

WINTER 2024

CLIMATE QUARTERLY

The Newsletter of the Expert Resource Group on Climate Change and Environmental Affairs



DON'T MISS THESE EVENTS AT THE 2024 AAD ANNUAL MEETING!



Climate Change & Environmental Issues ERG Annual Hybrid Meeting at the AAD

When: Saturday, March 9, 2024 | 12:00-2:00 PM PT

Location: Grand Ballroom 13 | Marriott Marquis San Diego Marina with [virtual option](#)

Program: ERG Updates & Scientific Abstract Presentations

Scientific Forum F071 - Skin-environmental Interface: Dermatologic Challenges of Our Changing Climate and Environment

When: Saturday, March 9, 2024 | 3:30-5:30 PM PT

Location: San Diego Convention Center | Room 5B

Program: <https://am2024.aad.org/sessions/16951>

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CLIMATE CHANGE IN THE MEDICAL LITERATURE

by *Jordan Bui, MS3 and Markus Boos, MD, PhD*

[Sustainable dermatology-A practical guide for the Australian dermatologist](#)

Tan E. Sustainable dermatology-A practical guide for the Australian dermatologist. *Australas J Dermatol*. Published online October 30, 2023. doi:10.1111/ajd.14178

Hospitals and pharmaceuticals contribute greatly to Australia's 7% of greenhouse gas emissions from the healthcare sector. This review article offers recommendations to practicing dermatologists in Australia for how to minimize carbon dioxide equivalents (CO₂e) and reduce costs at various steps while providing care. Please see the accompanying table below for recommendations. It is important to recognize the role dermatologists can play in reducing the healthcare carbon footprint as an environmentally sustainable measure while also saving costs to their practice.

	CO ₂ e saved per year	Cost savings per year
Utilities		
Installing solar panels*	11,180 kg	\$85,109
Installing double-glazed windows	3,437 kg	\$1,845
Retrofitting LED bulbs from halogen light bulbs	2,179 kg	\$1,170
Draught proofing the clinic	881 kg	\$473
Transportation		
Using a bicycle	2,180 kg	\$2,860
Carpooling	1,094 kg	\$1,036
Using public transportation	981 kg	\$1,288
Switching to electric vehicles	760 kg	\$1,468
Surgery		
Reducing the number of disposable sterile surgical gowns and drapes by 2**	5,520 kg	\$23,549
Using only necessary instruments	1.93 kg per instrument	\$31-\$150 per instrument
Paper & Recycling		
Implementing a paperless system	209 kg	\$8,640
Recycling as much as possible***	1,728 kg	N/A
Buying recycled paper	0.76 kg per 500 sheets	\$0
Water		
Converting to solar hot water system from electric	513 kg	\$275
Installing 8 water efficient faucets	18 kg	\$347
Using tap water instead of bottled water	4.70 kg per 1L bottle	\$1.20 per 1L bottle

*Cost savings expressed as net present value.

**Assuming 20 surgical cases a week in a 48 week year.

***Estimated from lifecycle analyses of hospital waste.

[The environmental impact of printed journals in dermatology](#)

Li C, et al. The environmental impact of printed journals in dermatology. *J Am Acad Dermatol*. Published online November 11, 2023. doi:10.1016/j.jaad.2023.11.010

An emergency call to action regarding climate change has noted that “innumerable small changes and the social pressures they exert can catalyze collective action and generate an overdue cultural shift in dermatology that prioritizes patient and planetary health.” Reducing the printing and distribution of printed journals is one such small change that may be of benefit to address fossil fuel combustion and associated global warming. Specifically, the environmental impacts from printed journals include deforestation and fossil fuel use for transportation among manufacturing, publishing, and distribution. The authors at the University of Massachusetts collected the electronic and printed journals received in one month across 42 providers to estimate their carbon footprint. A total of 177 printed journals (13,611 printed pages) were collected and 104 journals were received electronically. Using JAAD as an example to evaluate the carbon footprint for a journal, the authors estimated that the 177 printed journals received in their department was equivalent to 2,470-2,830 kg of CO₂ equivalents per year (roughly equivalent to a roundtrip flight from London to Chicago). If these 177 print journals were received electronically by clicking onto the JAAD website, there was an estimated 0.72 kg of CO₂ equivalents produced per year. Thus, the global circulation of one printed journal, JAAD, has a profound carbon footprint just in the realm of dermatology. To reduce the carbon footprint from printed journals, the authors propose journals offer subscriptions electronically by default and to have an “opt-in” option for printed versions at a higher cost.

CONT...CLIMATE CHANGE IN THE MEDICAL LITERATURE

by Jordan Bui, MS³ and Markus Boos, MD, PhD

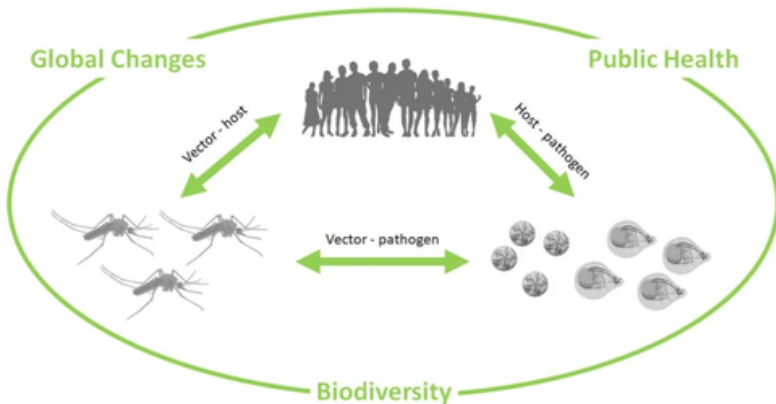


Photo Credit: Müller R, et al. Biodiversity and Health in the Face of Climate Change, Springer, Cham. 2019:67-90.

