

VU Research Portal

Quantification of nitrogen deposition and its uncertainty with respect to critical load exceedances

Bleeker, A.

2018

document version

Publisher's PDF, also known as Version of record

[Link to publication in VU Research Portal](#)

citation for published version (APA)

Bleeker, A. (2018). *Quantification of nitrogen deposition and its uncertainty with respect to critical load exceedances*. [PhD-Thesis - Research and graduation internal, Vrije Universiteit Amsterdam].

General rights

Copyright and moral rights for the publications made accessible in the public portal are retained by the authors and/or other copyright owners and it is a condition of accessing publications that users recognise and abide by the legal requirements associated with these rights.

- Users may download and print one copy of any publication from the public portal for the purpose of private study or research.
- You may not further distribute the material or use it for any profit-making activity or commercial gain
- You may freely distribute the URL identifying the publication in the public portal

Take down policy

If you believe that this document breaches copyright please contact us providing details, and we will remove access to the work immediately and investigate your claim.

E-mail address:

vuresearchportal.ub@vu.nl

Quantification of nitrogen deposition and its uncertainty with respect to critical load exceedances

Albert Bleeker

Cover picture taken by A. Bleeker near Rjukan in Norway, showing *Rhizocarpon geographicum* (map lichen). This lichen grows (mostly) on rocks in mountainous regions under low air pollution conditions.

Quantification of nitrogen deposition and its uncertainty with respect to critical load exceedances
(PhD Thesis, VU University Amsterdam)

© Albert Bleeker, 2018

ISBN: 978-94-028-0862-9
NUR 930

Printed by IPSKAMP Printing, Enschede

VRIJE UNIVERSITEIT

Quantification of nitrogen deposition and its uncertainty with respect to critical load exceedances

ACADEMISCH PROEFSCHRIFT

ter verkrijging van de graad Doctor aan

de Vrije Universiteit Amsterdam,

op gezag van de rector magnificus

prof.dr. V. Subramaniam,

in het openbaar te verdedigen

ten overstaan van de promotiecommissie

van de Faculteit der Bètawetenschappen

op maandag 5 februari 2018 om 13.45 uur

in de aula van de universiteit,

De Boelelaan 1105

door

Albert Bleeker

geboren te Hoogezand-Sappemeer

promotoren: prof.dr.ing. J.W. Erisman
prof.dr. M.A. Sutton

reading committee: prof.dr. K. Butterbach-Bahl
 prof.dr. A.J. Dolman
 prof.dr. M. Forsius
 prof.dr. M. Schaap
 prof.dr.ir. W. de Vries

On Uncertainty

“... as we know, there are known knowns. These are things we know we know. We also know there are known unknowns. That is to say, there are things that we know we don't know. But there are also unknown unknowns -- the ones we don't know we don't know ...”

(Defense Secretary Donald Rumsfeld in a Department of Defense news briefing in 2002)

