



Validation of SCIAMACHY level 2 data with the Heidelberg ground-based DOAS network

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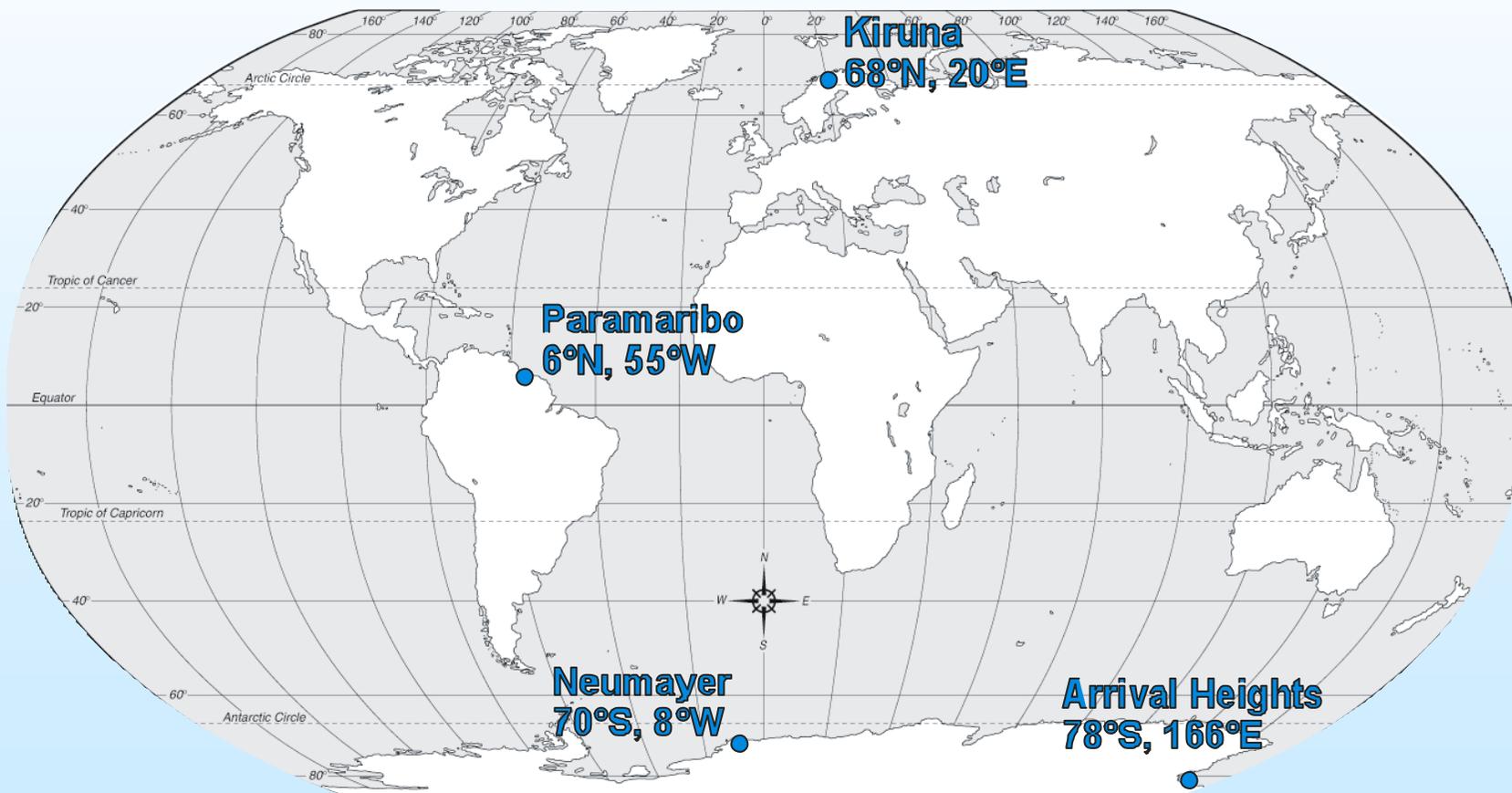
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(3) Institute for Space Physics, Kiruna, Sweden