[Climate change and the displaced person: how vectors and climate are changing the landscape of infectious diseases among displaced and migrant populations](#)

Choi SH, Beer J, Charrow A. Climate change and the displaced person: how vectors and climate are changing the landscape of infectious diseases among displaced and migrant populations. *Int J Dermatol*. 2023;62(5):681-684. doi:10.1111/ijd.16636

Climate change can result in extreme weather events such as drought and floods, displacing individuals. An estimated 21.5 million people were displaced due to flooding, fires, drought, and storms in 2018. Individuals who are displaced for other reasons such as economic or political are at increased risk of infection due to living in close quarters; climate change has also been noted to increase disease transmissibility. These infections are a leading cause of mortality in individuals who are displaced, and identifying cutaneous manifestations may allow for more prompt intervention. This review article summarizes various infectious diseases influenced by climate change. In Lebanon in 2013, there were 1,000 new cases of cutaneous leishmaniasis (CL) and 96.6% of them occurred among displaced Syrian refugees. In 2017, a surveillance network found high rates of *Leishmania donovani* and *Leishmania tropica* in sand flies from Syrian refugee camps in Greece, highlighting the importance of investigating CL disease burden.

The dengue virus has spread widely to unaffected regions because its incubation period in the *Aedes* mosquito has accelerated due to rising temperatures from climate change. Numerous outbreaks have been reported in refugee camps in Somalia and Western Sudan. The incidence of malaria has also increased in flooded regions that allow the mosquito vector to proliferate. A previous study found that 16% of deaths in refugee children < 5 years of age were due to malaria. Scabies burden has been found to be highest in areas that often faced adverse climate events: East, South, and Southeast Asia, Oceania, and Latin America. Scabies was one of the leading infections after the 2010 floods in Balochistan, Pakistan. The disease burden of cholera is worsened with rising sea levels leading to introduction of *Vibrio cholerae* from marine bacteria. Industrial pollution and dust also promotes cholera proliferation by introducing insoluble iron. Varicella zoster virus (VZV) has a high seroprevalence in temperate regions whereas tropical regions have a lower seroprevalence. Migrants coming to Italy from Ghana, Nigeria, Somalia, and Eritrea saw an increase in prevalence of VZV because of lower vaccination rates in these regions and moving to an area where VZV seroprevalence was higher. Overall, it is important for dermatologists to be aware of the effects of climate change when evaluating patients who have been displaced from climate-disparate regions.



Photo Credit: Li M, et al. *Molecules* 2023, 28, 3361.

CONT...CLIMATE CHANGE IN THE MEDICAL LITERATURE

by Jordan Bui, MS₃ and Markus Boos, MD, PhD

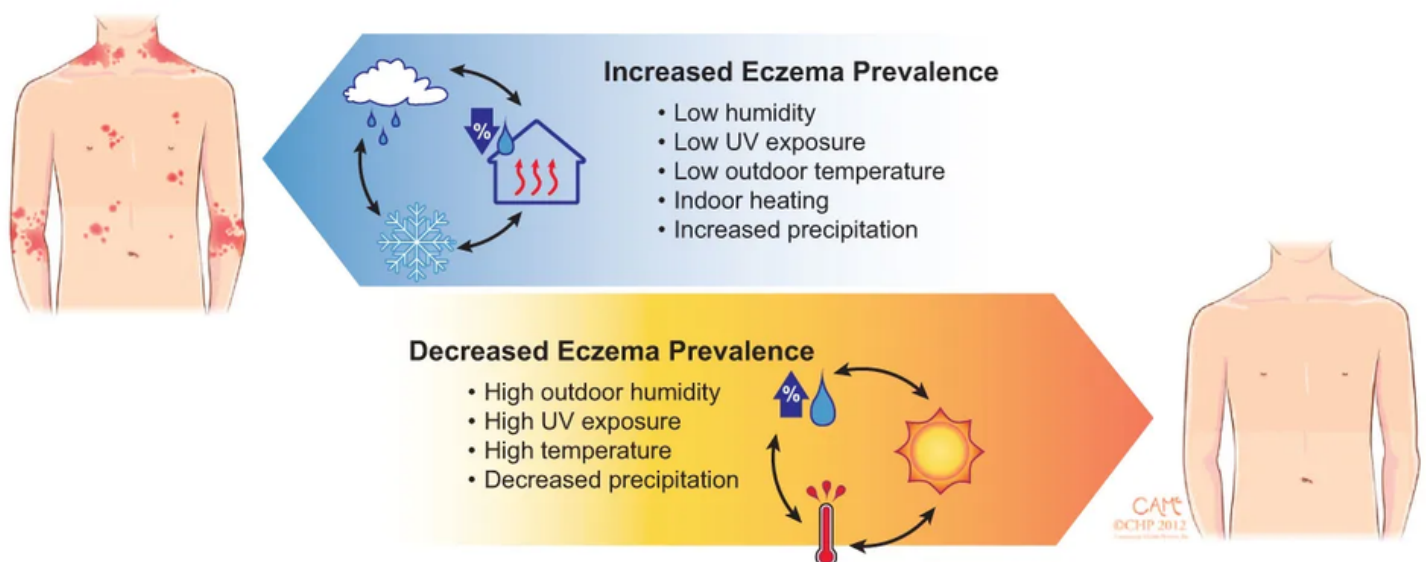
[The impact of climate change on atopic dermatitis and mental health comorbidities: a review of the literature and examination of intersectionality](#)

