Water Security and Climate Change
Conference
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Tashkent, Uzbekistan
08–10 October 2025

Call for Abstracts

Innovative Approaches for Sustainable Water and Environmental Management

SDG nexus network · TIIAME National Research University · DAAD exceed Deutscher Akademischer Austauschdienst German Academic Exchange Service · Federal Ministry for Economic Cooperation and Development · CNRD Centers for Natural Resources and Development · University of Hohenheim · Technische Universität Braunschweig · AIT Asian Institute of Technology

WSCC 2025 - A Platform for Exchange

The SDG[nexus] Network, the Centers for Natural Resources and Development (CNRD), the International Network on Sustainable Water Management in Developing Countries (SWINDON), the University of Hohenheim, the Asian Institute of Technology (AIT), and the Tashkent Institute of Irrigation and Agricultural Mechanization Engineers National Research University (TIIAME-NRU) are pleased to invite the community of water and climate experts to submit abstracts for the Water Security and Climate Change Conference (WSCC), 08 - 10 October 2025 to be held in Tashkent, Uzbekistan.

Achieving water security under climate change conditions is one of the major challenges faced by society today – both globally and locally. By building bridges between disciplines, sectors and different stakeholders, the conference provides a platform for international exchange. Consequently, interdisciplinary links are revealed and synergies between scientific evidence and societal and political decisions are released. The conference thus contributes to the formulation of sustainable strategies for water resources management in the face of climate change.

The WSCC 2025 is supported by the exceed program (Higher Education Excellence in Development Cooperation) and follows a successful series of conferences implemented in Thailand, Germany, Kenya, Mexico, Vietnam, and Ecuador between 2016 and 2024.

Background

In the face of escalating climate-related extremes, the imperative to gearing food production and industrial activities towards an environmentally sustainable use of water resources has never been more crucial. The intricate nexus between water, agriculture, and ecosystem resilience forms the backbone of our global response to climate uncertainties. This complex interplay calls for innovative, data-driven solutions that are both predictive and adaptive, a realm where artificial intelligence (AI) and big data hold transformative potential.

Extreme weather events, exacerbated by climate change, pose significant challenges for both human and ecological systems. Droughts, floods, and unpredictable weather patterns threaten freshwater availability, food security, and ecosystem viability. Effective coping strategies need to blend traditional wisdom with modern, science-based approaches. Communities worldwide are turning to adaptive water management practices that include rainwater harvesting, improved irrigation techniques, and real-time monitoring of water resources. By leveraging historical climate data and contemporary climate models, stakeholders can anticipate changes and minimize the impact of extremes on both agricultural output and natural habitats. In addition to the increasing frequency of extreme weather events, the risk of contamination of groundwater and surface water through the discharge of pollutants is also increasing due to the malfunctioning or lack of wastewater treatment in the municipal and industrial sectors. Further, during heavy rainfall events, uncontrolled or insufficiently sealed landfills also pose a significant hazard due to contaminated landfill leachate.

The dual demands of ensuring food security and maintaining ecological health present a daunting challenge. Water is the lifeblood of agriculture, yet its overuse, mismanagement and contamination have led to degraded ecosystems and declining biodiversity. Sustainable water management strategies necessitate a balance, safeguarding both crop yields and ecosystem integrity. Innovations such as precision agriculture, which optimizes water use through targeted irrigation and soil moisture management, are critical. These technologies not only increase agricultural productivity but also contribute to the conservation of vital water-dependent ecosystems.

AI and big data analytics stand at the forefront of revolutionizing how we understand and manage water resources in the face of climate extremes. With the capacity to process vast datasets, AI can offer predictive insights into weather patterns, water availability, and crop health. Advanced machine learning models can identify trends and anomalies that human analysis might miss, facilitating early warning systems and more informed decision-making processes. Moreover, AI-driven platforms can optimize the allocation of water resources across agricultural landscapes, ensuring maximum productivity with minimal environmental impact. Farmers and policymakers alike can use these insights to deploy interventions precisely where they are needed, enhancing resilience against climate variability.

