

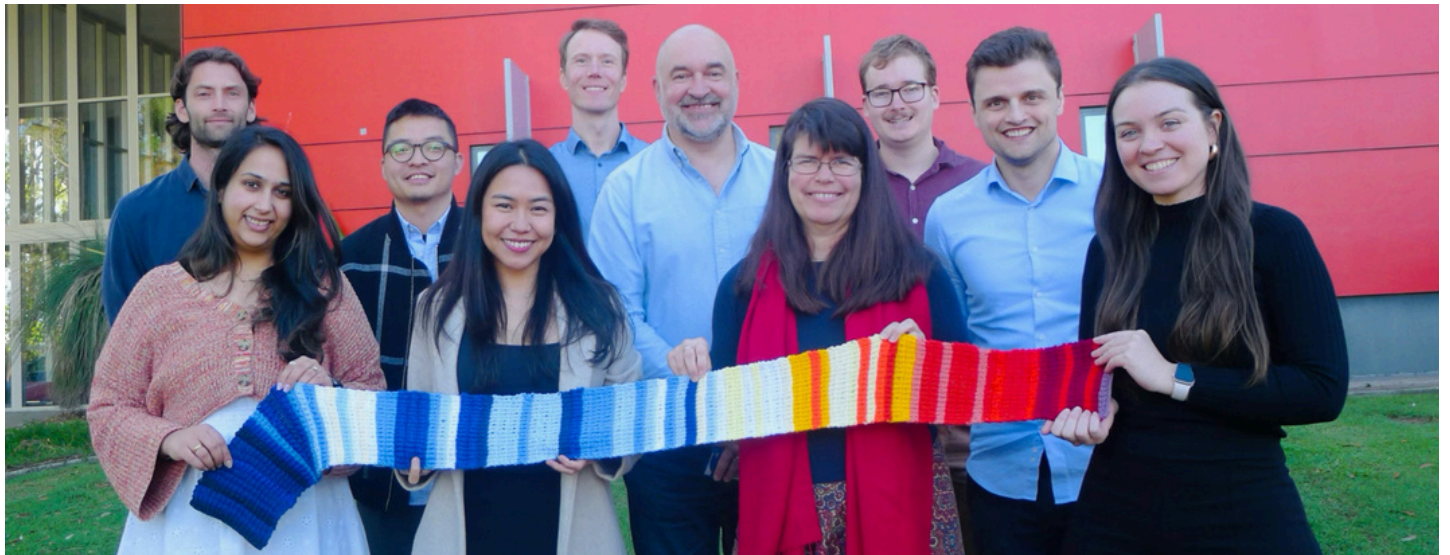
ETHOS BULLETIN



BY ISABELLA ENNEVER, ERIKA BUENAFE



ELLA JACKMAN AND MEHAK OBERAI



NOVEMBER UPDATE

In a blink of an eye, we are already nearing the end of 2025. And what a year it has been! As the Ethos Project wraps up, we look back on the last few years with pride and gratitude. We're excited to share all the Ethos team has achieved in the final stretch of 2025. Happy reading!

Regards,
Shannon, Aaron and Sebastian
 (Ethos Leadership Team)

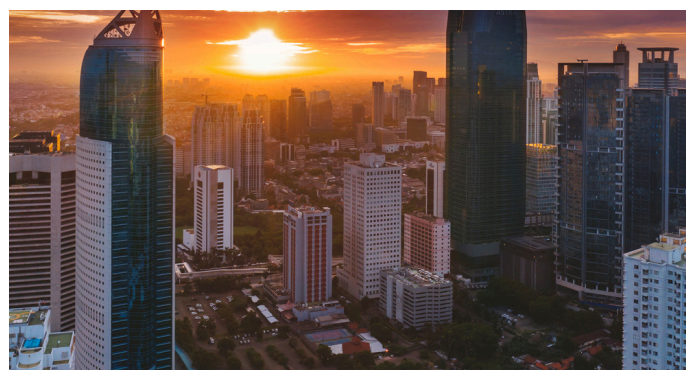


and extends a heartfelt thank you to everyone who has participated. We've also had fun debunking heat-health myths and raising awareness of protective strategies like spending time in the shade, drinking plenty of water, and visiting local air-conditioned spaces like libraries. A key goal of the Ethos Project has been to improve community awareness of heat-health risks and equip people with the skills and knowledge to manage extreme summer temperatures.

Enjoy this final edition of the Ethos Newsletter, showcasing our recent activities, celebrating the people driving our research, sharing insights from our team leads, and highlighting some of our most significant achievements. Thank you for being part of this amazing journey with us! It's been wonderful!

END OF A SEASON

Since our first newsletter in 2022 (it feels like only yesterday!), Ethos has explored a wide range of topics in the heat-health space. Our interviews have featured perspectives from thermophysiology, engineers, public health policymakers, architects, epidemiologists, and researchers, covering areas such as cyber security, software and technology, healthy ageing, public policy, urban design and planning, and early warning systems. In this final newsletter, we are thrilled to feature Shannon's interview as the last in this series. The Ethos Team has learned so much from these conversations



ETHOS UPDATES

OVERVIEW OF THE PHASE 2 ETHOS IN-HOME TRIALS

Over the summer of 2024-25, the Ethos Project had 63 older Queenslanders participate in the Phase 2 In-Home Trials (IHT). Eleven of this sample were repeat participants from our 2023-24 cohort! For this IHT, 55 participants utilised a smartphone app version of the Ethos Early Warning System, and 8 individuals used the original tablet version of the system. Many of the 2024-25 cohort also wore Fitbits, which collected heart rate data across the trial period. The mean age of our Phase 2 participants was 74 years, and two-thirds of the cohort were female. Most participants had air-conditioning, insulation, and solar panels in their homes. The most popular cooling strategies among the Ethos 2024-25 participants were drinking plenty of water, using a fan, wearing light/loose clothing, and opening/closing windows and doors. In comparison, hand/forearm baths, foot baths, and cold baths were the least preferred. Participants also reported a statistically significant increase in heatwave preparedness after the IHT period compared to before. Another interesting finding was that the 2024-25 cohort was significantly more likely to believe that heatwaves pose a risk to their health compared to the 2023-24 cohort.

