



FIGURE 11.1

Oceanic-continental plate convergence

'The deepest part of the subducting plate breaks into smaller pieces that become locked in place for long periods of time before suddenly moving to generate large earthquakes . . . often accompanied by uplift of the land by as much as a few metres.'

[Image credits Cambridge University Press. Websites: <http://wrgis.wr.usgs.gov/parks/pltec/converge.html>, <http://pubs.usgs.gov/publications/text/understanding.html>]

when there is a compressional earthquake the earth moves both vertically and horizontally.

From a tectonic perspective Greece happens to be located in a particularly critical place: it is at the convergence of Africa and Europe (Figure 11.2). When we look at a normal map we perceive that Africa starts at the southern shore of the Mediterranean Sea, but if you were to drain the ocean you would see that the land mass of Africa continues northwards on the seabed until it slides underneath the land mass of Europe. This African plate is also moving in a north-easterly direction at a speed of about 1 cm each year. That may not sound particularly troublesome until one considers that it corresponds to a kilometre of movement over a mere 100,000 years. Meanwhile this part of Europe (the Aegean plate) is being pushed in a south-westerly direction at about twice this speed by the relentless pressure of Asia, in the shape of the North Anatolian Fault. These forces converge at Greece, which explains why the country is so mountainous and also why it suffers from earthquakes.

Cephalonia is poised at a particularly delicate location in this intercontinental affair. If you sail to the island from Patras on mainland Greece and watch the echo-sounder as you go, the readout will on average indicate a seabed depth of less than 100 m, with occasional values of up to about 300 m. Now continue westwards from Cephalonia and by the time you have sailed just 10 more kilometres in the direction of Italy something quite extraordinary happens: an extra zero appears on the depth gauge. The 300 metres has become 3,000 m: you have just sailed over a submarine cliff-edge that is 2 miles high. This island is the last outpost of Europe: it is teetering on the edge of the continental plate and below it is the abyssal plain of Africa.

Near Cephalonia the boundary between the two continental plates has folded into a line running from south-west to north-east. The European land mass lies on the eastern side and it is moving towards the south-west, while