LOUISE NUIJENS

Assistant professor,
Geoscience & Remote Sensing, TU Delft

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My research focuses on unraveling the physical processes that underlie the interaction of clouds with atmospheric circulations and the implication of such processes for weather, climate and wind energy prediction. I combine field and satellite observations with high-resolution simulations and theoretical models.

My **h-index is 17 (Scopus)**, and I have **8 first-authored** out of of **25 peer-reviewed journal articles**. I publish on average one first-authored paper per year, and limit my co-authorship to projects I make a significant contribution to. My work on the interaction of clouds and their environment, which serves as a thread through my career, is highly cited.

— EDUCATION

01/01/2007 – 11/06/2010	**Ph.D** - Atmospheric Sciences Dept. of Atmospheric and Oceanic Sciences University of California, Los Angeles (UCLA), USA
01/01/2007 – 13/06/2008	**M.Sc** - Atmospheric Sciences Dept. of Atmospheric and Oceanic Sciences University of California, Los Angeles (UCLA), USA
01/01/2005 – 16/11/2006	**M.Sc** (cum laude) - Meteorology Dept. of Meteorology and Air Quality Wageningen University and Research Center, the Netherlands

— POSITIONS

01/12/2015 –	**Assistant professor** *(tenure agreed upon completion teaching qualification)* Dept. of Geosciences and Remote Sensing (GRS) Delft University of Technology (TU Delft), Netherlands
01/10/2015 – 31/10/2016	**Postdoctoral fellow** Dept. of Earth, Atmosphere and Planetary Sciences Massachusetts Institute of Technology (MIT), USA
01/07/2010 – 30/08/2015	**Group leader** Observations and Process Studies Group, Atmosphere Dept. Max-Planck Institute for Meteorology (MPI-M) Germany

— RESEARCH GRANTS, SCHOLARSHIPS & AWARDS

01/12/2019 - 31/11/2024	**NWO VIDI Grant - CMTRACE** *(Tracing convective momentum transport in complex cloudy atmospheres)* **- €799.602**
01/01/2019	**European Center for Medium-Range Weather Forecasts Fellowship**

01/01/2017 – 31/12/2021	**ERC Starting Grant - CloudBrake** *How nature's smallest clouds slow down large-scale circulations critical for climate* **- €1.876.000**
01/10/2015 – 31/09/2016	**Max Kade Postdoctoral Research Grant - €50.270** Max Kade Foundation, USA
01/10/2015 – 30/11/2016	**Reimar-Lüst Stipendium - €47.112** Max-Planck Society, Germany
2008	**Bosart Award**, Dept. of Atmospheric and Oceanic Sciences University of California, Los Angeles (UCLA), USA
2007	**Scholarship,** Institute of Geophysics and Planetary Physics, University of California, Los Angeles (UCLA), USA

— FIELD EXPERIENCE AND INTERNATIONAL ACTIVITIES

2020	**EUREC^{4}A/EUREC^{4}A-Wind** (**co-PI**) in the Elucidating the role of cloud-circulation coupling on climate (**EUREC^{4}A) Field Study**, in support of the World Climate Research Programme's Grand Science Challenge on Clouds, Circulation and Climate Sensitivity, Barbados
20/05/2019 – 07/06/2019	**CloudBrake Flight Campaign (PI),** flights out of German Aerospace Center, Oberpfaffenhofen, Germany
2019 –	**Joint Global Atmospheric System Studies Panel and Working Group on Numerical Experimentation project** on surface drag and momentum transport (co-lead with Irina Sandu (ECMWF) and Annelize van Niekerk (UK MetOffice)
01/07/2010 – 31/08/2015	**Barbados Cloud Observatory (team lead),** permanent remote sensing site on Barbados, West Indies
01/01/2005 – 31/01/2005	**Rain In Cumulus over the Ocean (RICO) Field Campaign (student),** Antigua & Barbuda, West Indies

