



University of Groningen

Validation of the Greenhouse Gas Balance of the Netherlands. Observational constraints on CO2, CH4 and N2O from atmospheric monitoring station Lutjewad.

Laan. Sander van der

IMPORTANT NOTE: You are advised to consult the publisher's version (publisher's PDF) if you wish to cite from it. Please check the document version below.

Document Version Publisher's PDF, also known as Version of record

Publication date: 2010

Link to publication in University of Groningen/UMCG research database

Citation for published version (APA): Laan, S. V. D. (2010). Validation of the Greenhouse Gas Balance of the Netherlands. Observational constraints on CO2, CH4 and N2O from atmospheric monitoring station Lutjewad. s.n.

Copyright

Other than for strictly personal use, it is not permitted to download or to forward/distribute the text or part of it without the consent of the author(s) and/or copyright holder(s), unless the work is under an open content license (like Creative Commons).

The publication may also be distributed here under the terms of Article 25fa of the Dutch Copyright Act, indicated by the "Taverne" license. More information can be found on the University of Groningen website: https://www.rug.nl/library/open-access/self-archiving-pure/taverneamendment.

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.

Downloaded from the University of Groningen/UMCG research database (Pure): http://www.rug.nl/research/portal. For technical reasons the number of authors shown on this cover page is limited to 10 maximum.

Validation of the Greenhouse Gas Balance of the Netherlands

Observational constraints on CO_2 , CH_4 and N_2O from atmospheric monitoring station Lutjewad

Sander van der Laan

```
Validation of the Greenhouse Gas Balance of the Netherlands
Printed by: Gildeprint, the Netherlands
ISBN: 978-90-367-4482-9 (printed version)
ISBN: 978-90-367-4484-3 (digital version)
```

Cover design: Eelke Veltman and Sander van der Laan

The figure is taken from: Climate Change 2007: The Physical Science Basis, Contribution of Working Group I to the Fourth Assessment Report of the Intergovernmental Panel on Climate Change, Chapter 2 (downloadable from: www.ipcc.ch) and represents the atmospheric concentrations of CO_2 (red), CH_4 (blue) and N_2O (black) over the last 2,000 years.

The fonts used throughout this thesis are based on the TeX Gyre font which is distributed under the GUST Font License and downloadable from: www.gust.org.pl.



This project was co-funded by the Dutch national research programme Climate changes Spatial Planning (CcSP), project ME2 "Integrated observations and modeling of Greenhouse Gas budgets at the national level in the Netherlands", and by the EU-commission FP6- project CarboEurope-IP (contract nr. GOCE-CT-2003-505572).

The printing of this thesis was financially supported by the University of Groningen

RIJKSUNIVERSITEIT GRONINGEN

Validation of the Greenhouse Gas Balance of The Netherlands

Observational constraints on CO_2 , CH_4 and N_2O from atmospheric monitoring station Lutjewad

Proefschrift

ter verkrijging van het doctoraat in de Wiskunde en Natuurwetenschappen aan de Rijksuniversiteit Groningen op gezag van de Rector Magnificus, dr. F. Zwarts, in het openbaar te verdedigen op vrijdag 22 oktober 2010 om 13:15 uur

door

Sander van der Laan geboren op 20 december 1978 te Dokkum Promotores:

Prof. dr. H.A.J. Meijer Prof. dr. ir. H.J.W. de Baar

Copromotor:

Dr. R.E.M. Neubert

Beoordelingscommissie: Prof. dr. K. Rozanski

Prof. dr. H. Dolman

Prof. dr. A.J.M. Schoot Uiterkamp

"Milieuproblemen zijn eigenlijk gedragsproblemen." H.C. Moll