DEPARTMENT OF **EARTH AND ENVIRONMENTAL SCIENCES**
K.U.LEUVEN - BELGIUM

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The AEROCLOUD project: How do aerosols and clouds affect the East Antarctic climate?

Prof. Nicole van Lipzig*, H. De Backer, M. Van Roozendael, N. Souverijns, A. Gossart, I. Gorodetskaya, S. Lhermitte, A. Mangold, Q. Laffineur, C. Gielen, F. Hendrick, C. Hermans -

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K.U.Leuven, Celestijnenlaan 200E, B-3001 Heverlee

COST-Leuven, 28 April 2016

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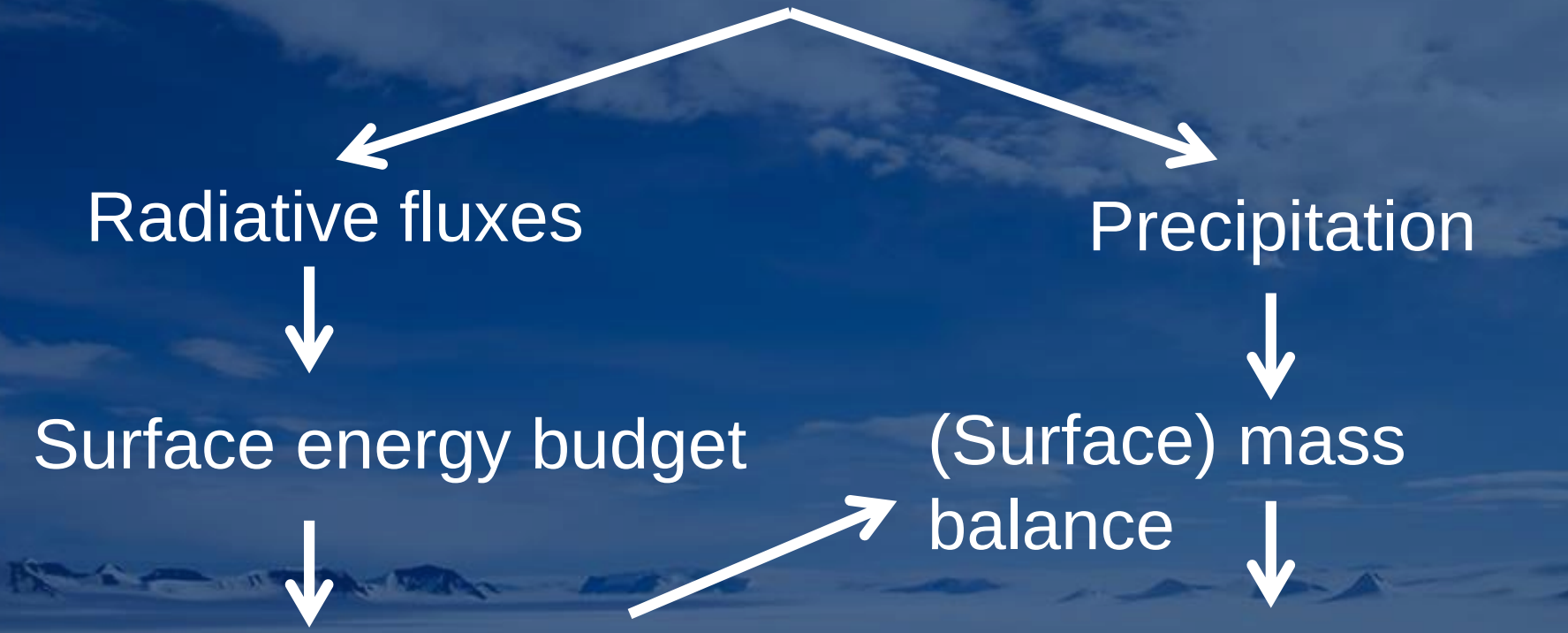
Clouds over the ice sheets

Why do we want to get them right?



