst
Wetter und Klima aus einer Hand



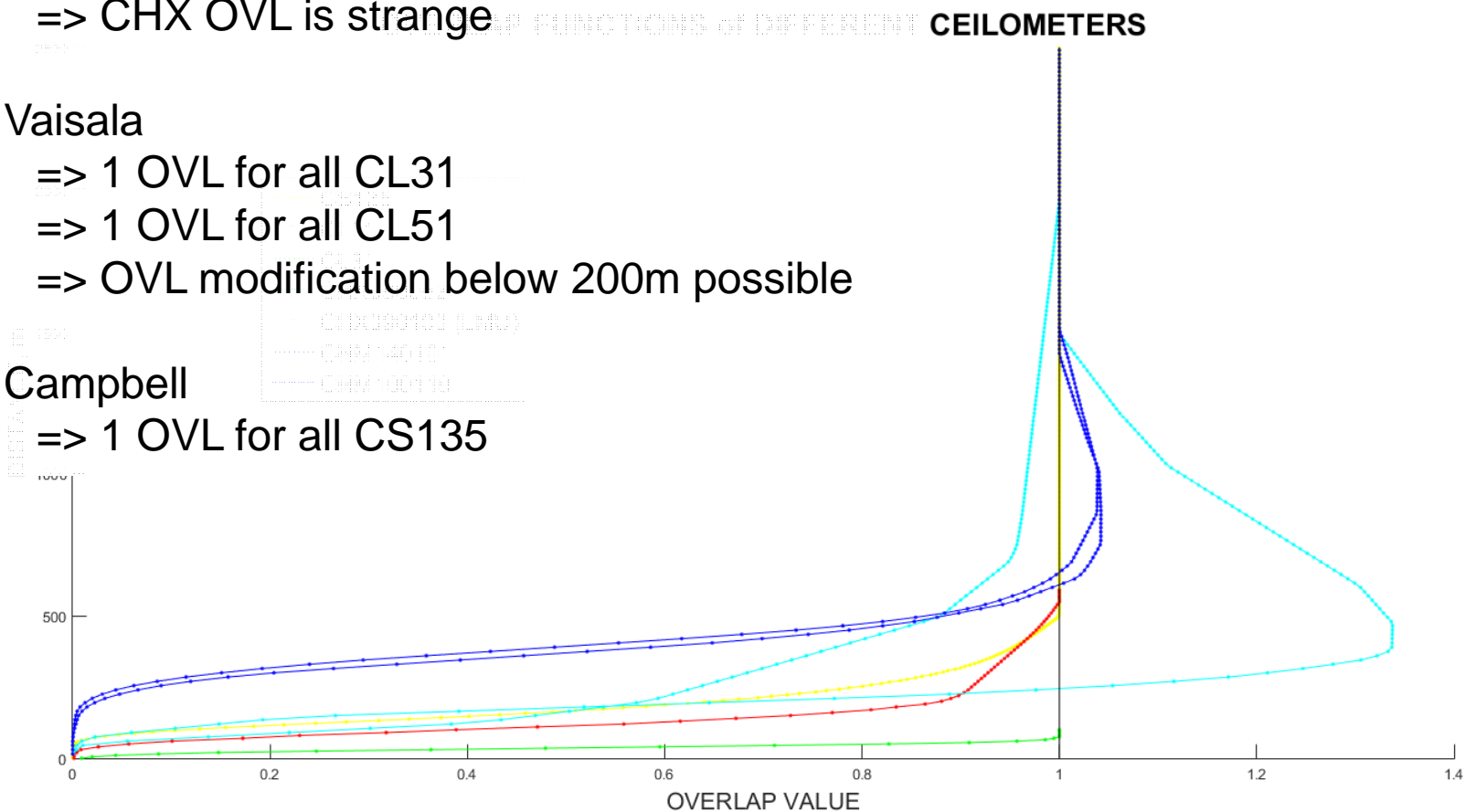
OVERLAP FUNCTIONS of DIFFERENT CEILOMETERS



OVERLAP by MANUFACTURER



- Luftt
 - => individual OVL Functions
 - => CHX OVL is strange
- Vaisala
 - => 1 OVL for all CL31
 - => 1 OVL for all CL51
 - => OVL modification below 200m possible
- Campbell
 - => 1 OVL for all CS135