Humankind must embark on a transformative journey that requires collective action and innovation across sectors. It takes an unwavering commitment to combine rational insights with data knowledge and principles of environmental protection. Through these combined efforts, we have the potential to redefine our relationship with water and climate and pave the way for hope and resilience for generations to come. It is in this context that this conference is taking place and rising to the challenge.

Theme A
Coping with Climate-related Extremes

The magnitude and frequency of climate-related water extremes have been on the rise in the recent past. In 2024, for example, there were record flooding events in India, Kenya, Tanzania, and UAE; record drought events in large parts of South America and Panama; record cyclones/hurricanes in the Philippines, Taiwan, China and USA; record heat waves in North America and Europe; and record cold spells in Finland, Norway and Sweden. Such records are being broken with alarming frequency. For example, on 22 July, 2024, Earth experienced its warmest day ever as the daily global average temperature reached a new high, at 17.16 C. Incidentally, this broke the previous record of 17.09 C, set just one day earlier on July 21, 2024.

Climate-related water extremes become the norm rather than the exception. Hence, contemporary scientific research must focus on how humankind should cope with these from multiple perspectives. This is indeed a multi-criteria problem with a deterministic and, what makes it really complicated, sometimes also with a chaos-driven, randomly developing chain of effects at different levels in the social, economic and ecological spheres. How do we cope with these challenges, and what are actually effective tools and measures in our responsive actions? The sessions under this theme will seek to deliberate on and discuss the latest state-of-the-art scientific knowledge in this domain through three dedicated sessions.

Session A1: Forecasting climate-related water extremes

Forewarned is forearmed. A robust forecasting mechanism can better help in arriving at adequate response mechanisms that minimize damage to life and property. This session will discuss the various models, techniques and tools to forecast climate-related extremes, with different lead times covering both short-term and long-term scenarios.

Session A2: Vulnerability and impact assessments

Water is the primary medium through which the impacts of climate-related extremes are manifested, and these impacts have repercussions on almost every sector—water, agriculture, energy, mobility, among others. The purpose of this session is to discuss research that has led to an improved understanding of how these impacts have been ascertained for the various sectors. The session will also deliberate on avenues that have been adopted to address these impacts and vulnerabilities.

Session A3: Strengthening societal resilience

Humans are at the center of any climate change response mechanism. Hence, enhancing societal or community resilience to climate and water extremes is arguably the most vital element in the battle against climate change. This session will discuss societal resilience from multiple perspectives, including community-based structures, governance models, and individual coping strategies.

Theme B
Water for Food and Environment Systems

Water is at the heart of sustainable development, linking food production, environmental health, and energy security. As global demand for water-intensive sectors rises, the balance between these interdependent systems becomes more fragile.

This theme will explore innovative approaches to managing water resources efficiently within the ambit of Water-Land-Energy Nexus. Experts will discuss strategies to enhance agricultural productivity, safeguard ecosystems, and optimize energy use while ensuring water availability under climate change.

How can science, policies, technologies and collaborations drive resilience in water depending systems? The sessions under this theme will provide insights into integrated solutions that promote food and water security as well as environmental well-being in a changing world.

Session B1: Sustainable Water Management for Agriculture and Ecosystems

Water management in agro-ecosystems focuses on the water cycle, including irrigation and water-efficient agriculture, water conservation and water quality, as well as on related impacts on biodiversity and ecosystem functions. The objective of this session is to discuss solutions for sustainable water management, including strategies for adaptation to climate change, while maintaining biodiversity and ecosystem functions in the context of sustainable agriculture.

Session B2: Society and Water Use

This session explores the relationship between society and water use, focusing on conservation while meeting demands. It examines trade-offs in managing river basins for agriculture, energy, and sustainability. The topics under this session include integrated management, watershed restoration, value of traditional knowledge, transboundary cooperation, and multi-sectoral water allocation. The session will also highlight the role of NGOs, local communities, and policies in sustainable water use. Key issues include water rights for small farmers, government and private sector roles, and incentives for sustainability, aiming to balance water use with social and environmental needs.

