



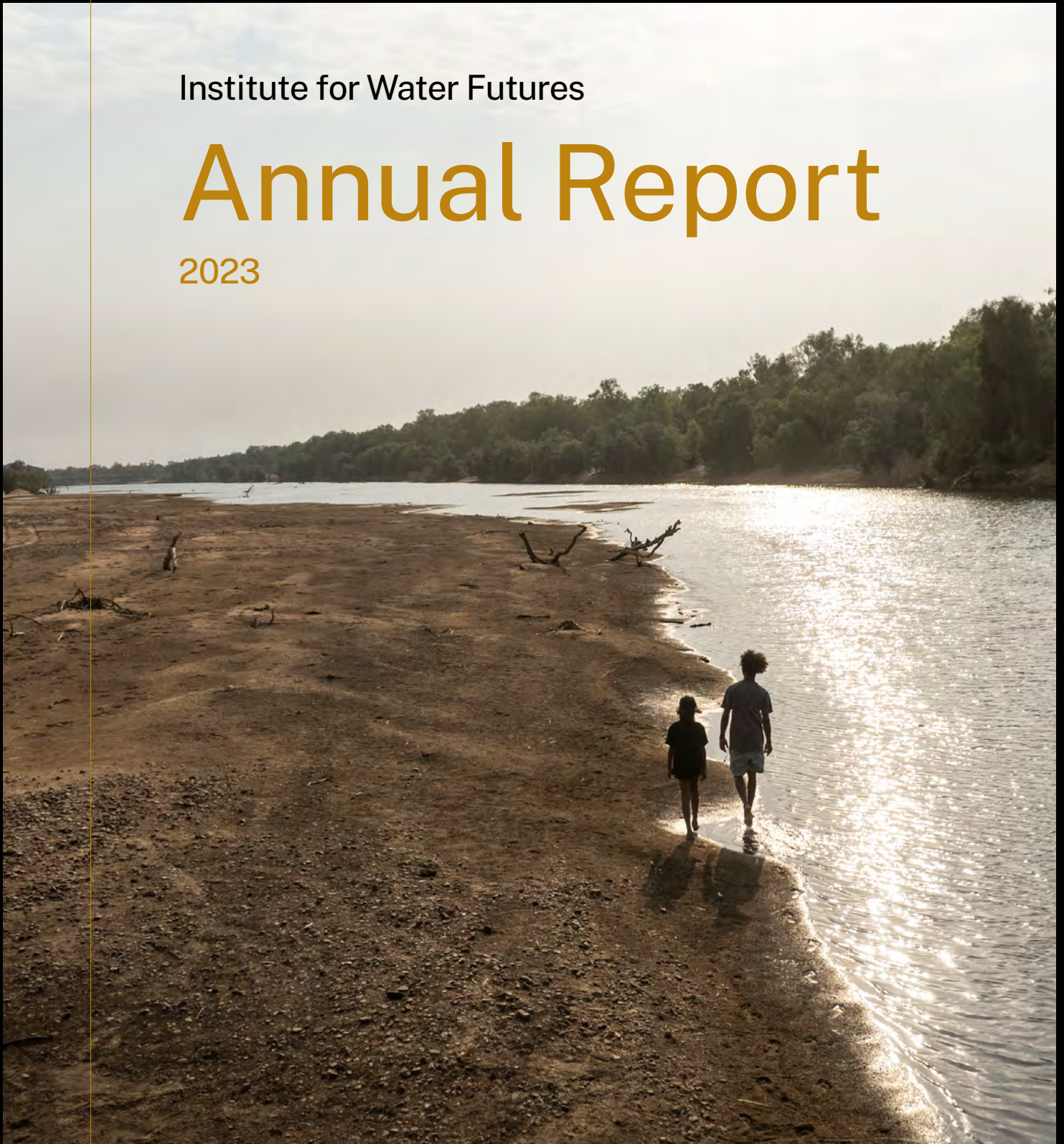
Australian  
National  
University

Institute for  
Water Futures

Institute for Water Futures

# Annual Report

2023





# Acknowledgments

We acknowledge the traditional custodians of Country throughout Australia and pay our respects to Elders past and present. We recognise the diversity of First Nations Peoples and celebrate their knowledge and ongoing connections to the land and waterways upon which we live and work.

We are grateful for the financial support from the Australian National University (ANU). We are proud to contribute to the implementation of the ANU Societal Transformation Plan, which forms the foundation of the University's Strategic Plan 2021-2025.

