Geophysical Research Abstracts,
Vol. 11, EGU2009-7339-5, 2009
EGU General Assembly 2009

The giant granodiorite block from Heuberg, Austria: Geoelectric measurements of a submarine debris flow component and its genetic interpretation.

B. Jochum, H. Gebhardt, H.-G. Krenmayr, and S. Coric

Geological Survey of Austria, Vienna, Austria (birgit.jochum@geologie.ac.at,holger.gebhardt@geologie.ac.at)

During geological mappings a single huge grey granodiorite block was encountered east of Siegersdorf (near Tulln, Lower Austria), on the northwestern slope of the Heuberg within the sub-alpine Molasse. The block is rich in biotite and was deposited together with smaller (dm to m scale) granitic and sandstone boulders in the informal lithostratigraphic unit „Blockschichten vom Heuberg“.
Similar granitic debris was also found farther west. These macroscopically very similar rocks (Krenmayr, 2003a) were identified by Humer & Finger (2004) as variscic biotite granite and granodiorite. They are similar to those of the Mauthausen/Freistadt - Group or equivalent rocks, which where encountered in drillings farther east in the Tullner Feld area.

Due to the expected high electrical resistivity contrast (silt / marl and granite) the multi electrode geoelectric method was used to study the granite body.
The geoelectrical measurements of the granite block with a total of four profiles revealed dimensions of approx. 21 x 29 x 8 m (width x length x depth). With its volume of about 2900 m3, it is probably the largest known single component in Lower Austria Molasse deposits.
The age of the surrounding marls, sands and sandstones was determined by foraminifers und nannoplankton associations as Eggenburgium (Lower Miocene).

Primarily submarine debris flow come into consideration as transportation and deposition mechanism due to accompaning sediment structures (massive fabric, lack of gradation and sorting, solitary sizable matrix supported components in fine sand matrix). Imbrications on the basis of the sequence point to a transportation of the material from the north (Bohemian Mass) towards the south.
It is well known that the southernmost area of the Bohemian Mass was affected by fracture tectonics in the era of the lower Miocene – this is documented by widespreaded crystalline megabreccia of the Mauer-Formation in the Dunkelstein-Forest (Krenmayr 2003b).
Therefore the giant block could be a big rock fragment, which slided off a submarine fault scarp of the northern slope area and reached the deeper basin area with a large debris flow.

HUMER, B. & FINGER, F. (2004), Jb. Geol. B.-A., 144/3+4, 399-400, Vienna.
KRENMAYR, H.G. (2003a), Jb. Geol. B.-A., 143/3, 464-465, Vienna.
KRENMAYR, H.G. (2003b), Jb. Geol. B.-A., 143/3, 351-353, Vienna.