IASI Validation Campaigns

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Contents

- Campaigns overview
- Cloud fraction and cloud top pressure validation
- Ozone total column validation
- High troposphere/low stratosphere humidity validation

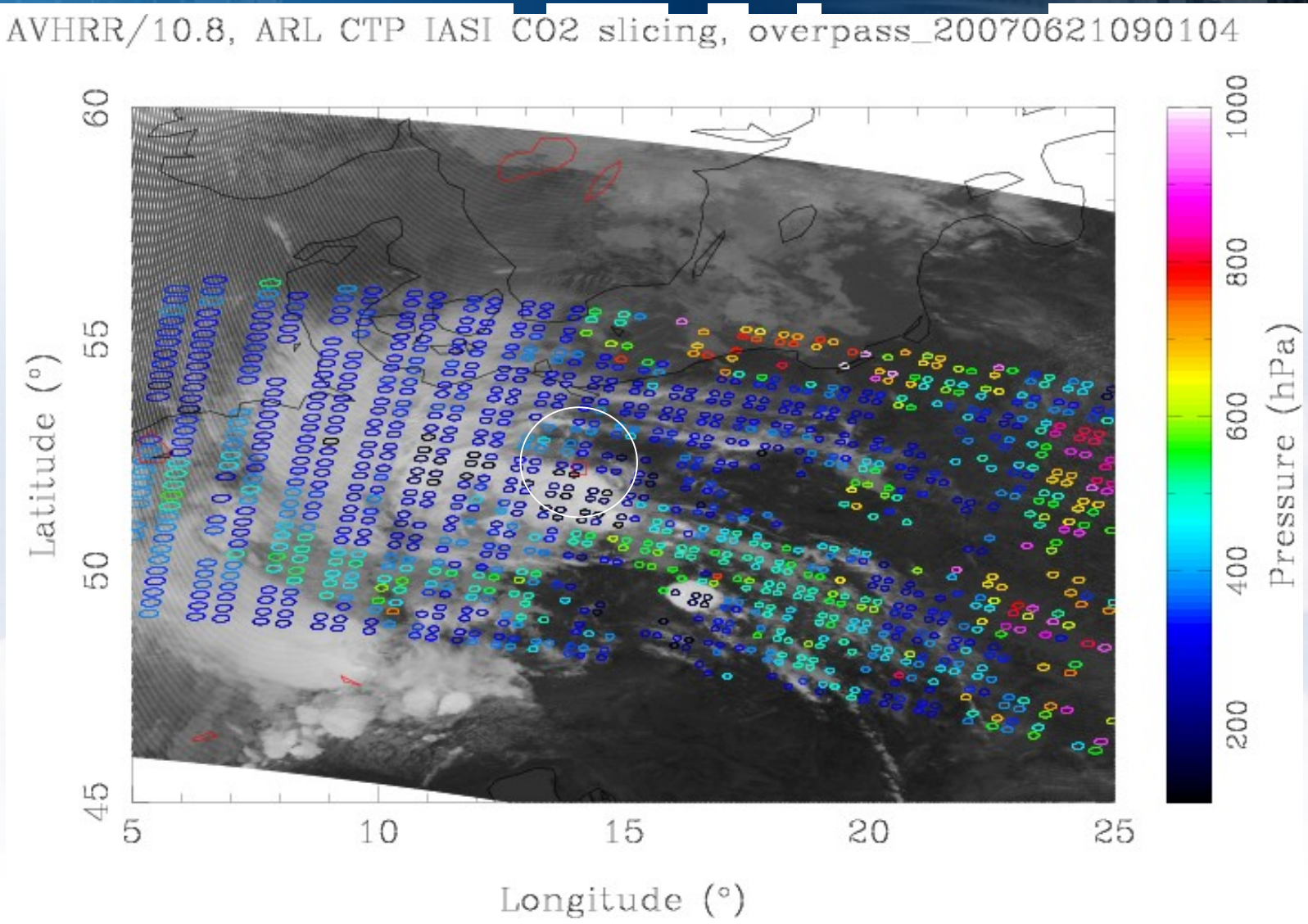
Campaigns Overview

- Running for 3 months June, July, August
- Lindenberg (Germany) and Sodankylä (Finland)
- Regular PTU sondes 1 hour and 5 min before overpass (360 per location)
- Three Ozonesondes per week (40 per location)
- Cryogenic Frost Point Hygrometer Sondes (7 in Sodankylä, 0.03°C)
- Ground based remote sensing observations: cloud radar (Ka-band), microwave radiometer, brewer, observer, etc.

Cloud fraction and cloud top pressure

- Validation of the CO2 slicing algorithm in the IASI L2 PPF
- Cloud top pressure validated with cloud radar
- Cloud fraction validated with Observer and Whole Sky Imaging (WSI) camera

Cloud top pressure vs AVHRR image



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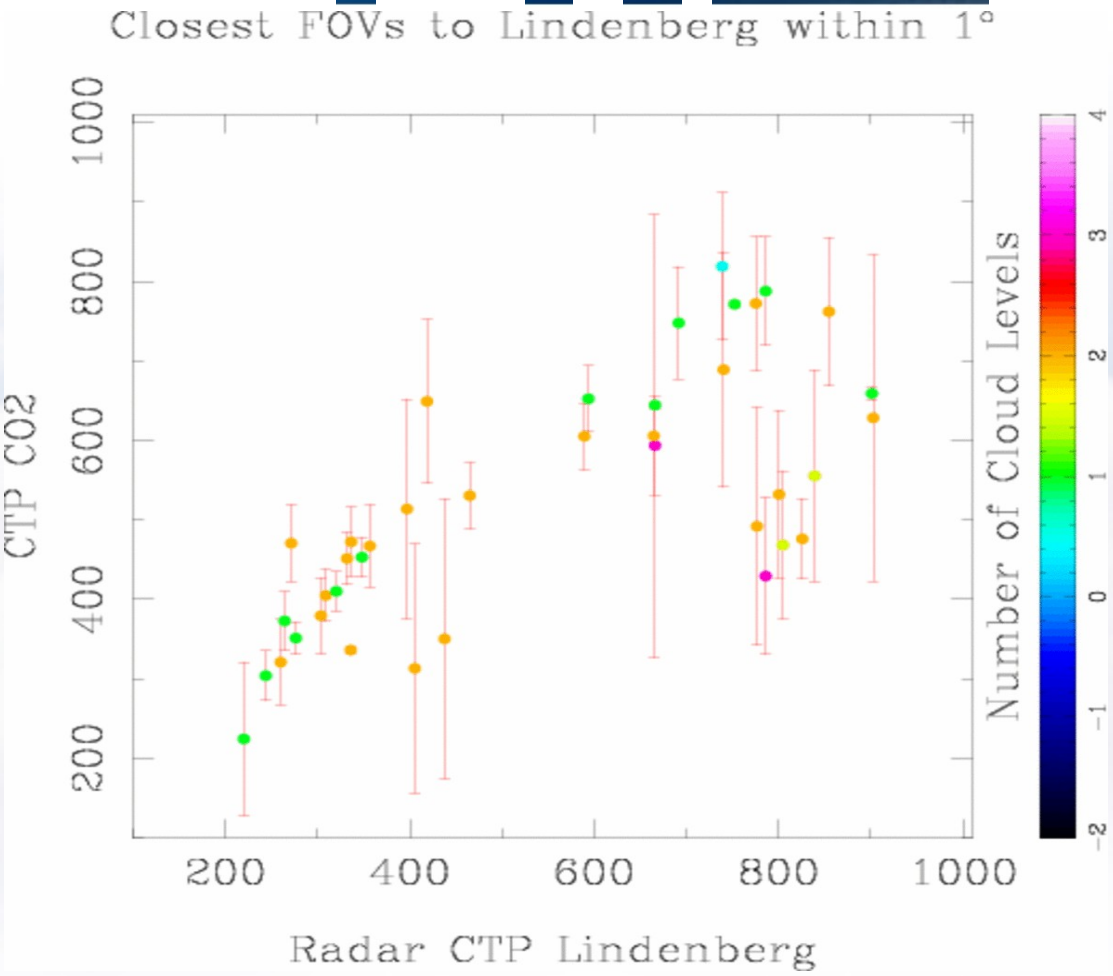
Cloud top pressure vs cloud Radar

