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Ministry of Infrastructure and the
Environment

GRUAN Station De Bilt - Cabauw

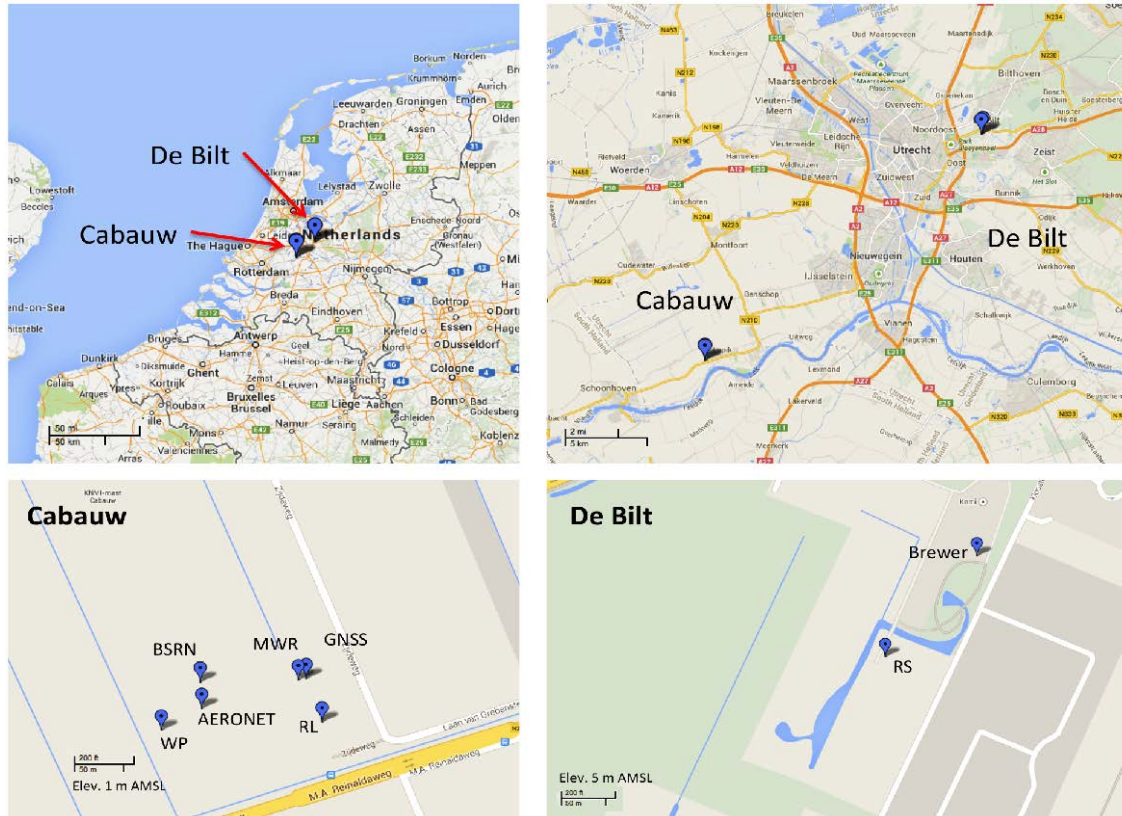
Transition Vaisala RS92 – RS41



Arnoud Apituley, Willem Koetse, Marc Allaart, Karin Tukker, Melvin
Glenn Plet, Peter Westenbrink, Damian Napoles Soto, Hans Verboom



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Top left: Map of the Netherlands with the GRUAN locations De Bilt and Cabauw indicated. Top right: Closer detail of the distributed site. The distance between the main location and the tower in Cabauw is about 22 km. Lower left: location of some of the instrumentation relevant to GRUAN in Cabauw. Instruments indicated are: **WP** (wind profiler), **BSRN** (baseline surface radiation network), Sunphotometer for **AERONET** (Aerosol robotic network), **MWR** (microwave radiometer), **GNSS** receiver, **RL** (Raman Lidar). Lower right: location of some of the instrumentation in De Bilt. Instruments indicated are: **RS** (radio sonde), **Brewer**. See also: [Cabauw instruments](#)