FITBIT DATA

Analysis of the Fitbit data revealed that participants' heart rates increased as their indoor living conditions became hotter and more humid. This correlation was observed even during rest! During night, heart rate variability worsened, and heart rate increased when bedroom temperatures exceeded 26°C – this is the average thermal comfort limit recommended by the World Health Organization.



Photo (left to right): Ella, Mehak, Erika at the 2025 HEWS Symposium



Photo: Aaron, Shannon, Mehak receiving the PVC Health Research Excellence Award

PVC RESEARCH EXCELLENCE AWARD

We're thrilled to share that the Ethos Project has been awarded the PVC Health Research Excellence Award at Griffith University! This recognition celebrates the incredible dedication, innovation, and impact of the Ethos team's work in advancing heat health research and building community resilience.

A huge congratulations and heartfelt thanks to everyone who has contributed — participants, partner organisations, community groups, the steering committee, and research affiliates. Your time, expertise, and commitment have been essential in shaping the project and ensuring its success. This award reflects not just the achievements of the team, but the collaboration, passion, and shared vision that drive the Ethos Project forward. We are proud of what we've accomplished together and look forward to continuing our work to make a real difference in heat health and community wellbeing.



Photo: Shannon as part of a panel in a conference

ETHOS UPDATES

INTRODUCING A VISITING PHD STUDENT!



I'm Razieh Rezabeigisani, a PhD researcher at Philipps-Universität Marburg, Germany, supervised by Prof. Dr. Sören Becker in the Department of Human Geography. My doctoral work, part of the HABITAT project (Health Affected by Climate Change and Air Pollution) funded by the LOEWE Hessen Program, examines how digital technologies can help address the health impacts of climate change, including heatwaves and air pollution. I focus on knowledge co-creation, user engagement, and the policy impacts of digital tools. Through a qualitative study of international best-practice cases, I explore how scientific, academic, and local knowledge are integrated in the design of digital climate-health tools. Using surveys, interviews, and case studies, my research aims to identify best practices for sustaining engagement and creating equitable, effective digital solutions. This aligns closely with the ETHOS Project, which develops heat-health early warning systems for older people. I hope my findings will contribute to ETHOS's vision of inclusive, climate-resilient health systems and guide future climate-health initiatives.

FOCUS GROUP DISCUSSIONS

To better understand how the Ethos system was used, ran a series of focus group discussions with two participant groups.

Repeat Participants (Phases 1 & 2):

Held online via Microsoft Teams, these sessions brought together users who had tried both the tablet and app versions of the system. They shared their thoughts on the new interface, how their experiences have changed over time, and what keeps them engaged with the project.

New Participants (Phase 2 only):

We also met in person at South Bank, Brisbane, with new users who recently used the app. These discussions explored first impressions, ease of use, and how the experience has influenced their heat awareness and everyday behaviours. The insights gathered will help shape future improvements and provide a deeper understanding of how the Ethos system supports communities in managing heat.



Photo (left to right): Veera from SL2, Aaron, Connor and Russell from SL2 at the 2025 HEWS Symposium

SUSTAINABLE LIVING LAB - ETHOS IN SINGAPORE!

At the Heat Early Warning Systems Symposium in Southbank, Ethos Communications Officer Ella met with Russel Fock from Singapore's Sustainable Living Lab (SL2) to discuss some next steps for the Ethos System, which will support their new initiative, Heat Aware SG. Russel shared that SL2 is "a sustainability consultancy focused on community-centric innovation and implementation projects... from schools to older adults, in sustainability, repair and climate adaptation." Inspired by Ethos' work in Queensland, he added, "We're incredibly fortunate to be working with you – your equipment, technical, and implementation guidance have been invaluable in helping us launch this project." Heat Aware SG focuses on elderly residents in low-income housing, using real-time temperature monitoring and tailored cooling advice to manage urban heat risks. Running through 2026, the project will first deploy indoor temperature and humidity sensors, followed by heat awareness surveys and community engagement activities.

EXPLORING RESEARCH IN LOW-MIDDLE INCOME COUNTRIES

Over the past year, we've been exploring how the Ethos system could be adapted for use in low- and middle-income countries (LMICs). Partnering with IIT Hyderabad, we've held discussions and workshops to assess its feasibility in resource-constrained settings. The recent international symposium in Brisbane allowed for valuable in-person exchanges, offering insights into on-ground conditions in Hyderabad, particularly within low-resource and social housing contexts. We're also beginning to explore opportunities to focus this work on older Indian women, an exciting direction that continues to develop through ongoing collaboration.



Photo: Shannon, Erika, Mehak and Sarath with LMIC pathway partners from India - Aalok and Swastik

GRIFFITH INSTITUTE FOR HUMAN AND ENVIRONMENTAL RESILIENCE (GIHER)

GIHER is Griffith's flagship institute dedicated to finding solutions for people to thrive in harmony with nature. They do research across environmental and social science, economics, public health, climate change, engineering, law and AI technology to grapple with the complexities of our changing planet.



Photo: GIHER booth showcasing heat-health related issues and early warning systems including Ethos

2025 HEAT EARLY WARNING SYSTEM SYMPOSIUM

The Ethos Project funded by Wellcome, hosted the 2025 Heat Early Warning System Symposium last 14-15 August 2025 at Southbank, Brisbane, was an outstanding success, receiving highly positive feedback from organisations within Australia and worldwide.

A Milestone Event

The symposium exceeded expectations, uniting international innovators, and experts from research, policy, and practice. Both in-person attendees in Brisbane and online participants praised the event's high-quality presentations, rich discussions, and valuable networking opportunities.

