FMI SODANKYLÄ: LAPBIAT Atmospheric Sounding Campaign 2010

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LAPBIAT Atmospheric Sounding campaign in January-March 2010

Instruments:

Vaisala DRYCAP® Humidity Sensor module RRD100
InterMet RSB1 sonde
RS92 (Vaisala; FMI)
GRAW

FLASH-B/RS92 (CAO; FMI)
CFH/ozonesonde/InterMet/RS80 (DWD; FMI)

COBALD aerosol sonde (ETHZ)
BKS aerosol sonde /ozonesonde/RS80 (FMI)

MIAWARA-C radiometer (University of Bern)
MARL Lidar (AWI, DWD)

Timing:

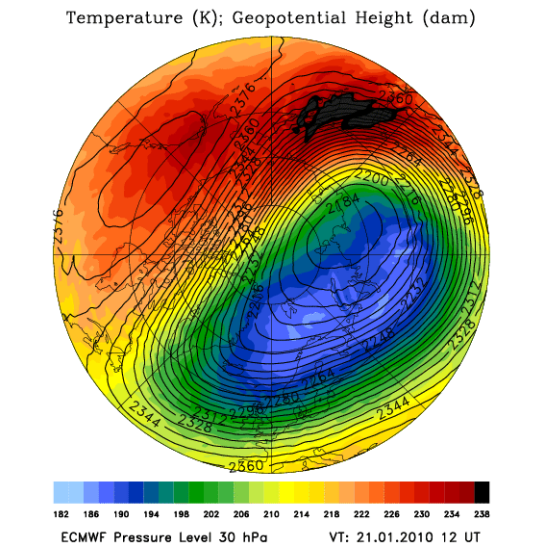
January-February 2010 and March 2010 during the Arctic aircraft campaign (M55 Geophysica)

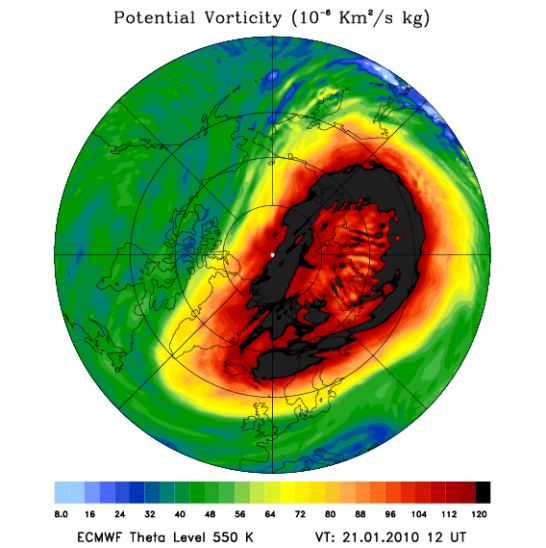
Motivation:

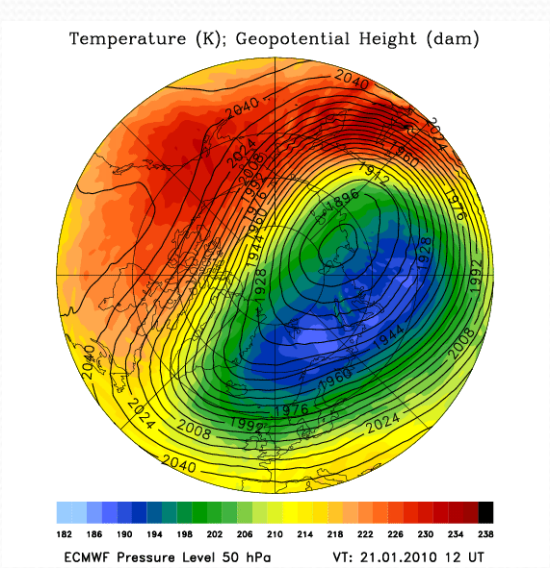
- PSCs , Cirrus and water vapor , incl. COBALD/CALIPSO Trajectory Matches
- Instrument comparisons (GRUAN network measurement accuracy)
- COBALD/BKS comparisons
- FLASH-B, a new version of the instrument tested
- RS92/reference
- Intermet/ref
- GRAW/ref
- Vaisala RR01/reference
- MIAWARA-C, MLS
- SSW, Sudden stratospheric warming, Meteor Radar, EISCAT, VHF, ISR worldwide

