

177-16 Poster Morton, Nicol

HIGH RESOLUTION CORRELATION OF AALENIAN - LOWER BAJOCIAN (MIDDLE JURASSIC) STRATA IN WESTERN EUROPE BASED ON AMMONITE BIOSTRATIGRAPHY

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Keywords: Middle Jurassic; correlation; ammonites; Europe

Jurassic sedimentary rocks have been correlated for over 200 years using ammonite biostratigraphy. This provides the foundation for the chronostratigraphical classification of the Jurassic at all levels, including Stage, Standard Zone and Subzone. These provide a means of relative dating at a very high level of precision, against which other methods of dating are calibrated. More recent work in western Europe (Scotland, England and Germany) has focussed on detailed analyses of successions of ammonite faunas in favourable situations of preservation and abundance. Sequences of assemblages at the lowest level practically identifiable in the field are established. This "bottom-up" empirical method has led to the recognition of sequences of ammonite faunal horizons (biohorizons). Unlike Standard Zones and Subzones, these are not chronostratigraphical subdivisions without gaps, but they give the potential for correlation at higher resolution. Based on selected sections where abundant ammonite faunas have been collected from successive layers of strata, Aalenian and Lower Bajocian (Middle Jurassic) strata contain 42 currently recognised ammonite faunal horizons (compared with 10 Zones and 18 Zones/Subzones). Not all faunal horizons are recognised in every section, due to erosion or non-deposition, thus enabling demonstration of the incompleteness of the succession, though non-preservation can also be a factor. The durations in years of these units were, of course, highly variable. Numerical time-scales for most of the Jurassic are notoriously unreliable but, using best current estimates for bases and tops of the Aalenian and Bajocian, the mean duration of an ammonite horizon must have been of the order of 100,000 years, giving a relative precision of approximately 0.05% for correlating rocks 170-180 million years old. The new collections include rich faunas with good guide fossil assemblages that can be utilised for correlation at sub-continental level. They also help clarify the phylogeny of the evolutionary lineages.

177-17 Poster Nikitenko, Boris

HIGH RESOLUTION FORAMINIFERAL BIOSTRATIGRAPHY OF THE UPPER JURASSIC PETROLEUM REGIONS OF THE ARCTIC BASIN

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Keywords: Upper Jurassic; microfossils; zonal subdivision; Arctic

Jurassic deposits are wide-spread in the Arctic. The Jurassic is almost entirely represented by terrigenous sediments over this vast territory. The Upper Jurassic is one of the main targets for oil and gas production in the West Siberia, Northern Alaska and Canadian Arctic. The study of the Upper Jurassic from the outcrops and numerous wells in the northern regions of Siberia characterized by numerous ammonites allows the precise determination of the boundary between foraminiferal assemblages according to the ammonite zonation. During the past several years Upper Jurassic zonation of Siberia based on foraminifers has been improved, detailed and correlated with the Boreal ammonite standard. Concurrent-range zones, biozones, ecozones or complex parallel phylozones have been used to develop foraminiferal zonation. At the same time, zones of narrow and wide ranges, characterized by different foraminiferal assemblages in various facies, have been defined. Micropalaeontological study of numerous Upper Jurassic sections of Northern Alaska, allows establishing the succession of foraminiferal zones similar to Siberian one. Therefore the stratigraphic analysis of foraminiferal assemblages provides the reliable definition of the stratigraphic range of sandy reservoirs of Kingak Formation. The studying the microfossils of Arctic Canada Canadian micropalaeontologists revealed the significant similarity of taxonomical composition of Upper Jurassic foraminifers of Canadian Arctic and Western Siberia. Upper Jurassic foraminifers of Frantz Josef Land and Svalbard were studied by Russian and Norwegian micropalaeontologists for a long period. The published data on layerwise stratigraphic distribution of Upper Jurassic foraminifers allow to follow here some Siberian foraminiferal zones. The foraminiferal assemblages of northern regions of North-West of Pechora basin are rather specific. They comprise both Siberian and southern elements that result in alternation of local and Siberian assemblages in foraminiferal succession of this region. Thus, Upper Jurassic foraminiferal zonations developed from northern regions of Siberia sections is traced over the whole Arctic basin. Therefore Upper Jurassic zonations based on foraminifers established for northern Siberia can be considered as an Arctic zonal standard. Moreover, a number of marker-levels, based on microfossils have been traced which allow us to correlate Arctic and European microfossil zonations of Upper Jurassic age.

