

Comparison of Liquid Water Path from AMSU (NN) and AVHRR (KLAROS)

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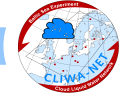
Kiel



WP 3200: Description of work

- LWP algorithm for AMSU ✓
- LWP retrieval over sea from AMSU data ✓
- LWP retrieval over sea and land from AVHRR data ✓
- Synergetic algorithm for AVHRR and ground based observations over land
- Synergetic algorithm for AVHRR and AMSU over sea areas
- Combining results over sea and land to get LWP fields for the Baltic modelling area and the Netherlands
- Retrieval of an optimized algorithm from combined ground based and satellite measurements during BBC and reprocessing EOP1+2.

KLAROS Data on the web



- CNN 2 : Overpasses near noon

- NOAA-14:

- April North: ok South: missing

- May North: missing South: missing

- NOAA-16:

- April North: ok South: ok

- May North: ok South: ok

- BBC : Overpasses near noon

- NOAA-14 partly

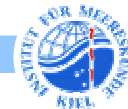
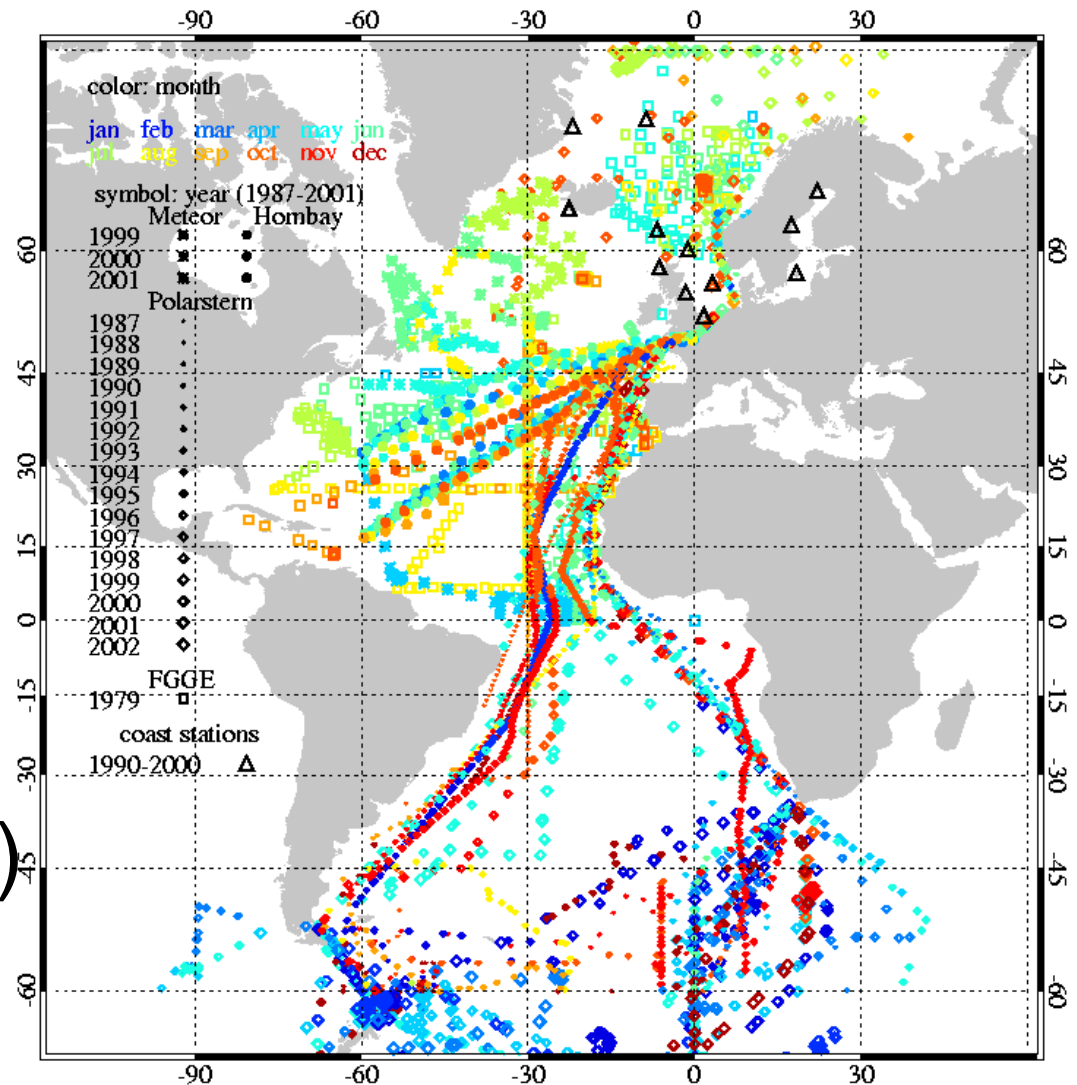
- NOAA-16 ok



Radiosonde dataset



- Radiosonde ascents
- Input data
 - Pressure < 300 hPa
 - 5 hPa level
 - Synop - data
 - Offshore winds
- $N = 7388$ ($< 500\text{g/m}^2$)

