Deutsches Zentrum
DLR für Luft- und Raumfahrt

UNITED NATIONS
Office for Outer Space Affairs

DLR CONFERENCE ON CLIMATE CHANGE 2018

Atmospheric Research for Understanding and Mitigating Climate Change

in collaboration with the United Nations Office for Space Affairs (UNOOSA)

17 – 19 April 2018, Cologne, Germany

DLR.de/ccc2018

Dear
Conference Delegate,

A warm welcome to you at the CCC 2018 here in Cologne.

We would like to thank you for taking up our invitation to be here. We believe that dealing with the effects of climate change is one of the biggest problems the Earth is currently facing. By attending this conference and taking an active part in the programme lined up for the next two days with fellow international scientists, members of the United Nations offices and politicians we hope to provide a further insight into possible causes, new impacts of Climate Change and suggested remedies.

We are looking forward to some interesting discussions on this important issue and ask you to contribute with your expertise and ideas to fully understanding the reasons for Climate Change, thus presenting us all with possible new solutions for counterreacting the detrimental effects of our climate.

Yours sincerely,

Prof. Dr. Pascale Ehrenfreund
Chair of the Executive Board, DLR e. V.

Prof. Dr. Hansjörg Dittus
Member of the Executive Board, DLR e. V.

Prof. Rolf Henke
Member of the Executive Board, DLR e. V.

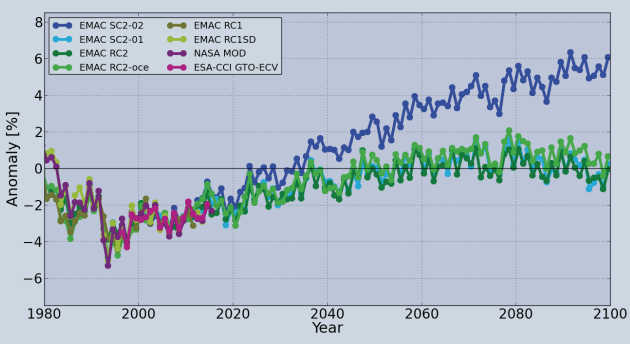

Fig. 1: Observed (satellite, purple and pink) and simulated (EMAC) anomalies of the near global mean (60°S – 60°N) ozone (O_3) column.

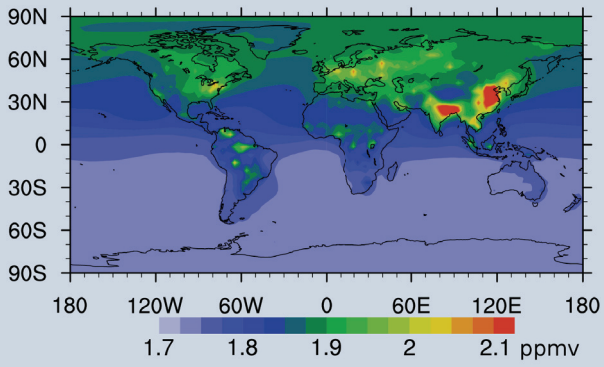

Fig. 2: Simulated (EMAC) present day near surface methane (CH_4) concentration (1 ppmv = 10^{-6}).

The Science Advisory Board

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Member of the Executive Board,
DLR e. V. (German Aerospace Center)
Cologne, Germany

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at the Technical University Berlin
Deputy Director of the Potsdam Institute for Climate Impact Research (PIK)
former Co-Chair of Working Group III of the IPCC
Director of the Mercator Research Institute on Global Commons and Climate Change
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Cologne, Germany

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Helmholtz Centre for Environmental Research–
UFZ, Department of Ecological Modelling
Leipzig, Germany

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Professor of Climate and Environmental Physics
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former Co-Chair of the Working Group I of the IPCC
Bern, Switzerland

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UNOOSA/ UNSPIDER, Bonn, Germany

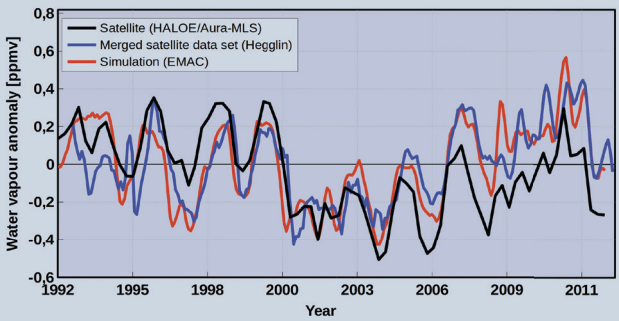

Fig. 3: Observed and simulated (EMAC) anomalies of the near global mean (60°S – 60°N) water vapour anomaly at 83 hPa.