- **All cases**



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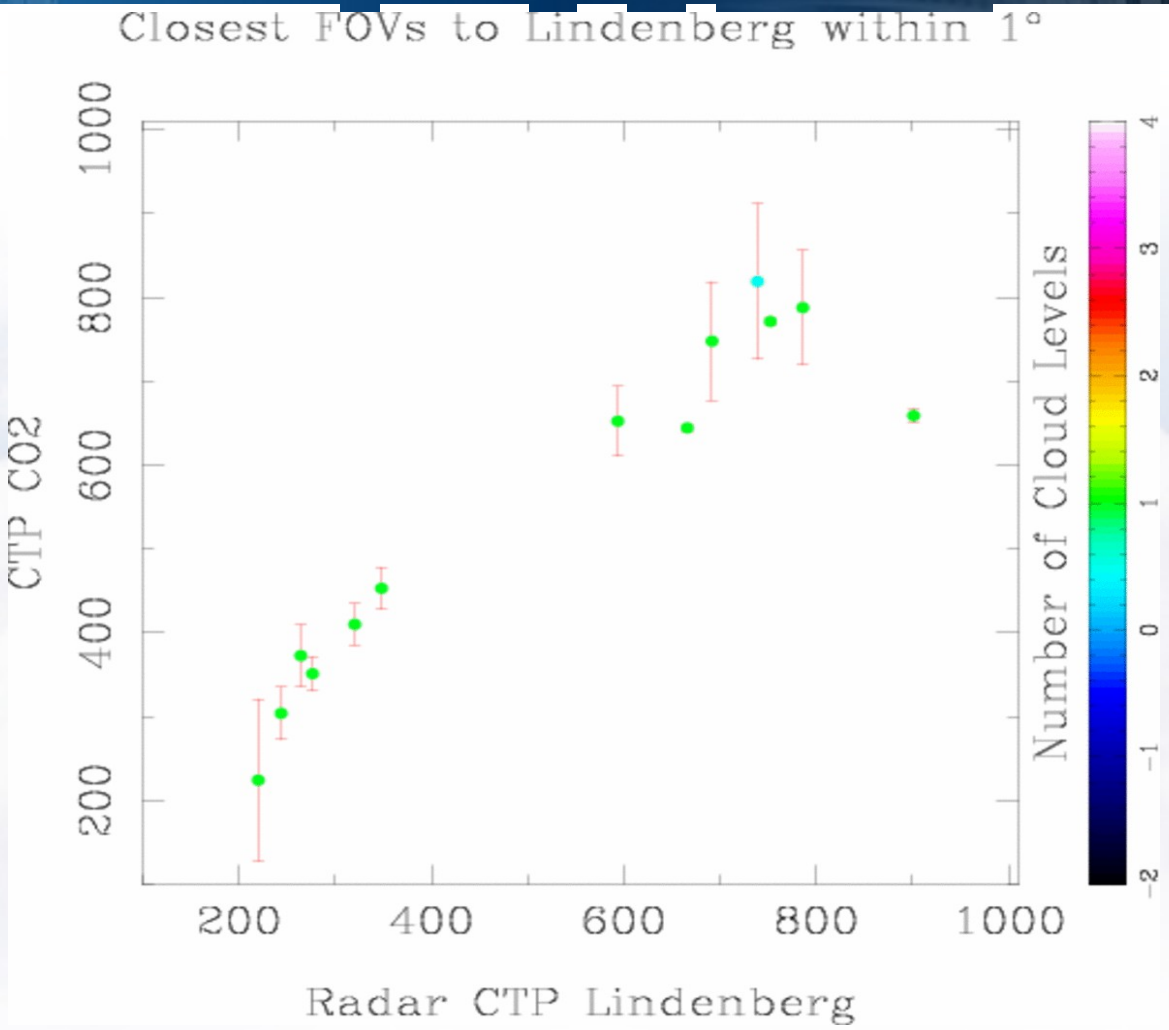
Cloud top pressure vs cloud Radar

- **Only one cloud layer**



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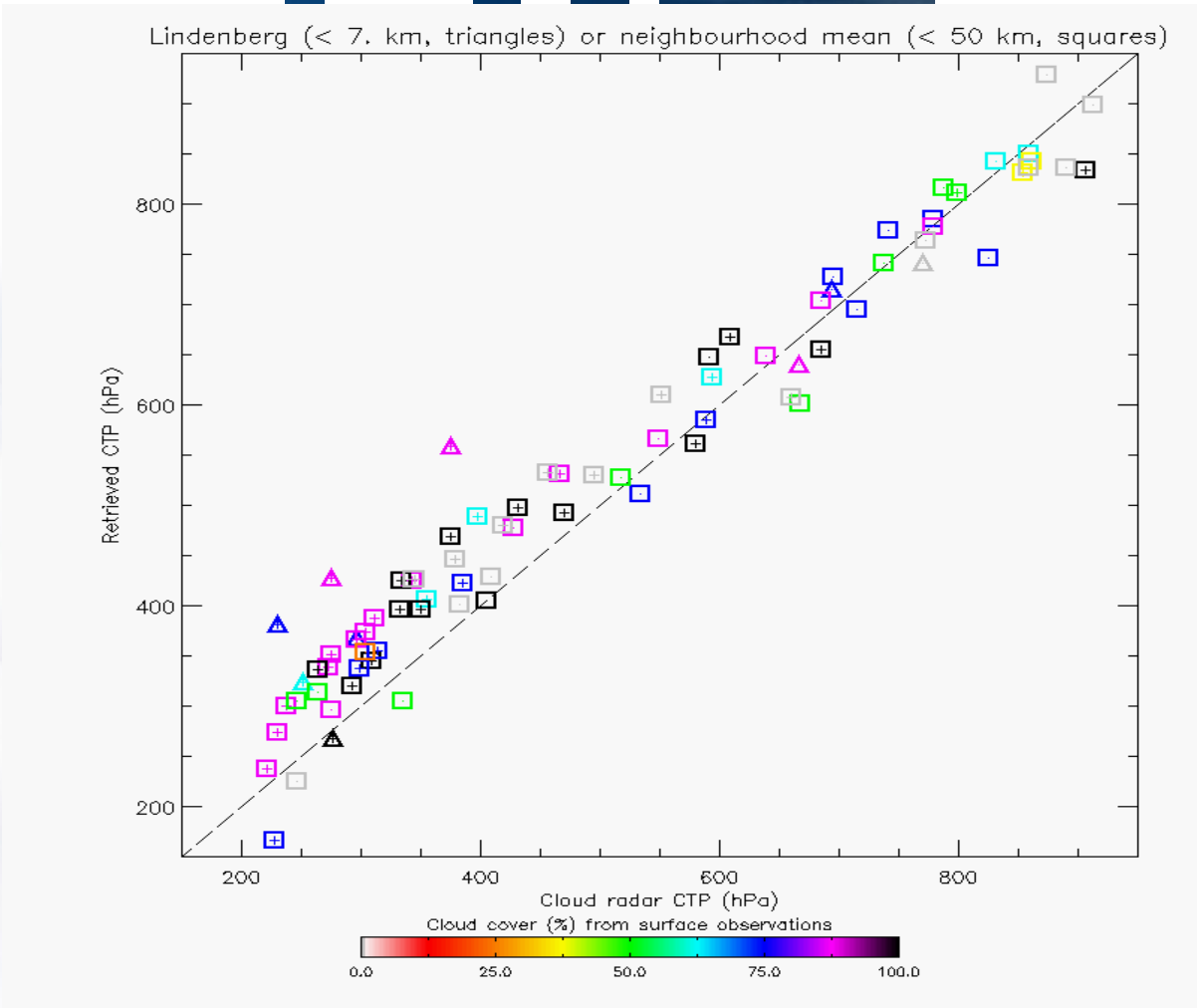
Cloud top pressure vs cloud Radar

