

WINTER 2022

CLIMATE QUARTERLY

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



ERG HAPPENINGS: AAD 2022

Mark your calendars and don't miss these climate-related events at the **2022 AAD Annual Meeting** in Boston, **March 25-29!**

"Should dermatologists and their societies prioritize engaging in the political discussion of climate change and advocate for socio-political solutions?" featuring **Dr. Misha Rosenbach** at **The 2022 Debates: Controversies in Dermatology (S017)** on Friday, **March 25, 2022 from 3-3:30pm**. The event details can be found [here](#).

Climate Change and Environmental Affairs ERG-wide Annual Meeting on Saturday, **March 26, 2022 from 4:30-6:30pm** in the Burroughs Room, Westin Boston Seaport. For those not attending the AAD meeting in person, you can join by Zoom: <https://us02web.zoom.us/j/88036744880?pwd=TIUxcU1Rc2RwMjVJWjByN2FJYTg4QT09>

Skin-Environmental Interface: Dermatologic Challenges of Our Changing Climate and Environment (F103) on Monday, **March 28, 2022 from 9-11am**. The forum is co-directed by **Dr. Misha Rosenbach** and **Dr. Eva Parker**. The event details can be found [here](#).

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CLIMATE CHANGE IN THE LITERATURE & NEWS

by Erica Lin, MS³ and Markus Boos, MD, PhD

Spatial variations in Leishmaniasis: A biogeographic approach to mapping the distribution of *Leishmania* species

- Jagadesh S, Combe M, Ginouvès M, Simon S, Prévot G, Couppié P, Nacher M, Gozlan RE. Spatial variations in Leishmaniasis: A biogeographic approach to mapping the distribution of *Leishmania* species. *One Health*. 2021 Aug 12;13:100307. doi: 10.1016/j.onehlt.2021.100307.

This study evaluated the distribution of *Leishmania* in French Guiana through a biogeographic approach with environmental predictors. Leishmaniasis has previously been categorized by the WHO as a climate-sensitive disease since alterations in rainfall, humidity and temperature can modify the spatial distribution and survival of its vectors and reservoir hosts. The study evaluated 470 patients seen at Cayenne General Hospital and associated health centers between January 1994-January 2015. It found unique distribution patterns and clusters among the various *Leishmania* species that were affected by climatic covariates, including temperature and rainfall. It also established associations between an increased expansion of *L. braziliensis* to more densely populated regions with climate factors as well as tree cover loss. Tree cover loss was additionally found to affect the distribution of the two most common *Leishmania* species in the region, *L. guyanensis* and *L. braziliensis*. This study highlighted the importance of accounting for the impact of climate change on the distribution of vector-borne diseases.

Surveying the attitudes of dermatologists regarding climate change

- Mieczkowska K, Stringer T, Barbieri JS, Williams M, Rosenbach M. Surveying the attitudes of dermatologists regarding climate change. *Br J Dermatol*. 2021 Nov 17. doi: 10.1111/bjd.20900. Epub ahead of print.

This survey study evaluated the attitudes of dermatologists on climate change. The authors analyzed 148 responses from members of the American Society of Dermatologic Surgery, Medical Dermatology Society, the American Society of Dermatopathology, the Society of Pediatric Dermatology, the Association of Professors of Dermatology, the Society for Investigative Dermatology, and the American Academy of Dermatology's Climate Change Expert Resource Group. They found that while 99.3% of respondents affirmed the existence of current global climate change, 93.9% believed that it was anthropogenic, and 76.9% endorsed a belief that climate change has started to affect their patients, only 37.2% were comfortable discussing anthropogenic climate change with their patients. Notably, 31.1% reported that they would want more knowledge on the subject before having such discussions, and 81.8% wanted to see more related content in dermatologic publications. The findings suggest a "practice gap" among dermatologists and raise the importance of awareness of this issue through the provision of resources and actionable items to the dermatology community by journals and organizations.

