



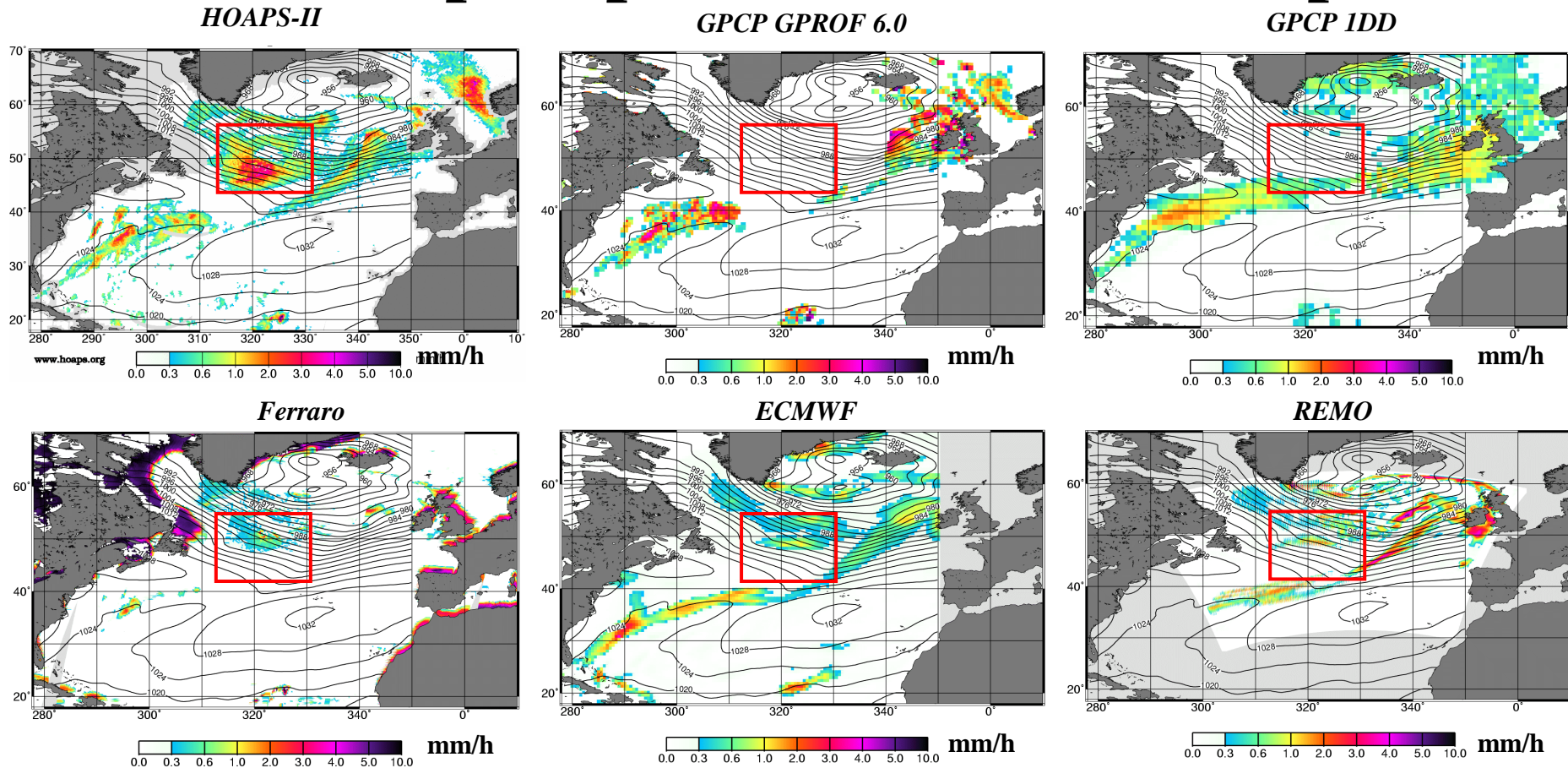
Water Budget of North Atlantic Cyclones

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North Atlantic precipitation case intercomparison



- All data (except Ferraro) are similar for cold fronts, warm fronts, cyclogenesis and subtropical shower systems.
- Only HOAPS detects intense rainfall west to the cold front of a mature cyclone.