Kam S, Hwang BJ, Parker ER. The impact of climate change on atopic dermatitis and mental health comorbidities: a review of the literature and examination of intersectionality. *Int J Dermatol.* 2023;62(4):449-458. doi:10.1111/ijd.16557

Atopic dermatitis (AD) flares are susceptible to environmental triggers and climate change can impact these factors, exacerbating AD symptoms and mental health. Air pollution from burning fossil fuels creates particulate matter which has been implicated in AD exacerbation; long-term exposure is also associated with AD development. Airborne pollutants are thought to directly trigger allergic-type sensitization and generate reactive oxygen species which in turn leads to release of inflammatory cytokines. Air pollutants can also penetrate the blood brain barrier, triggering inflammation and causing oxidative stress within the brain. This results in an upregulation of stress hormones and dysregulation of neurotransmitters, contributing to the pathogenesis of diseases including Parkinson's disease and Alzheimer's disease. AD and psychiatric disorders have a bidirectional relationship that is likely

influenced by climate change, which independently exacerbates each of these conditions. AD at baseline is associated with multiple psychological comorbidities, including anxiety, depression, and ADHD. In children, air pollution and heat waves may diminish cognitive capacity while also influencing AD flares, reducing school productivity, and increasing absenteeism. This is relevant as more frequent, ever enlarging wildfire events secondary to heat waves and drought create particulate matter that triggers irritation and pruritus, inciting AD flares. Concomitantly, massive wildfires may cause significant psychological stress as a result of displacement, loss of property, loss of community and death. This stress, coupled with potential decreased access to appropriate healthcare, may also engender AD flares, creating a cyclical relationship between AD and psychiatric illness.

It is important for dermatologists to consider these changes when managing AD. Through patient-centered education, patient resilience to these climate factors can be improved by encouraging them to reference heat and air quality indices to minimize environmental exposures and prepare emergency kits that contain necessary medications and skin care products.



COP28 INAUGURAL HEALTH DAY AND CLIMATE-HEALTH MINISTERIAL: UNVEILING A GLOBAL COMMITMENT TO TACKLE CLIMATE-RELATED HEALTH CHALLENGES

by Sheng-Pei Wang, MD, MPH and Markus Boos, MD, PhD

The [COP28 United Nations Climate Conference](#), held in Dubai, from November 30 to December 12, 2023, was notable for its “global stocktake” that catalogued countries’ greenhouse gas emissions and also provided roadmaps for transition to renewable energy sources. In turn, it has been lauded as “the beginning of the end” of fossil fuels. Moreover, the conference marked a significant milestone with the introduction of the inaugural Health Day and climate-health ministerial. These events underscore the pressing need to integrate health concerns into the global climate change agenda, reflecting a pivotal moment in the efforts to address the intersection of climate and health.

During the COP28 Health Day, discussions centered around five key topics, each addressing critical aspects of climate-related health challenges. These topics included showcasing evidence based and clear impact pathways between climate change and human health, promoting “health arguments for climate action” and health co-benefits of mitigation, highlighting barriers and best practices for strengthening climate resilience of health systems, identifying and scaling adaptation measures to address the impacts of climate change on human health, and taking action at the nexus of health and relief, recovery and peace.

The COP28 United Arab Emirates (UAE) Declaration on Climate and Health stands out as a significant global commitment endorsed by 143 countries. This declaration emphasizes the improvement of health systems to anticipate and implement adaptations against climate-sensitive diseases and health risks. Furthermore, it promotes measures to reduce carbon emissions and waste in the health sector while encouraging a One Health approach with collaboration centered around the challenges posed by climate change on the health of humans, animals, and ecosystems.



Photo Credit: @COP28_UAE (COP28 UAE on X)

On the inaugural Health Day at COP28, over 40 million health professionals from around the globe joined the call to action by the World Health Organization (WHO) and civil society organizations. They emphasized the need to prioritize health in climate negotiations and called on governments to fulfill their commitments, including delivering on the Paris Agreement and accelerating the phasing out of fossil fuels, building climate-resilient, low-carbon health systems, and meeting promises of \$100 billion USD in annual climate financing. In addition, the Health Day emphasized the pressing need to address climate change, air quality, and biodiversity loss to mitigate the growing health risks associated with these challenges.

The COP28 Presidency, WHO, the UAE Ministry of Health and Prevention, and a group of champion countries also hosted the first-ever climate-health ministerial.

CONT...COP28 INAUGURAL HEALTH DAY AND CLIMATE-HEALTH MINISTERIAL: UNVEILING A GLOBAL COMMITMENT TO TACKLE CLIMATE-RELATED HEALTH CHALLENGES

by *Sheng-Pei Wang, MD, MPH and Markus Boos, MD, PhD*



Photo Credit: UN Climate Change

Ministers of health, environment, finance and other related sectors set out a roadmap and opportunities for action to address the rapidly growing burden of climate change on healthcare systems and capture the vast socio-economic benefits from better health and well-being through climate action.

