



Royal Netherlands
Meteorological Institute
*Ministry of Infrastructure
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Paramaribo Station

potential GRUAN site?

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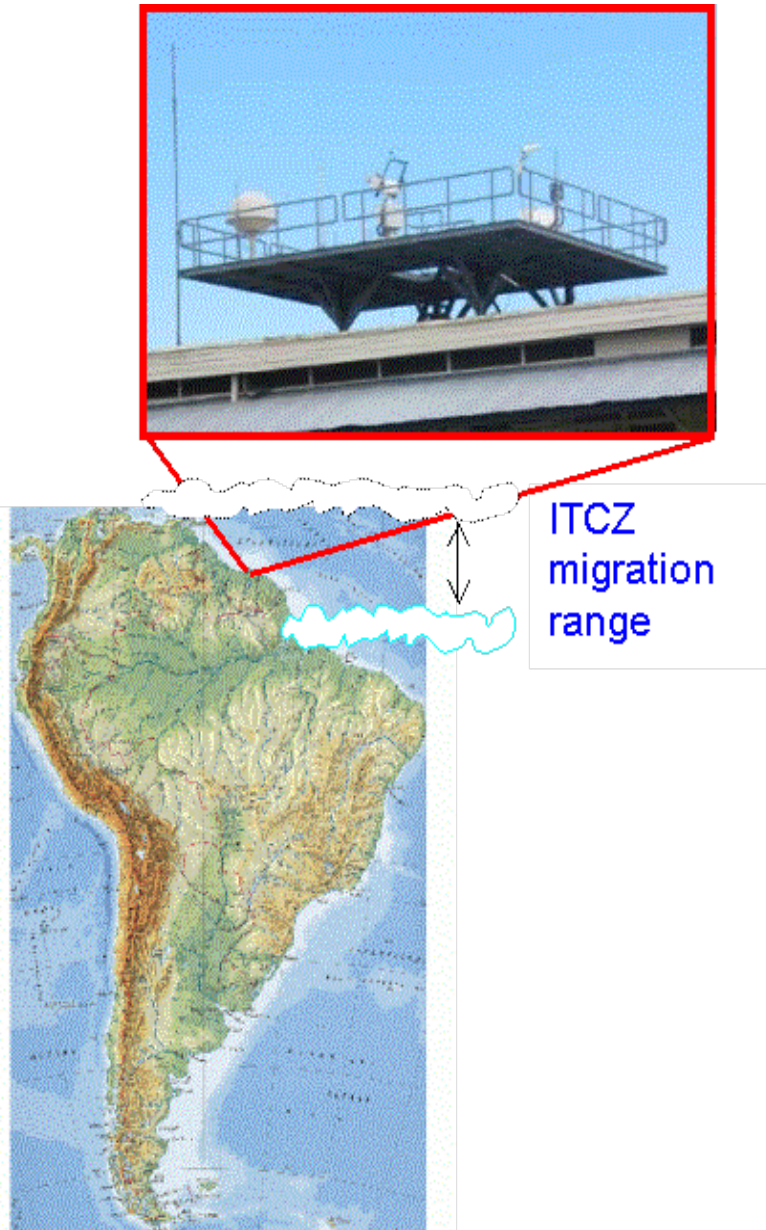
GCOS Reference Upper-Air Network





Suriname

- › Tropical rainforest climate (i.e. >60mm rain in driest month)
- › ITCZ migrates over the site twice per year
- › Two rainy seasons, two dry seasons
- › Unique location on two hemispheres





Paramaribo Atmospheric Observatory

- › Founded in 1998: cooperation between KNMI and Meteorological Service of Suriname (MDS)
- › Ozone measurement programme since 1999
- › Expanded between 2004 and 2006 with EU-funding
- › Several international measurement campaigns
- › GAW Regional Station, NDACC, SHADOZ, BSRN Candidate



