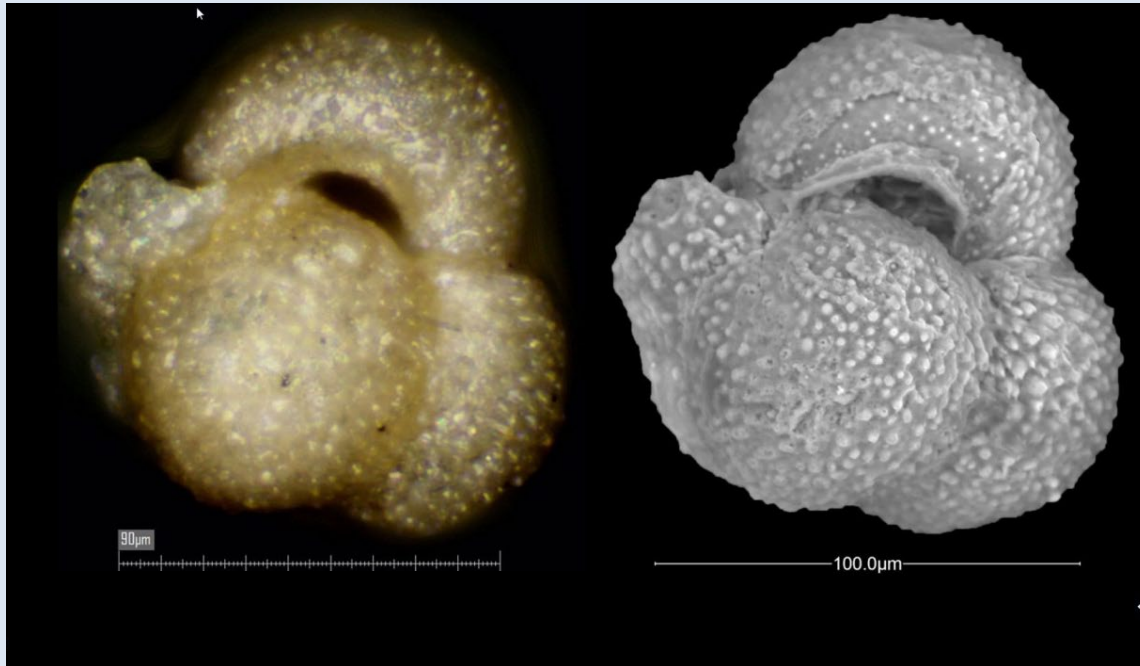


The First 40 Million Years of Planktonic Foraminifera

Industrial Applications

Felix M. Gradstein

University of Oslo, Norway and Portsmouth U., UK



Globuligerina waskowskae, Morrissi Zone, Bathonian, Poland

Jurassic planktonic Foraminifera

Evolution and biostratigraphy

Paleobiogeography

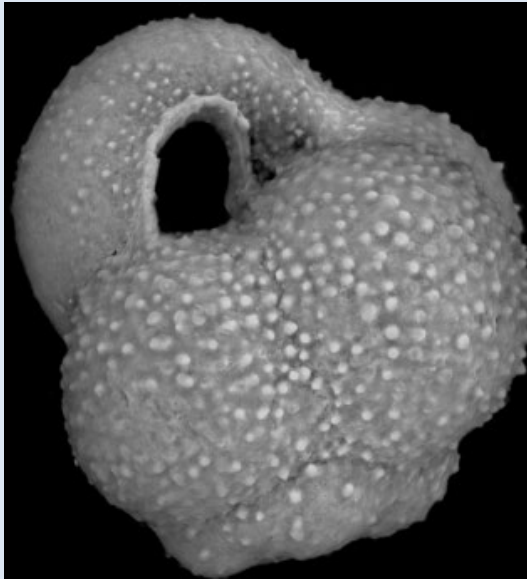
Industrial applications



Jurassic Planktonic Foraminifera

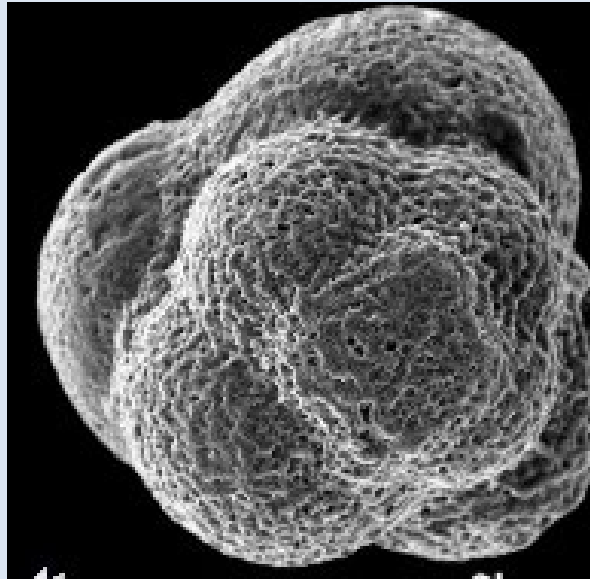
11 species in 3 genera (~100 μ tests)

Low to high-spired
Globuligerina
with pustulose wall



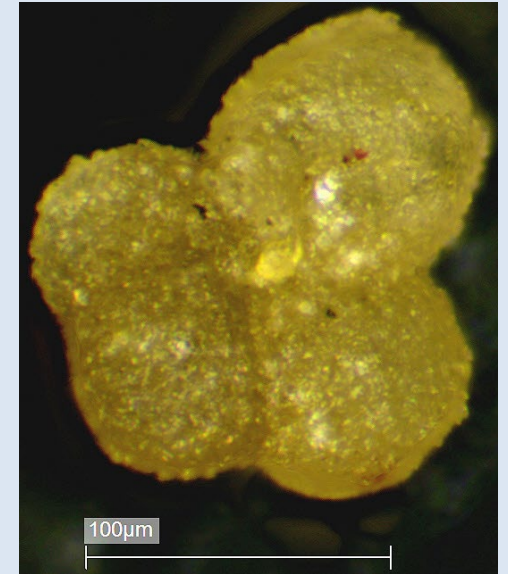
Bajocian – Tithonian

Medium high-spired
Conoglobigerina
with reticulate wall



Oxfordian - Kimmeridgian

Low spired, large final whorl
Petaloglobigerina
petaloid chambers maybe twisted



Kimmeridgian

MIKROTAX

<https://www.mikrotax.org/pforams/mesozoic/Conoglobigerinidae>



Jeremy R. Young
University College London, UK

pforams@mikrotax - Conoglob X +

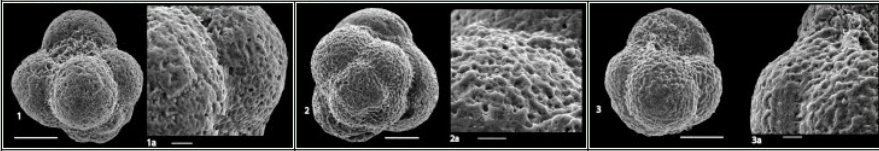
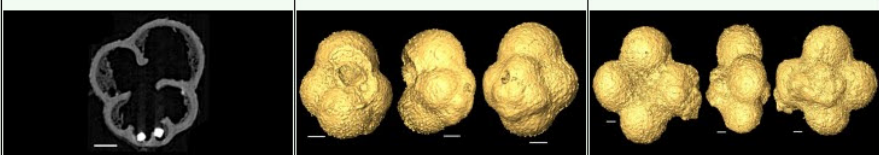