NWP model deficits?

- Rejection of VOS data from the PFL region during model initialization due to initial plausibility control.
- The convection parameterization may also play a role as soon as the proper pressure field is set up.
- Model resolution seems to be a minor aspect.



Preliminary Conclusion

- ◆ The discrepancy between area integrated HOAPS-precipitation and standard data for the whole cyclone can reach more than 50% in certain development stages and up to 25% throughout the whole life cycle of a North Atlantic cyclone.



The aim of a HALO mission would be to provide

- ◆ a most realistic data set of precipitation in terms of quantitative rain rate with adequate temporal and spatial resolution and coverage,
- ◆ data, relevant for the validation of satellite observations.



Proposed HALO Microwave Package (HAMP)

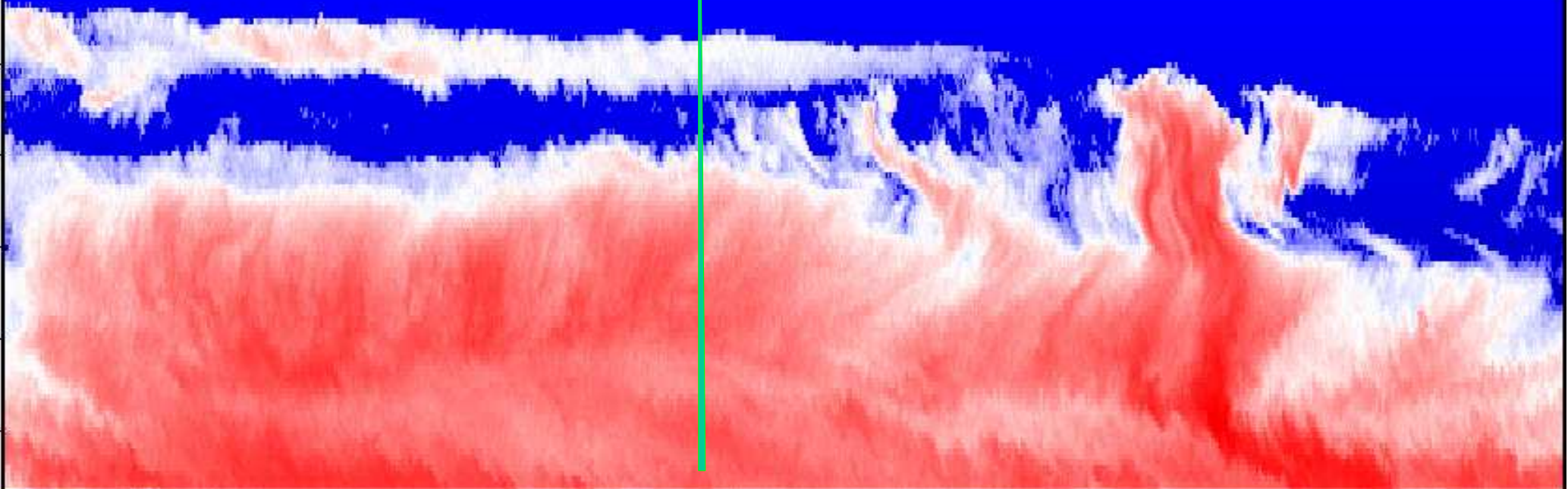


Cloud Radar MIRA 36

Range Gates.....	500
Range Resolution.....	30 m
Time Resolution.....	0.1 s
Velocity Resolution.....	5 cm/s
Detection Threshold (R=5km, $\delta t=0.1$ s).....	-40 dBZ

Multichannel Microwave Radiometer

19, 35, 85 GHz



Cloud Radar MIRA 36



First system, delivered to MPI-MET in 2001



System No. 4 to be delivered to IMK in 2005