Program Sessions

- Setting the Scene on Early Warning Systems
- Population-based Systems Heat Early Warning Systems in Practice
- Community-based & Hybrid Models of Early Warning Systems
- Other Models of Heat Early Warning Systems: Learning and Opportunities
- Opportunities for Collaboration and Where to Next



Photo: Panel Discussion; Participants enjoying morning tea; Networking Event sponsored by GIHER; Panel Discussion

Looking Forward

This event firmly positions Griffith University and the Ethos Project as global leaders in raising awareness and advancing the development of heat early warning systems. Bringing together experts, researchers, and community representatives from around the world, it showcased the university's commitment to translating research into real-world impact. The strong appetite for continued collaboration reflects not only the growing urgency of addressing extreme heat but also the collective recognition that innovative, cross-sector action is essential. Together, these efforts signal a shared determination to safeguard communities, strengthen resilience, and build a safer, more sustainable future.



Global Recognition

Feedback was overwhelmingly positive, with participants appreciating the diversity of perspectives, the practical insights shared, and the hybrid format that effectively connected local and international expertise. Many highlighted how the symposium fostered meaningful discussions, strengthened existing networks, and inspired new collaborations and partnerships that will continue beyond the event.



Photo (Top to Bottom): Jason Lee, John Nairn, Shannon after Session 1; Day 1 Session 2 - online presentation; The Ethos Core team - Day 2 Lunch; Aaron with presenters Federico Tartarini, Nick Ravanelli and Michele Renard

HEAT AND HEALTH RESEARCH IN QUEENSLAND SHOWCASE: LEARNINGS AND FUTURE DIRECTIONS

On 22 October 2025, The Ethos Project, in partnership with the Queensland Heat Health Community of Practice (QHHCoP), hosted a local symposium at South Bank, Brisbane, bringing together researchers, community members, Ethos research affiliates passionate about improving heat health resilience across Queensland. The morning session, held in a hybrid format with 44 online and 25 in-person participants, featured thought-provoking presentations from PhD candidates from Griffith University, The University of Queensland, and James Cook University. Each shared their latest research on heat health, sparking meaningful reflections on how these studies can inform and empower those most at risk during extreme heat events particularly the vulnerable populations like older people and pregnant women, who often face the greatest risk to rising temperatures.

After lunch, the event shifted into a more intimate and conversational space, where members of the Ethos Project Steering Committee, Reference Group and IHT participants reflected on their experiences and insights. One message that resonated deeply was, “We are heard.” It perfectly captured the spirit of the day – a space where community voices are not only welcomed but truly valued in shaping real-world solutions. When asked about the value of the project, our research affiliates highlighted its impact on students and links with the university sector, as well as its personal and community benefits.



Photo (Top to Bottom) : Ref. Group and Steering Committee members with Steve as facilitator; In-person participants during hybrid session



Photo (Top to Bottom): Aaron leading the reflection session; Ref. Group Member Narelle and Christine sharing their experiences; PhD Candidate Anjalee presenting her study; Ref. Group Member Peter sharing his experience

They noted increased heat awareness, the use of technology and data to support wellbeing, and the importance of engaging with end users. Participants valued cross-disciplinary learning, ongoing connection with the university, and tools like the Ethos system that promote awareness and action. They also emphasised the project’s role in bringing healthy ageing and heat-health into focus, along with the need to address social connection and isolation during extreme heat. Future opportunities include building health sector awareness, strengthening community engagement and communication, and continuing technology development to embed heat-health into everyday conversations. Participants praised the Ethos team’s strong communication, consistent follow-ups, and genuine collaboration, which have built trust and momentum throughout the project’s journey.

The symposium reaffirmed that while there is still much to be done and that meaningful change takes time, the Ethos Project stands as a trailblazer in reimagining how we approach heat health. It’s not just about data or models; it’s about connection, collaboration, and care. Together, this growing network is charting a path forward, one where collective knowledge and compassion lead the way in safeguarding communities against the escalating challenges of extreme heat.

SHINING A LIGHT ON THE ETHOS REFERENCE GROUP

Co-design is a research principle that brings together technical experts and community members with lived experience to problem solve, evaluate and critique new innovation and technology. Since the beginning of the project, the Ethos Group has been passionate about prioritising the voice and opinions of older Queenslanders to ensure that a) Ethos's research is addressing worthwhile and meaningful issues for our target population, and b) the Ethos In-Home Early Warning System is user-friendly and effective. Ethos' Reference Group is composed of over 65s residing in South-East Queensland, who have participated in a myriad of online and in-person feedback sessions. Let's meet them!

CHRIS AND CLIVE POLLARD

ADRIAN HOLBECK

NARELLE CECCHI

BRIAN MITCHELL

BARBARA WINTRINGHAM

GRAHAM PARSONS

Graham was born in the UK and moved to Australia 44 years ago. He had several jobs over the years, but Graham's main trade was screen printing. He even owned a small business where he travelled around Australia selling his products! Now retired, Graham resides in Ipswich and enjoys helping other older adults navigate technology through SeniorNet.

MICHELLE THOMAS

Michelle has a 33-year career in complex care within the disability and aged care sector. Michelle has not only developed person-centered and strengths-based training for staff in this field, but has also delivered higher education for La Trobe University. Michelle is passionate about leadership, professional practice and staff and client safety in the health, aged care and disability space.

LARAINÉ ANIFOTOS

Laraine is passionate about health and wellbeing, education and learning, primary production and farming, and family and community. After reading a flier about the Ethos Project, Laraine was keen to lend her life experiences to assist the project.

JUDITH JAMES

KATE PRYNNE

NELSON QUINN

After being a farmer for over 20 years, Nelson is very interested in how climate change has and continues to affect community health. Now living on the Gold Coast, Nelson has been very involved in climate change research and policy advice.

NEIL MCFADZEN

Neil resides in Ipswich and is both a causal and volunteer painter in his local community. After attaining undergraduate and postgraduate qualifications at Deakin University and the University of Sydney, Neil worked in politics for many years both in Australia and overseas. Neil's experience painting homes and restoring locomotives has given him key insights into Queensland's heat and UV.

PETER HENNESSY

Peter has over 50 years of experience in health and aged care, holding multiple tertiary qualifications in health administration, research, and accounting from Australia and abroad. He has presented at international conferences and worked at various universities. Outside of work, Peter enjoys music, cultural activities, and equestrianism.

JUDY TRIPP

THANK YOU SO, SO MUCH!