Several key initiatives were announced at COP28, including a collaborative effort by the Green Climate Fund (GCF), the United Nations Development Program (UNDP), and the WHO to support 14 countries in Africa, Asia, and Southeastern Europe in both mitigating and responding to the health impacts of climate change. Additionally, the Tropical Belt Initiative, introduced by the President of Sri Lanka, aims to address global warming challenges within the tropical belt, encompassing 134 countries and territories, covering approximately 40% of the planet's surface area and housing around 40% of the world's population. The Tropical Belt plays a crucial role in shielding the globe from potential weather instabilities; however, human activity may disrupt its thermal equilibrium, resulting in adverse impacts that affect the environment in temperate countries. Financial commitments made at COP28 include the launch of the Climate and Health Initiative by the

Asian Development Bank (an initial allocation of \$7 million), along with contributions from the Bill and Melinda Gates Foundation (\$57.95 million), Wellcome Trust (£100 million), Rockefeller Foundation (\$100 million), and the UK government (£18 million).

In conclusion, COP28 demonstrated a heightened focus on the intersection of climate and health, with the inaugural Health Day and climate-health ministerial marking substantial progress. The initiatives and commitments announced reflect a global commitment to addressing climate-related health impacts and fostering collaboration to build resilient and sustainable health systems in the face of climate change.

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3. COP28 UAE Declaration on Climate and Health <https://www.cop28.com/en/cop28-uae-declaration-on-climate-and-health>
4. <https://www.who.int/news-room/events/detail/2023/12/03/default-calendar/cop28-health-day>
5. <https://www.who.int/srilanka/news/detail/13-12-2023-focus-on-health-at-cop>
6. <https://www.reuters.com/world/cop28-delegates-urge-greater-action-climate-linked-health-risks-2023-12-03/>
7. <https://www.who.int/news-room/events/detail/2023/12/03/default-calendar/cop28-health-day>



Photo Credit: UN Climate Change

CLIMATE-SENSITIVE DISEASE: HEALTH IMPACTS OF EL NIÑO IN THE CONTEXT OF CLIMATE CHANGE

by *Eva Rawlings Parker, MD, DTMH* and *Joshua Kotlyar, MS₃*

As climate change continues to impact the planet, its effects must be considered in tandem with large-scale, cyclical variations in Earth's climatic patterns. One such phenomenon is El Niño, which results from warming of surface waters in the eastern equatorial Pacific Ocean and arrived June 8, 2023, and is expected to last until the spring of 2024 (1). El Niño (warm phase) and La Niña (cool phase) are opposing patterns that together represent a recurring climatic cycle known as the El Niño-Southern Oscillation (ENSO), which is considered to be the most important natural determinant of year-to-year variations in seasonal climate patterns globally (1,2). The resultant effects on major weather phenomenon also translate to key impacts on extreme weather events, patterns of infectious diseases, and our food supply, resulting in notable implications for human health that are further amplified in the context of climate change.

The warm and cool phases of ENSO shift irregularly every 2-7 years with each cycle bringing predictable alterations in sea surface temperature, wind patterns, and rainfall that subsequently affect weather patterns globally (1, 3). In the neutral phase of this pattern, equatorial trade winds blow westerly in the Pacific Ocean, pushing large volumes of warm water from South America toward Asia and Africa, creating upwellings of deep, cold, nutrient-rich water in the Eastern Pacific (1). In years when the trade winds weaken, the global enters El Niño where by warm water is instead pushed toward the eastern Pacific, increasing sea surface temperatures. Consequently, upwellings are reduced, and the Pacific jet stream shifts southward (3). El Niño's effects lead to wetter winters across the southwestern U.S. and both cooler and wetter weather in the southeastern U.S., while warmer than average conditions prevail in the Pacific Northwest and Western Canada (1,3). Globally, during El Niño, greater precipitation occurs along the western coast of South America and in East Africa. Conversely, Australia, Southern Asia, southern Africa, and northeast Brazil become warmer and/or dryer (1,3). As a consequence of these accentuated climatic patterns, extreme weather events such as storms, flooding, heat, and drought may increase during El Niño cycles with the specific events observed regionally dependent upon the differential geographic impacts of ENSO. Moreover, climate change is

implicated in increasing the frequency, intensity, and duration of such events and enhances not only the variability, unpredictability, and severity of El Niño-associated fluctuations in extreme weather, but also acts synergistically with climate change to amplify climate-related health impacts (2).

Of significant consequence to human health is further amplification of climate-sensitive infectious diseases by ENSO. In particular, the temperature and precipitation extremes caused by El Niño alter the climatic variables that serve as key determinants for the range, seasonality, and viability of pathogens and the ecology and population dynamics of their reservoirs, hosts, and vectors (2,4). For example, vector-borne diseases such as dengue, malaria, and leishmaniasis are also noted to rise, while an increase in tick-transmitted rickettsial diseases is observed in the western U.S. (2,4,5). In addition, the 2015-2016 El Niño cycle contributed to a significant spike in vector-borne and zoonotically transmitted tularemia cases in the U.S. due to proliferation of insect vectors as well as alteration in host ecology among hares.⁴ Similarly, increased precipitation in the southwestern U.S. during El Niño oscillations are associated with an increased incidence of both Hantavirus pulmonary syndrome and plague due to expansion of rodent reservoirs for both infections as well as proliferation of flea vectors that transmit plague. As a result, a reported 28% rise in plague cases in Colorado and New Mexico during El Niño years is observed (4,6).