DETERMINATION of OVL

- Theoretical considerations/calculations
- Comparing Ceilometer Signals with a **known true** Signal
- Horizontal Measurements
 - * Horizontal homogeneity (aerosol particles and molecules)
 - * Problem: weather
- Vertical Measurements
 - * Vertical homogeneity
 - * Method can correct strong ovl artefacts
 - * unlikely that unknown ovl can be obtained
 - * Problem: weather

HORIZONTAL MEASUREMENTS

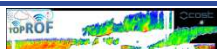
Deutscher Wetterdienst
Wetter und Klima aus einer Hand



During Ceilnex

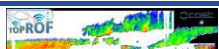
- Test of several viewing directions
- Various measurement times

Necessary condition == horizontal homogeneity only partially fulfilled ☹️



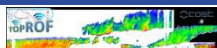
HORIZONTAL MEASUREMENTS

Deutscher Wetterdienst
Wetter und Klima aus einer Hand



HORIZONTAL MEASUREMENTS

Deutscher Wetterdienst
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HORIZONTAL MEASUREMENTS

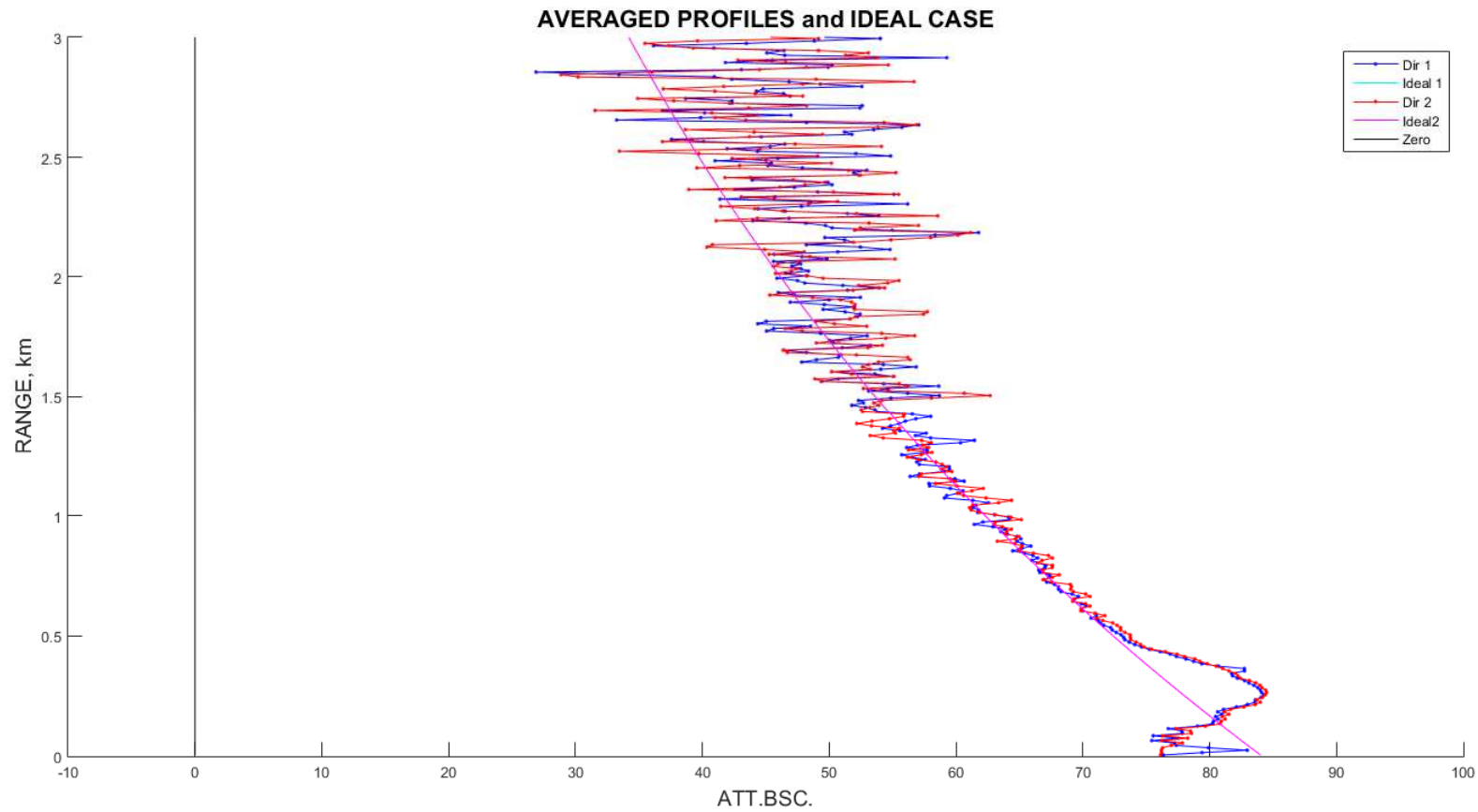


HORIZONTAL MEASUREMENTS

Deutscher Wetterdienst
Wetter und Klima aus einer Hand

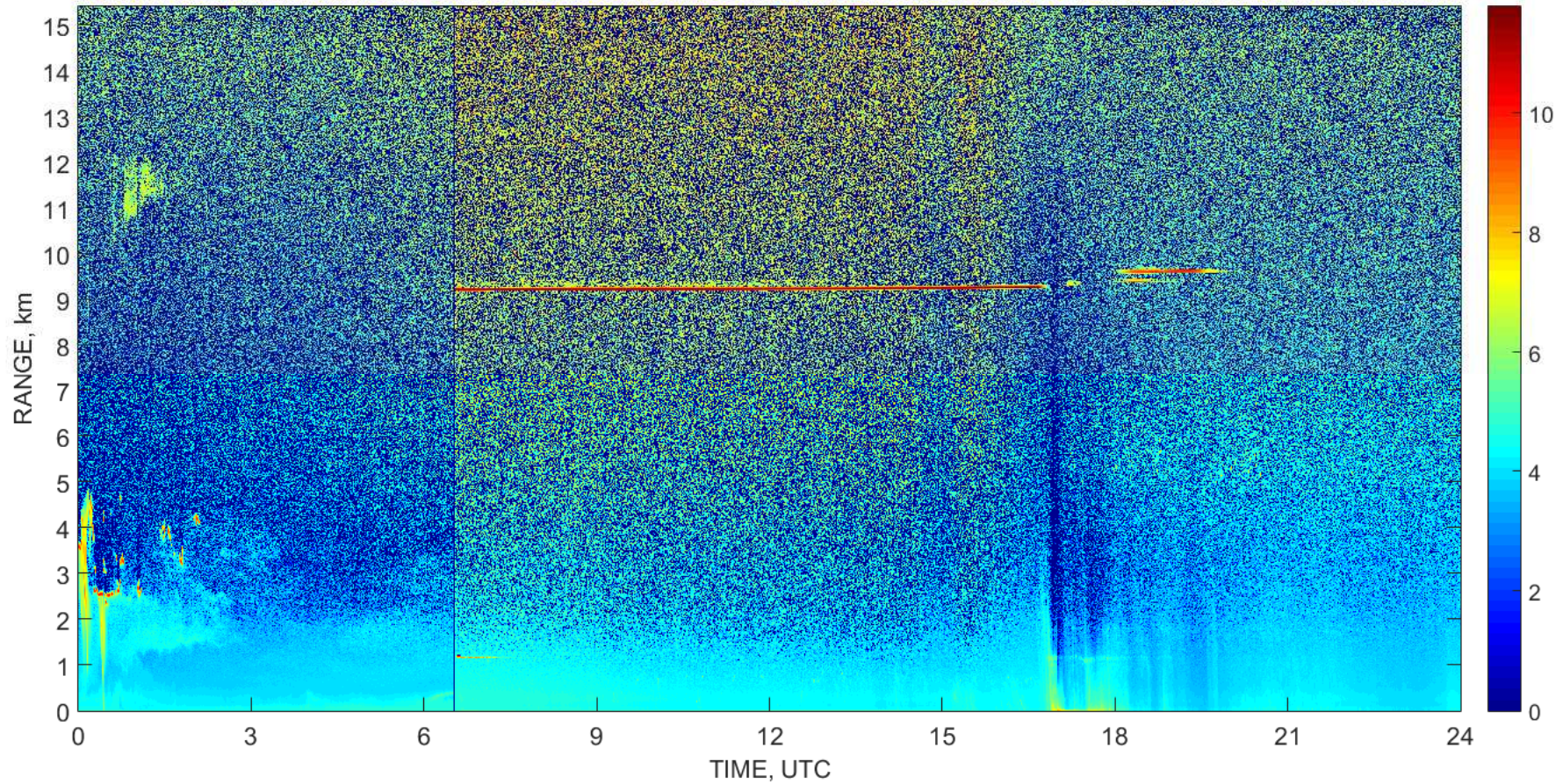


