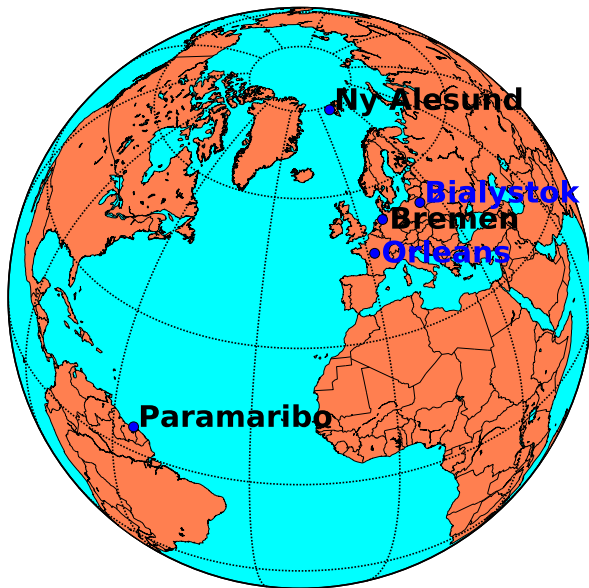


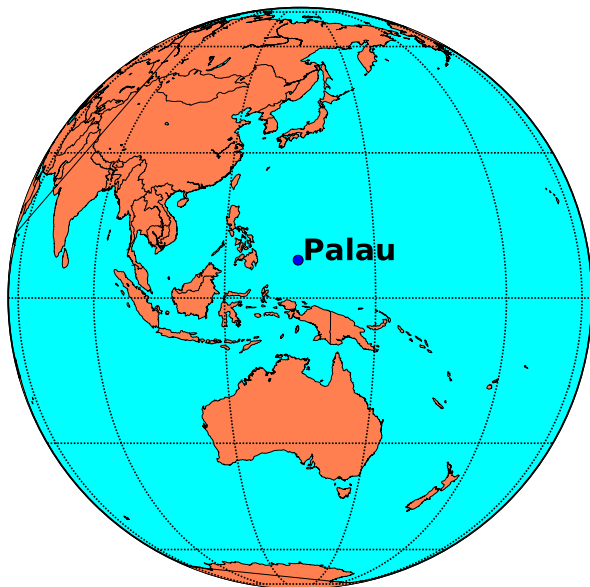
Station report Universität Bremen

Mathias Palm, Thorsten Warneke, Christof Petri,
Christine Weinzierl and Justus Notholt

Institute of Environmental Physics
Universität Bremen

Toronto, Canada, June 2015



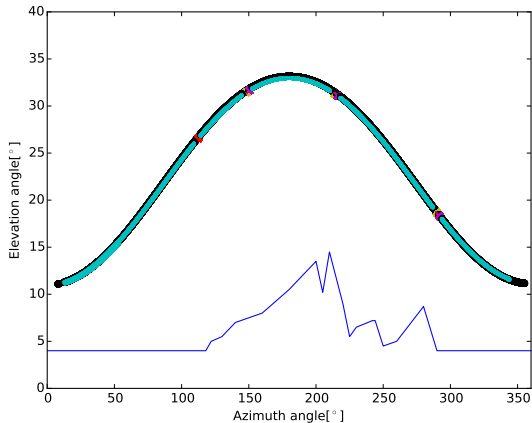


Status

- ▶ Instrument runs automatically all INSB/CaF₂ and TCCON measurements. MCT/KBr measurements still need manual assistance.
- ▶ NDACC measurements performed between mid of March and end of September (polar day)
- ▶ lunar measurements during polar night
- ▶ emission of mesospheric OH* to determine mesopause temperature during polar night

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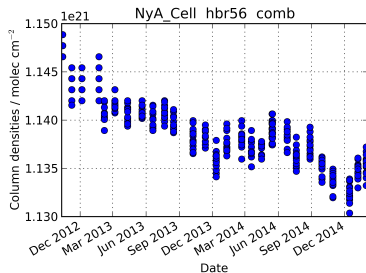
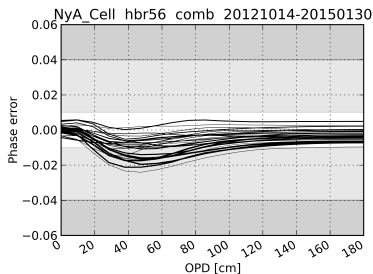
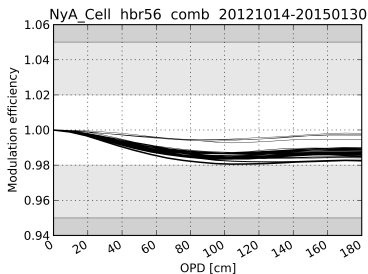
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Ny Ålesund



- ▶ HBR cell measurements: every month
- ▶ ILS retrievals driven by batch

Bremen

- ▶ Youwen Sun of the Anhui Institute, Chinese Academy of Sciences, Hefei, China visited Bremen (October 2014 till April 2015)
 - ▶ operation and adjustment of an 125HR instrument
 - ▶ taking measurements in Bremen
 - ▶ introduced to running linefit, gfit and sfit4
- ▶ instrument currently not working because solar tracker failure (no replacement of electronic board available from Bruker)