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Conoglobigerinidae

Classification: pf_mesozoic -> Conoglobigerinidae

Sister taxa: GUEMBELITRIDAE } HETEROHELICIDAE } PLANOMALINIDAE, GLOBIGERINELLOIDIDAE, SCHACKOINIDAE } **CONOGLOBIGERINIDAE**, CHILOSTOMELLIDAE, FAVUSELLIDAE, PRAEHEDBERGELLIDAE, HEDBERGELLIDAE, RUGOGLOBIGERINIDAE, ROTALIPORIDAE, GLOBOTRUNCANIDAE, HIDDEN

Daughter taxa (time control age-window is: 0-800Ma) [?](#)

| | | | Granddaughter taxa |
|---|--|--|---|
|  | <p><i>Conoglobigerina</i> Chambers of the last whorl strongly embrace previous whorls; irregularly reticulate wall surface pattern</p> | | <p><i>Conoglobigerina caucasica</i> <i>Conoglobigerina grigelisi</i> <i>Conoglobigerina gulekensis</i> <i>Conoglobigerina helvetojurassica</i> <i>Conoglobigerina sp.</i></p> |
|  | <p><i>Globuligerina</i> Wall smooth or pustulose but without reticulate pattern</p> | | <p><i>Globuligerina avariformis</i> <i>Globuligerina baskhatovae</i> <i>Globuligerina bathoniana</i> <i>Globuligerina dagestanica</i> <i>Globuligerina glinskikh</i> <i>Globuligerina jurassica</i> <i>Globuligerina oxfordiana</i> <i>Globuligerina tojeiraensis</i> <i>Globuligerina waskowskiae</i> <i>Globuligerina sp.</i></p> |
|  | <p><i>Petaloglobigerina</i></p> | | <p><i>Petaloglobigerina simmonsii</i></p> |

Gradstein, F. M., Gale, A. S., Kopaevich, L., Waskowska, A., Grigelis, A. & Glinskikh, L. (2017b). The planktonic foraminifera of the Jurassic. Part I: material and taxonomy. *Swiss Journal of Palaeontology*. **136**(2): 187-257. [gs](#) [O](#)

Gradstein, F. & Waskowska, A. (2021). New insights into the taxonomy and evolution of Jurassic planktonic foraminifera. *Swiss Journal of Palaeontology*. **140**(1): 1-12. [gs](#) [O](#)

Gradstein, F. M. (2017a). New and emended species of Jurassic planktonic foraminifera. *Swiss Journal of Palaeontology*. **136**(2): 161-185. [gs](#)

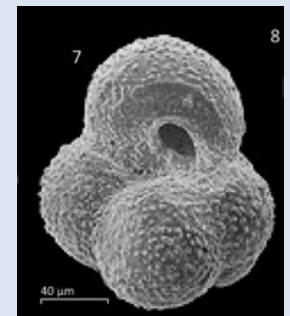
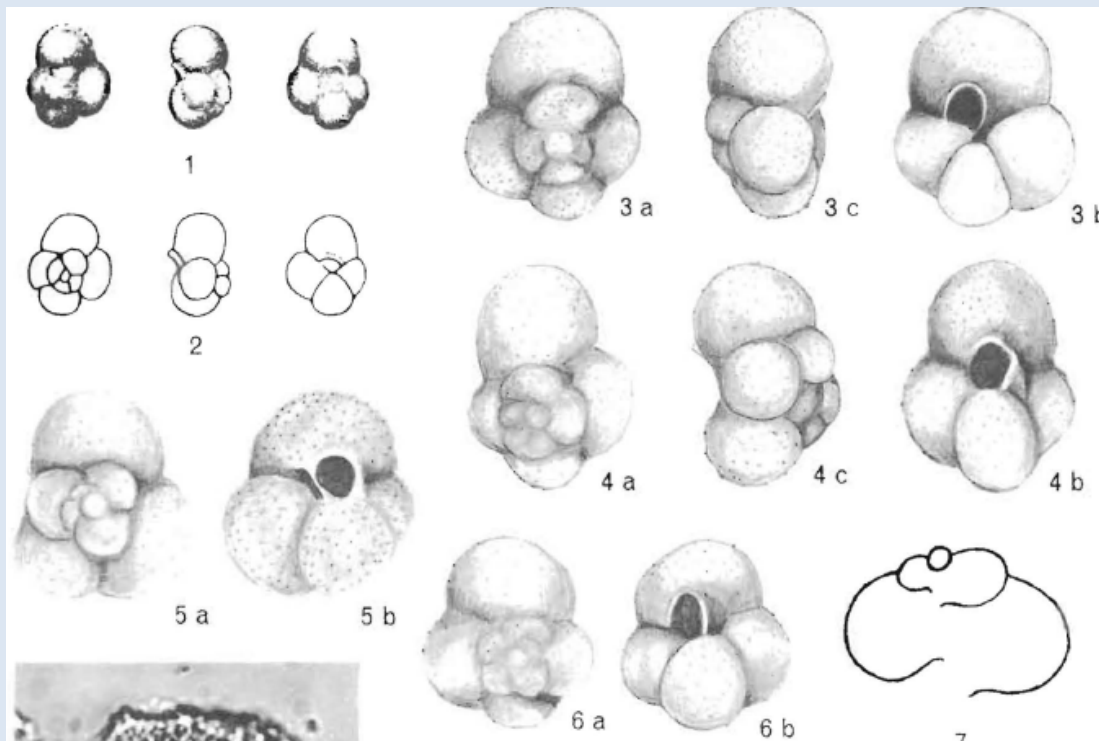
Globuligerina oxfordiana (Grigelis)

REVUE DE MICROPALÉONTOLOGIE
Vol. 9, n° 2, pp. 104-110

1966

DÉCOUVERTE DE FORAMINIFÈRES PLANCTONIQUES DANS L'OXFORDIEN DU HAVRE (SEINE-MARITIME)

par G. Bignot* et J. Guyader**



Globuligerina bathoniana (Pazdrowa)

OLGA PAZDROWA *

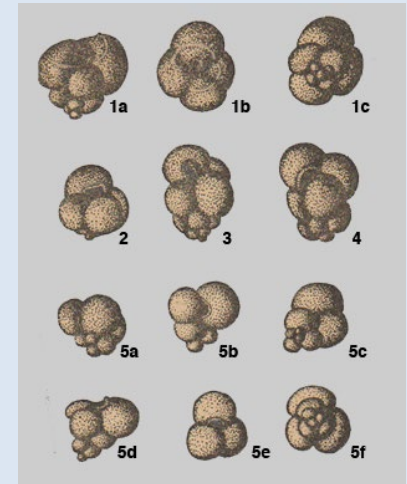
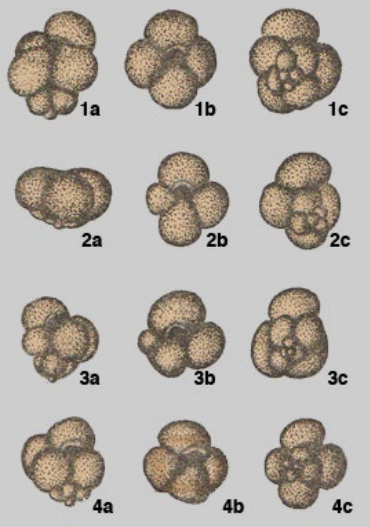
1969

BATHONIAN GLOBIGERINA OF POLAND

(Pl. II—IV, 16 Figs.)