- **Automatic selection of only one cloud layer in the vicinity (7 or 50 km)**



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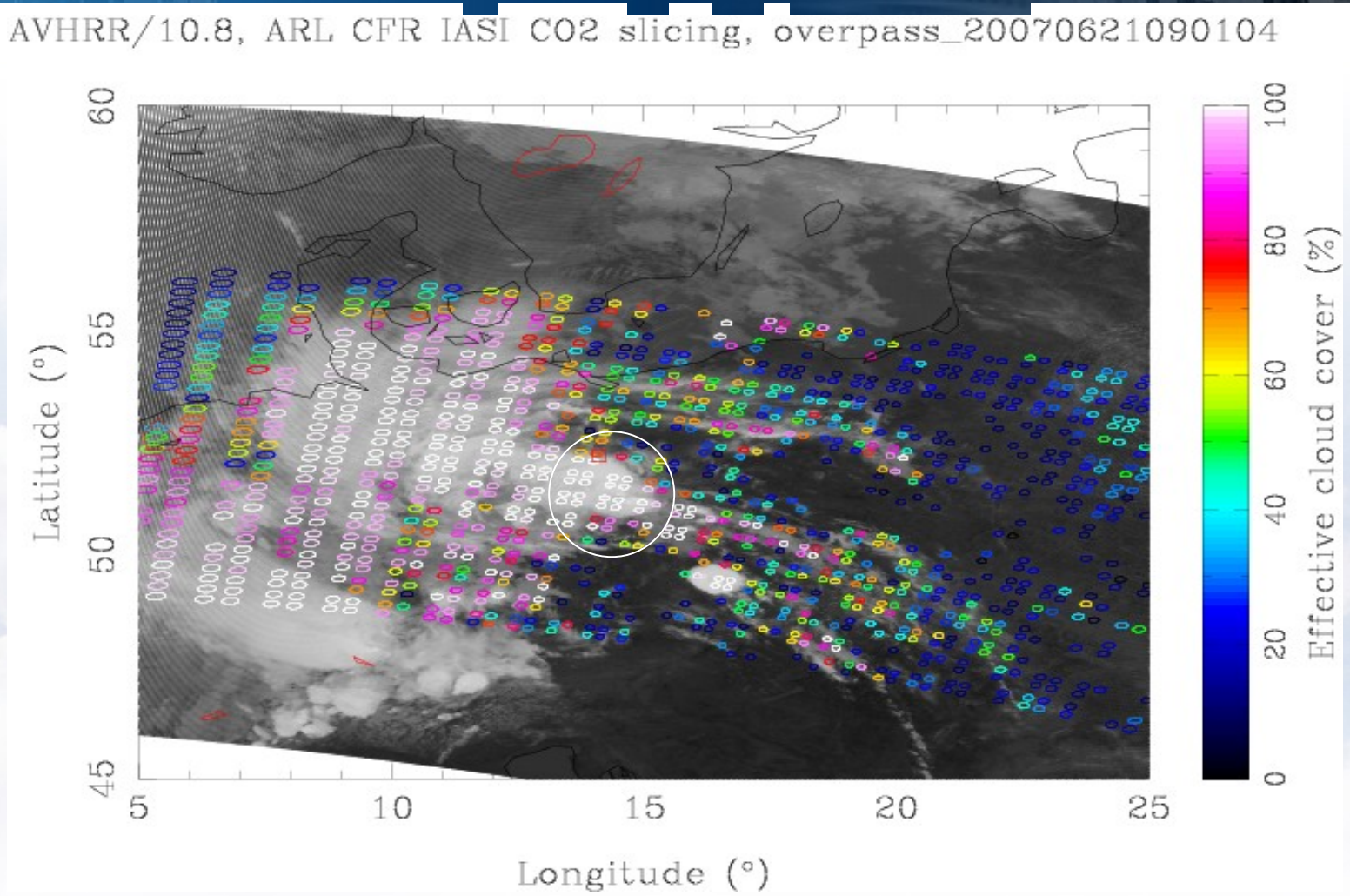
Cloud fraction vs AVHRR image



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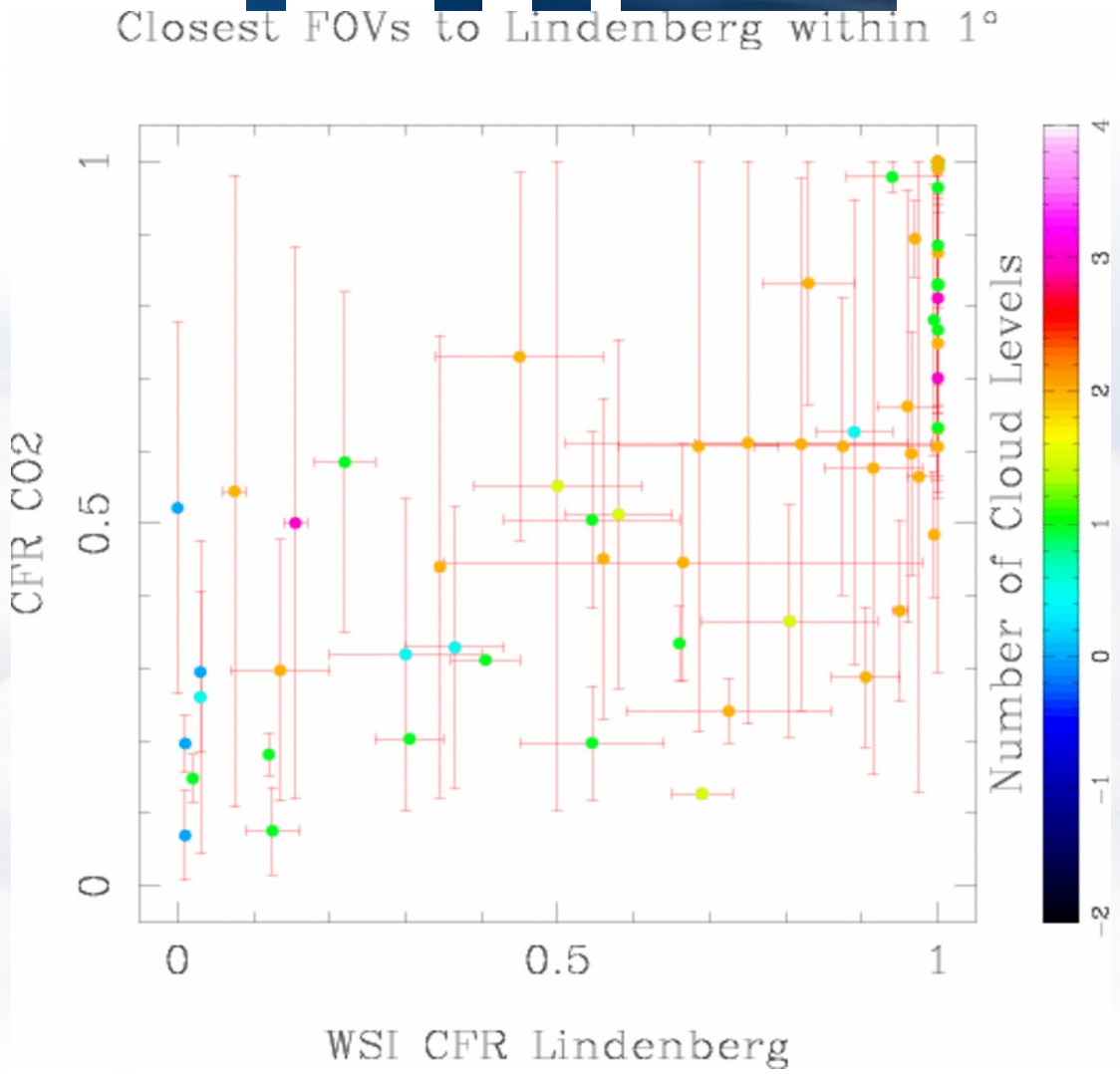
Cloud fraction vs WSI