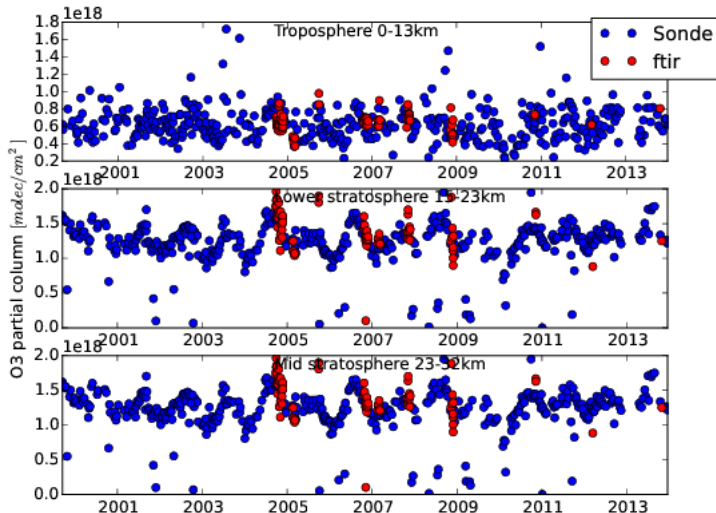
Paramaribo

- ▶ instrument check and measurement campaign in October 2014
- ▶ year around INGAAS/NIR measurements spring 2014
- ▶ year around INSB measurements since autumn 2014
 - ▶ PROBLEM: liquid nitrogen, very expensive to buy
 - ▶ Interested in buying a used nitrogen liquifier
- ▶ need to devise retrieval setups for e.g. Ozone in the INSB range ($\geq 2000\text{cm}^{-1}$) in order to make use of the wet season measurements.

Paramaribo

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- ▶ 120-5M setup up to measure on a campaign base.
- ▶ Closed cycle INSB → no liquid nitrogen necessary
 - ▶ will be measured in parallel with LN2 INSB for testing
- ▶ Complicated adjustment of refurbished 120-5M.

Measurement statistics and Funding

Measurement days since last meeting

Ny Ålesund	30
Bremen	23
Paramaribo	21

Funding

All stations are funded by national, EU or Universität Bremen projects.

Outlook and plans

- ▶ Continuation of continually performed measurements in Palau → need to find solution to the liquid nitrogen problem.
- ▶ devise O_3 retrieval for INSB range, because this would enhance the coverage in Paramaribo.
- ▶ Finishing and shipping of the automated container to Palau
- ▶ We participate in measurement campaigns like the one proposed by Manu.

Publications



S. Barthlott, M. Schneider, F. Hase, A. Wiegeler, E. Christner, Y. González, T. Blumenstock, S. Dohe, O. E. García, E. Sepúlveda, K. Strong, J. Mendonça, D. Weaver, M. Palm, N. M. Deutscher, T. Warneke, J. Notholt, B. Lejeune, E. Mahieu, N. Jones, D. W. T. Griffith, V. A. Velasco, D. Smale, J. Robinson, R. Kivi, P. Heikkinen, and U. Raffalski.
Using xco_2 retrievals for assessing the long-term consistency of ndacc/tfir data sets.
Atmospheric Measurement Techniques, 8(3):1555–1573, 2015.



Dammers e. et. al.

Retrieval of ammonia from ground-based ftir solar spectra.
submitted to ACP, 2015.



E. Mahieu, M. P. Chipperfield, J. Notholt, T. Reddman, J. Anderson, P. F. Bernath, T. Blumenstock, M. T. Coffey, S. S. Dhomse, W. Feng, B. Franco, L. Froidevaux, D. W. T. Griffith, J. W. Hannigan, F. Hase, R. Hossaini, N. B. Jones, I. Morino, I. Murata, H. Nakajima, M. Palm, C. Paton-Walsh, J. M. Russell III, M. Schneider, C. Servais, D. Smale, and K. A. Walker.
Recent northern hemisphere stratospheric hcl increase due to atmospheric circulation changes.
Nature, 515(7525):104–107, November 2014.



A. Ostler, R. Sussmann, M. Rettinger, N. M. Deutscher, S. Dohe, F. Hase, N. Jones, M. Palm, and B. M. Sinnhuber.

Multistation intercomparison of column-averaged methane from NDACC and TCCON: impact of dynamical variability.
ATMOSPHERIC MEASUREMENT TECHNIQUES, 7(12):4081–4101, 2014.



E. Sepúlveda, M. Schneider, F. Hase, S. Barthlott, D. Dubravica, O. E. García, A. Gomez-Pelaez, Y. González, J. C. Guerra, M. Gisi, R. Kohlhepp, S. Dohe, T. Blumenstock, K. Strong, D. Weaver, M. Palm, A. Sadeghi, N. M. Deutscher, T. Warneke, J. Notholt, N. Jones, D. W. T. Griffith, D. Smale, G. W. Brailsford, J. Robinson, F. Meinhardt, M. Steinbacher, T. Aalto, and D. Worthy.
Tropospheric ch_4 signals as observed by ndacc ftir at globally distributed sites and comparison to gaw surface in situ measurements.
Atmospheric Measurement Techniques, 7(7):2337–2360, 2014.



C. Vigouroux, T. Blumenstock, M. Coffey, Q. Errera, O. García, N. B. Jones, J. W. Hannigan, F. Hase, B. Liley, E. Mahieu, J. Mellqvist, J. Notholt, M. Palm, G. Persson, M. Schneider, C. Servais, D. Smale, L. Thölix, and M. De Mazière.
Trends of ozone total columns and vertical distribution from ftir observations at eight ndacc stations around the globe.
Atmospheric Chemistry and Physics, 15(6):2915–2933, 2015.

