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Editor's Note: Please hyperlink to the [abstract](#) and [full study](#) on the AJTMH site once the embargo lifts.

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**New Study Details Significant Public Health Impacts from
Extreme Weather Linked to Climate Change in South Pacific**

Study exposes the danger and health risks for island populations worldwide

Oakbrook Terrace, Ill. (April 18, 2016)—As weather events turn more frequent and more extreme in the 21st century, a new study published today in the *American Journal of Tropical Medicine and Hygiene* details the public health impacts after devastating flooding on a South Pacific island, and provides graphic evidence of the risk facing island populations and their health systems worldwide. Researchers documented the injury, loss of life, disease, and displacement experienced by the people of Honiara, the Solomon Islands capital city, after torrential rains triggered flash floods in April 2014.

“This is the first study to catalog significant health impacts from our changing climate in the Pacific region,” said Eileen Natuzzi, MD, a general surgeon and public health researcher at San Diego State University’s Graduate School of Public Health, who led the unique multi-national collaboration and who was present on the island at the time of the disaster. “The findings support the notion that this region is vulnerable not only to the well-documented rising sea levels associated with climate change, but also to more severe storms like this flood, which we witnessed as well as cyclones like Pam and Winston that have followed it.”

Unlike the majority of climate change research, which relies heavily on computer modeling to project future impacts, the Honiara study provides a data-driven snapshot of the tragic health consequences that befell an island nation.

“Our findings could help governments and those providing aid improve readiness and response in order to save lives,” said Dr. Natuzzi.

Key findings include:

- A total of 31 people died: 21 during the flooding and 10 – all children – who succumbed to infectious diarrheal disease brought on by challenges with sanitation in the weeks afterward. Per capita, this was the world's most deadly single event disaster of 2014, according to the Centre for Research on the Epidemiology of Disasters.
- Most of those who died (62 percent) were children under 14 years old who were swept away by floodwaters and drowned. Thirty-three people had injuries serious enough to seek treatment at a medical facility.
- Infectious disease transmission reached its peak one month after the flood, with 2,134 reporting flu-like illness and 3,876 cases of diarrhea, mostly among children under five years old. Limited infectious disease diagnostics prevented a detailed analysis of pathogens found in the drinking water in the weeks after the flood.
- There were no cases of cholera, typically a common occurrence after floods in this part of the world.
- Remote mapping and site inspections revealed 75 percent of the healthcare infrastructures in the capital city of Honiara are located in areas vulnerable to destruction by a future flood event.
- One in three people in Honiara live in a flood prone area, making changes in land use planning an urgent need in the Solomon Islands and throughout the region.
- The Solomon Islands National Vector-borne Disease Control Program's aggressive mosquito control measures after the flood likely contributed to the documented reduction in cases of malaria and dengue fever over the same months in the previous year.
- Difficulty in diagnosing and tracking infectious diseases underscored the need for local or sub-regional infectious disease reference laboratories to track both ongoing disease outbreaks and the spread of emerging infectious agents such as Zika virus, which has now been confirmed in neighboring Fiji.

Some of the Worst Flooding in Solomon Islands History

Over three days, April 2-4, 2014, more than 24 inches (600 mm) of rain fell on Honiara, brought on by Tropical Cyclone Ita, which stalled in the region. Even on a tropical island accustomed to heavy rain, the extreme intensity quickly caused rivers to burst their banks, washing away people, homes, roads and bridges. Honiara is one of the most rapidly growing urban Pacific areas, with the highest population growth rates in the Pacific Island region – a chain of 25,000 islands that also includes Micronesia, Melanesia and Polynesia.

Led by the on-the-ground efforts of Natuzzi, the research team, including local health authorities and World Health Organization health workers, was given unprecedented access to scour hospital records, police reports, infectious disease reports and geographic information system (GIS) data collected from January 2013 through December 2014 to capture the human impact of the natural disaster and to define the community's future vulnerability to similar events.

Impact on land use planning

The floodwaters inundated three of Honiara's nine health clinics. The Solomon Islands National Referral Hospital, which serves the nation's entire population of 600,000 is located mere yards from the shoreline. A portion of the hospital needed to be evacuated due to storm surge damage. Researchers on the ground also believe that injuries were severely underreported due to an inability to access the health system.

Adding to the challenges of delivering healthcare, much of the region's housing and transportation infrastructure was also damaged. Water and sewer lines broke, setting up the conditions for infectious disease outbreaks that followed. GIS mapping revealed that one in three households in Honiara is located within 500 meters of a river or coastline, making them especially vulnerable to future floods. Changes in land use, moving housing away from flood-prone areas, and relocating hospitals and clinics away from flood plains could help minimize the impact of future flooding events, according to the study data.

"We can't change the weather, but we can change the capacity of communities to cope with the aftermath of extreme weather events," Natuzzi said. "If we understand the risks, we can minimize them and build in resilience."

According to the Pacific-Australia Climate Change Science and Adaptation Planning Program report of 2014, annual rainfall is projected to increase only slightly on the Solomon Islands due to climate change, but extreme rain events will become more common. The 2015 Pacific cyclone season was the second most active ever recorded, according to the U.S. National Weather Service.

"This important scientific research shines light on the true impact that severe weather can have on our health and provides insight that will guide our ability to prepare ourselves and develop responses for improving the outcomes," said Stephen Higgs, PhD, president of the American Society of Tropical Medicine and Hygiene. "We need to support more studies like this one that improve our understanding of the relationships between climate, extreme weather events and public health. This study, based in the Pacific island region, has implications for coastal communities worldwide."

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The American Society of Tropical Medicine and Hygiene, founded in 1903, is the largest international scientific organization of experts dedicated to reducing the worldwide burden of tropical infectious diseases and improving global health. It accomplishes this through

generating and sharing scientific evidence, informing health policies and practices, fostering career development, recognizing excellence, and advocating for investment in tropical medicine/global health research. For more information, visit astmh.org.

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