



Sustainable Management of Land and Water: Making Ecosystems and Communities More Resilient to Drought and Floods

A side event for the International Conference on Climate Risk, Vulnerability and Resilience Building

13:00-14:30(CET) on 19 April 2023

UNESCO Headquarters in Paris and online

Context

Floods and droughts are two sides of a water management crisis that is linked to the changing climate, the health of the land and the biological diversity of ecosystems. Feedback loops exacerbate this, where increasing exposure of land to climate change accelerates the degradation of land, making it more susceptible to the impacts of droughts and floods.

As reported in the IPCC's 6th Assessment Report, climate change is intensifying the water cycle, leading to increased flooding and drought in many regions. Since the report was published in 2021, the world has witnessed catastrophic drought, flood and fire events leading to many deaths, increased food and water insecurity, and extensive loss and damage worldwide. It is becoming increasingly evident that improved ecosystems and community resilience to drought is the urgent task for adaptation to climate uncertainty, and success will be dependent on how land and water are used and managed.

The UNCCD is the sole legally binding international agreement linking environment and development, with the mandate to address land degradation and mitigate the effects of drought. The Convention's [Science Policy Interface](#) (SPI) has been working on translating scientific findings into policy options for enhancing drought resilience building through integrated land use planning and drought-smart land management.

Side event approach

Expert presentations at the beginning of the side event will highlight the science behind the interaction between land degradation and climate change and the pivotal role land can play in conferring drought and flood resilience. It will provide an opportunity to share the UNCCD SPI work on the land-drought nexus and the role the drought-smart land management in enhancing water security and building resilience. It will introduce the proactive actions that can be taken by communities on land to minimize their growing exposure and vulnerability to drought and floods. The results of the SPI work on approaches to assess drought resilience at multiple scales will be showcased. The participants will also be informed of ongoing scientific assessment of the SPI on historical aridity trends and future projections and anticipated impacts.

A moderated interactive dialogue will follow the expert presentations, where experts from international institutions and policymakers from countries will exchange views. These speakers will bring practical experience from the water, land, biodiversity, and disaster risk management sectors to discuss policy needs, perceived gaps and practical implementation challenges



encountered. They will also relay the opportunities for improvement in future policy development so that joint integrated solutions can be more readily pursued. The audience will be invited to share their comments and ask the panelists.

Programme

Warming Up (2 minutes)

The stage will be set by a pre-recorded 2-minute video for the participants to settle down and online participants to link in.

This side event will be moderated by Ms. Xiaoxia Jia, Programme Officer for Science, Science, Technology and Innovation, UNCCD.

1. Opening Remarks (3 minutes)

Dr. Barron Joseph Orr, Chief Scientist, UNCCD secretariat

These remarks would set the stage for the interactive sessions to follow; emphasizing the role land can play in building ecosystems and community resilience to droughts and floods.

2. Science presentations (5 minutes for each)

a. Land-drought nexus and drought smart land management

Dr. Alisher Mirzabaev (online) Senior Researcher, Center for Development Research (ZEF), Bonn University

b. Multiple scales approach for assessment and monitoring ecosystems and community resilience to drought and Historical trends of the aridity and projection in the future and its impacts (15 Minutes)

Mr. Sergio Vicente-Serrano, Scientific Researcher of the Pyrenean Institute of Ecology, Spain.

c. Land and water nexus approaches for assessment and monitoring drought resilience. (5-7 minutes)

Dr. Ali Karnib (online), Senior researcher and Prof. on water and engineering, University of Lebanon

Audience engagement (2 minutes)

After the presentation, the moderator will invite the audience to ask questions.

Interactive discussion with the audience. (3 questions, 3 minutes for each, in total 9 minutes)

3. Panelist discussion Part 1 - International organizations (in total 15 minutes):

Ms. Vera Boerger, Senior Programme Officer, Land and Water Division, FAO,

Mr. Robert Stefanski, Chief, Agricultural Meteorology Division, WMO,

Mr. Anil Mishra, Chief of Hydrological Systems, Climate Change and Adaptation, UNESCO,

Ms. Loretta Hieber Girardet, Chief of the Risk Knowledge, Monitoring and Capacity-Development Branch, UNDRR)

The moderator will invite the panelist to respond to the questions relevant to drought resilience in respect to the mandate and role of respective UN organizations.