Globigeryny batonu Polski

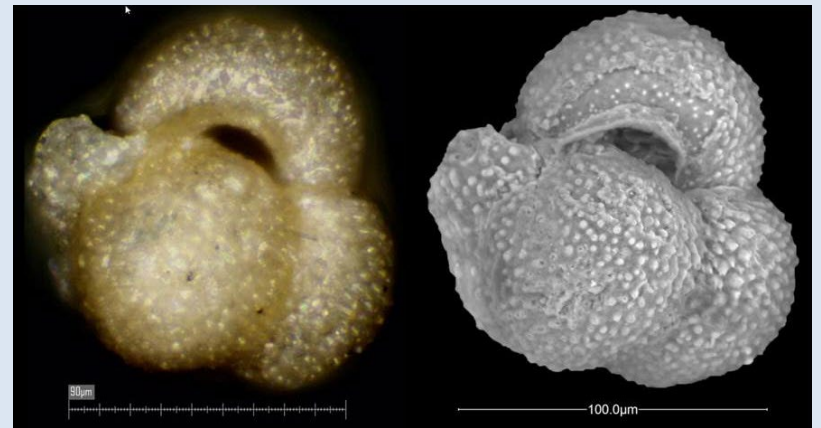
(*Tabl. II—IV, 16 fig.*)



Scanning Electron Digital Microscopy

Dr. Anna Waskowska

AGH, Krakow

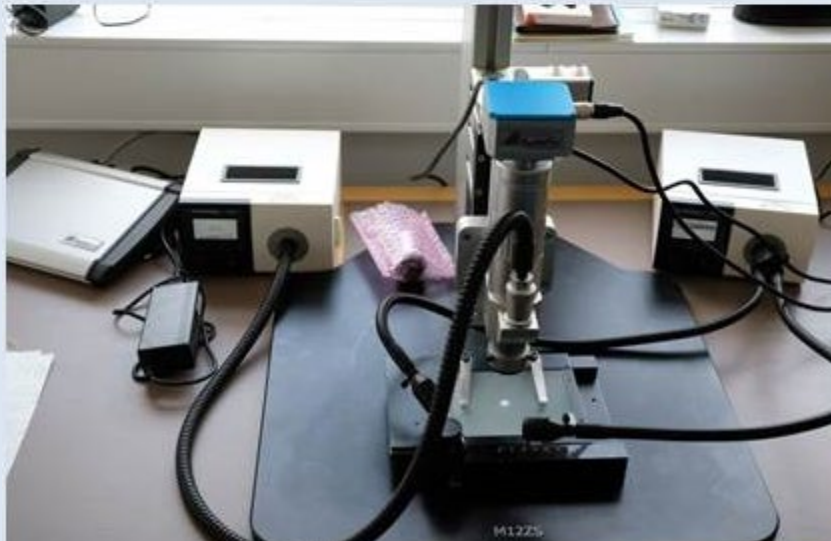
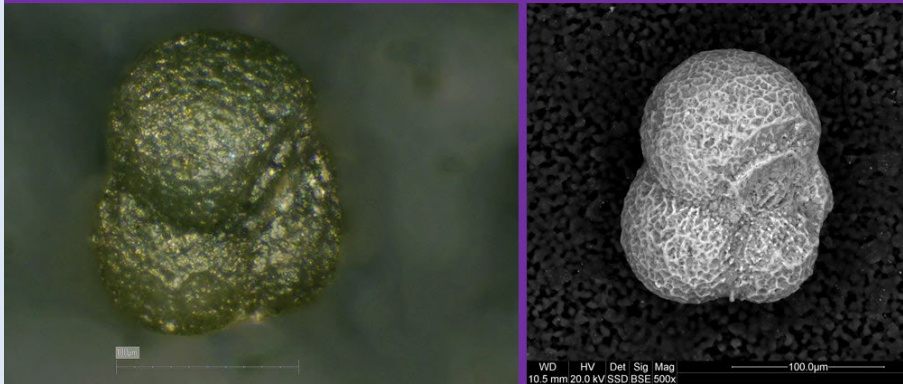


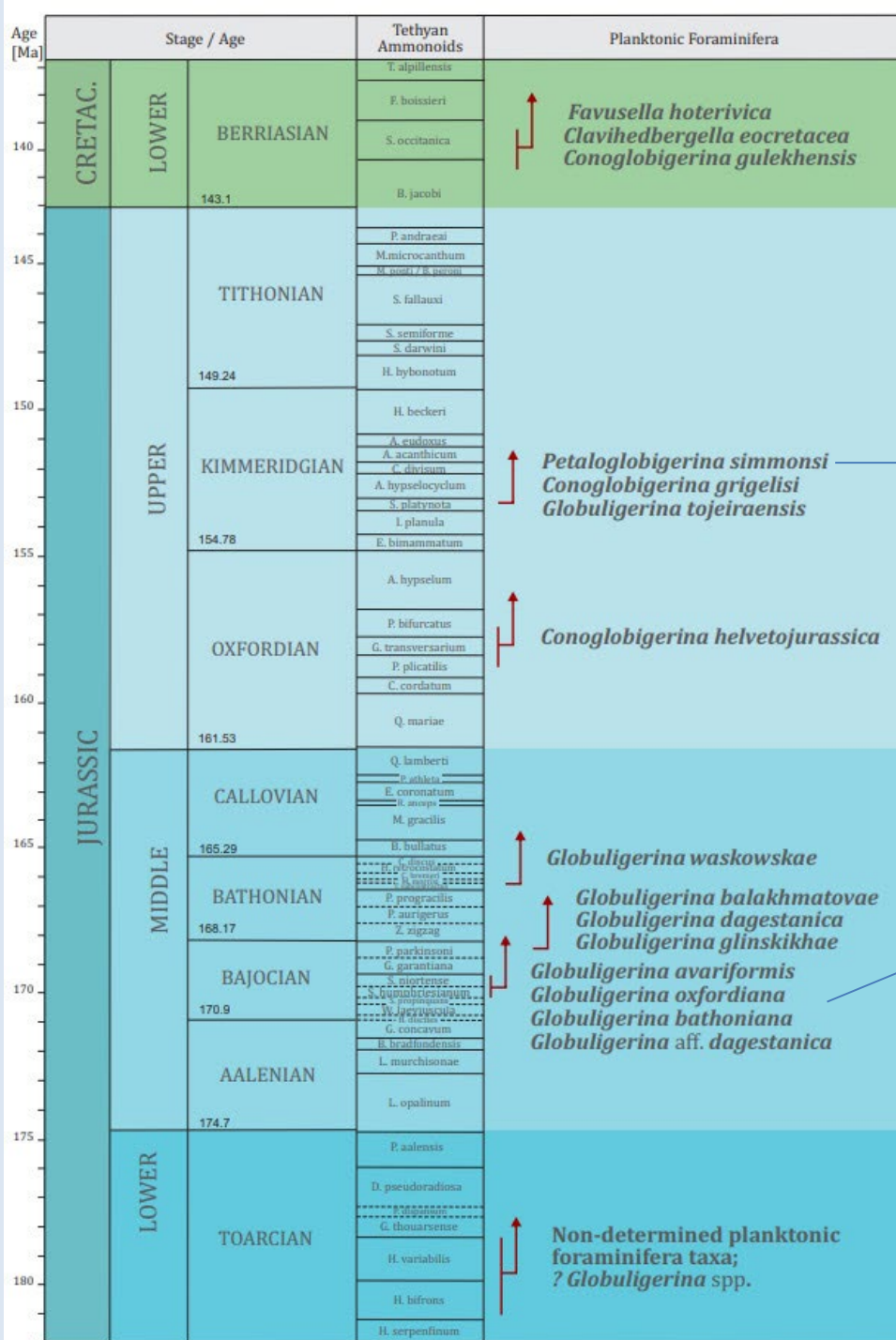
Globuligerina waskowskiae Gradstein

Digital Optical Microscopy

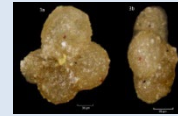
Deltapix M12ZS
with two Photonic LED lights