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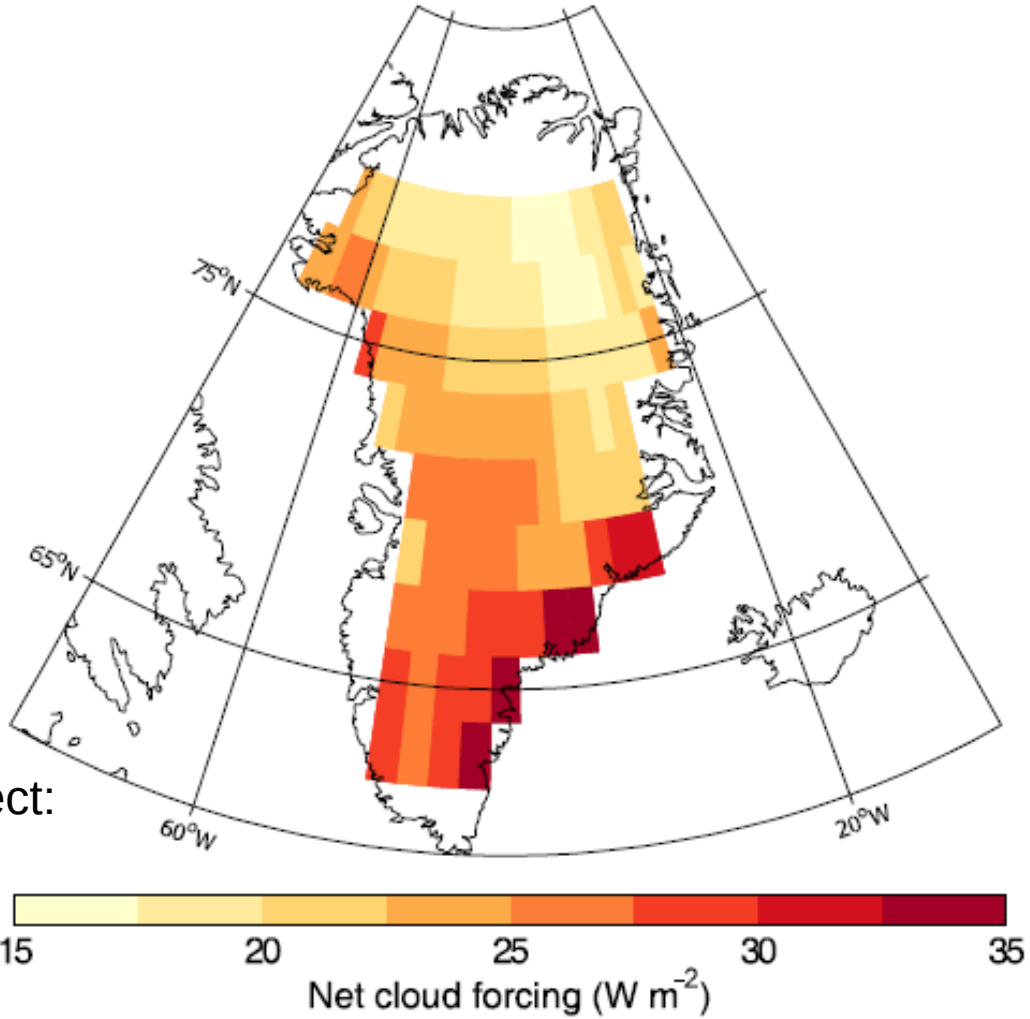
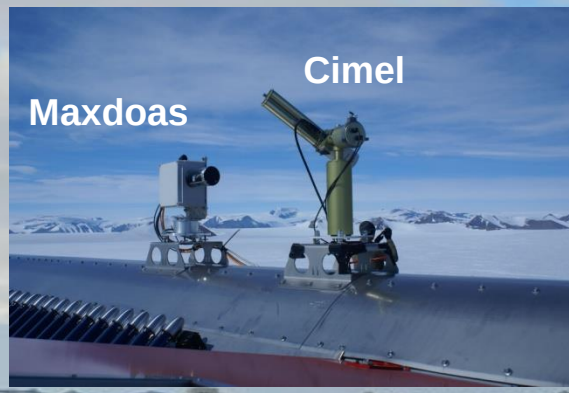
Clouds enhance Greenland meltwater runoff by one-third



Cloud radiative effect:
29.5 (±5.2) W m^{-2}.