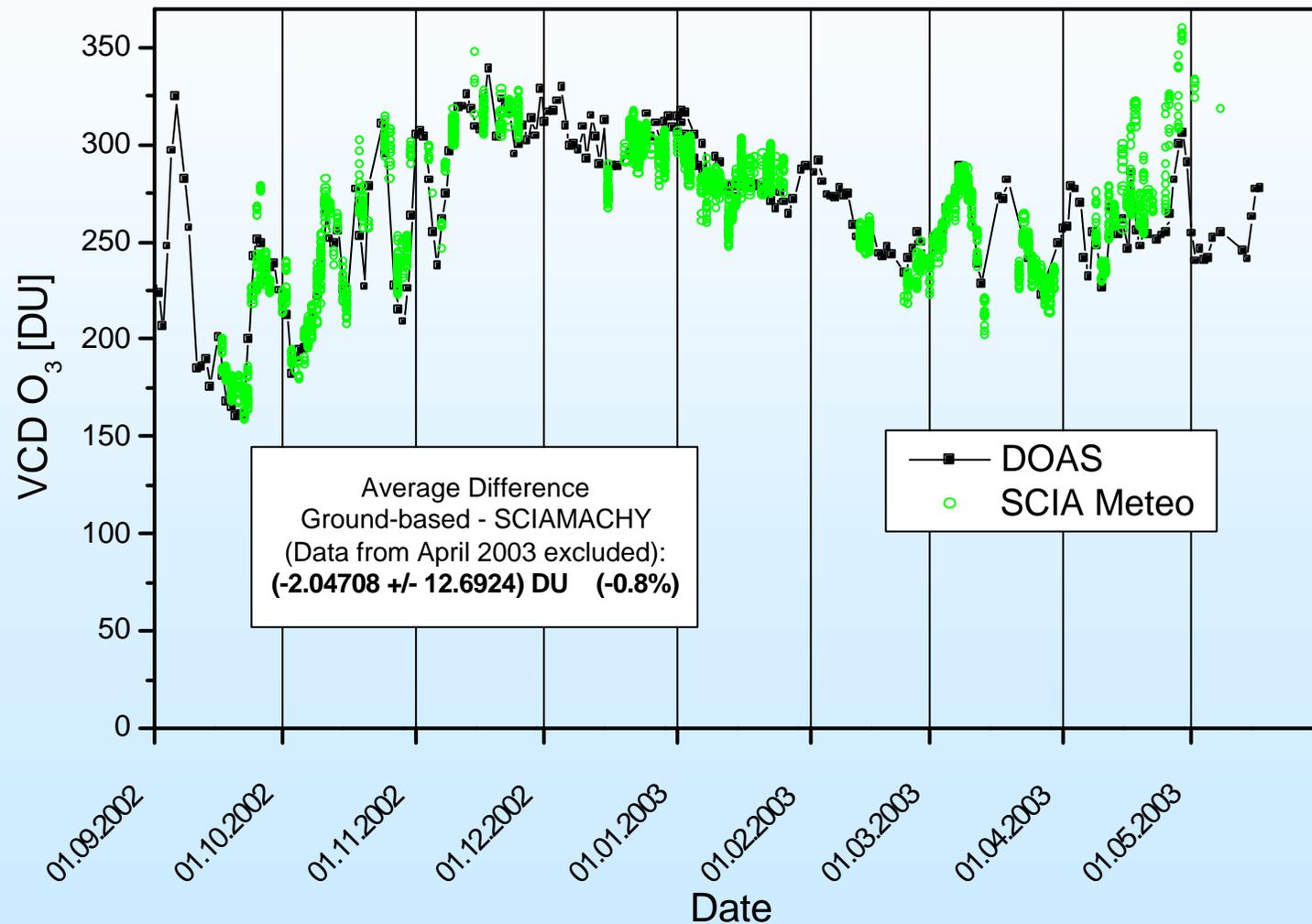


The Heidelberg ground-based DOAS Network





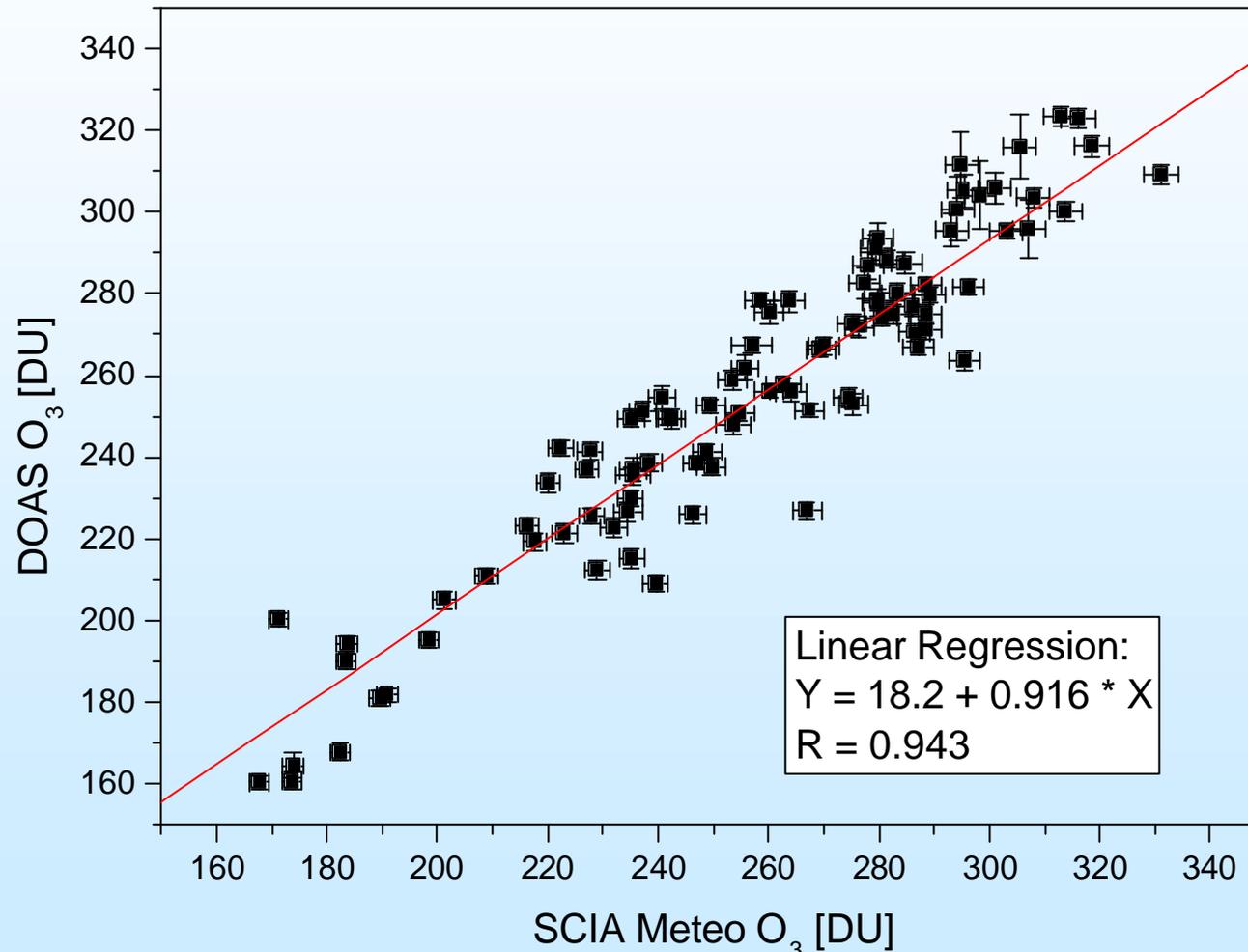
Ozone VCD @ Neumayer/Antarctica (70° S, 8° W)