Audience engagement (3 minutes)

-This engagement could focus on which land-based solutions should be adopted urgently in support of building resilience to drought and flooding.

Interactive discussion with the audience. (3 questions, 3 for each in total 9 minutes)



4. Panel discussion Part 2- Policies and practices from countries (in total 9 minutes)

Dr. Anik Bhaduri, Director of the Sustainable Water Future Programme of Future Earth, Associate Professor and Australian River Institute, Griffith University, Australia (Australia)

Dr. Olcay Ünver, Professor of Practice at Environmental and Resource Management Program, Arizona State University/Water Policy Group (USA)

Dr. Nana Yan, Associate Professor of Aerospace Information Research Institute (AIR), Chinese Academy of Sciences (CAS) (China)

Moderators will invite each panelist to respond to the questions relevant to the role of governments in addressing the systemic risk of drought and flood in the face of climate change, gaps or challenges must be overcome to ensure informative decision-making and the approach being taken for the assessment and monitoring of drought resilience.

Audience engagement (3 minutes)

-This engagement could focus on which land-based solutions should be adopted urgently in support of building resilience to drought and flooding.

Interactive discussion with the audience. (3 questions, 3 minutes for each in total 9 minutes)

5. Wrap-up (3 minutes)

The moderator will wrap up by providing “Take home messages” from what has been presented and discussed.

6. Closure of the Meeting (3 minutes)

Closing remarks by Dr. Barron Joseph Orr, Chief Scientist, UNCCD secretariat

The remarks will provide perspectives on what has been discussed in the context of UNCCD priorities, including opportunities for future scientific and technical collaboration so that the needs of countries can be better met in the future.

The SPI publications for further reading:

In 2019: The Land-Drought Nexus Enhancing the role of land-based interventions in drought mitigation and risk management at <https://www.unccd.int/resources/reports/land-drought-nexus-enhancing-role-land-based-interventions-drought-mitigation-and>

- Science policy brief: Land Management and Drought Mitigation at https://catalogue.unccd.int/1214_UNCCD_SPI_2019_PB_2_WEB.pdf
- In 2022: **Multiscale approaches for the assessment and monitoring of social and ecological resilience to drought** at <https://www.unccd.int/resources/reports/multiscale-approaches-assessment-and-monitoring-social-and-ecological-resilience> (Advanced copy)
- In 2017: **Sustainable land management contribution to successful land-based climate change adaptation and mitigation** at <https://www.unccd.int/resources/reports/sustainable-land-management-contribution-successful-land-based-climate-change>
- In 2023: **Land and Water-based approaches for assessment on the drought resilience** (Report in the process)

- Information and publications are provided by the Drought Toolboxes of the UNCCD official website at <https://www.unccd.int/science/overview>

Introduction on the Speakers

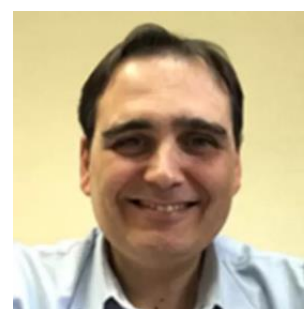
1. Barron Joseph Orr

Dr. Barron Joseph Orr is the Chief Scientist for the United Nations Convention to Combat Desertification (UNCCD). He is also a Professor Emeritus at the University of Arizona (USA) where he also served as a NASA Geospatial Extension Specialist. He was named a Marie Curie Fellow in 2014 and is co-lead author of the Scientific Conceptual Framework on Land Degradation Neutrality (LDN) which was formally endorsed by the 197 Parties to the UNCCD in 2017. After a career collaborating with local communities to address environmental challenges, he is now engaged in global environmental monitoring, helping establish a globally harmonized approach to the assessment of drought hazard, exposure and resilience. He has also been central to the development of SDG indicator 15.3.1 on land degradation. Dr. Orr helped facilitate the work of the UNCCD Science-Policy Interface on the land-drought nexus.



