FORCE: BIOSTRATIGRAPHY, CONVENTIONAL AND BEYOND (6-7 March 2024)

Abstracts

Day 1

1. StrataBugs: what have we done, where are we now, and where are we going

Paul D. Britton

StrataData Ltd

StrataBugs has been supporting the application of biostratigraphy for over 30 years. Many of original principles of the data structure have been maintained, while some have evolved, and new data types and structures have been added. The application itself has gone through three major revisions, and development is ongoing. We focus on a couple of detailed examples of the data handling in practice, and how they have evolved, and look at the possible impacts of future developments.

2. The Last of Us: palynology/biostratigraphy at the geoscience department @UIO

Wolfram Michael Kürschner

Department of Geosciences, University of Oslo

No abstract provided – it's top secret 🙂

3. The first 40 million years of planktonic foraminifera - industrial applications

Felix M. Gradstein

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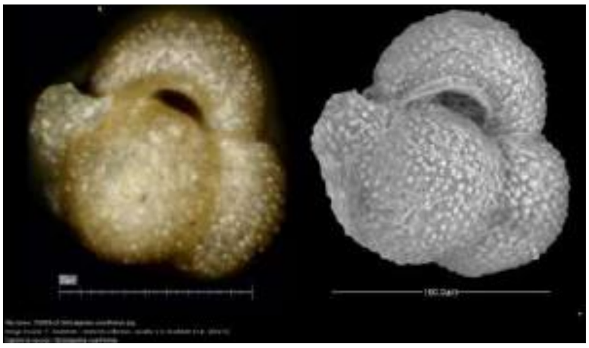
I provide a biochronology of Jurassic Planktonic Foraminifera (JPF; *), using first order linkage to ammonite and nannofossil stratigraphy and geochronology. Although taxa of JPF are regularly used in industrial (oil and gas) applications (as outlined in this presentation) the JPF as a group are enigmatic and scientifically understudied. JPF occurred from Toarcian through Tithonian time, from ~180 to ~143 Ma; its origin is unknown.

There are three genera: *Globuligerina, Conoglobigerina* and *Petaloglobigerina*. Stratigraphic events are recognized from eleven species across four evolutionary lineages, calibrated to Geologic Time Scale 2020. A dramatic faunal change over, which is not well documented led to the survival of only one taxon, most likely *Gobuligerina oxfordiana* in the Tithonian. During the Berriasian several new taxa appeared.

(*) https://www.mdpi.com/2076-3263/11/2/85



Globuligerina waskowskae

4. The application of biostratigraphic studies in the energy and subsurface-storage industries. An example from the Ainsa Basin, Spain

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Biostratigraphic studies are commonly used in the oil industry for age calibration and facies characterization. Particularly in fine-grained sedimentary successions, integration of biostratigraphic data with sequence-stratigraphic interpretations and rock-property measurements are useful to understand and predict retention of fluids in the subsurface.

This has application to petroleum exploration, as well as hydrogen and CO2 storage. Outcrop studies serve as powerful analogues to make subsurface predictions for such applications. Here, we present an integrated study of Eocene strata of the Ainsa Basin in Spain which is a great outcrop analogue for many subsurface settings and issues. This tectonically influenced siliciclastic deepwater to fluvial succession has been heavily researched for understanding reservoir architecture and seal properties, initially for oil and gas exploration, and more recently as an analogue for CO2 storage.