— SUPERVISION AND LEADERSHIP

TU Delft	**Kevin Helfer** (2017-), PhD *CloudBrake* **Beatrice Saggiorato** (2017-), PhD *CloudBrake* **Mariska Koning** (2018 -), PhD *CloudBrake* **Vishal Dixit** (2019 -), Postdoc *CloudBrake* **Geiske de Groot** (2020 -), PhD *Constrain*, co-supervision with Pier Siebesma **Alessandro Savazzi** (2020 -), PhD *CMTRACE* **5 MSc** students (van der Voort, Antonissen, Ramakrishnan, Koning, de Villiers)
MPI-M	**3 Engineers/Technicians** (Jansen, Bruegmann, Linne) **2 Scientific Staff** (Hirsch, Serikov) **2 PhD's** (Raphaela Vogel, Katrin Lonitz) **5 MSc** students, **4 BSc** students**, 4** Student assistants

— TEACHING ACTIVITIES

2020 - (TU Delft)	**Climate Impacts and Engineering** (CTB3311)
2018 - (TU Delft)	**Journal Club on Climate Change & Geosciences** (CIE5604)
2017 - (TU Delft)	**Introduction to Meteorology** (CIE4706)
24/06/2013 – 05/07/2013	**Lecturer** - International Summer School on Clouds and Climate Les Houches, France.
01/09/2009 – 31/12/2009	**Teaching assistant** for AOS 101 ”Climate Change” Department of Atmospheric Sciences, UCLA, USA
2005 – 2006	**Originator** of a graduate student course on ”Clouds and Climate” Wageningen University and Research Center, the Netherlands

— PROFESSIONAL SERVICES

2019 –	**BSA (Bindend Studie Advies) committee member,** TU Delft
2018 –	**Faculty MSc Redesign Team member,** TU Delft
2018 –	**Bachelor end project coordinator GRS,** TU Delft
2020	**American Geophysical Union Meeting** Co-convener
2019	**PHD thesis committee member,** Xabier Pedruszo-Bagazgoitia, Wageningen University and Research Center
2017-2018	**European Geophysical Union Meeting** Co-convener
2016-2019	**Panel Reviewer** for the Department of Energy (DOE) Atmospheric System Research Program, USA
06-07/07/2013	**Organizer Gordon Research Seminar** on Radiation & Climate Maine, USA
2007 – today	**Reviewer** for the: Deutsche Forschungs Gemeinschaft (DFG), European Research Council (ERC), Journal of Atmospheric Sciences, Journal of Climate, Atmospheric Chemistry and Physics, Monthly Weather Review, Bulletin of the American Meteorological Society, Quarterly Journal of the Royal Meteorological Society, Journal of Advances in Modeling Earth Systems.
2005 – 2006	**Committee Member** - ’Teacher of the Year’ Award, Wageningen University and Research Center, Netherlands
2004 – 2005	**Committee Member** - 'Towards an improved B.Sc. curriculum', Wageningen University and Research Center, Netherlands

— OUTREACH & MEDIA

2020	**I am a scientist**[1] bringing science to classrooms worldwide' project The Plenary, Boston, USA
2019	**Up in the Clouds**[2]**,** Stories of Science, CITG, TU Delft
2017	**"*The stilling: global wind speeds slowing since 1960*"**[3]**,**

[1] https://www.iamascientist.info/louise-nuijens
[2] https://www.tudelft.nl/en/ceg/research/stories-of-science/up-in-the-clouds/

interview in the EU Research and Innovation Magazine Horizon

2013 **'The mystery of sheep clouds'[4],** Video Interview with Dr. Max from Die Zeit Wissen, Germany's largest newspaper, Hamburg, Germany

PEER-REVIEWED JOURNAL PAPERS

- Helfer, K.C., **Nuijens, L.**, Dixit, V. (*submitted to QJRMS*): The role of shallow convection in the momentum budget of the trades from large-eddy-simulation hindcasts
- Helfer, K.C., **Nuijens, L**., De Roode, S.R. and Siebesma, A.P. (*in review for JAMES*): How wind shear affects trade-wind cumulus convection

25. Saggiorato, B., **Nuijens, L**., Siebesma, A. P., de Roode, S., Sandu, I. and Papritz, L. (2020). The influence of convective momentum transport and vertical wind shear on the evolution of a cold air outbreak. *Journal of Advances in Modeling Earth Systems*, 12,

24. **Nuijens, L.** & Siebesma, A.P. Boundary Layer Clouds and Convection over Subtropical Oceans in our Current and in a Warmer Climate. Curr Clim Change Rep (2019) 5: 80. https://doi.org/10.1007/s40641-019-00126-x