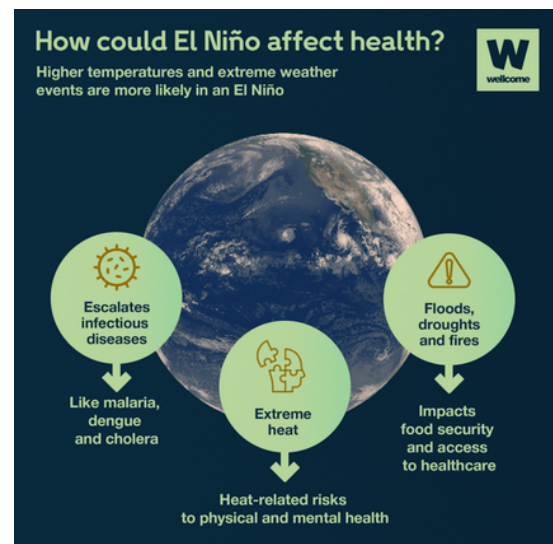


Photo Credit: Wellcome2

CONT...CLIMATE-SENSITIVE DISEASE: HEALTH IMPACTS OF EL NIÑO IN THE CONTEXT OF CLIMATE CHANGE

by Eva Rawlings Parker, MD, DTMH and Joshua Kotlyar, MS³

The incidence of the zoonotic infection leptospirosis also increases in regions with heavier El Niño-associated rainfall and flooding (7), whereas *Vibrio* skin and soft tissue infections correlate with El Niño-related increases in sea surface temperatures (8).

With respect to cutaneous disease, a rise in dermatophyte infections, tinea versicolor, verrucae, folliculitis, actinic keratoses, miliaria, and rosacea are associated with El Niño (7, 9). In addition, El Niño creates favorable conditions for the proliferation of *Paederus* beetles globally, and the incidence of irritant contact dermatitis caused by these beetles increases concomitantly during these periods (7). Conversely, the incidence of psoriasis, scabies, and papular urticaria, may decrease during ENSO cycles (7).

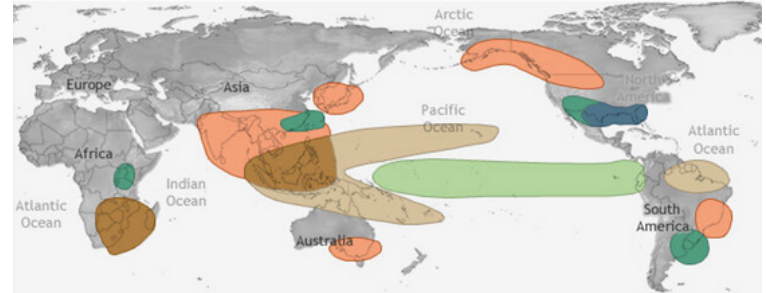
In the context of unprecedented climate change, superimposed El Niño events also increase the number of people impacted by natural disasters and extreme weather events, including storms, floods, droughts, and heat. Accordingly, greater rates of extreme weather-related cutaneous disease, physical injuries, mental health disease, and displacement are observed (10). Temperature and precipitation shifts during El Niño events may also affect food security by altering the quality and quantity of staple crops — such as wheat, maize, and soy— and increasing the risk of full-scale crop failures (10).

Additionally, fewer upwellings and warmer sea surface temperatures alter marine microhabitats and thus the distribution of fish. In particular, an increase in migration of commercially important marine species (i.e. tuna) from locations where they are traditionally fished as well as increased mortality and growth restriction among Pacific salmon populations are observed during El Niño (11).

The cyclical nature of ENSO affords the opportunity for enhanced anticipation of weather extremes and improved disaster preparedness including

EL NIÑO CLIMATE IMPACTS

December-February



June-August

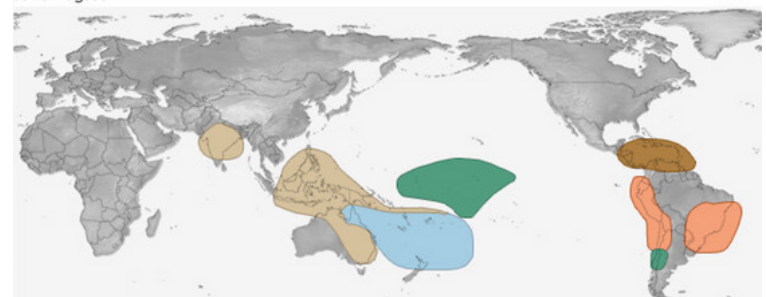


Photo Credit: climate.gov/enso3

implementation of early warning systems, reinforced infrastructure, public health education programs, targeted risk communication, healthcare readiness and broader clinician awareness, thus allowing greater adaptation and resiliency to El Niño events in the setting of climate change extremes (10,12). Considering that climate change serves as a threat multiplier for health and health systems and El Niño further accentuates these impacts, ongoing disease surveillance is needed to further characterize the interlinkages between climate change, ENSO, and resultant health effects.

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FIFTH NATIONAL CLIMATE ASSESSMENT: A SUMMARY OF IMPACTS ON HEALTH, EQUITY, AND HEALTHCARE

by *Ning McKenzie, MS3* and *Eva Rawlings Parker, MD, DTMH*

Under the U.S. Global Change Research Program, the [Fifth National Climate Assessment](#) (NCA5) was released in November 2023, detailing the U.S. federal government's assessment of climate change impacts, risks, and responses. Importantly, the impact of climate change on health, social determinants, and equity were among 20 national topics examined in this comprehensive assessment with the report concluding, "Climate change is harming physical, mental, spiritual, and community health through the increasing frequency and intensity of extreme events, higher incidences of infectious and vector-borne diseases, and declines in food and water security. These impacts worsen social inequities."