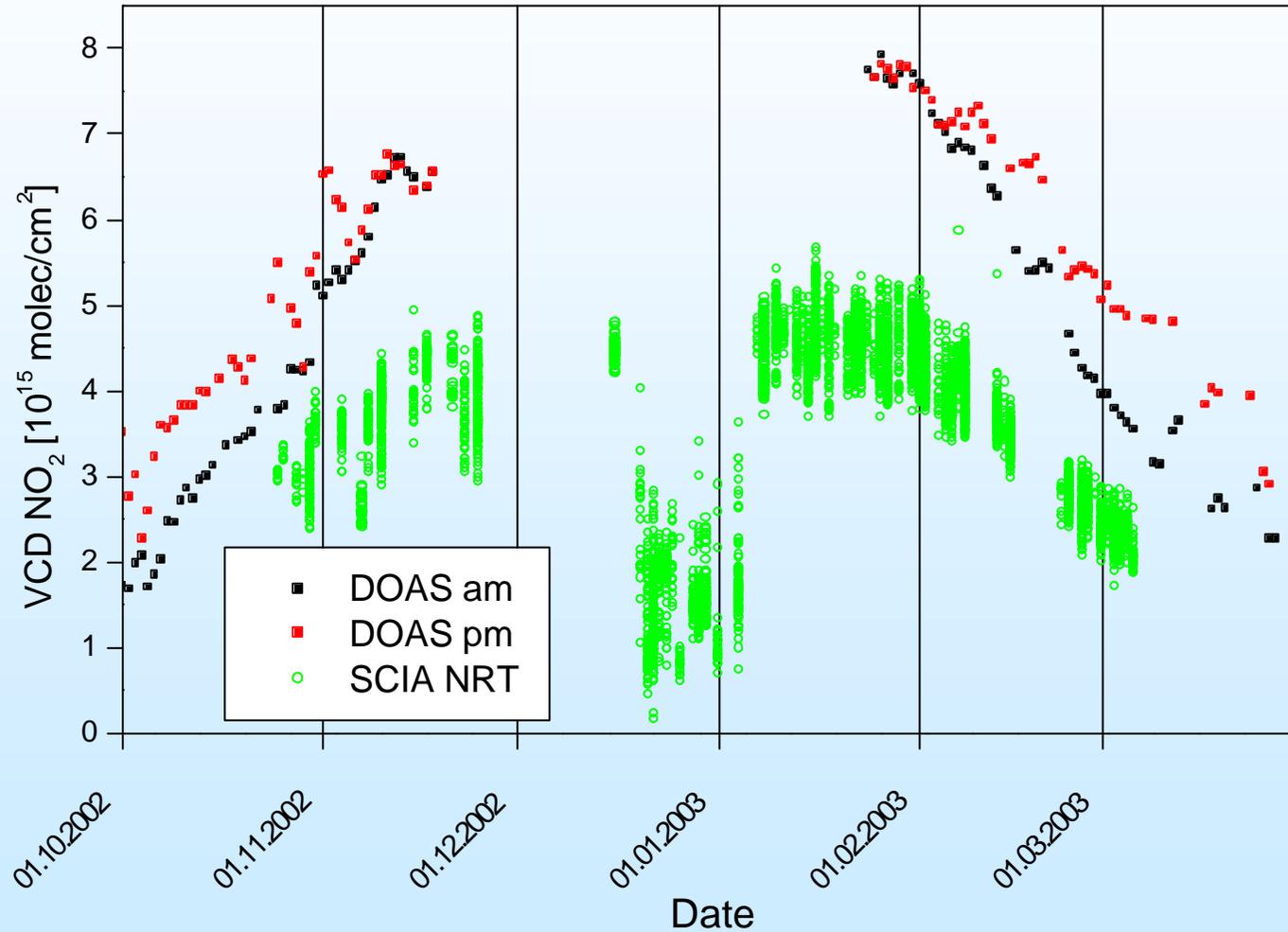
Ozone VCD @ Neumayer/Antarctica (70° S, 8° W)

(Data from April 2003 excluded)



