MAKE OUR PLANET GREAT AGAIN

THE FRANCO-GERMAN MOPGA PROGRAM: ASSESSING, UNDERSTANDING, MITIGATING GLOBAL CHANGE

SCIENTIFIC CONFERENCE

NOVEMBER 23RD-24TH 2021
STRASBOURG

HYBRID
THE FRANCO-GERMAN MOPGA PROGRAM: ASSESSING, UNDERSTANDING, MITIGATING GLOBAL CHANGE

NOVEMBER 23RD-24TH 2021, STRASBOURG

TUESDAY, 23RD NOVEMBER 2021

9:00 AM OPENING WELCOME BY CHRISTINA RICHARDS (MOPGA LAUREATE) & CHRIS BOCKMAN (SCIENTIFIC JOURNALIST)

9:15 AM POLITICAL OPENING BY
  - Michel Deneken - President of the University of Strasbourg
  - Antoine Petit - Chief Executive Officer of the CNRS
  - Anja Karliczek - German Federal Minister for Education and Research
  - Frédérique Vidal - French Minister for Higher Education, Research and Innovation

10:00 AM KEYNOTE BY
  - Jérôme Chave, Evolution and Biological Diversity Laboratory (EDB), France - Status and threats of tropical forests
  - Stefan Rahmstorf, Potsdam Institute for Climate Impact Research (PIK), Germany - Are we approaching a tipping point of the Atlantic overturning circulation?
  - Samuel Morin, National Weather Research Centre (CNRM), France - Research to services in the field of climate change impact awareness and adaptation: examples and lessons learnt in the field of ski tourism
  - Claudia Kemfert, German Institute for Economic Research (DIW), Germany - Are we reaching the tipping point for climate protection? Why costs matter

11:20 AM COFFEE BREAK

SESSION 1 – UNDERSTANDING PROCESS OF GLOBAL CHANGE

11:50 AM INTRODUCTORY STORYLINE BY CHRIS BOCKMAN

1.1. TRENDS BASED ON PAST CLIMATE - CHAIRED BY HENRY WU
  - Alessandro Forte - Geodynamic Modelling of Sea Level Markers in Past Geological Warm Periods
  - Pierre Valla - Past glacier fluctuations and mountain erosion under a changing climate
  - Gayane Asatryan - Paleogene polar plankton and paleoproductivity across the Eocene - Oligocene boundary
  - Frédéric Bouchard - Permafrost lakes in Yakutia (eastern Siberia): Small but active carbon processors
  - Henry Wu - Double trouble in our tropical ocean

1.2. UNDERSTANDING PROCESS ON VARIOUS SCALES / OBSERVING THE EARTH SYSTEM
  1.2.a. Aerosol effects on clouds and air quality - chaired by Barbara Ervens
  - Matthias Tesche - A new view of aerosol-cloud interactions from polar-orbiting and geostationary satellite observations
  - Chien Wang - Roles of Atmospheric Aerosols in Climate and Environment
  - Barbara Ervens - Biowaters in the atmosphere
  - Christopher Cantrell - Atmospheric Chemistry in Interacting Urban and Rural Air Masses

12:55 PM QUESTIONS

1:20 PM LUNCH

2:50 PM 1.2.b. Feedbacks on climate change - chaired by Gayane Asatryan
  - Anna Possner - Understanding Southern Ocean Clouds
  - Ashley Ballantine - Investigating hotspots of carbon-climate sensitivity: regions and processes
  - Thomas Lauvaux - Atmospheric monitoring of city pledges
  - Rainer Kiko - Imaging Zooplankton and Particle Dynamics in an Ocean of Change
  - Helmuth Thomas - The Ocean’s Alkalinity: Connecting geological and metabolic processes and time-scales
1.3. NEW CHALLENGES FOR EARTH SYSTEM MODELLING AND FORECASTING

1.3.a. Understanding and assessing uncertainties - chaired by Matthias Tesche

- Redouane Lguensat (Venkatramani Balaji representative) - The calibration of coupled climate models with multiple intrinsic timescales
- Takaya Uchida (William Dewar representative) - Exploiting realistic ensemble ocean simulations in examining the Gulf Stream
- Philippe Lucas-Picher - Climate change impacts at the kilometer scale over Europe
- Julien Boucharel - Climate-driven coastal vulnerability: towards global previsions