Agenda – Tuesday, 17 April 2018

10^{00} Press conference, Registration

Joint opening session
Chair: Prof. Dr. Markus Rapp

12^{50} Prof. Dr. Hansjörg Dittus
Member of the Executive Board, DLR e. V.
Cologne, Germany
Welcome address

13^{05} Max Kroymann- Leiter Referat DLR/ HGF
Representative of the Federal Ministry of Economy **Welcome address**

13^{15} Prof. Dr. Petteri Taalas
Secretary-General of WMO, Geneva, Switzerland
The role of World Meteorological Organization in the international climate agenda

13^{25} Dr. Gilles Rabin
Director for Science, Innovation and Application, CNES
Paris, France
Opening address

13^{35} Dr. Maurice Borgaud
Head of Science, Applications and Futures Technologies Department, ESA Esrin, Rome, Italy
Opening remarks

13^{50} Dr.Youssef Nassef
Director Adaptation, UNFCCC, Bonn, Germany
The UNFCCC context: Strengthening the link between the systematic observation community and action to meet the Paris Agreement goals

14^{05} Dr. Juan Carlos Villagrán de Leon
Head of UNSPIDER Office UNOOSA/ UNSPIDER
Bonn, Germany
Space research and technology for low-emission and resilient societies: The 2030 Space Agenda

14^{20} Prof. Dr. Thomas Stocker
University of Bern, Bern, Switzerland
Keynote: Climate Change: Ocean services under threat

15^{00} Coffee break

Session 1:
State of the art and major challenges
Chair: Prof. Dr. Robert Sausen

15^{30} Dr. Philippe Ciais
CEA, Paris, France
The potential of spaceborne imagery to quantify fossil emissions

16^{00} Prof. Dr. Thomas Birner
Meteorological Institute of LMU, München, Germany
Climate change and circulation shifts

16^{30} Prof. Dr. rer. nat. Andreas Huth
Helmholtz Centre for Environmental Research (UFZ)
Department of Ecological Modelling, Leipzig, Germany
Forests, climate and remote sensing

17^{00} Dr. Peter Bauer
Centre for Medium-Range Weather Forecasts (ECMWF)
Reading, UK
Why do weather and climate prediction need to come together?

17^{30} Dr. Torge Martin
GEOMAR, Helmholtz Centre for Ocean Research
Kiel, Germany
Blue vs. white ocean: frontiers in ice-ocean modelling

18^{00} Prof. Dr. Peter Braesicke
Karlsruhe Institute of Technology (KIT)
Institute of Meteorology and Climate Research
Karlsruhe, Germany
Across scales atmospheric composition interactions in weather and climate applications

18^{30} End of Day 1

19^{00} Welcome Reception at ZooEvent
The welcome reception is a flying buffet style catered event that will allow delegates to meet and network while enjoying food and beverages.

Agenda – Wednesday, 18 April 2018

08^{00} Registration

Session 2:
Improving our knowledge of the climate system
Chair: Prof. Dr. Andreas Huth

08^{30} Dr. David W. Fahey
National Oceanic and Atmospheric Administration (NOAA), Earth System Research Laboratory
Boulder, CO, USA
Keynote : Improving our knowledge of the climate system

09^{10} Prof. Dr. Thomas Jung
AWI, Climate Sciences & Climate Dynamics
Bremerhaven, Germany

Prof. Dr. Robert Sausen (DLR)
Prof. Dr. Sabine Attinger (UFZ)
Prof. Dr. Arne Biastoch (GEOMAR)
Prof. Dr. Peter Braesicke (KIT)
Prof. Dr. Stefan Kollet (FZJ)
Prof. Dr. Maik Thomas (GFZ)
Prof. Dr. Corinna Schrum (HZG)

The Helmholtz project Advanced Earth System Modelling Capacity (ESM) – Towards a common modelling environment

09^{40} Prof. William Collins
Department of Meteorology, University of Reading
Reading, UK
The climate sensitivity to short-lived forcers

10^{10} Prof. Dr. Dr. Peter Höppe
Munich Re and LMU, München, Germany
Is climate change already increasing losses caused by extreme weather events?