Session B3: Innovations in Water Use and Recycling for Food Systems

This session will focus on innovations and technologies in water use efficiency, treatment, and reuse. It will highlight advances in desalination and treatment for agricultural use. The session will also explore circular economy approaches to water reuse, including wastewater recycling for agriculture and industry, and nutrient recovery from wastewater for sustainable farming. Contributions may consider case studies of closed-loop water systems in food production, water-saving opportunities with controlled environment farming and other innovative approaches in managing water in the rural-urban continuum.

Theme C
Data-Driven Solutions - Leveraging AI and Big Data Systems

Data and digitization are transforming water resources management and climate change adaptation by enabling real-time monitoring, predictive analytics, and data-driven decision-making. With the use of advanced sensors, remote sensing, and AI-driven models, we can significantly improve water availability forecasts, optimize resource allocation, and enhance early warning systems for droughts, floods, and other climate-related events.

Digital platforms empower stakeholder collaboration by integrating hydrological, meteorological, and socio-economic data, leading to more effective governance and decision-making processes. By leveraging big data and smart technologies, societies can develop resilient water systems, mitigate risks, and promote sustainable water use in the face of climate change. The sessions under this theme will address these diverse aspects of data-driven solutions.

Session C1: Monitoring and Open Data

This session explores how monitoring technologies, such as automatic sensors, IoT devices, and satellite remote sensing, contribute to accurate and timely data collection on water resources. It also examines the role of open data sources in facilitating access to this information, promoting transparency, and enabling data-driven decision-making across various sectors involved in water management.

Session C2: Open-Source Models and Advanced Data Analytics

This session delves into the development and application of open-source modeling tools and data analytics frameworks that empower researchers and policymakers to simulate water resource scenarios. It focuses on how these tools leverage big data and machine learning to enhance predictive capabilities, optimize water management strategies, and support evidence-based policy formulation.

Session C3: Enhancing Collaboration with Data Sharing and Digital Tools

This session examines the importance of data sharing among stakeholders and the digital tools that facilitate this process. It highlights platforms and technologies that enable effective collaboration between governments, communities, and organizations, thereby fostering integrated approaches to water governance and climate adaptation efforts.

Framework

The WSCC 2025 conference planning committee welcomes your abstracts for oral presentations and scientific posters. The submission period is 01 May – 15 June 2025.

The WSCC aims to provide ample exchange opportunities. The conference consists of science and poster sessions involving different stakeholders, tying the scientific community to policy, industry, and society. Innovative perspectives and dimensions in the current discourse on climate change and water security are particularly welcome, especially presentations combining academic and practical approaches.

Besides, sessions on Successes & Challenges are offered to discuss factors and processes that made the implementation of research or development projects a success or prevented their implementation or completion.

During panel discussions and invited keynote presentations, participants will have the opportunity to connect with and discuss the latest challenges in the field.

Accepted contributions to the conference will be published in the WSCC book of abstracts. In addition, the conference organizers consider publishing the best submitted contributions if the authors agree.

Each session will be hosted by prominent organizations, institutions, or experts in relevant fields. The conference will be held in English.

Submission

01 May 2025	Abstract submission portal opens
15 Jun 2025	Abstract submission deadline
01 Aug 2025	Notification of approved abstracts

Abstracts must be submitted online:
www.watersecurity.info

Registration Fee

The registration fee is **200 EUR** and includes

- A digital book of abstracts,
- Attendance at all conference sessions,
- Welcome Reception,
- Lunches on 08th – 10th of October,
- Tea/coffee during the breaks.

Guidelines

In-Person Conference

The WSCC 2025 is planned as an in-person conference. An online participation for presenters is not foreseen. All presenters should be prepared to be at the conference venue in Tashkent to present their content during the conference. If accepted, participation must be confirmed through registration by 01 September. A virtual book of abstracts and conference program will be compiled and made available through the WSCC website.

