

## Continental Affinities of the Alpha Mendeleev Ridge

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The origin of Alpha-Mendeleev Ridge has been an enigma. Many theories on the Ridge's tectonic evolution have been postulated since 1935 with insufficient information to test them. In the last decade significant new data sets have been acquired including geophysical data, geological samples and improved onshore/offshore geologic mapping that aid in clarifying the Ridge's origin. The velocities and thickness of crust from refraction data and large amplitude magnetic anomalies indicate the Ridge is a large igneous province that can have either a continental or an oceanic origin. Comparisons based on topography, magnetics and pseudo-gravity indicate it is most similar to the Kerguelen Plateau. This plateau is part of a large igneous province known to include continental crust. A seismic refraction profile across the Chukchi Borderland, a continental fragment, and the less understood Mendeleev Ridge recorded shear waves on ocean bottom seismometers. Poisson's ratios indicative of both an upper and lower continental crust were determined. On the Nautilus Spur of the Alpha Ridge expendable sonobuoys recorded clear converted shear waves also consistent with continental crust. The circum-Arctic geology of the small polar ocean provides compelling evidence of a long-lived continental landmass north of the Sverdrup Basin in the Canadian Arctic Islands and north of the Barents Sea continental margin. The geophysical data, onshore geologic constraints and sparse geological samples are consistent with a large igneous province enveloping continental crust.