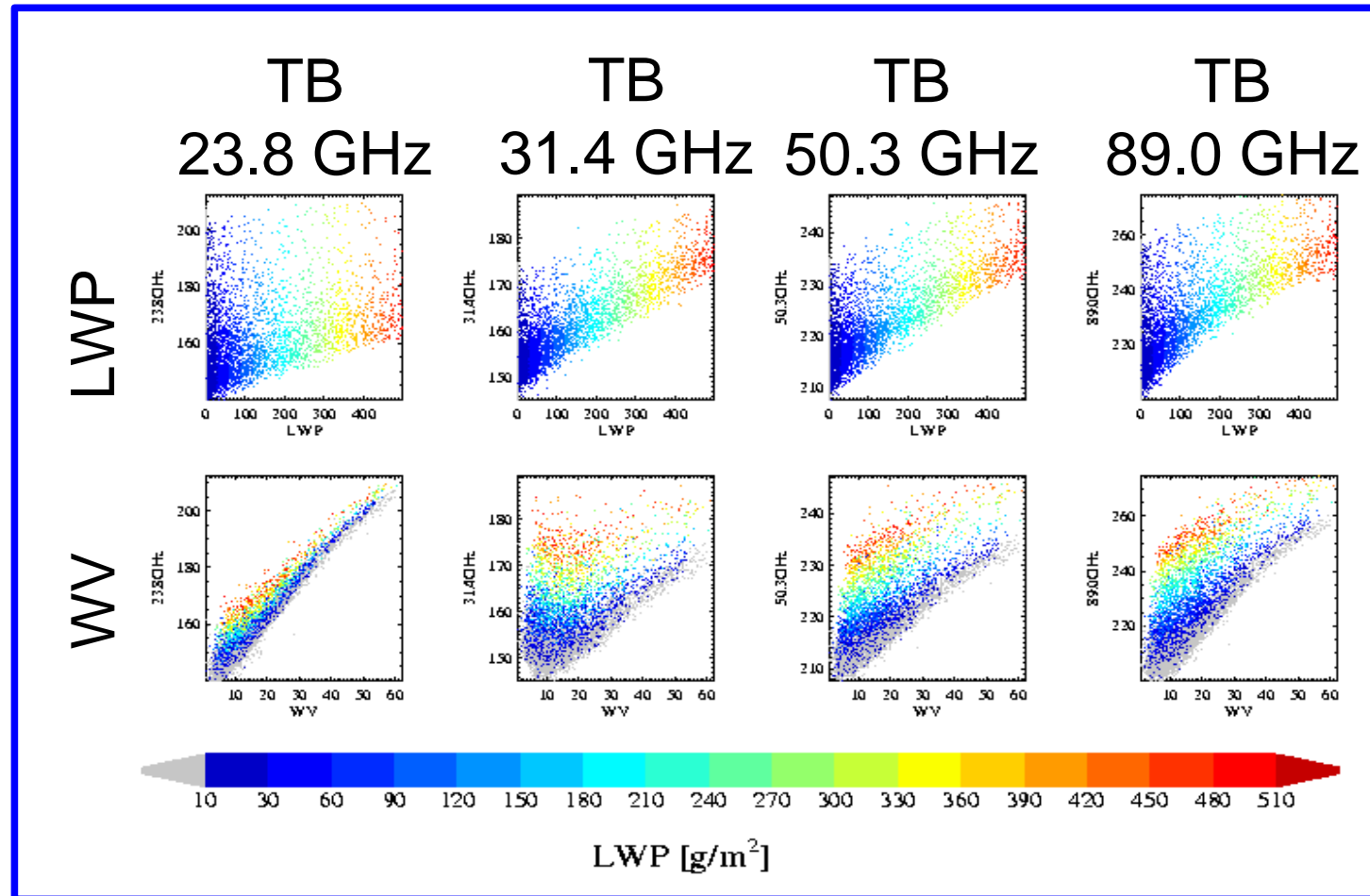
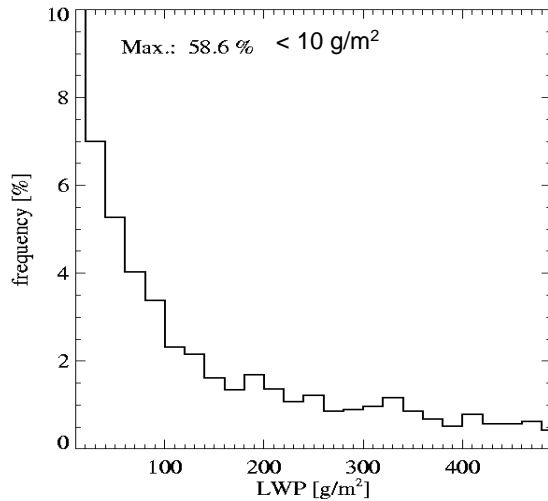