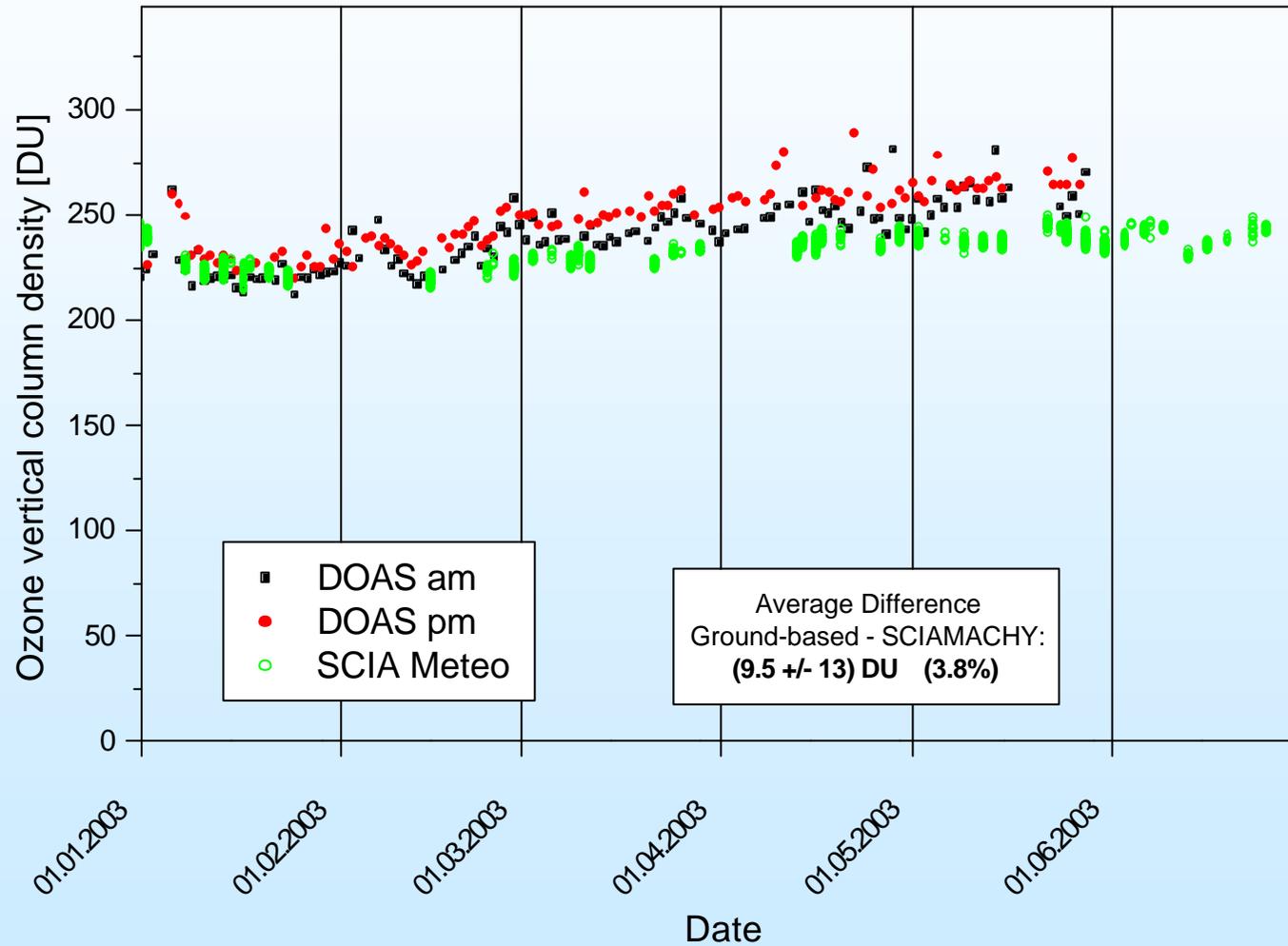


NO₂ VCD @ Neumayer/Antarctica (70° S, 8° W)