1.3.b. Climate responses – chaired by Alessandra Giannini

- Alexey Fedorov - The AMOC and climate change
- Jhan Carlo Espinoza - The hydrological cycle in the Andes-Amazon connection facing climate change and deforestation
- Louis Derry - CZ-TOP: The Critical Zone as a Non-Steady State Biogeochemical Reactor
- Katsumasa Tanaka - Overshooting the Paris Agreement temperature targets

2.2. IMPACTS ON QUALITY OF HUMAN LIFE - CHAIRED BY LORIE HAMELIN

- Silvia Schroetter (Jed Kaplan representative) - Crop adaptation to climate change in the seasonally arid tropics
- Valery Ridde - Resilience of health systems in the context of climate change: conceptual and methodological challenges
- Maria Apergi (Andreas Goldthau representative) - An energy justice index for the energy transition in the Global South
- Bruno Turnheim - Destabilisation, decline and phase-out: Examining the Risks of low-carbon transitions

Questions

Lunch

3:20 PM

4:10 PM

4:50 PM

6:20 PM

6:40 PM

WEDNESDAY, 24TH NOVEMBER 2021

9:15 AM | WELCOME

9:30 AM

INTRODUCTORY STORYLINE BY CHRIS BOCKMAN

2.1. IMPACTS ON BIODIVERSITY AND ECOSYSTEMS - CHAIRED BY CHRISTINA RICHARDS

- James Clark - Twenty first century forest recovery and loss determined by recruitment limitation across five continents
- Camille Parmesan - Potential and limitations of evolution in shaping the impacts of climate change on wild species
- Nuria Teixido - Impacts of global environmental change on marine biodiversity
- Carol Eunmi Lee - Rapid Evolutionary Responses to Global Change
- Christina Richards - Mechanisms of rapid response in a globally invasive plant species

3.1. TECHNOLOGY DEVELOPMENT

3.1.a. Alternative energy resources: Solar, photocatalytic and storage - chaired by Yutsung Tsai

- Heechae Choi - Supercomputing for commercializable energy material developments
- Philip Schulz - Beating the Terawatt Challenge - The Future of Solar Power
- Ludmilla Cojocaru - Energy conversion-storage devices using perovskite solar cells & supercapacitors
- Yutsung Tsai - 2-dimensional solar cell development
- Eric Hill - Photocatalytic Nanohybrids for a Green Future
- Michael Zuerch - Ultrafast X-ray spectroscopy of energy materials
3.1.b. Alternative energy resources: non-solar/photocatalytic - chaired by Eric Hill
- Marion Carrier - Tackling complex kinetics in thermal decomposition
- Giuliano Giambastiani - Catalysts and Reactors for a Clean Energy Transition
- Paulo Paioti (Amir Hoveyda representative) - Making Drugs Without Harming the Environment
3.1.c. Fossil fuel/CO2 reduction - chaired by Michael Zuerch
- Konstantinos Christoforidis - Photo-active nanomaterials for CO2 reduction and H2 production
- Orestes Rivada Wheelaghan - Cooperative Systems in Molecular CO2 Electroreduction

QUESTIONS
COFFEE BREAK
11:45 AM
3.2. ADAPTATION STRATEGIES
3.2.a. Global strategies - chaired by Philip Schulz
- Ignacio Palomo - Nature based solutions for climate change adaptation in the Alps
- Lorie Hamelin - Sustainable national transitions towards low fossil carbon economies
- Emmanuel Vincent - Investigating the impact of web platforms’ policies against misinformation
3.2.b. Food and water security – chaired by Clemens Scheer
- Alessandra Giannini - The multiple dimensions of the vulnerability of food security to climate in Senegal
- Delphine Renard - Saw crop diversity to harvest food security
- Vincent Vadez - Turn off the tap! Plants traits contributing to water savings for future climates
- Clemens Scheer - The role of nitrogen management in climate change mitigation