10^{40} Coffee break

11^{00} Poster session
See page 8

13^{00} Lunch break

Session 3.1:
Mitigation of climate change
Chair: Prof. Dr. Volker Grewe

14^{05} Prof. Rolf Henke
Member of the Executive Board, DLR e. V.
Cologne, Germany
Aviation and environment – The aircraft as perpetuator and victim

14^{20} Prof. Dr. Ottmar Edenhofer
Technische Universität, Berlin and PIK
Potsdam, Germany
Keynote: Post-Paris challenges: climate, coal and capital

15^{00} Prof. Dr. André Thess
DLR Institute of Engineering Thermodynamics
Stuttgart, Germany
Renewable energy and energy storage for the 2 °C target

15^{30} Dr. Bruce Anderson
NASA Langley Research Center,
Hampton, VA, USA
Alternative-fuel effects on aircraft emissions and contrails: Results from joint NASA-DLR missions

16^{00} Coffee break

Session 3.2:
Mitigation of climate change
Chair: Dr. Christoph Kiemle

16^{30} Prof. Dr.-Ing. Josef Kallo
DLR Institute of Engineering Thermodynamics
Stuttgart, Germany
Electric flight

17^{00} Prof. Dr. Volker Grewe
DLR Institute of Atmospheric Physics
Oberpfaffenhofen, Germany
Operational measures for mitigating aircraft climate impact

Session 4.1:
Remote sensing for climate change (atmosphere)
Chair: Dr. Diego Loyola

17^{30} Dr. Pepijn Veefkind
KNMI, De Bilt, and Delft University of Technology
Utrecht, The Netherlands
Results of TROPOMI on Sentinel 5 Precursor: the beginning of the Copernicus Atmospheric Composition Data Record

18^{00} Dr. Heinrich Bovensmann
Institut of Environmental Physics, University of Bremen
Bremen, Germany
Towards space based contributions to monitor emissions of CO_2 and CH_4 – challenges and opportunities

18^{30} Dr. Sander Houweling
Vrije Universiteit Amsterdam
Amsterdam, The Netherlands
Greenhouse gas surface flux estimation using satellite observations

19^{00} End of Day 2

19^{30} Reception and conference dinner
Flora Cologne, Room „Dachsalon“

Agenda – Thursday, 19 April 2018

08^{00} Registration

Session 4.2:
Remote sensing for climate change (aerosol, clouds)
Chair: Dr. Claudia Künzer

08^{30} Prof. Dr. Clemens Simmer
Meteorological Institute, University Bonn
Bonn, Germany
The challenge of remotely sensing precipitation changes in a warming climate

09^{00} Dr. Julien Delanoe
Laboratoire Atmosphères, Milieux, Observations Spatiales (LATMOS, ISPL), Paris, France
Active synergistic observations for improving our knowledge on clouds

09^{30} Prof. Johannes Quaas
O. Sourdeval
J. Mülmenstädt
Institute for Meteorology, University of Leipzig
Leipzig, Germany
Satellite observations for model evaluation of cloud-aerosol interactions

10^{00} Dr. David M. Winker
NASA Langley Research Center, Hampton, VA, USA
Active Observations for Understanding Climate

10^{30} Coffee break

Session 4.3:
Remote sensing for climate change (land surface)
Chair: Dr. Gerhard Ehret

11^{00} Dr. Claudia Künzer
DLR, German Remote Sensing Data Center (DFD)
Oberpfaffenhofen, Germany
The Potential of Earth Observation to quantify Land Surface Dynamics

11^{30} Prof. Dr. Matthew Hansen
University of Maryland, College Park, MD, USA
A strategy for global land change monitoring

12^{00} Dr. Carsten Montzka
Forschungszentrum Jülich (FZJ), Jülich, Germany
Soil moisture: From observation to prediction

12^{30} Dr. Konstantinos P. Papathanassiou
Prof. Dr. - Ing. Alberto Moreira
DLR Remote Sensing Technology Institute
Oberpfaffenhofen, Germany
Tandem-L: A challenging radar mission for climate research and environmental monitoring

13^{00} Lunch break

Session 5:
Detecting and projecting anthropogenic climate change
Chair: Prof. Dr. Veronika Eyring

14^{00} Dr. Claudia Tebaldi
National Center for Atmospheric Research (NCAR)
Boulder, CO, USA
Avoided impacts between alternative scenarios, with a focus on the low warming targets of 1.5 and 2.0 °C

14^{30} Dr. Peter Stott
Hadley Centre, Met Office, Exeter, UK
Detection and attribution of climate change

15^{00} Dr. Joeri Rogelj
International Institute for Applied Systems Analysis (IIASA), Wien, Austria
Can we meet the 1.5 °C target?

