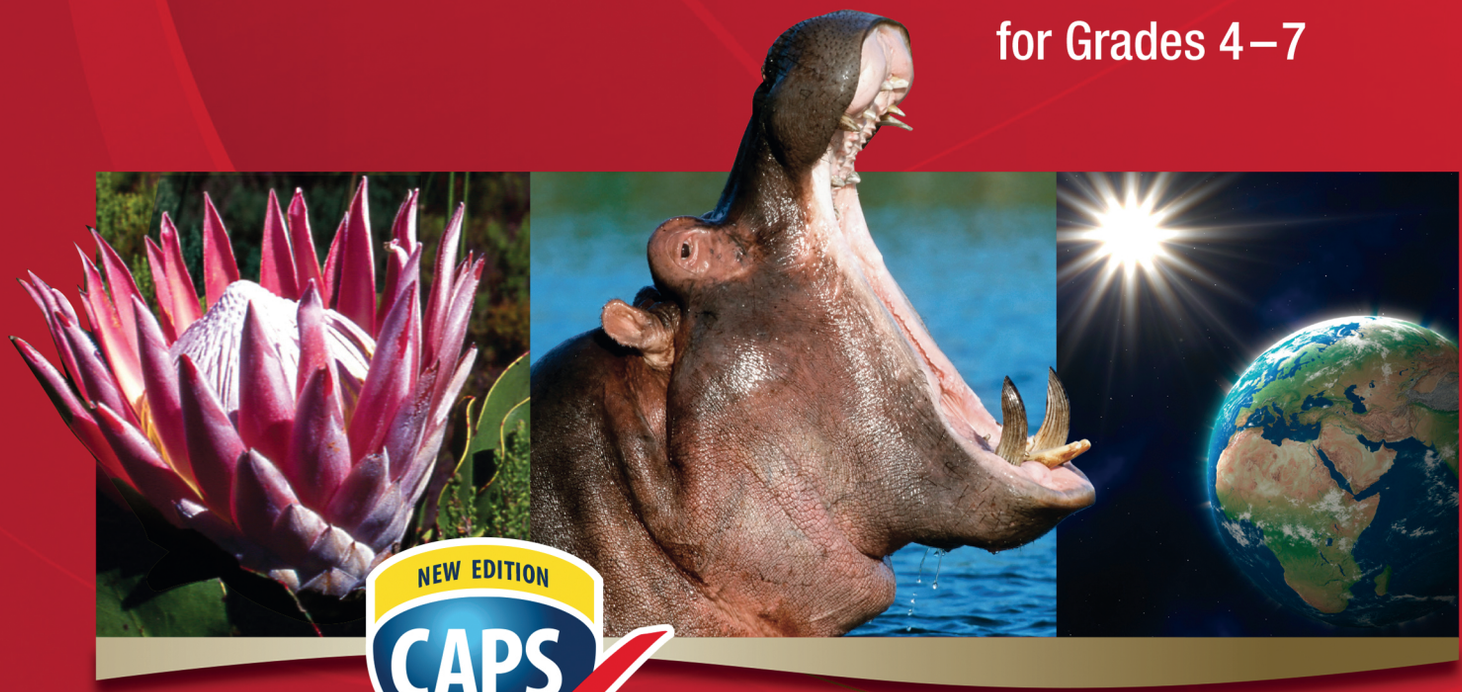
OXFORD *Primary* ATLAS *for South Africa*