Favusella hoterivica (Subbotina), Oneida O-25 well, cts 9390-9460', Berriasian, E.Canada

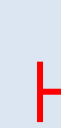
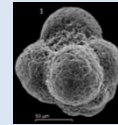




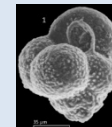
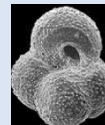
First Appearance Datum (FAD) Jurassic planktonic Foraminifera



Onset of twisted chambers in test coil

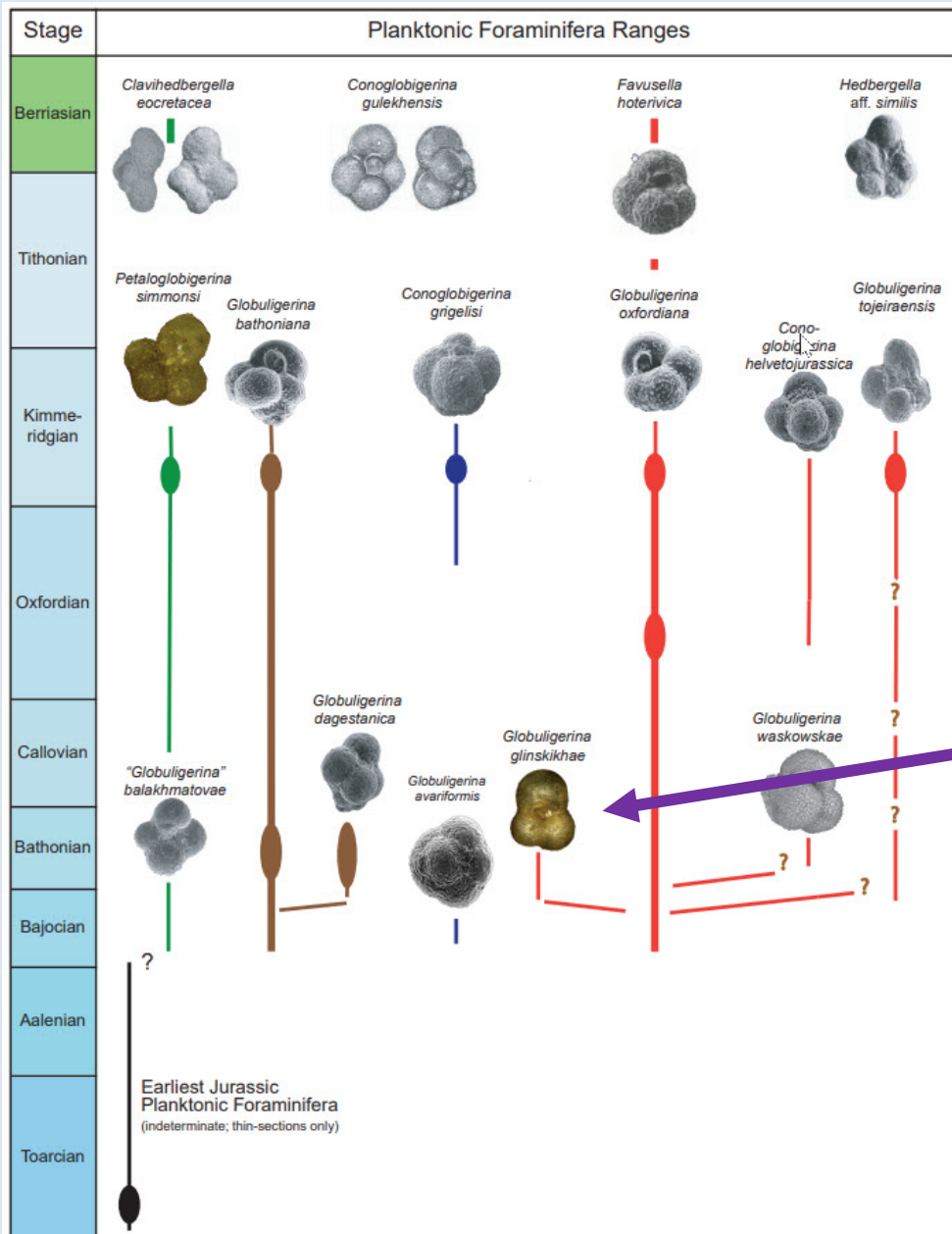


Onset of reticulate test surface



FAD of planktonic forams

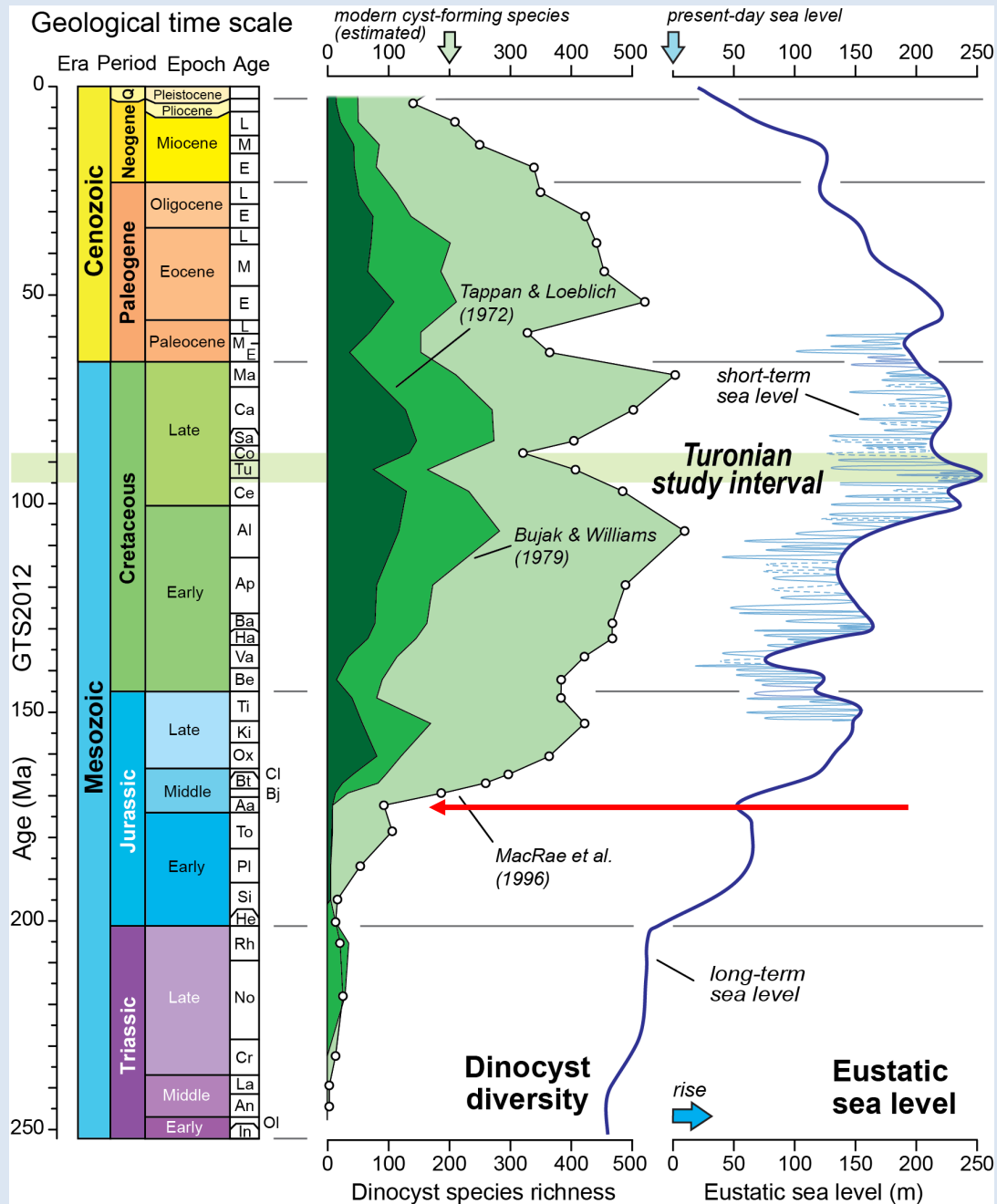
Planktonic foraminiferal ranges and acmes