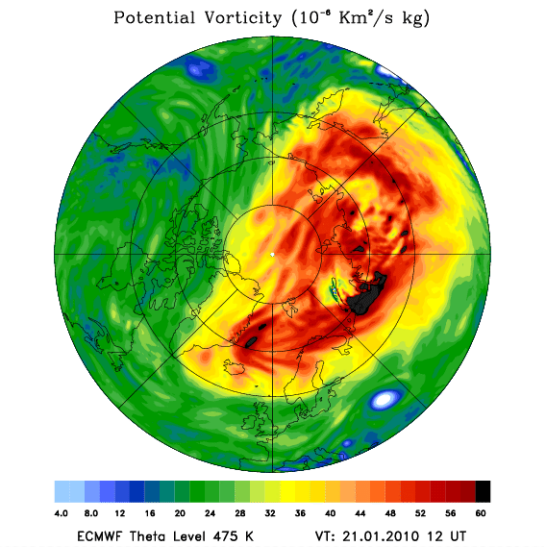
- New instruments involved (MIAWARA-C, new RRD100, FLASH-B, COBALD, CFH new combination with IM)

PSC temperatures in the Arctic vortex

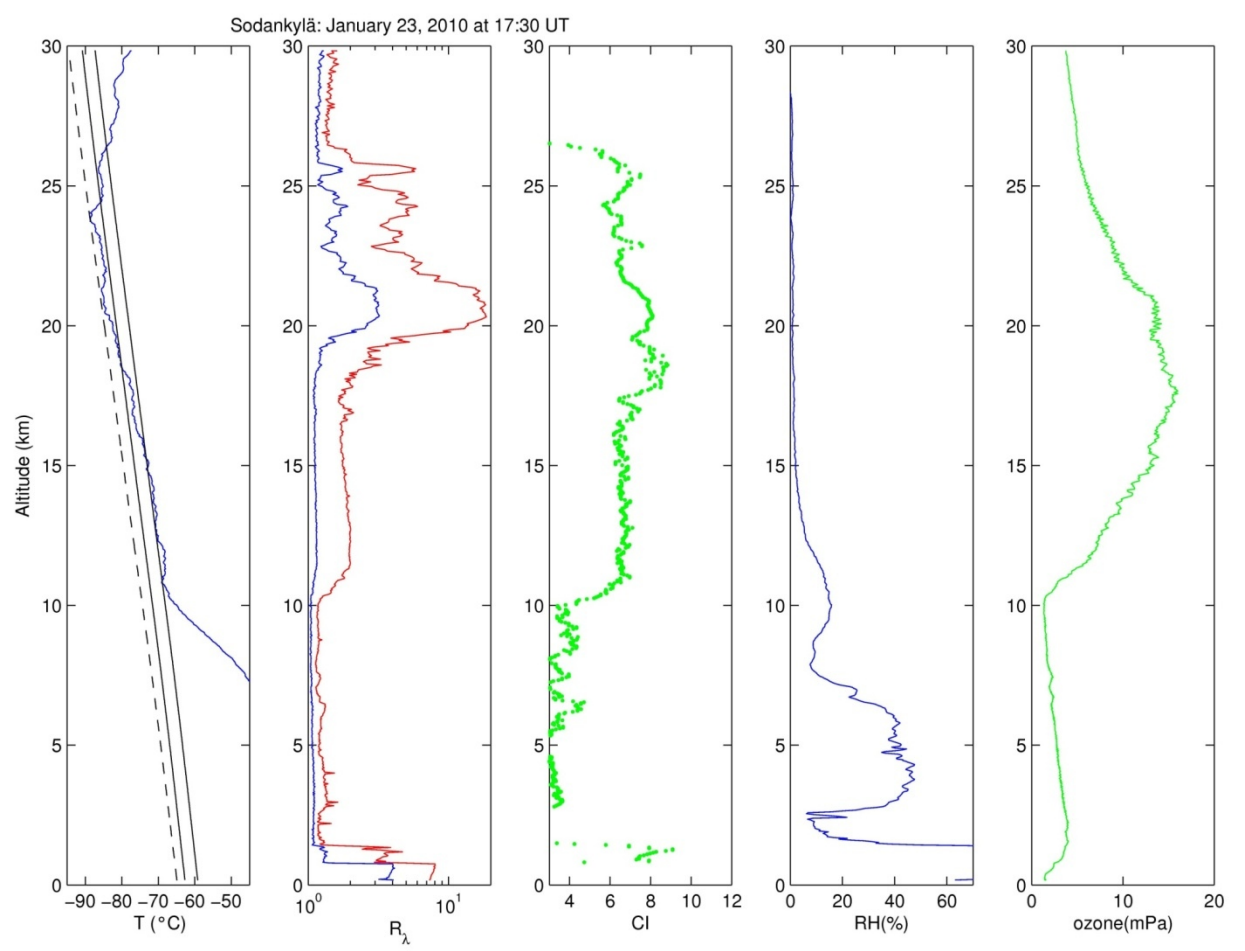




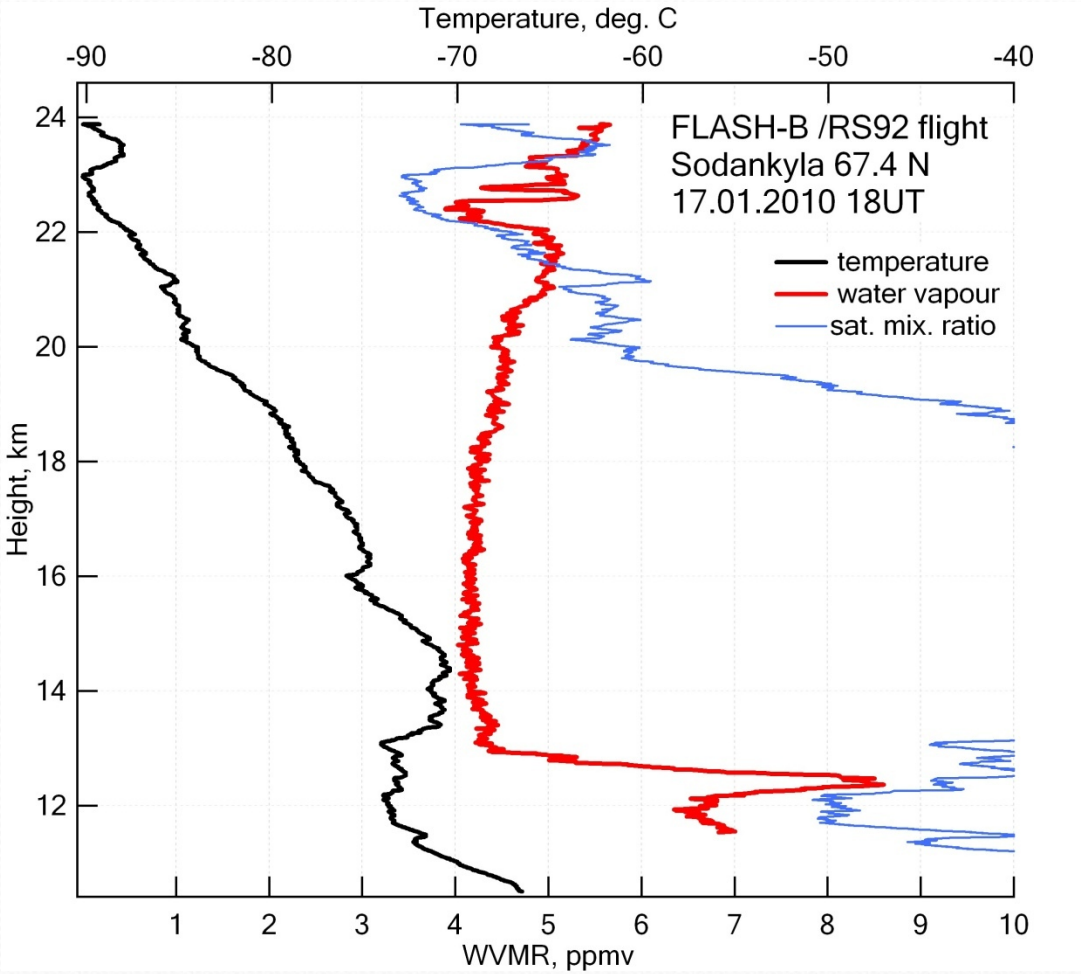




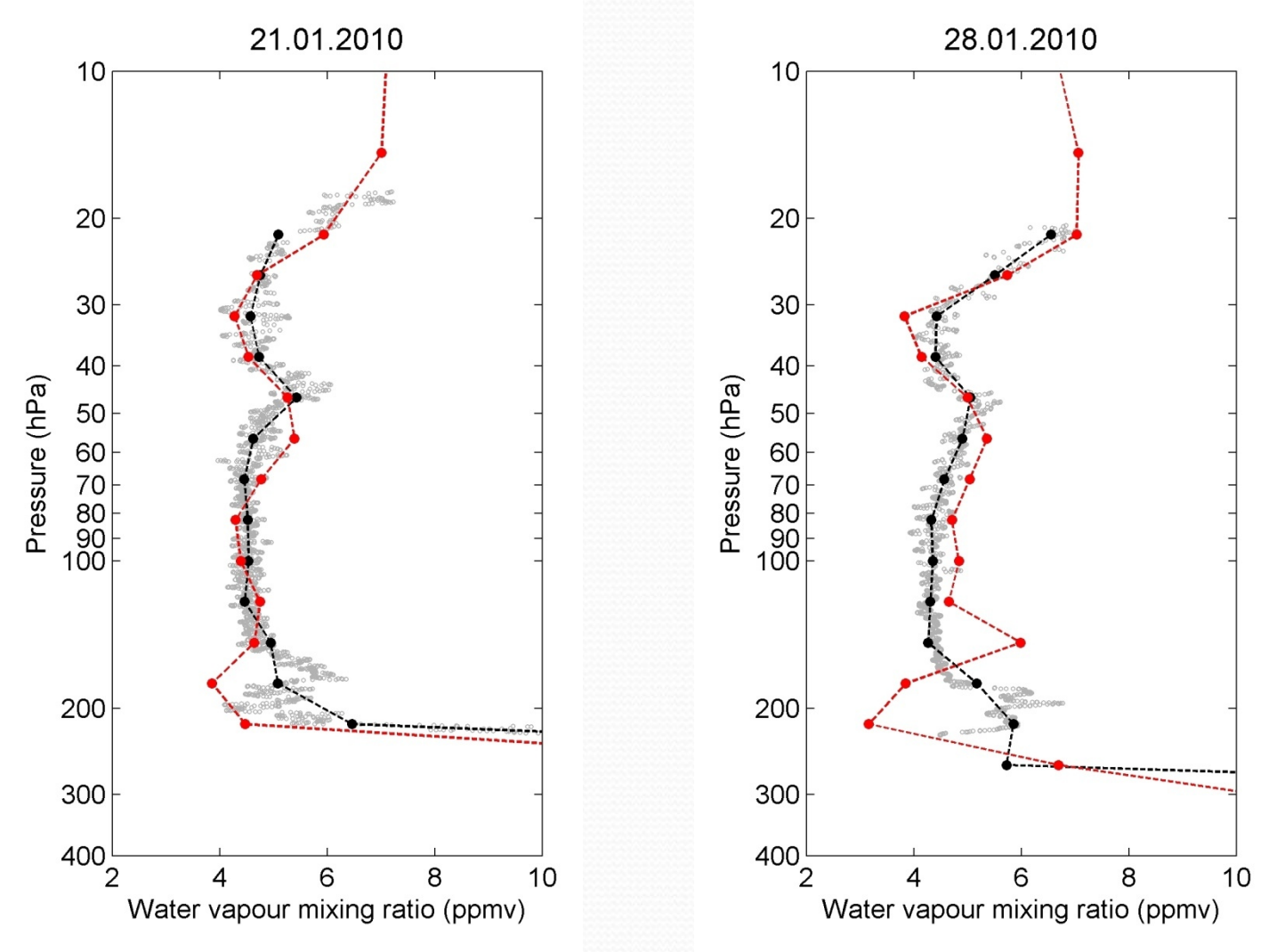