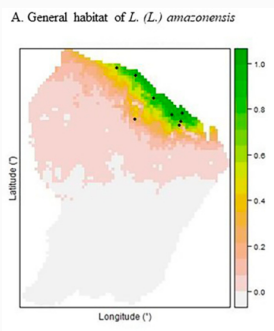


Fig 2. Distribution map of *L. amazonensis* in French Guiana, South America. Panel A – demonstrating the general habitat suitability of *L. (L.) amazonensis*, with black dots indicating *L. (L.) amazonensis* occurrences



POLICY UPDATE: TRACKING PRESIDENT BIDEN'S ENVIRONMENTAL POLICY

by Annika Belzer, MS4 and Caroline A. Nelson, MD

During his campaign, President Joe Biden outlined a plan to “secure environmental justice and equitable economic opportunity.” Dermatologists, even those with an interest in climate change and policy, are busy. In this column, our goal is to summarize the most impactful environmental policy actions taken by the United States federal government during the last quarter. While content curation is unavoidable, we will refrain from editorializing.

In the last installment of this column, we examined President Biden’s Build Back Better agenda, as well as sunscreen regulations, the Line 3 pipeline, the Justice40 initiative, and flood insurance rates. Last month, the secretary general of the United Nations deemed the Intergovernmental Panel on Climate Change (IPCC) Report a “damning indictment of failed climate leadership.” With Build Back Better stalled in the legislature, how are the executive and judicial branches promoting (or hindering) progress?

1. Offshore Outroar: President Biden pledged to ban drilling on federal land during his presidential campaign. During the United Nations Climate Change Conference, President Biden stated, “none of us can escape the worse that’s yet to come if we fail to seize this moment.” Four days later, the Interior Department moved forward with the lease sale of 80 million acres of land off of the Gulf of Mexico, placing the Biden administration on track to issue more drilling permits than the Trump Administration and drawing fire from climate activists. Biden officials stated that the administration had no choice regarding the lease sale after Judge Doughty of Louisiana ruled that only Congress has the power to suspend such leases. Two months later, however, Judge Contreras of D.C. cancelled all leases, citing that the Interior Department “did not sufficiently take climate change into account.” The Interior Department must now complete an analysis of greenhouse gas emissions that would result from the lease sale prior to deciding whether to repeat the auction.

2. Restricting Russia: Following the Russian invasion of Ukraine in late February, President Biden placed sanctions on Nord Stream 2 AG, the company that owns the Nord Stream 2 pipeline that runs from Russia to Germany. This action targets Gazprom, an energy corporation owned by the Russian state. Germany also took action against Russia by freezing the Nord Stream 2 pipeline project until further notice. The Biden Administration is now looking into blocking all imports of gas from Russia, either with or without the participation of allies within the European Union.

3. Newsom’s Newfound Freedom: The Clean Air Act of 1970 authorized California to create and enforce its own regulations regarding automobile emissions. This placed California as a leader in automobile emissions standards. The Trump administration revoked California’s autonomy in this realm, citing safety and cost. The Biden administration is now expected to reverse this decision in the upcoming weeks, allowing Governor Newsom to again set regulations on automobile emissions that are more stringent than federal standards. This will build upon California’s ongoing efforts to decrease greenhouse gas emissions, which include a 2020 Executive Order that all cars sold in California be zero-emission vehicles by 2035.

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CARBON OFFSETS: A STRATEGY TO MITIGATE THE CARBON FOOTPRINT OF A CONFERENCE

by Annika Belzer, MS4 and Caroline A. Nelson, MD

The most recent International Governmental Panel on Climate Change (IPCC) Report stated that there is “no inhabited region escaping dire impacts from rising temperatures and increasingly extreme weather.” The detrimental effects of climate change on health have been well-documented, with the greatest burden falling upon vulnerable populations. As the climate crisis ensues, healthcare professionals must consider our contribution to greenhouse gas (GHG) emissions. Globally, the healthcare sector is responsible for 4.4% of GHG emissions. Within the United States, this is nearly doubled to 8.5%. As healthcare providers, can we truly live up to our oath to do no harm without considering our role in perpetuating the climate crisis?