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Instruments

Derived Parameter	Start Year	Instrument PI	Certify ¹
Balloon-borne Observations			
<i>Radiosonde</i> Temperature, air pressure, relative humidity, wind speed and wind direction	1946	M.A.F. Allaart (KNMI)	Now
<i>Ozone sonde</i> O ₃	1992	M.A.F. Allaart (KNMI)	Later
Total Column Observations			
<i>GNSS (GPS)</i> Total integrated water vapour path	2001	S. de Haan (KNMI) H. van der Marel (TU-Delft)	Later
<i>Brewer</i> Integrated ozone column	1994	M.A.F. Allaart (KNMI)	Later
<i>Sunphotometer</i> Aerosol optical depth. Aerosol optical depth wavelength dependence.	2003	J.S. Henzing (TNO)	Later
Surface Observations			
<i>Present weather</i>	1879	KNMI	Later
<i>Aerosol concentration</i> Mass concentration, particle size, particle scattering Particle absorption	2006	J.S. Henzing (TNO) J. Vonk (RIVM)	Later
Other Profile Measurements			
Meteorological tower	1972	F.C. Bosveld (KNMI)	Later
Raman lidar	2008	A. Apituley (KNMI)	Later
Water vapour			
Aerosol			
Microwave radiometer	2006	H. Klein Baltink (KNMI)	Later
UV Backscatter and depolarisation lidar	2007	D.P. Donovan (KNMI)	Later
Ceilometer	2000	H. Klein Baltink (KNMI)	Later
Cloud Radar	2001	H. Klein Baltink (KNMI)	Later
Wind profiler + RASS	1994	H. Klein Baltink (KNMI)	Later
Solar Radiation Observations			
<i>BSRN measurement site</i> Global, diffuse, and direct components of solar radiation, long-wave incoming radiation, sunshine duration	2004	W. Knap (KNMI)	Later



GRUAN Site Certification, 1 April 2016





RS92-RS41 Transition Project Team

- Willem Koetse, Project Leader
- Karin Tukker, sensor scientist
- Melvin Glenn Plet, team leader operations
- Damian Napoles Soto, technician
- Hans Verboom, quality assurance
- Marc Allaart, (ozone) sonde scientist
- Peter Westenbrink, ozone sonde technician
- Arnoud Apituley, scientific applications



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GRUAN Station Cabauw/De Bilt