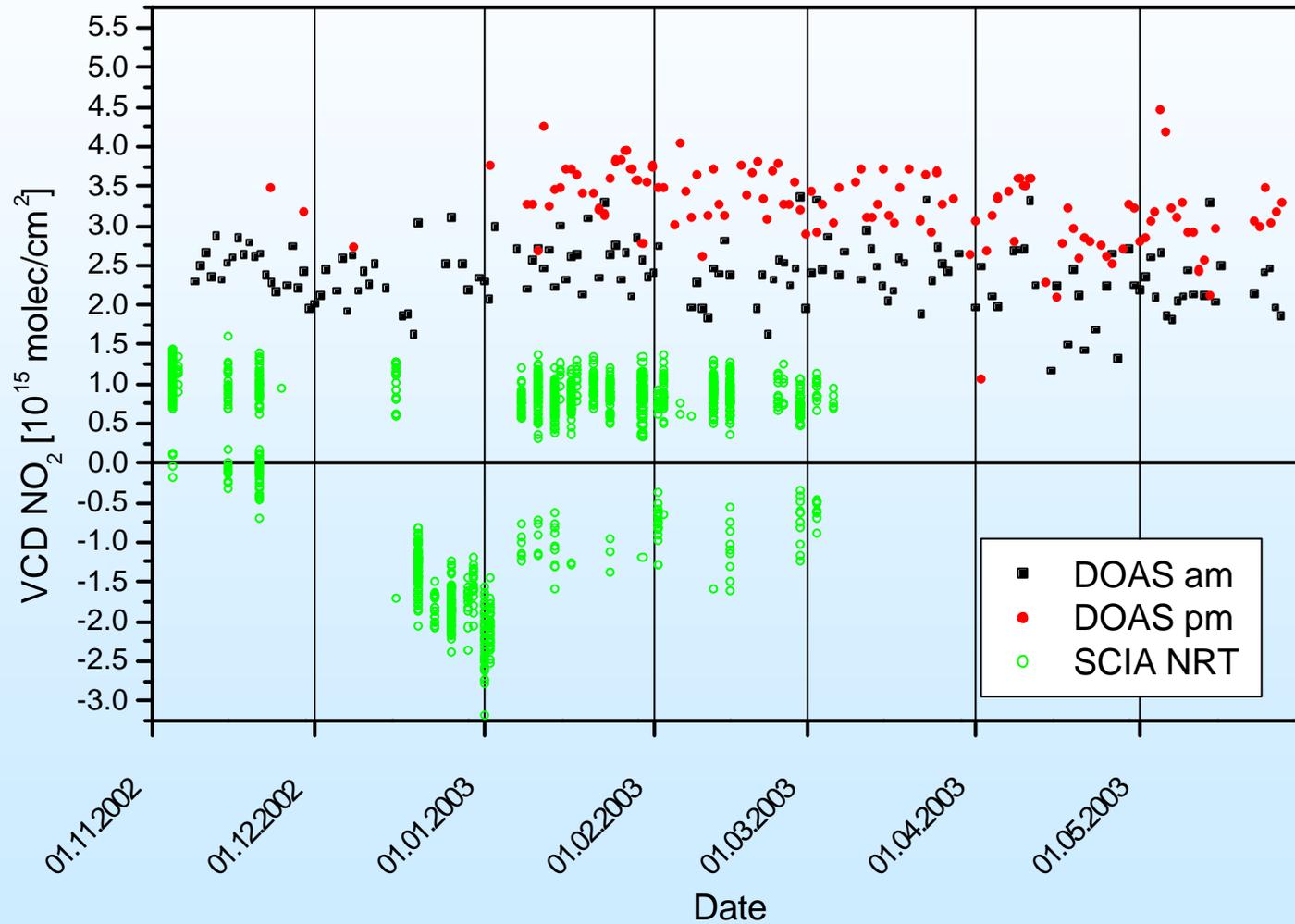


Ozone VCD @ Paramaribo/Suriname (6° N, 55° W)



