

**Lithosphere-asthenosphere decoupling beneath oceans – United Kingdom
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Reported by Yaoling Niu, and edited by NERC <<Planet Earth>>

A sideways move for the asthenosphere

NERC fellow Yaoling Niu has solved the puzzle of how soft material beneath the Earth's rigid plates moves. For years it was thought that the soft material, called the asthenosphere, dragged along the rigid plates above it. Then it was discovered the rigid plates moved by themselves. This happens because the old and cold edge of a plate sinks

into the Earth pulling the rest of the plate with it.

Yaoling, of Cardiff University, has now discovered that beneath ocean basins, the asthenosphere doesn't even move in the same direction as the plates, but in the opposite direction. He said, 'It's all due to plate tectonics. Because most of an ocean plate is formed at the ridges, it needs

material to flow towards the ridges. Because the asthenosphere is the softest at its top, and becomes harder and difficult to move with depth, the material supply to ridges is likely to move sideways towards ridges. Therefore, oceanic plates and asthenosphere move in opposite directions.'

