JOHANNES (Hans) OERLEMANS

Professor Emeritus at Utrecht University (IMAU)
Affiliated with *Glacier Vision Gmbh* (Switzerland)

Research interests:

glaciers
sea-level change
palaeoclimatology
dynamic meteorology

Ice & music

Requiem for the Swiss Glaciers
The MortAlive project

Current projects

Future behaviour of tidewater glaciers in Svalbard

J Oerlemans, J Kohler and A Luckman (2022): Modelling the mass budget and future evolution of Tunabreen, central Spitsbergen. *The Cryosphere,* **16**, 2115-2126.

The use of ice stupas as water storage

J Oerlemans, S Balasubramanian, C Clavuot and F Keller (2021): Brief communication: Growth an decay of an ice stupa in alpine conditions – a simple model driven by energy-flux observations over a glacier surface. *The Cryosphere,* 15, 1-6.

Lake ice modelling (recreation and safety)

J Oerlemans and F Keller (2022): Application of a simple model for ice growth to the Lake of St. Moritz, Switzerland. *Journal of Glaciology* (submitted)

The **GlaciersAlive** Foundation (co-Founder)

The objective is to foster small-scale projects for protecting glaciers and dealing with the consequences of glacier retreat (e.g. water supply for mountain huts).
GlaciersAlive Foundation

Curriculum vitae

- born at Eethen on 8 October 1950
- 1969: diploma HBS-B (Rijks-hbs, Bergen op Zoom)
- 1972: graduating in physics (University of Utrecht)
- 1976: Master in geophysics, meteorology (summa cum laude); optional topics: applied mathematics and physical oceanography
- 1976-1980: junior scientist at the Royal Netherlands Meteorological Institute; in September-December 1979 visitor at the National Center for Atmospheric Research (Boulder, USA)
- 1980: Ph. D. (summa cum laude); title of the dissertation: SOME MODEL STUDIES ON THE ICE AGE PROBLEM. Promotor: Prof. Dr. C.J.E. Schuurmans
- 1980-1989: scientist at the Institute for Marine and Atmospheric Research, Utrecht University
- 1982-1986 (part-time): reader at the University of Leuven (Department of Physics)
- 1986-1988 (part-time): research position at the Alfred-Wegener Institut für Polarforschung (Bremerhaven)
- 1989-present : Professor of Meteorology, Faculty of Physics and Astronomy, Utrecht University
- 1997-2001; 2004-2006 : Director, Institute for Marine and Atmospheric Research, Utrecht University

Major honours and awards:

- 1994: Elected member of the Royal Netherlands Academy of Sciences and Arts
- 2001: Recipient of the NWO-SPINOZA award
- 2004: Physica-prijs, The Netherlands' Physical Society
- 2007: Doctor Honoris Causa, University of Stockholm
- 2007: Academy Professorship, Royal Netherlands Academy of Arts and Sciences
- 2008: Julia and Johannes Weertman Medal, European Geosciences Union
- 2009: Elected member of the Norwegian Scientific Academy for Polar Research
- 2010: Ridder in de Orde van de Nederlandse Leeuw
- 2019: Richardson Medal, International Glaciological Society
- 2022: Balzan Prize

Initiation of new developments - the most significant ones are listed below with a few key publications

1980: Successful simulation of the 100 ky glacial cycle with a dynamic ice sheet model with delayed bed response

J Oerlemans (1980): Model experiments on the 100 000 yr glacial cycle. *Nature* **287**, 430-432

1981-1983: Unravelling the nonlinearities involved in ice sheet – climate coupling (bifurcations, cyclic behaviour), including the effect of topography

J Oerlemans (1981): Some basic experiments with a vertically-integrated ice-sheet model. *Tellus* **33**, 1-11.

J Oerlemans (1983): A numerical study of cyclic behaviour of polar ice sheets. *Tellus* **35A**, 81-87.

1982: First self-consistent numerical model of the Antarctic ice sheet, including bed response, dynamic ice shelves and a mass balance field related to topography and climatic state.

J Oerlemans (1982): A model of the Antarctic Ice Sheet. *Nature* **297**, 550-553.

1984: First attempt to couple an ice sheet model with a simple erosion model, showing how fjords may form and what the role is of the later scale.

J Oerlemans (1984): Numerical experiments on glacial erosion. *Zeitschrift fuer Gletscherkunde und Glazialgeologie* **20**, 107-126.