177-18 Poster Ram, Awatar

DISCOVERY OF THE MIDDLE-LATE JURASSIC PALYNOFOSSILS FROM THE INDUS-SUTURE ZONE, LADAKH HIMALAYA, INDIA

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Keywords: Palynology; Jurassic; Indus- Suture Zone; Ladakh; Himalaya

The result of a palynological analysis of the sedimentary sequence of Lamayuru Formation, Ladakh Himalaya is presented here. The palynoassemblage recovered from the slightly younger horizon of the well-dated Hettangian *Psiloceras planorbis* (Lower Jurassic ammonitina) bed, near Saraks locality (~300-400 m, NW of Khangral Village), in the Indus-Suture Zone of the Lamayuru Complex. The samples, which yielded the palynofossils, consist of fine-grained sandstone, siltstone, carbonaceous shale, and limestone of turbiditic origin. The palynoassemblage revealed the dominance of monosaccate pollen- *Callialasporites dampieri* followed by followed by disaccate taxa i.e., *Podocarpidites grandis*. The diversified spore/ pollen flora incorporated with *Alisporites grandis*, *Murospora florida*, *Microcachryditites antarcticus* and *Podosporites tripakshi*. The assemblage has been correlated with the known Jurassic palynoassemblage of India and *Murospora florida* Zone of Australia. This is the first record of Jurassic palynofossils from Ladakh Himalaya, and on the basis of the marker palynotaxa a Middle Callovian to Kimmeridgian age has been assigned to the present assemblage.

177-19 Poster Rogov, Mikhail

PRELIMINARY REPORT ON THE CALLOVIAN/OXFORDIAN BOUNDARY IN THE CENTRAL RUSSIA

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Keywords: Callovian/Oxfordian boundary; Russian Platform; GSSP; faunal horizon

Last decades there are many papers devoted to biostratigraphy of the Middle-Upper Jurassic boundary beds were published and some sections for the GSSP were suggested. Throughout in the Russia as well as in the Europe with rare exception Callovian-Oxfordian boundary traced by the condensed and incomplete deposits (Brochwic-Lewinski et al. 1984). Only in the temporal quarry near Saratov (Dubki section) good and rich by the taxa and individuals ammonite succession through these levels occur (Mitta 2003; Rogov & Egorov 2003). As in the Oxford Clay facies in southern England, these beds have the potential to yield information on microfossil assemblages. In our opinion this section is good candidate for the Callovian/Oxfordian boundary GSSP. Ammonite succession consists from taxa of the different palaeobiogeography confined areas. Therefore we can build few independent scales of faunal horizons, based on the Boreal (Cardioceratid), Subboreal (Kosmoceratid) and Submediterranean (Aspidoceratid and Opeleiid) ammonites. Here we proposed summary of the ammonite succession within faunal horizons: Upper Callovian, Lamberti Zone, Lamberti Subzone, Lamberti horizon Callomon 1964, *Quenstedtoceras lamberti* (Sow.), *Q. zieteni* Maire, *Q. brasili* R.Douv., *Vertumnicerias vertumum* (Leck.), *Kosmocerias subspinosa* (Nik. et Rozhd.), *K. duncani* (Phill.), *Peltoceras* sp. *mojarowskii* horizon Gulyaev et al. 2002, *Cadoceras williamsoni* (Buck.), *Kosmocerias rotundum* (Quenst.), *K. mojarowskii* (Nik. et Rozhd.), *Sublunuloceras* cf. *nodosulcatum* (Lah.), *Putealiceras douvillei* Jeannot, *Brightia* sp., *Grossouvria sulcifera* (Opp.) *paucicostatum* horizon Marchand 1979, *Vertumnicerias paucicostatum* (Lange), *V. mariae* (Orb.), *Quenstedtoceras orbis* Maire, *Cardioceras* (*Scarburgiceras*) sp. nov., *Choffatia poculum* (Leck.), *Euaspidoceras* sp., *Sublunuloceras* cf. *deperditum* (Rollier). Lower Oxfordian, *Mariae* Zone, *Scarburgense* Subzone, *Scarburgense* horizon Buckman 1913, *Cardioceras scarburgense* (Young et Bird), *Vertumnicerias lupповi* (Amannjuzov), *Sublunuloceras deperditum* (Rollier), *Euaspidoceras* sp. *woodhamense* horizon Fortwengler & Marchand 1994, *Cardioceras woodhamense* Arkell, *Praecordatum* Subzone, unnamed horizon *Cardioceras praecordatum* R.Douv., *Peltoceras* sp. *renggeri* horizon Loriol, 1898, *Creniceras renggeri* (Opp.), *Richeiceras* aff. *richei* (Lor.), *R. dentostriatum* (Quenst.), *R. sarasini* (Lor.), *Cardioceras* cf. *alphacordatum* Spath, *Peltoceras* sp. This project has been supported by RFBR grant no.03-05-64297.