- **All cases**



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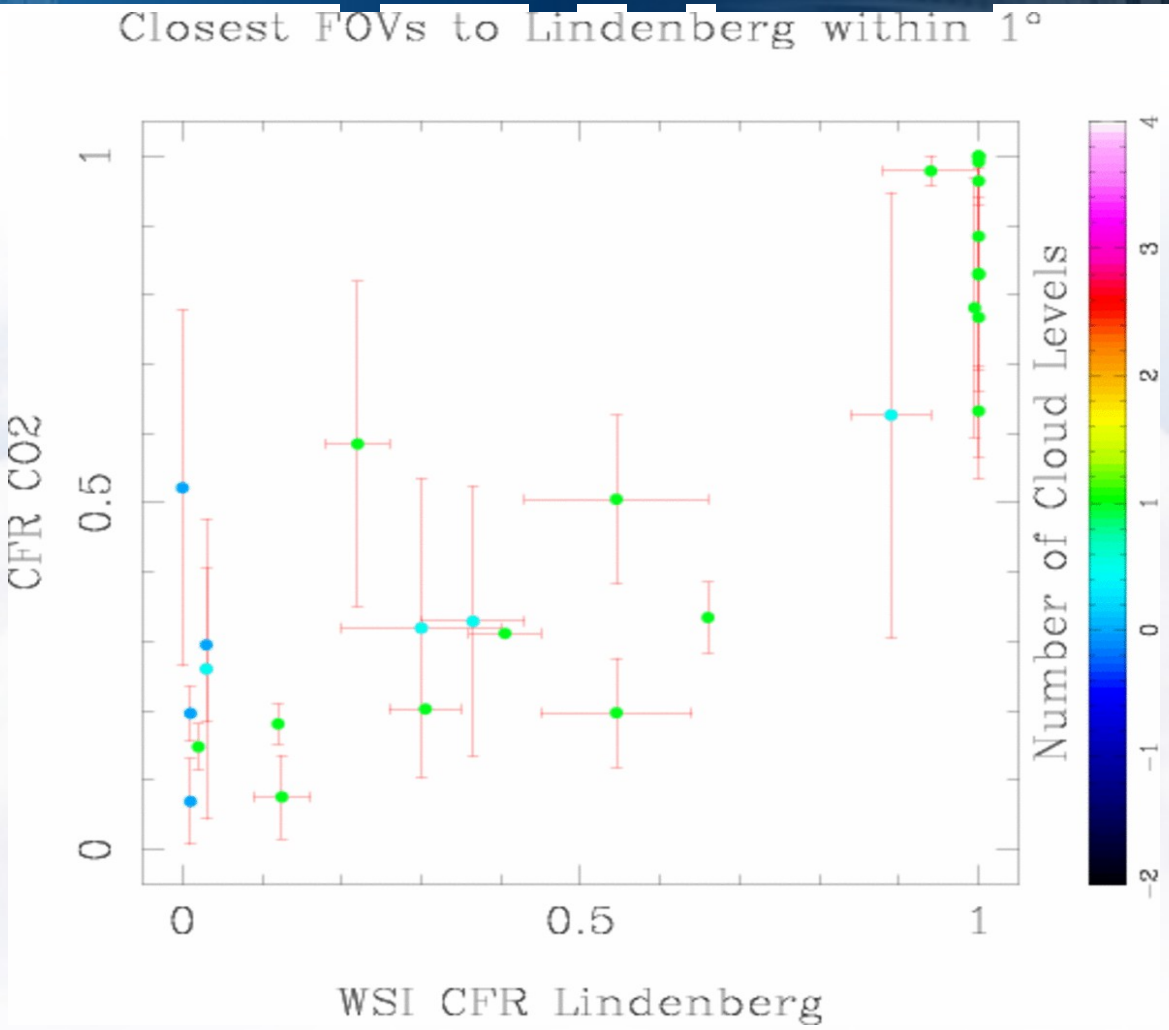
Cloud fraction vs WSI