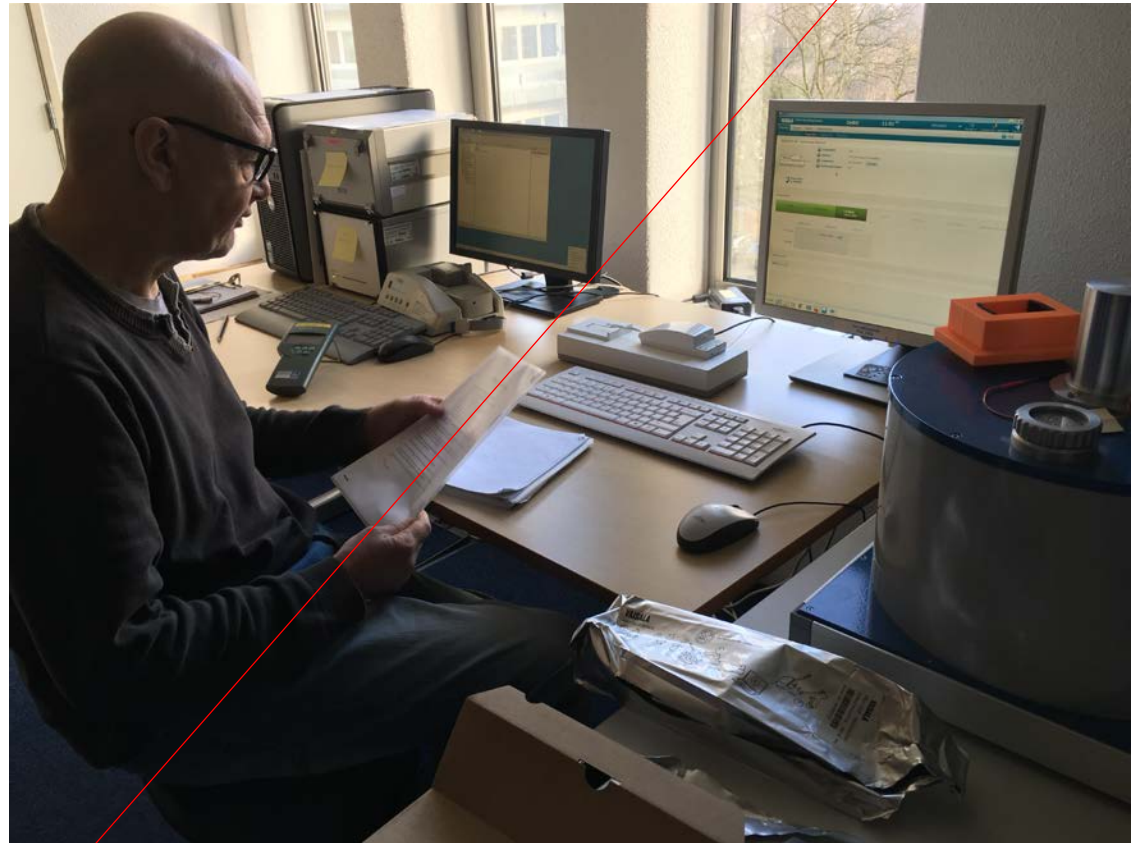
- Tests with duplicate ground station
 - Check sub systems with new hardware and software while routine launches continued with existing hardware and software
 - Switch to new hardware and software on 17 Jan. 2017



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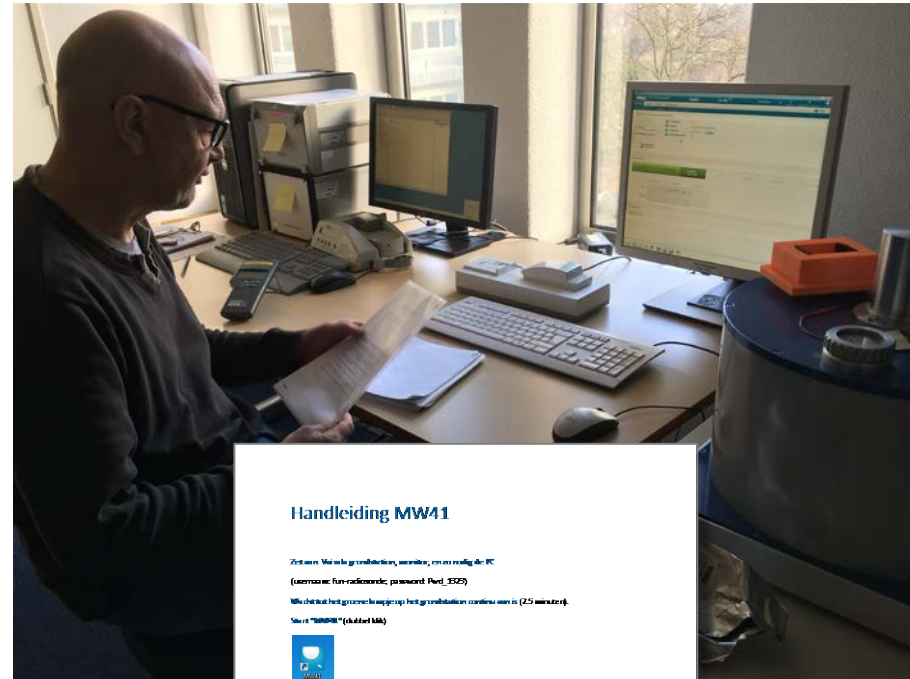
GRUAN Station Cabauw/De Bilt

- Ground station
 - PC
 - DigiCora
 - Conditioning unit
 - SHC adapter





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Handleiding MW41

Zet aan: 'Meteo-grondstation, meteorologisch, met een rook- of IR'

(naam: 'Meteo-grondstation, meteorologisch, met een rook- of IR')

Wanneer het grondstation is opgesteld, wordt het automatisch aan de slag.