Aerosol Backscatter Sonde



FLASH-B Sonde

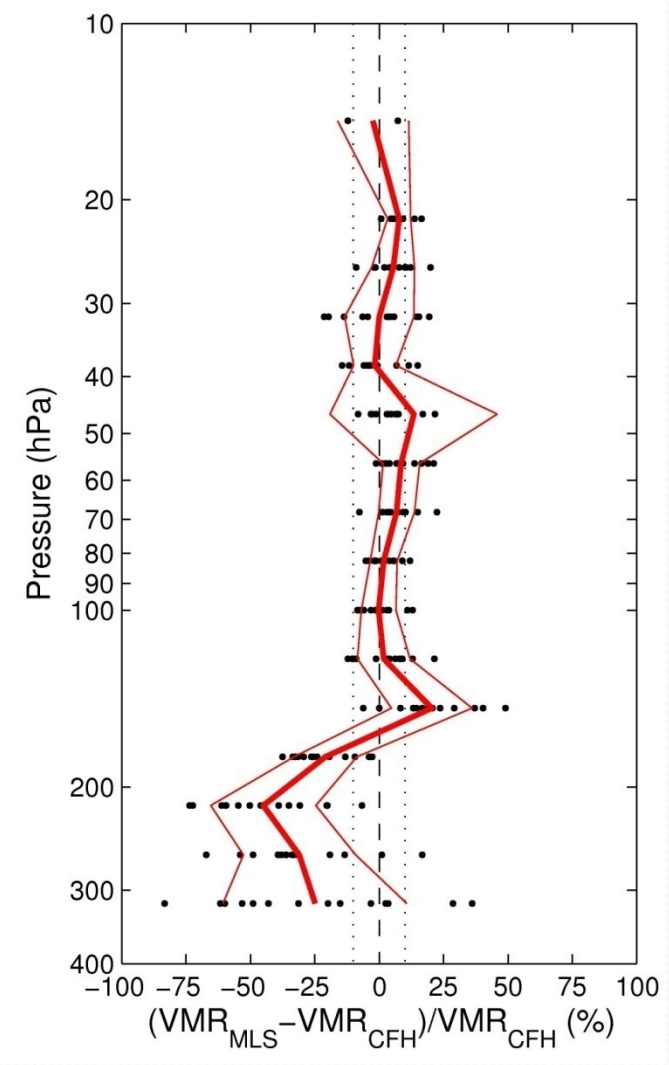