Medical conferences are a significant source of GHG emissions within healthcare. An analysis of the environmental impact of the 2006 American Thoracic Society International Conference reported CO₂ equivalent emissions of approximately 11,000 tons [4]. This is comparable to annual GHG emissions from 550 individuals in the US, 11,000 individuals in India, or 110,000 individuals in Chad [4]. Travel is the most significant source of GHG emissions resulting from an international conference. An in-depth analysis of the carbon footprint due to travel to the American Society of Tropical Medicine and Hygiene’s Annual Conference revealed CO₂ equivalent emissions of 8,646 metric tons, which is on par with the weekly carbon footprint of 9,366 US households [5].

The significant carbon footprint of a medical conference is an issue that requires thoughtful and expedient action. The most effective solution is transitioning to a virtual conference format. However, this may adversely impact social networking and professional development. The purchase of carbon offsets is an alternative strategy to decrease the carbon footprint resulting from travel. This should be in conjunction with actions to reduce carbon emissions during the event.

It is important to note that carbon offsets are not without controversy. They are viewed by some as justification to avoid decarbonizing and continue emitting GHG. However, offsets may be appropriate in situations such as air travel where there is not currently a reasonable alternative. Another issue with carbon offsets surrounds the quality of funded projects that are meant to reduce GHG emissions; this has been met with the development of certification programs such as Green-e.

For the first time this year, a dermatology society is offering attendees of their annual meeting the opportunity to offset their carbon footprint due to travel. To our knowledge, this is the first such effort in the field of dermatology. The Medical Dermatology Society (MDS) has partnered with TerraPass, a carbon offset provider that undergoes annual Green-e Certification. This program is open to all individuals, including non-MDS members. A \$10 contribution will offset 1,000 pounds of CO₂, which is equivalent to emissions from a medium-distance round trip flight. If you are interested in offsetting GHG emissions resulting from travel to Boston, please scan the QR code below. This will direct you to the Terrapass website where carbon offsets can be purchased.

Although the role of carbon offsets in the pursuit of green dermatology conferences remains to be seen, this may be a step in the right direction.



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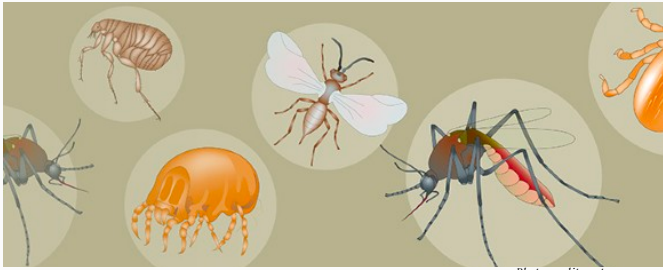


Photo credit: nature.com

CLIMATE SENSITIVE DISEASE: VECTOR-BORNE DISEASES

by Betty Nguyen, MS⁴, Narges Maskan, MS³, and Eva R. Parker, MD

Human activity has altered the course of Earth's climate, enabling transmission of vector-borne diseases (VBDs) to increasingly wider geographical areas. VBDs – infections transmitted by arthropods such as mosquitos, ticks, and flies – are extremely climate-sensitive and predicted to dramatically rise in the coming decades, posing a growing threat to global health.

As temperatures rise globally, VBDs including Lyme disease and dengue fever are increasingly reported outside of their typical geographic boundaries. Due to rising temperatures, Lyme disease, harbored by *Ixodes* ticks, has expanded north- and westward from its original endemicity in the Northeastern US and is now routinely reported in Canada [1]. In Europe, the *Ixodes ricinus* tick, known to harbor transmissible infections including Lyme disease, rickettsia, babesiosis, ehrlichiosis, and anaplasmosis, is found at elevations 1,300 ft higher than previously reported in the 1950s as a direct result of global warming [2]. Due to the increased length of warmer seasons, mosquitos breed for longer and thus proliferate in greater numbers during a season. Consequently, dengue fever, a mosquito-borne viral illness, is on the rise in Asia, sub-Saharan Africa, Europe, Central and South America, the Caribbean, and now the Southeastern US [3].

Climate-driven arthropod expansion into broader geographical regions is due to increased arthropod feeding, survival, and reproduction that occur at warmer temperatures as well as enhanced breeding conditions after periods of flooding [2, 4]. Pathogen reproduction within its host vector is also expected to increase under these conditions [5]. With increases in global temperatures, arthropods will continue to expand in population numbers and geographical range, making VBD containment an increasing challenge in temperate zones currently unaccustomed to the need for aggressive vector management strategies.