Van Tricht, Lhermitte, Lenaerts, Gorodetskaya, van Lipzig, et al., Nature Communications, 2016

AEROCLOUD observatory Princess Elisabeth Station



Ceilometer

Pyrometer

Precipitation radar

Webcam and spotlight

Atmospheric Aerosol characterisation

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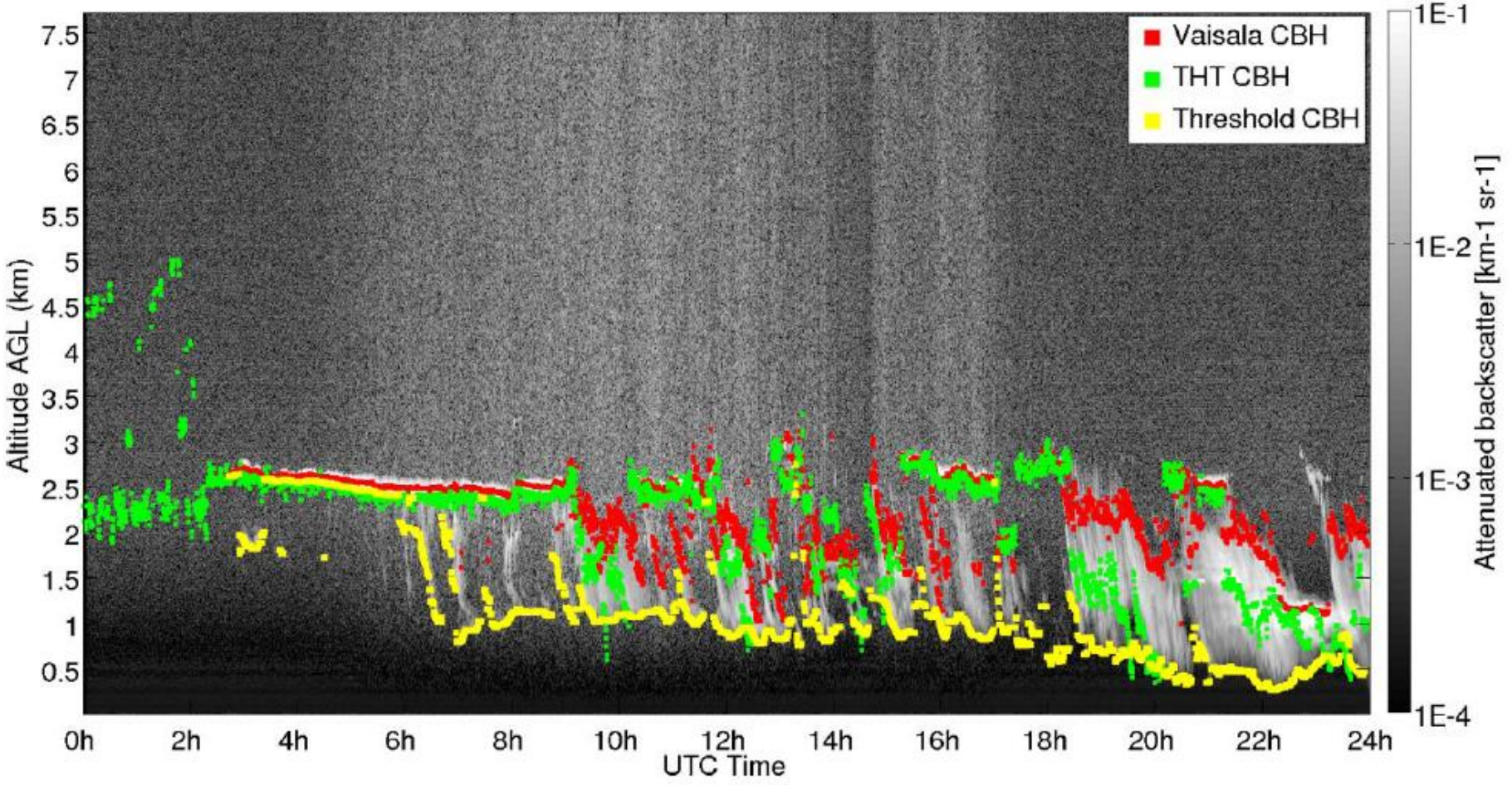
New algorithms tailored to polar regions