- **Only one cloud layer**



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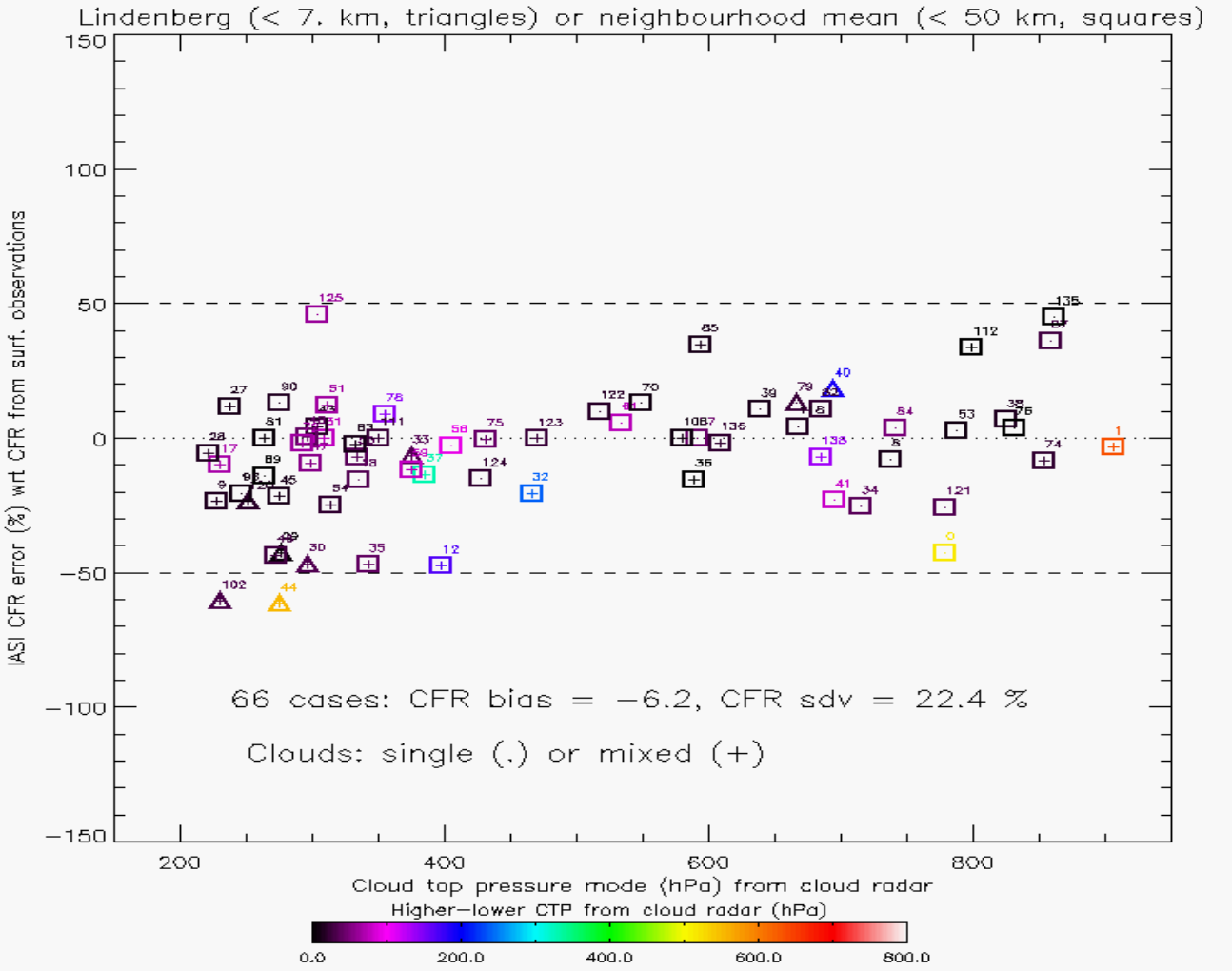
Cloud fraction vs cloud Radar

- **Automatic selection of only one cloud layer in the vicinity (7 or 50 km)**



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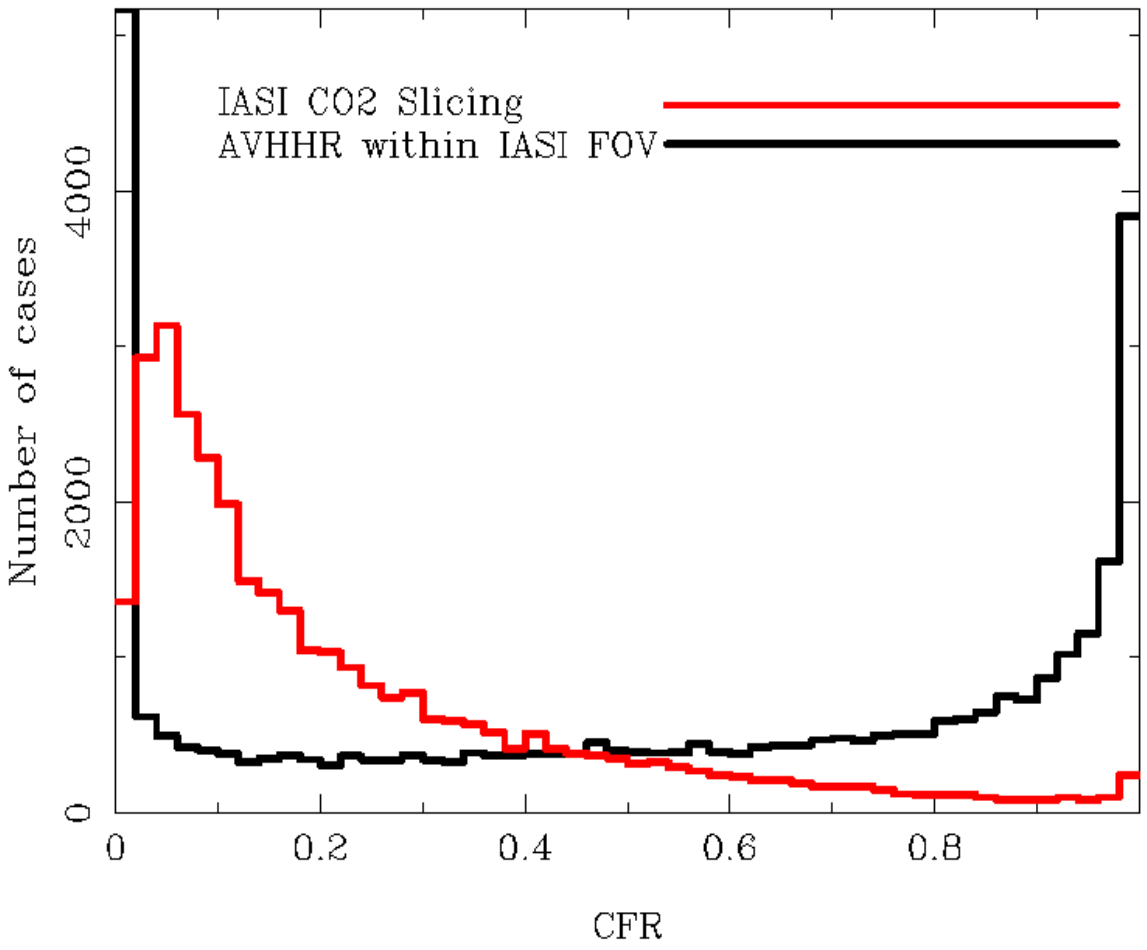
Cloud fraction vs AVHRR cloud fraction

- AVHRR cloud fraction within an IASI FOV
- Very different!!



