August 2023

Julie Ann Wrigley Global Futures Laboratory
Arizona State University

Global Futures: Now

"In 1995 the budget for fighting fire made up 16 percent of the US Forest Service's budget. It rose to the 50 percent level in 2015 and could reach close to 70 percent by 2025." — Edward Struzik,Firestorm: How Wildfire Will Shape Our Future

On the heels of a record shattering month of heat in the northern hemisphere, with what felt like a magnifying glass-like focus on those of us here in Arizona,

our world was confronted with catastrophic wildfires across the Hawaiian Islands with the greatest damage on Maui. Since the fires ignited on Aug. 7 the town of Lahaina has been destroyed and more than 115 people have been identified dead with more than 388 still unaccounted for as of Aug. 30.

Maui is home to two of the wettest places on Earth. One of those places is Pu‘u Kukui, the peak of the western wall of mountains that was part of the island's original volcanic structure. It receives an average of more than 380 inches of rain annually (In comparison, Tempe gets nine inches). However, there are also very dry regions on Maui such as Laihana that receive less than 10 inches of precipitation per year. Such dry conditions preconditioned the wildfire that - fueled by strong winds - ran uncontained down the western slopes of the mountain near Lahaina Intermediate School right down into Lahaina without any time for the majority of residents to flee or firefighters to react. What was the confluence of events that led to this catastrophic wildfire and what could become of these vital ecosystems now that the fire has consumed them? Because extreme wildfires that happened in Maui could potentially happen in many other places. Consider the events in Italy, British Columbia, Alberta, Myanmar, India and here in Arizona this summer alone.

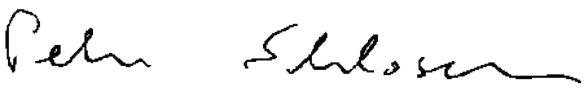
Ongoing investigations will determine how much responsibility Hawaiian Electric may have for the spark of the fires. Downed power lines may have been the spark, but climate change was the major driver for this incident and the abundance of non-native grasses was the fuel. The Pacific’s 2023 hurricane season has already proven to be irregular with its first storm not developing until late June. This has led to a drier early summer for Maui, with the USGS’s rain guage at Pu‘u Kukui only at 54% of its annual average for July. That arid period allowed the grasses, originally planted by European livestock ranchers in the late 1800’s, to mostly dry out. It was a convergence of human actions from long ago that caused the catastrophe.

Hawaiians are not simply allowing this grass to overrun the countryside. School of Ocean Futures assistant professor Katie Kamelamela spoke to Nature about how continued traditional agriculture practices that are no longer widespread may need to be revitalized, both to limit potential threat but also to reconnect people to the land. “That’s why these fires started: because no one had a

relationship to these places."

While we are experiencing these catastrophes with increasing frequencies and strengths, we also see actions to adjust our behaviors and expectations of how we manage ourselves and our place in the world. This month, a landmark decision was handed down in Montana where the court sided with a group of local youths sued the State of Montana government for violating the state's constitutional guarantee to a right to a "clean and healthful environment." The plaintiffs, a group of 16 Montanans ages 5 to 22 and led by Rikki Held, argued that Montana lawmakers were pushing aside the constitution's environmental protection mandate in favor of fossil fuel mining and production. This approach not only brings forward a new way for people to claim rights over how they are able to live but it empowers and gives standing to a group of advocates who had otherwise been largely silenced. Additionally, other states including Arizona, Iowa, Connecticut and Maine are introducing amendments similar to Montana's constitution to provide similar rights to their residents.

We will be witnessing more wildfires, but we are also now witnessing more people working to prevent fires altogether. While our scientists, scholars and innovators here at the Global Futures Laboratory and across all of ASU including our partnerships around the world continue to develop technological and knowledge-based solutions to mitigate future damage, we see more action targeted at dousing these fires before they start. It is this changing of societal will that gives us hope.



Peter Schlosser
Vice President and Vice Provost of Global Futures

News

How is Arizona tackling the intersection of the heat and housing crisis?

Diane Pataki, a professor in the School of Sustainability, said the approach to development must change if we are to see a more sustainable future. Despite knowing of better alternatives, decision-makers tend to stick to old habits, Pataki said in an article for The Arizona Republic. This reluctance to implement new ideas, in addition to other factors, has led to a rise in both housing demand and sustained high temperatures. State officials must prepare to build for the Arizona of the future: a hotter, drier and more crowded state.