23. Vogel, R. , **Nuijens, L.** and Stevens, B. (2019), Influence of deepening and mesoscale organization of shallow convection on stratiform cloudiness in the downstream trades. Q J R Meteorol Soc. Accepted Author Manuscript. doi:10.1002/qj.3664

22. **Nuijens, L.** and Emanuel, K. (2018): Congestus modes in circulating equilibria of the tropical atmosphere in a two-column model. Quarterly Journal of the Royal Meteorological Society. DOI: 10.1002/qj.3385

21. **Nuijens, L.,** Emanuel, K., Masunaga, H., L'Ecuyer, T.(2017): Implications of Warm Rain in Shallow Cumulus and Congestus Clouds for Large-Scale Circulations, Surveys in Geophysics, 38 (6), pp. 1257-1282. DOI: 10.1007/s10712-017-9429-z

20. Bony, S., Stevens, B., Ament, F., Bigorre, S., Chazette, P., Crewell, S., Delanoë, J., Emanuel, K., Farrell, D., Flamant, C., Gross, S., Hirsch, L., Karstensen, J., Mayer, B., **Nuijens, L.**, Ruppert, J.H., Sandu, I., Siebesma, P., Speich, S., Szczap, F., Totems, J., Vogel, R., Wendisch, M., Wirth, M. (2017): EUREC4A: A Field Campaign to Elucidate the Couplings Between Clouds, Convection and Circulation. Surveys in Geophysics, 38 (6), pp. 1529-1568. DOI: 10.1007/s10712-017-9428-0

19. Vogel, R., **Nuijens, L.**, Stevens, B. (2016): The role of precipitation and spatial organization in the response of trade-wind clouds to warming. Journal of Advances in Modeling Earth Systems, 8 (2), pp. 843-862. DOI: 10.1002/2015MS000568

18. Medeiros, B., **Nuijens, L.** (2016): Clouds at Barbados are representative of clouds across the trade wind regions in observations and climate models. Proceedings of the National Academy of Sciences of the United States of America, 113 (22), pp. E3062-E3070. DOI: 10.1073/pnas.1521494113

17. Stevens, B., Farrell, D., Hirsch, L., Jansen, F., **Nuijens, L.**, Serikov, I., Brügmann, B., Forde, M., Linne, H., Lonitz, K., Prospero, J.M.(2016): The Barbados cloud observatory: Anchoring investigations of clouds and circulation on the edge of the ITCZ. Bulletin of the American Meteorological Society, 97 (5), pp. 735-754. DOI: 10.1175/BAMS-D-14-00247.1

16. **Nuijens, L.**, Medeiros, B., Sandu, I., Ahlgrimm, M. (2015): Observed and modeled patterns of covariability between low-level cloudiness and the structure of the trade-wind

[3] https://horizon-magazine.eu/article/what-happens-world-dying-winds.html
[4] https://www.zeit.de/video/2013-04/2278557247001/wolkenforschung-dr-max-dasraetsel-der-schaefchenwolken

layer. Journal of Advances in Modeling Earth Systems, 7 (4), pp. 1741-1764. DOI: 10.1002/2015MS000483

15. Lonitz, K., Stevens, B., **Nuijens, L.,** Sant, V., Hirsch, L., Seifert, A.(2015): The signature of aerosols and meteorology in long-term cloud radar observations of trade wind cumuli. Journal of the Atmospheric Sciences, 72 (12), pp. 4643-4659. DOI: 10.1175/JAS-D-14-0348.1

14. **Nuijens, L.**, Medeiros, B., Sandu, I., Ahlgrimm, M. (2015): The behavior of trade-wind cloudiness in observations and models: The major cloud components and their variability. Journal of Advances in Modeling Earth Systems, 7 (2), pp. 600-616. DOI: 10.1002/2014MS000390

13. Lamer, K., Kollias, P., **Nuijens, L.** (2015): Observations of the variability of shallow trade wind cumulus cloudiness and mass flux. Journal of Geophysical Research, 120 (12), pp. 6161-6178. DOI: 10.1002/2014JD022950

12. Brueck, M., **Nuijens, L.,** Stevens, B. (2015): On the seasonal and synoptic time-scale variability of the North Atlantic trade wind region and its low-level clouds. Journal of the Atmospheric Sciences, 72 (4), pp. 1428-1446. DOI: 10.1175/JAS-D-14-0054.1