Van Tricht, Gorodetskaya, Lhermitte, Turner, Schween, van Lipzig, 2014

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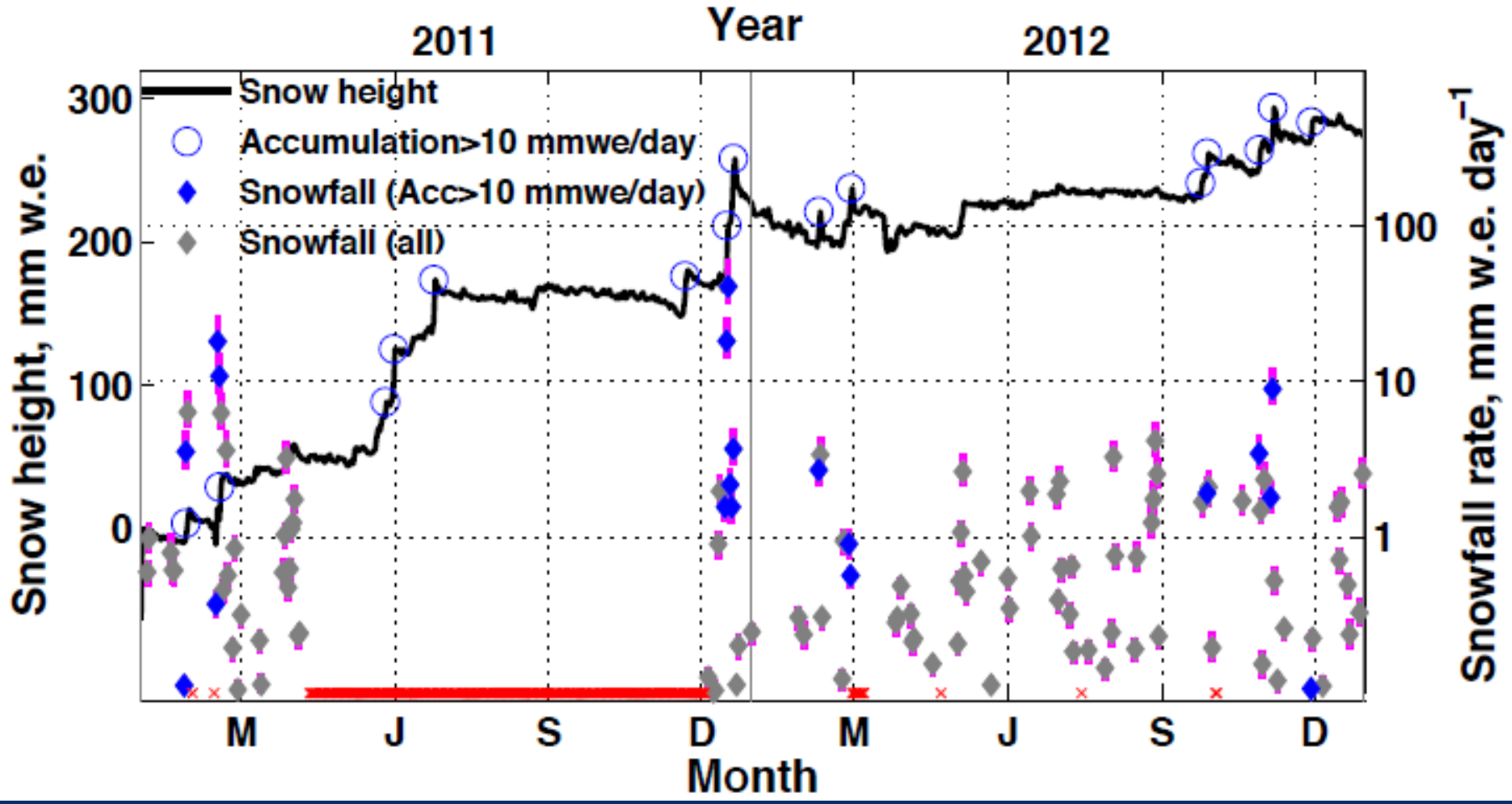
Cloud characteristics and statistics