for Grades 4–7



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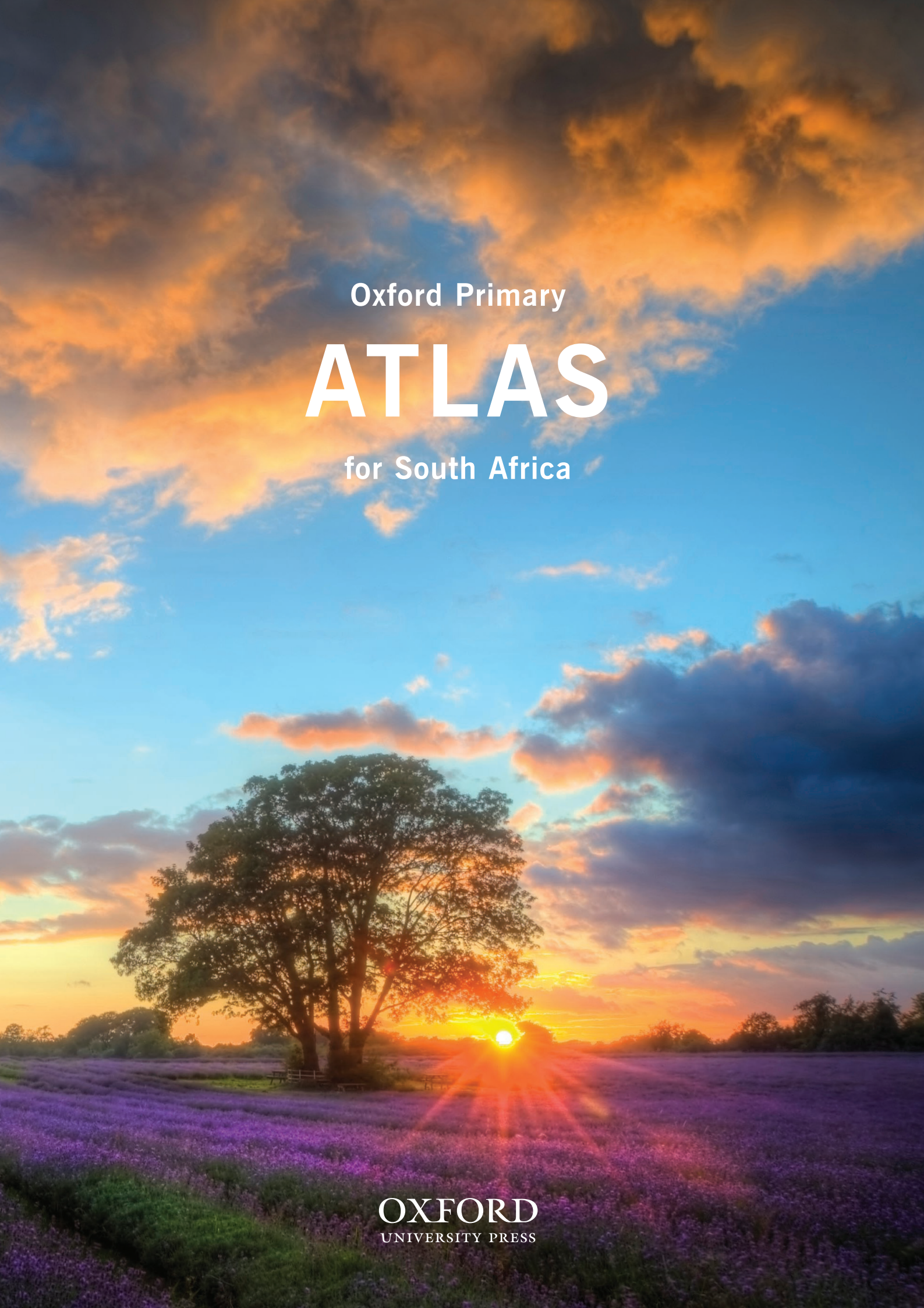

Oxford Primary

ATLAS

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The structure of the Earth

The Earth is made up of several layers, including:

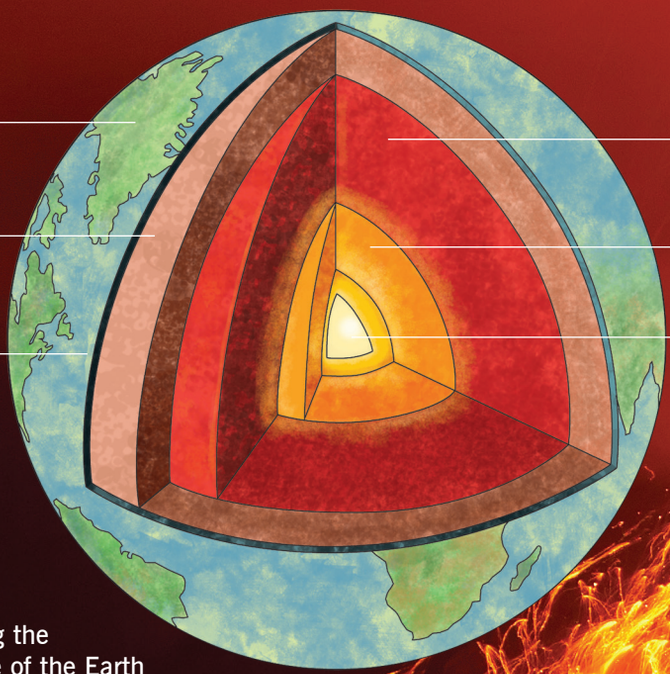
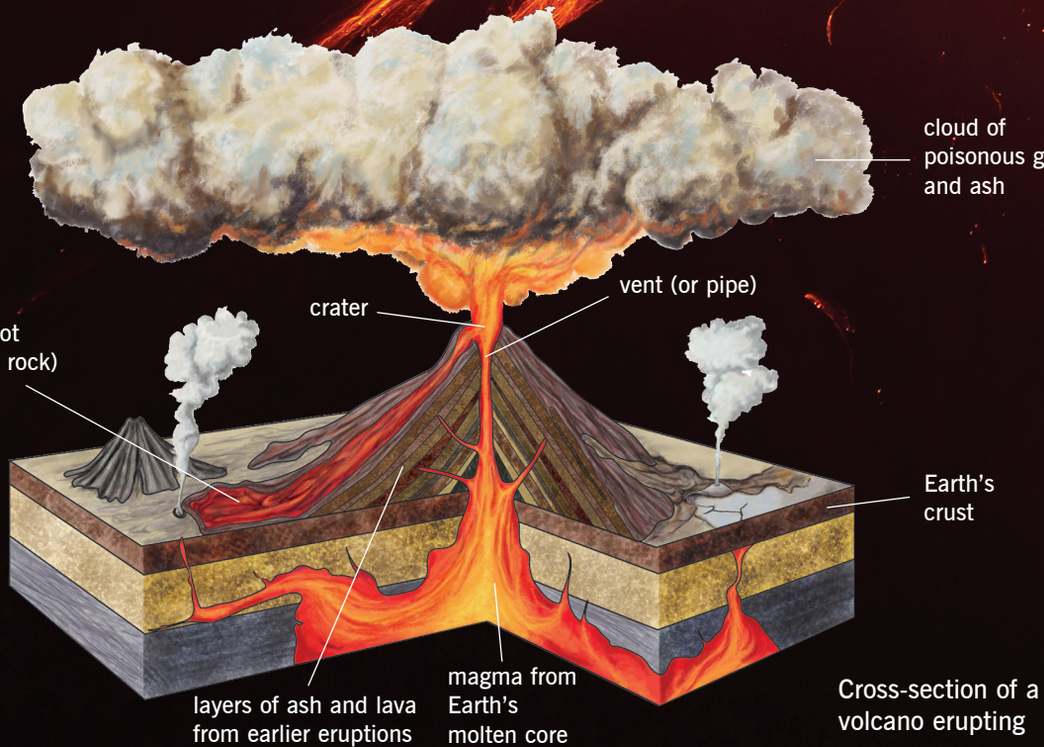


Diagram showing the internal structure of the Earth

Volcanoes

A volcano is a place where the Earth's crust has opened and lava (melted rock) from the liquid inner core has erupted out under very high pressure. Most volcanoes occur along the boundaries of **tectonic plates**.