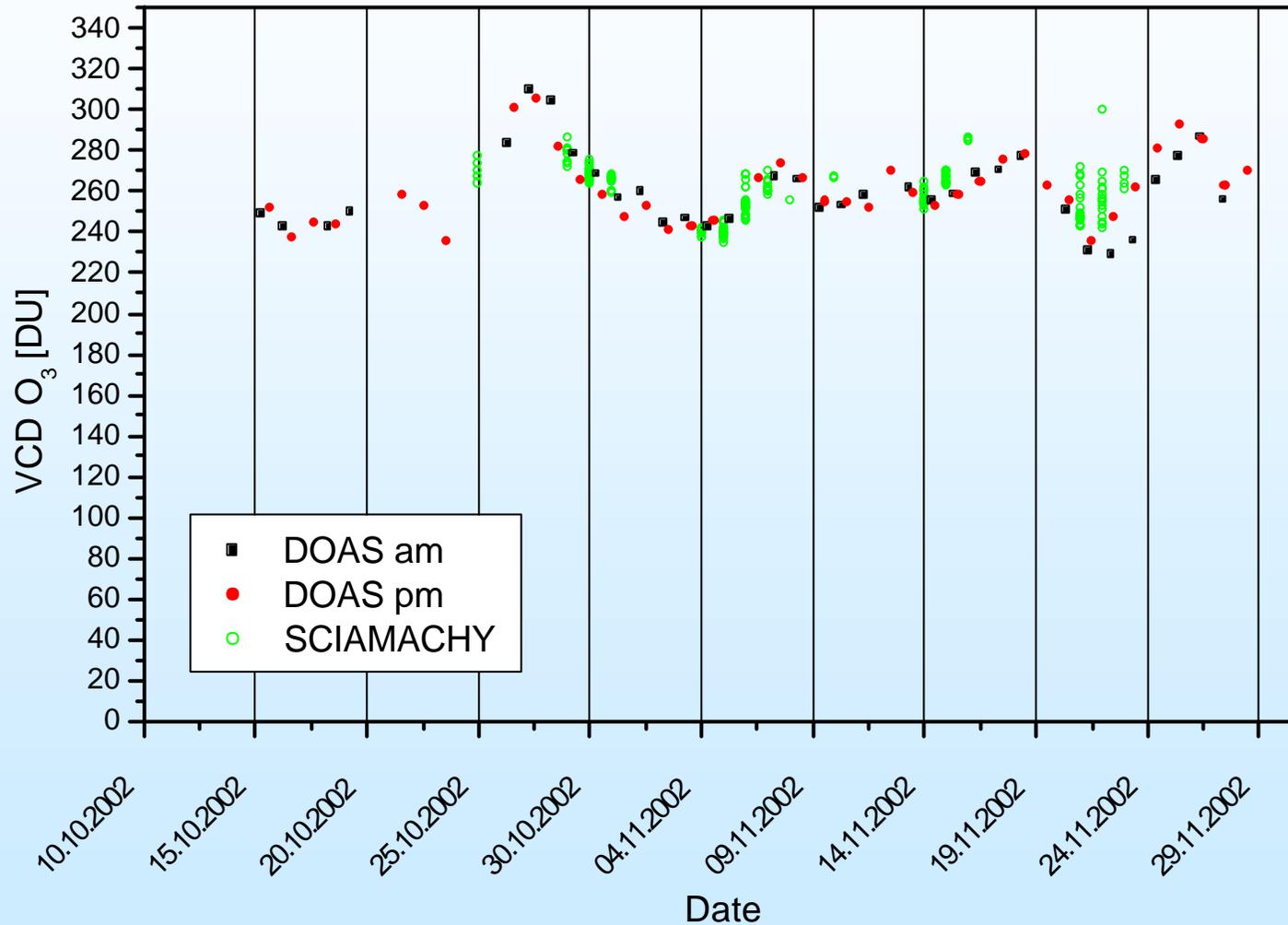


NO₂ VCD @ Paramaribo/Suriname (6° N, 55° W)



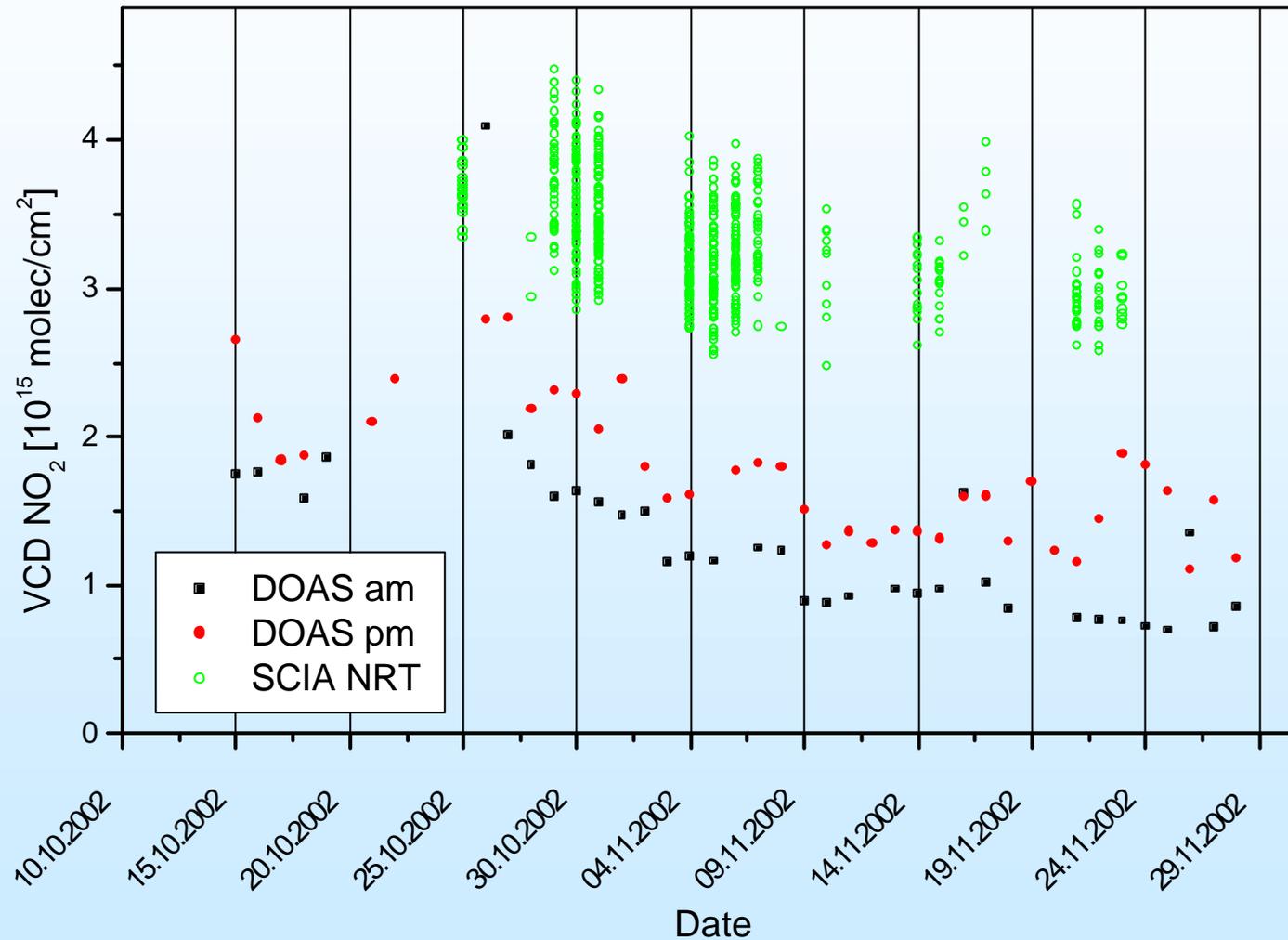


Ozone VCD @ Kiruna/Sweden (68° N, 21° E)





NO₂ VCD @ Kiruna/Sweden (68°N, 21°E)