2. Sergio Vicente-Serrano (Spain)

Dr. Sergio M. Vicente is a Senior Scientific Researcher at the Pyrenean Institute of Ecology, a Research Centre of the Spanish National Research Council based in Zaragoza. His major work is scientific research on different topics related to global change, including the study of landscape and vegetation changes in the Mediterranean region and different hydrological and climatic processes analyzed on different spatial and temporal scales. Currently, Sergio is working as the lead author for the sixth assessment report of the IPCC.



3. Alisher Mirzabaev (Germany)

Dr. Alisher Mirzabaev is a senior specialist of the UNIQUE Land and Forestry GMBH based in Berlin. He was an acting Professor, at the Production Economics Group, Institute for Food and Resource Economics (ILR), and a Senior Researcher, at the Center for Development Research (ZEF), at the University of Bonn 2022-present and the Economist of the International Center for Agricultural Research in the Dry Areas (ICARDA), Central Asia and Caucasus Office in 2006-2012. His research focal areas are the Economics of Land Use and Land Degradation, Ecosystems Restoration, Climate Change Impacts and Adaptation, and the Water-Energy-Food Security Nexus. He currently is a coordinating lead author of the IPCC Special Report on Climate Change and Land Chapter on Desertification and Lead author of the IPCC Sixth Report, working group 2.



4. Ali Karnib (Lebanon)

Dr. Ali Karnib is a Senior researcher and professor of water and engineering at the Lebanese University of Lebanon. He studies Sustainable Water Resources Management, Water-Food-Energy-Climate Change Nexus, and Sustainable Development. He has been providing consultancy services for UNESCO, UNCCD, other international organizations on drought and water-related SDG indicators. His recent publication is on Quantitative Assessment Framework for Water, Energy and Food Nexus: A Tool for Bridging Science and Policy Making.





5. Anik Bhaduri (Australia)

Anik Bhaduri is the Director of the Sustainable Water Future Programme (Water Future) of Future Earth. He is an Associate Professor at the Australian River Institute, Griffith University, Australia. He is also a Senior Fellow at the Centre of Development Research, University of Bonn, Germany and a visiting Professor at the Indian Institute of Science. He is the co-lead of the upcoming Global Water Assessment mechanism together with UNESCO and an accomplished leader in the field of water economics, global water policy and water governance with over 20 years of experience.



6. Olcay Ünver (USA)

Dr. Olcay Ünver is the Professor of Practice at the Environmental and Resource Management Program and Senior Global Futures Scientist with Julie Ann Wrigley Global Futures Laboratory at Arizona State University, a member of the Water Policy Group, Senior Water Advisor to FAO, and Industry Fellow at Australian Rivers Institute. In his public service career spanning three decades, he led FAO's water programs and activities, UN-Water's World Water Assessment Programme, and UNESCO's Program Office on Global Water Assessment and served as Vice-Chair of UN-Water.



7. Nana Yan (China)

Dr. Nana Yan currently is an associate professor at the Aerospace Information Research Institute (AIR), Chinese Academy of Sciences (CAS). She is secretary-general of the Digital Agriculture Special Committee, Chinese National Committee of the International Society for Digital Earth. Her research interests are remote sensing applications in agriculture and water resources, including drought monitoring and assessment, evapotranspiration monitoring, crop water productivity and water-saving assessment. She developed the national drought monitoring system (DroughtWatch) in 2006 and continually provides the ten-day/seasonal bulletin for different departments of government. As a member of the workgroup in China for the regional mechanism on drought monitoring and early warning in the Asia-Pacific region, she participates in the capacity building of drought monitoring with remote sensing, and customized drought monitoring systems for Mongolia. She has published 4 monographs and more than 80 peer-reviewed papers.