Radar measures for the first time snowfall rate in Antarctica



Gorodetskaya, Van Tricht, Thiery, Mangold, Van Lipzig, et al., 2015

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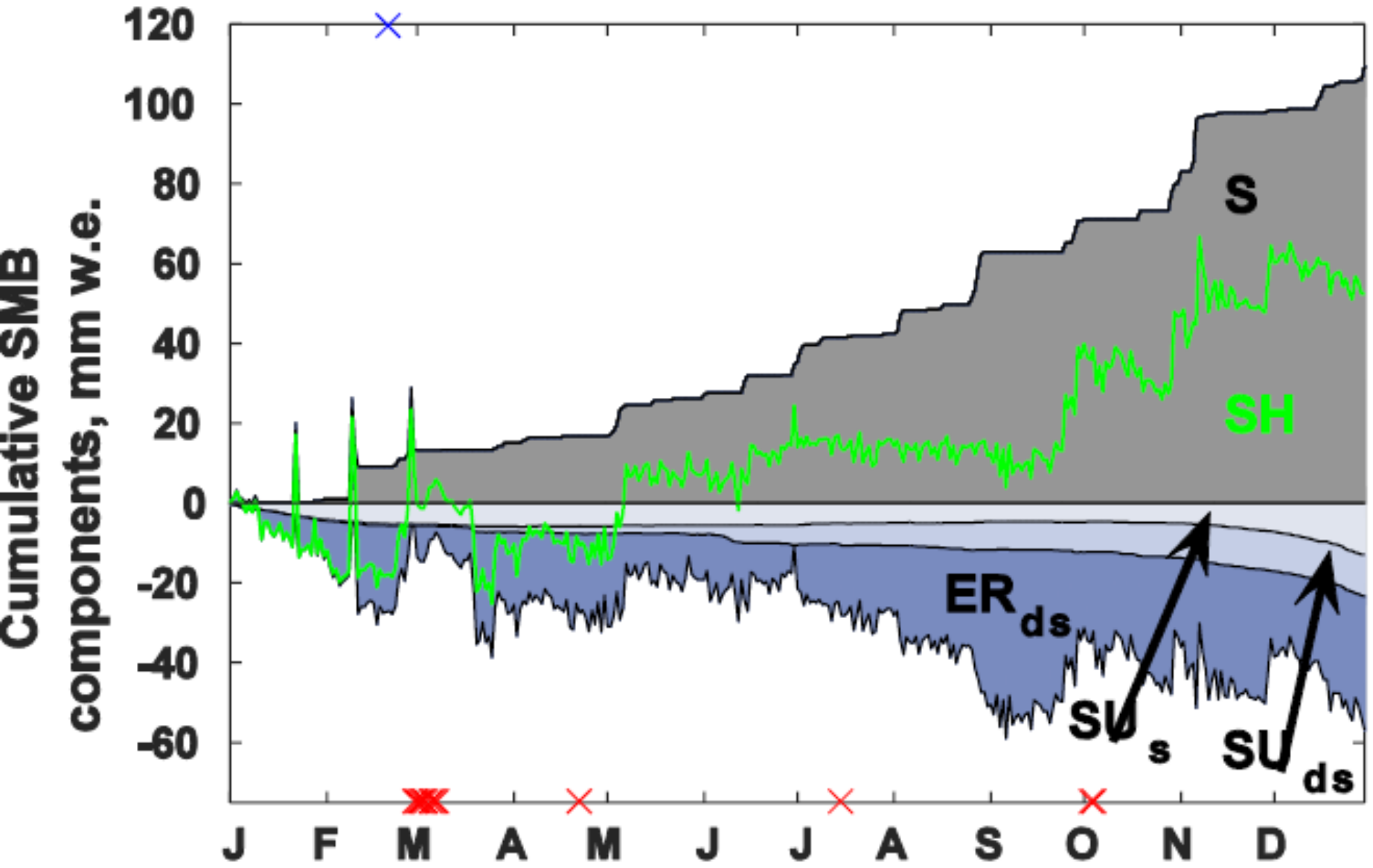
New algorithms tailored to polar regions