We express our appreciation to our partners and collaborators who support our vision and assist us as we work towards our goals.

A special thanks goes to the ANU Fenner School of Environment & Society for their continuous support.

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# Message from the Director



The year 2023 saw the Institute for Water Futures (IWF) continue along the diverse pathways laid out in our Strategic Plan. While some activities were inevitably opportunistic, we also invested carefully to advance our strategic agendas. In this report, we are pleased to highlight these next steps.

Our engagement and leadership in the development and emergence of the One Basin Cooperative Research Centre (One Basin CRC) has been a major step in our collaborative and integrative work, as well as a substantial long-term commitment to important water challenges of the Murray-Darling Basin.

Our futures work was showcased in publications and at conferences, with our doctoral candidates leading the research and practice developments in this area. Hosting Hozaus Claire as the 2023 IWF Cultural Resident was another highlight, and his generosity in sharing his knowledge and love for Country was inspirational.

IWF research into the poor standards of water quality in many rural and remote communities was recognised at the highest levels of government, and we continue to be active in government processes on this issue.

To boost the power of our interdisciplinary Institute, we started an exciting process of seed funding cross-Institute activities. These ‘flagship’ projects have the potential to unite the diverse expertise of our team and tackle complex issues from multiple perspectives.

With yet more floods and droughts across Australia, the need for vibrant and innovative water futures expertise in all its emergent forms is only increasing. Our ongoing work towards just and sustainable futures for all is evident in the pages that follow.

Thank you for your interest in our journey.

A handwritten signature in blue ink, appearing to read 'Lorrae van Kerkhoff', with a stylized flourish at the end.

Professor Lorrae van Kerkhoff

# At a glance

## People



**8**

Research fellows

**8**

Leadership group members

**25+**

HDR students

**3**

Professional staff

**7**

Project-funded researchers

**3**

HDR theses submissions

## Collaboration



**11**

Key external partners

**5**

ANU schools & institute memberships

**1**

**2**

Major consortia partnerships

**7**

Active cross-campus research projects

## Research



**24**

Active projects

**58**

Publications

**8**

Projects launched

**\$1 million**

Newly funded projects contracted

## Engagement



**11**

Representation at national conferences

**13+**

Participation in international initiatives and working groups

**7**

Representation at international conferences

**5**

IWF led Indigenous focused activities

## Outreach



**20+**

Expert speakers

**10+**

IWF hosted seminars, panels, roundtables, workshops

**700+**

Public event registrations

**500+**

Newsletter subscribers

# About us

The future of water poses one of the most intricate challenges we face as a nation and a global community. IWF is an interdisciplinary research institute created to respond to this challenge. Established in 2020, our Institute unites researchers and students from across the ANU to investigate how water can best meet environmental, economic, social and cultural needs over the long term.

At IWF we adopt a futures-focused and collaborative approach. Our research encompasses advanced technologies, modelling, the social and natural sciences, governance, economics and policy. By harnessing expertise from different fields, we strive to create innovative tools and foster novel perspectives to address the future of water.

Our ultimate goal is to enable decision-makers at all levels to adapt to the challenges posed by climate change and other external influences, ensuring the sustainable management of this vital resource.

Our Strategic Plan 2020-2024 includes places and themes, as well as a specific commitment to Indigenous-led initiatives. In this report, you will see how we have advanced our work programs throughout 2023, from local to global scales. Through effective engagement, we work to ensure that our research influences practice, policy and attitudes and in doing so, helps to shape a future of sustainable and equitable water stewardship.

[Learn more about us](#)



The Martuwarra Fitzroy River.

# Strategy

## Our vision

Understanding change | Enabling action

Sustainable and just water futures for all, empowered through collaboration, innovation, integrity and influence.

## Our values



Innovation



Integrity



Influence

## Focus areas

Australia - national

Great Barrier Reef catchments

Indo-Pacific region

Murray-Darling Basin

Indigenous-led initiatives

Global engagement







# People

We are a diverse team of senior academics, fellows, project-funded researchers, graduate students and professional staff, drawing on expertise from across ANU and beyond. A group of global thought leaders from the ANU make up the IWF Leadership Group, overseeing our operations and strategy as well as engaging in our projects.

Our fellows are dedicated to IWF work and are based in partner schools and institutes, fostering cross-campus collaboration.

Our project-funded researchers maintain ongoing interest in IWF activities and are often actively involved in IWF projects, while also pursuing separate ANU and external initiatives.

