

Vintage crustal-scale seismic profiling data made available for future applications: DEKORP 1984 – 1999

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The German continental seismic reflection program DEKORP (DEutsches Kontinentales Reflexionsseismisches Programm) was carried out in the years between 1984 and 1999. The aim of DEKORP was to investigate the deep crustal structure of Germany with high-resolution near-vertical incidence (mostly vibro)seismic acquisition, supplemented by wide-angle seismic and other target-oriented piggy-back experiments, all complemented by optimized methods of data processing and interpretation. The DEKORP project was an equivalent to many other deep-seismic programs worldwide such as COCORP, BIRPS, LITHOPROBE, ECORS, CROP, BELCORP, IBERSEIS and many more others.

The resulting DEKORP database consists of approximately 40 crustal-scale 2D-seismic reflection lines covering a total of ca. 4 700 km and one 3D-seismic survey covering ca. 400 km², recorded in close connection with the German Continental Deep Drilling Program (KTB). Nowadays, re-recording of these seismic traverses in the same extent and quality would often not be possible due to increased acquisition costs and tightened permission requirements. Therefore these datasets provide unique and deep insights into the subsurface below Germany covering the earth's crust from the surface to the upper mantle.

Currently, many of the original raw data are still stored on half-inch 9-track magnetic tapes on which the data were recorded and processed at that time. These old storage media and formats cannot be handled by today's technology anymore, and many of the tapes are due to their age at the verge of failure and can only be read with special devices, programs and experts. To prevent the final loss of this valuable geoscientific treasure, an initiative at GFZ transcribes all relevant DEKORP data to modern formats and media. This preserves the data for future research and evaluation, especially for further reprocessing based on respective state-of-the-art processing methods like CRS and PSDM.

Over the last few years the demand for DEKORP data continuously increased. Several academic institutions (universities, geological surveys, research centres) and commercial companies (exploration industry, engineering offices, consulting bureaus) reprocess and/or reinterpret these data. Fields of applications are geothermal development, hazard analysis, hydrocarbon/shale gas exploration, underground gas storage, tunnel construction, disposal of nuclear waste and much more. Recent reprocessing campaigns of single DEKORP profiles already show a tremendous improvement of the old results from the last century.

To simplify the data access for the scientific as well as for the commercial geo-community, a well-structured provision and utilisation concept is being developed. The concept includes so-called data publications with DOIs, a defined license model and an automatised retrieval for each of the surveys providing raw data, processed data, meta data, related links and more. The plan aims to have all relevant DEKORP datasets compiled and prepared for access via web interface within the next two years.