Na 15 minuten (standby) (standby 15 min)



(naam: 'Meteo-grondstation, meteorologisch, met een rook- of IR')

Regel de RS485: met de RS485-verbinding kan de data over de RS485-lijn worden verzonden.

(niet aanstellen, geen knop)

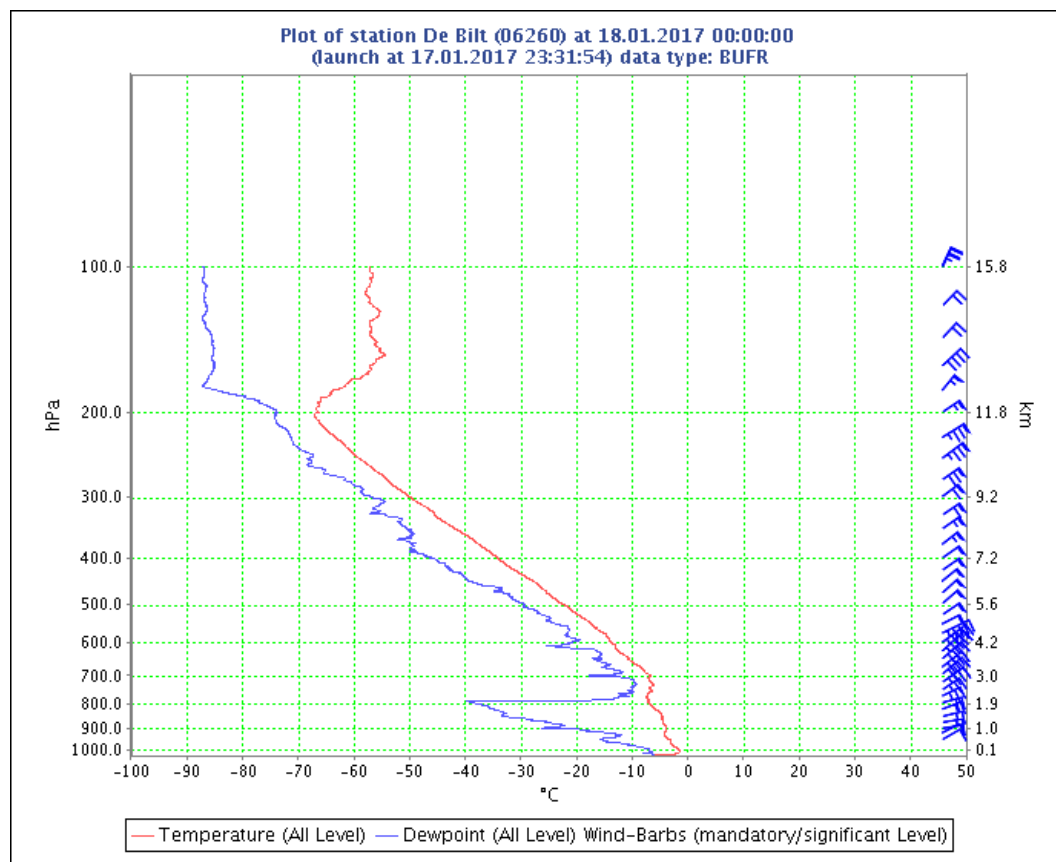


Zet de RS485-verbinding in de juiste richting.



