

Active tectonics of the Hellenic subduction zone

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Abstrak

It begins by solving a famous puzzle of the ancient world, which is what was responsible for the tsunami that destroyed settlements in the eastern Mediterranean in 365 AD. By radiocarbon dating of preserved marine organisms, Shaw demonstrates that the whole of western Crete was lifted out of the sea by up to 10 meters in a massive earthquake at that time, which occurred on a previously unknown fault. The author shows that the resulting tsunami would have the characteristics described by ancient writers, and uses modern GPS measurements and coastline geomorphology to show that the strain build-up near Crete requires such a tsunami-earthquake about every 6,000 years. A detailed seismological study of earthquakes in the Cretan arc over the last 50 years reveals other important features of its behaviour that were previously unknown. Finally, she provides fundamental insights into the limitations of radiocarbon dating marine organisms, relating to how they secrete carbon into their skeletons.