NN Training Data



Ships plus coastal stations

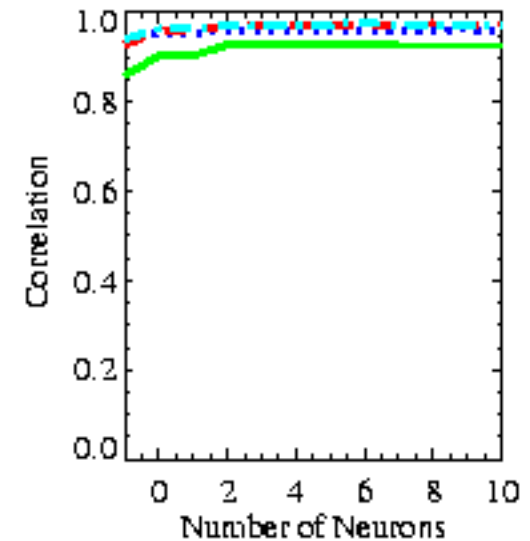
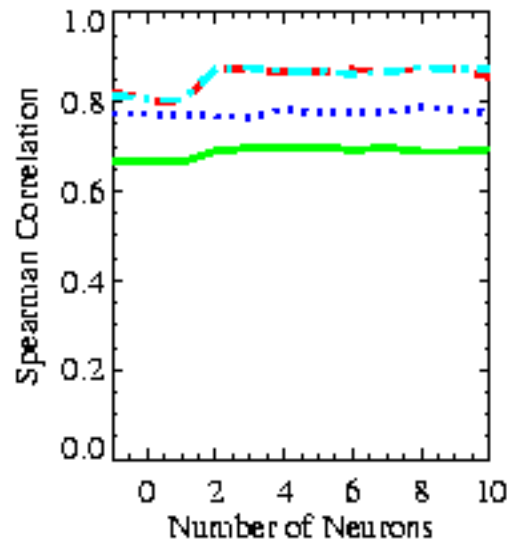
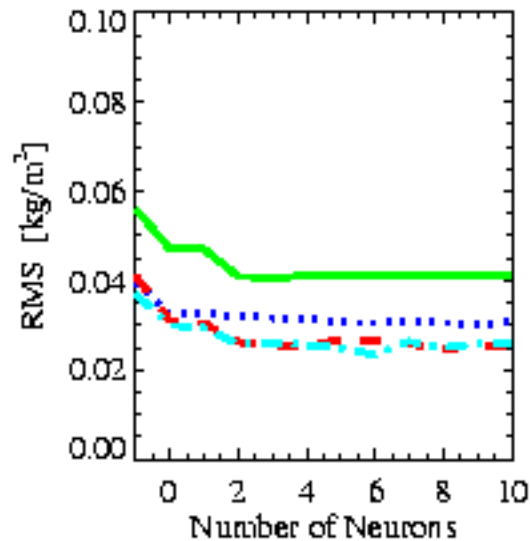
N=7388



Neural Network



Ships + Coast N=7388



23.8 GHz & 31.4 GHz

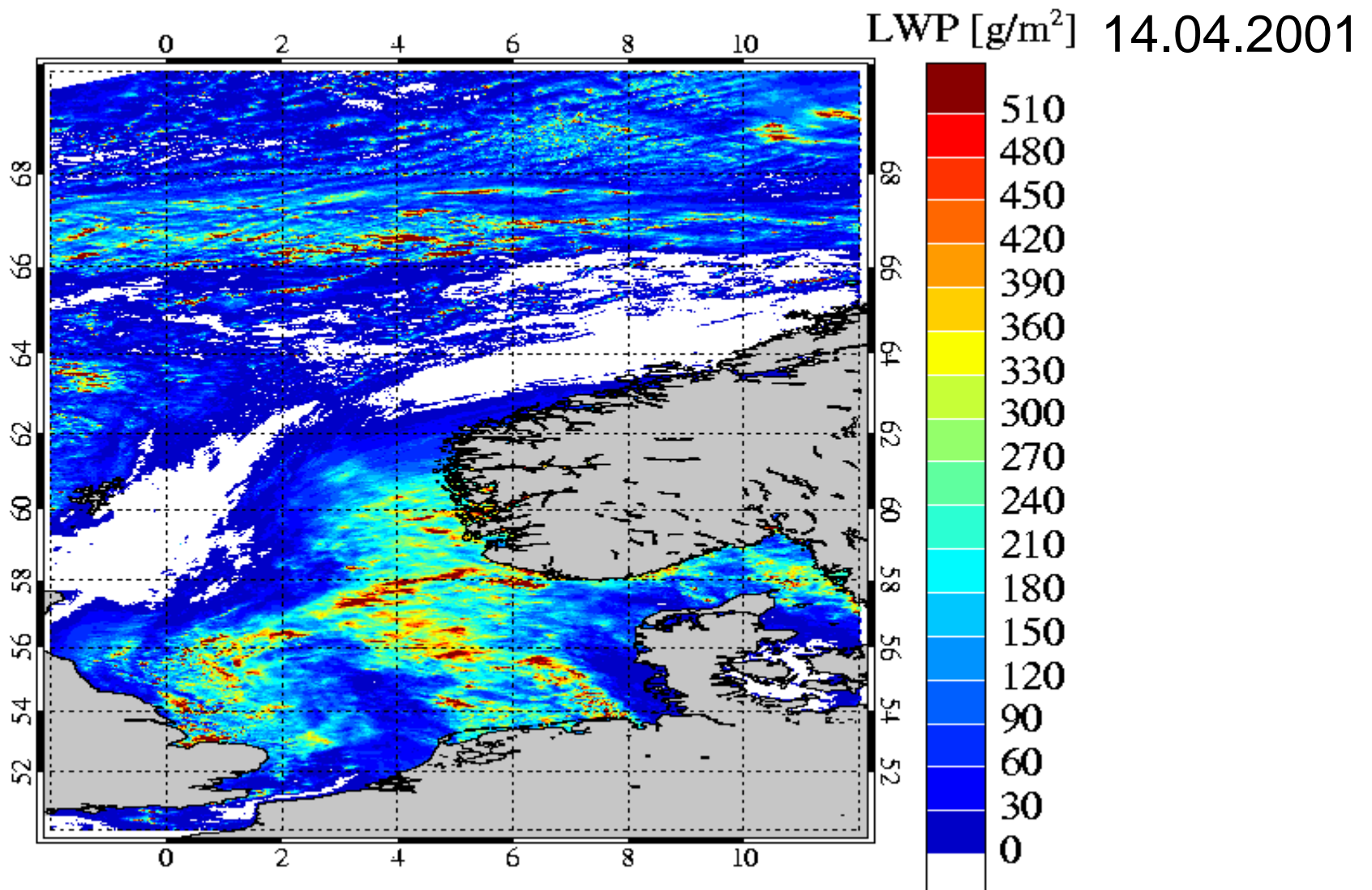
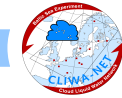
23.8 GHz & 31.4 GHz & 50.3 GHz