Our professional staff bring a wide range of expertise to the Institute, managing operations, supporting the research team and contributing to our strategic objectives. Throughout the year, we have nurtured a supportive environment through networking opportunities, meetings, and social activities.

We extend our gratitude to everyone who has worked with us and contributed to our projects. It is a privilege to have such dedicated and passionate individuals as part of our Institute.



# Researcher Spotlight

## Dr Siavash (Sia) Ghelichkhan



Sia is building a game-changing groundwater model. Joining IWF as a fellow in 2023, his research could significantly improve our understanding of groundwater systems in Australia – crucial knowledge in the face of increasing climate extremes.

“You can run a model and there is no guarantee that the feedback is actually representing the subsurface system that you’re trying to model,” Sia said.

“In response to this problem we are using new techniques that meticulously examine the discrepancies between the predictions of our models and the actual data we gather. This aims to derive physical [model] parameters that not only conform to the fundamental principles of subsurface water flow but also accurately mirror the data.”

“Once we achieve a harmonious alignment between our model’s predictions, the underlying physics, and the empirical data, we can confidently vouch for their dependability.”

Sia pursued PhD and post-doctoral appointments at the Ludwig-Maximilian-University in Munich, focusing on data assimilation methods for studying the Earth’s mantle, before making the move to the Australian National University. It was here that he began his exploration into groundwater.

Australia has the largest interconnected aquifer system in the world, the Great Artesian Basin, and most of our major water management agencies are not equipped to include it in their models or forecasts. According to Sia, groundwater presents both a challenge and an opportunity for the nation, but is notoriously difficult to measure and forecast.

“Most simulation programs look at surface water. We currently don’t have the same level of attention when it comes to groundwater. My plan currently is to look into how we can provide our partners like the Bureau of Meteorology with those modelling capabilities.”

“If we can turn to solutions like managed aquifer recharge, it will help us use groundwater as a reliable and more sustainable water source, especially with extremes brought on by climate change.”

# Researcher Spotlight

## Dr Fateme Zare



Growing up in an agricultural region of Iran, Dr Fateme Zare understood the importance of water management from an early age.

“My family were originally farmers,” said Fateme. “I grew up around fields and farms and irrigation systems. I saw firsthand how drought can affect our life.”

It was this understanding that pushed her towards a career in water resource management. Now calling Australia home, Fateme joined IWF as a researcher in 2023.

Fateme works with a team of researchers on the Water Infrastructure Critical Component Anomaly Detection & Health Prediction Prototype project, a collaboration between ANU, University of Melbourne, Murrumbidgee Irrigation and Coleambally Irrigation, within the One Basin CRC.

She and the team focus on the Murrumbidgee and Coleambally irrigation areas and their vast, automated irrigation systems which rely on thousands of solar-powered field instruments to monitor and control flow. Faults in these components can lead to operational problems, however there is an opportunity to use the automated and telemetered data collected by the instruments to identify the anomalies and diagnose their cause.

The team are developing and testing algorithms and models to provide early detection of failures and support asset maintenance. Fateme works in the area of workforce assessment and adoption pathways.

“My job is to find out how our suggestions will affect people working within the system, and how we should consider them in the design so that they can easily adopt these tools and put them into practice.”

“It’s not enough to just create the tools, we must consider the real people who will use them.”

# Students

Higher Degree Research (HDR) students are an integral part of the IWF community. Our HDR scholars work on water-related research under the supervision of IWF fellows and project funded researchers. We are committed to supporting their study journey while also valuing and incorporating their unique insights and experiences.



# Student Spotlight

## Caroline Rosello



While completing her master's degree, IWF PhD candidate Caroline Rosello developed an economic model to inform policy decisions around the energy, water and food nexus. Recognising the model's limitations in accounting for people and the environment, she was inspired to shift her research focus to improving decision-making processes.

Guided by her supervisors Dr Joseph Guillaume, Dr Carmel Pollino and Professor Tony Jakeman, Caroline embarked on a PhD focused on building decision makers capabilities for robust and adaptive water planning. This topic was not without its own challenges and was outside her comfort zone, as she came from an environmental sciences background, with only introductory knowledge in integrated water management.

“After an initial [moment of] panic, I developed my own strategy [and], with the support of family and my supervisors, slowly found a way to deal with different aspects that I found challenging, as I was facing my own lack of knowledge at that time.”

Engaging in activities outside her PhD, especially team projects, also contributed to her personal and professional growth.

“I got involved in different group and team activities. My aim was to learn from others and build my confidence progressively.”