1991 – 2018: Bringing glaciology and meteorology together. Initiation of field campaigns (mostly with EU projects) in the Alps, Greenland, Iceland, Norway, Antarctica, Svalbard. Integration of in situ measurements, remote sensing and computer simulation. Energy-balance modelling of glacier mass balance.

J Oerlemans and H F Vugts (1993): A meteorological experiment in the melting zone of the Greenland ice sheet. *Bulletin of the American Meteorological Society*, **74**, 355-365.

J Oerlemans, H Bjornsson, M Kuhn, F Obleitner, F Palsson, P Smeets, H F Vugts and J de Wolde (1999): A glacio-meteorological experiment on Vatnajokull, Iceland. *Boundary-Layer Meteorology* **92**, 3-26.

E J Klok and J Oerlemans (2002): Model study of the spatial distribution of the energy and mass balance of Morteratschgletscher, Switzerland. *Journal of Glaciology* **48** (163), 505-518.

M de Ruyter de Wildt and J Oerlemans (2003): Satellite retrieval of mass balance: comparing SAR images with albedo images and in situ mass-balance observations. *Journal of Glaciology* **49** (166), 437-448.

J Oerlemans, R H Giesen and M R van den Broeke (2009): Retreating alpine glaciers: increased melt rates due to accumulation of dust (Vadret da Morteratsch, Switzerland). *Journal of Glaciology* **55** (192), 729-736.

1997 – until today

Many studies on computer simulation of glacier fluctuations, introducing the concepts of dynamic calibration, multiple-flowline modelling.

J Oerlemans (1997): Climate Sensitivity of Franz-Josef Glacier, New Zealand, as revealed by numerical modelling. *Arctic and Alpine Research* **29** (2), 233-239.

J Oerlemans, B Anderson, A Hubbard, Ph Huybrechts, T Johannesson, W H Knap, M Schmeits, A P Stroeven, R S W van de Wal, J Wallinga and Z Zuo (1998): Modelling the response of glaciers to climate warming. *Climate Dynamics* **14**, 267-274.

J Oerlemans (2018): Modelling the late Holocene and future evolution of Monacobreen, northern Spitsbergen. *The Cryosphere* **12**, 3001-3015, doi.org/10.5194/tc-12-3001-2018.

J Oerlemans, and F Keller (2021): Modelling the Vadret da Tschierva, Switzerland: calibration with the historical length record and future response to climate change. *Journal of Glaciology,* 12 July 2012, 1-10, https:// doi.org/10.1017/jog.2021.82.

1989-2004 Sea level fluctuations – role of ice dynamics and thermal expansion of oceans

First peer-reviewed projection of future sea-level change, including quantification of uncertainty:

J Oerlemans (1989): A projection of future sea level. *Climatic Change* **15**, 151-174.

J Oerlemans, M Dyurgerov and R S W van de Wal (2007): Reconstructing the glacier contribution to sea-level rise back to 1850. *The Cryosphere* **1**, 59-65.

R H Giesen and J Oerlemans (2013): Climate-model induced differences in the 21st century global and regional glacier contributions to sea-level rise. *Climate Dynamics* **14** (11-12), 3283-3300. Doi:10.1007/s00382-013-1743-7.

2005 - 2011 Inverse modelling on glacier length records – an independent method to derive a global temperature record

J Oerlemans (2005): Extracting a climate signal from 169 glacier records. *Science* **308**, 675-677; 10.1126/science.1107046.

P W Leclercq and J Oerlemans (2011): Global and hemispheric temperature reconstruction from glacier length fluctuations. *Climate Dynamics*. Doi: 10.1007/s10712-011-9121-7.

2004: First attempt to separate the deep ocean temperature and ice volume signals in d18O sediment records by means of an ice dynamics model.

> J Oerlemans (2004): Correcting the Cenozoic deep-sea temperature record for Antarctic ice volume. *Palaeogeography, Palaeoclimatology, Palaeoecology* **208** (3), 191-201.