Gorodetskaya, Van Tricht, Thiery, Mangold, Van Lipzig, et al., 2015

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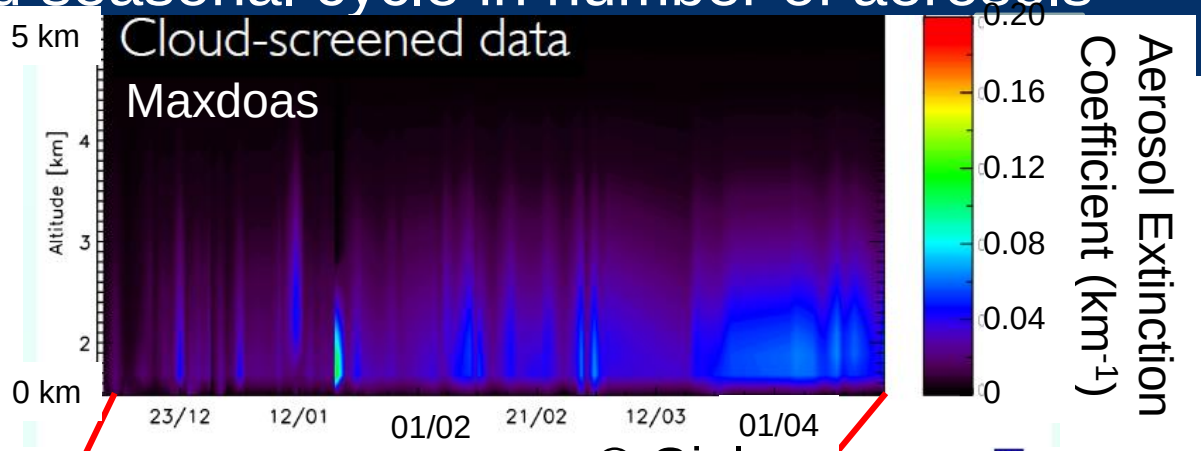
Marked seasonal cycle in number of aerosols