When reflecting on a key takeaway from her research, Caroline emphasised the importance of including people and their experiences in decision-making processes to manage deep uncertainty. This goes beyond quantitative models to consider hybrid quantitative and qualitative approaches to better understand systems and inform planning and management decisions.

“There isn't one single solution. It's not only models or quantitate tools, we also need methods and processes that are inclusive of people and experience in order to work together to better understand different systems.”

Among the highlights of her journey was receiving a Commendation for Student Oral Presentation at the 25th International Congress on Modelling and Simulation (MODSIM) in Darwin in 2023, for the conference paper co-authored with her supervisors: “Identifying factors influencing water planning: Benefits of a capability approach?”. This award recognised her efforts to improve her communication skills.

Caroline finished her thesis in 2023, with her final submission in early 2024. She is now working on building her practical skills within the IWF research team.

# Student Spotlight

## Dan Schulz



Photo by Dan Schulz

Dan is a resident of Broken Hill, Wilyakali Country, in NSW, and is exploring issues of water injustice in the Murray-Darling Basin.

A PhD candidate at IWF and the ANU Crawford School of Public Policy, Dan's research takes a political ecology approach to analysing the past 30 years of water policy and management in relation to the Darling-Baaka River and Menindee Lakes.

"My research emerges from a close personal relationship to the rivers of the Murray-Darling Basin and a long-held practice of critical thinking around environmental injustices, through media production, art-making and engaged research practices," Dan said.

"I see water access and distribution as a fundamentally political question, not a technical one, and it is through an understanding of water as socially determined that I pursue engaged research, which includes active participation in community organising and media."

Weaving several narrative threads which include ecological changes in the Basin, hard and soft infrastructure developments, representational infrastructure, and development of powerful agribusiness-government networks, Dan's research demonstrates that uneven distribution of gains and losses is fundamental to the structure of policy reform in the Basin.

"My research aims to greater empower people to understand the social, cultural and political mechanisms of water management, and open space for marginalised and alternative understandings to productively participate in democratic processes and social discourse."

Dan is also a visual artist, filmmaker, and co-creator of Water Watch Radio; a weekly radio show about water management, broadcast on the Community Radio Network.

# Collaboration

Our Institute is committed to fostering inclusivity by bringing diverse voices and experiences into our work. Through our collaborative approach, we aim to co-create innovative solutions and enhance our collective capacity for future-oriented decision making.

## Partners

We are grateful to our partners and their ongoing engagement and support.

- Bureau of Meteorology (BoM)
- Murray-Darling Basin Authority (MDBA)
- Office of Water Science - Department of Agriculture, Water and the Environment (DAWE), now Department of Agriculture, Fisheries and Forestry (DAFF)
- QLD Department of Environment, Science and Innovation (DESI)
- Australian Institute of Marine Science
- Icon Water
- Watertrust Australia

# Collaboration

## One Basin CRC

ANU is a tier-one partner of the One Basin Cooperative Research Centre (CRC), a \$150 million collaboration that aims to develop and commercialise sustainable opportunities for Australia's irrigation regions and water industries.

In 2023, QuickStart projects led by IWF researchers, together with CRC partners University of Melbourne, Murrumbidgee Irrigation and Coleambally Irrigation, made steady progress.

Using the Murrumbidgee as a case study, one project focuses on water demand forecasting algorithms, and their potential role in managing where water is stored across the landscape. Improving current demand forecasting and water storage management can enhance benefits from water use for multiple purposes, as well as the efficiency, reliability and flexibility of irrigation water delivery.

The CRC partnership is already testing outputs from the research, as part of the long-term development of a tech accelerator to test new ideas quickly for optimised water delivery.

Another QuickStart project is developing algorithms for early detection of failures and asset maintenance in the Murrumbidgee and Coleambally irrigation areas, promising deliverables fit for immediate use by industry partners.

IWF PhD candidate Camaria Holder was also awarded a full scholarship from the CRC. Her research will critically examine using participatory foresight methods to foster conversations with communities and industries as they prepare for water futures under climate change.

The Murrumbidgee irrigation area around Griffith, NSW.





# Collaboration

## SNSW Drought Resilience, Adoption and Innovation Hub

Our role in representing ANU as a partner of the Southern NSW Drought Resilience Adoption and Innovation Hub (SNSW Hub) continued throughout 2023. Established through the Federal Government's Future Drought Fund, the SNSW Hub is one of eight regional hubs responsible for helping farmers, rural and regional communities build drought resilience. IWF Director, Lorrae van Kerkhoff, sits on the SNSW Hub Board.