The Ethos Project would never have been able to achieve so many of its goals without the support, ideas and advice of our reference group. Every member of the Ethos Project learnt so much from each reference group meeting and sincerely values their time and contribution. Research cannot be successful without the engagement of community members, and the Ethos Project is very lucky to have had such passionate representatives in its reference group. Thank you, Ethos reference members!!!



THE ETHOS STEERING COMMITTEE: A KEY PROJECT PARTNERSHIP

The Ethos Steering Committee is a collection of stakeholders in the health, aged-care, policy, academic and community spaces that have advised and guided the Ethos Project utilising their unique knowledge, skills and experiences. Across the Ethos Project's lifespan, the Steering Committee has met with the Ethos Team every 4 months to discuss challenges, achievements and opportunities. During this time, the Steering Committee has assisted the Ethos Project in ensuring its goals and objectives are relevant and achievable to addressing heat stress among older Queenslanders by providing invaluable insights and lived experiences. Many members of the Steering Committee have been fundamental to project planning and problem solving!

STEERING COMMITTEE REPRESENTATIVE ORGANISATIONS:



The Ethos Project gives immense thanks to the Steering Committee for their support and guidance over the last four years. We'd also like to give a special shout-out to some of our most engaged Steering Committee members, including Kerry Foss (LiveUp), Susan Inglis (DES), Lesley English (Queensland Health) and Nicole Mandalios (Queensland Health)!

Steering Committee Members

Anne Curson
Carol Edden
David King
Dian Tjondronegoro
Peter Hennessy
Jennene Buckley

Kerry Foss
Lesley English
Louise Harris
Linda O'Brien
Nick Barter
Norman Morris

Nelson Quinn
Nicole Mandalios
Susan Harris Rimmer
Stephanie Power
Susan Inglis
Wendy Moyle



SHANNON RUTHERFORD

Associate Professor, School of Medicine and Dentistry

Ethos Project Leadership Team

With a background in environmental science, Associate Professor Shannon Rutherford is part of the Leadership team of Ethos. Her career has focused on researching the links between environmental change and human health, and building capacity to understand and respond at local, national, and global levels. Shannon has been involved in researching public health problems, ranging from pandemic risk communication in China, to mosquito-borne diseases in Kenya and Bangladesh, coastal salinity and hypertension in Bangladesh, and disasters and climate change governance in China, the Philippines, and Indonesia. Shannon is a member of the Climate Action Beacon, the Institute for Human and Environmental Resilience and the Queensland Heat Health Community of Practice.



CHECK OUT SHANNON'S ADVOCACY WORK IN THE NEWS:

- [Research Australia's Inspire magazine: Climate Change Edition](#)
- [Sweltering Cities panel warns Brisbane heatwaves will worsen](#)
- [Likelihood of more ambulance callouts as heatwave conditions](#)
- [5 reasons to check on elderly neighbours during a heatwave](#)



LEARNING ACROSS DISCIPLINES

SHANNON RUTHERFORD
ETHOS LEADERSHIP TEAM

"My journey with Ethos began as part of the Climate Action Beacon.... At the time, we were understanding more about the impacts of heat on human health but did not really have a clear pathway for research-orientated solutions or actions.... There was an emergence of wearables... [We were] thinking about how we could use wearables to better understand risk for heat and about whether the current warning systems were effective for specific populations." In alignment with the Beacon's desire for researchers to step outside their disciplinary silos, Associate Professor Shannon Rutherford was at the forefront of the Ethos Project's conception as a transdisciplinary venture into actionable research. "We were given some seeding funding...a little bit of early support to bring the team together to conceptualize it... Fortuitously [Wellcome] invited us to put an EOI in...as part of an emerging scheme on Data for Sciences and Health.

Since the Ethos Project was successful with its funding bid over three years ago, Shannon's role on the Ethos Leadership Team has been a diverse and dynamic learning experience. "My background is in public health and climate, but [I've] had a steep learning curve around digital technologies and physiology.... [I worked a lot on] really valuing that need for co-design and thinking how we could make sure that the voices of the people that we're developing [the Ethos System] for are embedded in the process along the way.... My other strong passion is making sure that policymakers and other experts are there to guide us...to contextualize our work...and disseminate what we're doing...as well as getting their views on the value of this work to a broader policy space."

"THE TIME I'VE SPENT LEADING ETHOS HAS PROBABLY BEEN THE MOST REWARDING TIME OF MY CAREER."

The people-to-people interface has been both a challenge and a highlight of the Leadership role for Shannon, providing many opportunities for professional development. "I've loved learning from others and having those amazing conversations and learning about different disciplines and the way they think about publication and dissemination and humans and health...the flip side of that is that it's also hard and you have to be really vulnerable to learn...it takes you out of a comfort place."

"THE OTHER REWARDING THING FOR ME WAS WORKING WITH OLDER PEOPLE - THEY HAVE BEEN SUCH A GIVING GROUP TO OUR PROJECT AND WE COULDN'T HAVE DONE IT WITHOUT THE AMAZING PEOPLE WE WORKED WITH IN BOTH OUR REFERENCE GROUP AND PARTICIPANTS."

"One of the key highlights for me was the privilege of going into people's homes and understanding how they live and how this type of system might help them and hearing their stories about what heat might mean to them. And a little bit of pride when they really like what we've done." In recognition of Ethos's positive impact, Shannon emphasizes the importance of continuing the project's work to improve heatwave warnings, awareness and community readiness. "The biggest challenge now is to make sure that this work is not lost.... How do we ensure that this goes somewhere and try to scale it so the impacts reach more people?... We've laid a lot of good groundwork...but it's now about how do we take it to the next level?"

Shannon also reflected on the teamwork and collaboration fostered through the Ethos Project. "One of the things I loved about our team is that people pitched in when it was needed.... No one said, 'I'm too busy', 'I can't do anything', 'it's beyond me' or 'I don't want to do that'.... We got the job done. We learnt from each other. We had some fun.... I hope we provided a rich learning environment for new researchers...that they felt that their contribution was important...that they enjoyed doing what they did." Fittingly, Shannon described the legacy of the Ethos Project as embodying the following words:

"INNOVATIVE. INTEGRATIVE. EMPOWERING."