23.8 GHz & 31.4 GHz & 89.0 GHz

23.8 GHz & 31.4 GHz & 50.3 GHz & 89.0 GHz



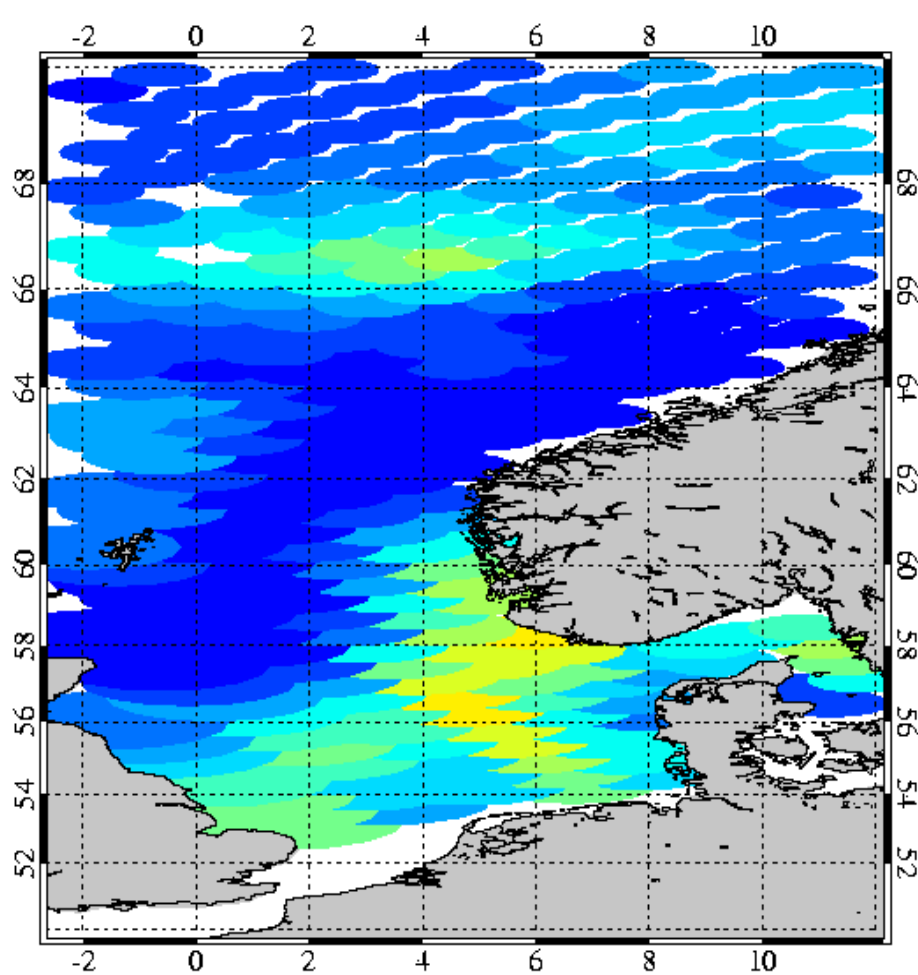
KLAROS LWP



