**Title**: Petrogenesis of pillow basalts in West Junggar, NW China: Constraints from geochronology, geochemistry, and Sr–Nd–Pb isotopes

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**Uncovering the geological history of Central Asia: Did these land rocks come from the sea?**

The Central Asian Orogenic Belt (CAOB) is a mountain region that covers about 11% of Asia, and the geological processes that caused its formation are unclear. West Junggar is a subregion of the CAOB and is located in northwest China. There, rocks called Silurian pillow basalts can be found, and their formation process may explain the tectonic evolution of the area. These pillow basalts are considered to have originated during the Silurian period (roughly 440 million years ago) and have been classified as ocean island basalts (OIB), which erupted underwater in locations away from the boundaries of tectonic plates. It is thought that many of these basalts were initially under the Paleo-Asian Ocean, forming structures called seamounts, or submerged mountains of suboceanic volcanic rocks.

In a recent study, we collected rock samples from a Silurian rock formation and, through radiometric dating experiments and in-depth geochemical analysis, gained valuable insight that allows us to clarify the origin of these pillow basalts and elucidate the geological evolution of the CAOB. The geochemical composition of the samples suggests that these volcanic rocks were derived from an OIB reservoir in the ancient Paleo-Asian Ocean. Dating experiments reveal that these rocks were aged approximately 437 million years. Our results challenge a current view in geology that there was a long period of 100 million years of seamount-related magmatic inactivity in the CAOB during the Paleozoic, which includes the Silurian period. Our characterization of Silurian pillow basalt rocks indicates otherwise; seamount-related magmatic activity seems to have been continuous during the evolution of the Paleo-Asian Ocean. Our findings call for further investigation on this topic so that we can uncover the mysteries of the geological history of our planet, which would be invaluable for better understanding the geology of today's world and that of tomorrow.

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