Rapid and Unprecedented Changes

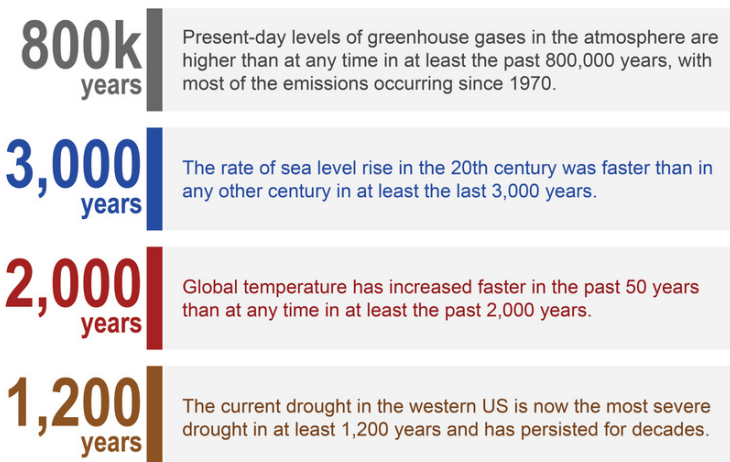


Photo Credit: NCA5 GlobalChange.gov

NCA5 delivers three key messages: (1) Climate change is harming human health; (2) Systemic racism and discrimination exacerbate climate impacts on human health; and (3) Timely, effective, and culturally appropriate adaptation and mitigation actions protect human health. Alarming, the assessment found that climate-related disasters — such as heat waves, wildfires, hurricanes, storms, and droughts — occur every 3 weeks on average in the U.S. Compounding and cascading hazards are increasingly resulting from the occurrence of multiple climate drivers and events along with their associated exacerbation of societal and ecosystem impacts.

From a health standpoint, acute and chronic impacts from heat, pollution, extreme weather events, and diminished food and water quality are of primary concern. In particular, climate-related alteration in the geographic distribution, abundance, and seasonality of pathogens and their vectors is expected to expand the incidence of many infectious diseases in the U.S. Moreover, the assessment also identified that climate-related events interacted with COVID-19 throughout the pandemic, worsening COVID-19 exposure, transmission, disease severity, and disparities with greater levels of particulate air pollution additionally associated with increased COVID-19 morbidity and mortality.

Based on the NCA5 report, populations most at risk for disproportionate health outcomes from climate-related impacts in the U.S. include children, pregnant women, elderly adults, those with disabilities and mental health disease, outdoor workers, low-wealth communities, communities of color, Indigenous Peoples, and sexual and gender minorities. Notably, the lasting impacts of historic practices and policies such as colonization, forced relocation of Indigenous Peoples, redlining, and dispossession of land and wealth have deeply harmed BIPOC communities in the U.S., such that they are under-resourced, overburdened, and experience outsized exposure to heat, pollution, water and food insecurity, and climate-related extreme events. These climate hazards diminish health, disrupt access to medical care, and compound social disparities. Climate change also creates intergenerational inequities such that those born now will experience many more climate hazards than someone born in 1965. Importantly, these broad health impacts can lead to negative mental health outcomes that amplify existing stressors for these groups and, in general, combine to worsen community health and exacerbate existing inequities.

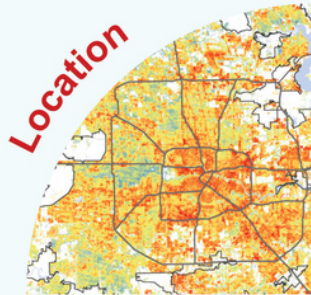
CONT...FIFTH NATIONAL CLIMATE ASSESSMENT: A SUMMARY OF IMPACTS ON HEALTH, EQUITY, AND HEALTHCARE

by Ning McKenzie, MS3 and Eva Rawlings Parker, MD, DTMH

Heat and Health Equity



- Historically redlined communities (BIPOC and low-wealth communities) are often hotter than other neighborhoods.
- Access to cooling centers is more limited in some areas.



Social and Racial Factors



- Certain populations are more vulnerable to extreme heat and have less access to healthcare.
- Socially isolated individuals may have less access to cooling centers.



- Energy costs and the costs of repairs limit the ability to afford air-conditioning.
- Low-wealth residents often live in homes that provide less protection against extreme heat.



Economics



Compound Risks



- COVID-19 protocols reduced the accessibility and effectiveness of cooling centers.
- Disadvantaged populations are more at risk for heat-related illnesses during power outages.

Photo Credit: NCA5 GlobalChange.gov

Fortunately, climate action has increased across regions and sectors of the U.S. Because climate events stress healthcare systems and impede access to medical care, NCA5 found, with a high degree of confidence, that decarbonization of care delivery and development of climate-resilient health systems will positively impact health and reduce inequities. The report emphasizes that strategies to achieve mitigation, adaptation, and resilience in healthcare must focus on equity through a just transition, addressing mental health needs, linking community health resources, reducing emissions, risk

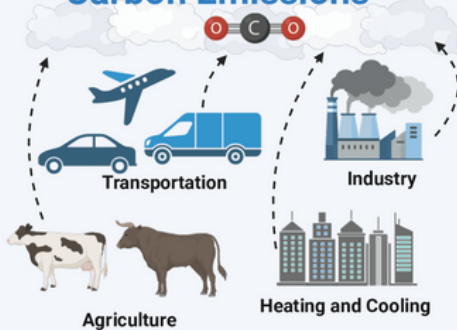
management for both health systems and vulnerable populations, investment in infrastructure, increasing active transport, ensuring access to quality food, and improving water and sanitation.