15^{30} Prof. Dr. Markus Rapp
DLR Institute of Atmospheric Physics
Oberpfaffenhofen, Germany
Concluding remarks

16^{00} End of conference

Posters

In the following the posters are listed in alphabetical order of the first authors' names:

C. A. Baumhoer, A. J. Dietz, C. Künzer:
Antarctic glacier and ice shelf front dynamics in a changing climate

C. Beer, J. Hendricks, M. Righi:
Global modelling of ice-nucleating aerosol

Ch. Böhm, S. Crewell, O. Sourdeval, J. Mülmenstädt, J. Quaas:
Cloud base height retrieval from multi-angle satellite observations and its application to assess cloud heights over the southeast Pacific

S. Brinkop, M. Dameris, P. Jöckel, H. Garny, St. Lossow, G. Stiller, R. Sausen:
The millennium water vapour dropin chemistry–climate model simulations

M. Buchwitz, H. Bovensmann, M. Reuter, O. Schneising, J. P. Burrows, H. Boesch, J. Anand, R. Parker, R. G. Detmers, I. Aben, O. P. Hasekamp, C. Crevoisier, R. Armante, G. Lichtenberg:
Satellite-derived atmospheric CO_2 and CH_4 essential climate variable (ECV) climate data records (CDRs)

M. Coldewey-Egbers, K.-P. Heue, D. Loyola, M. Dameris, P. Valks, Ch. Lerot, M. van Roozendael:
Long-term total and tropical tropospheric ozone data records from European satellite sensors for climate applications

A. Dietz, C. Kuenzer:
Snow Cover changes in Central Asia derived from long term time series analysis of medium resolution remote sensing data

K. Ebell, T. Nomokonova, R. Gierens, U. Löhnert, M. Mech, S. Crewell, M. Maturilli, Ch. Ritter, R. Neuber, E. O'Connor:
The role of clouds in the arctic amplification: insights from newobservations at the Arctic research base AWIPEV

G. Ehret, A. Amediek, A. Fix, Ch. Kiemle, M. Quatrevalet, M. Wirth, S. Wolff:
Greenhouse gas emission rates from strong point sources by airborne and space-borne IPDA sidar measurements

R. Eichinger, S. Dietmüller, H. Garny, R. Walz, F. Fritsch, L. Hoffmann:
Stratospheric transport today and in the future in CCMI model simulations

St.O. Eze:
The impacts of gully erosion on biodiversity conservation in South-Eastern Nigeria

F. Frank, P. Jöckel, D. Brunner, St. Henne, M. Dameris:
Revealing influencing factors on uncertainties in sources and sinks of atmospheric methane

B.K. Gier, M. Buchwitz , V. Eyring, M. Reuter, S. Zechlau:
Benchmarking CMIP5 models with ESA CCI data using the ESMVal Tool

S. Groß, F. Ewald, M. Wirth, J. Delanoë, T. Zinner, Q. Cazenave, B. Mayer, M. Hagen, L. Hirsch:
The use of combined active and passive remote sensing payload on HALO in preparation for EarthCARE

W. Heldens, J. Zeidler, S. Üreyen, Th. Esch:
Deriving surface characteristics for the new urban climate model PALM-4U using remote sensing and geo-data

Ch. Kiemle, A- K. Naumann, S. Groß:
Airborne Lidar observations of water vapor variability in the tropics

I. Klein, U. Gessner, St. Dech, C. Künzer:
Daily dynamics of water bodies over 15 years. Selected examples for the relationship of water body extents, temperature and precipitation

A. Laeng, T. von Clarmann, G. Stiller, N. Kramarova, K. Walker, J. Zawodny, J. Plieninger:
Ozone before and post-1997 trends from merged SAGE II / MIPAS / OMPS satellite ozone record

A. Luther, R. Kleinschek, A. Roiger, P. Jöckel, A-L. Nickl, Th. Klausner, F. Hase, M. Frey, J. Chen, M. Wedrat, Ch. Knote, M. Wiegner, J. Necki, J. Swolkien, M. Kud, A. Butz:
Estimation of methane emissions in the upper Silesian coal basin using portable FTIR spectrometry and WRF modelling