2008: Introducing a new class of glacier models (book: Minimal Glacier Models), that allow to study dynamic processes and coupling with climate without relying on huge numerical models.
Very useful for educational purposes and many possibilities for transparent calibration (control methods). Examples (application to tidewater glaciers):

> J Oerlemans and F M Nick (2006): Modelling the advance-retreat cycle of a tidewater glacier with simple sediment dynamics. *Global and Planetary Change* **50**, 99-111.
>
> J Oerlemans, J Jania and L Kolondra (2011): Application of a minimal glacier model to Hansbreen, Svalbard. *The Cryosphere* **5**, 1-11. Doi: 10.5194/tc-5-1-2011.
>
> J Oerlemans (2018): Modelling the late Holocene and future evolution of Monacobreen, northern Spitsbergen. *The Cryosphere* **12**, 3001-3015, doi.org/10.5194/tc-12-3001-2018.

Publications
4 text books
232 peer-reviewed papers (**92** as first author, of which 10 in *Nature / Science*)

Karthaus summer course
Since 1995 Oerlemans organized the Karthaus summer school on *Ice sheets and glaciers in the Climate System*. Meanwhile this is widely acknowledged as the best master course in glaciology for PhD students.
For his efforts, Oerlemans received the Richardson Medal of the International Glaciological Society (2019).

Contributions to international assessments on climate change
- IPCC Working Group-I, First Assessment, 1990, Lead author of Chapter 9 (*Sea level rise*)
- IPCC Working Group-I, Second Assessment, 1996, Lead author of Chapter 9 (*Sea level rise*)
- IPCC Working Group-I, Third Assessment, 2001, Lead author of Chapter 2 (*Observed Climate Variability and Change*)
- ACIA (Arctic Climate Impact Assessment), 2005, Arctic Council, contributing author *(Cryosphere and Hydrology)*

Committees / councils (ordinary membership of national committees not listed):
- Scientific Advisory Committee on the European Glaciological Programme, European Science Foundation, 1986-1990
- Commission on Dynamic Meteorology (IAMAP), 1987-
- Council of the International Glaciological Society, 1988-1991
- Member of Steering Committee, European Ice-Sheet Modelling Initiative (ESF), 1993-1998
- Working Group on Arctic Glaciology - International Arctic Science Committee, 1993- (chairman 2003-2007)
- Member of the Science Panel and Steering Committee of EPICA (European Project on Ice Coring in Antarctica), 1995-2002
- Vice President of the International Commission on Snow and Ice (ICSU), 1995-1999
- Chairman of the Committee for the Heineken Price for Environmental Sience, 2001
- Chairman of the Scientific Advisory Board of the Alfred-Wegener-Institut für Polar- und Meeresforschung (2004-2008)
- Chairman of the Committee for the Buys Ballot Award of the Royal Netherlands Academy of Arts and Sciences, 2004
- PI of the IPY project GLACIODYN (Response of Arctic glaciers to climate warming, International Polar Year 2007-08)
- Member of the Scientific Advisory Board of the Bert Bolin Centre for Climate Research, University of Stockholm, 2008-2013
- Member of the Scientific Advisory Board of the 'Geowissenschaftliches Zentrum, Oesterreichische Akademie für Wissenschaften', 2009-2010
- Chair of the Scientific Advisory Board of the Bert Bolin Centre for Climate Research, University of Stockholm, 2014-2016
- Member of the Board of the foundation GlaciersAlive

Member of the editorial board of the following journals:
- *The Holocene*, 1990-1998
- *Tellus*, 1991-1995
- *Arctic, Antarctic and Alpine Research*, 1995-2005

Principal organizer of the following international meetings:

- International workshop on 'ORGANIZATION OF CONVECTIVE CLOUDS', (University of Utrecht), 24-25 May 1984; sponsor: Netherlands Organization for Scientific Research (NWO).
- together with C.J. van der Veen: internationale workshop 'DYNAMICS OF THE WEST ANTARCTIC ICE SHEET', (University of Utrecht), 6-10 May1985; sponsors: Ministry of Education and Science (NL), Royal Netherlands Meteorological Institute
- International conference on GLACIER FLUCTUATIONS AND CLIMATIC CHANGE, (Royal Netherlands Academy of Sciences), 1-5 June 1987; sponsors: University of Utrecht, Ministry of Housing, Physical Planning and Environment NL).
- International workshop on ICE-ATMOSPHERE-INTERACTIONS, (Royal Netherlands Academy of Sciences), 18-19 November 1993; sponsor: European Science Foundation (EISMINT).
- Summer School on MODELLING OF GLACIERS AND ICE SHEETS (Grindelwald, Switzerland), 27 August- 6 September 1995; sponsor: European Science Foundation (EISMINT).
- Workshop on THE RESPONSE OF GLACIERS TO CLIMATE WARMING (Pontresina, Switzerland), 16-18 October 1996; sponsor: European Science Foundation (EISMINT).
- Second Summer School on MODELLING OF GLACIERS AND ICE SHEETS (Karthaus, Italy), 2-12 September 1997; sponsor: European Science Foundation (EISMINT).
- Summer School on DYNAMICS OF GLACIERS AND ICE SHEETS (Karthaus, Italy), 13-23 September 2000; sponsor: COACH
- Summer School on ICE SHEETS AND GLACIERS IN THE CLIMATE SYSTEM (Karthaus, Italy), 10-21 September 2002; sponsor: COACH, Utrecht University
- Summer School on ICE SHEETS AND GLACIERS IN THE CLIMATE SYSTEM (Karthaus, Italy), 9-20 September 2003; sponsor: COACH, Utrecht University, Province Alto Adige (Italy)
- Workshop on the USE OF AUTOMATIC WEATHER STATIONS ON GLACIERS (Pontresina, Switzerland), 28-31 March 2004
- Workshop on THE MASS BUDGET OF ARCTIC GLACIERS (Pontresina, Switzerland), 13-15 January 2005; IASC Working Group on Arctic Glaciology; sponsor: Utrecht University
- Summer School on ICE SHEETS AND GLACIERS IN THE CLIMATE SYSTEM (Karthaus, Italy), 13-24 September 2005; sponsor: COACH, Utrecht University
- Workshop on THE MASS BUDGET OF ARCTIC GLACIERS and GLACIODYN meeting (Obergurgl, Austria), 29 January - 3 February 2006; IASC Working Group on Arctic Glaciology; sponsor: Utrecht University
- Summer School on ICE SHEETS AND GLACIERS IN THE CLIMATE SYSTEM (Karthaus, Italy), 11-22 September 2007; sponsor: Utrecht University
- Summer School on ICE SHEETS AND GLACIERS IN THE CLIMATE SYSTEM (Karthaus, Italy), 9-20 September 2008; sponsors: IMAU, Utrecht University, and Niels Bohr Institute, University of Copenhagen
- Summer School on ICE SHEETS AND GLACIERS IN THE CLIMATE SYSTEM (Karthaus, Italy), 8-19 September 2009; sponsors: IMAU, Utrecht University; Niels Bohr Institute, University of Copenhagen; Ice2Sea (EU-FP7-project)
- Summer School on ICE SHEETS AND GLACIERS IN THE CLIMATE SYSTEM (Karthaus, Italy), 14-25 September 2010; sponsors: IMAU, Utrecht University; Niels Bohr Institute, University of Copenhagen; Ice2Sea (EU-FP7-project)
- Summer School on ICE SHEETS AND GLACIERS IN THE CLIMATE SYSTEM (Karthaus, Italy), 13-24 September 2011; sponsors: IMAU, Utrecht University; Niels Bohr Institute, University of Copenhagen; Ice2Sea (EU-FP7-project)
- Summer School on ICE SHEETS AND GLACIERS IN THE CLIMATE SYSTEM (Karthaus, Italy), 11-22 September 2012; sponsors: IMAU, Utrecht University; Niels Bohr Institute, University of Copenhagen; Ice2Sea (EU-FP7-project)
- Summer School on ICE SHEETS AND GLACIERS IN THE CLIMATE SYSTEM (Karthaus, Italy), 10-21 September 2013; sponsors: IMAU, Utrecht University; Niels Bohr Institute, University of Copenhagen; SVALI (Nordic countries)
- Summer School on ICE SHEETS AND GLACIERS IN THE CLIMATE SYSTEM (Karthaus, Italy), 9-20 September 2014; sponsors: IMAU & Netherlands Earth System Science Centre, Utrecht University; Niels Bohr Institute, University of Copenhagen; SVALI (Nordic countries)
- Summer School on ICE SHEETS AND GLACIERS IN THE CLIMATE SYSTEM (Karthaus, Italy), 8-19 September 2015; sponsors: IMAU & Netherlands Earth System Science Centre, Utrecht University; Niels Bohr Institute, University of Copenhagen; SVALI (Nordic countries)
- Summer School on ICE SHEETS AND GLACIERS IN THE CLIMATE SYSTEM (Karthaus, Italy), 13-24 September 2016; sponsors: IMAU & Netherlands Earth System Science Centre, Utrecht University; The Descartes Prize (EPICA), EU
- Summer School on ICE SHEETS AND GLACIERS IN THE CLIMATE SYSTEM (Karthaus, Italy), 12-23 September 2017; sponsors: IMAU & Netherlands Earth System Science Centre, Utrecht University; The Descartes Prize (EPICA), EU
- Summer School on ICE SHEETS AND GLACIERS IN THE CLIMATE SYSTEM (Karthaus, Italy), 11-22 September 2018; sponsors: IMAU & Netherlands Earth System Science Centre, Utrecht University; The Descartes Prize (EPICA), EU
- Summer School on ICE SHEETS AND GLACIERS IN THE CLIMATE SYSTEM (Karthaus, Italy), 10-21 September 2019; sponsors: IMAU & Netherlands Earth System Science Centre, Utrecht University