IWF Knowledge Broker, Dr Anita Peerson, works with ANU researchers to facilitate relationship-building and research projects with SNSW Hub partner agencies and within local communities. This is a joint appointment with the ANU Agri-Food Innovation Institute. Anita participates in regular knowledge broker network activities, and contributes to knowledge exchange with farming and agricultural groups and First Nations colleagues.

Mid-2023, five IWF HDR scholars travelled to Wagga Wagga for the Southern NSW Drought Resilience Adoption and Innovation Hub (SNSW Hub) Student Engagement Forum. This was a chance for HDR scholars from ANU, UC and CSU working on rural resilience and innovation-related research to connect and network with each other as well as experts and practitioners within the Hub's network.

Prof Lorrae van Kerkhoff with members of the SNSW Hub Board and Hon Michael McCormack MP, Member for Riverina.



# Research

IWF teams lead and collaborate on a range of futures-focused research projects to improve knowledge, capability and governance in the water sector. In 2023, we enhanced our team's multidisciplinary capabilities by launching our Flagship Projects Program. This strategic initiative unites IWF's various disciplines to work towards our mandate. Throughout the year, IWF researchers conceived three new and exciting multi-disciplinary projects. We also continued to invest in the research agendas of our fellows by providing seed funding for projects including AI for Water Policy Exploration, Eco-acoustic monitoring in the upper Murrumbidgee, and Stakeholder Mapping of Capabilities for Qualitative Foresight Applications in Queensland.

# Project Spotlight

## Sharing Early Insights for more Resilient Communities

Extreme climate events like droughts, bushfires and floods are now frequent and cumulatively affect communities. Few tools currently exist to detect early warning signs or changes in community wellbeing.

The 'Sharing Early Insights for more Resilient Communities' project seeks to develop tools to identify early changes in community resilience. It aims to find 'early indicators' of resilience loss, enabling earlier intervention to reduce loss, hardship and mental health impacts. These indicators will be used to create and test tools for disaster preparation and recovery, helping services identify at-risk communities sooner.

Funded by the Department of Agriculture, Forestry and Fisheries, this project is a collaboration between Southern NSW Innovation Hub, University of Canberra, Charles Sturt University, The Australian National University, and University of Wollongong. IWF researchers Professor Lorrae van Kerkhoff, Dr Steven Lade and Dr Wendy Merritt led the contribution from ANU. The first stage of the project was completed in mid-2023.

[Learn more about the project](#)



# Research highlights



**Dr Joseph Guillaume** took up the role of Program Leader of the One Basin CRC Foresight and Decisions Program. In this role he provides research leadership, engages with partners, builds research teams and facilitates the design, delivery and evaluation of research projects.



After joining the IWF team in December, **Dr Sia Ghelichkhan** launched into modelling continental scale subsurface water flow in Australia. His research aims to significantly improve our understanding of Australia's groundwater systems.



**Dr. Hannah Feldman** led the inaugural Next Generation Basin Workshop that brought to Canberra 40 young representatives from agriculture, academia, government and the non-profit sector from across the Murray-Darling Basin. The workshop aimed to begin the process of co-creating a vision for sustainable future management in the Basin.



**Dr Jason Alexandra's** research on climate risk assessment in the Murray-Darling Basin delivered a comprehensive analysis of the science-policy interface as it applies to climate adaptation and water resources planning.



**Prof Jamie Pittock** together with Dr Paul Wyrwoll, Assoc. Prof. Barry Croke and others led a comprehensive review into the risks to shared water resources in the Murray-Darling Basin and associated governance challenges. The six identified risks to shared water to the MDB include groundwater resources and extraction, trees and forest interactions, climate change, water infrastructure systems, water quality and governance. The review provided an update of the risk assessment by CSIRO in 2006 on shared water in the MDB and explores how knowledge of these risks has changed between 2006 and 2022.



The 2022 study evaluating the gaps in drinking water quality and monitoring in rural and remote Australian communities led by **Dr Paul Wyrwoll** was recognised at the highest levels of government during 2023, including by the office of the Minister for the Environment and Water, the Hon Tanya Plibersek MP.

# Research highlights



**Assoc. Prof. Barry Croke** was also a part of a cross-campus interdisciplinary team studying the potential for nature-based solutions for improving the flood resilience of rural communities. The goal of this is the development of guidelines to help local communities explore nature-based options for reducing flood risks.



