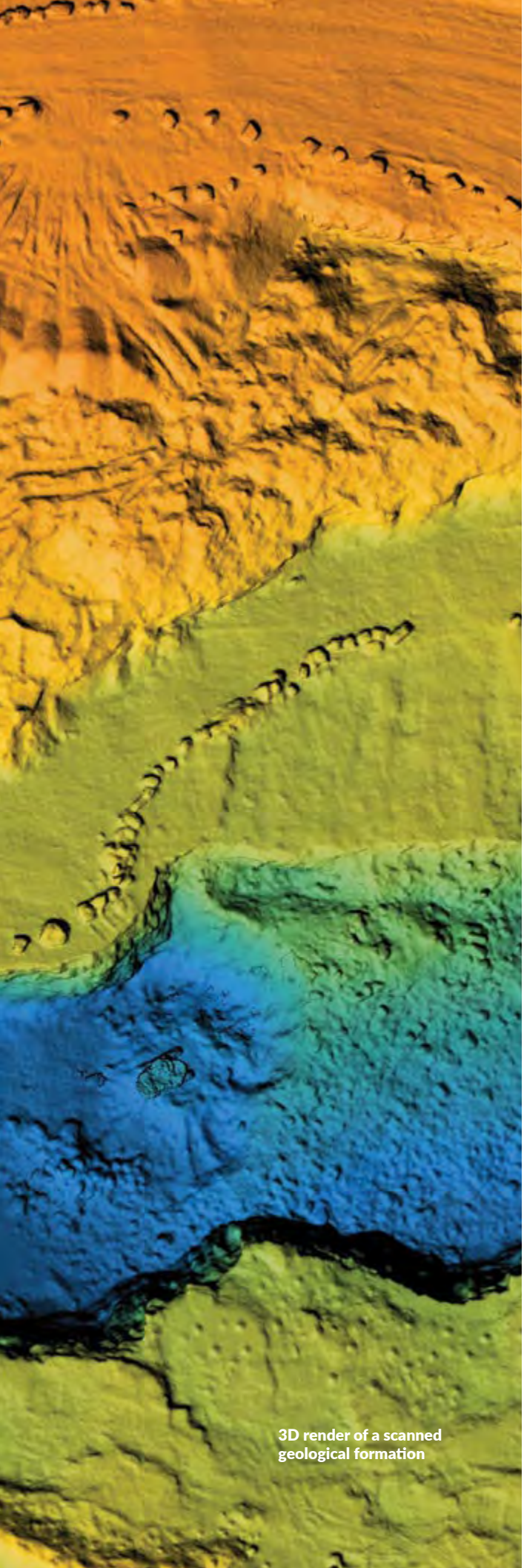

3D render of a scanned geological formation

We need to dig deeper

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Instruments are at the heart of geophysics. Their tech is vital to being able to look underground without needing to dig the whole world up. The University of Malta's (UM) geophysical laboratory has recently attracted funding to help them see our Earth in clearer detail, helping to better understand the ground beneath us.

Researcher Dr Sebastiano D'Amico (Department of Geosciences, UM) describes how technical developments have allowed for notable improvements in the instruments at the UM's geophysics laboratory. Their on-site lab work requires portability. Improved battery life has allowed teams like D'Amico's to take these instruments to remote places.

The team combines multiple techniques that allow them to clearly see objects above and below ground. They map surfaces in high resolution using LIDAR (Light Detection and Ranging) based photogrammetry. These images are then coupled with data from seismometers, resistometers, and magnetometers to provide a more holistic picture of the Earth.

This technology allows researchers to form a clearer picture of the ground beneath us. This holds true when assessing the impact geological disasters could have on an area. Geoscientific teams use their arsenal of instruments to spot potential links between the composition of the ground and its susceptibility to earthquakes.

D'Amico and his team are mapping Maltese coastlines to see how stable they are. The department uses their equipment to map out 3D visual projections of cliff faces to decipher cracks and boulder extensions. These details need study to assess whether the next storm might crumble a cliff face, which can be very dangerous for hikers and hunters alike. Such monitoring helped capture the last few seconds of the Azure Window in Gozo. Now the team assesses the arch at Wied il-Mielah nearby — analysing its stability and its degradation process.

The data D'amico collects doesn't only help predict and safeguard the environment from disaster. His work also helps archeologists uncover beautiful histories from our past. Understanding the ground beneath us requires us to wear a different pair of eyes. These technological improvements not only help to further research, but allow us to better understand the world we live in. T