

currents. This implies that spiny Lower Devonian plants may represent a special adaptation to frequently (or seasonally?) flooded river sides and banks. If this suggestion is correct, the relative abundance of spiny plants can reflect a repeatedly high energy paleoenvironment in a fluvial/deltaic system.

ABOUT THE USE OF GIS FOR GEOLOGICAL PURPOSES

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ABSTRACT.- The geologist has to solve spatially distributed problems (logs description, cross-section, correlation, ore estimation, etc.), and thus requires elaborate software possibilities. He needs topological and attribute databases, for an accurate digital description of the data, but also procedures and techniques for data management and spatial analysis as well as elaborate display facilities.

The database structure, beyond the usual functionalities of structure flexibility, friendly coding, correcting and editing, etc. must be 3D architected and must offer large text facilities. Besides algorithms for data classification and selection, networking and overlay, the system has to be able to integrate soft information, to take into account the spatial reference (through geostatistics, for instance) and to propose typical geological procedures (stereographic projections, fence-diagrams, 3D models, ...).

Using Geographic Information Systems (GIS) for geological purposes is a realist solution. The young and expanding market offers global and dedicated versions, running on PC or workstations. However, for very pointed problems like the geological ones, a unique solution is uncommon, even non-existent. The softwares are fortunately open and the geologist, through the combination of well chosen programs, can find directly and fully operational systems.

At the Natural Resources Department of INIEX, GIS are commonly used for practical purposes. The example of an actual research will be given, which show the interest but also the software requirements of GIS; it concerns the thematic mapping of the exploitation potentialities of the «Petit Granit» in Belgium.

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STRIKE SLIP DEFORMATION IN THE STAVELOT MASSIF

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ABSTRACT.- The Stavelot Massif can be divided into a northern part with a NE-SW (hercynian) direction and a southern part characterised by a E-W (caledonian) tectonic style.

These two parts are separated by a left hand (N50-60°E) strike slip fault system just south to the Malmedy Graben.

The movements along this fault system can be seen in the tectonic structure of the southern part, viz: a window structure at Falize-Ligneuville, a very complicated structure at Trois Ponts, and the typical bending of the dipping Rv5 anticline at He de Hierlot.

This strike slip fault may also be responsible for the extension of the Lower Devonian near Jevigné.

The north east prolongation of this strike slip fault passes through the seismic centre of Robertville.

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RECENT CONTRIBUTION TO TEPHROSTRATIGRAPHY BETWEEN THE EIFEL AND THE FRENCH MASSIF CENTRAL

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ABSTRACT.- Using microprobe analyses of minerals, criteria have been established for the identification of tephra which occur in Middle and High Belgium, and also in the Vosges/France: the Laacher See Tephra (11.000BP), the Eltville Tephra (16.000BP), and the Rocourt Tephra (between 62.000 and 106.000BP).

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Since glass shards have not been found in several localities in the investigated regions, the most recent tephra was attributed either to boreal trachytic eruptions in the Chaîne des Puys (French Central Massif), or to the Allerod phonolithic eruption of the Laacher See (Eifel). The clinopyroxenes of the Laacher See Tephra are more calcic than those of the trachytic eruptions of the Chaîne des Puys. The composition of titanite is also quite different in each tephra. Therefore the only recent tephra layer in the Vosges and in High Belgium must be correlated with the Laacher See Tephra.

A basic tephra layer which was found in loess profiles of Belgium and The Netherlands was correlated previously with the Eltville tephra which is well known in central Germany. This correlation was contested using stratigraphical criteria. Recently it has been demonstrated that the clinopyroxene and olivin respectively have identical chemical composition throughout the lobe.

For the last 40 years, enstatite is considered as the guide mineral of the widespread Rocourt Tephra. Since enstatite is only known in ultra-basic magma, its optical determination has been doubted by some authors. Microprobe analyses firmly proved the presence of enstatite in the tephra so that it can be used as guide mineral for the relevant volcanic material.

BIOSTRATIGRAPHICAL CORRELATION BETWEEN THE HANGENBERG SCHIEFER (NORTHERN «RHEINISCHES SCHIEFERGEBIRGE») AND GLACIGENIC DEPOSITS IN BRAZIL

M. STREEL¹ & S. LOBOZIAK²

ABSTRACT.- Clastic sedimentary sequences with glacial characteristics of Late Devonian age are described in several basins of Brazil. They were dated as Famennian *sensu lato*. Samples from these sequences in the Amazonas and Parnaíba basins contain well preserved miospores which allow a accurate correlation with the uppermost Famennian (Middle *praesulcata* Zone

equivalent) *R. lepidophyta* - *H. explanatus* and *R. lepidophyta* - *V. nitidus* Zones (LE and LN Zones). The same miospore-zones characterize the Hangenberg Schiefer and Sandstein in the Northern «Rheinisches Schiefergebirge» which are considered to correspond to a sudden drop of sea level. Such an accurate time relationship between glacial sediments in Brazil and drop of sea-level in Germany (and around the world!) suggests that they might have the same climatic origin.

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DEUX SONDAGES A MALMEDY

Georges VANDENVEN¹

avec la collaboration de Melles

B. LEONARD (Lg) et A. SMOLDEREN (L)
et de MM.

Ph. ANCIA (Lg), F. DIMANCHE (Lg), J. THOREZ (Lg)
et M. VANGUESTAINE (Lg)¹

SITUATION DES SONDAGES

MALMEDY I

INTERMILLS, route de Robertville; X=267.851, Y=126.078, Z=+338,443m, archivé 169E/379; profondeur atteinte: 200m.

MALMEDY II

EMBRANCHEMENT AUTOROUTIER DE WAVREUMONT. X=265.210, Y=123.672, Z=+395,256m' archivé 160W/928; profondeur atteinte: 200m.

NIVEAUX LITHOLOGIQUES TRAVERSES PAR «MALMEDY I»

De 0,00 à 4,00 m :

Alluvions de la Warche.

De 4,00 à 38,36 m :

Formation moyenne des Poudingue de Malmédy (F. à galets de calcaire). Les éléments calcaires ont été attribués au Couvinien, au

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