

isostatically compensated trough which is underlain by a considerably thin crust. Available results of geophysical investigations show that the basement underneath the Benue Trough is irregular in shape and folded and uplifted in places mapping out several basinal structures in which sediments of varying thickness have been laid down. Sedimentary thickness in the trough averages from about 0.38 km to an estimated maximum of about 7.00 km. These sediments have been interpreted as being folded and cut across by numerous faults, 5 - 160 km in length whose trends are mostly anti-parallel to the axis of the trough.

Geophysical investigations further suggest the existence of igneous intrusives of basic to intermediate composition within the Benue Trough. These intrusives occur at depths which vary from as shallow as 0.005 km to depths of 8.0 km or more. On the basis of geophysical studies, the Benue Trough can be described as an elongated rift of subsidence in which a thick succession of sedimentary rocks, evaporites and intrusives have been emplaced. Results of geophysical studies so far carried out support the fact that the evolution of the Benue Trough involves asthenospheric up-doming, crustal thinning and stretching, emplacement of igneous bodies and block faulting.

Magnetotellurics in the Senegalo-Mauritanian Basin, West Africa

ORSTOM Fonds Documentaire

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The deep geologic structure of the onshore Mesozoic-Cenozoic Senegalo-Mauritanian basin (West Africa) has been studied using the magnetotelluric (MT) method along three approximately linear traverses, with a limited amount of information provided by deep drilling. The interpretation of the MT data, given in terms of two-dimensional (2-D) resistivity structures, indicate that the main gross lithological boundaries of Senegal can be readily followed by using calculated resistivities derived from the 2-D Mt modelling. The resultant interpretive cross sections depict three important layers in the electrical stratigraphy (post-Senonian, pre-Senonian, basement). Conductive horizons not indicated in the borehole logs are also observed and are probably caused by saline water-filled fracture zones. The basin is characterized by water-saturated, unconsolidated, low-resistivity sediments. In the southern part of the basin, there are relatively conductive (10-30 ohm-m) formations below the Mesozoic which are interpreted to indicate very fractured sandstones of Ordovician-Devonian age. However, delineation of the boundary between Jurassic limestones and basement rocks is somewhat uncertain due to the low electrical resistivity contrast. With the details provided by the MT data, a geologic model has been developed. This indicates that the basin is a westward-sloping, open homocline in which the structure is controlled by basement faults that portray a more or less staircase structural style.

La chaîne des Mauritanides au Sénégal Oriental:  
Interprétation de deux profils magnétotelluriques

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Des mesures récentes du champ électromagnétique (méthode magnéto-tellurique), le long de deux traverses au Sénégal Oriental, depuis le bassin côtier jusqu'au craton ouest africain à travers la chaîne des Mauritanides, ont permis d'établir des

modèles géo-électriques à deux dimensions (1) dans lesquels des inhomogénéités térales de conductivité électrique sont mises en évidence dans la croûte et manteau supérieur. Ces inhomogénéités indiquent une diminution importante, suivie dans une direction N-S, de l'épaisseur crustale à l'ouest du craton ainsi qu'un changement brutal de l'épaisseur de la lithosphère au droit de l'accident de Bissau-Kidira. Les coupes géo-électriques indiquent également des changements de résistivité liés aux différentes unités lithostructurales de la chaîne des Mauritanides, leur extension en profondeur. Ces résultats permettent de confirmer le modèle géodynamique proposé par Villeneuve (2) et de l'affiner: l'unité "Bassarès" à volcanisme basique, représentant l'ouverture d'un bassin plus ou moins océanisé, chevauchée au Panafricain par l'unité "Koulountou" à volcanisme calcoalcalin. Le plan de suture, à plongement ouest, est masqué par le bassin molassique de Ykounkoun. L'unité de la Koulountou est pincée et redressée vers le Nord par l'existence de l'accident lithosphérique de Bissau-Kidira (3), dont le jeu transformé Panafricain semble confirmé.

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#### Results of magnetotelluric and seismic investigations in the High and Middle Atlas Mountains, Morocco

G. Schwarz and P.J. Wigger (Berlin, F.R.G.)

The field measurements were carried out in 1983 along a profile running from Erfoud to NNW crossing the High and Middle Atlas mountains. As signal source for the two seismic profiles the blasts of the lead mine Zaida have been used. At the profile which crosses the Middle Atlas in NW direction at a depth of 17 km an intracrustal discontinuity was found. Between this discontinuity and the crust-mantle boundary a low velocity layer has to be stated. The total crustal thickness reaches nearly 30 km. On the other profile which crosses the High Atlas in SE direction an intracrustal discontinuity was discovered, too, but at a depth of 10 km.

Magnetotelluric measurements and geomagnetic depth sounding have been done at several recording sites. On the profile section from the High Atlas mountains to the Middle Atlas the middle crust is well conducting from site to site at different depths, with specific resistivities much less than 10 ohm.m. To the south, the conductor ends at the border to the Anti Atlas, where normal resistivities were found in crust and mantle. The southern border of this conductor is well seen in the results of geomagnetic depth soundings, too. From these results one has to assume a conductivity structure within the high mountains' crust, which is much more complicated, as it results from the first interpretation of magnetotelluric measurements. The anomalous conductivity structures may point towards a high flux content in the middle crust, as well as towards planes of overthrusting. Partial melts may not be excluded at this depth range.

First results of more extended crustal seismic measurements which have been done in 1986 in the above mentioned region will be introduced, too.



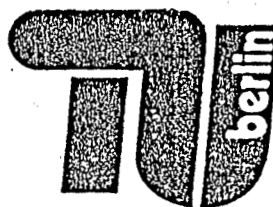
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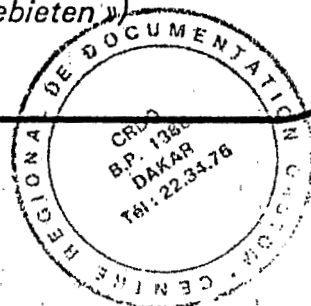


**ABSTRACTS**

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