Current (and near future) Essential Climate Variables - Atmosphere

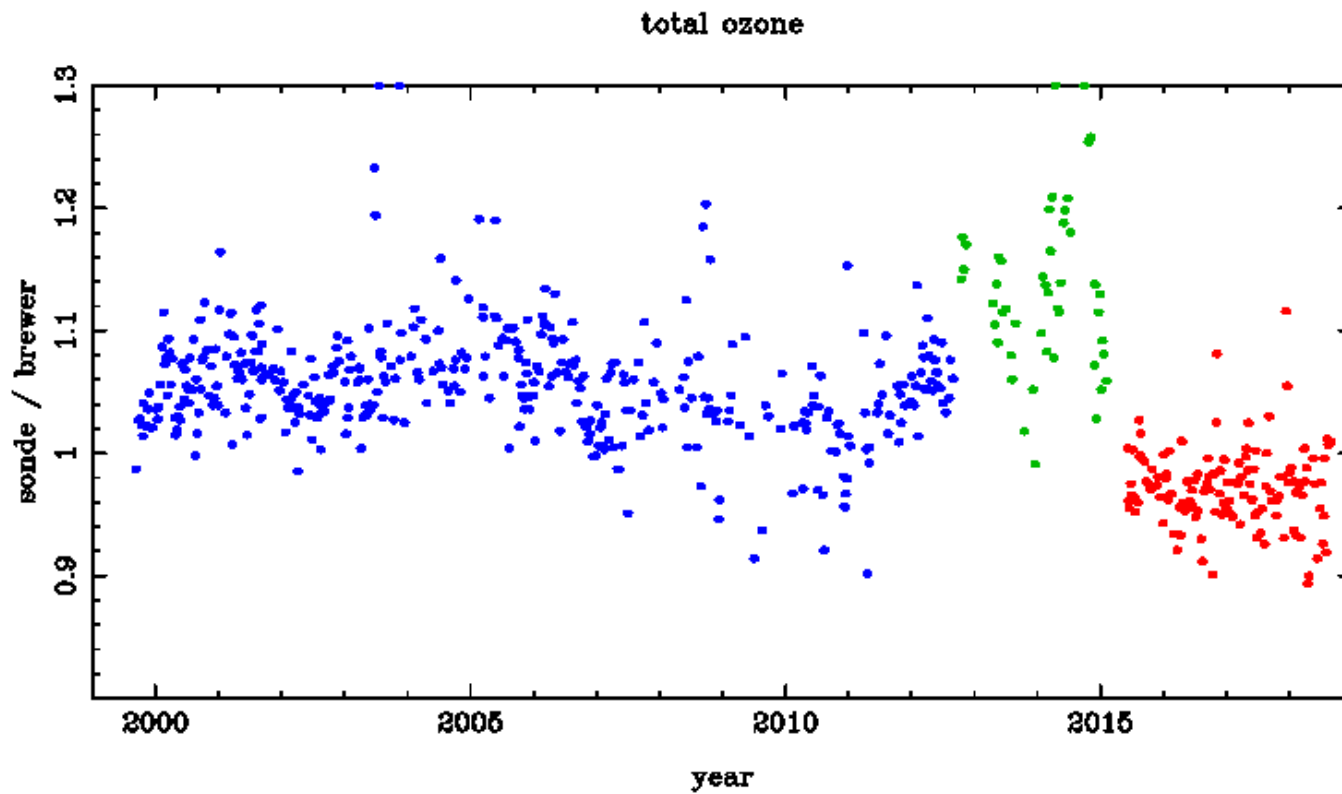
	Quantity	ECV	Instrument	Programme	Institute	Since
Composition	Ozone column	Ozone	Brewer	NDACC	KNMI, NL	1999
	Ozone profile	Ozone	ECC Sonde	NDACC/SHADOZ/(GRUAN)	KNMI, NL	1999
	Ozone surface in-situ	Ozone	O3 analyser	(WDCGG)	KNMI, NL	2005
	CO	Precursors	FTIR	NDACC	UIP- Bremen, DE	2005
	CH4	Greenhouse gases	FTIR	NDACC	UIP- Bremen, DE	2005
	Aerosol profile	Aerosol properties	Micro Pulse Lidar	MPL-Net	NASA, USA	(2019)
Upper Air	Cloud profile	Cloud properties	Micro Pulse Lidar	MPL-Net	NASA, USA	(2019)
	Temperature	Temperature	RS80/RS92/RS41	(GRUAN)	KNMI, NL	1999
	Rel. Humidity	Water vapour	RS80/RS92/RS41	(GRUAN)	KNMI, NL	1999
	Wind speed and direction	Wind speed and direction	RS80/RS92/RS41	(GRUAN)	KNMI, NL	1999
	GNSS-PW	Water vapour	GNSS	(GRUAN)	GFZ DE	(2019)
Surface	Direct solar radiation	Surface Radiation Budget	pyrheliometer	BSRN	KNMI, NL	2007
	Diffuse and global	Surface Radiation Budget	pyranometers	BSRN	KNMI, NL	2007
	Longwave downward	Surface Radiation Budget	pyrgeometer	BSRN	KNMI, NL	2007
	Pressure	Pressure	PTB220	BSRN	KNMI, NL	2007
	Temperature	Temperature	PT1000	BSRN	KNMI, NL	2018
	Rel. Humidity	Water vapour	E+E33	BSRN	KNMI, NL	2018