Our studies reveal the distribution and sealing potential of overall low Net-to-Gross successions (mudstones and siltstones) as well as their spatial and temporal relation to associated coarser-grained strata. We integrated biostratigraphy (foraminifera, nannoplankton, palynomorphs), pore typing (MICP), geochemistry, sedimentology, to build a predictive model for facies distribution and architecture in the subsurface.
We studied two stratigraphic sections: an older Upper Ypresian unit and a younger Upper Lutetian unit. The older unit (150m thick) is dominated by deepwater sediment-gravity-flow deposits interbedded with transitional to hemipelagic deposits with relatively abundant nannoplankton and planktonic foraminifera. Mudstones contain variable amounts of calcareous and agglutinated benthic foraminifera, with some clay-mineral-rich horizons exclusively containing agglutinated microfauna. These facies are interpreted as overbank deposits (levees) of channel complexes as well as distal fringes of lobe complexes. Paleoenvironmental conditions near the seafloor were at times stressful and sometimes dysoxic. Paleobathymetric estimations indicate upper to middle bathyal depths (200 - >500m).
The younger section (170 m thick), in contrast, displays a progressive decrease of planktonic foraminifera and calcareous nannoplankton and a notable increase of diversity and abundance of calcareous benthic foraminifera and reworking of larger benthic foraminifera (mostly Nummulites). This pattern records an overall shallowing of water depth from upper bathyal (500m) to neritic water depths of no more than several meters. MICP data suggests the most favourable sealing facies correspond to mudstones with significant volumes of detrital clay minerals and variable amounts of biogenic carbonate. Mudstones with high biogenic carbonate content have poor capillary sealing capacity and also tend to have abundant natural fractures, which may adversely affect mechanical sealing capacity. The poor sealing capacity of biogenic-rich mudstones is due both to primary porosity associated with microfossils, as well as secondary dissolution porosity.
Using biostratigraphic observations, we hypothesize that mudstone facies from hemipelagic settings with abundant nannoplankton and planktonic foraminifera, and
slope facies with abundant calcareous benthic foraminifera would have lower-quality seals. Mudstones deposited from muddy turbidites (overbank facies or distal fringe facies with abundant clay mineral aggregates) and moderate to abundant agglutinated foraminifera would make good-quality seals. This model is a useful analogue to subsurface case studies of petroleum exploration and fluid storage projects, where the evaluation of capillary seal quality and fracture potential is a key uncertainty.

5. Scampi - Answering the 3-billion fossil question

David Wade[1], Sissa Stefanowicz[1], Erik Anthonissen[1] & Alex Cullum[1]

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The NPD is digitalizing and releasing its entire archive of palynology slides. With ~150,000 slides and ~20,000 fossils per slide, there are approximately 3 billion fossils to be analyzed - a monumental challenge. To address this, we present the application of machine-assisted classification of microfossil images at multi-well scale.

It has been demonstrated that latent-space clustering of microfossil image embeddings can be leveraged to identify meaningful groupings of fossils (Wade et al. DigEx 2022 & FORCE Cross Border Seminar 2023). By extending this approach with Content-Based Image Retrieval we demonstrate a system which acts as a powerful search engine for palynologists.

In our method, computer-vision techniques are used to automatically extract crops of all the individual microfossils from whole-slide images of scanned palynology slides. An arbitrary 'query' image can then be compared to every single crop in a given well, and the most relevant ones returned for review by the palynologist. Expert-approved species identifications of dinoflagellate cysts, algae, pollen and spores can then be plotted by depth. Consistent queries can be run on multiple wells in order to easily perform well correlations.

Equinor is now implementing Scampi as a minimum viable product. Not only will this system drastically increase analysis efficiency, but through auditability it will also maintain high confidence levels in species counts. Furthermore, it opens possibilities for previously infeasible workflows such as generating reliable abundance ratios required for accurate palynofacies work.

6. BiostratAI - a new artificial intelligence-assisted tool to analyse palynology slides

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Recent advances in the digitialization of palynological slides using high-resolution scanners have allowed to capture of enormous amounts of data (recent and vintage) in digital format which can be used in multiple ways. One of these is Computer Vision, the branch of Artificial Intelligence which deals with visual data.