QUESTIONS
LUNCH
12:30 PM
12:50 PM
2:20 PM
4:30 PM
CLOSED REMARKS BY JULIEN BOUCHAREL (MOPGA LAUREATE) & CHRIS BOCKMAN

THE MINISTERS / FRANCE
FRÉDÉRIQUE VIDAL
FRENCH MINISTER FOR HIGHER EDUCATION, RESEARCH AND INNOVATION
Before being appointed Minister of Higher Education, Research and Innovation, Frédérique Vidal was President of the University of Nice Sophia-Antipolis (UNS) since 2012. She holds a master’s degree in biochemistry from the University of Nice Sophia-Antipolis, a D.E.A. from the Institut Pasteur, and a doctorate from the University of Nice Sophia-Antipolis, where she was recruited as a lecturer in 1995. Since 2004, Frédérique Vidal has been a university professor in biochemistry, molecular and cellular biology at the UNS. She was also deputy director of the Life Sciences department from 2007 to 2009, was appointed research assessor to the dean of the faculty and then head of the department in 2009. She was previously in charge of internships, then deputy director of the pharmacology master’s degree. Frédérique Vidal was an external member of the Inserm Regional Scientific Council from 1999 to 2003 and has been a member of the jury of the Master of Virology at the U.P.M.C.-Paris Diderot-Institut Pasteur since 2004. She was co-responsible for the European Tempus project on the implementation of the LMD in the Balkans from 2006 to 2009.
Anja Karliczek was appointed Federal Minister of Education and Research and member of the government of Federal Chancellor Angela Merkel on 14 March 2018. Following her training as a bank clerk at Deutsche Bank AG and a period of employment at the bank, Anja Karliczek underwent training in hotel management at her family’s hotel during which she also gained qualifications to train apprentices. She worked in a managerial position at the Hotel Teutoburger Wald from summer 1994 until becoming a Member of the German Federal Parliament (Bundestag) in 2013. She has three children. She completed her studies in business management at the FernUniversität Hagen in 2008 with a diploma thesis analysing the fiscal advantages of transferring pension obligations from the employer’s point of view. She was elected Parliamentary Secretary of the CDU/CSU Parliamentary Group in January 2017. She was a member of the Bundestag Finance Committee and deputy member of the Budget Committee and the 4th Committee of Inquiry. She was a full member of the Tourism Committee from October 2013 to January 2017. She was the Parliamentary Group’s rapporteur on the Finance Committee for the topics of old age provision, employee shareholding, the Life Insurance Reform Act and Solvency II with the Investment Directive. In the field of tourism, Anja Karliczek was responsible for initial and continuing training in the hotel and catering sector, quality initiatives in the German tourist industry and the EU funding period 2014-2020. She began her political career in 2004 when she was elected as Member of Tecklenburg Town Council. Here she held the position of Chair of the Committee for Families, Senior Citizens and Social Affairs and Chair of the Lengerich Adult Education Centre Association. Anja Karliczek became Deputy Chair of the CDU political group on Tecklenburg Town Council in 2009. In January 2011 she became leader of the Tecklenburg CDU political group, a position which she held until 2014, and took over as Chair of the Tecklenburg CDU Association. She still holds this latter office today. Anja Karliczek was born in Ibbenbüren on 29 April 1971.

Michel Deneken has been teaching at the University of Strasbourg since 1989, where he was appointed professor in 2003. He became president of the university in December 2016. From 2001 to 2009 he was Dean of the Faculty of Catholic Theology at the University of Strasbourg. He held the position as Vice-President for Finance and then for Education and Training, from 2009 to 2016. In the years 2013 to 2017 he headed the joint research unit Droit, religion, entreprise et société (Dires). In September 2016, he acted as interim president of the University of Strasbourg after its president, Alain Beretz, was appointed general director for research and innovation at the Ministry of Education and Research. His research focuses on the history of religious dogma. He also works in the field of ecclesiology, on ecumenical questions, especially on the relations between the Catholic Church and the Churches of the Reformation, and on 19th century German theology.