SOME EXAMPLES

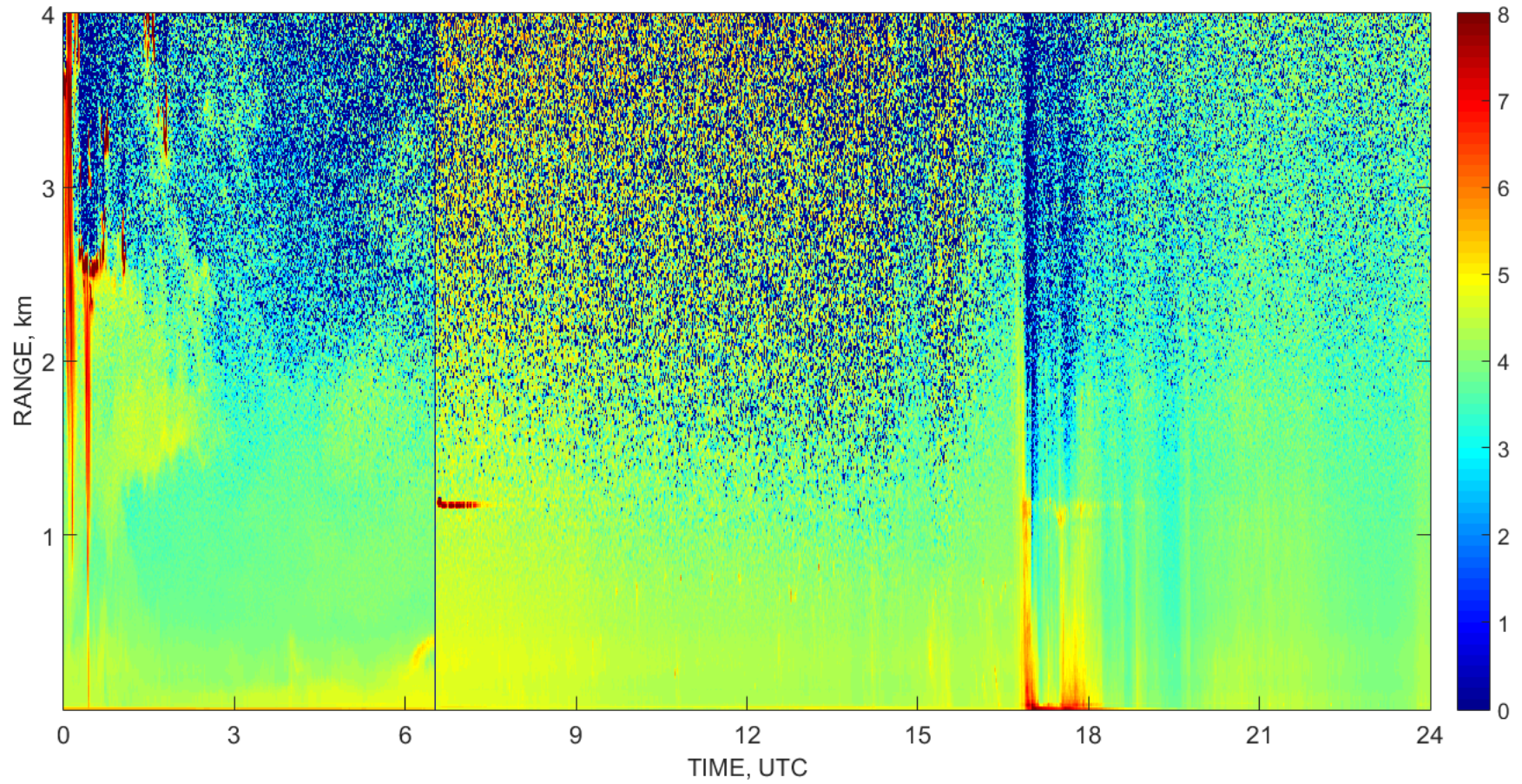


SOME EXAMPLES

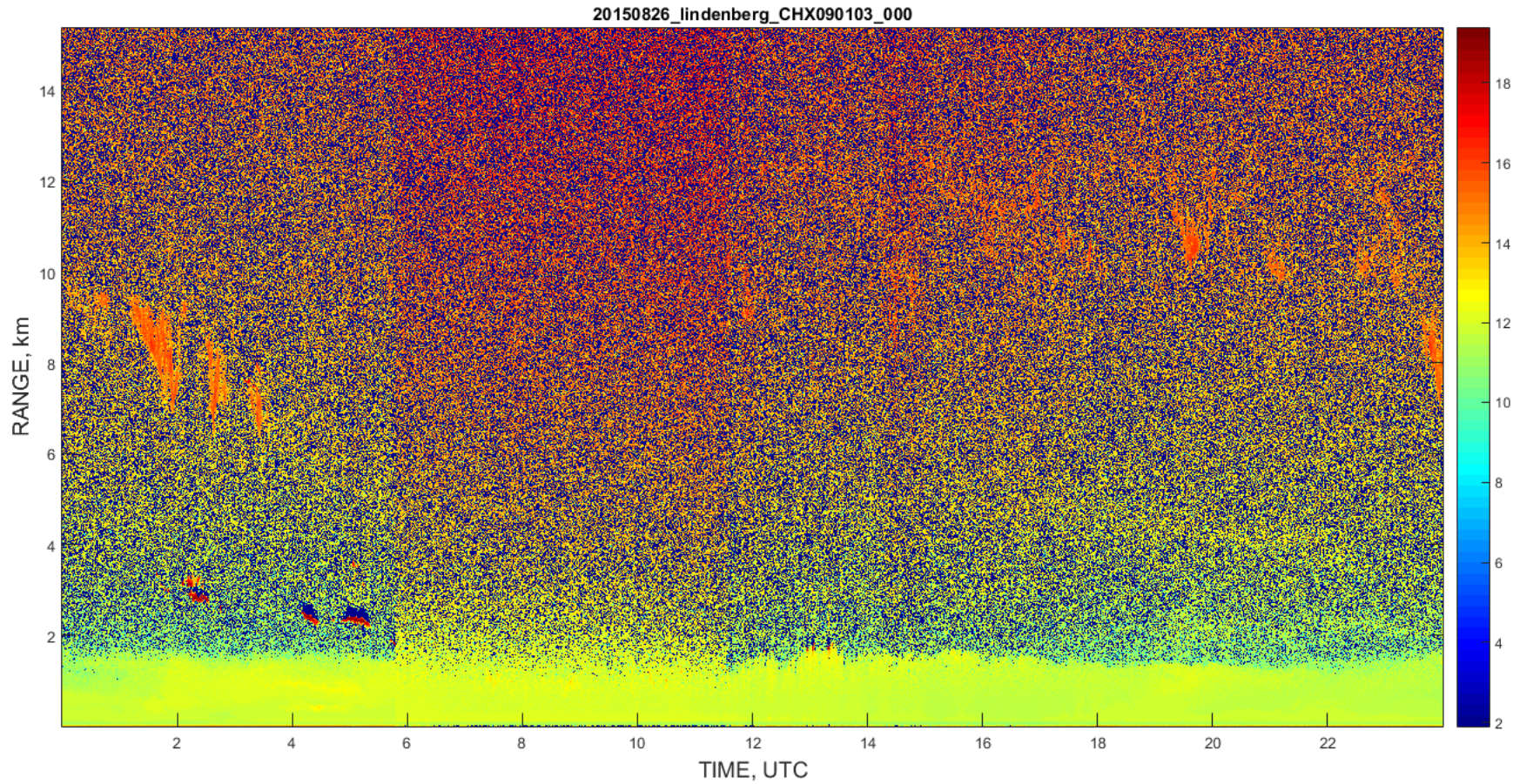
20150901_lindenberg_CL51RAO



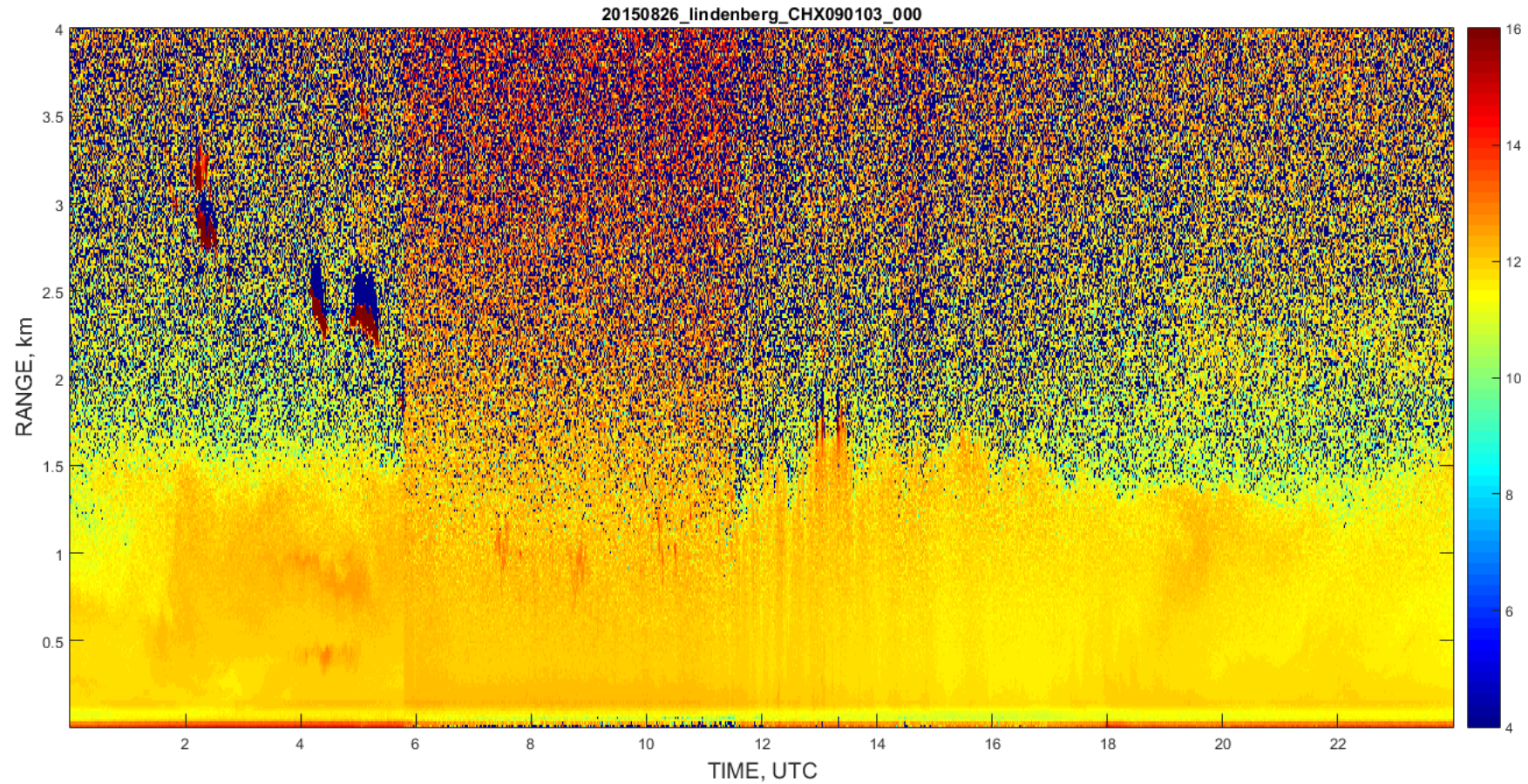
SOME EXAMPLES



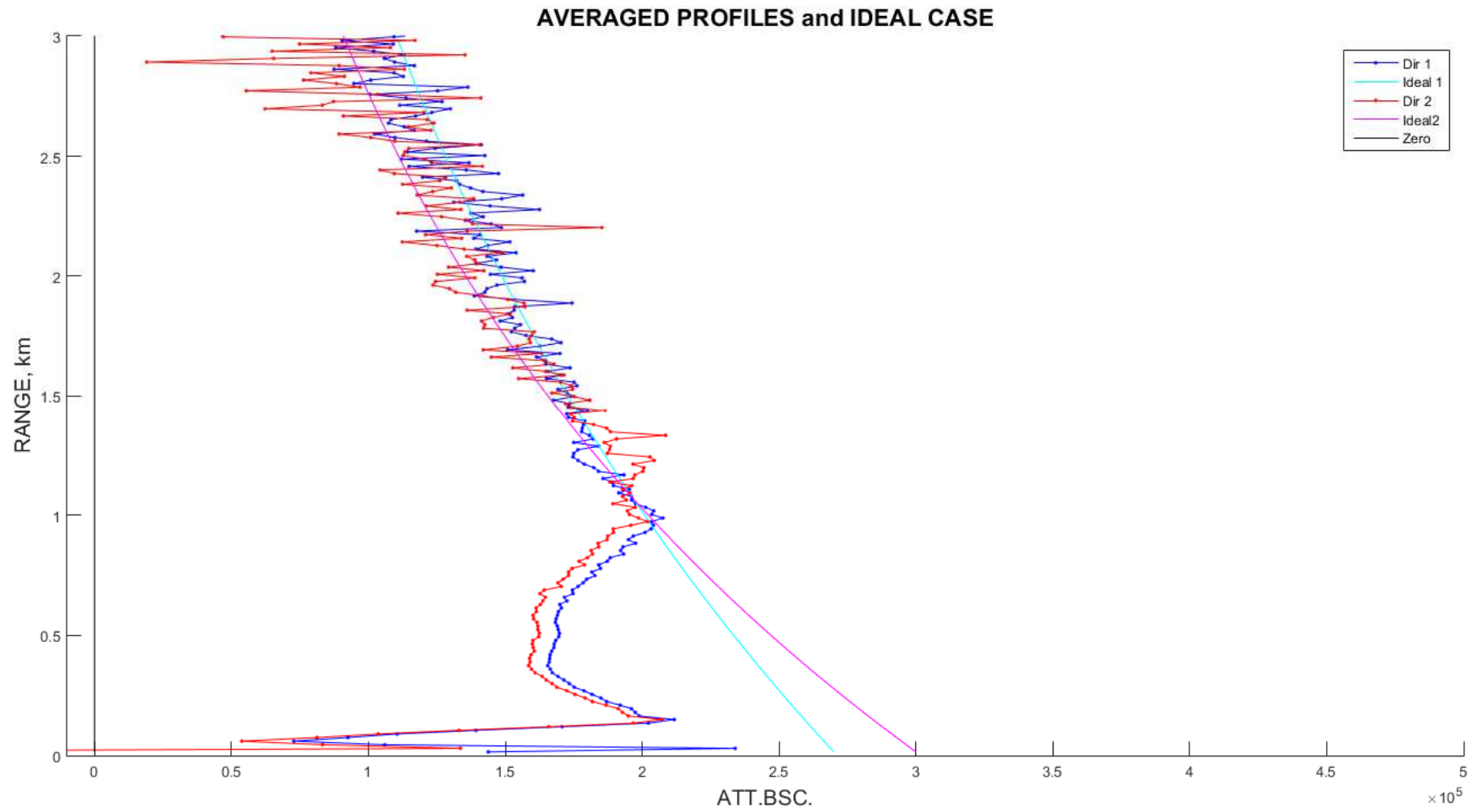
SOME EXAMPLES



SOME EXAMPLES



SOME EXAMPLES



CONCLUSIONS



Currently it is unclear whether the horizontal measurements at Lindenberg could be used for deriving the overlap function

Tendency:

- * for the most interesting part (0-500m)
=> measurements cannot be used
- * 500-1500m
=> measurements could be used