Ozone soundings



- weekly launch of ECC sonde (Science Pump) with
 - RS80+GPS since 1999
 - RS92-SGP since 2005
 - RS41-SGP since 2017
- TX1200 balloons, burst altitude ~32km
- air-conditioned preparation room
- following Standard Operating Procedures as much as possible
- participated in the 2017 JOSIE-SHADOZ campaign
- all data reprocessed following the O3S-DQA homogenization guidelines.
- data available via NDACC, SHADOZ and WOUDC





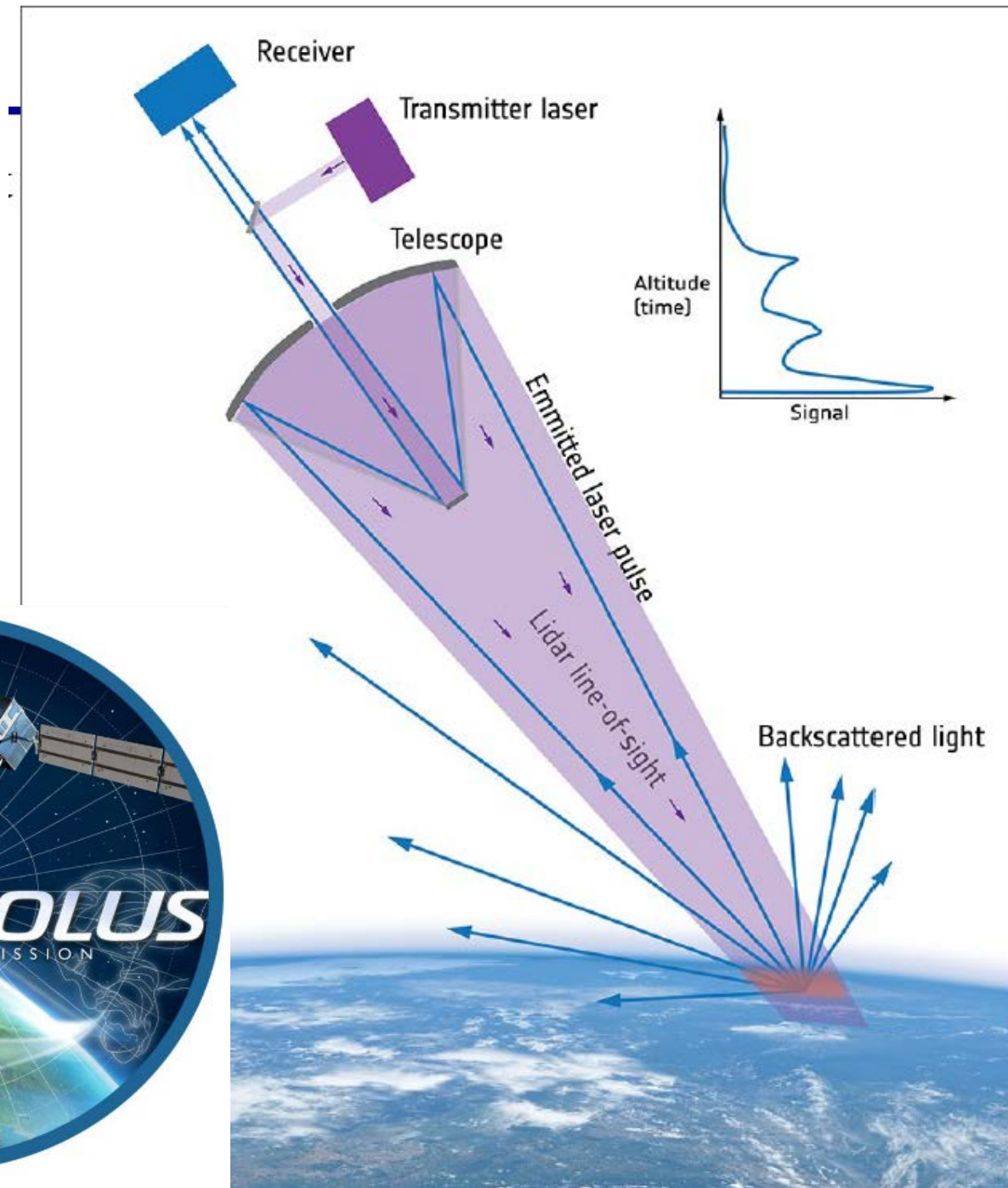
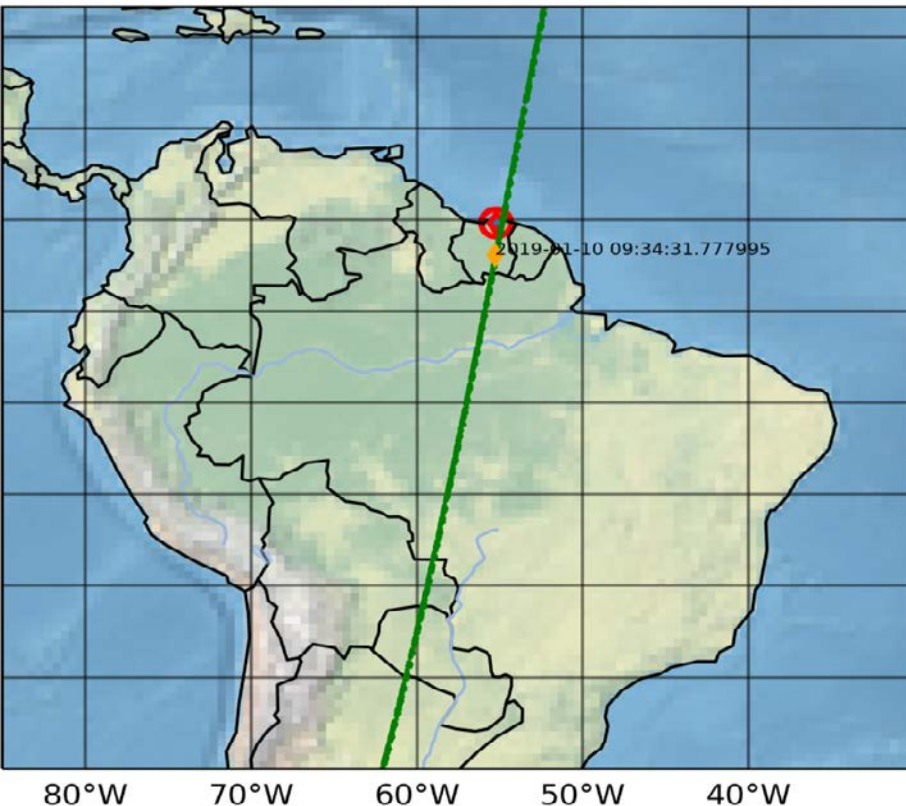
- large step in total column ozone
- error in sensing solution recipe
- dual ozone soundings in De Bilt to determine transfer function