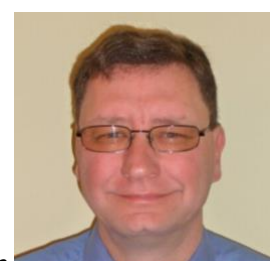
8. Vera Boerger

Ms. Vera Boerger is a Senior Programme Officer, Land and Water Division, FAO, specialized in Field projects on soil fertility in Bolivia and Tanzania (1989-1996); Extension, Education and Communication for Development Officer in the Subregional /Regional offices in Zimbabwe and Chile (1998-2004); Land and Water Officer in the Subregional Office for Mesoamerica in Panama (2009-2018). Since 2018 Senior Land and Water Officer in FAO-Rome. DED: Supported family farmers organizations in Belem/Brazil on agroecology (1996 – 1998).



9. Robert Stefanski (WMO)

Mr. Robert Stefanski is currently Chief of the WMO Agricultural Meteorology Division of the World Meteorological Organization (WMO) in Geneva, Switzerland. His duties include developing the scientific and technical aspects of this division and providing technical and scientific support to the WMO Commission for Agricultural Meteorology. He is also the Head of the Technical Support Unit of the Integrated Drought Management Programme which works with



countries in developing drought early warning systems and national drought policies. From 2005 to 2010, he was the Scientific Officer in the same Programme at WMO. From 1991 to 2004, he was an agricultural meteorologist for the United States Department of Agriculture where he monitored worldwide weather and climate conditions and how they impacted global agricultural production.

10. Anil Mishra (UNESCO)

Dr. Anil Mishra is the Chief of Hydrological Systems and Climate Change and Adaptation, Intergovernmental Hydrological Programme (IHP), UNESCO. Dr Anil Mishra provides science policy advice underpinned by scientific research findings to deal with climate and water related challenges to UNESCO Member States. Dr. Anil Mishra's academic, professional, and managerial experiences in the field of hydrology, water resources and environment have spanned over 25 years and included a number of international research studies, initiating and leading thematic groups, coordinating center of excellencies, and supporting decision and policy making in the fields of hydrology, cryosphere, water resources and coupled human-environment systems across the globe. His recent work focuses on developing science research agenda and adaptation strategies along the line of 2030 Development Agenda, Paris agreement and Sendai Framework for Disaster Risk Reduction particularly related to hydrological processes, extremes, and Climate Change. Dr. Mishra has authored, co-authored numerous scientific publications, edited books, scientific reports and policy briefs and convened and co-convened conferences focusing on Climate Change Adaptation, Hydrological Extremes, Cryosphere, and Water Resources Management. Dr. Mishra also facilitated several science policy dialogues during the side event of the High-Level Political Forum (HLPF) on Sustainable Development, and UN Climate Change Conferences (Conference of the Parties, COPs).



11. Loretta Hieber Girardet (UNDRR)

Ms. Loretta Hieber Girardet is the Chief of the Risk Knowledge, Monitoring and Capacity-Development Branch covering risk information and analytics, climate change, disaster loss and monitoring data and capacity-building for UNDRR globally. Previously, she served as Chief of the UNDRR Asia-Pacific regional office, covering 38 of the world's most disaster-prone countries. Loretta served in various management positions at OCHA for over a decade before joining UNDRR. She also has a background in public health and worked for the World Health Organization in various capacities, including in emergency contexts in Afghanistan, Pakistan and sub-Saharan Africa. Her experience in emergency contexts spans more than 25 years and she is the author of several publications including Lifeline Media: Reaching Populations in Crises which promotes greater accountability to people affected by disasters. Her academic background includes fellowships and degrees from the Harvard School of Public Health and the University of Paris-Assas.



12. Xiaoxia Jia

Ms. Xiaoxia Jia is a Programme Officer for Science, Science, Technology and Innovation Unit of the UNCCD, focusing on matters of the Committee on Science and Technology (CST) of the Convention, and science policy interfacing relevant to Land-drought and Energy Nexus, and ecosystems and community resilience to drought. She was responsible for UNCCD Regional Implementation Coordination for Asia-Pacific Region. Before she joined in the UNCCD secretariat, she was working for the National Bureau to Combat Desertification, the State Forestry Administration of China in charge of UNCCD Implementation and International Cooperation as Deputy Director General.