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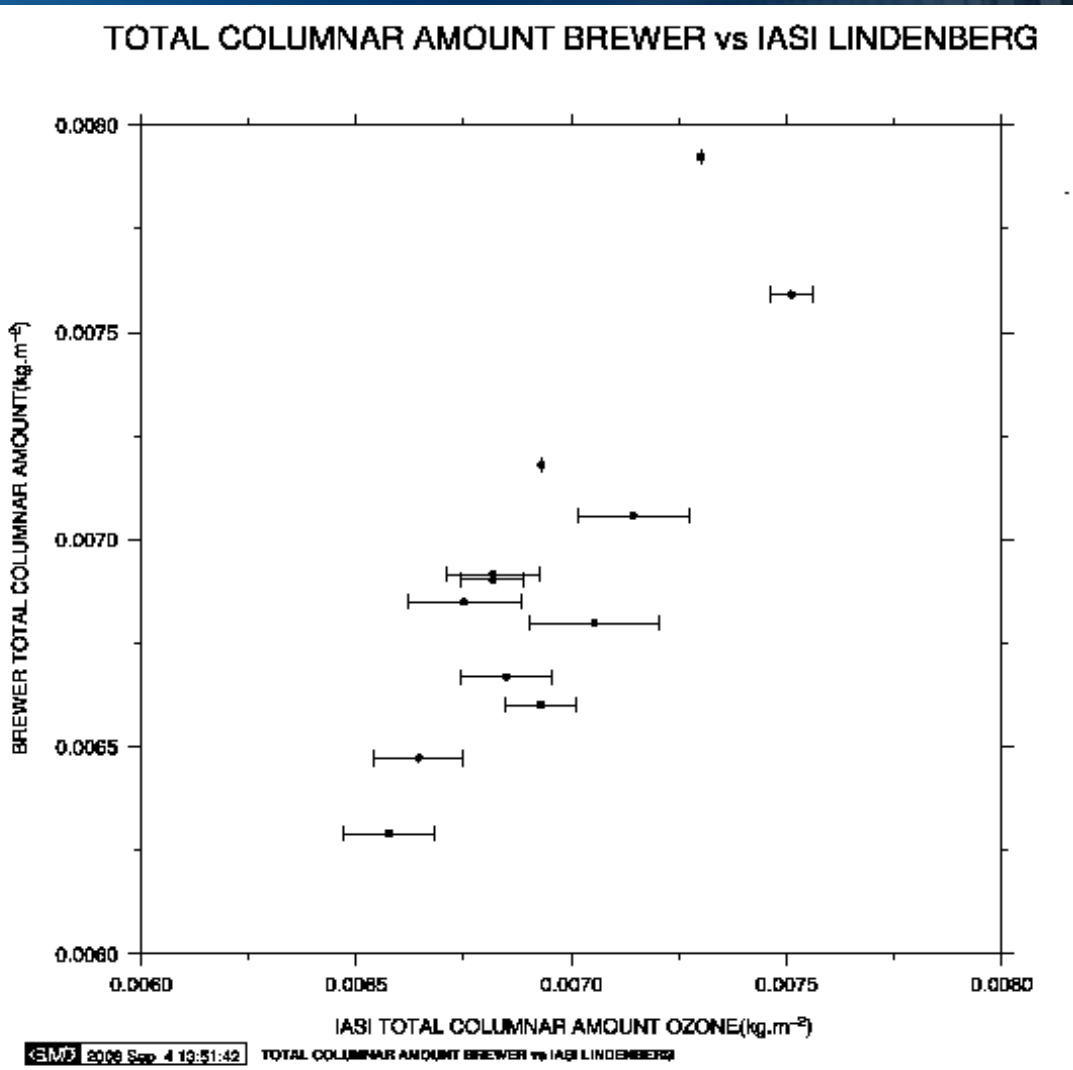
Ozone total column

- Validation of the Ozone total column in the IASI L2 PPF
- Ozone total column validated with ground based Brewer measurements and ozonesondes

Ozone total column vs Brewer



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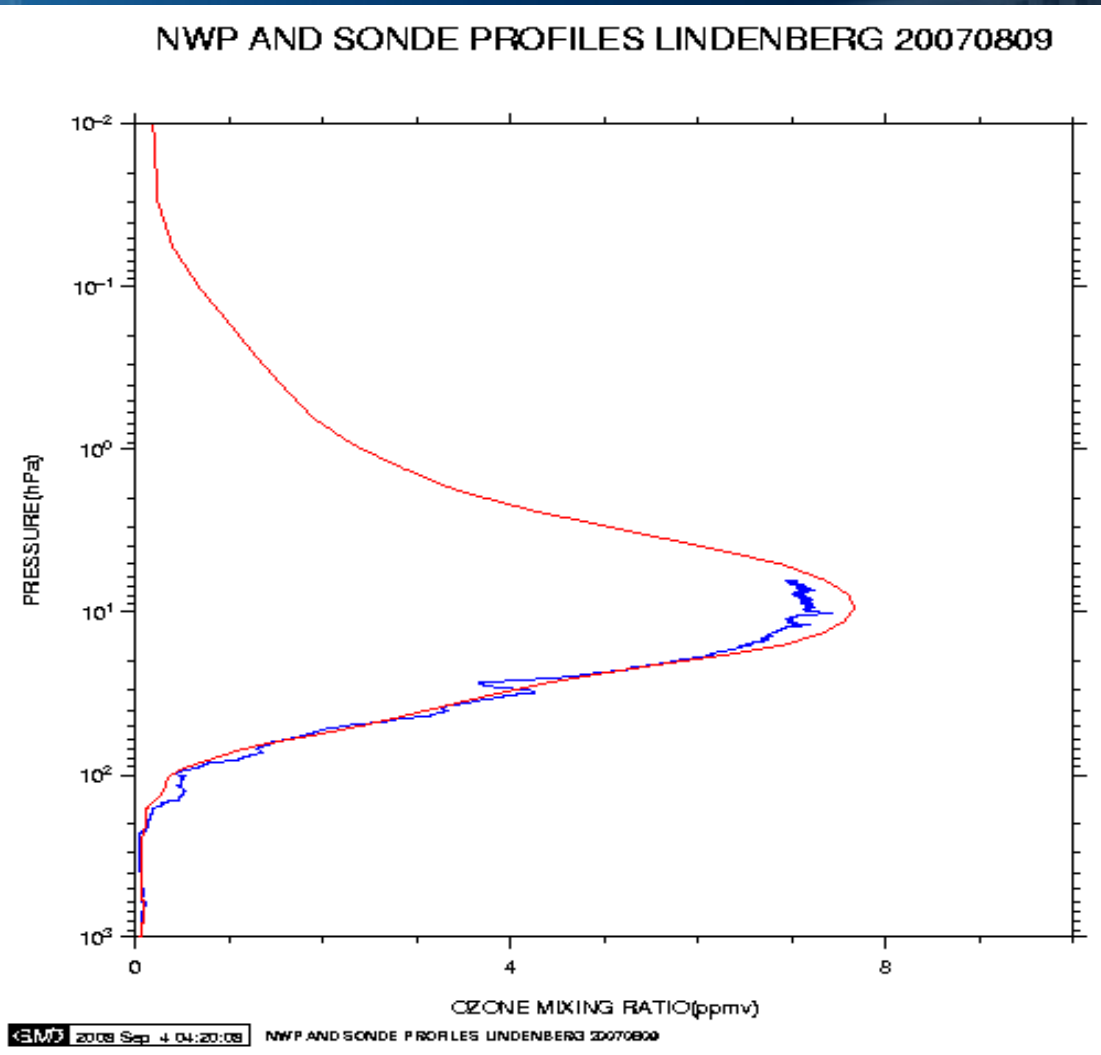
Ozone total column vs Ozone Sondes