11. Burdanowitz, J., **Nuijens, L.,** Stevens, B., Klepp, C. (2015): Evaluating light rain from satellite- and ground-based remote sensing data over the subtropical North Atlantic. Journal of Applied Meteorology and Climatology, 54 (3), pp. 556-572. DOI: 10.1175/JAMC-D-14-0146.1

10. **Nuijens, L.**, Serikov, I., Hirsch, L., Lonitz, K., Stevens, B. (2014): The distribution and variability of low-level cloud in the North Atlantic trades. Quarterly Journal of the Royal Meteorological Society, 140 (684), pp. 2364-2374. DOI: 10.1002/qj.2307

9. Siebert, H., Beals, M., Bethke, J., Bierwirth, E., Conrath, T., Dieckmann, K., Ditas, F., Ehrlich, A., Farrell, D., Hartmann, S., Izaguirre, M.A., Katzwinkel, J., **Nuijens, L.,** Roberts, G., Schäfer, M., Shaw, R.A., Schmeissner, T., Serikov, I., Stevens, B., Stratmann, F., Wehner, B., Wendisch, M., Werner, F., Wex, H. (2013): The fine-scale structure of the trade wind cumuli over Barbados – An introduction to the CARRIBA project. Atmospheric Chemistry and Physics, 13 (19), pp. 10061-10077. DOI: 10.5194/acp-13-10061-2013

8. Rieck, M., **Nuijens, L.**, Stevens, B. (2012): Marine boundary layer cloud feedbacks in a constant relative humidity atmosphere. Journal of the Atmospheric Sciences, 69 (8), pp. 2538-2550. DOI: 10.1175/JAS-D-11-0203.1

7. **Nuijens, L.**, Stevens, B. (2012) : The influence of wind speed on shallow marine cumulus convection. Journal of the Atmospheric Sciences, 69 (1), pp. 168-184. DOI: 10.1175/JAS-D-11-02.1

6. Matheou, G., Chung, D., **Nuijens, L.,** Stevens, B., Teixeira, J. (2011): On the fidelity of large-eddy simulation of shallow precipitating cumulus convection. Weather Review, 139 (9), pp. 2918-2939. DOI: 10.1175/2011MWR3599.1

5. VanZanten, M.C., Stevens, B., **Nuijens, L.**, Siebesma, A.P., Ackerman, A.S., Burnet, F., Cheng, A., Couvreux, F., Jiang, H., Khairoutdinov, M., Kogan, Y., Lewellen, D.C., Mechem, D., Nakamura, K., Noda, A., Shipway, B.J., Slawinska, J., Wang, S., Wyszogrodzki, A. (2011): Controls on precipitation and cloudiness in simulations of trade- wind cumulus as observed during RICO. Journal of Advances in Modeling Earth Systems, 3 (2), DOI:10.1029/2011MS000056

4. Seifert, A., **Nuijens, L.**, Stevens, B. (2010): Turbulence effects on warm-rain autoconversion in precipitating shallow convection. Quarterly Journal of the Royal

Meteorological Society, 136 (652), pp. 1753-1762. DOI: 10.1002/qj.684

3. Medeiros, B., **Nuijens, L.**, Antoniazzi, C., Stevens, B. (2010): Low-latitude boundary layer clouds as seen by CALIPSO. Journal of Geophysical Research Atmospheres, 115 (23), art. no. D23207. DOI: 10.1029/2010JD014437

2. **Nuijens, L.**, Stevens, B., Siebesma, A.P. (2009): The environment of precipitating shallow cumulus convection. Journal of the Atmospheric Sciences, 66 (7), pp. 1962-1979. DOI: 10.1175/2008JAS2841.1

1. Rauber, R.M., Stevens, B., Ochs III, H.T., Knight, C., Albrecht, B.A., Blythe, A.M., Fairall, C.W., Jensen, J.B., Lasher-Trapp, S.G., Mayol- Bracero, O.L., Vali, G., Anderson, J.R., Baker, B.A., Bandy, A.R., Brunet, E., Brenguier, J.L., Brewer, W.A., Brown, P.R.A., Chuang, P., Cotton, W.R., Di Girolamo, L., Geerts, B., Gerber, H., Göke, S., Gomes, L., Heikes, B.G., Hudson, J.G., Kollias, P., Lawson, R.P., Krueger, S.K., Lenschow, D.H., **Nuijens, L.**, O'Sullivan, D.W., Rilling, R.A., Rogers, D.C., Siebesma, A.P., Snodgrass, F., Stith, J.L., Thornton, D.C., Tucker, S., Twohy, C.H., Zuidema, P. (2007): Rain in shallow cumulus over the ocean: The RICO campaign. Bulletin of the American Meteorological Society, 88 (12), pp. 1912-1928. DOI: 10.1175/BAMS-88-12-1912