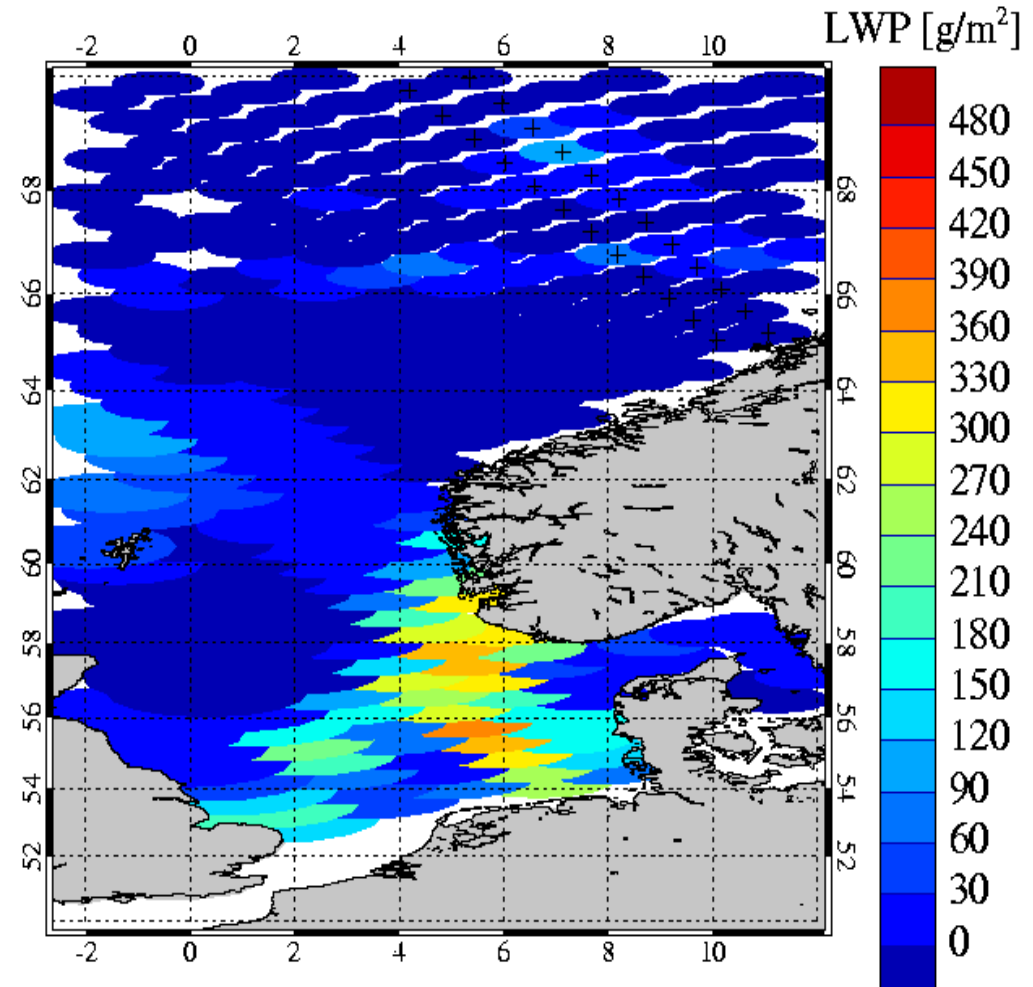
AVHRR - AMSU



14.04.2001



AVHRR



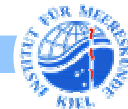
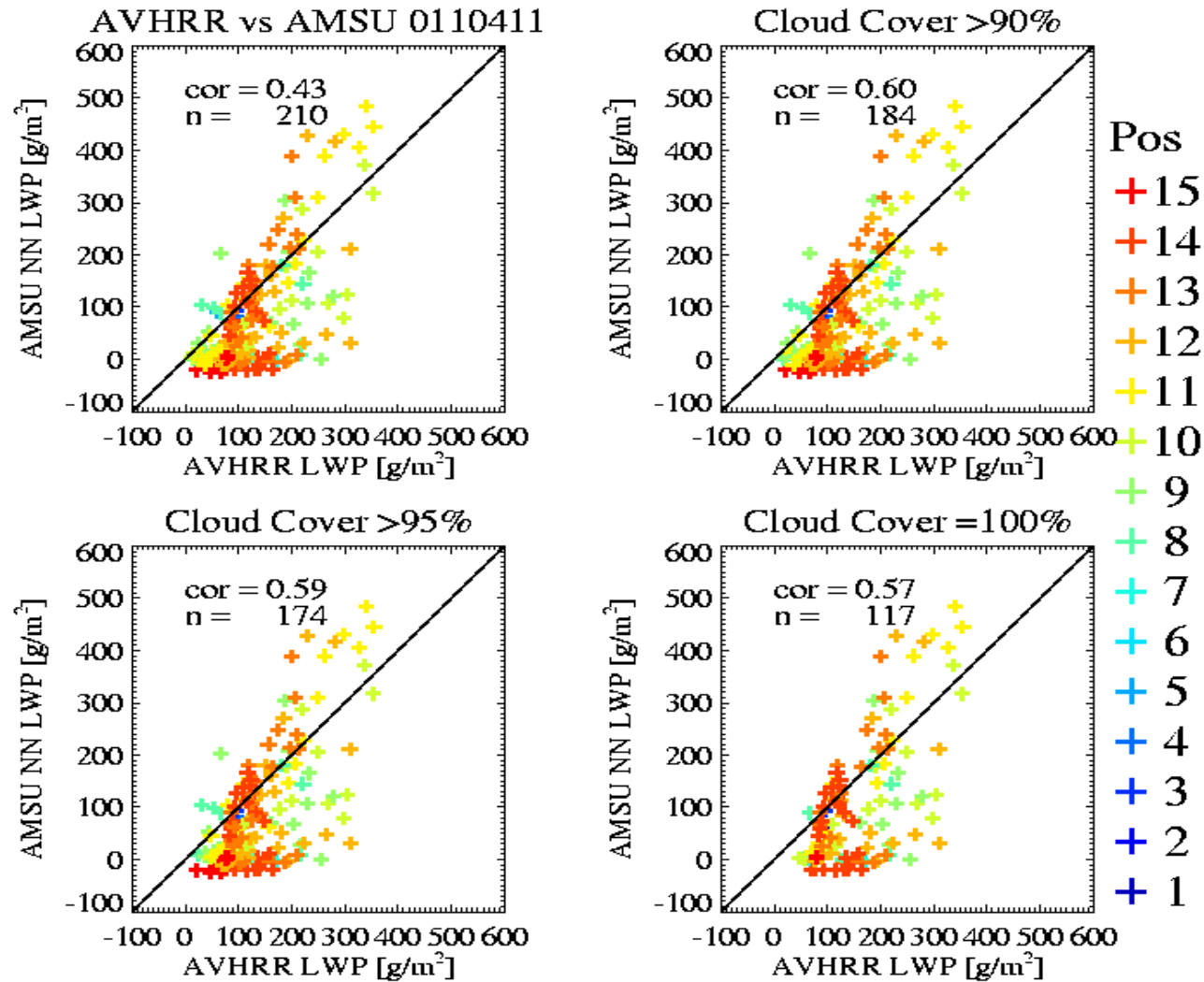
AMSU