Teaching through the years

- Undergraduate courses (Utrecht University, Physics): Introduction to Meteorology, Continuum Mechanics
- Master courses (Utrecht University): Dynamic Meteorology, Numerical Methods in Meteorology and Oceanography, Climate Dynamics, Ice and Climate
- Master courses (University of Leuven, Physics): Physics of the Atmosphere

Supervised Ph.D. projects

- C.J. van der Veen (1986): Ice sheets, atmospheric CO2 and sea level
- A.J. van Delden (1987): On cumulus cloud patterns and the theory of shallow convection
- W.D. van den Berg (1987): Coastal frontogenesis in the Netherlands: observations and modeling
- J.W. Greuell (1989): Glaciers and climate: energy balance studies and numerical modelling of the historical front variations of Hintereisferner (Austria)
- R.S.W. van de Wal (1992): Ice and climate
- J.P.F. Fortuin (1992): The surface mass balance and temperature of Antarctica
- R. Bintanja (1995): The Antarctic ice sheet and climate
- M.R. van den Broeke (1996): The atmospheric boundary layer over ice sheets and glaciers
- J.J. van Roijen (1996): Determination of ages and specific mass balances from 14C measurements of Antarctic surface ice
- W.H. Knap (1997): Satellite-derived and ground-based measurements of the surface albedo of glaciers
- N.P.M. van Lipzig (1999): The surface mass balance of the Antarctic ice sheet: a study with a regional atmospheric model
- B. Denby (2001): Modelling and interpretation of turbulent fluxes in katabatic flows: applications to glaciers and the Greenland ice sheet
- C.H. Reijmer (2001): Antarctic meteorology: a study with automatic weather stations
- M.S. de Ruyter de Wildt (2002): Satellite retrieval and modeling of glacier mass balance
- E.J. Klok (2003): The response of glaciers to climate change
- K.A. Kaspers (2004): Chemical and physical analyses of firn and firn air
- D. van As (2005): The summertime atmospheric boundary layer over the Antarctic Plateau
- M. Helsen (2006): On the interpretation of stable isotopes in Antarctic precipitation
- F.M. Nick (2006): Modelling the behaviour of tidewater glaciers
- J. van den Berg (2007): Interactions between ice sheets, climate and the solid earth
- W.J. van de Berg (2008): Present-day climate of Antarctica: A study with a regional climate model
- P. Kuipers Munneke (2009): Snow, ice and solar radiation
- R.H. Giesen (2009): The ice cap Hardangerjokulen in the past, present and future climate
- S.L. Axelsen (2010): Large-eddy simulation and analytical modelling of katabatic winds
- I.G.M. Wientjes (2011): A study of the dark region in the western ablation zone of the Greenland ice sheet
- P.W. Leclercq (2012): Glacier fluctuations, global temperature and sea-level change
- B. de Boer (2012): A reconstruction of temperature, ice volume and atmospheric CO2 over the past 40 million years
- A. Slangen (2012): Modelling regional sea-level changes in recent past and future
- W.J.J. van Pelt (2014): Modelling the dynamics and boundary processes of Svalbard glaciers
- M. Maris (2014): The evolution of the Antarctic Ice Sheet from the Last Glacial Maximum to 2100

Publications

2023

S Cloetingh .... J Oerlemans .... many others (2022): Coupled surface to deep Earth processes: Perspectives from TOPO-EUROPE with an emphasis on climate- and energy-related societal challenges. Global and Planetary Change. https://doi.org/10.1016/j.gloplacha.2023.104140