AARON BACH

Researcher and lecturer, School of Allied Health, Sport and Social Work
Ethos Project Leadership Team

Dr Aaron Bach is part of the leadership team of Ethos, a Lecturer in Exercise Science, and works on a number of projects as a post-doctoral research fellow within the School of Medicine and Dentistry at Griffith University. Primarily, he co-leads a Wellcome Trust funded project looking to develop heatwave risk mitigation strategies for older populations. His background in human physiology, specifically occupational safety, work/exercise performance in extreme environments, thermal comfort, and risk mitigation strategies. Dr. Bach is the Early Career Researcher representative on the Cities Research Institute (CRI) Executive Committee within Griffith University. Dr. Bach is currently a co-supervisor of two PhD students looking at health and wellbeing of occupational workers in low-middle income countries, and mitigating heat stress in older populations.



INTERESTED IN LEARNING MORE ABOUT HEAT-HEALTH RISKS?

Check out Ethos's educational videos:

- [Claire's warning: Heat, humidity and health](#)
- [Martin's story: Why does age increase heat risk?](#)
- [Heatwave ready: Stay safe during hot weather!](#)

AN ETHOS OF GROWTH

AARON BACH
ETHOS PROJECT LEADERSHIP TEAM

After being approached with the idea of an individualised warning system by A/Prof. Shannon Rutherford in 2020, Dr Aaron Bach worked alongside Shannon and Dr Sebastian Binnewies to secure funding from Wellcome for the Ethos Project. "And then it ended up being myself, Seb and Shannon that led the three different prongs of it." Aaron described the experience of being a co-lead on the Ethos Project as dynamic and multidimensional. "We're a very collaborative research leadership team, so it can be anything from HR, through to figuring out where we're going to have the Christmas party, to trying to find the best way to measure something or to recruit participants...we're all pretty well across all the different ins and outs of everything. I think we don't really have much of a hierarchy or even a silo....People jump in and out where capacity is available and where expertise is available. But everyone chips in, which I think is quite a unique way of going about a research project like this." The multidisciplinary knowledge, experience and skills supplied the Ethos Project's co-leads has facilitated innovative research into the heat-health space.

“WE'RE FROM SUCH DIFFERENT BACKGROUNDS-THAT'S BEEN A STRENGTH TO HAVE THAT HOLISTIC APPROACH RATHER THAN WORKING QUITE SINGULARLY AS THREE SEPARATE ARMS. **WE VERY MUCH LIKE TO SEE OURSELVES AS ONE BIG TEAM.**”

As an early-career researcher, Aaron was only two years post his PhD when he became one-third of the Ethos Leadership Team. Being thrown into the deep end of project management allowed Aaron to develop significantly as both a researcher and a leader. "Certainly, one of the things that I've really taken away from it is really seeing how the sausage is made and all the background stuff and what it takes to run a project at this sort of scale. I sort of tend to gravitate towards is the data collection....Running a project at this scale is so much more than just that. And being completely

exposed to that breadth was quite a big learning for me. I feel like I'm much better equipped to be able to, maybe not run a project of the scale by myself, but certainly be more informed and more experienced to be able to run big projects." In humble leadership fashion, Aaron explained that seeing the Ethos Team grow was the most fulfilling aspect of the project for him. "Along with the actual the research itself, the thing that I genuinely find the most enjoyable has been watching the junior members of the team change over the last three years... people like Issie, Mehak, Sarah, Connor, Ella. All of you came into this project at various times...and done bigger and smaller roles for various things. Mehak is such an accomplished early career researcher now. When she came on board, she was much more junior, and she has shined like no one else on the project....Issie's an early career researcher in her own right...but people wouldn't suspect that of an undergraduate student....Sarah was amazing in the beginning of the project and getting the thing off the ground and she was a very early PhD student that went on to bigger and brighter things in medicine. And then we have Ella....She loves communication so much, which she found through the Ethos project. She's now gone on to do a PhD in heat communication. Seeing all of these junior staff members flourish has helped me enjoy the project more."

“I'LL LOOK BACK AS AN OLD RETIRED PROFESSOR WITH A LITTLE GLINT IN MY EYE SAYING THEY STARTED WITH ETHOS... THEY'LL GO ON TO HAVE SUCCESSFUL RESEARCH CAREERS THAT SCOPE OUT BEYOND ETHOS AND **THAT IS THE LEGACY OF THE ETHOS PROJECT.**”

Aaron extended his reflection to consider the impact of the Ethos System on the older adults who participated in the Ethos In-Home Trials, as well as the role of Ethos's research in the future of the heat-health space. "I hope what we provided [the users] with a more comprehensive knowledge and better evidence and better understanding of what's happening to themselves and their environment and how to react to that...hopefully impacting their lives every summer....I'm excited to see where we're at in 10 years' time in our ability to monitor risk...what Ethos has tried to do but at better and bigger scales as technology continues to improve.... Early warning systems as a concept are new and we're at the leading edge of it." Aaron summarised the legacy of the Ethos Project as:

“WARMTH...DETERMINATION ...AND JOY.”



SEBASTIAN BINNEWIES

Researcher and lecturer, School of Information and Communication Technology

Ethos Project Leadership Team

Dr. Sebastian Binnewies is part of the Ethos Leadership team and is a Senior Lecturer in the School of ICT at Griffith University and Director of the Griffith App Factory. App Factory is a student enterprise, where high-achieving students have the opportunity to work on real-life projects to expand their employability and entrepreneurship skills. Given the wide range of IT expertise within the School, the projects are not limited to mobile apps, and can include general software applications, data visualisations & dashboards, machine learning models etc., developed according to industry standards. Dr. Binnewies has multiple publications in top-tier outlets and previously secured external grant funding. His research interests include data science, text analytics, and knowledge representation & reasoning.



WANT TO LEARN MORE ABOUT THE APP FACTORY?

The App Factory has an extensive portfolio of projects across app development, machine learning and start-up software. Students involved in the App Factory have gained invaluable employment experience and made real-world impact. Check out the App Factory website and student outputs [here](#).