With this aim, we created a large training dataset based on scanned palynological slides with ages ranging from the Ordovician to the Miocene, varied depositional settings and geographical areas. The slides were annotated in custom-built software, by an expert, using 23 particle types (classes) such as Spores, Phytoclasts (opaque, degraded, etc), Pollen (monosaccate, bisaccate, non-saccate), Dinoflagellate cysts, AOM, Acritarchs, among others. This dataset feeds the supervised algorithm which is used in a user-friendly graphical interface to automatically segment (isolate from the background) and to identify the particle types, calculating areas and providing particle counts.

The AI-model results can be QCed by the user and further model training can be done if needed. The outputs are plotted on the fly as multiple paleoenvironmental indexes, optical kerogen typing parameters, and ternary diagrams (e.g. Tyson).

An additional usage is facilitated taxonomic identification, by displaying relevant particles (e.g. spores) on the screen and using a pick list to associate the particles to species. The table format output can be exported to StrataBugs or other any stratigraphic software.

The purpose of the software is not to replace the biostratigrapher, but to facilitate time-consuming tasks, notably microscope observation and logging of slides. Additional advantages include the possibility of remote work and sharing data and interpretation with colleagues located in different regions. The data and interpretation can be QCed, and are traceable and reproducible, reducing interpretation bias and increasing consistency.

We would like to acknowledge FundingBox and the StairwAI program (EU-funded) for their support in the initial stages of the work.

7. Leaves and leafy bodies of liverworts in palynological samples from the Mesozoic of NW Europe

David Bailey

BioStrat Ltd

Leaves and other leaf-like bodies of liverworts are abundant and widespread in palynological and palynofacies samples from Mesozoic sediments of northwest Europe, including leaves and underleaves of leafy liverworts, together with ventral scales of thalloid liverworts. They have been previously overlooked as randomly fragmented phytoclasts or misidentified as miospores, acritarchs and dinocysts. There are significant implications for palynology, where the biological affinities of numerous taxa will need to be re-evaluated.

8. Middle Miocene dinoflagellate cysts assemblages along a shallow water (onshore Denmark) – deep water (Norwegian North Sea) transect with a focus on the transition to the Middle Miocene Climatic Optimum

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A preliminary study of dinoflagellate cyst assemblages has been performed on Lower-Upper Miocene sediments, focusing on the transition to the Miocene Climatic Optimum (MOC, ~16,9-14,7 Ma). The Sønder Vium onshore borehole from Denmark and the 2/11-12S distal well in the southern Norwegian North Sea Basin allowed a comparison of proximal to distal assemblages. Data were collected and interpreted together with palynofacies and organic geochemistry analyses in order to reveal sea-level changes and indications of climatic variations. For palynofacies analysis, the palynomorphs were subdivided into the following eight categories: non-saccate pollen, bissacate pollen, spores, fungal spores, freshwater algae, acritarchs, dinoflagellate cysts, and undifferentiated palynomorphs. Some samples showed a relatively high abundance and diversity of dinoflagellate cysts, meaning that the sediment was deposited in an open marine environment. Diverse pollen assemblages compromising e.g. *Taxodium*, *Alnus,* and *Corylus*, and the gymnosperm conifers *Pinus* were also observed. Samples with a higher relative abundance of non-saccate pollen inferred a coastal setting. Additionally, we analysed organic geochemical biomarkers on select samples from 2/11-12S well for accessing e.g. sea surface temperature. Combined with the palynofacies analysis it was possible to trace proximal to distal input of organic matter during the MCO, offering a more complete record of the North Sea Basin.

9. A revised Jurassic biozonation scheme for the North Sea and adjacent area

Philip Copestake

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In 2023, a revised biozonation scheme was published for the Jurassic (Hettangian)–lowermost Cretaceous (Upper Berriasian) of the North Sea area (Copestake & Partington, 2023); the zonation was a revision of an earlier scheme (Partington *et al*., 1993), that had never been fully documented. It is based on the recognition 49 palynology biozones plus subzones (based on dinocysts, spores and pollen) and 27 microfaunal zones plus subzones (based on foraminifera, radiolaria and ostracods) to provide the essential chronostratigraphic calibration of the defined sequences. The biozonation scheme is tied to standard ammonite zonal chronostratigraphy wherever possible. Parts of the biozonation scheme are also applicable to onshore UK (boreholes and outcrops), onshore Denmark (boreholes) and offshore Netherlands. The presentation will provide an overview of the new biozonation scheme.

