

Venice to suffer fewer storm surges

June 10 2011



Venice - The frequency of extreme storm surge events are expected to fall by 30 per cent. Image credit - Lea Crosswell, CSIRO

(PhysOrg.com) -- Venice – the City of Dreams – may have one less nightmare to deal with following a finding that the frequency of extreme storm surge events generated by Adriatic Sea tempests could fall by about 30 per cent by 2100.

A team of international scientists led by CSIRO's Dr Alberto Troccoli studied atmospheric circulation in the Mediterranean region to assess climate impacts through changes in [storm](#) surge frequency in Venice – a World Heritage-listed city built on 117 small islands and considered vulnerable to high [sea](#) levels (locally known as Acqua Alta).

Dr Troccoli said predictions of such extreme and small-scale events are

exceedingly challenging, even for relatively short time horizons.

“The survival of Venice and its lagoon is seriously questioned under the International Panel on Climate Change (IPCC) global sea level rise scenarios and the results of this study, published in the journal *Climatic Change*, emphasise the need for location-by-location studies to determine coastal flooding impacts.

"While some assessment of the vulnerability of Venice to extreme high-water events have been carried out in the past, possible future changes in storm surge occurrences critical to flooding events remain largely unexplored. It is important to understand how these events will evolve since a moderate to strong storm surge event is required to cause serious flooding.

"We found that the frequency of extreme storm surge events affecting Venice is projected to decrease by about 30 per cent by the end of the 21st century which would leave the pattern of flooding largely unaltered under 21st Century climate simulations," Dr Troccoli said.

The research team – from CSIRO, the University of Padova and the University of Reading – used data from observations of storms, analysis of atmospheric and surface conditions, and climate scenario simulations. Storm surges in the northern part of the Adriatic Sea are driven by the passage of deep low-pressure systems, which cause sea level pressure gradients and strong Sirocco (South-Easterly) winds along the Adriatic Sea. These forces combine to push water into the northern end of the basin where [Venice](#) is located.

Dr Troccoli said an implication of the finding is that alterations in extreme tidal levels under climate change must be considered on a location-by-location basis in spite of the projected increase in global sea level.

"Thus the projected change in the storm surge contribution, combined with the projected change of mean water levels in the Adriatic Sea indicates that tidal flooding events might not be exacerbated over the current century, with potential beneficial consequences for the conservation of the city.

"Our paper presents an alternative analysis for storm surges and we believe our findings could have important implications on the way future storm surge and high tide events are interpreted," he said.

Provided by CSIRO

Citation: Venice to suffer fewer storm surges (2011, June 10) retrieved 20 March 2024 from <https://phys.org/news/2011-06-venice-storm-surges.html>

<p>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.</p>
--