- Typical burst height 10 hPa is low



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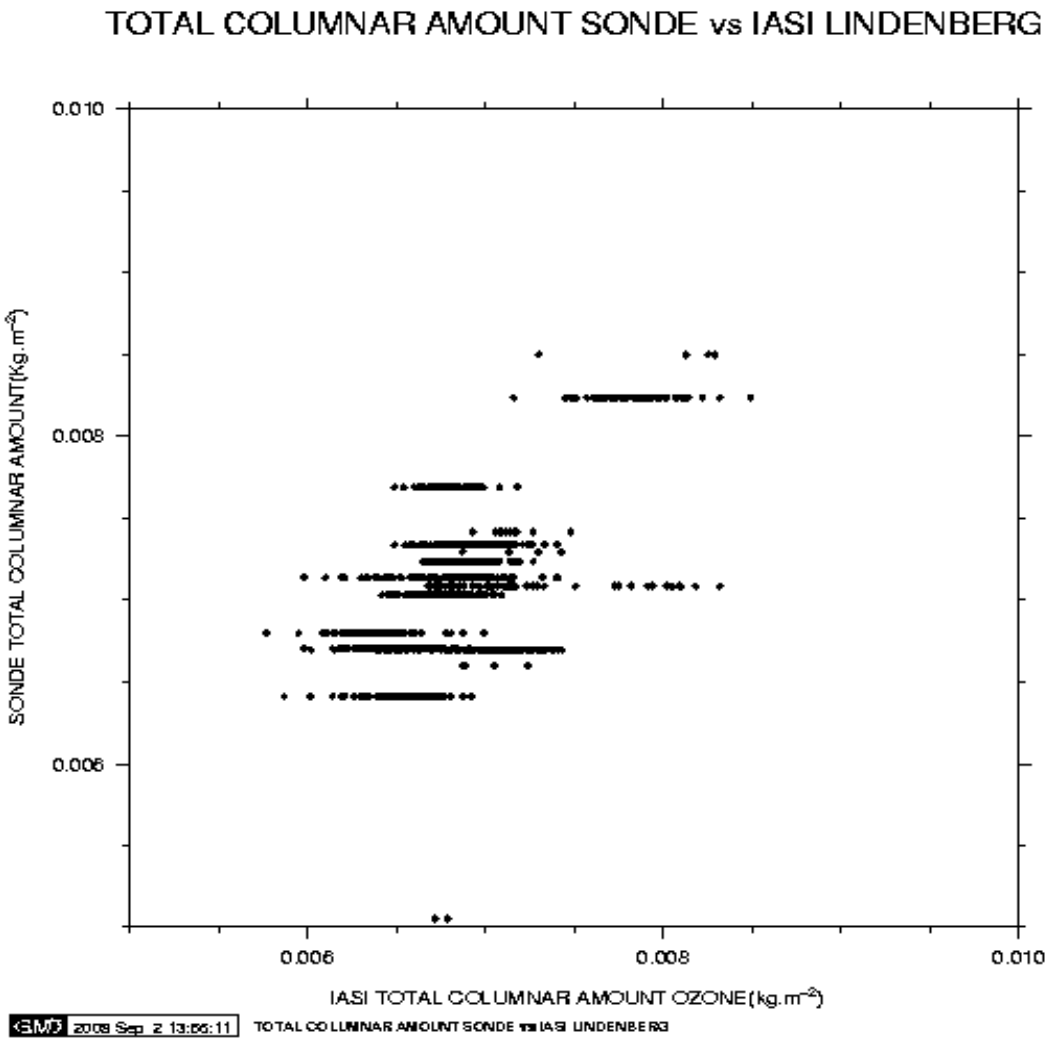
Ozone total column vs Ozone Sondes



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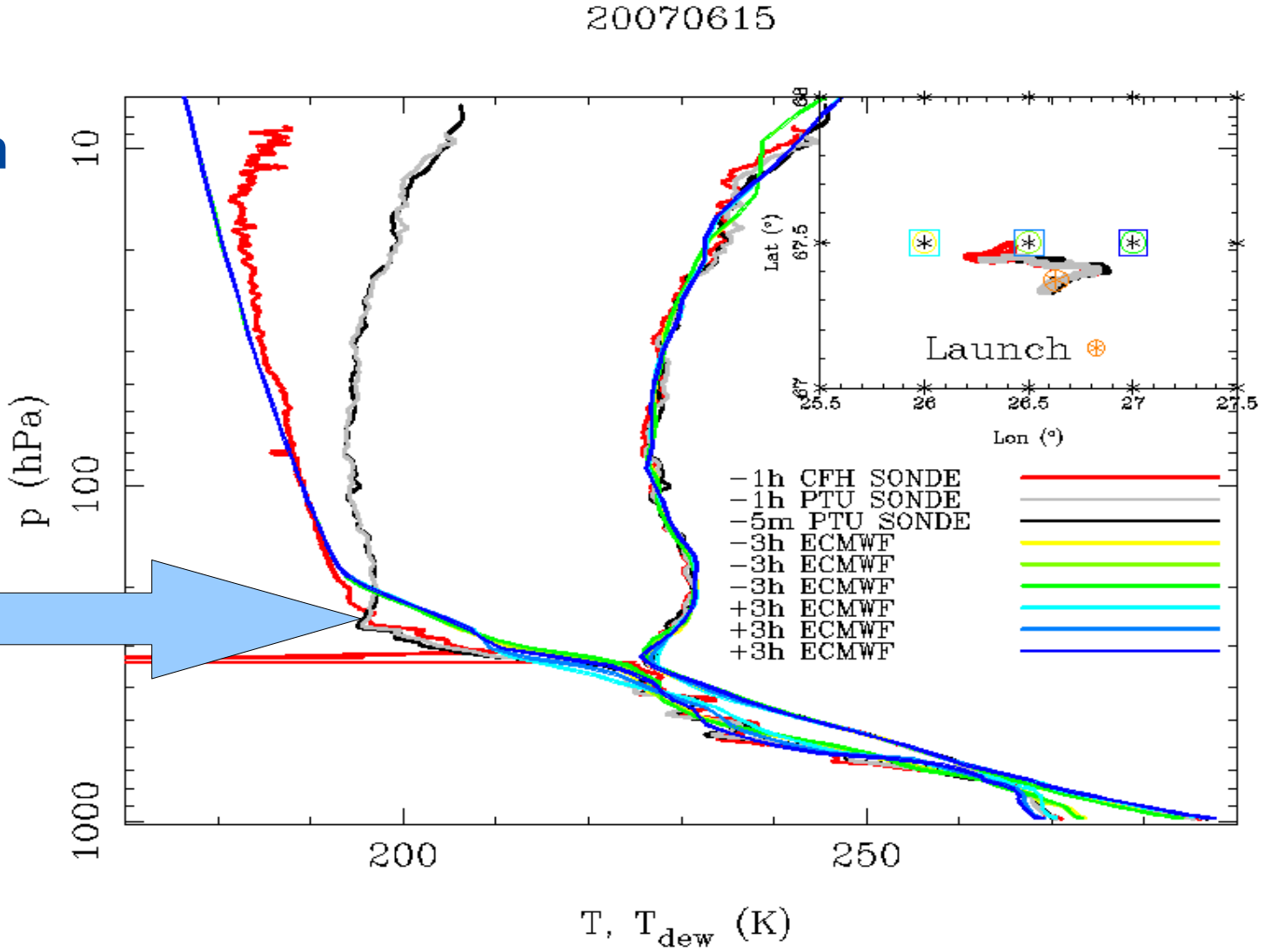
High Troposphere/ Low Stratosphere humidity

- **Can we improve humidity IASI retrievals in the High Troposphere/Low Stratosphere region?**