Antoine Petit, an exceptional grade university professor, was appointed Chairman and Chief Executive Officer of the CNRS on January 24, 2018. After earning a teaching degree and a PhD in computer science from the Université Paris Diderot, he specialized in formal methods, mostly based on transition systems, for the specification and verification of parallel systems in real time. An academic from 1984 to 2004, he served as an assistant professor at the Université d’Orléans, a lecturer at the Université Paris-Sud and a professor at the ENS Cachan (near Paris) from 1994. In 2004, he was seconded to the CNRS, first as scientific director of the Information and Communication Science and Technologies Department, before becoming inter-regional director for South West France.

Chris Bockman is a British broadcast journalist. He started his career as a junior reporter at CNN headquarters in Atlanta before returning to London where he worked for a television news agency. Twenty years ago he made the move to Toulouse when the BBC was looking for someone to cover southern France for the broadcaster and he has stayed put ever since. From the « Ville Rose » he has covered a wide range of topics including numerous scientific and environmental issues. For the CNRS he even hosted the first ever televised Nano Car race in 2017 a fun and clever way of communicating about nanotechnology to a wider audience. In 2018 his first book was published looking back at some of the off-beat stories he has covered in the region over the past two decades. The title « Are you the foie gras correspondent? Another slow news day in south west France. »
THE SPEAKERS

CHRISTINA RICHARDS

Christina Richard’s research focus lies in Ecology & Evolution, Conservation & Disease and Marine Biology. She currently works on her MOPGA project “Genomics and Epigenomics of Plant Invasion”. Her fellowship as laureate of the German call of the MOPGA-GRI programme at the Institute of Evolution and Ecology (EVE) of the University Tübingen started in 2019. Her MOPGA project focuses on the interaction between climate change, evolution, and invasive plant species to better control them and prevent future invasions. In her home institution, the University of Florida, she holds the position as director of the Evolution Working Group, at the Institute for the Advanced Study of Culture and the Environment (IASCE) at the Department of Integrative Biology. Further information: http://ecologicalepigenetics.com/

JÉRÔME CHAVE

Prof Dr Chave holds the position as Deputy Director of the EDB (Evolution et Diversité Biologique) Research Unit in Toulouse. Since 2011 he acts as Coordinator of the laboratory of excellence CEBA (Centre d’Étude de la Biodiversité Amazonienne). He is a leading figure in the field of tropical ecology at the interface between community ecology and evolutionary ecology. His research focuses on the ecology and evolution of trees in the tropical forest. He combines field research, molecular biology, and mathematical modelling to explore the mechanisms used to explain biodiversity, biogeochemical cycles, and macroevolutionary patterns. Further information: http://chave.ups-tlse.fr/ https://www.cnrs.fr/en/person/jerome-chave

STEFAN RAHMSFORF

Professor Rahmstorf holds the position as head of the Research Department on Earth System Analysis of the Potsdam Institute for Climate Impact Research (PIK). He is professor of Physics of the Oceans at the University of Potsdam and co-founder of two award-winning research blogs. His research is focused on paleoclimate, tipping points, planetary boundaries, ocean circulation, sea level, extreme weather events and Earth System modelling. He is the first scientist outside the US to be awarded the Climate System Analysis of the Potsdam Institute for Climate Impact Research (PIK). He is the first scientist outside the US to be awarded the Climate Communication Prize of the American Geophysical Union in 2017. In 2007 he was one of the lead authors of the 4th Assessment Report of the IPCC and he published over 130 scientific papers and co-authored four books. Further information: http://www.pik-potsdam.de/-stefan/index.html https://www.realclimate.org/ https://scilogs.spektrum.de/klimalounge/

SAMUEL MORIN

Dr Morin holds the position as Head of National Weather Research Centre (CNRM) in Toulouse. His research focus lies in snow science, where he explores the scientific challenges related to the assessment of climate change impacts and risks in mountain areas. He is especially focused on mountain monitoring and prediction for meteorological, snow and avalanche conditions. With his research he contributes to raising scientific knowledge and public awareness about climate change for mountain key sectors. He also served as lead author of the IPCC Special Report on Ocean and Cryosphere in a Changing Climate (SROCC) approved in September 2019. Further information: http://www.umr-cnrm.fr/spip.php?article250&lang=fr https://www.mountainresearchinitiative.org/who-we-are/team/science-leadership-council/2469-samuel-morin