CFH Sonde, MLS

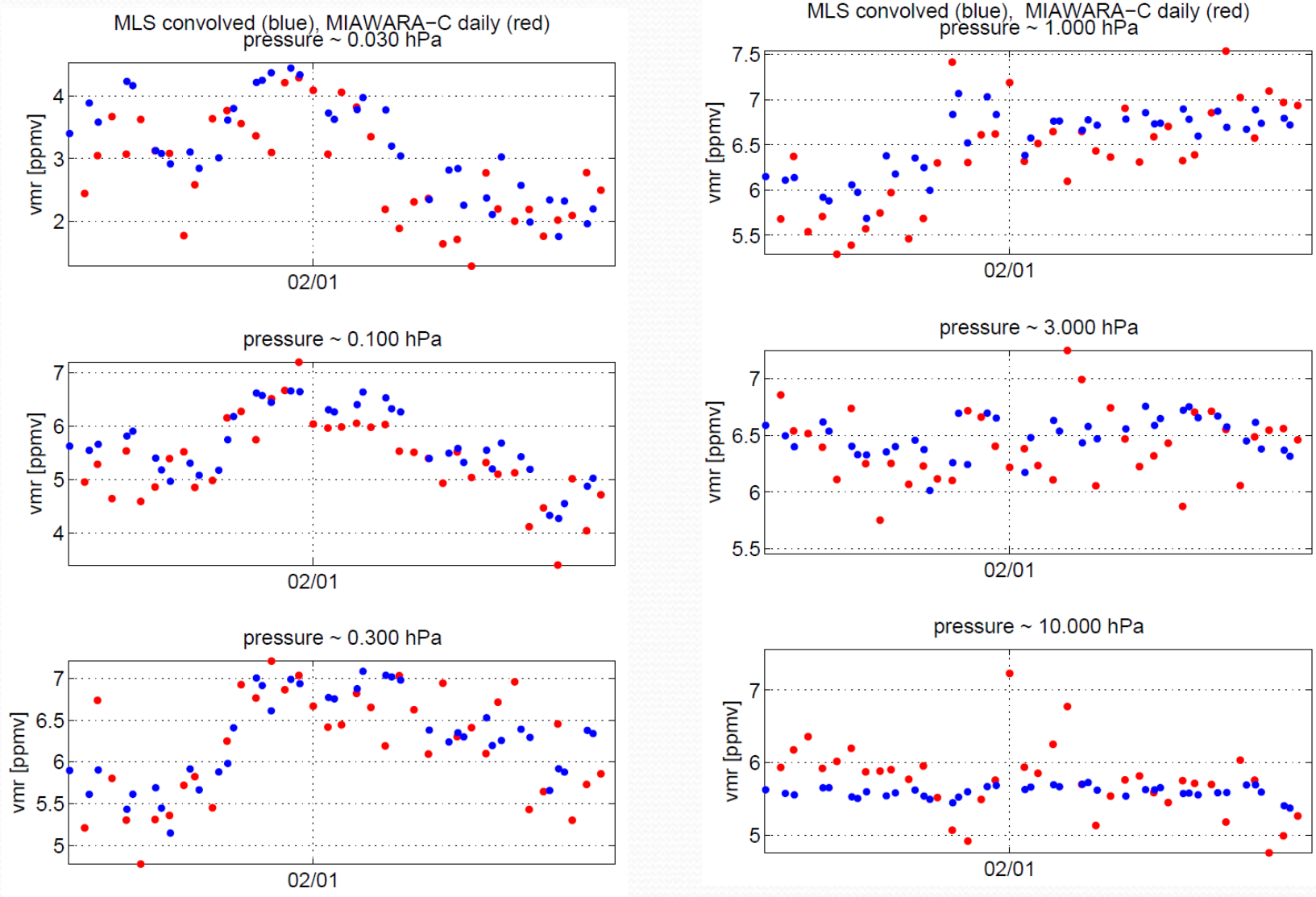


CFH Sonde (black line), MLS (red line)