CFH, PTU Sondes and ECMWF analyses

- **Significant differences in High Troposphere and Low Stratosphere humidity**



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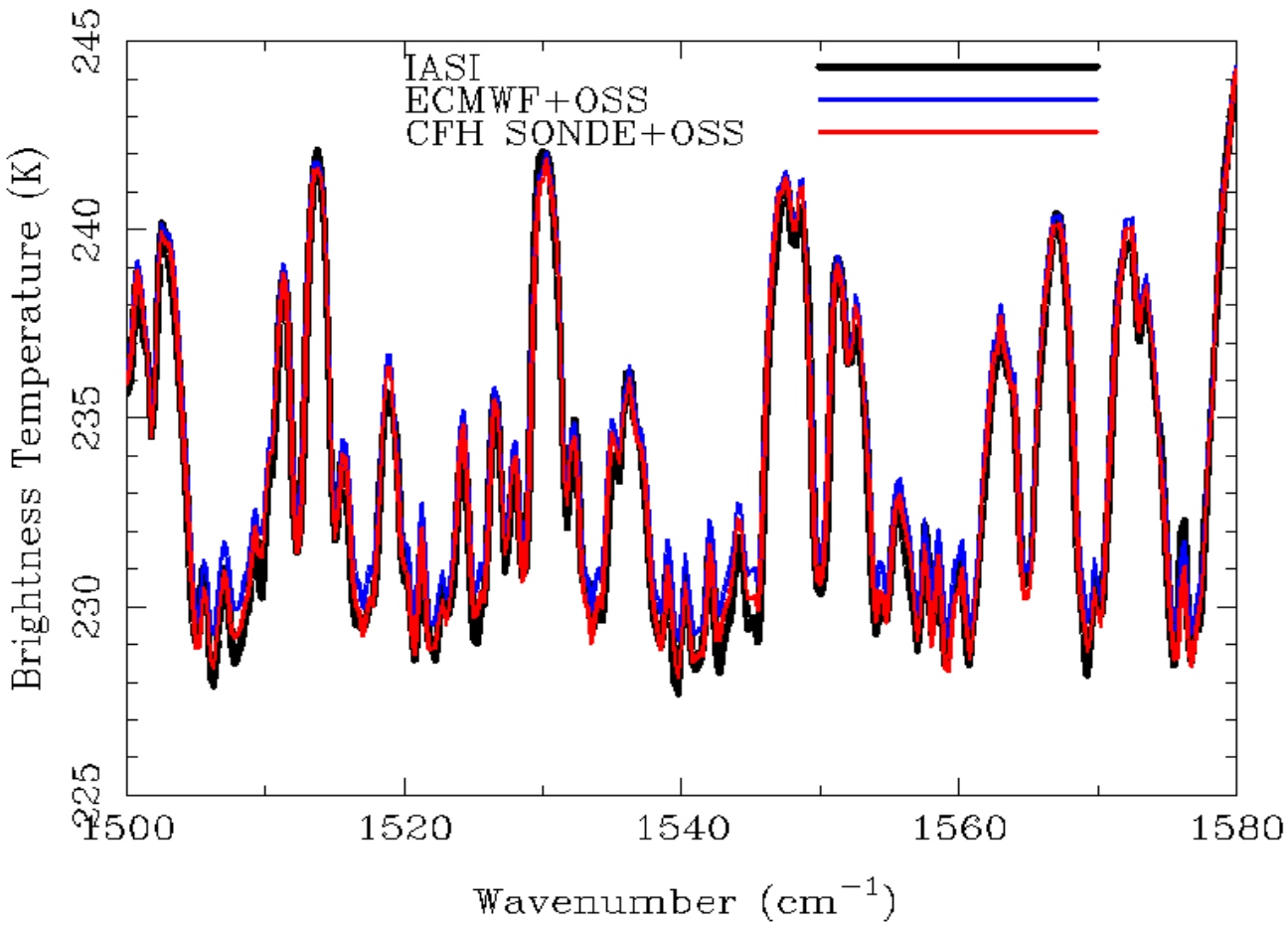
Does it have an impact on IASI?



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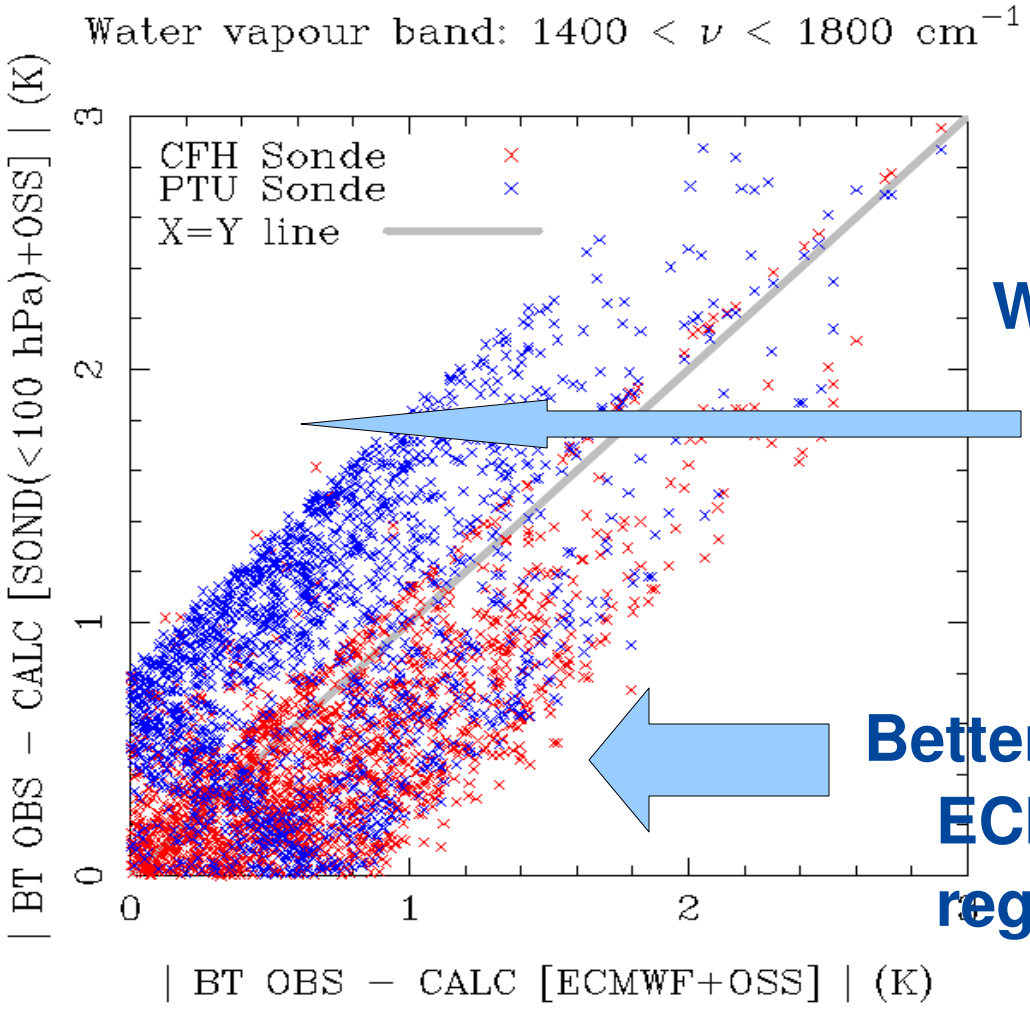
Does it have an impact on IASI?

- CFH sondes better than ECMWF and PTU sondes
- Yes!, it should have an impact on IASI retrievals



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Conclusions

- IASI CO2 slicing provides valid Cloud Top Pressure and Cloud Fractions
- IASI Ozone total column compares well with Brewer measurements
- IASI Ozone total column and ozonesondes needs further investigation
- Should be possible to increase the accuracy of IASI humidity retrievals in high troposphere/low stratosphere
- IASI L2 PPF provides a good framework to test the MTG-IRS retrieval algorithms
- Comments to further improve IASI L2 or MTG-IRS L2 concepts welcome!!