

Scientists work to make sea defences stronger

Wave research helps coastal areas confront impact of heavier storms

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SENIOR NEWS REPORTER

SCOTTISH scientists have helped develop ways of bolstering Britain's battered coastal defences to better withstand powerful storms triggered by climate change.

Edinburgh University scientists' joint study of wave dynamics found improving seawalls could help limit loss of life and damage to property as coastal waters become stormier over coming years.

The team has developed a way of predicting what happens to the millions of tonnes of water inside big waves when they collide with cliffs, seawalls and buildings.

Their findings could help engineers design coastal defences that are better able to stop sea water spilling over on to land.

When a breaking wave collides with an upright structure, a powerful jet of water is thrown straight up into the air.

Researchers found these huge sheets of water then split into several "fingers" before breaking apart into a spray of droplets, which can hit people and property with real force.

Saltwater can also cause damage to buildings, vehicles and transport infrastructure.

Scientists at Edinburgh and Hokkaido universities recreated stormy sea conditions in a 24m wave flume in Japan to gauge the impact of waves on vertical walls.

A scaled-down version of a seawall was bombarded with waves, which were tracked with a high-resolution video camera.

They found water is dispersed in

a distinct pattern that varies depending on the size of waves.

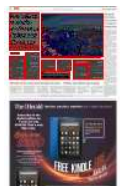
The pattern differs from those produced by other types of spray, such as those produced by industrial sprayers used in car and agriculture industries.

Based on their findings, researchers developed a statistical model to calculate the pattern of spray produced by wave impacts.

Professor David Ingram, of Edinburgh University's School of Engineering, said: "The UK and Japan are island nations on the edge of large oceans where storms can create very big waves.

"With climate change increasing the intensity and frequency of storms, a better understanding of the interaction of waves and our natural and engineered coast is critical."

The research could be used to



protect homes and commercial property, as well as wildlife and other aspects of our heritage, such as Orkney's late Neolithic settlement of Skara Brae, one of the world's most famous heritage sites.

Other coastal gems under threat include the Statue of Liberty in New York, Venice and the Galapagos Islands.

The 5,000-year-old Skara Brae, the best-preserved Stone Age dwelling complex in Western Europe, is

the most high-profile site at risk of eventual loss due coastal erosion, a separate study found.

Many archaeological sites are on the coast due to the importance of the sea in Stone Age life.

Skara Brae is on the southern shore of Sandwick and was inhabited by people between 3200 and 2200 BC. Seven of their houses, connected by low covered passageways, have survived.

The latest study is published in the Royal Society journal Proceedings A, and was funded by the Japan Society For The Promotion Of Science.

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AT RISK: The Stone Age village of Skara Brae in Orkney could eventually be lost due to coastal erosion from stormy seas. Picture: Shutterstock

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