As part of her ARC DECRA on anticipatory decision making in water resource management, **Assoc. Prof. Carina Wyborn** supported IWF PhD candidate Carla Alexandra to hold a workshop in Adelaide with site managers, policymakers, and researchers involved in climate adaptation for the Coorong, Lower Lakes, and Murray Mouth region. The workshop, facilitated by Dr Hannah Feldman, was part of Carla's PhD data collection, covering topics such as foresight-to-policy opportunities and challenges and anticipatory adaptation for the Coorong.



**Dr Serena Hamilton** led the codesign process for the One Basin CRC for a project focused on enhancing information systems to support co-benefits in environmental, cultural and productive outcomes in the Murray Darling Basin. The codesign process involved over 16 industry and research partners, and led to the development of a proposal for the project "Reducing uncertainties and enabling multiple benefits in water delivery operations".



**Dr Steven Lade** co-led a study, titled "Safe and just Earth system boundaries", that assessed the planetary conditions required for sustainable development. Limits to changes to planetary conditions, called "Earth system boundaries", were set across biophysical systems including climate, biodiversity, water, nutrient use and air pollution. The study involved an international collaboration of over 50 authors. The results underpin science-based target-setting for environmental impacts of companies, cities, and nations.



**Dr Wendy Merritt** and ANU colleagues delivered a study on strategic foresight for water and natural resource management for the Queensland Water Modelling Network (QWMN). They continue to participate in the QWMN Foresight Community of Practice that was formally established in 2023; the member objectives of this CoP include championing and sharing information on techniques, approaches, emerging issues and opportunities for foresight across water and related sectors

# Indigenous engagement

The IWF celebrates the ancient and contemporary expertise of First Nations People in managing and protecting Australia's waterways. We work to support Indigenous water researchers, practitioners and advocates and to amplify Indigenous voices on water issues.

Hozaus working on his Cultural Residency piece.



## Cultural Residency

In celebrating Indigenous knowledge and connection to water, this year we continued the IWF Cultural Residency program. The residency supports a First Nations creative to spend time in Canberra to work on an art piece and, in the process, promote conversation and learning around Indigenous perspectives on water and Country.

The 2023 IWF Cultural Resident was Hozaus Claire. Hozaus is a Bunuba/Gooniyandi man, young community leader and artist from the Kimberly region. He made the long trek from Fitzroy Crossing to Canberra to spend two weeks at ANU creating art and engaging with researchers.

During his time in Canberra, the IWF team had the opportunity to learn more about Hozaus and his story at a number of community activities including a fire-side yarn, a picnic evening, and a 'river walk' with a local Ngunnawal custodian. Hozaus created a painting exploring his connection with the Martuwarra Fitzroy River. As part of the residency, our Institute supported Hozaus to create the short film, [Believing to See](#), about his relationship with the Martuwarra River and Country, capturing his efforts to preserve his cultural heritage and rally his community to safeguard the river for future generations.



Hozaus Claire yarning fire-side at ANU.

## National First Nations' Water Roundtable

Our Institute also supported the organisation of Mayiny-galang-ngadyang "People's Water" - the National First Nations' Water Roundtable held in Canberra in May, led by the ANU First Nations Portfolio. The Roundtable was attended by a diverse group of over 80 people with expertise on First Nations water rights and its intersection with public policy and water management.

In addition to contributing to the steering committee and background paper, IWF also supported a group of eight First Nations student representatives from around Australia to attend the meeting, bringing fresh perspectives from the next generation of First Nations water professionals.

The National First Nations' Water Roundtable became the focus of a three-week case study for third year undergraduate students in the course "Complex Environmental Problems in Action". Building on the reports from the Roundtable, students grappled with the question of "If the Voice to Parliament referendum [IS / IS NOT] successful, what strategies could be pursued by First Nations peoples to pursue water sovereignty at a national level?" The case study also supported students to reflect on their own personal perspectives towards decoloniality and challenged them to consider the subtleties involved in attempting to synthesise Indigenous and non-Indigenous ways of knowing.



First Nations student representatives, Lorrae van Kerkhoff, IWF Indigenous Scholars Program Committee member Hmalan Hunter-Xenie and Indigenous Scholars Program Coordinator Hayley Primrose at the National First Nations' Water Roundtable.





# Government & policy engagement

Through active engagement, we work to ensure that our research contributes to the public discourse and supports informed water policy and decision-making. In 2023, researchers collaborated with government agencies on various studies and reports. Additionally, our independent research also reached decision-makers and played a role in influencing policy decisions.