— BOOKS AND REPORTS

2020 Sandu, I., Bechtold P., **Nuijens, L.**, Beljaars, A. and Brown, A. (2020) What controls the systematic forecast biases in near-surface wind direction over the oceans? (*ECMWF Technical Memo*)

2020 **Nuijens, L.** and C. Jacob, (2020): Cloudy Perspectives, Chapter 1 of *Clouds and Climate. Clouds and Climate: Climate Science's Greatest Challenge. Siebesma, A., Bony, S., Jakob, C., & Stevens, B. (Eds.). Cambridge: Cambridge University Press.*

— INVITED TALKS

The following only lists international conferences, workshops and universities to which I have been invited to speak. In total I have given > 30 presentations at conferences/workshops since the start of my career (excluding a large number of informal seminars) and ~10 poster presentations at conferences/workshops.

Feb 2020	**CIMH, Barbados Symposium: *From BOMEX to EUREC^{4}A***
Dec 2019	**American Geophysical Union Fall Meeting**, San Fransisco, US on: *Convectively driven wind variability in connection to wind biases in the ECMWF operational model*
Nov 2019	**Karlsruhe Institute of Technology (KIT) Meteorologisches Kolloquium**, Karlsruhe, Germany
Oct 2018	**Cloud Feedback Model Intercomparison Project Meeting**, Boulder,US
Sept 2018	**ECMWF Physics Seminar,** Reading, UK
Feb 2018	**Pan GASS (Gewex Cloud System Studies) Conference**, Lorne, Austrialia
July 2017	**Workshop 'The Future of Cumulus Parameterization'**, TU Delft
Apr 2017	**European Geoscience Union (EGU) General Assembly** Vienna, AU
Feb 2017	**Max Planck Institute for Meteorology** Seminar, Hamburg, Germany

06/28/2016 **Brookhaven National Laboratory**, Long Island, New York, US

05/05/2016 **Columbia University**, SEAS Colloquium in Climate Science, New York,US
on: *When shallow convection deepens and precipitates: rethinking the role of subsiding regions in large-scale circulations*

04/13/2016 **Rosenthiel School of Marine & Atmospheric Science**, Department of Atmosperic Sciences, Department Seminar, Miami, US
on: *Observed and modeled sensitivity of trade-wind cloudiness to changes in the large-scale flow*

03/05/2016 **DLR/UNOOSA Conference on Climate Change**, Cologne, DE
on: *Low clouds, more than the wild card in global mean temperature rise*

02/15/2016 **BMBF funded international conference** of the High Definition Clouds and Precipitation for Advancing Climate Prediction Project, Berlin, DE
on: *Understanding clouds and precipitation through highly resolved process modelling and observations*

02/08/2016 **International Space Science Institute (ISSI) workshop**, Bern, CH
on: *"Shallow clouds and water vapor, circulation and climate sensitivity"*

12/12/2015 **American Geophysical Union Fall Meeting**, San Fransisco, US
on: *The Interaction of Trade-Wind Clouds with the Large-Scale Flow in Observations and Models*

03/09/2015 **ECMWF Annual Seminar on Physical Processes in present and future large-scale models** , Reading, UK
on: *Coupling between clouds and their environment - using observations to constrain models*

24/01/2013 **University of Oxford**, Oxford, UK
on: *The structure and variability of shallow trade-wind cumulus from long-term ground-based remote sensing*

08/11/2011 **Klaus Hasselmann Symposium**, Hamburg, Germany
on: *Observations for model development*

18/08/2011 **Goldschmidt Conference**, Prague, CZ
on: *The Barbados Cloud Observatory: controls on precipitating shallow cumulus convection*

20/04/2009 **European Geoscience Union *(*EGU) General Assembly** Vienna, AU
on: *Relationships between wind speed, humidity and precipitating shallow cumulus convection*