The NCA5 report underscores the critical intersection of health and equity in the context of climate change as well as the need for comprehensive and inclusive approaches to address these issues. The detailed assessment is an optimistic sign of government investment and a larger focus on environmental justice and climate action to protect health.

Confused by all of the sustainability buzzwords that get kicked around? Here what they actually mean. *Part 1*

By: Madisen A. Swallow MS, Annika Belzer MD MHS, and Eva Rawlings Parker MD, DTMH, FAAD Created using Biorender.com

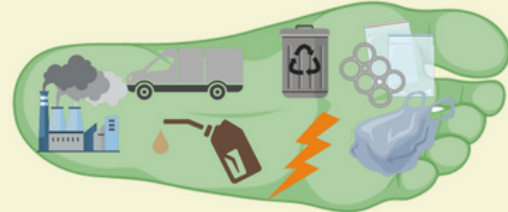
Carbon Emissions



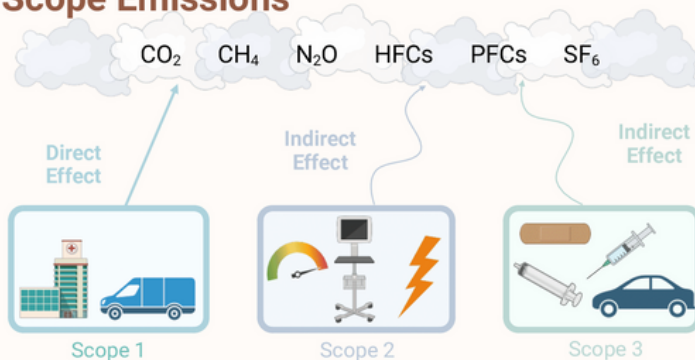
Human activity, in particular burning fossil fuels, is responsible for the rapid increase in CO₂ and other heat-trapping gases, resulting in global warming. The primary sources of greenhouse gas emissions in the U.S. include transportation (28%), industry (30%), commercial and residential sector (30%) due to fossil fuel combustion for heating, cooling, refrigeration and electricity, and agriculture (10%). In the U.S., 94% of the fuel used for transportation is petroleum-based and 60% of electricity produced is derived from fossil fuel combustion.

Carbon footprint is a measure of the amount of CO₂ and other greenhouse gases emitted directly and indirectly due to the consumption of fossil fuels by a particular person, group, organization, or sector. A product's carbon footprint includes the emissions for its entire life cycle from production along the supply chain to its final consumption and disposal.

Carbon Footprint



Scope Emissions



Scope 1: Emissions produced and controlled by a facility.
 Scope 2: Emissions from purchased electricity and utilities used by a facility.
 Scope 3: Emissions from supply chain including manufacturing and shipping pharmaceuticals and supplies. This also includes emissions from patient-related travel to/from a facility. Scope 3 emissions account for 80% of healthcare greenhouse gases emissions.

The circular economy is a model of resource production and consumption focused on sharing, leasing, reusing, repairing, refurbishing and recycling existing materials and products to extend the life cycle of products as long as possible. By decoupling economic activity from the consumption of finite resources, which characterizes linear models, circularity reduces biodiversity loss, waste, greenhouse gas emissions, and pollution.



Linear vs. Circular Economy

Net Zero



Net-zero is a standard set by the Science Based Targets initiative and is defined as near-term alignment with the 1.5°C warming scenario and 90% reduction in scope 1-3 emissions by 2050 without the use of offsets. The final 10% of emissions must be balanced by an equivalent amount in permanent carbon removal and storage.

Confused by all of the sustainability buzzwords that get kicked around? Here's what they actually mean. *Part 2*

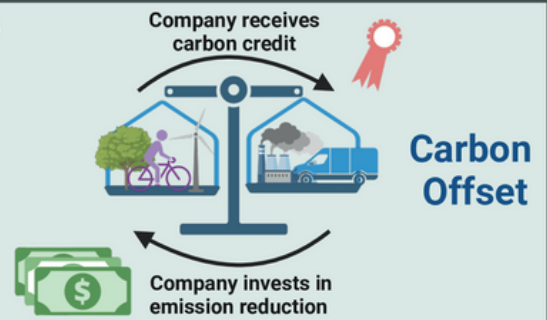
By: Madisen A. Swallow MS, Annika Belzer MD MHS, and Eva Rawlings Parker MD, DTMH, FAAD. Created using Biorender.com

Carbon Neutral

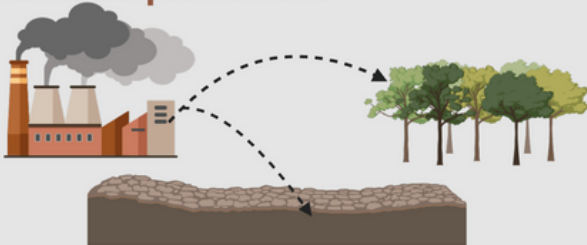


Carbon neutrality means compensating for CO₂ emissions released by the use of offsets. However, this does not reduce the actual emissions generated by a person, process, or organization.

Carbon offsets compensate for one's emissions by reducing the equivalent amount of CO₂ in the atmosphere via removal or sequestration such as land restoration efforts, tree planting, or investment in renewable energy projects. Consumers or companies may also indirectly offset their emissions by purchasing carbon credits from certified programs which invest the money in CO₂ reducing activities. However, many carbon offset programs are under increasing scrutiny for greenwashing due to failure to capture carbon as advertised.

