

17TH REGIONAL AFRICAN EUROPEAN MEETING OF SEDIMENTOLOGY

المؤتمر الإقليمي الإفريقي الأوروبي
السابع عشر لجيولوجيا الرسوبيات

ABSTRACTS



SFAX - TUNISIA
March 26th - 28th 1996

IAS

INTERNATIONAL ASSOCIATION OF SEDIMENTOLOGISTS
ÉCOLE NATIONALE D'INGÉNIEURS DE SFAX
FACULTÉ DES SCIENCES DE SFAX - FACULTÉ DES SCIENCES DE TUNIS
ASSOCIATION TUNISIENNE DES ÉTUDES INTERNATIONALES DE GÉOLOGIE

Contents

SEDIMENTARY EVOLUTION, SOURCE ROCK MATURITY, OIL GENERATION IN THE RIFT BASINS OF INTERIOR SUDAN O.M. ABDULLATIF	1
AGE AND NATURE OF THE NEAR K-T DEPOSITS IN MEXICO, IMPLICATIONS FOR THE PROPOSED CHICXULUB IMPACT ON YUCATAN. T. ADATTE, W. STINNESBECK & G. KELLER	2
STRATIGRAPHY AND MAIN SEDIMENTARY DEVONIAN CYCLES OF ILLIZI-GHADAMES F. AISSANI & H. TOURQUI	3
LES MODELES SEDIMENTO-PEDOGENETIQUES DANS LE TRIAS SAHARIAN R. AIT OUALI & A. NEDJARI	4
LES BIOCONSTRUCTIONS CARBONIFERES DU BASSIN DE BECHAR-MEZARIF, ALGERIE R. AIT OUALI & A. SEBBAR	4
NEW DATA ON THE MEDITERRANEAN RIDGE MUD VOLCANISM G.G. AKHMANOV	5
ECONOMIC POTENTIAL OF CU MINERALIZATION IN METABASALTS NORTH-EAST OF IRAQ (CASE STUDY OF BORE HOLE) M. AL HILLALI	6
GEOCHEMICAL PROSPECTING FOR COPPER MINERALISATION IN WARAZ AREA, NORTH EAST IRAQ M. AL HILLALI	7
FACIES ANATOMY OF A RAMP - BASIN TRANSITION KHASIB FORMATION, CENTRAL IRAQ B. AL - QAYIM	7
NEOARCHEAN CARBONATE PLATFORM DEVELOPMENT: AN EXAMPLE FROM THE KAAPVAAL CRATON, SOUTH AFRICA W. ALTERMANN & D.R. NELSON	8, 9
THE ROLE OF GLAUCONY IN BASIN ANALYSIS AND SEQUENCE STRATIGRAPHY: AN EXAMPLE FROM THE EOCENE OF THE ISLE OF WIGHT (SOUTHERN ENGLAND) A. AMOROSI & M.C. CENTINEO	10
LATE QUATERNARY SEDIMENTARY EVOLUTION IN THE PO PLAIN COASTAL AREA (NORTHERN ITALY) A. AMOROSI, D. PRETI, G. DIDIO & N. MARCHI	11
THE DANUBE DEEP SEA FAN. MAIN FEATURES AND ORIGIN A. M. AKHMETJANOV, M. K. IVANOV & V.V. ARCHIPOV	12
FACTORS CONTROLLING COMPACTION IN A FLUVIAL SEQUENCE: OLIGOCENE-EARLY MIOCENE OF LORANCA BASIN, CENTRAL SPAIN J. ARRIBAS, M^oE. ARRIBAS, & A. TORTOSA	13, 14

FACTORS CONTROLLING COMPACTION IN A FLUVIAL SEQUENCE: OLIGOCENE-EARLY MIOCENE OF LORANCA BASIN, CENTRAL SPAIN

J. ARRIBAS, M^aE. ARRIBAS, & A..TORTOSA

Departamento de Petrología y Geoquímica, Univ.Complutense de Madrid, 28040-Madrid, Spain.

Loranca basin was filled during Late Oligocene - Early Miocene by fluvial deposits (Upper Detrital Unit) derived from sedimentary mesozoic highlands (fig.1). Sandstone deposits are represented by meander loops, channel fills and crevasse splay embedded in fine grained mudstones (flood plain sediments; fig.2). During sedimentation of this unit, a paleoclimatic change from tropical -sub-tropical towards more arid conditions has been deduced from paleontological, sedimentological and petrological evidences.

Quartz (65% approx.) and extra- and intrabasinal carbonate grains (27% approx.) are the most abundant framework components in sandstones (fig.3). Intrabasinal carbonates appear as micritic-oncolitic soft grains related to coeval pedogenetic, palustrine and lacustrine deposits. Intergranular volume in sandstones is preserved as primary porosity (maximum of 25%) in the lower part of the stratigraphic succession (LP), while in the upper part of the stratigraphic succession (UP) early gypsum cementation occluded completely primary pores (fig.4).

In spite of their very shallow burial (less than 300m), mechanical compaction is very intense, favoured by the abundance of intrabasinal clasts. In the LP the average compactional porosity loss is 25%, showing a clear dominance of compaction versus cementation in reducing primary porosity ($ICOMPACT = 0.78$; fig.4). These data emphasize the major role played by the intrabasinal carbonate soft grains in the irreversible loss of intergranular volume by compaction during shallow burial of LP sandstones. The average compactional porosity loss in the UP sandstones is reduced to near 15% ($ICOMPACT = 0.35$), due to gypsum cementation prior compaction.

Composition of interbedded mudstones (siltstones and claystones) from LP reflects a dominance of detrital clay minerals (illite, kaolinite and smectite; fig.2) with domain and coated microfabrics as a result of mechanical compaction. Irregular micropores represent residual porosity after compaction. Mudstones of the UP show neoformed clay minerals as palygorskite fibers joined with gypsum and dolomite crystals (fig.2) causing massive disordered and closed microfabrics. The displacive growth of these minerals into the sediment provokes the occlusion of macroporosity, and prevents compaction of the original framework components.

Some conclusive remarks concerning the factors that control compaction of fluvial sediments may be inferred. Composition of the sandstone framework is decisive in the decay of intergranular volume in the LP. However, the paleoclimatic change in the ISP manifested by the growth of early diagenetic minerals in sandstones (gypsum) and into mudstones (palygorskite, gypsum and dolomite) preserves grain packing and the effects of mechanical compaction.