Radio soundings for ADM-Aeolus validation

- launched August 2018
- active laser
- LOS wind from doppler-shift

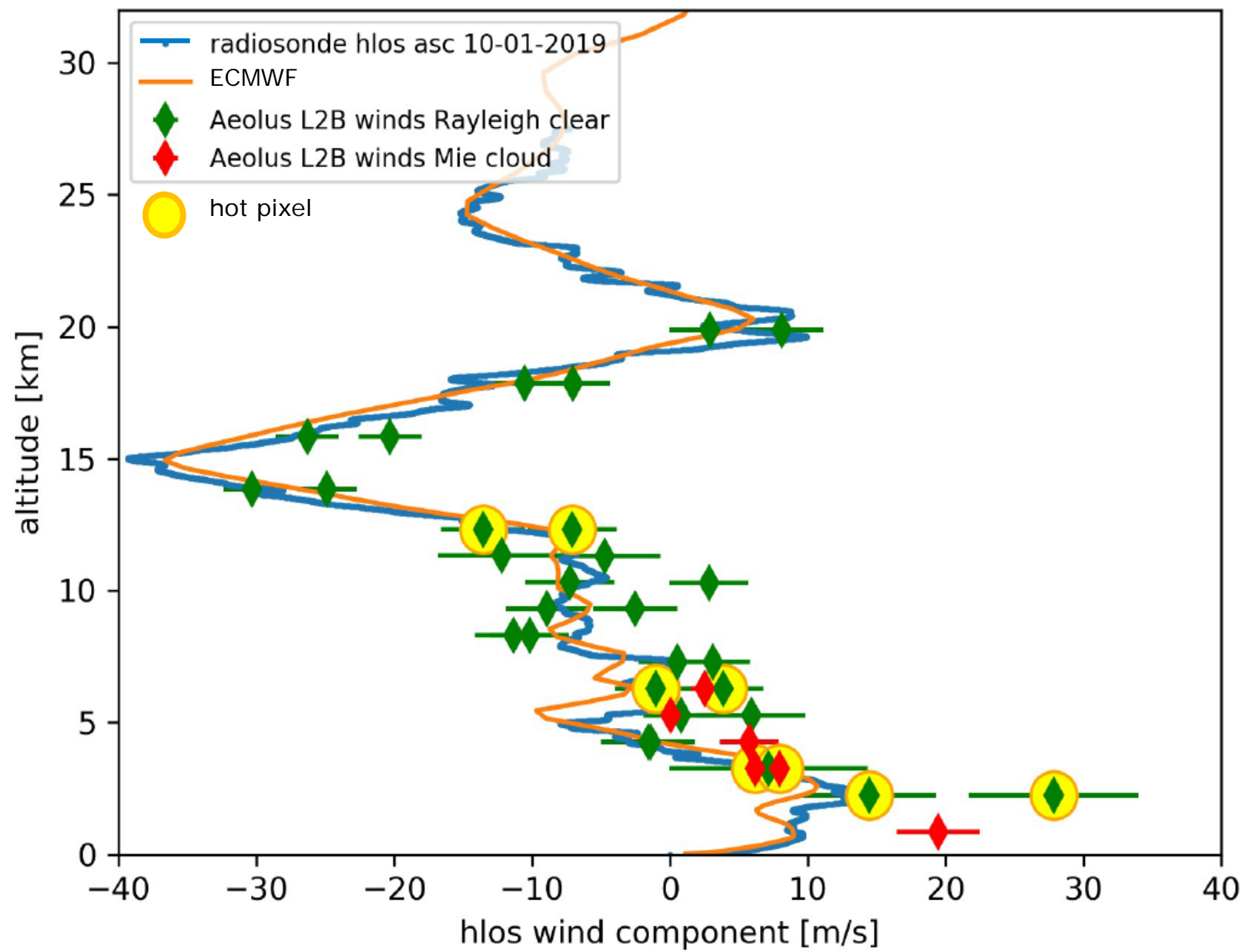
Radiosonde + Aeolus 2019-01-10



Since February 2019:

- Every Thursday morning before sunrise
- RS41 with pressure sensor and GPS
- Burst altitude: ~28km with TX350 balloon





courtesy: Jos de Kloe, KNMI



Planned in near future

- buy a Standard Humidity Chamber
- include a GNSS antenna (from GFZ)
- include a Micro Pulse Lidar (from NASA)
- revision and NIST calibration for the surface O₃ monitor
- metadata and data submission to GRUAN Lead Centre