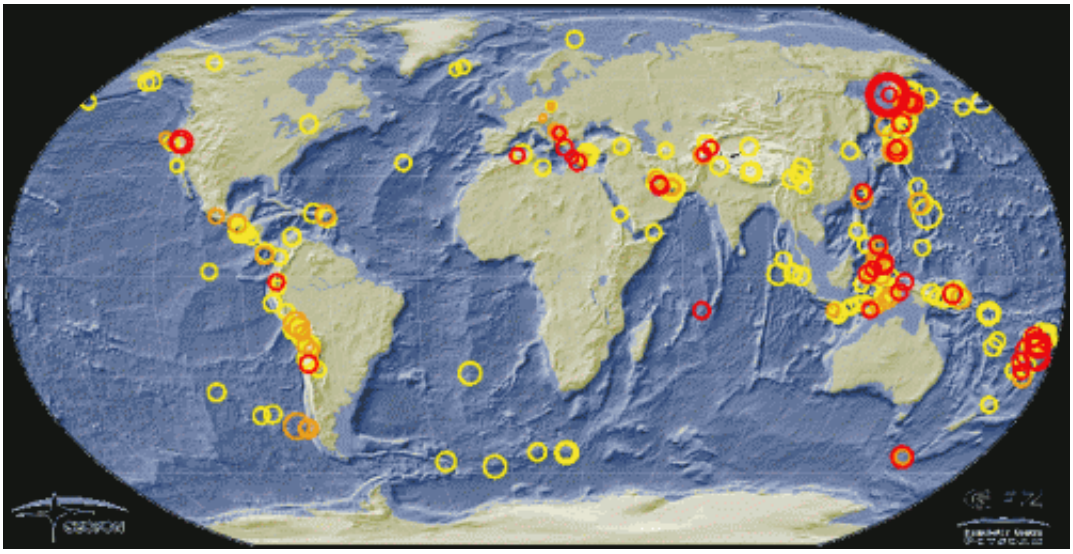
Strong earthquake at exceptional depth

May 24 2013



This morning at 05:45 CEST, the earth trembled beneath the Okhotsk Sea in the Pacific Northwest. The quake, with a magnitude of 8.2, took place at an exceptional depth of 605 kilometers. Because of the great depth of the earthquake a tsunami is not expected and there should also be no major damage due to shaking.

Professor Frederik Tilmann of the GFZ German Research Centre for Geosciences: "The epicenter is exceptionally deep, far below the earth's crust in the mantle. Such strong earthquakes at this depth generally occur only in a few places in the world: namely where geologically old oceanic plates with more than 80 million years of age push quickly under another

plate." Because of their age, these plates are comparatively cold and remain cool even at great depths if they also descend quickly. The temperature of the plates stays below 650 to 700 °C, the highest temperature at which rocks can break rapidly in an earthquake rather than deforming. In the case of the Okhotsk-earthquake, the Pacific plate moves at a speed of about eight centimeters per year underneath the Okhotsk microplate.

The quake also follows a highly unusual accumulation of eleven shallow earthquakes with magnitudes from 5.5 to 6.1 within two days. This swarm is, however, located over 650 kilometers in a direct line away from today's earthquake, so a direct relationship cannot be confirmed.

Provided by Helmholtz Association of German Research Centres