IT'S ALL ABOUT PEOPLE

SEB BINNEWIES

ETHOS PROJECT LEADERSHIP TEAM

"I clearly recall when it all started-It started when [Shannon Rutherford] and I met at a symposium in South Bank...it must have been at the end of 2020. And then Shannon approached me a little bit later...she had this idea of, why don't we try to design something for older people that exactly captures their individualised [heat] requirements?" Dr Sebastian Binnewies explained that the potential to contribute his Information and Communication Technology background to an innovative, topical issue is what initially drew him to the Ethos Project. However, it was the shared passion and goals between Seb and the other interested researchers that sealed the deal.

"THE OTHER PART IS THE CHEMISTRY BETWEEN THE TEAM AND BETWEEN THE OTHER LEADERS. AND THAT BOTH WORKED-THERE WAS NO DOUBT IN GOING FOR THIS GRANT."

Acting in the Ethos Leadership Team has proven to be a multi-faceted process. Seb described how the Ethos Project not only allowed him to leverage his intricate knowledge of commercialisation, software development and project management, but also provided many opportunities to grow as a researcher. "We all have overlapping roles here.... It's more like running a small business then being part of the university.... We need to be able to act across all different things. For example, I deal a lot with finance for the project and, even though I'm the main person doing this, it's still important that Shannon and Aaron chime in to make decisions because they're the co-leads." Learning to navigate the financial side of the Ethos Project was a key learning experience for Seb during his time on the Leadership Team. "I've learned a lot about the processes in the university, [what] needs to be done for their accounting services. And then I also needed to understand exactly what the funder requires from us... I hadn't known before how to do it."

"WHAT I ENJOYED THE MOST WAS BUILDING THE TEAM AND WORKING WITH THE TEAM FOR SUCH A LONG TIME."

Unlike most other research projects where team members are transient after a short period, the Ethos Project has had the advantage of a very consistent core team over the initiative's three-and-a-half-year timeframe. For Seb, the ability to meaningfully collaborate with the other members of the Ethos Team for such a substantial period is a highlight of the project. Although the project has produced a relevant and usable early warning system for older Queenslanders, curated many high-quality journal articles and formed sustainable relationships with various stakeholders, Seb considers the synergist nature of the Ethos Team to be the projects greatest accomplishment.

"I THINK WE'VE CHANGED PEOPLE'S LIVES...THE PEOPLE WE'VE GIVEN WORK TO THROUGH THIS PROJECT...AND THE USERS- WE'VE HAD PEOPLE WHO REALLY THINK DIFFERENTLY ABOUT THEIR HEAT EXPOSURE.... [THE PROJECT] GOES BEYOND RESEARCH, BEYOND THE USUAL TARGETS...AND I THINK THAT'S SOMETHING THAT WE CAN BE REALLY PROUD OF."

When asked to describe the Ethos Project's legacy in three words, Seb only needed one- Impact. As climate change continues to increase temperature and temperature variability, Seb is excited to see how Ethos's research can facilitate the next generation of heatwave prediction modelling and early warning systems. Together, the Ethos Team and its partners have paved the way for the future of heat-health adaptation. "I'd like to thank the team for sticking with [Shannon, Aaron and I] through thick and thin...that really means a lot to me. And I'd like to thank everyone else who had an appetite in our project- the steering committee, reference group, users...that's the most important part of our project because it's about people."

CALL TO ACTION



As we wrap up our Ethos Project, we recognize there is still more to do to improve heat awareness and heat health risk perception in the community. The Ethos Team encourage everyone to stay connected to your communities and spark conversations on heat-health issues. Have discussions with your health professionals (e.g. physiotherapists, specialists, GP's, pharmacists) about heat and health. Talk with your peers and families about heat safety. Engage with your politicians about making our communities more heat resilient!! From our team's perspective, please know we are working through various opportunities to keep our work going, including thinking about further use and expansion of the Ethos technology. The Ethos Team is also thinking deeply about how we can facilitate 'the ripple effect' so more people can become heat aware and how we can meaningfully work with the health and aged care sector to more actively promote heat risk and cooling options. Every voice counts and every story helps raise awareness of knowledge of this important issue!!

USEFUL RESOURCES

CHECK OUT OUR PAST NEWSLETTERS:



ETHOS SPOTLIGHT INTERVIEWS:

Kerry Foss

NATIONAL COMMUNITY ENGAGEMENT LEAD
LIVEUP

Jennifer Warburton

EMERITUS PROFESSOR
LA TROBE UNIVERSITY

Liza Neil

BUILDINGS AND FACILITIES DESIGN COORDINATOR
CITY OF MORETON BAY

Brendan Mackey

DIRECTOR
CLIMATE ACTION BEACON

Peter Hennessy

ETHOS REFERENCE GROUP MEMBER

Nicole Mandalios

POLICY & PLANNING, DISASTER MANAGEMENT MANAGER
QUEENSLAND HEALTH

CONTACT US



s.rutherford@griffith.edu.au
www.climate-ethos.com

A FINAL REFLECTION FROM SHANNON

My reflection on our Ethos success is based on a collation of quotes gathered via the last 4 years...

Firstly, I am reminded of the heat and health work we do and how so much of the health risks we measure or hear about are highly preventable. I am constantly reminded by Joel Dignam's quote of '**Vulnerability is not a fact**'. This reminds us that our biologically 'at risk' populations have vulnerabilities that can be influenced by the evidence that we translate, the interventions that we co-design and the solutions that we embed into policy and practice. This also reminds me that the science and the research outcomes are not enough, that we need to work with our policymakers and practice partners to make the changes needed both in the short-term and over longer periods to build heat resilience into our communities.

This takes me to my second quote '**Everything happens at the speed of trust**'. This focuses my thinking around the importance and patience needed to build trusting relationships with other researchers, practice partners and policy champions if our goals are to improve the health and wellbeing of our communities then we must build these relationships and do our part as researchers to build and maintain this trust through open and honest dialogue and respect for each others worlds and expectations.