Dr. Larissa Glinskikh, Novosibirsk

Figure 5. Stratigraphic ranges and evolution of Jurassic planktonic foraminifera. For details, see text.

Eustatic sea-level and dinoflagellate cyst species richness



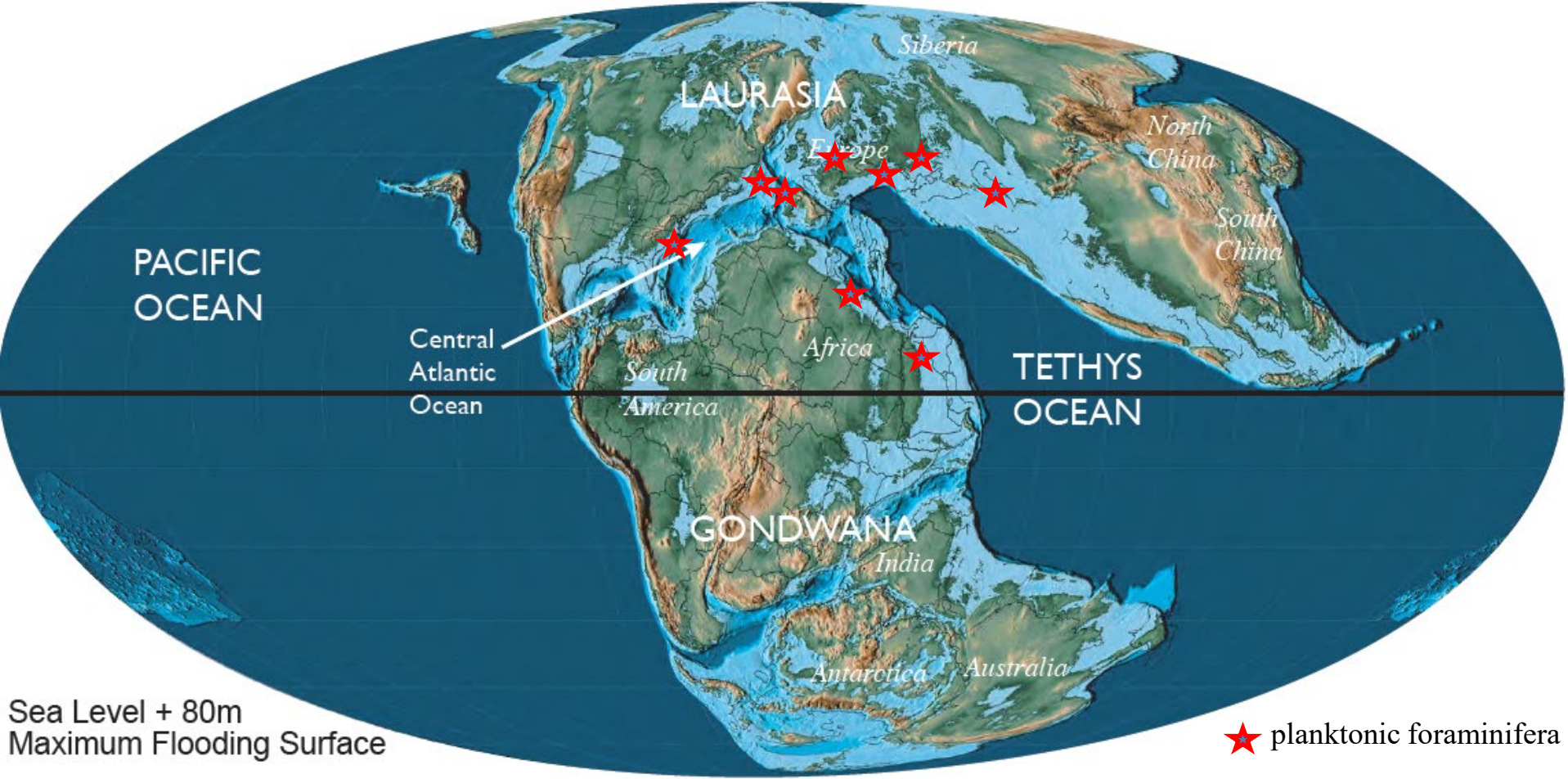
Middle Jurassic !