© Gielen

concentration in number per cm3

2000
1500
1000
500
0

2013
2014
2015
2016

D J F M A M J J A S O N

© Mangold

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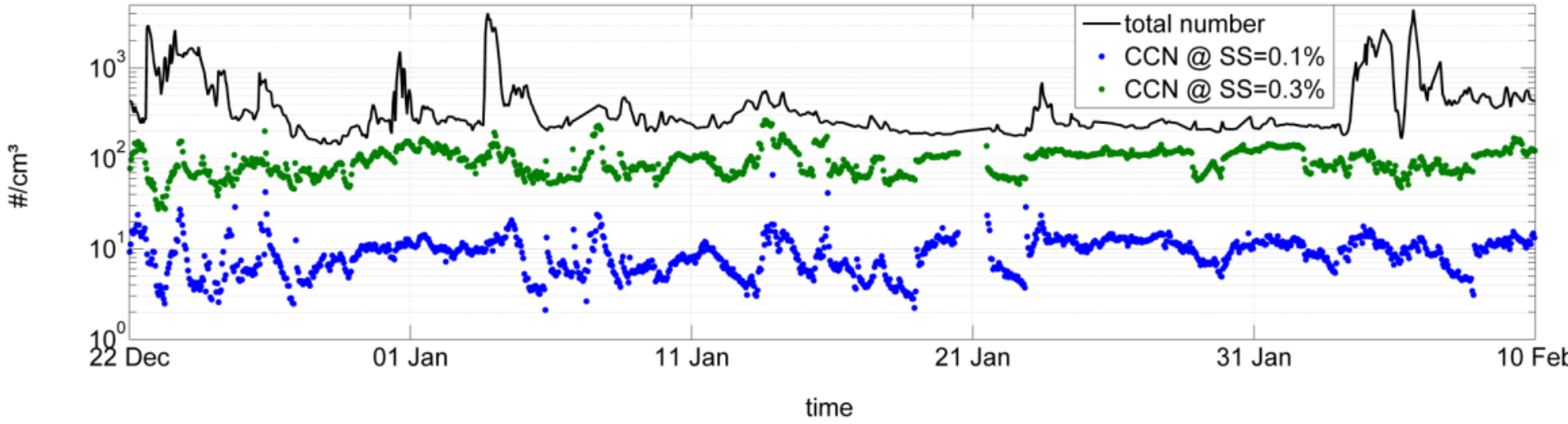
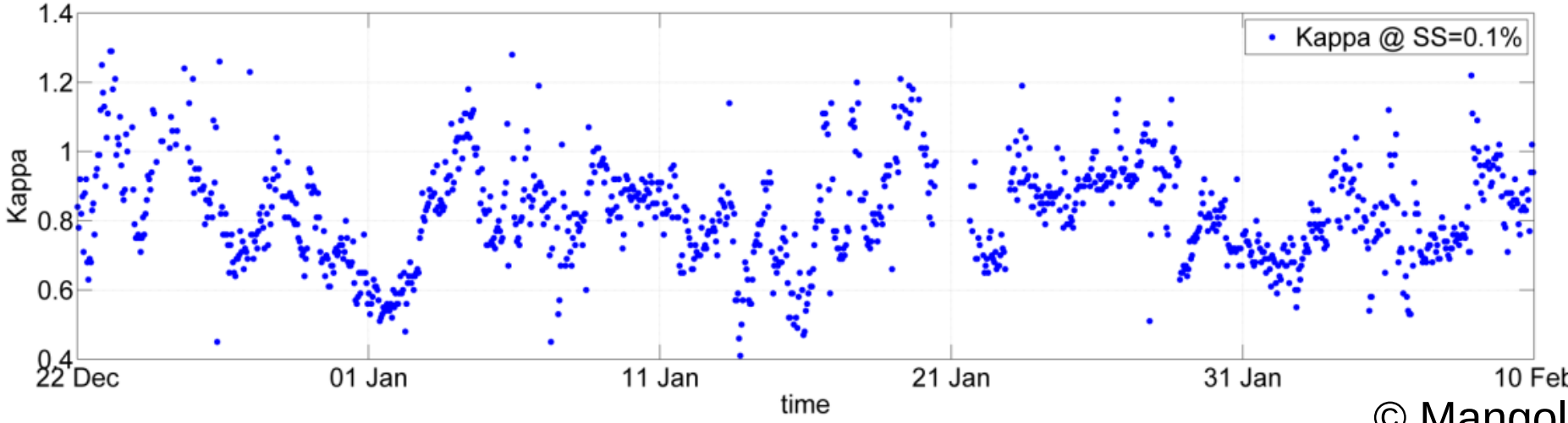
Dominance of material with hygroscopicity close to that of sulfate





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