Day 2

1. From counts to chrons: Equinor's data science approach to automating geologic age interpretation

Erik Anthonissen[1] & Kjell Lindbo[1]

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Equinor's subsurface database for biostratigraphy contains some 63500 fossil species recorded in over 100 million counts. Over the past 50 years our biostratigrapher specialists have manually interpreted over 300 000 chronostratigraphic age labels. This is, however, still less than a third of the data currently available for lithostratigraphy. In an increasingly challenging industry, a consistent and wide-reaching cross-border stratigraphic framework offers enormous efficiency gains to support goals for resource replenishment.

Together with Equinor's in-house biozonation schemes, these fossil counts form the input for a data analytics solution that automates what would take the current specialist workforce at least 10 more years to achieve in only a few hours. The output is currently chronostratigraphic, biozone and sequence stratigraphic welltops, with the potential to generate predictions from any age-calibrated stratigraphic scheme with sufficient well data.

Here we demonstrate a novel approach using an isotonic regression algorithm that can perform to levels of accuracy approaching the human interpreter. We envisage a future data pipeline where the algorithm consumes the SCAMPI auto-generated fossil counts to produce even higher degrees of accuracy and resolution. The project is currently working towards a minimum viable product with test groups including our inhouse biostratigrapher specialists and within the carbon capture and storage business.

2. How to separate 'good and bad' events: a Mad Dog case history

Felix M. Gradstein[1] & Inger Lise Kristiansen[2]

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The current interest in Automated Stratigraphy is eloquently outlined during this Force conference at NOD, Stavanger. The quest from fossil slide to well correlation on event level or millions of years scale justifies renewed interest in recognition of good and bad events in stratigraphy. Effective methods exist to objectively quantify this process. I will outline this in a simple GOM case history from the late eighties of last century.

Special thanks to Inger Lise Kristiansen for assisting with dinoflagellate stratigraphy.

'From paleontology sample to well correlation report'.

3. A correlation of Jurassic rocks in the offshore basins of the British Isles and Ireland

Philip Copestake[1], Nigel Ainsworth, Matt Wakefield

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A revised correlation of Jurassic rocks in all offshore basins of the British Isles and Ireland has been carried out, as a major update of the original two correlation publications (Cope et al., 1980a, 1980b) published by the Geological Society of London in 1980. The revision publication will be published either in 2024 or 2025. The presentation will summarise the Jurassic stratigraphy of all the major basins across the offshore British Isles area, in addition to parts of offshore Norway and Denmark. The most significant Jurassic lithostratigraphic developments and key geological changes will be reviewed. The biozonation schemes that can be applied to the area will be briefly reviewed.

4. Dinosaurs and Megaspores – New advances in the biostratigraphy of the Late Jurassic Lourinha Formation, central western Portugal

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The Lourinha Formation comprises some 400 -700 m of predominantly alluvial fan and fluvial-deltaic sediments deposited within the Lusitanian Basin, which formed during the initial rifting of the Atlantic in the Kimmeridgian – Tithonian. Outcrops of the formation have gained international acclaim for yielding rich Late Jurassic dinosaur faunas including egg nests with embryos of *Lourinhanosaurus*, the only dinosaur embryos known in Europe (Antunes & Mateus 2003). Whilst this dinosaur fauna has been the subject of collecting and study since the early eighteenth century only recently has the formation biostratigraphy been evaluated. However, resolution is poor due to the paucity of marker species, notably dinocysts, which has led to difficulty in establishing a reliable litho-stratigraphic framework. For the first time megaspore assemblages are described and their biostratigraphic potential evaluated following a pilot study of coastal outcrop in the Lourinha area. The preliminary results presented indicate that many horizons are megaspore–rich with several new species evident. Species display short ranges with a possible microfloral turnover near the base of the Santa Rita Member (Tithonian). Megaspore assemblages and phytoclast associations are mostly typical of seasonal peat-mire/ponds on the fluvial flood plain (MB3 of Morris & Batten 2016): more permanent standing water/lacustrine habitats do not appear to be developed in the Lourinha area. Finally this new study attempts to fill the taxonomic 'gap' in Late Jurassic megaspore biostratigraphy arising from the predominance of marine facies in northern Atlantic margin basins.