177-20 Poster Duarte, Luis Vitor

FACIES ANALYSIS, CALCAREOUS NANNOFOSSILS AND PALYNOLOGICAL EVIDENCES ACROSS THE SINEMURIAN/PLIENSCHACHIAN BOUNDARY IN THE WESTERN IBERIA MARGIN

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Keywords: Early Jurassic; Integrated stratigraphy; Black shales; Palaeoenvironment; Portugal

Lower/Middle Liassic series of the Lusitanian Basin (LB) show important changes in the depositional system, from Lower Sinemurian peritidal to Pliensbachian hemipelagic deposits. Based on facies analysis, calcareous nannofossils, palynology, total organic carbon (TOC) and clay minerals of two key expanded sections, S. Pedro de Moel (SPM) and Peniche, the marine conditions around Sinemurian/Pliensbachian boundary will be characterised and the main stratigraphic constraints refined. In western sector of the LB, the *Oxyntotum-Raricostatum* Zone consists in marl/limestone rhythmic alternations (lower portion of Agua de Madeiros Formation), in the case of SPM, very rich in centimeter-thick organic (bituminous) facies and nektonic (ammonites and belemnites) macrofauna. It (Polvoeira Member) is organised in deepening-upward sequences, corresponding to the first transgressive event occurred in the LB, in distal carbonate ramp setting. The samples collected furnish diverse and well-preserved calcareous nannofossil assemblages dominated by murolith coccoliths (*Crepidolithus* and *Parhabdolithus*) and nannoliths (*Schizosphaerella* and *Orthogonoides*). Probably related to high productivity, it accumulated in a palaeoenvironment controlled by significant oxygenation oscillations as suggested by TOC (with several cases higher than 5%). The clay mineral assemblages are composed by illite, kaolinite, vermiculite and mixed-layers. Furthermore, the predominance of pollen grains and spores with respect to acritarchs is indicative of a marine environment, with a great continental influence and the abundance of rimulate pollens (mainly of the genus *Classopollis*), suggests a deposition controlled by a warm climate, probably in semi-arid conditions. The sedimentological features of the overlying Upper Sinemurian calcareous unit (Praia da Pedra Lisa Member), is referable to a shallow marine palaeoenvironment (includes planar lamination and *Rhynchocorallium*). Unfortunately, the majority of the samples collected from this marl-free unit are scarce and badly preserved. Certainly related to a deepening of the carbonate ramp and the onset of the hemipelagic sedimentation, the lowermost Pliensbachian series consists of marly transgressive facies (Vale das Fontes Formation), very rich in benthic and nektonic macrofauna. In the Jamesoni Zone we emphasize the occurrence of chlorite in the clay mineral assemblages and of the genus *Similicutum* in the well-preserved nannofossil assemblages.

177-21 Poster Ricci, Carlo

EARLY JURASSIC CONNECTIONS BETWEEN THE WESTERN TETHYS AND SOUTHERN AMERICA: A NEW DATUM

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Keywords: palaeogeography; Jurassic; ammonites

An early Jurassic seaway ("Hispanic corridor") between the Western Tethys and the South America Pacific coast through proto-Central Atlantic is already accepted by many authors. At present time, there is no general consensus about the precise age for the beginning of its activity. We would like to present a new observation which suggests that this seaway was working at least by middle Lias. The opening of the "Hispanic corridor" was connected to the break-up of Pangea which started before the Mesozoic (Stampfli et al., 2002). The NE-SW diachronic initiation and termination of the evaporitic and shallow-water carbonate deposits supports a progressively NE-SW opening of the Northern Atlantic from the Iberic areas to the present day Gulf of Mexico (Jansa, 1991). This promoted a faunal exchange between the two areas in the Liassic, as