Science Sessions

These sessions will feature oral presentations from the authors whose abstracts have been selected. The sessions are meant to provide them with an opportunity to showcase their research in thematically organized sessions, providing a concise yet impactful platform for sharing findings. Selected and assigned to specific thematic sessions by the committee based on submitted abstracts, these presentations are expected to foster dynamic discussions and knowledge exchange among attendees.

Poster Sessions

These sessions will offer an interactive forum for authors to discuss their work with attendees in a dynamic and engaging environment. Presenters will be assigned pin boards to display their posters and will be encouraged to bring one-page handouts to supplement their visuals. All posters will be evaluated. The best poster of the day will be announced at the daily closing session, where the author will be given 10 minutes to summarize the main findings.

Successes & Challenges (S&C)

These plenary sessions focus on identifying and discussing factors and processes that made the implementation of research or development projects a success, but also those that impeded or even prevented the implementation or completion of projects. Both scientists and other stakeholders will be invited to report on specific accomplishments as well as on failures of projects to encourage fresh perspectives and exchange real-life experiences. Oral contributions will be selected by the committee based on the quality and pertinence of the submitted abstracts.

Submission Instructions

- All abstracts must be submitted online between 01 May and 15 June 2025
- Abstracts can be submitted as ‘Oral or Poster Presentation’, ‘Poster Presentation only’, or for a ‘Successes & Challenges’
- All abstracts must be submitted through the submission portal in text form
- The following information must be included in the submitted abstract: presentation title, all author(s)’ identifying information (including names, degrees, and institutional affiliations), WSCC sessions (if submitted as oral or poster presentation - see list of topics in the submission portal), three to five keywords and narrative text (limited to 1800 characters)
- The conference organization committee may propose an alternative presentation format, based on the available times in the conference program

Criteria For Abstract Selection

Abstracts will be selected by the WSCC scientific committee according to the following criteria:

- Relevance of the presentation for the conference themes
- Potential of the presentation to link science, practice, and decision-making
- Quality of abstract, in terms of content and language
- Originality and innovation
- The introduction text should not exceed 25% of the total abstract.
  The methods, results, and problem-solving approach should comprise 75% of the abstract

Funding

Limited funding is available to support selected presenters from DAC-listed countries. The conference organizers will contact potential presenters who indicated the need for support and who are eligible for funding after the submission deadline to determine further proceedings. For selected presenters, the WSCC2025 may cover, depending on the necessity:

- International travel (round-trip ticket) from the nearest international airport in the country of departure to Tashkent (TAS)
- Airport transfer to/from the hotel in Tashkent
- The registration fee for the conference
- Four nights of accommodation (check-in 07th of October, check-out 11th of October) in a hotel selected by the conference organizing team, including breakfast

Please note that the WSCC2025 will NOT cover the following:

- Local transport from your current place of residence to the nearest international airport in your country
- Airport taxes, if any
- Visa fee, if any
- Travel health insurance fees
- Daily allowance or boarding that exceeds the meals that are offered during the conference

Spouses/Partners are not supported, but they can attend the conference as participants when paying the conference fee. Travel arrangements for spouses/partners need to be arranged by the participant and will not be organized by the conference organizers.

Committee

SDG^{nexus} Network:	Björn Weeser, Iuliia Horn
TIIAME-NRU:	Abdulkhakim Salokhiddinov
CNRD:	Lars Ribbe, Sven Tönsjost
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Water Security and Climate Change Conference 2025

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08–10 October 2025
Tashkent, Uzbekistan

Contact

Please do not hesitate to direct any questions you may have regarding the conference to:

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DAAD Deutscher Akademischer Austauschdienst
German Academic Exchange Service

The WSCC 2025 is funded by the German Academic Exchange Service (DAAD) from funds of the Federal Ministry for Economic Cooperation (BMZ)

SDG^{nexus} Network (grant number 57753302), program "exceed - Hochschulexzellenz in der Entwicklungszusammenarbeit