2022

J Oerlemans and F Keller (2022): Application of a simple model for ice growth to the Lake St. Moritz, Switzerland. *Journal of Glaciology* 1-6. https://doi.org/10.1017/jog.2022.110

J Oerlemans, J Kohler and A Luckman (2021): Modelling the mass budget and future evolution of Tunabreen, central Spitsbergen. *The Cryosphere,* **16**, 2115-2126, https://doi.org/10.5194/tc-16-2115-2022

2021

J Oerlemans, S Balasubramanian, C Clavuot and F Keller (2021): Brief communication: Growth an decay of an ice stupa in alpine conditions – a simple model driven by energy-flux observations over a glacier surface. *The Cryosphere,* 15, 1-6, https://doi.org/10.5194/tc-15-1-2021.

J Oerlemans, and F Keller (2021): Modelling the Vadret da Tschierva, Switzerland: calibration with the historical length record and future response to climate change. *Journal of Glaciology,* 12 July 2012, 1-10, https:// doi.org/10.1017/jog.2021.82.

B Anderson, AN Mackintosh, R Dadić, J Oerlemans, C Zammit, A Doughty, A Sood, and B Mullan (2021): Modelled response of debris-covered and lake-calving glaciers to climate change, Kā Tiritiri o teMoana/Southern Alps, New Zealand. *Global and Planetary Change*, https://doi.org/10.1016/j.gloplacha.2021.103593

2019

W Haeberli, J Oerlemans and M Zemp (2019): The future of alpine glaciers and beyond. *Oxford Research Encyclopedia of Climate Science,* 36 pp, DOI: 10.1093/acrefore/9780190228620.013.769.

2018

J Oerlemans (2018): Modelling the late Holocene and future evolution of Monacobreen, northern Spitsbergen. *The Cryosphere* **12**, 3001-3015, doi.org/10.5194/tc-12-3001-2018.

P Kuijpers Munneke, C J P P Smeets, C H Reijmer, J Oerlemans, R S W van de Wal and M R van den Broeke (2018): The K-transect on the western Greenland Ice Sheet: Surface energy balance (2003–2016), *Arctic, Antarctic and Alpine Research* **50** (1), doi: 10.1080/15230430.2017.1420952.

C J P P Smeets, P Kuipers Munneke, D Van As, Dirk, M R van den Broeke, W Boot, J Oerlemans, H Snellen, C H Reijmer and R S W van de Wal, R.S.W. (2018). The K-transect in west Greenland: Automatic weather station data (1993–2016). *Arctic, Antarctic, and Alpine Research*, **50** (1).

2017

J Oerlemans, M Haag and F Keller (2017): Slowing down the retreat of the Morteratsch glacier, Switzerland, by artificially produced summer snow: a feasibility study. *Climatic Change* **145**, 189-203, doi 10.1007/s10584-017-2102-1.

S van Geffen and J Oerlemans (2017): The 1982/83 surge and antecedent quiescent phase of Variegated Glacier: revising the original dataset for application in flow line models. *Journal of Glaciology* **62** (235), 861-887; doi.org/10.1017/jog.2016.75.

2016

H Machgut, many others, J Oerlemans, many others (2016): Greenland surface mass-balance observations from the ice-sheet ablation area and local glaciers. *Journal of Glaciology*, http://dx.doi.org/10.1017/jog.2016.75.

2015

J Oerlemans and W J J van Pelt (2015): A model study of Abrahamsenbreen, a surging glacier in northern Spitsbergen. *The Cryosphere* **9**, 767-779, doi: 10.5194/tc-9-767-2015.

R S W.van de Wall, C J P P Smeets, W Boot, M Stoffelen, R van Kampen, S H Doyle, F Wilhelms, M R van den Broeke, C H Reijmer, J Oerlemans and A Hubbard (2015): Self-regulation of ice flow varies across the ablation area in south-west Greenland. *The Cryosphere* **9**, 603-611, doi: 10.5194/tc-9-603-2015.

2014

M N A Maris, B de Boer, S RM Ligtenberg, M Crucufux, W J van de Berg and J Oerlemans (2014): Modelling the evolution of the Antarctic ice sheet since the last interglacial. *The Cryosphere* **8**, 1347-1360, doi: 10.5194/tc-8-1347-2014.