A panel of experts speaking about policy engagement at the IWF Research Retreat.



# Government & policy engagement

## Drinking Water

The office of the Minister for the Environment and Water, the Hon Tanya Plibersek MP, referenced numerical estimates from the 2022 study evaluating the gaps in Australia's drinking water quality and monitoring, led by Dr Paul Wyrwoll. These figures continue to be used by the office, most recently in the [2024 Federal Budget communications](#).

## Risks to Shared Water Resources in MDB

Researchers led by Professor Jamie Pittock briefed staff from the Murray-Darling Basin Authority and other Government agencies on findings from a comprehensive review into the risks to shared water resources in the Murray-Darling Basin. The findings revealed persistent threats, emphasising the need for proactive decision-making, particularly in light of the Basin Plan Review set for 2026.

[Watch the recording](#)



# Government & policy engagement

## Minimum Groundwater Monitoring Guidelines

Researchers led by Dr Joseph Guillaume are continuing to help state and Commonwealth governments explore potential for national minimum groundwater monitoring guidelines, with feedback from industry now addressed, and a draft put to the National Water Reform Committee. Our work helps define a common ground on what evidence and analysis is necessary to support decisions about our landscape that often have far-ranging effects into the future.



## Victorian Water Quality Analysis

Dr Danlu Guo was part of a cross-institutional team that worked on a state-wide Victorian water quality analysis for the State Government Department of Energy, Environment and Climate Action. The project team looked at monthly samples of salinity, turbidity, nutrients, pH and Dissolved Oxygen over 27 years for 137 sites from both temporal trend and spatial pattern perspectives.



## DFAT Analysis of quality adaptation

Dr Jason Alexandra co-authored a report for the Department of Foreign Affairs and Trade on quality adaptation in the Indo-Pacific. This report examines adaptation quality and finance, providing principles and a broad framework for how Australia can ensure intelligent and diligent investment into adaptation in our region.

# Academic Engagement

IWF researchers engage with academic peers from around Australia and beyond at conferences, working groups and workshops. Some of these are detailed below.

# Academic Engagement

## MODSIM

A group of IWF researchers and HDR students attended the 25th International Congress on Modelling and Simulation (MODSIM) in Darwin. IWF PhD candidate Caroline Rosello was awarded the Commendation for Student Oral Presentation for her presentation on the conference paper “Identifying factors influencing water planning: Benefits of a capability approach?” co-authored with Dr Joseph Guillaume, Dr Carmel Pollino and Professor Tony Jakeman.

## EcoSummit

In June, a group of IWF researchers and scholars attended the 6th International EcoSummit Congress on the Gold Coast. Professor Lorrae Van Kerkhoff, Dr Hannah Feldman, Adrian Hinds, Stephanie Rosestone, Caroline Rosello, and Carla Alexandra presented a symposium on ‘Imagining and planning for uncertain water futures’. Each speaker brought a novel perspective to the question, “How can we use different ways of thinking about uncertain futures to achieve more positive and sustainable outcomes?”.



Adrian Hinds, Caroline Rosello, Stephanie Rosestone, Carla Alexandra, Hannah Feldman and Lorrae van Kerkhoff at the EcoSummit Congress.

# Academic Engagement

## Humboldt University Exchange

Dr Jason Alexandra spent two weeks on an academic exchange at Humboldt University's Integrative Research Institute on Transformations of Human-Environment Systems (IRI THESys). In addition to building connections between the two institutes, the exchange focused on understanding how integrated research institutes, such as IWF and IRI THESys, can accelerate transformative approaches to complex sustainability challenges, including the 'nexus' - the world's intersecting land, water, energy, and food system issues. Handling the nexus requires transdisciplinary research, with many questions about how the research needed should be funded, organised and delivered. Jason reported that a striking feature of the exchange was discovering the common challenges faced by IWF and IRI THESys. These institutes have similar ambitious mandates. They work largely through the powers of persuasion and influence of bold ideas. Working with diverse partners and scholars from disparate disciplines they catalyse integrative research, teaching and outreach. Their approaches to integration span topics, disciplines, and the methods used to co-produce and apply knowledge. They are forging new ways of doing research, appropriate to our post-natural Anthropocene world.



A poster from Humboldt University's Integrative Research Institute on Transformations of Human-Environment Systems.