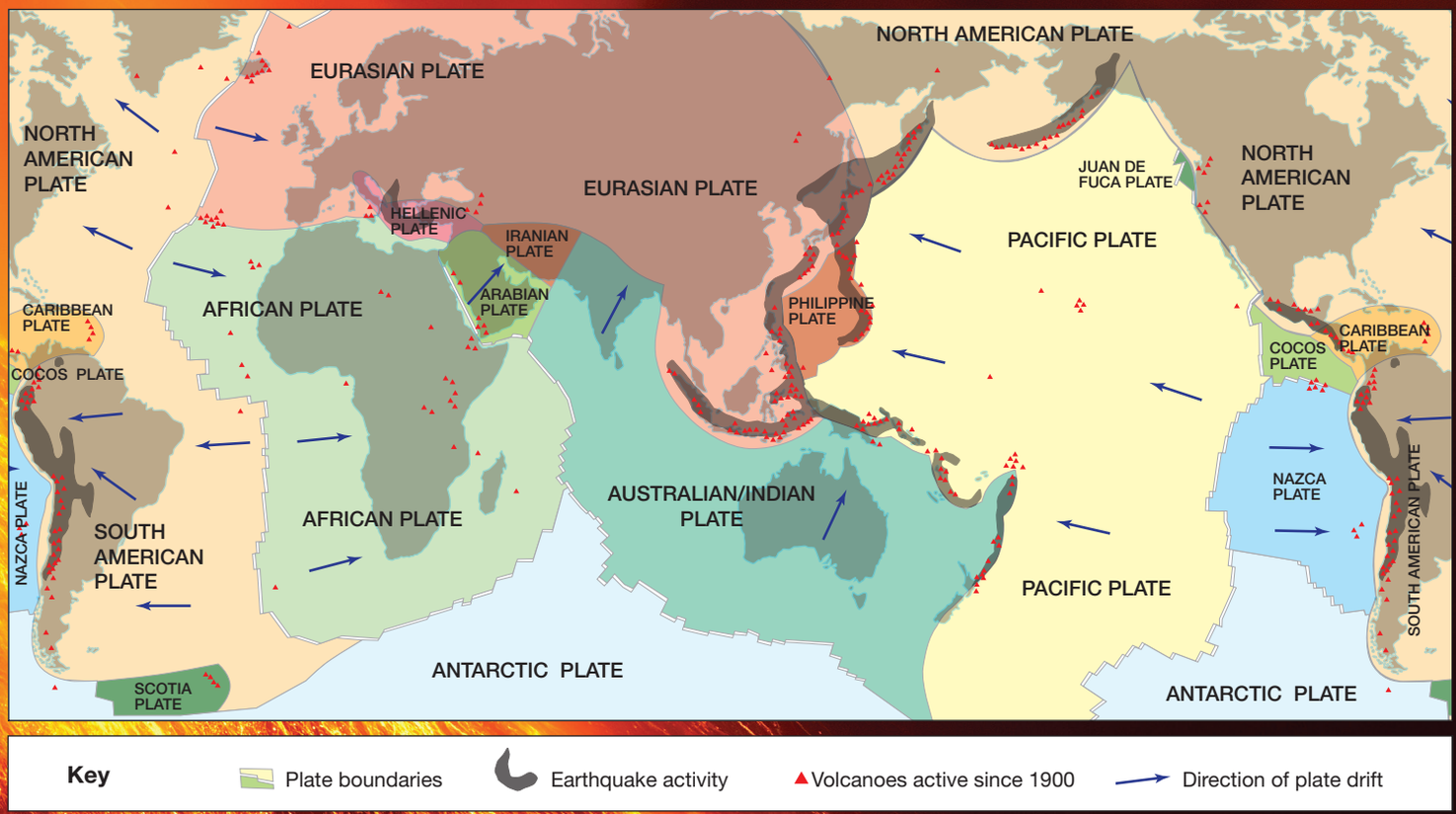
Cross-section of a volcano erupting

Where do earthquakes and volcanoes occur?

The Earth's outer crust (also called the lithosphere) is cool and rigid. It lies on a hot, partly fluid layer called the asthenosphere (the upper part of the mantle.) The lithosphere consists of eight or nine tectonic plates.Tectonic plates are large "pieces" of the crust that float on the asthenosphere. Tectonic plates are constantly and gradually moving. They move between 10 and 150 mm per year. There are many cracks or faults in the crust all along the plate boundaries where the tectonic plates meet. Earthquakes occur most often along these faults, when plates slip past each other or are forced against each other.

An earthquake is a sudden and violent shaking of the ground, caused when tectonic plates shift, break or collide. When an earthquake happens under the sea, it may cause a tsunami, which is a huge wave of water.

The circle of places that are prone to volcanoes and earthquakes that you see surrounding the Pacific Ocean is called the Pacific Ring of Fire.



Tectonic plates, with main regions of earthquake and volcanic activity

Some of this century's deadliest earthquakes:

Year	Place	Force on Richter scale	Deaths
2011	Japan	9	10 000
2010	China	6,9	2 300
2010	Haiti	7,0	222 517
2005	Sumatra, Indonesia	8,7	1 300
2005	Kashmir, Pakistan	7,6	87 350
2004	Sumatra, Indonesia	9,2	283 100
2003	Iran	6,6	26 270
2003	Algeria	6,8	2 266
2002	Afghanistan	6	2 000
2001	India	6,9	20 000

Though many volcanic eruptions are small, some are deadly. These are some of the worst in history:

Year	Place	Deaths
1792	Unzen, Japan	14 300
1815	Mount Tambora, Indonesia	92 000
1883	Krakatoa, Indonesia	36 400
1902	Mount Pelee, Martinique	33 000
1902	Santa Maria, Guatemala	7 000
1919	Kelut, Indonesia	5 110
1985	Nevado del Ruiz, Colombia	25 000