P W Leclerq, J Oerlemans, H J Basagic, I Bushueva, A J Cook and R Le Bris (2014): A data set of worldwide glacier fluctuations. *The Cryosphere* **8**, 659-672, doi: 10.5194/tc-8-659-2014.

R H Giesen, L M Andreassen, J Oerlemans and M R van den Broeke (2014): Surface energy balance in the ablation zone of Langfjordjøkelen, an arctic, maritime glacier in northern Norway. *Journal of Glaciology* **60** (219), 57-70. Doi: 10.3189/2014JoG13J063.

T Howard, J Ridley, AK Pardaens, R T W L Hurkmans, A J Payne, R H Giesen, J A Lowe, J L Bamber, T L Edwards and J Oerlemans (2014). The land-ice contribution to 21st-century dynamic sea level rise. *Ocean Science* **10**, 485-500, doi: 10.5194/os-10-485-2014.

2013

J Oerlemans (2013): A note on the water budget of temperate glaciers. *The Cryosphere* **7**, 1-8, doi: 10.5194/tc-7-1.2013.

W J J van Pelt, J Oerlemans, C H Reijmer, R Pettersson, VA Pohjola, E Isaksson, and D Divine (2013): An iterative inverse method to estimate basal topography and initialize ice flow models. *The Cryosphere* **7**, 987-1006, doi:10.5194/tc-7-987-2013, 2013.

R H Giesen and J Oerlemans (2013): Climate-model induced differences in the 21st century global and regional glacier contributions to sea-level rise. *Climate Dynamics* **14** (11-12), 3283-3300. Doi:10.1007/s00382-013-1743-7.

M M Helsen, W J van de Berg, R S W van de Wal, M R van den Broeke and J. Oerlemans (2013): Coupled regional climate–ice-sheet simulation shows limited Greenland ice loss during the Eemian. *Climate of the Past* **9**, 1773-1788.

2012

J Oerlemans (2012): Linear modeling of glacier fluctuations. *Geografiska Annaler* **94A**, 183-194, doi: 10.1111/j.1468-0459.2012.00469.x

R S W van de Wal, W Boot, C J P P Smeets, H Snellen, M R van den Broeke and J Oerlemans (2012): Twenty-one years of mass balance observations along the K-transect, West Greenland. *Earth System Science Data* **4**, 31-35, doi: 10.5194/essd-4-31-2012.

P W Leclerq, A Weidick, F Paul, T Bolch, M Citterio and J Oerlemans (2012): Historical glacier length changes in West Greenland. *The Cryosphere* **6**, 1339-1343, doi: 10.5194/tc-6-1339-2012.

P W Leclerq, P Pitte, R H Giesen, M H Masiokas and J Oerlemans (2012): Modelling and climatic interpretation of the length fluctuations of Glaciar Frías Model (north Patagonian Andes, Argentia) 1639-2009 AD. *Climate of the Past* **8**, 641-659.

W J J van Pelt and J Oerlemans (2012): Numerical simulations of cyclic behaviour in the Parallel Ice Sheet Model (PISM). *Journal of Glaciology* **58**, 347-360, doi: 10.3189/2012/JoG11J217.

W J J van Pelt and J Oerlemans, C H Reijmer, V A Pohjola, R Petterson and J H van Angelen (2012): Simulating melt, runoff and refreezing on Nordenskiöldbreen, Svalbard, using a coupled snow and energy balance model. *The Cryosphere* **6**, 347-360, doi: 10.3189/2012/JoG11J217.

M M Helsen, R S W van de Wal, M R van den Broeke and J Oerlemans (2012): Coupling of climate models and ice sheet models by surface mass balance gradients: application to the Greenland ice sheet. *The Cryosphere* **6,** 255-272. Doi:10.5194/tc-6-255-2012.

M N A Maris, B de Boer and J Oerlemans (2012): A climate model intercomparison for the Antarctic region: present and past. *Climate of the Past*, **8**(2), 803-814, doi:10.5194/cp-8-803-2012.

2011

J Oerlemans (2011): *Minimal Glacier Models*. Second edition. Igitur, Utrecht University, 103 pp. ISBN 978-90-6701-022-1 [contact author for a free hardcopy]

J Oerlemans, J Jania and L Kolondra (2011): Application of a minimal glacier model to Hansbreen, Svalbard. *The Cryosphere* **5**, 1-11. Doi: 10.5194/tc-5-1-2011.

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