

## Weathering the storm



Venice: at risk both from flooding  
and rising seas

STONEHENGE HAS SURVIVED the past few millennia – but how about the next hundred years?

The impact of changing weather patterns on human health and the natural world is often in the news. Rarely reported is the toll that climate change may take on our cultural heritage – partly because scientists know remarkably little about it.

Heritage experts have previously concentrated on understanding the effects of pollution such as acid rain. But wind-driven rain and sand, freeze-thaw cycles and radiation from the sun could all start to impact on historic buildings in unexpected ways, according to researchers on a new European project.

"An increase in wind speed may cause sea-salts to travel further inland and furthermore increase the impact of driving rain on buildings," explains Prof Peter Brimblecombe of the University of East Anglia. "Changes in the composition of the atmosphere, for example more ozone, will impact on the fundamental chemical processes causing damage to building materials."

Prof Brimblecombe has also speculated that that vegetation might exploit new weather conditions and create some remarkable makeovers. He says it's conceivable that lichens and vegetation could turn Trafalgar Square green.

"The profile of this needs to be raised," he says. "It is a big money-earner if you think in terms of tourism." The prospect that regions could see a dramatic loss of income is likely to send alarm bells ringing, if cultural conservation is not enough of a reason in itself.

The three-year 'Noah's Ark' project brings together experts from ten European countries including the UK, Italy, Sweden, Poland, the Czech Republic, Spain and Norway to investigate the effects of climate change and pollution on Europe's historic built environment.

Experts will look at a number of test sites, such as Prague – subject to very cold winters combined with very hot summers, and Venice – at risk from both sea-level rise and flooding.

The European Commission-funded project is being coordinated by the Institute for Sciences of the Atmosphere and Climate (ISAC) at the National Research Council in Bologna, Italy. ISAC's Dr Cristina Sabbioni warned climate change would bring irreparable damage in its wake, especially to archaeological and historical works exposed to the open air.

"Sandstorms caused by desertification could lead to the erosion of stones used to build the ancient temples and historic palaces of southern Italy, while increased and severe flooding in northern Europe could create a hazard to structures built in wood or containing clay binders, materials that deteriorate on contact with water," she said.

The result of the study will be a Vulnerability Atlas, highlighting the threats to different regions across the continent. Being relevant to two different timescales (20-30 years, and 100 years) it is hoped that the atlas will provide long-term insights as well as those that influence current policymaking.

"Buildings don't vote. People do," says Prof Brimblecombe, pointing out that although the consequences of climate change are often prioritised in terms of human health and the natural environment, the notion that cultural heritage has a lower place is "a sort of illusion".

"It's only when you don't have cultural heritage anymore that you notice it's gone. There's a health that derives from our own sense of place that is very difficult to quantify in terms of money."

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