Paleobiogeography of Jurassic planktonic foraminifera

Relatively 'near-shore' in Tethys-subTethys marine belt

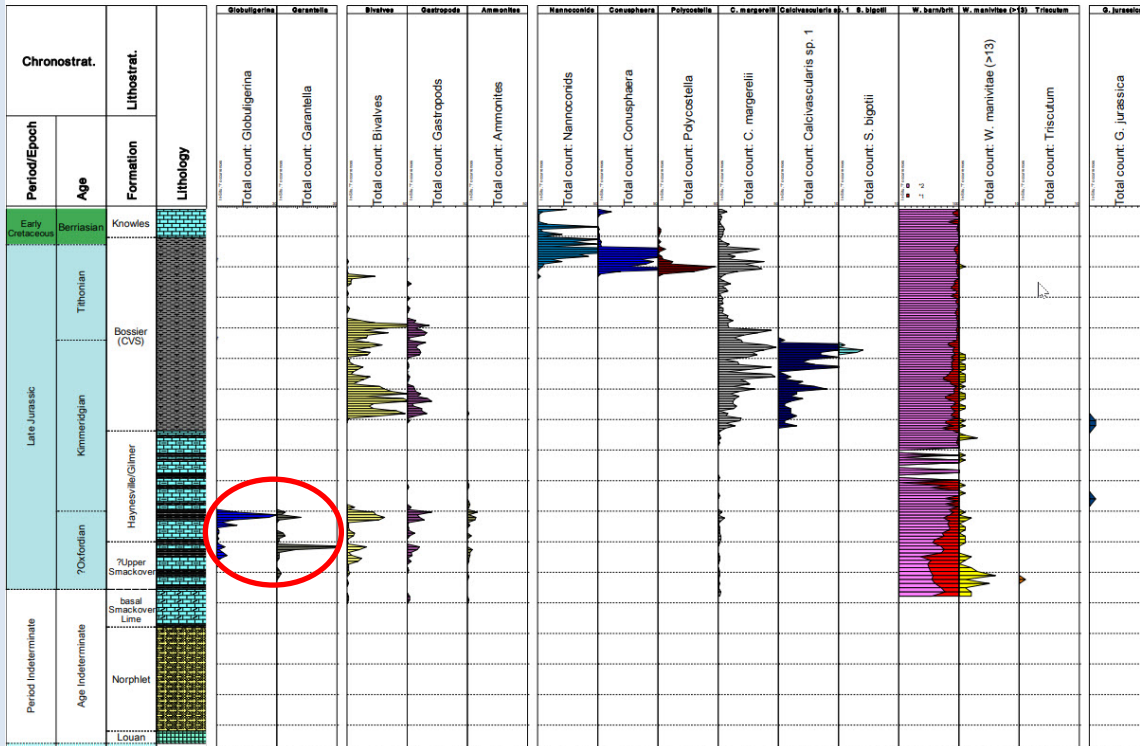


Kimmeridgian 153.2 Ma

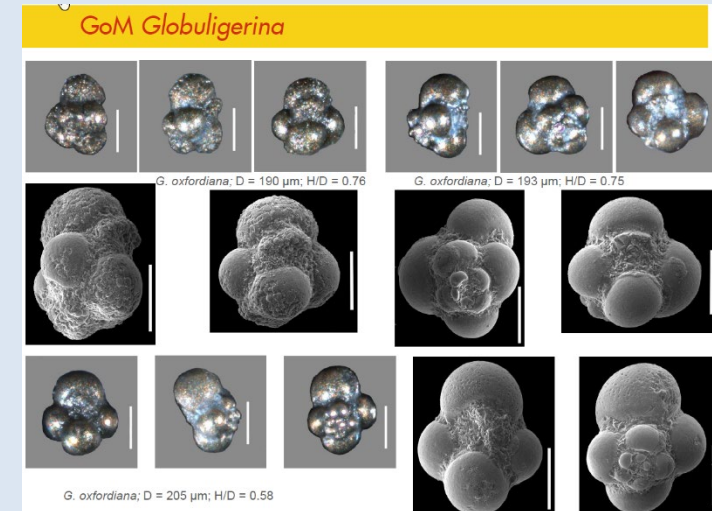


Taxa are useful markers in wells in Gulf of Mexico, Grand Banks, Scotian Shelf, N and NE Africa, USSR and Middle East

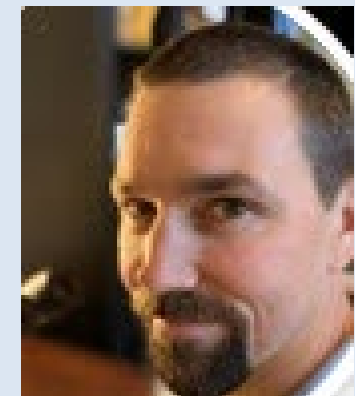
Typical NE GoM microfossil distributions



Haynesville Formation with *Globuligerina oxfordiana* and *Globuligerina bathoniana*, Oxfordian



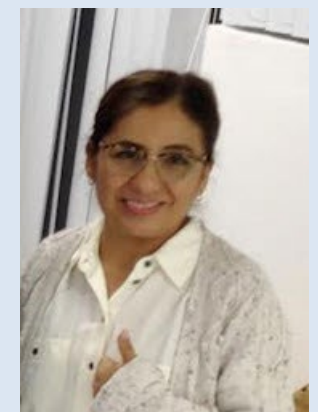
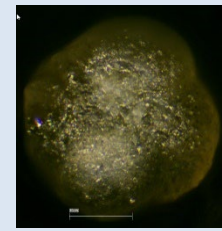
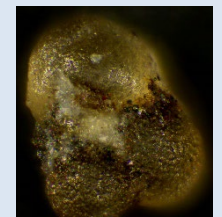
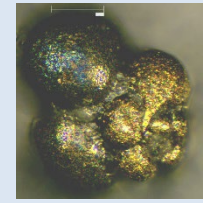
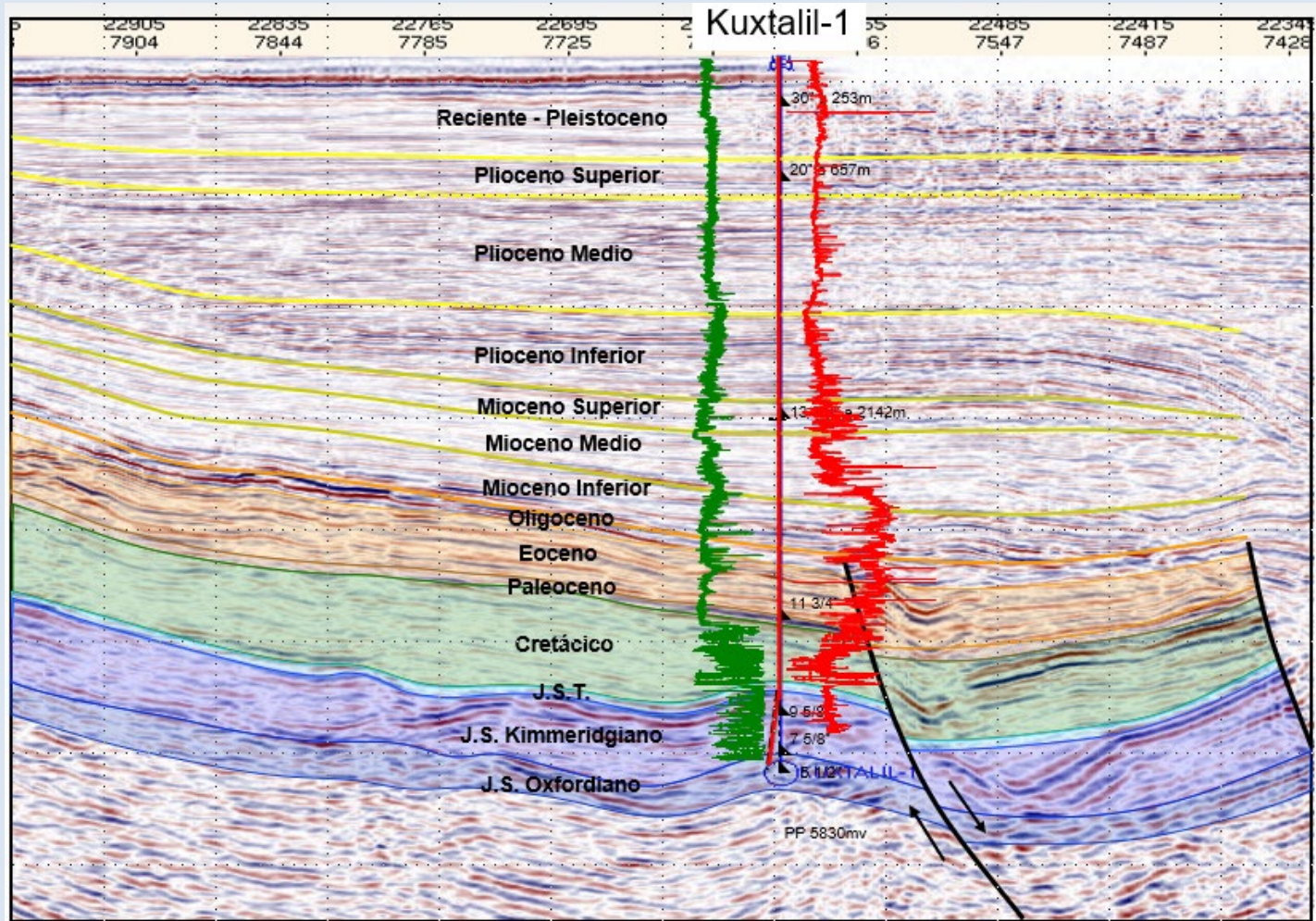
New Record of Upper Jurassic Planktonic Foraminifera from the Northeastern Gulf of Mexico