On the theme of collaboration and partnerships, the next quote '**no secret to success, just a system to success**' highlights the need for systems thinking and interconnectedness when tackling the problem of extreme heat in our community. We need to bring together natural systems of climate, meteorology and environment to understand this phenomenon of heat while considering its interactions with where we live, work and play and recognise that we are facing both a steady increased ambient land surface and ocean temperature as well as increased extreme heat events. For our work, this demands we engage across the disaster and climate change policy and research environments and seek solutions across many connected systems. This quote could also explain some of our success in the Ethos project. With the magic of Mehak, we invested in our project systems and sustained our planning monitoring and evaluation processes alongside our intervention design and engagement processes to ensure that our project parts were constantly 'talking' to each other.



Another key factor to our project's success is our approach to co-design. Borrowing from our colleagues in the disability space, **Nothing about us, without us..** drives us to work in partnership with our research affiliates - our older adult reference group and our trial participants who have been so generous in giving of their time and insights into the value, impact and workability of our Ethos system across its various design phases. We have strived to embed co-design across our project lifecycle and our success in designing a usable and useful technology would not have been possible without them.

Finally I would like to spend some time talking about our team. Our project team included diversity of skills and experience. We took our capability development mandate seriously as team leads, reminding me of the expression commonly used in healthy aging **Everything you do for me - you take from me**. We have all learned so much from getting on with it and by encouraging each other to take risks, do things that don't sit comfortably, having a go at skills outside our usual - from public speaking and media interviews, to writing manuscripts, developing videos, organising and hosting an international symposium, to engaging with community members. We hope that we have enabled the development of a set of skills and experiences that will grow our workforce in key areas like healthy aging, climate and health, disaster preparedness and technology and health and most importantly value the benefits of transdisciplinary.

The work we have done has not been easy! I was at a conference the other day when the welcome speaker invited engagement with speakers and materials indicating '**your head should hurt**'!! Indeed our heads have hurt quite a lot along the way!! The work has not always been easy - particularly working across disciplines, learning about each other's theories and worldviews and working collectively to solve problems and challenges, often within institutional constraints and process issues, priority conflicts and human resource challenges along the way but...

Collectively we did it! When looking at what we set out to achieve I firmly believe we have reached our goals. This takes me to my last quote, a cliché but a cliché for a reason - **There is no I in team**. The team has been amazing. We have learnt together, we have grown as professionals and individuals together. We have celebrated weddings and births, new jobs, and opportunities. We have supported each other through difficult personal circumstances and it is a testament to our TEAM that we have achieved what we have. Thank you to each of you.

I wonder what new quotes I will accumulate over the next 4 years!!

GET INVOLVED


STAY COOL THIS SUMMER!



Queensland Health encourages everyone to take a break from the heat by visiting air-conditioned public places such as libraries, shopping centres, and cinemas. Researchers from Griffith University would love to hear your thoughts about using these cool places during hot weather and heatwaves in South East Queensland. Your feedback will help improve heat resilience and support better adaptation strategies for older adults aged 65 years and over. **By completing the survey you can go into the draw to win 1 of 4 \$100 supermarket gift cards. The online survey opens on the 1st December 2025, register your interest to complete the survey by emailing sarah.rogers2@griffithuni.edu.au.**

Dr Aaron Bach is part of a student research project looking for people with diabetes to participate at Griffith University aiming to prevent diabetic foot ulcers and reduce the risk of amputation. **The study involves a one-time visit (2 hours maximum) for a free foot health check and walking assessment with podiatrists and biomechanics experts.** Your participation will help researchers develop better ways to protect feet and improve care for people living with diabetes.

If you're interested, please scan the QR code below or contact Nancy at nancy.mckelvey@griffithuni.edu.au or 0431 149 270.



Queensland, Australia

HELP STOP FOOT AMPUTATIONS

How
One foot is amputated every 2hrs.
Take part in a study of how your foot works during walking to stop the foot ulcers that cause this.

What you get
• Nerve damage and blood flow foot exam by a podiatrist
• Walk analysis by world leading biomechanics experts


Who can participate
• Clinical diagnosis of diabetes (type 1 or 2)
• Older than 18 years
• Able to walk for up to 30 minutes
• +/- healed foot ulcer

Where
Griffith University, Gold Coast Campus, Biomechanics Laboratory

When
1 visit lasting 3 hours

To participate:
Scan QRcode
OR
0431 149 270
OR
Email

Contact: Nancy McKelvey (Podiatrist & Student Investigator) | Griffith University
nancy.mckelvey@griffithuni.edu.au
0431 149 270
GU ref no: 2024/911



This is the final newsletter from the Ethos Project, and we want to extend our heartfelt thanks to the Ethos team, collaborators, and research affiliates. It has been a fantastic journey, and we hope to continue working with our communities to manage heat-health risks into the future. Please don't hesitate to contact us if you have any ideas or questions, we'd love to hear from you!

Email: s.rutherford@griffith.edu.au

WHAT'S NEXT FOR OUR TEAM?

Aaron Bach will continue teaching and researching at Griffith, while enjoying family life with his wife, two young daughters and their dog.

Connor Forbes our software engineer will be continuing work with Bond University and caring for his two cats with his partner, Indigo.

Ella Jackman will continue teaching and researching at Griffith while completing her PhD and enjoying life in Brisbane with her partner, Jack and dog, Toby.

Erika Buenafe our research assistant will begin a new role supporting multicultural communities and spend some well-deserved time with her newlywed husband, Joel.

Fergus O'Connor will continue his research at Griffith focusing on heat-health projects, while also enjoying surfing and spending time with his partner and their dogs.

Issy Ennever after taking a solo Euro trip at the end of 2025, will take on research work at Griffith while finishing up her undergraduate degree.

Mehak Oberai will continue collaborating closely with Shannon and Steve further developing her expertise in heat and healthy aging, while enjoying family life with her husband, Ashwin.

Sebastian Binnewies will return from Germany this year to continue teaching and researching at Griffith, spending his free time with his wife and surfing on the Gold Coast.

Shannon Rutherford will continue leading heat-health projects, supervising PhD students and progressing Ethos findings, while enjoying family time and a Great Barrier Reef trip in January as one daughter starts university and the other enters Year 11.

Steve Baker will remain engaged in research at Griffith while enjoying life back in Melbourne with his family after celebrating his daughter's wedding.