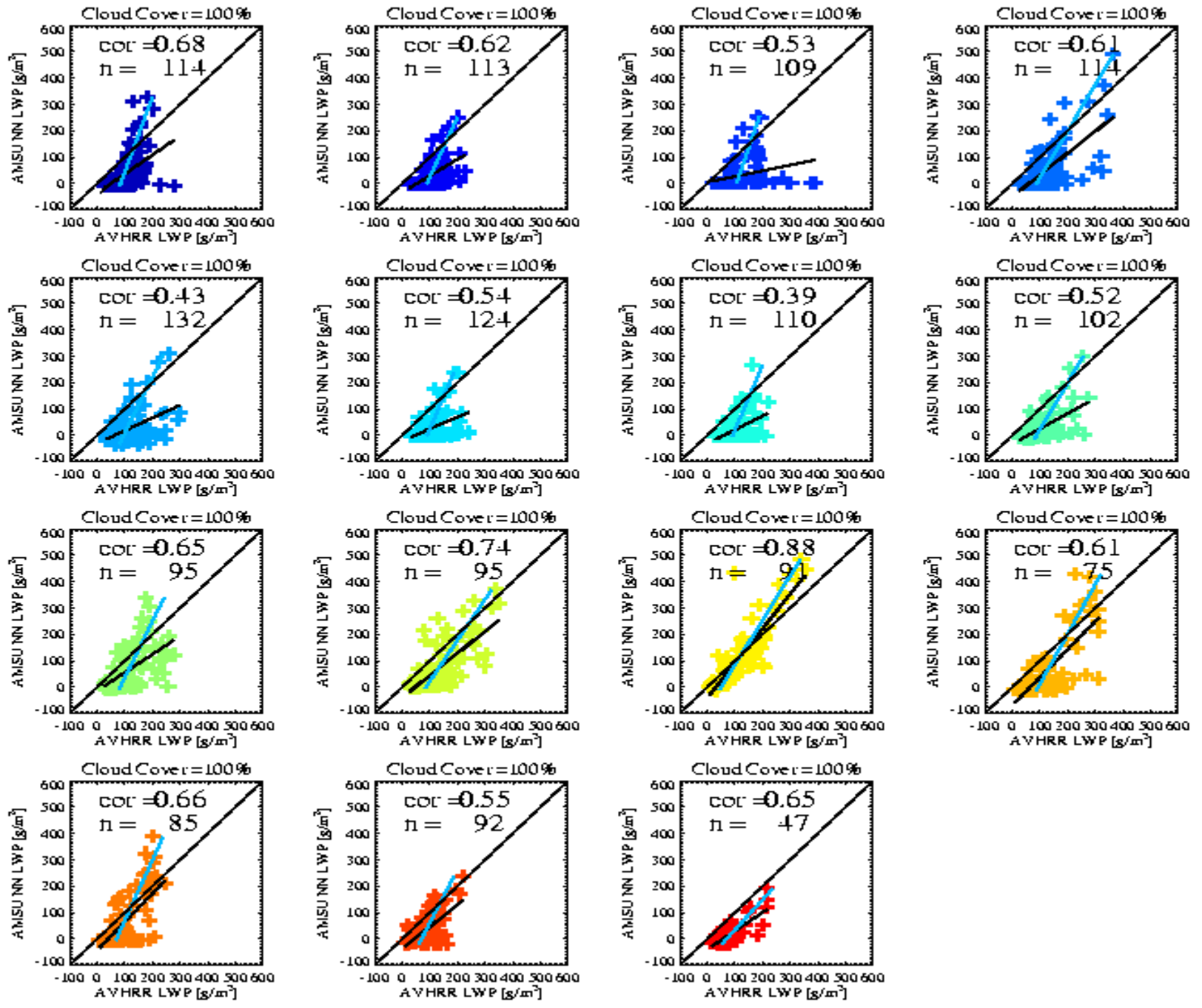


Neural Network

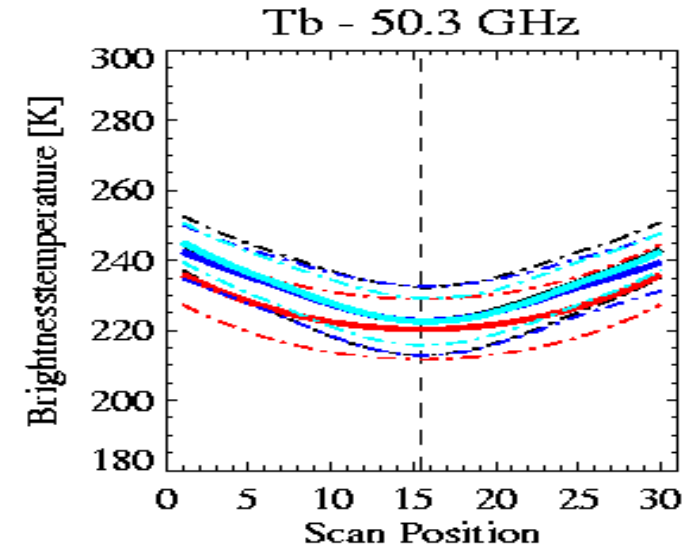
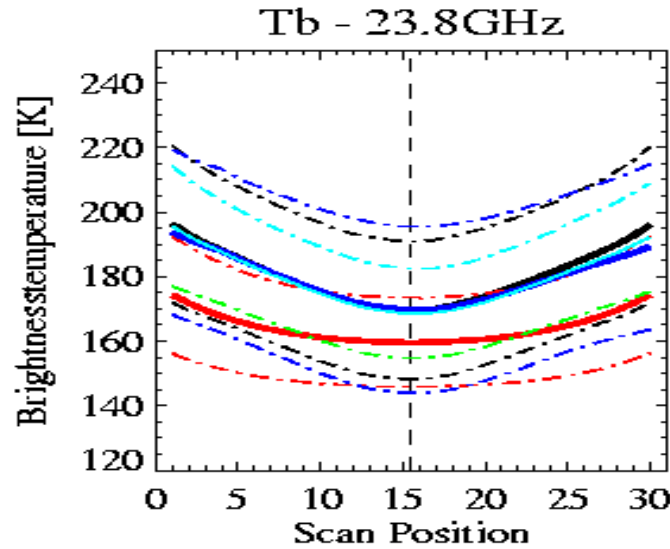