## Open Modelling Foundation

Good Modelling Practice is essential to supporting management and policy to complex environmental issues. Since early 2023, IWF researchers including Dr Serena Hamilton, Emeritus Professor Tony and Caroline Rosello have joined the Open Modelling Foundation (OMF), which is an international open science community that works to enable the next generation modelling of human and natural systems. OMF is an alliance of modelling organizations that coordinates and administers a common, community developed body of standards and best practices among diverse communities of modelling scientists. It provides informational, data, and technological resources to facilitate the implementation of common standards and best practices among the scientific communities it serves.

IWF's key role in OMF is as collaborators in the Standards Working Group, which is overseeing the adoption, dissemination, and administration of OMF standards for access, documentation, reusability, and interoperability. Serena is the co-chair of this Working Group. In addition, with Tony, Serena and Caroline are contributing to the organisation of a Joint Special Issue on Good Modelling Practice across three international journals. More than 30 seminal articles are in review distributed across the journals Socio-Environmental Systems Modelling, Environmental Modelling and Software, and Ecological Modelling.

# Academic Engagement

## INITIATE for PhD in Montpellier

Dr Joseph Guillaume represented the IWF in a workshop in Montpellier, France to begin the co-design of a transdisciplinary PhD exchange program with thirteen universities across the global north and south. The program is supported by the UNESCO International Centre for Interdisciplinary Research on Water Systems Dynamics (ICIREWARD). This new program continues to build on long standing relationships with colleagues from the joint research unit “Water Management, Actors, Territories” (UMR G-EAU) and a recent MOU signed between ANU and INRAE.

## UN Water Conference

IWF was represented by Professors Katherine Daniell and Quentin Grafton at the UN Water Conference, convened during World Water Week in New York. It was the largest-ever gathering of Member States and stakeholders to deliberate on water. By the close of the conference, the Water Action Agenda had received approximately 700 commitments in the form of financial pledges, collaborative projects, and actions to protect the world’s most precious and irreplaceable resource. Katherine and Quentin spoke to First Nations’ rights and interests in water, and the importance of recognising Indigenous cultural values at the highest level.







# Events

IWF hosted a range of events in 2023, engaging diverse audiences in a variety of topics. Some of these events are highlighted below.



# Events

## Next Gen Basin event

The first event in our calendar was the Next Generation Basin Workshop. Led by Dr Hannah Feldman, the event brought together 40 youth representatives working in agriculture, academia, government and the not-for-profit sector from around the Murray-Darling Basin. With the opening address by Murray-Darling Basin Authority CEO Andrew McConville, the workshop aimed to connect future Basin stewards and begin the process of co-creating a vision for Murray-Darling Basin management for the years to come.

[Watch the highlight video.](#)



Participants at the Next Gen Basin Workshop.

## Water Operations for Uncertain Futures

In June, an IWF team led by Dr Joseph Guillaume hosted the Water Operations for Uncertain Futures Workshop, bringing together over 50 practitioners from research, government and industry from across Australia and beyond.

It was an action-packed three days filled with interdisciplinary and futures-focused discussions around water management. The event kicked off with a panel of national and international experts pondering the question, “What water operations future could we build together?” We followed this with a workshop where participants developed, tested and presented concept pitches on a range of future water operations challenges. We finished off the program with a visit to the Snowy Hydro Limited headquarters in Cooma, including a guided tour of the control room and a talk by a Snowy Hydro water operations expert.

A big thanks to our event partners – One Basin CRC and the Erasmus+ Programme of the European Union.



Panellists pondering “What water operations future could we build together?”

# Events

## National Water Week Panel

During National Water Week, together with our partners Australian Water Association (AWA) and the Department of Climate Change, Energy, the Environment and Water (DCCEEW), we hosted the panel discussion, “United for Australia’s Water Future: Imagining Water Security in 2050.”

The six expert panellists were Michelle Hobbs from Griffith University, Emeritus Professor Cynthia Mitchell from the Institute for Sustainable Futures at UTS, Kate McBride of the Australia Institute, Dr Paul Wyrwoll from IWF, Matthew Coulton from Bureau of Meteorology and Matthew Dadswell from DCCEEW. Led by moderator Professor Lorrae van Kerkhoff, the panel explored the challenges and opportunities facing Australia as it navigates the risks and sometimes competing priorities of water security.

They emphasized the importance of looking beyond the immediate and adopting a long-term perspective, with a focus on collaboration, connection and climate adaptability. It’s clear that our efforts will be measured by the collective vision we share for 2050 and our commitment to securing Australia’s water future for all.

[Watch the recording](#)



Panellists Michelle Hobbs, Cynthia Mitchell, Kate McBride with moderator Lorrae van Kerkhoff.



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