Ship borne observations

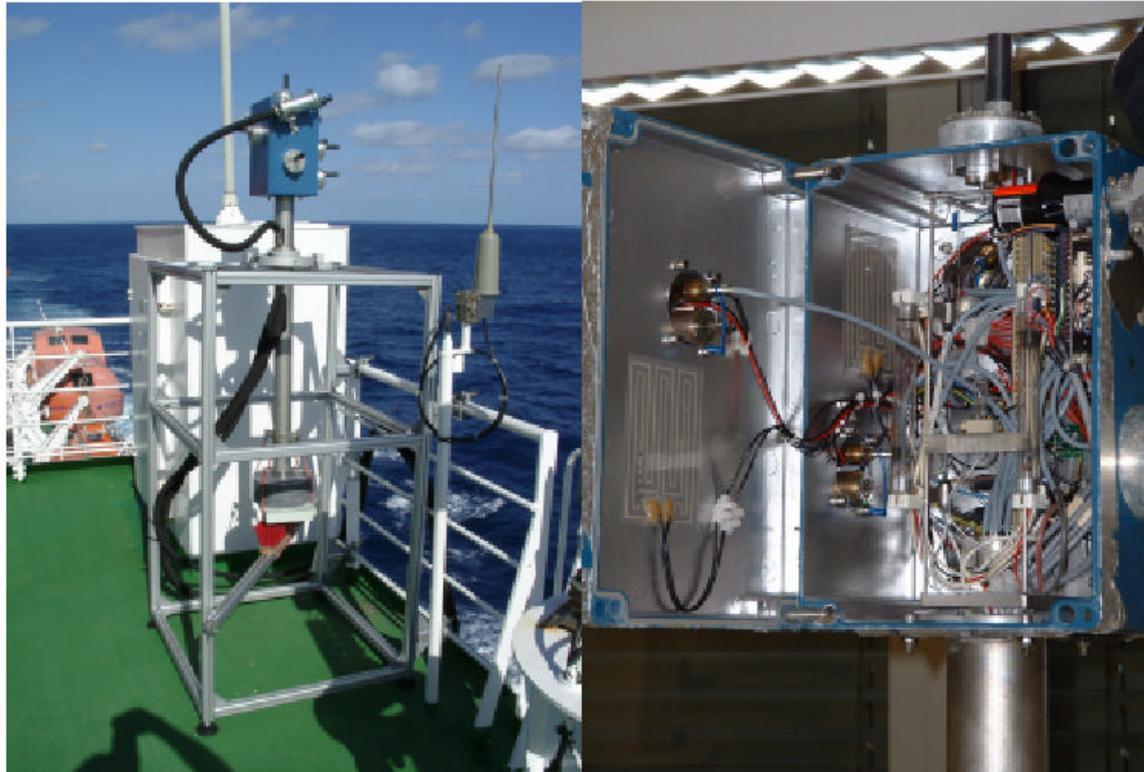


Figure 3-2: To the left the outdoor set-up on the observation deck can be seen with the aluminium frame, the gimbal arrangement, the rubber hoses and the blue telescope housing. To the right the interior of the telescope housing is shown.