Read the article

Research: Global Futures Scientist contributes to report on under-explored opportunities to increase water resilience

Paul Westerhoff joined a thematic task force to discuss strategies to increase sustainability in our water systems. The report, published by the NSF Engineering Research Visioning Alliance, highlights high-impact areas and outcomes that can be driven by engineering efforts. The report highlights five under-explored areas in addition to seven key priorities for engineering research investments.

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Research: Long-term study shows human activity can be directly tied to coral reef health outcomes

Greg Asner , senior author of the recent study and director of ASU's Center for Global Discovery and Conservation Science, engaged with NOAA and Bangor University to study coral reefs over a 20-year period. They found that along some of the more highly populated areas on the shorelines of Hawai‘i, wastewater pollution and urban runoff combine with fishing pressures to put immense stress on coral reefs. Asner said this research shows that coral reef health declines are not only attributable to climate change, but also human behavior which can be immediately adjusted via a

shift in actions and policy.

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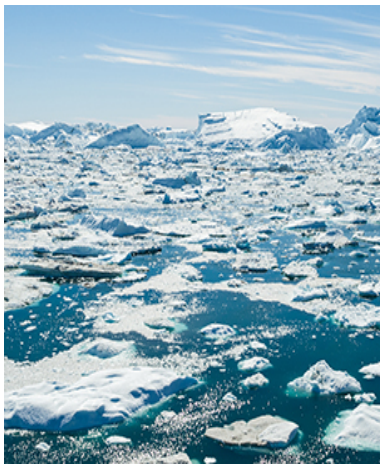
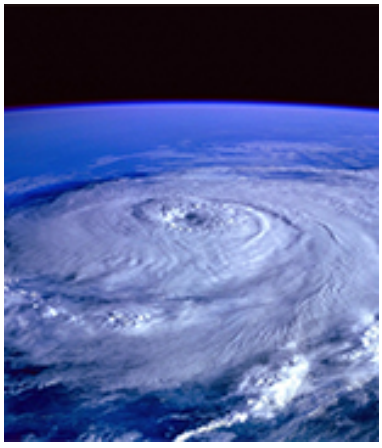


Research: New research focused on Arctic permafrost receives $5M from Google

New research by Wenwen Li, professor in the School of Geographical Sciences and Urban Planning and a Senior Global Futures Scientist, aims to support the development of a new, open-access resource that will use satellite data and artificial intelligence technology to make it possible to track Arctic permafrost thaw in near real time. The project will use AI technology to streamline the data analysis process and make it easier to rapidly identify patterns and trends in permafrost thaw datasets.

Read more

Q&A: ASU researchers model hurricane responses for more effective evacuations



Sean Bergin, an assistant research professor with the School of Complex Adaptive Systems, and Michael Barton , a professor in the School of Complex Adaptive Systems and School of Human

Evolution and Social Change, have been modeling how people respond to hurricane and tropical storm warnings in an effort to create more effective evacuation messaging. They discuss their work, and its real-world applications, in an ASU News article.

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Q&A: Acoustic ecologist contributes to big cat conservation in Costa Rica

Senior Global Futures Scientist and acoustic ecologist Garth Paine, along with professor and wildlife ecologist Jan Schipper, created a gunshot detection program throughout the rainforest in the Cordillera Talamanca mountain range, which can immediately direct guards to jaguar poachers. In a Q&A with ASU News, Schipper explains the connection between jaguars and their ecosystems, the rise of poaching and the adaptability of jaguars.

Read more

Video: Youth ARTivist Hawai‘i connects middle school students with ocean and conservation education for

impactful summer camp experience

The Mega Lab, a part of the Center for Global Discovery and Conservation Science, engaged with young people for Youth ARTivist Hawai‘i, an outreach program that empowers young people by bridging art and science to think creatively and elevate their solutions for a healthy, sustainable ocean. The program is a week-long free summer camp for middle school youth focusing on environmental art and ocean science.