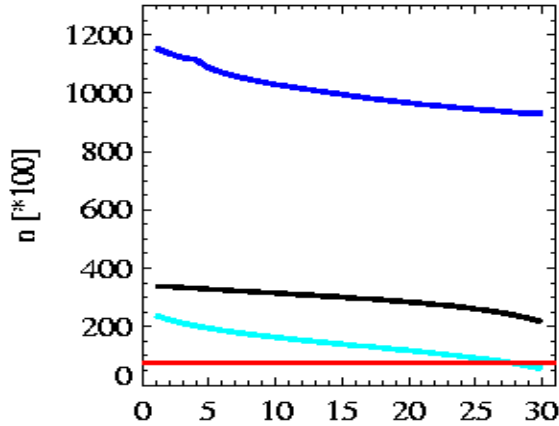


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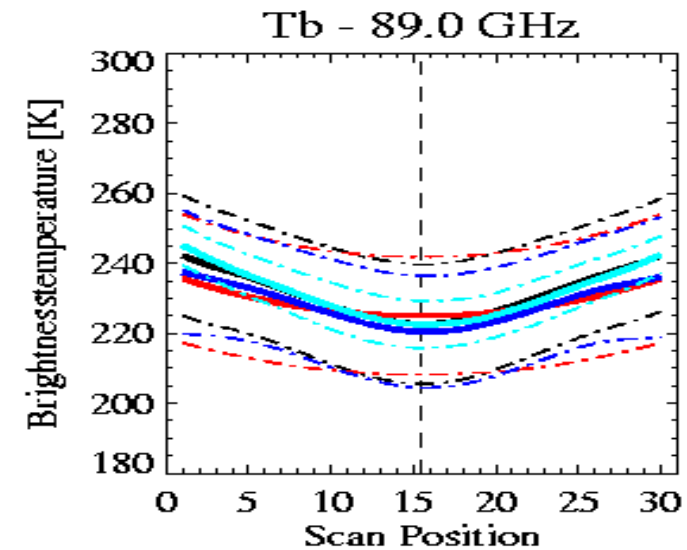
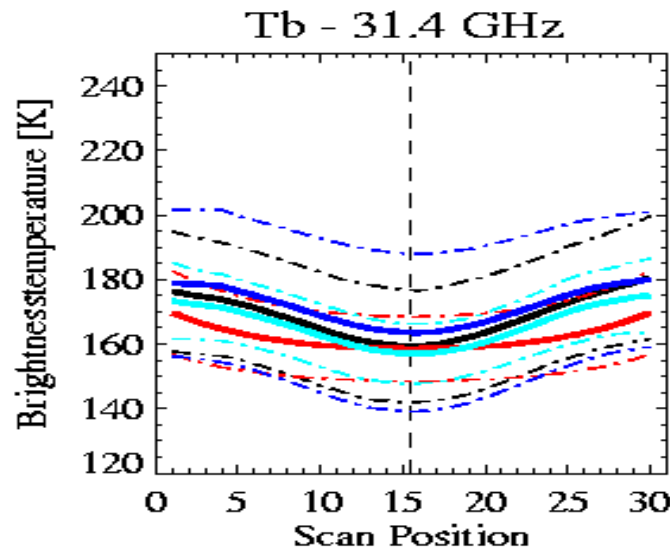