CLAUDIA KEMFERT

Professor Kemfert holds the position as head of the Energy, Transportation, Environment Department at the German Institute for Economic Research in Berlin (DIW Berlin). She is professor of Energy Economics and Energy Policy at Leuphana University and member of the German Council on the Environment (SRU) since 2016. Her research focus lies in the economic assessment of climate, energy and transportation policy measures and the transfer of research results into political practice. She acts as an intermediary between science, economy and politics and issues recommendations for action. Further information: https://www.claudiakemfert.de/en/ https://www.claudiakemfert.de/en/publications/

JULIEN BOUCHAREL

Julien Boucharel is interested in the tropical climate variability over various time scales ranging from seasons to centuries, especially in the dynamics of El Niño Southern Oscillation (ENSO). He currently researches as laureate of the French call of the MOPGA programme, working at his host institution Laboratoire d’Études en Géophysique et Océanographie Spatiales in Toulouse. His MOPGA project “Tropical Cyclone activity and upper-ocean Dynamics (TROCODYN)” focuses on identifying and understanding the mechanisms involved in hurricane genesis and intensification, to build reliable forecast systems that are beneficial for risk management agencies and coastal populations. In his home institution, the University of Hawai‘i at Mānoa, he works as postdoctoral fellow at the School of Ocean and Earth Science and Technology (SOEST). Further information: https://labo.obs-mip.fr/dynotrop/projets/mopga-trocodyn-tropical-cyclone-activity-and-upper-ocean-dynamics/
Six years after the major commitment of the Paris Agreement and two years after the Kick-Off of the “Make Our Planet Great Again (MOPGA)” program, the world community has become more and more aware of the urgency to stop global warming. The annual climate conference of the United Nations, that will be held in Glasgow this year (COP26), is dedicated to make tackling climate change a joint effort of all nations. Drawing on the latest work of the IPCC experts, the world is recognizing that the impact of human activities on the evolution of the climate system is stronger, and that climate is changing faster than predicted. The change of the presidency of the United States – especially their pledge to return to the Paris Agreement in January 2021 and pick up the fight against global warming again – has therefore been a relief.

On the political level, the MOPGA program aims at making the initiative visible in France and Germany and thereby underlining the necessity of scientific collaboration, living up to Europe’s growing global responsibility as a role model. The program will thus help to generate meaningful research results to enable comprehensive and global recommendations for action for politics, the economy and society. On the scientific level, the Franco-German MOPGA program strives to create new impulses for research and future research collaboration in the fields of climate change, energy transition and earth systems. By supporting interdisciplinarity and building links in between research groups, it provides a platform for scientific exchange in the research fields of global change.

The MOPGA Kick-Off Conference in Paris in 2019 has proven to be an incentive for collaborative climate research at the European level. It will help to support the commitments of the Paris Climate Agreement to stop global warming. Since then, more than 50 international scientists and their research teams have been working at French and German research institutions to assess the challenges of global warming and to find applicable solutions to mitigate climate change. The “Make Our Planet Great Again” international research initiative is funded for France by the General Secretariat for Investment (SGPI) and for Germany by the German Federal Ministry of Research and Education (BMBF). The research initiative is managed by the National Scientific Research Center (CNRS) and the National Research Agency (ANR) on behalf of all French research organizations, and by the German Academic Exchange Service (DAAD) in Germany.

The scientific mid-term conference of the MOPGA program will be held in a hybrid format from November 23rd to 24th 2021 in Strasbourg. The diversity of the MOPGA projects clearly illustrates the multi-dimensional and complex problems, the global community faces to tackle real-world problems involving multiple stakeholders. Titled “Assessing, Understanding, Mitigating Global Change”, the conference will span the full spectrum of disciplines: from understanding Earth’s climate history in deep time to current, and predicting future atmospheric processes; response of biodiversity and ecosystems, including coupled human-natural systems; and solutions ranging from cutting-edge technology development to political and social adaptation strategies. It will be comprehensible to all members of the MOPGA audience and to a larger scientific community, and also to the public. This crosstalk is critical to address global change.