Watch

Athena Aktipis says we can learn more about cancer from an unexpected source: cacti

Outside of the Biodesign Institute, crested cacti grow proudly. Their mutations, which cause them to grow into strange shapes, have many parallels to cancer in humans. In an article for Aeon, Senior Global Futures Scientist Athena Aktipis explores the ways in which the strange growths on cacti echo the cancers and cancer-like growths that have been found in all forms of multicellular life spanning back millions of years ago.

Read more

Katie Kamelamela offers insights into Hawai‘i’s endangered plant life following Maui fire

In addition to its immense impact on the residents in Maui, the recent fire also threatens endangered plants in Hawai‘i. Katie Kamelamela, assistant professor in the School of Ocean Futures, said she has seen the destruction wildfires can cause to plant life before: in Oahu, the island she grew up on, she participated in a project to reforest a fire site with plant life that originated from Hawai‘i. Fifteen years passed, and the site burned again.

Read more

Dave White and the Arizona Water Innovation Initiative featured in H2O Global News

Dave White, director of ASU’s Global Institute of Sustainability and Innovation, contributed his insights on the water crisis for H2O Global News. In the feature, he points to his role with the Arizona Water Innovation Initiative as a way that he is contributing to increasing access to sustainable drinking water. White serves on the strategy team of the initiative, which officially launched this year and is funded by the State of Arizona and the Virginia G. Piper Charitable Trust.

Read more

ASU's expertise in heat mitigations could make the city's heat waves less unbearable

Global Futures Scientists David Hondula, Ariane Middel and David Sailor talk about heat in the Valley of the Sun in an article for Inside Climate News. As temperatures increase, so do the public safety concerns. However, research taking place within the Global Futures Laboratory aims to mitigate those concerns.

Read more

New episode of podcast "What About Water?" showcases water experts around the state

Hosted by Jay Famiglietti, the latest episode of "What About Water?" explains that the end-all solution to drought does not lie below our feet. In this episode, titled "Digging Deeper Won't Fix This," experts across varying sectors contribute their thoughts on the future of water in Arizona and their role in generating solutions.

Listen

City of Chandler partners with ASU on Project Cities Program

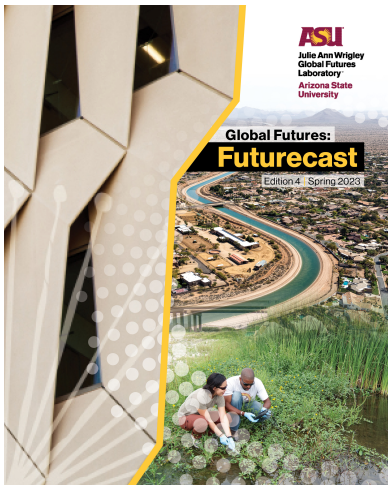
Chandler City Council recently authorized a Master Intergovernmental Agreement for the development and execution of the Project Cities Program. Through the program, ASU students will research issues selected by the city. ASU faculty and staff and city staff will collaborate on experiential learning projects that will help them gather data. At the end of each semester, students will present their innovative solutions, designs, recommendations and strategies to city staff.

Read more

ASU water visualization tool recognized for sustainable impact

A research team featuring Senior Global Futures Scientists has been developing solutions to help decision-makers manage water resources. This team created an online visualization tool, the CRB-Scenario-Explorer, which can simulate scenarios like droughts and forest disturbances. Recently, the project received the Governor's Award for Arizona's Future from the environmental organization Arizona Forward, a recognition given to projects with significant sustainability impacts.

Read more



Futurecast

Edition 4 | Spring 2023

In this issue of Futurecast, we explore a number of topics including the current state of global stability, how ASU is driving water conservation through innovation, the vulnerabilities of our energy systems and how human health and heat are interrelated.

Read now

Global Futures Viewbook

We must rediscover our planet and our relationship with it.

What does this mean, exactly? For the faculty, students, researchers and global partners of the Julie Ann Wrigley Global Futures Laboratory, it means a commitment to urgently exploring pathways to impactful solutions and decisions that address the challenges we have caused through resource extraction and thoughtless consumption as part of a relentless pursuit of “progress.”

We believe better is possible.

Learn more

Julie Ann Wrigley Global Futures Laboratory
Arizona State University

#1 in the U.S. for global impact
–Times Higher Education, 2021

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