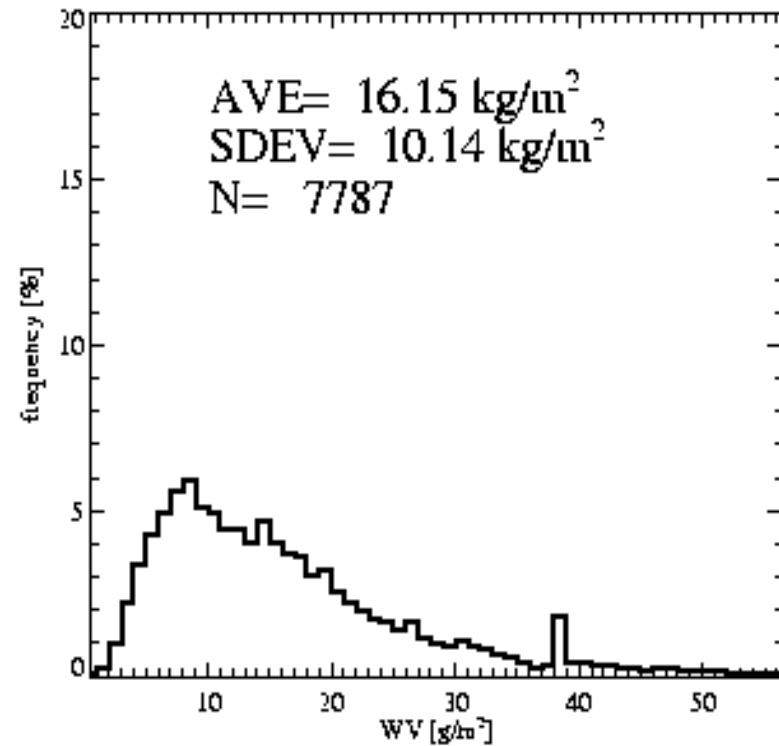
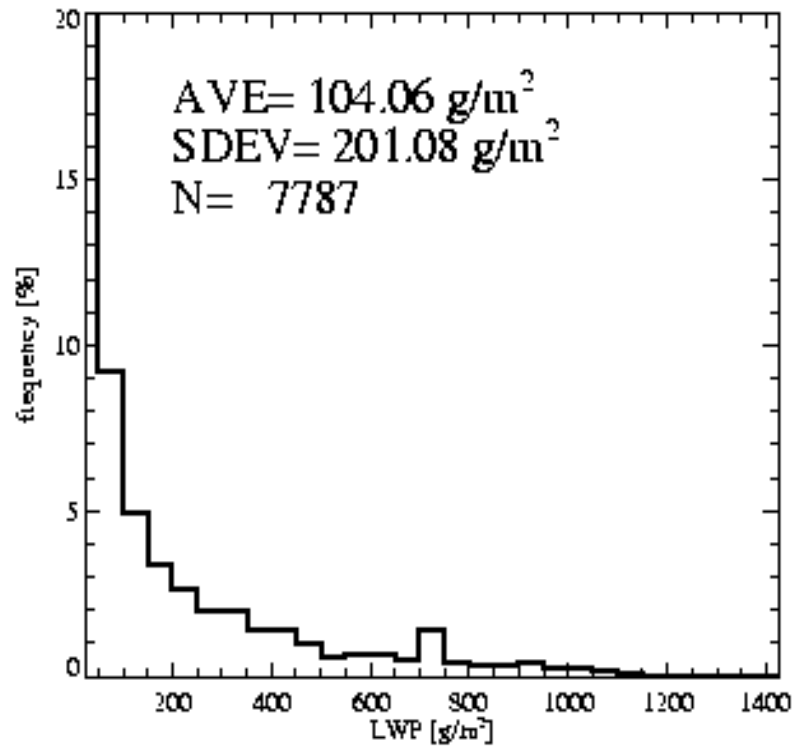
Temperature vs Viewing Angle



-  Red: RS- data
-  Blue: 70S - 70N
-  Light blue: N. Atlantic
-  Black: 20N- 70N, 20W-20E



MWMOD distribution



Conclusion



- Cloud fields can be reproduced by NN-retrieval
 - Overestimation for high LWP ($> 300 \text{ g/m}^2$)
 - Underestimation for low LWP ($< 200 \text{ g/m}^2$)
- Sub-FOV variability complicates the LWP retrieval
- Validation of LWP derived from AVHRR by the use of AMSU retrievals does not work