Robert Campbell, Shell

In Mexico JPF assist with stratigraphy and paleoenvironment of major deep Oxfordian oil and gas reservoirs

paly is burned out.



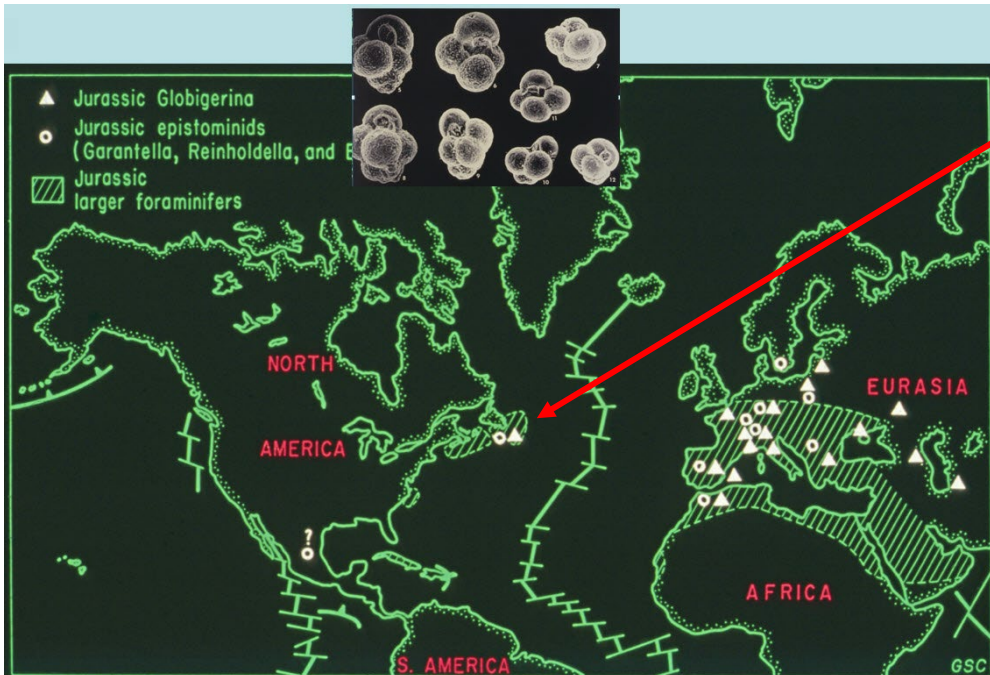
Damaris Jymenez

BIOSTRATIGRAPHY AND BIOGEOGRAPHY OF JURASSIC GRAND BANKS FORAMINIFERA

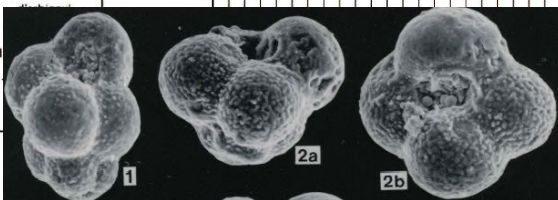
1976

F.M. GRADSTEIN

Atlantic Geoscience Centre, Geological Survey of Canada



| | AGE | GRAND BANKS FORAMINIFERAL BIOZONATION | | Taxa | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|--------|-------------------------|---------------------------------------|-------------------------------------|-------------------------------------|-----------------------------|--------------------------|------------------------------|----------------------------|--------------------------------|-----------------------|---------------------------|----------------------------------|---------------------------|--------------------------------|-------------------------------|-----------------------------|------------------------------|---------------------------------|-------------------------------------|---------------------------|--------------------------|----------------------------|-------------------------|------------------------------------|------------------------------|------------------------|------------------------------|-----------------------------|----------------------------|--------------------------|-------------------------|---------------------------|------------------------------|--|--|--|
| | | NERITIC | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | | SHALLOW - DEEP | VERY SHALLOW | <i>Anchispirocyclina lusitanica</i> | <i>Buccidrenata italica</i> | <i>Epistomina uhligi</i> | <i>Epistomina mosquensis</i> | <i>Valvulina meentzeni</i> | <i>Lenticulina quenstedtii</i> | <i>L. tricarinata</i> | <i>Paalozwella feifei</i> | <i>Pseudocyclammina jaccardi</i> | <i>Epistomina soldani</i> | <i>Reinholdella crebra var</i> | <i>Reinholdella crebra ss</i> | <i>Epistomina regularis</i> | <i>Epistomina oxfordiana</i> | <i>'Globigerina' bathoniana</i> | ' <i>Globigerina' balakhratovae</i> | <i>Reinholdella media</i> | <i>Garantella ornata</i> | <i>Garantella stellata</i> | <i>Garantella serra</i> | <i>Garantella ampasindaveensis</i> | <i>Garantella aff. rudia</i> | <i>Ostracod sp. 84</i> | <i>Lenticulina d'orbigny</i> | <i>Nodesaria columnaris</i> | <i>Involulina liassica</i> | <i>Epistomina sp. 12</i> | <i>Lingulina tenera</i> | <i>Brizalina liassica</i> | <i>Esquirtulina liassica</i> | | | |
| LATE | TITHONIAN | | <i>Anchispirocyclina lusitanica</i> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | KIMMERIDGIAN | <i>Epistomina mosquensis</i> | <i>Pseudocyclammina jaccardi</i> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| MIDDLE | OXFORDIAN | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | CALLOVIAN | <i>Reinholdella crebra var</i> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | BATHONIAN | <i>Globigerina bathoniana</i> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| EARLY | BAJOCIAN | <i>Garantella</i> spp. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | AALENIAN - TOARCIAN | <i>Lenticulina</i> | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | PLIENSCHACHIAN | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| | HETTANGIAN - SINEMURIAN | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |



Globuligerina bathoniana (Pazdrowa)

Middle and Upper Jurassic Strata of the Gotnia Basin, Onshore Kuwait: Sedimentology, Sequence Stratigraphy, Integrated Biostratigraphy and Palaeoenvironments, Part 1