Zhiwei Xu will continue his work with the ABS and join Griffith as an adjunct, while also preparing for a new addition to his family.

ETHOS IN THE NEWS



Effect of Ceiling Fans on Core Temperature in Bed-Resting Older Adults Exposed to Indoor Overheating



Why you don't have to "stick it out" without air-con during a hot summer



Only 25% of older Queenslanders are aware of the risks heatwaves put on their health - new study



New weather-sensing technology created to stop 'preventable' heat-related fatalities in Queensland's elderly

CONTACT US






s.rutherford@griffith.edu.au
www.climate-ethos.com

PUBLICATIONS

A Digital Heat Early Warning System for Older Adults	Oberai, M., Xu, Z., Bach, A., Forbes, C., Jackman, E., O'Connor, F., Ennever, I., Binnewies, S., Baker, S., & Rutherford, S. (2025). A digital heat early warning system for older adults. <i>Npj Digital Medicine</i> , 8(1), 114. https://doi.org/10.1038/s41746-025-01505-5	
Biophysical versus Machine Learning Models for Predicting Rectal and Skin Temperatures in Older Adults	Forbes, C., Coccarelli, A., Xu, Z., Meade, R. D., Kenny, G. P., Binnewies, S., & Bach, A. J. E. (2025). Biophysical versus machine learning models for predicting rectal and skin temperatures in older adults. <i>Journal of Thermal Biology</i> , 128, 104078. https://doi.org/10.1016/j.jtherbio.2025.104078	
Experimental Research in Environmentally Induced Hyperthermic Older Persons: A Systematic Quantitative Literature Review Mapping the Available Evidence	Bach, A. J. E., Cunningham, S. J. K., Morris, N. R., Xu, Z., Rutherford, S., Binnewies, S., & Meade, R. D. (2024). Experimental research in environmentally induced hyperthermic older persons: A systematic quantitative literature review mapping the available evidence. <i>Temperature</i> , 11(1), 4–26. https://doi.org/10.1080/23328940.2023.2242062	
Heat, Heatwaves, and Ambulance Service Use: A Systematic Review and Meta-Analysis of Epidemiological Evidence	Xu, Z., Watzek, J. T., Phung, D., Oberai, M., Rutherford, S., & Bach, A. J. E. (2023). Heat, heatwaves, and ambulance service use: A systematic review and meta-analysis of epidemiological evidence. <i>International Journal of Biometeorology</i> , 67(10), 1523–1542. https://doi.org/10.1007/s00484-023-02525-0	
Increased Risk of Cardiopulmonary Mortality During Hot Weather: Well-Designed Health Impact Assessments to Inform Heat Adaptation Strategies	Xu, Z. (2024). Increased risk of cardiopulmonary mortality during hot weather: Well-designed health impact assessments to inform heat adaptation strategies. <i>The Lancet Regional Health - Europe</i> , 46, 101065. https://doi.org/10.1016/j.lanepe.2024.101065	
Multimorbidity and Emergency Hospitalisations During Hot Weather	Xu, Z., Yi, W., Bach, A., Tong, S., Ebi, K. L., Su, H., Cheng, J., & Rutherford, S. (2024). Multimorbidity and emergency hospitalisations during hot weather. <i>eBioMedicine</i> , 104, 105148. https://doi.org/10.1016/j.ebiom.2024.105148	
Older Queenslanders' Behaviours During Hot Weather: Factors Impacting their Heat Response Actions	Xu, Z., Oberai, M., Bach, A., Binnewies, S., Jackman, E., Forbes, C., Baker, S., Phung, D., & Rutherford, S. (2023). Older Queenslanders' behaviours during hot weather: Factors impacting their heat response actions. <i>ISEE Conference Abstracts</i> , 2023, isee.2023.MP-162. https://doi.org/10.1289/isee.2023.MP-162	

PUBLICATIONS

Preparing for a Hotter Climate: A Systematic Review and Meta-Analysis of Heatwaves and Ambulance Callouts in Australia	Oberai, M., Xu, Z., Bach, A. J. E., Phung, D., Watzek, J. T., & Rutherford, S. (2024). Preparing for a hotter climate: A systematic review and meta-analysis of heatwaves and ambulance callouts in Australia. Australian and New Zealand Journal of Public Health, 48(1), 100115. https://doi.org/10.1016/j.anzjph.2023.100115	
Promoting Targeted Heat Early Warning Systems for at-risk Populations	O'Connor, F. K., Oberai, M., Xu, Z., Binnewies, S., Rutherford, S., Meade, R. D., Baker, S., Jackman, E., Forbes, C., & Bach, A. J. E. (2025). Promoting targeted heat early warning systems for at-risk populations. Nature Climate Change. https://doi.org/10.1038/s41558-025-02374-2	
The odds and costs of ambulance attendances associated with heatwave severity in older adults of Queensland, Australia	Xu, Z., Rutherford, S., Nghiem, S., Mason, H. M., Varghese, B. M., King, J. C., Peden, A. E., Watt, K., Bosley, E., & Franklin, R. C. (2025). The odds and costs of ambulance attendances associated with heatwave severity in older adults of Queensland, Australia. International Journal of Biometeorology. https://doi.org/10.1007/s00484-025-02981-w	
Towards Improvement of Heatwave Warnings for Older Adults: The Case of Queensland Australia	Oberai, M., Baker, S., Bach, A. J. E., Forbes, C., Jackman, E., Binnewies, S., Xu, Z., Cunningham, S., Nghiem, S., Phung, D., & Rutherford, S. (2024). Towards Improvement of Heatwave Warnings for Older Adults: The Case of Queensland Australia. Journal of Primary Care & Community Health, 15, 21501319241286584. https://doi.org/10.1177/21501319241286584	

REPORTS

- Ethos Phase 1 In-Home Trial 2023-24 Summary
- Ethos Heat-Health 65+ Queensland Survey
- Ethos Project Policy Maker Report
- World Café 2023 - Exploring Heat, Health, Technology, and Ageing
- World Café 2024 - Ethos System and In-Home Trial Experience Phase 1