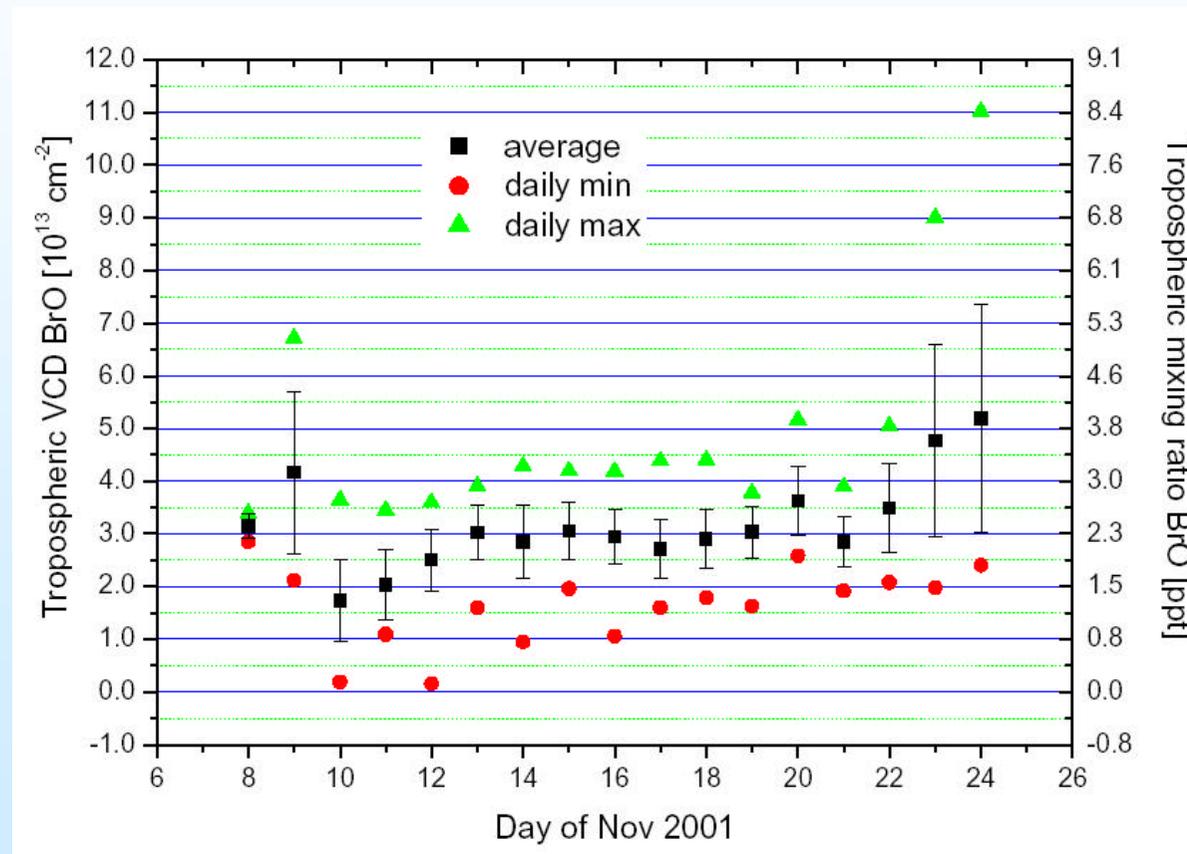
Ship borne observations



Figure 3-4: Indoor set-up with the UV and VIS detecting units, the rack with the control units, the computer and the rubber hoses being introduced through a cable door.



Ship borne observations



Daily averages, minimum and maximum values of the BrO total tropospheric vertical column densities (up to 10km) and the corresponding mixing ratios assuming that the latter remain constant throughout the first eight km. A minimum was found on 10 Nov coinciding with a maximum in NO₂ concentration.

(Aus Diplomarbeit J. Bossmeyer)



Ship borne observations

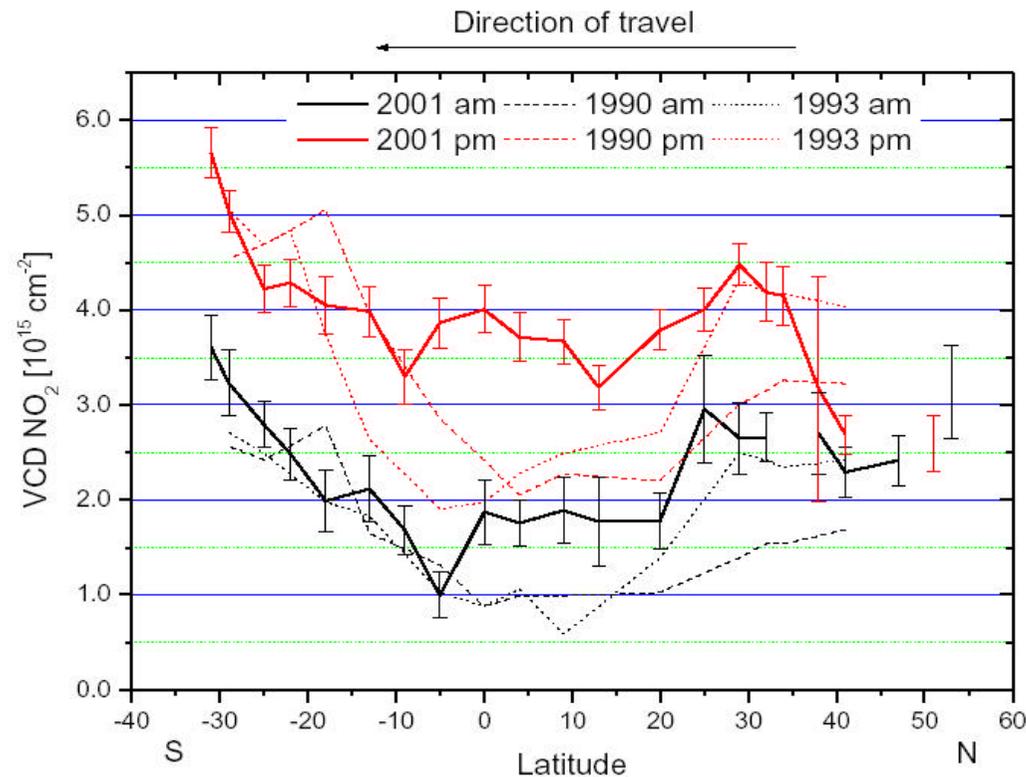


Figure 6-10: Vertical column densities (VCDs) of NO₂ in a latitudinal cross section. Values were determined for sunrise and sunset at 90° SZA as observed by the zenith-looking telescope.



Summary

- **Ozone:**
 - SCIAMACHY and ground-based ozone VCDs are generally in good agreement (less than 4% difference at all observation sites), even under the strongly perturbed conditions of the Antarctic ozone hole in 2002
 - Ozone from ground-based DOAS in Paramaribo shows a slight increase from January to May. This seasonal variation is not observed by SCIAMACHY
 - SCIAMACHY ozone VCDs at Neumayer Station are highly scattered and systematically higher than from ground-based DOAS at the end of Austral summer (April)
- **NO₂:**
 - **Neumayer Station/Antarctica:**
NO₂ VCDs from SCIAMACHY smaller than from ground-based DOAS by a factor of 1.5 - 2. SCIAMACHY NO₂ unrealistically low during polar day
 - **Paramaribo/Suriname:**
SCIAMACHY NO₂ unrealistically small, many values below zero
 - **Kiruna/Sweden:**
SCIAMACHY NO₂ are larger than from ground-based DOAS by almost a factor of 2.