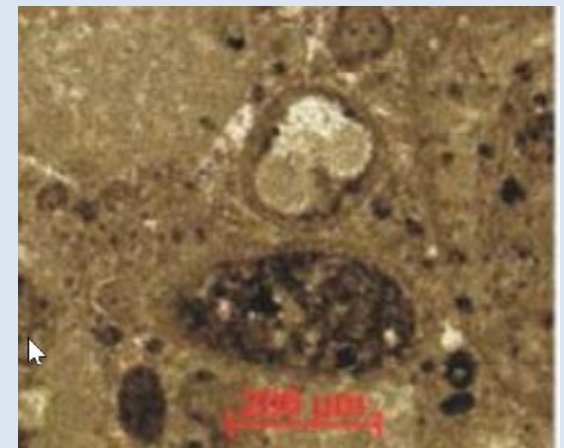
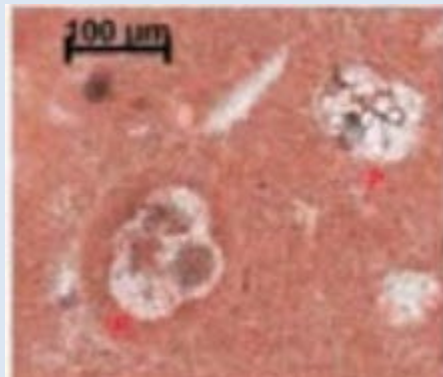
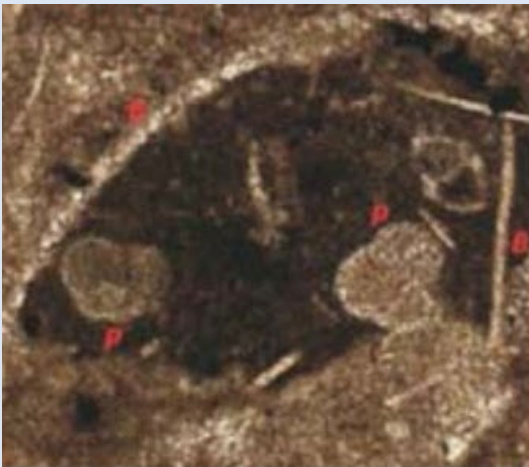
← Sandra Crespo de Cabrera¹, Thomas De Keyser², Ghaida Al-Sahlan¹, Al-Wazzan Hajar¹, Adi P. Kadar³ and Khalaf A. Karam¹

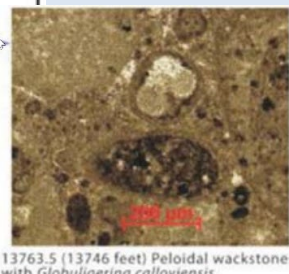
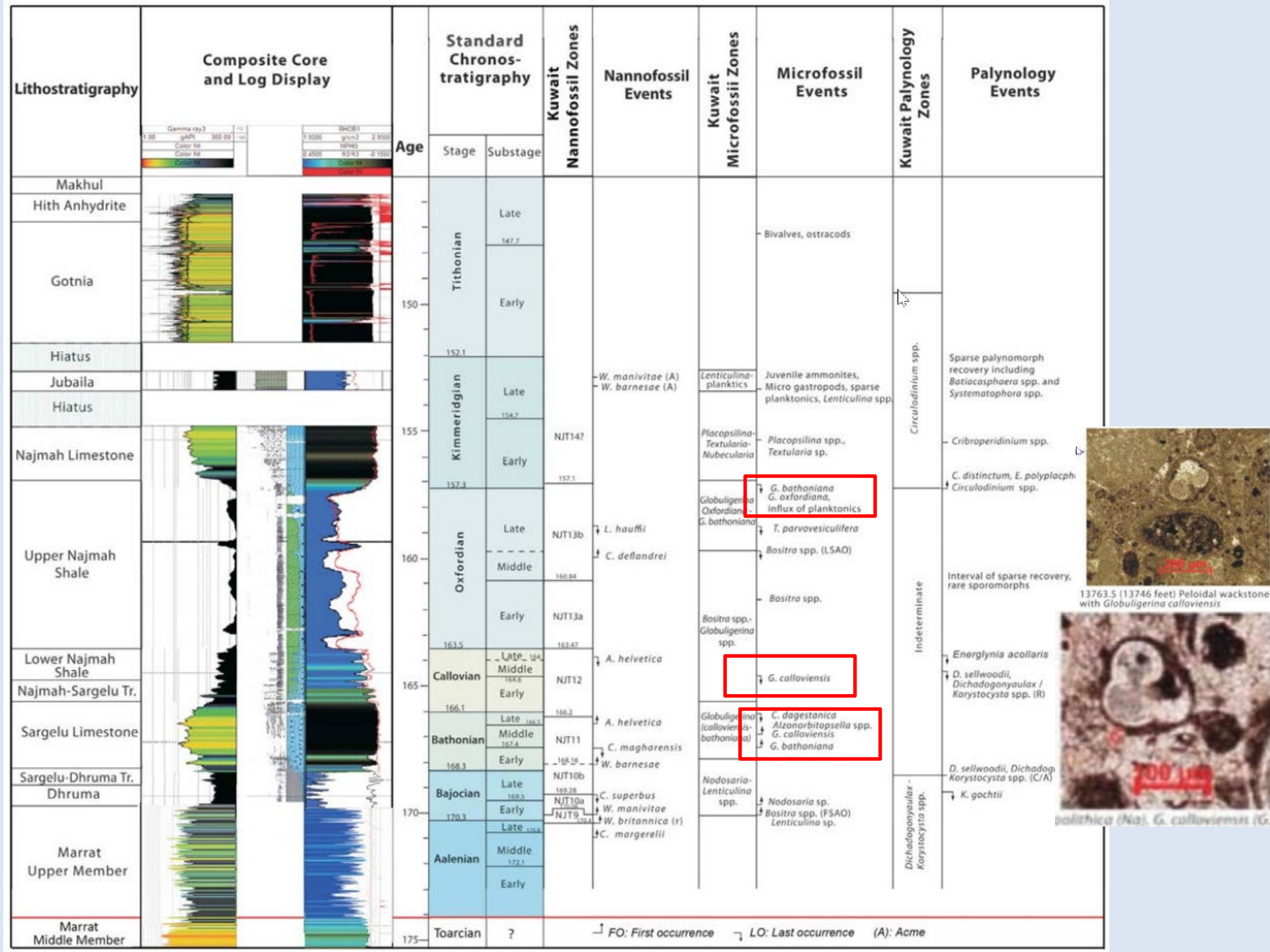
Kuwait Oil Company (KOC) Exploration Group Exploration Studies Kuwait, 2018

¹*Kuwait Oil Company, Exploration Group, P. O. Box 9758, Ahmadi, Kuwait*

²*Technically Write Consulting, LLC, 21091 Powerline Road, Harrisburg, OR 97446*

³*Jl. Raya Gadobankong 178C, Ngamprah, Kabupaten Bandung Barat, Indonesia*





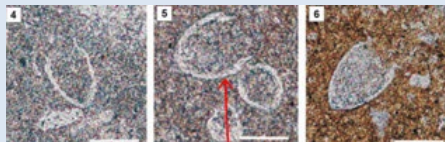
↑ FO: First occurrence ↓ LO: Last occurrence (A): Acme

CONCLUSIONS

Bajocian through Tithonian planktonic foraminifera lived along the continental margins of Tethys and sub Tethys, and evolved in 3 genera and 11 species.

In mid Cretaceous the bugs invaded all oceans

Industrial stratigraphic applications are promising



Ammonitico Rosso type limestones across the J/Cr boundary,
Veliky Kamenets, West Ukraine