

Workshop **Integrated Earth System Research** – **Challenges, Approaches and Impacts**

Virtual conference, **29th June 2021, 13:00 to 30th June 2021, 14:00** (CEST)

Organiser: Leibniz Research Network “Integrated Earth System Research”

Humans have increasing impacts on the Earth system. Global warming, widespread pollution of the oceans, worldwide declines in biodiversity, severe water stress, nutrients’ and pollutants’ proliferation, and other environmental changes indicate the 'Anthropocene'. The accelerating exploitation of nature allowed for prosperity and well-being for significant parts of the world population. However, continuous changes in the global environment are increasingly leading to major negative consequences for people's livelihoods and quality of life, as well as for justice, peace and security. The Anthropocene, thus, is shaped by close interrelations between planet Earth and the human world.

Scientific observations and projections of future development clearly depict that securing the Earth as we know it critically depends on societal decisions and actions in the near future, with the current decade being of outstanding importance. This involves a unique societal coordination and transformation task and requires comprehensive scientific evidence to avoid further negative developments in the Earth system with their consequences for the world.

The Leibniz Research Network initiates an **Integrated Earth System Research** (IESR) which explicitly addresses the connections between humans and the Earth system and provides scientific findings of high societal relevance. It takes a holistic view focusing on the anthroposphere as an integral part of the Earth system. Accordingly, the people’s capacities, activities and artefacts in physical, social, cultural and economic terms are central to the iESR.

The workshop provides a forum for the presentation, reflection and consolidation of the new field within the Leibniz Association and together with invited guests from other institutions. Selected keynotes set the scene to introduce key global challenges, the scientific vision of the iESR as well as related national and international efforts and initiatives. Parallel sessions on particularly pressing research themes involve statements from multiple disciplines and provide room for discussion on future interdisciplinary and transdisciplinary collaboration. The workshop participants will finally jointly derive recommendations for the further conceptualisation and establishment of the iESR, ranging from disciplinary contributions to the interfaces with society. Key findings will be immediately presented to the national and international research community and the media.

Participation is open to all scientists of the Leibniz Association across the natural, engineering, economic and social sciences, as well as the humanities. It does not involve any charge. External speakers and guests are invited by the organisers.

Registration is required under the following link: <https://form.jotform.com/211443736558965>

Further information on the event including the links to the virtual rooms will be circulated via e-mail to the registered participants prior to the event.

Programme

29th June 2021

	Plenary session	Room A
13:00 – 13:15	Opening – Katrin Böhning-Gaese (Vice President of the Leibniz Association)	
13:15 – 13:45	Keynote: The Earth system in the Anthropocene – Johan Rockström (PIK)	
13:45 – 14:15	Keynote: Integrated Earth System Research: an outline – Jochen Schanze (IOER)	
14:15 – 14:30	Q&A	
	<i>Break</i>	
	Parallel session 'Theoretical basis and new methods and models of IESR'	Room A
	<i>Moderation: Katharina Helming (ZALF)</i>	
14:45 – 15:15	Integration as a key challenge of iESR – Dieter Gerten (PIK) & Jochen Schanze (IOER)	
15:15 – 15:30	Approaches to World-Earth modelling – Jonathan Donges (PIK)	
15:30 – 15:45	Climate-economy models as examples of Integrated Earth System Modelling – Sonja Peterson (IfW)	
15:45 – 16:00	The social construction of climate futures – Miriam Prys-Hansen (GIGA)	
	Q&A	
	Short break	
16:30 – 17:00	Moderated discussion	
	Parallel session 'Oceans and their use in the Earth system'	Room B
	<i>Moderation: Ulrich Bathmann (IOW)</i>	
14:45 – 15:15	Oceans and their use in the Earth system – Ulrich Bathmann (KDM, DAM)	
15:15 – 15:30	Oceans and the relevance of the climate – Markus Meier (IOW)	
15:30 – 15:45	Ocean protection and biodiversity – Karen Wiltshire (AWI)	
15:45 – 16:00	Governance of coastal zones – Marion Glaser (ZMT)	
	Q&A	
	Short break	
16:30 – 17:00	Moderated discussion	
	Parallel session 'Urban-rural interlinkages in the Earth system'	Room C
	<i>Moderation: Barbara Warner (ARL)</i>	
14:45 – 15:15	Urban-rural interlinkages: scientific background and agenda – Barbara Warner (ARL)	
15:15 – 15:30	To be, or not to be 'urban': remote sensing perspectives on urban-rural statistical analyses – Hannes Taubenböck (DLR)	
15:30 – 15:45	Talk on urban agriculture/aqua culture – Werner Kloas (IGB)	
15:45 – 16:00	Aerosols and air quality: urban and regional aspects – Ina Tegen (TROPOS)	
	Q&A	
	Short break	
16:30 – 17:00	Moderated discussion	
	<i>Break</i>	

