July 2023



Global Futures: Now



"God, it was hot! Forget about frying an egg on the sidewalk; this kind of heat would fry an egg inside the chicken." Rachel Caine

The heat we are experiencing is truly unprecedented in terms of our world's recorded history. We are not simply breaking records - we are obliterating them. Every day this month of July, 2023, <u>our Valley of the Sun has reached a high temperature of more than 110 degrees</u>. The previous record for our region was 18 days, set in 1974. In fact, <u>we are on track for our average temperature over the course of this month to</u>

<u>exceed 102</u>. This would make Phoenix the first major U.S. city to ever encounter this level of extreme heat. The closest we came to this previously was in August, 2020 when we averaged 99.1, more than two degrees cooler than this month.

The source of this historic wave is a "heat dome" that has kept wetter weather above the jet stream, which also has led to the incredible deluge of rain that hit the northeast this month. That extreme weather caused such substantial flooding that many towns in that region <u>including Montpelier</u>, VT had to shut down due to the devastating water <u>levels</u>.

Our region's heat circumstance is also exacerbated by the <u>ENSO Cycle</u>, commonly known as El Niño and La Niña, the weather cycle driven by the warming surface temperatures of the Pacific, also pushing the jet stream north. Granted, this is not the first time an El Niño season has caused warming across the Southwest, but the interaction between natural climate variability and the secular trend superimposed by human-induced global warming make projections of the impact of the exact nature and impact of such natural cycles more uncertain.

The U.S. Southwest is not the only place on the globe to experience extreme heat this year. It was widely reported that <u>July 4 was the hottest day globally in recorded history</u>. That was then topped by July 5, which was then exceeded on July 6. The Acropolis was closed to tourists as several have been collapsing from heat and airports in Sicily have been closed because of wildfires triggered by extreme weather. What's becoming increasingly troubling is that there are regions that are hitting seasonal temperatures above normal that should not be impacted by the extreme weather events closer to the equator. Entire sections of the North American Arctic and the Russian Arctic as well as southern Africa and Australia are also unseasonably warm.

Excessive heat impacts everything, but the most noticeable and important impact is on human health. <u>There have already been 25 heat-related deaths in Maricopa</u> <u>County with another 249 pending investigations</u>, and we are just entering August (just a week ago, those numbers were at 18 confirmed deaths and 69 pending investigations). And, this heat hits our region as many unsheltered residents have been displaced and growing drug addiction impacts the health of many of our economically insecure population. In the Spring volume of Futurecast, Global Futures scientists and scholars Patricia Solis, Jennifer Vanos, Zachary Van Tol and David Hondula <u>discussed the variety of factors that influence how people are susceptible to heat-related physical distress</u>. It is also this same group of researchers, joined by Ariane Middel, David Sailor, Melissa Guardaro and many others, who are learning how we can better understand these extremes and how we can develop solutions to them. This past May, ASU and the Global Futures Laboratory hosted the <u>23rd International Congress of</u> <u>Biometeorology</u>. This month, a team of researchers that worked with the city of Phoenix a year ago on surface cooling alternatives conducted an assessment that found <u>many of the options are helping to mitigate urban heat</u>. And over the past few weeks you may have seen students and faculty collecting critical data with the <u>MaRTy cart</u> and <u>ANDI mannequin</u> to understand how we can respond to this historic heat wave and the even stronger ones we now have to expect in the future.

It is hot. It will likely get hotter. But our fate is not sealed and our region is not doomed. Our faculty, scientists and scholars, together with our students, are growing our knowledge base and working on new ways to bring this knowledge into the action space. We are also exploring how our knowledge will find a better resonance in communities and global society because in the end change depends on our willingness to make different choices and trust that they will offer new opportunities rather than requiring sacrifices. Simply turning up the air conditioning is not a viable option.

Petro Shlow

Peter Schlosser Vice President and Vice Provost of Global Futures

News



New PIRCA report outlines population vulnerabilities of low-lying atolls due to climate change

ASU's Hawai'i-based <u>Pacific RISA</u> center in collaboration with researchers from the <u>East-West Center</u> and the University of Hawai'i have released a new report that identifies threatened resources that includes culturally siginificant coastal infrstructure, a multi-million dollar fishing industry and human health. The Pacific Islands Regional Climate Assessment focused on the impacts of climate change in the Federated States of Micronesia and included input with 30 technical contributors from local government, NGOs, and research organizations.

Read the report



Preserving Native knowledge, kinship with nature

Katie Kamelamela, an ethnobotanist and assistant professor in the School of Ocean Futures, studies people and their relationships to nature. In an article for ASU News, Kamelamela discusses her work in Hawaii, which chronicles Indigenous practices, analyzes how practices have evolved over time in the face of climate change and brings together place- and practice-based community needs with policy.



Research: Enhancing the accessibility and interactions of regional hydrologic projections for water managers

The impacts of intensifying forest disturbances under climate change are not well understood, but expected to have major consequences. A team of ASU researchers, developed a web-based tool, CRB-Scenario-Explorer, that provides interactive visual assessments of modeled future Colorado River Basin hydrology scenarios and detailed documentation of their approach to support mindful interpretations.



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Q&A: Arizona should brace for fire season despite wet winter

Global Futures Scientist <u>Stephen Pyne</u> said that Arizona's wet winter does not mean residents should expect a mild fire season. In a Q&A with ASU News, Pyne discusses the start of fire season, causes of wildfires and how human activity can change the future of fire in Arizona.

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Q&A: Director of the Center for Energy and Society offers insights into transition from fossil fuels

As global temperatures increase and we grow closer to the 1.5 degrees Celsius benchmark set by the Paris Agreement, the case for clean energy seems stronger than ever. However, executing this feat will take time, years of collaborations and financial resources. <u>Clark</u> <u>Miller</u> talks about the nuances of transitioning from fossil fuels to electric power generation.



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Q&A: To advance research and restoration of coral reefs, start small

Two new papers published in Nature Nanotechnology and One Earth, led by Liza Roger, assistant professor in ASU's School of Molecular Sciences and affiliate faculty in the School of Ocean Futures, examine the potential to leverage nanotechnology — the study and manipulation of individual atoms and molecules — for coral reef ecosystem science.



College of Global Futures professor of practice among panelists at GreenFin 23

<u>George Basile</u> participated in a panel on internal engagement and action regarding environmental, social, and corporate governance. The panelists, including Basile, Veena Jayadeva, head of enterprise ESG at Guardian Life; Kate Hanley, director of global climate strategy at Aramark; and Ben Morley, partner and associate director at Boston Consulting Group, offer strategies to increase employee engagement and, in turn, advance social and environmental progress.



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Solar Canoes Against Deforestation project funded by ASU Women and Philanthropy

Solar Canoes Against Deforestation, led by Janna Goebel, assistant professor of sustainability education in the School of Sustainability, was one of five projects funded by ASU Women and Philanthropy. The project aims to work with the Indigenous Waorani community in the Ecuadorian Amazon, who currently relies on gaspowered canoes. Through collaborating with the local community, Goebel and her team are striving to implement an alternative to the gas-powered motor by retrofitting canoes with an electric clean motor.