References: Atunes M.T. & Mateus O. (2003). Dinosaurs of Portugal. C.R. Palevol ***2 (1),*** *77-95. DOI [10.1016/S1631-0683(03)00003-4](10.1016/S1631-0683(03)00003-4)*

Morris P.H. & Batten D.J. (2016). Megaspores and associated palynofloras of Middle Jurassic fluvio-deltaic sequences in North Yorkshire and the northern North Sea: a biofacies–based approach to palaeoenvironmental analysis and modelling. Journal of Micropalaeontology ***35****, 151 -172. [DOI 10.1144/jmpaleo2015-017](10.1144/jmpaleo2015-017)*

5. Biostratigraphy and palaeoenvironmental analysis of the Late Triassic in the Barents Sea

Shaan Heydenrych

University of Aberdeen

The Barents Sea in Arctic Norway contains thick sedimentary successions spanning the entire Triassic Period. These strata offer a continuous record of plant evolution and palaeoenvironmental change in the Triassic. This region has been an important factor in Norwegian hydrocarbon production, with reservoirs in the Late Triassic Snadd and Fruholmen Formations. In the last few decades, the Late Triassic in this region has also been part of renewed interest due to the potential for CO^2 storage in the fluvial sandstone formations. Norway has been successfully injecting CO^2 into the Late Triassic-Early Jurassic Tubaen Formation in the Snohvit Field of the Barents Sea since 2008. This study analyzed 44 palynological samples from well 7219/12-1 spanning a 52-meter section of the Late Triassic in the southwestern Barents Sea (Ringvassoy-Loppa Fault Complex). The samples encompass 52m of the Late Triassic (Snadd, Fruholmen and Tubaen Formations), containing 3 distinct lacustrine sections with oil-rich sandstones interspersed. A sampling frequency of 0.5m was utilised within the lacustrine sections. The dense vertical sample distribution enables a detailed palynological investigation of the Late Triassic of the area, focusing on key palynological assemblages and their implications for paleoclimatology and vegetation dynamics. The assemblages from this study are compared to previous palynological studies from the Barents Sea and North Sea to gain more understanding of the Triassic climate and depositional settings along the margins of Fennoscandia.

6. Early Cretaceous deltaic deposits of the Main Pay Reservoir, Zubair Formation, SE Iraq: integrated palynostratigraphy

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Rumaila is one of the world's super-giant oil fields. BP entered into a Technical Service Contract as the lead contractor with the South Oil Company of Iraq (SOC) and PetroChina to develop the remaining resource. The Early Cretaceous Main Pay is one of the largest reservoirs in the field. A rich dataset has recently become available including access to nearly 1 km of core, wireline image logs, open hole logs, formation pressure tests and cased hole saturation logs.

Biostratigraphic analysis of the core indicates that most samples contain both marine and terrestrial mircoflora, confirming a marginal marine gross depositional environment. Palynology has proved to be of particular value, with diverse and abundant recovery of algal and dinoflagellate cysts from fine grained deposits allowing for a high resolution bio-chronostratigraphic model to be built. A set of marginal marine genetic elements was interpreted through the integration of core sedimentology and palynofacies. The stratigraphic and depositional descriptions have been extended away from cored wells using cuttings, well logs, formation pressure tests and fluid saturation data. The current description suggests the potential for targeted development of bypassed oil beneath flooding shales and in the mouth bar, shoreline and tidal flat genetic elements.