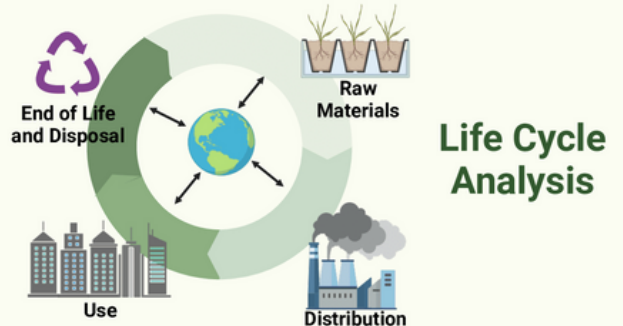


Carbon Sequestration



Carbon sequestration is the capture and storage of CO₂ from industrial facilities, power plants or directly from the atmosphere. Biologic sequestration leverages the natural carbon cycle by storing CO₂ in woody plants, soil, or wetland and grassland ecosystems; whereas geologic carbon sequestration compresses and stores CO₂ deep underground in porous rock formations.

Life cycle analysis is a systematic analysis to quantify the environmental impact and carbon emissions of a product, process, or service over the entire course its life. For products, this includes a cradle-to-grave assessment starting at raw material extraction, through manufacturing, distribution and use, and ending with disposal.



Greenwashing



Greenwashing is a term coined by environmentalist Jay Westerveld in 1986 referring to misleading advertising or deceptive marketing programs used to persuade the public or investors that a company's products, operations, and policies are environmentally friendly.

ERG HAPPENINGS

LEARN ABOUT CLIMATE CHANGE AND DERMATOLOGY AT THESE UPCOMING MEETINGS

GLODERM INTERNATIONAL ALLIANCE FOR GLOBAL HEALTH DERMATOLOGY 2024 PRE-AAD SCIENTIFIC MEETING

Global skin health in vulnerable populations: The impact of neglected diseases and climate change

Thursday, March 7, 2024 | 9:00 AM - 12:30 PM PT

Marriott Marquis San Diego Marina with Virtual Option

Program: <https://ilds.typeform.com/SanDiego2024?typeform-source=l.instagram.com>



AMERICAN ACADEMY OF DERMATOLOGY ANNUAL MEETING

Climate Change & Environmental Issues ERG Annual Hybrid Meeting

Saturday, March 9, 2024 | 12:00 - 2:00 PM Pacific Time

In Person: Grand Ballroom 13 | Marriott Marquis San Diego Marina

Virtual: <https://penmedicine.zoom.us/j/96010153871?pwd=bnBnQlZpQnpFUUxtaHhlnNhZbi9wQT09>

Program: Updates from the ERG and Scientific Abstract Presentations

- *BSDS Dermatological Surgery Sustainability Guidance* (virtual) - Fatima Ali
- *Regulated Medical Waste Reduction In Dermatologic Settings* (in person) - Genevieve Silva, BS
- *Environmental Mitigation and Clinical Utility of a Direct-to-Patient Mobile Teledermoscopy Program at the San Francisco VHA* (virtual) - Gunnar Mattson, BS, MPH
- *Impact of climate change on atopic dermatitis: A review by the International Eczema Council* (in person) - Sheng-Pei Wang, MD, PhD

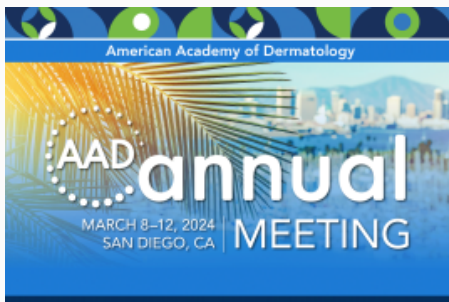


Scientific Forum F071 - Skin-environmental Interface: Dermatologic Challenges of Our Changing Climate and Environment

Saturday, March 9, 2024 | 3:30 PM - 5:30 PM PT

San Diego Convention Center | Room 5B

Program: <https://am2024.aad.org/sessions/16951>



SOCIETY OF INVESTIGATIVE DERMATOLOGY 2024 ANNUAL MEETING

Wednesday, May 15, 2024 | 1:00-5:00 PM | Dallas, TX

Program: <https://www.sidannualmeeting.org/schedule/>

1:00-2:00 PM - Climate Change and Dermatology

2:00-3:00 PM - Climate Change & Skin Aging

3:00-4:00 PM - Climate Change: Clinical Perspective Unmet Needs

4:00-5:00 PM - Climate Change & Infectious Diseases





GET INVOLVED & STAY INFORMED

We have an ERG website: www.climatedermatology.com which includes archived editions of our Newsletter. Stay tuned as we build out more content on this site.

Do you have an idea for the Newsletter or want to write an article? Great! We welcome your contributions. Please submit your idea [here](#).

We also have multiple opportunities for medical students, residents, fellows, and practicing dermatologists to engage in meaningful work with our ERG's Newsletter and Committees including Communication & Education, Outreach & Policy, and Innovation & Initiatives. Sign up [here](#) or contact us at climatedermatology@gmail.com if you would like to volunteer or join our ERG's mailing list.



Drs. Eva Parker and Mary Maloney at the Medical Society Consortium on Climate and Health 2024 Annual Meeting



ERG Leadership

Misha Rosenbach, MD – ERG Co-Chair
 Eva Rawlings Parker, MD, DTMH – ERG Co-Chair
 Tim McCalmont, MD – ERG Secretary/Treasurer
 Mary Maloney, MD – AAD Representative to MSCCH
 Mary Williams, MD – Immediate-Past ERG Co-Chair
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