

Nature's extreme events provide immediate lessons

April 3 2014



Nina Stark, assistant professor of civil and environmental engineering, stands on the sand-covered steps of the Farnley Reserve in Christchurch, New Zealand, an area affected by flooding.

When the Canterbury earthquake of 2010-11 struck in the Christchurch area of New Zealand, wide spread liquefaction occurred, allowing the soil to behave more like a liquid. As a result of tectonic movements and

subsidence due to this liquefaction, large portions of Christchurch became susceptible to flooding.

So, when in early March of this year, as heavy rains fell in this same area, and were described by the town's mayor as a one in a 100 year event, further destruction wreaked new havoc on this largest city in the South Island of New Zealand.

As a result, the U.S. based National Science Foundation is supporting a team of experts, including Nina Stark, assistant professor of civil and environmental engineering at Virginia Tech, to investigate the impacts of this most recent flooding, labeled by professionals in the geotechnical community as an extreme event.

Stark and the other members of the team were selected by the Geotechnical Extreme Events Reconnaissance Association. This association attempts to collect data immediately after an extreme event such as an [earthquake](#), a tsunami, or a flood.

According to a GEER press release, the team will focus on understanding how a large [liquefaction](#) event impacts the damaging effects of another extreme event that follows it. The team will be focusing in critical infrastructure performance such as sewer and water networks, foundations of critical structures, levee networks, and other lifelines.

Stark was in New Zealand gathering information from March 17-21.

GEER assembled this multidisciplinary team to investigate the wide range of hazardous aspects of the recent Christchurch flood event. John Allen, a professional engineer at TRI Environmental Inc., is leading the GEER team. Co-Leader is Sonia Giovinazzi, research fellow at the University of Canterbury. Joining them are Craig Davis, of the

Department of Water and Power for the city of Los Angeles; Laurie Johnson of Laurie Johnson Consulting; William Siembieda of California Polytechnic of San Luis Obispo; Rebecca Teasley of the University of Minnesota Duluth; and Stark.

The U.S. GEER team will be working closely with New Zealand engineers and scientists to document the effects of this flood event that may have been affected by the 2010-11 Canterbury earthquake sequence.

Stark joined the Virginia Tech faculty in the fall of 2013 from a postdoctoral fellow position she held since 2012 at the Dalhousie University's Department of Oceanography in Halifax, Canada.

From 2007 until 2010, Stark was a research assistant at the MARUM Center for Marine and Environmental Science. During that time she participated in some 20 research cruises and field experiments in the North Sea, Baltic Sea, Northern and Southern areas of the Pacific Ocean, and in different lakes in New Zealand. In 2011 she became a postdoctoral fellow with the university.

Provided by Virginia Tech

Citation: Nature's extreme events provide immediate lessons (2014, April 3) retrieved 4 July 2024 from <https://phys.org/news/2014-04-nature-extreme-events-lessons.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.