

QUARTZ

Long-Range Profile "Quartz":

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The profile “Quartz” (Murmansk-Kizil) is one of 14 major DSS profiles acquired in the USSR during the fulfillment of the DSS program. The profile, completed in 1984–87, extends 3850 km across several major tectonic units of northern Eurasia (Zonenshain et al., 1990). Starting at the northwest end of the profile, these units are (Figure 1):

1) The East European Platform (770 km), including 440 km of the Baltic Shield. The oldest rocks of the East European Platform are early Archean; the last significant event here was the intrusion of rapakivi granites about 1600 Ma ago.

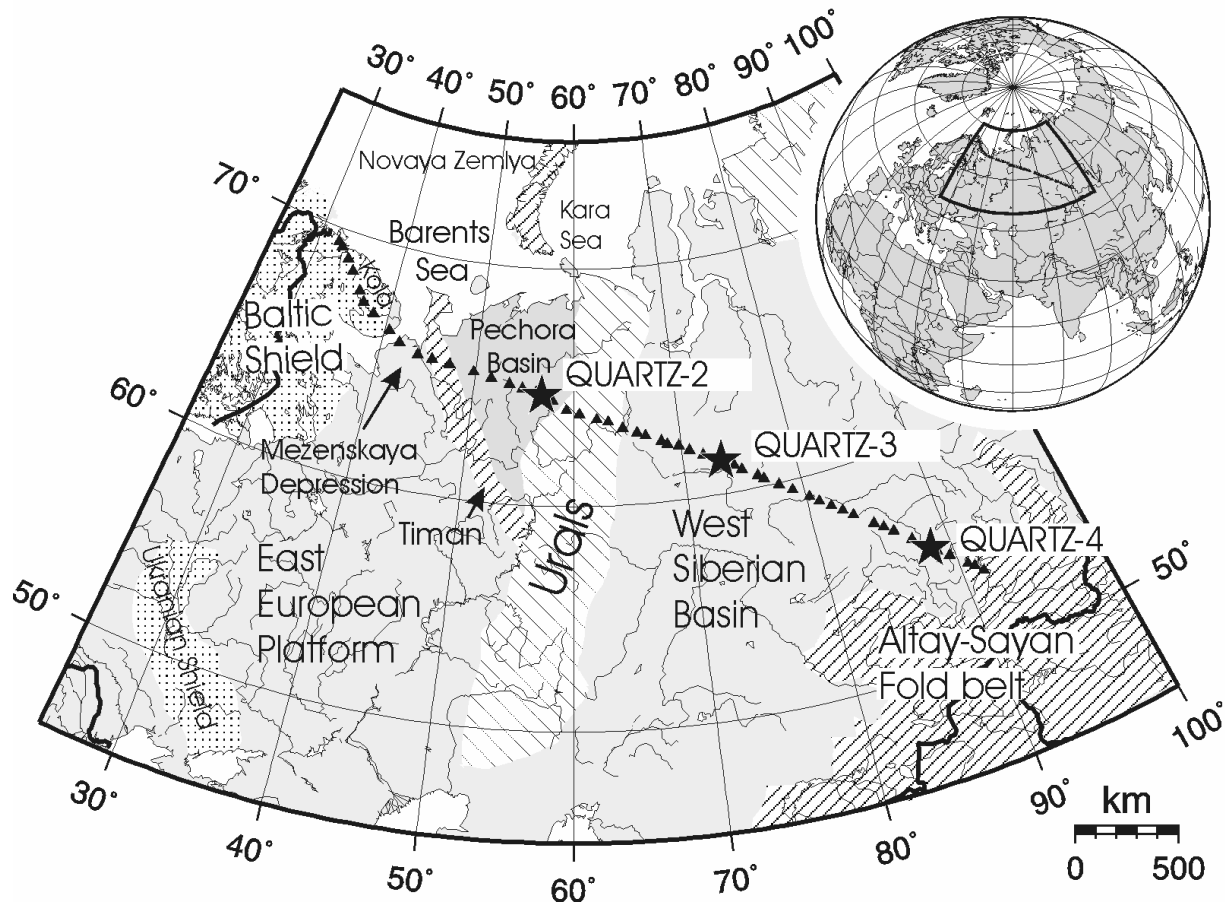


Figure 1. Location map of profile QUARTZ and the major tectonic units of NW Eurasia. Stars are the locations of PNEs, triangles are the chemical shots.

- 2) The Timan Belt (120 km of the profile), which is a late Precambrian fold belt or a suture between eastern Europe and Barentsia.
- 3) The Pechora Basin (360 km), which underwent a number of extensional events from early Devonian to late Cretaceous or early Palaeogene.
- 4) The Uralian Belt (260 km), formed at the end of the Paleozoic and the beginning of the Mesozoic.
- 5) The West Siberian Basin (1540 km) - a broad extensional basin with very thick Triassic and Holocene sediments.
- 6) The Altai-Sayan Foldbelt (900 km of the profile) -- an active Alpine belt which underwent several phases of deformation from the early to middle Cambrian to the Permian throughout the Paleozoic.

Recordings were made with about 400 3-component seismographs from 3 PNEs (located at about 1130, 2050 and 2820 km from the northwestern end of the profile, Figure 1) and 51 chemical explosions (3 of which returned poor data). The average station spacing was about 10-15 km.

Extensive analysis of the data from the profile “Quartz” was published to date (see an incomplete bibliography below).. These publications cover the 1-D and 2-D mantle structure, attenuation, upper-mantle scattering (vigorously disputed at this time), crustal imaging using receiver functions, and also coda analysis and modeling.

Data

The data are provided in standard SEG-Y format using IBM floating point values for data samples. Geographic coordinates of the shots and receivers, and offsets (in meters) are loaded in SEG-Y headers. Recording station numbers (numbered from the NW, Figure 1) are loaded in the headers as CHANNEL numbers, the FFIDs correspond to shot numbers. Each file contains a single component or recordings from one shot. File naming nomenclature is as follows:

```
quartz-<shot_number>-<component_index>.seg-y
```

where `shot_number` is 2, 3, or 4 for the PNEs (Figure 1) and the number of the nearest recording station for chemical shots. `Component_number` is v for the vertical, r, for inline component, and t for cross-line.

Significant publications using “Quartz” records

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