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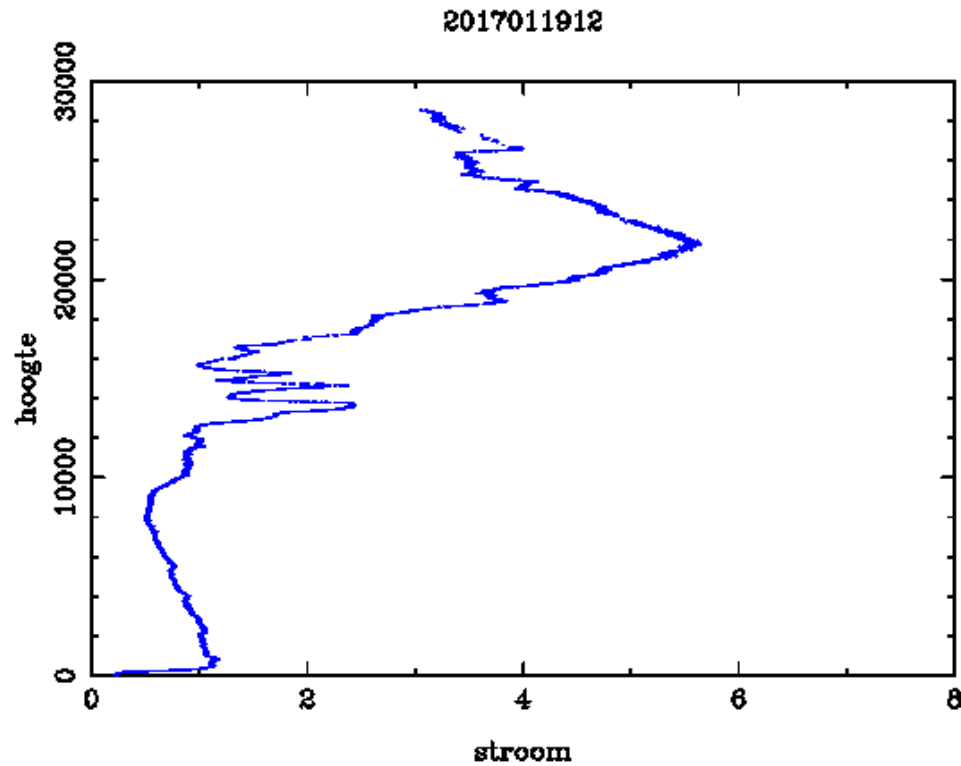




BUFR from eucos.de



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First ozone sonde launch with RS41



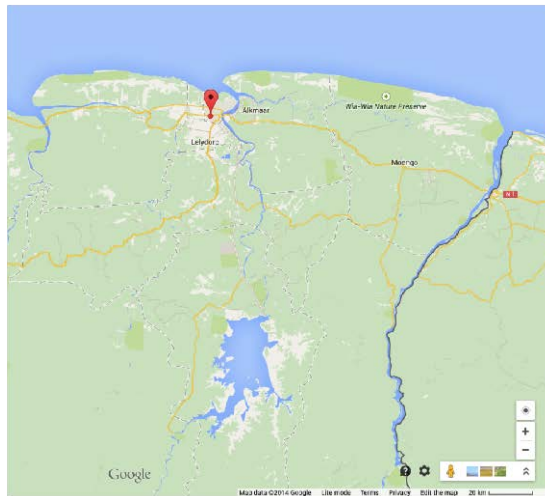
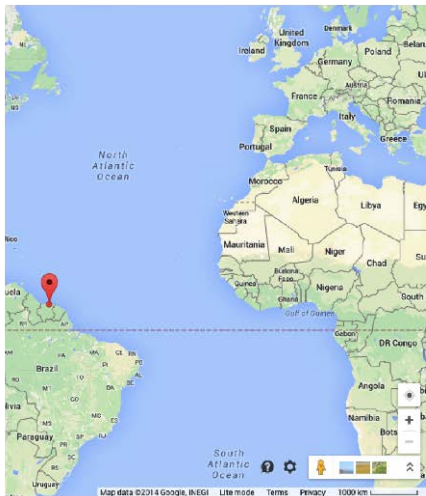
Issues

- Antenna problems – resolved
- Time resolution (file size) – resolved (work around)
- Transmission of .mwx files to GRUAN Leadcenter – pending
- Installation of RSLaunchClient – pending
- Dual/near simultaneous launches – to be done (short campaign)



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Paramaribo, Surinam



MDS staff launching an ozone sonde (March 2017)

- Ground station upgraded in Sept./Oct. 2016
- RS41 use imminent



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Conclusions

- Transition to RS41 of the operational data stream is complete
- GRUAN data stream near complete