Importantly, the incidence of tick-borne illnesses, dengue fever, leishmaniasis, Chagas disease, and malaria are expected to dramatically rise in N. America over the course of this century as a result of climate change. Moreover, extreme weather events (severe storms, flooding, drought, heat waves) and rising sea level are key climate impacts that drive population displacement globally, and this trend is expected to continue over the coming decades. Approximately 22.5 to 24 million people are displaced annually due to extreme weather disasters, but the World Bank estimates that these numbers could increase to >140 million by 2050 with large-scale migration predicted to increase the frequency and severity of VBDs globally [5,6].

Various methods may be implemented to curb the spread of VBDs. Technologies developed to predict outbreaks, including mobile health applications that enable real-time monitoring of disease outbreaks and surveillance systems that utilize satellite imagery which is coupled with climate, environmental, and anthropogenic data to predict spikes in transmission, are increasingly deployed to mitigate VBDs [5]. Investment in research and technology can enable improved adaptation, mitigation, and resiliency to the growing threat of VBDs. However, while you may not intuitively connect your carbon footprint here at home with VBDs, reduction of greenhouse gas emissions will have the largest impact indefinitely on mitigating this threat. In 2019, transportation and electricity production were the largest source of greenhouse gas emissions in the U.S., accounting for 29% and 25% of all emissions, respectively [7]. As a profession, we can reduce emissions by encouraging our medical centers and municipalities to invest in clean energy sources and public transportation, greening our practices through free toolkits such as MyGreenDoctor, engaging in telehealth services to deliver patient care, and continuing to participate in professional activities virtually. Additionally, we can and should counsel our patients on the increasing health risks that biting insects pose and advise use of insect repellants and protective clothing when outdoors.

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Spotlight on: Medical Student and Resident Efforts in Dermatology



CREATING A CLIMATE CHANGE CURRICULUM IN MEDICAL SCHOOLS AND RESIDENCY TRAINING PROGRAMS

by Divya Sharma, MS4 and Eva Parker, MD

Understanding the unique effects of climate change on dermatologic health is imperative for all future dermatologists. However, many medical schools and residency programs do not offer a formal curriculum focused on climate change. While the importance of a climate-health curriculum has been emphasized in the medical literature and by professional societies [1-4], obstacles to practically implementing such programs persist. For instance, some medical schools or residency programs may not have an expert in climate change available or may not have the resources to host one. Additionally, the task of creating a curriculum focused on climate change and its health effects requires significant time and resources. Herein, we wish to shine a light on ERG members including medical students, residents, and an attending dermatologist who are working to overcome these hurdles to increase access to dermatology-specific climate change educational programming such that it may be more readily incorporated as an integral part of both medical school and residency curricula.

As part of a greater initiative by physicians from Massachusetts General Hospital, Brigham and Women's Hospital, University of California San Francisco, and the Global Consortium on Climate and Health Education (GCCHE), an open-source, peer-reviewed climate and health curriculum is currently being created titled Climate Resources for Health Education (CRHE). The CRHE collaborative is working to create a variety of resources including learning objectives/medical education competencies, slide decks, and problem-based learning lesson plans with an estimated publishing date later this year.

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If you are interested in contributing to the CRHE initiative, please access the following link to learn more about how you can help! [Climate Resources for Health Education Sign-up.](#)

You can also learn more about CRHE by visiting [Climate Resources for Health Education Initiative | Columbia Public Health.](#)

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We have multiple opportunities to roll up your sleeves and engage in meaningful work with our ERG's Committees including Communication & Education, Outreach & Policy, and Innovations & Initiatives. Please contact Eva Parker (eva.r.parker@vumc.org) if you would like to volunteer.

Become an Advocate Member of the Medical Society Consortium on Climate & Health. Click [here](#) to sign up and learn about numerous opportunities for climate advocacy and action.

Please email Sarah Coates (sarah.coates@ucsf.edu) or Markus Boos (markus.boos@seattlechildrens.org) to join our mailing list.



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