S. Matthes, B. Lührs, F. Linke, V. Grewe, F. Yin, H. Yamashita, L. Lim, K. Shine:
Mitigation potentials of climate-optimized routing: A concept study for Europe

P. Ney, A. Graf, H. Bogena, B. Diekkrüger, C. Drüe, O. Esser, G. Heinemann, A. Klosterhalfen, K. Pick, Th. Pütz, V. Valler, H. Vereecken:
CO_2 fluxes before and after partial deforestation of a spruce forest

M. Nützel, M. Dameris:
Variability of transport from the planetary boundary layer to the South Asian High

B. Pospichal, J. Beer, S. Trömel, U. Löhnert:
JOYCE-CF – Jülich Observatory for Cloud Evolution. A core facility for long-term cloud and precipitation observations

A. Roiger, J. Kostinek, T. Klausner, M. Eckl, A. Fiehn, M. Mertens, P. Joeckel, H. Huntrieser, A. Fix, H. Schlager, Ch. Gerbig, J. Necki, K. Davis, J. P. Burrows, L. A. Hernández, H. Bovensmann, D. Zavala-Araiza:
Better understanding of anthropogenic greenhouse gas emissions using aircraft-borne in-situ observations: Overview on first measurement results and future activities at DLR-IPA

J. Runge, L. Kühne, X. Tibau, Ch. Requena, Ch. Reimers, V. Trifunovand, V. Eyring:
Climate informatics: Causal discovery and deep learning in climate research and earth system science

M. Schlund, V. Eyring, A. Lauer:
Constraining transient climate response to cumulative CO_2 emissions from CMIP5 models with observations

G. M. Tsidu:
Detection and attribution of recent trends in climate extremes over Eastern Africa

C. Voigt, V. Hahn, S. Kaufmann, J. Kleine, Y. Boose, J. Taylor, S. Haslett, H. Coe, D. Sauer, H. Schlager, S. Borrmann, V. Catorie, J. Brito, R. Dupuy, A. Schwarzenboeck, C. Chiu, C. Flamant, P. Knippertz:
Anthropogenic aerosol effects on shallow clouds in West Africa

H. Volkert, M. Kenntner:
Assisting atmospheric research for understanding climate change: SPARC in operation for 25 years as DLR hosts International Project Office

J. Wilzewski, J. Landgraf, B. Mayer, A. Roiger, A. Butz:
Spectral sizing of a satellite-borne CO_2 sensor to monitor localized emissions

Social Program

Tuesday, 17 April

Welcome reception at the ZooEvent

On Tuesday evening we would like to invite you all to a welcome reception at ZooEvent. This is a good opportunity to meet and network, while enjoying some local culinary specialities.

The ZooEvent is located right next to the Flora and can easily be reached by a short walk.

ZooEvent

Riehler Str. 173,

50735 Cologne

Wednesday, 18 April

Conference Dinner at the Flora

The evening will start shortly after the conference and includes a pre-dinner welcome drink, followed by a three course sit down dinner, soft, alcoholic drinks, tea and coffee.

Please note that return transport after the evening social event has to be organized individually.

Flora Cologne Dachsalon

Am Botanischen Garten 1a

50735 Cologne

Notes

Notes

Deutsches Zentrum
für Luft- und Raumfahrt

Contact

Deutsches Zentrum
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51147 Köln

CCC2018@dlr.de

Contact information and persons at the registration office on site

Petra Naoum
Svetlana Saburova
Rebecca Bartkowski

Mobile: +49 174 1935578
(available 16 - 19 April 2018)
E-Mail: CCC2018@dlr.de

Information for speakers

If you have not yet uploaded your presentation, please prepare a pptx (preferred) or pdf file on a USB device and hand it in at the registration office, at the latest by 30 minutes prior to your session. Please limit your presentation to the assigned time period (30 min incl. discussion, if not specified differently).

Information for poster presenters

Please pin your poster to the assigned board and be present during the Poster Session on Wednesday, 18 April, 11:00 -13:00.

WiFi

Free WiFi is available on site. The open network name is „Hotspot Köln". Despite the fact that it's free, please concentrate on the oral presentations and posters.

The Venue

Flora Köln
Am Botanischen Garten 1a
50735 Cologne | Germany