Virtual lobby**Room A**

- 17:15 – 17:30 Evening talk: How to talk about the upcoming Earth system ‘catastrophy?’ – Imke Hoppe (U Hamburg)
- 17:30 – 19:00 Get-together on Kumospace

30th June 2021**Plenary session****Room A**

- 09:00 – 09:15 Wrap up day 1 – Mark Gessner (IGB)
- 09:15 – 09:45 Keynote: Destination Earth – Grazyna Piesiewicz (European Commission)
- 09:45 – 10:15 Keynote: Multi-level global governance – Eugénia da Conceição-Heldt (TUM)
- 10:15 – 10:30 Q&A

*Break***Parallel session ‘Biodiversity in the Earth system’****Room A***Moderation: Bernd B. Misof (ZFMK) & Andreas Mulch (SGN)*

- 10:45 – 11:00 IESR on biodiversity – Andreas Mulch (SGN)
- 11:00 – 11:15 Talk on biodiversity in the Earth system – Klement Tockner (SGN)
- 11:15 – 11:30 Talk on biodiversity in the Earth system – Wolfgang Lucht (PIK)
- 11:30 – 11:45 Talk on biodiversity in the Earth system – Susanne Fritz (SGN)
- 11:45 – 12:00 Talk on biodiversity in the Earth system – Bernhard Misof (ZFMK)
- Q&A

Short break

- 12:30 – 13:00 Moderated discussion

Parallel session ‘Environmental migration and security in the Earth system’**Room B***Moderation: Nicole Deitelhoff (HSFK) & Tobias Stöhr (IfW)*

- 10:45 – 11:00 Environmental migration and security in the Earth system: scientific background and agenda – Claas Schneiderheinze (IfW) & Christina Kohler (HSFK)
- 11:00 – 11:15 Habitability and mobility in contexts of disasters and climate change – Caroline Zickgraf (Université de Liège)
- 11:15 – 11:30 Non-migration as adaptation in the face of climate change – Bishawjit Mallick, (TU Dresden)
- 11:30 – 11:45 Overheated security? Explorations into the securitisation of climate change & the governmentalisation of security – Franz von Lukke (U Tübingen)
- 11:45 – 12:00 Can trade mitigate climate change effects? – Hendrik Mahlkow (IfW)

Q&A

Short break

- 12:30 – 13:00 Moderated discussion

Parallel session 'Bioeconomy in the Earth system'

Room C

Moderation: Heidi Webber (ZALF)

- 10:45 – 11:15 Bioeconomy: sustainability challenges and the need for integrated research
– Frank Ewert (ZALF)
- 11:15 – 11:30 Policy perspective: research and assessment needs for a successful bioeconomy
– Maria Proestou (HU Berlin)
- 11:30 – 11:45 Biodiversity utilisation as a basis for future bioeconomic valorisation
– Ludger Wessjohann (IPB)
- 11:45 – 12:00 Assessing bioeconomy impacts on biodiversity: indicators and monitoring – Jörg Freyhof (MfN, LEB)
- Q&A
- Short break
- 12:30 – 13:00 Moderated discussion

Break

Plenary session

Room A

Moderator: Jochen Schanze (IOER) & Dieter Gerten (PIK)

- 13:15 – 13:45 Overall discussion of scientific advances through an iESF and their societal relevance
- 13:45 – 14:00 Conclusions and next steps towards the national and international establishment of an iESF
- 14:00 Closure

Media briefing

- 16:00 – 16:30 Die Herausforderungen des Anthropozäns erfordern neuartige Anstrengungen der Wissenschaft
(The challenges of the Anthropocene need an unprecedented effort of science)
Jochen Schanze, Dieter Gerten, Sonja Peterson
Leibniz-Forschungsnetzwerk "Integrierte Erdsystemforschung"
(Leibniz Research Network "Integrated Earth System Research")
- Invited media and public relations units of the Leibniz Association and the institutes of the Leibniz Research Network "Integrated Earth System Research"