7. The Arctic Cretaceous–Eocene – a biostratigraphical review and a new detailed palynostratigraphy

Henrik Nøhr-Hansen
Geus

Lower Cretaceous to upper Eocene palynostratigraphies are for the first time compiled and correlated across the Arctic from the Labrador–Baffin Seaway, Candian Arctic Archipelago, onshore Nuussuaq Basin central West, onshore- southern East, central East, North-East, eastern North Greenland and Danmarkshavn Basin to the Barents Sea offshore Norway and Svalbard. The work presents a compilation of results from more than three decades of detailed Arctic palynostratigraphies, mainly based on dinoflagellate cysts. A historical overview of the Cretaceous to Palaeogene palaeontological studies of Greenland is presented and 85 biostratigraphical intervals and numerous events are described.
The palynological assemblages from the Labrador–Baffin Seaway, Nuussuaq Basin and north-east Baffin Bay illustrate the opening of the Labrador–Baffin Seaway from brackish to freshwater environment in a large embayment in the Early Cretaceous to an open marine seaway in the Late Cretaceous. The study shows the differences in dinoflagellate cyst provincialism between the opening stages of the Labrador–Baffin Seaway and the already opened Greenland–Norwegian–Barents seaway through the Cretaceous.
The Upper Cretaceous worldwide Oceanic Anoxic Event 2 (OAE2) spanning across the Cenomanian–Turonian boundary has been recognised from Arctic Canada, north-east Baffin Bay, Nuussuaq Basin central West and North-East Greenland, and is mapped and correlated based on the present dinoflagellate cyst stratigraphy and carbon isotope ($d^{13}C_{org}$) curves.
At the end of the Cretaceous, dinoflagellate cysts of Cretaceous/Palaeogene boundary assemblages can be correlated from the Labrador Sea across to the Nuussuaq Basin central West Greenland where the earliest Danian palyno assemblage is represented by incoming warm water species.

8. Biostratigraphy of the Early to Middle Miocene siliceous succession of the Hod/Vahall area, southern Norwegian North Sea

Emma Sheldon, Karen Dybkjær, Erik Skovberg Rasmussen & Mimmi Oksman

Geus

A high resolution, multidisciplinary biostratigraphic study has been carried out on the Early to Middle Miocene silica-rich succession of six wells from the Valhall and Hod Fields, southern Norwegian North Sea sector. The Miocene siliceous succession/diatomite is currently in focus in the North Sea, including the Valhall-Hod area, owing to its potential as a hydrocarbon reservoir but also due to its geomechanical properties in connection with well abandonment.

Biostratigraphic subdivision of the North Sea Miocene succession, particularly using dinoflagellate cysts (Dybkjær & Piasecki 2010), but also microfossils (large fraction) (King 1989, 2016), has proven to be reliable, especially in clays and marls. However, these fossil groups are not as successfully applied to the siliceous intervals for biostratigraphic breakdown. Potentially useful siliceous microfossils are usually washed away during wellsite sample preparation due to their small size. Nannofossil biostratigraphy is not conventionally applied due to comparatively long zone ranges.

The cored sections of the 2/11-12S and 2/8-G10A wells together provide a unique and continuous record of the Aquitanian to Serravalian succession of the Lark Formation of the Hordaland Group, including the silica-rich Dany and Nora Formation equivalents (Rasmussen in prep). The cores were analysed for palynology (dinoflagellate cysts, acritarchs, fresh-water algae), microfossils-large fraction (including foraminifera, Bolboforma, diatoms and sponge spicules) and calcareous nannofossils. Diatoms and silicoflagellates were analysed from the small microfossil fraction, to attempt to refine the biostratigraphy of the siliceous intervals.