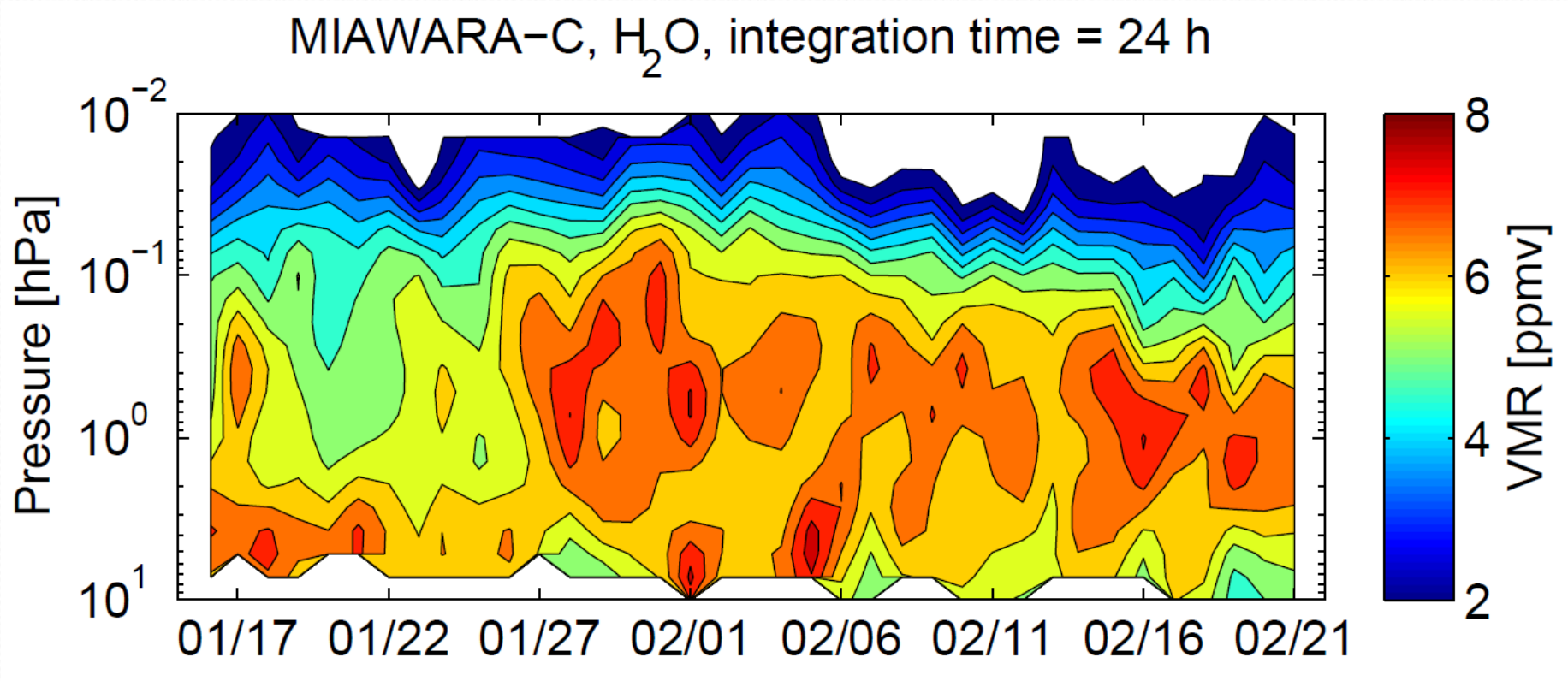
CFH vs. MLS, January-February 2010

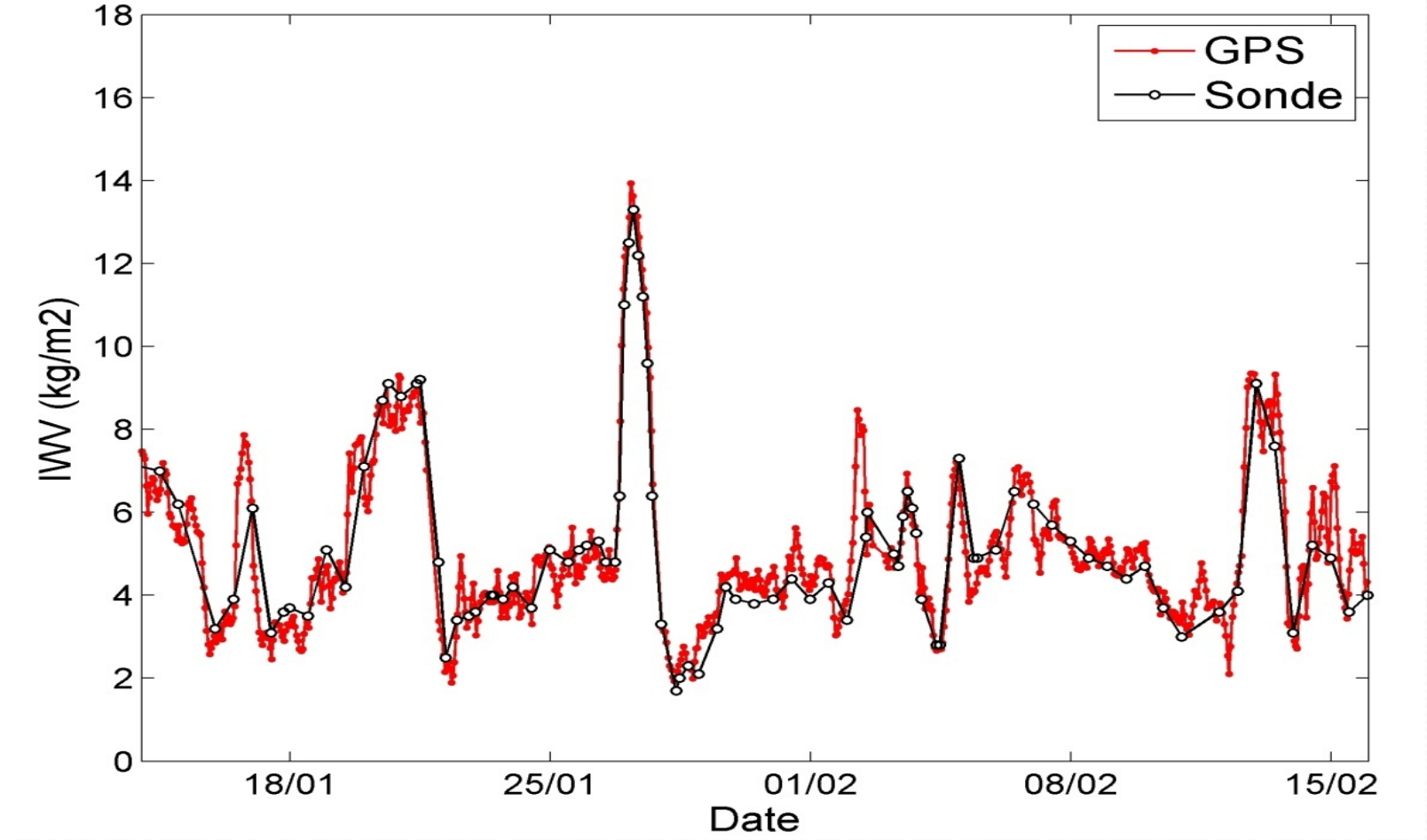


MIAWARA-C, MLS



MIAWARA-C


MIAWARA−C, H_2O, integration time = 24 h
Pressure [hPa]
10^{-2}
10^{-1}
10^{0}
10^{1}
01/17
01/22
01/27
02/01
02/06
02/11
02/16
02/21
VMR [ppmv]
8
6
4
2

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Period 14.1.2010 - 15.2.2010
Sonde mean          :   5.2854 kg/m2
GPS mean            :   5.0675 kg/m2
GPS-Sonde           :  -0.2179 kg/m2
(GPS-Sonde)/Sonde:  -4.1222 %
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Summary

- Polar dehydration/rehydration processes, PSCs observed in the Arctic vortex

- Vaisala reference sonde RRD100 tested under Arctic conditions
http://www.vaisala.com/weather/applications/referenceradiosondeprogram.html

- InterMet sonde, Graw, RS92 sonde comparisons with Cryogenic Frostpoint Hygrometer (CFH) and Fluorescent Advanced Stratospheric Hygrometer (FLASH)

- Remote sensing instruments: MIAWARA-C, MARL, satellite borne instruments

- Ozonesondes

- COBALD/BKS comparisons