The Lower to Middle Miocene cored sections spanned the *Sumatradinium hamulatum* to *Gramocysta verricula* dinocyst zones (Dybkjær & Piasecki 2010), the NSB9-NSB12c, NS33-NS36c North Sea microfossil zones (King 1989, 2016) and the NN2-NN6 nannofossil zones (Martini 1971). The siliceous microfossil study revealed the *Rhizosolenia norwegica* to *Denticulopsis hyalina* Norwegian Sea diatom partial range zones (Schrader & Fenner 1976) and the lower *Corbisema triacantha* to *Paramesocena circulus apiculatea* Norwegian Sea silicoflagellate zones (Locker & Martini 1989). New palynomorph and microfossil events are identified in addition to established zonal markers, therefore providing a refined and robust biostratigraphic framework.

The biostratigraphic framework resulting from the study of the two unique cored wells was tested, successfully on ditch cuttings samples from four neighbouring, non-cored wells 2/8-N4, 2/8-V6, 2/8-8 and 2/11-1.

The successful application of the new framework in the Valhall/Hod area implies it could also be valuable as a correlation tool in a more regional context. The new integrated biostratigraphy also enables correlation of the studied successions in the southernmost part of the Norwegian sector with the new Danish litho- and sequence stratigraphic framework (Rasmussen 2010; in prep; Dybkjær et al. 2019).

9. How living cyst studies contribute "bio" to dinoflagellate biostratigraphy

Barrie Dale

Professor emeritus, Geosciences Department, University of Oslo, Norway

Today, there is extensive research on living dinoflagellate cysts that started sixty years ago in response to palynologists beginning to reveal the long geological record of fossil cysts that proved so valuable to biostratigraphy. Since then, geological interests have expanded from industrially relevant biostratigraphy into the successful use of cysts as environmental indicators in paleoceanography, climate change, and pollution. Biological interests have concentrated mainly on the role of cysts in harmful algal blooms. Each of these interests has developed its own specialty with its own funding possibilities, inevitably leading to a shift of focus away from biostratigraphy. This presentation shows examples where developing an understanding of living cysts is relevant for better understanding the fossils applied in biostratigraphy. The main topics of interest include: 1. phylogeny, where the cyst morphology basic to fossils is compared to molecular trees based on DNA bar-coding of living cysts; 2. how processes of cyst formation, transportation and sedimentation combine to affect the fossil record; and 3. the ecological role of living cysts that translates into palaeoecological signals. Both living phytoplankton studies and geological applications of fossil cysts such as biostratigraphy continue to benefit from the continuing integration of the "bio" and "geo" science of dinoflagellate cysts.

10. Palynology as a tool to constrain variations in sedimentary provenance within Triassic fluvial successions from the Central North Sea Basin, U.K.

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Ancient fluvial successions in the subsurface are typically subdivided into basin-wide lithostratigraphic units comprising of sandstone and mudstone members, although sediment is often generated from multiple sources of differing origins (first-cycle or polycyclic). The impact of varying provenance histories within a fluvial basin can greatly affect the distribution, wireline log character and preserved composition of such members. Therefore, constraining the age of these often highly heterogenous successions reduces uncertainty in using correlative tools across the geographic extent of a sedimentary basin. Triassic fluvial successions from the Skagerrak Formation in the Central North Sea (CNS) were deposited under dryland and semi-arid conditions within the interior of Pangaea. These successions contain sandstone reservoirs that form some of the major U.K. Continental Shelf hydrocarbon-producing fields. Traditionally, CNS Triassic successions are regarded as being barren of palynomorphs, although where low abundances/ sporadic recoveries have been encountered, robust age determinations can be made to calibrate other stratigraphically continuous datasets such as heavy minerals. Using an integrated approach from new data obtained across multiple offshore wells, major changes in the source-to-sink configuration of the CNS Basin during the Triassic can be age-constrained. This study aims to refine our current understanding of Triassic stratigraphic palynology in the CNS and contribute to the ongoing challenge of correlating distributive fluvial systems in the subsurface.