A revised integrated Cretaceous biostratigraphy of eastern Greenland

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Part of eastern Greenland bordering the western seaboard of the northern North Atlantic contains a near complete succession, all be it fragmented, of marine Cretaceous strata. All stages are represented from Berriasian to Maastrichtian. It is the best analogue for sedimentary rocks offshore Norway which are a major target for hydrocarbon exploration. Similar successions are not available onshore in Scotland or Norway. In Svalbard only the Early Cretaceous is exposed. An integrated biostratigraphic scheme is presented in this paper of the Cretaceous of eastern Greenland uniting macropalaeontology, a favoured tool of onshore field geologists at outcrop, with microbiota, used heavily by the hydrocarbon industry from borehole information. Of the macrofauna, ammonites, buchiid and inoceramid bivalves are of particular value, but belemnites are also of use. Marine dinoflagellate cysts with spores and pollen, together with microfauna, particularly foraminifera and radiolarians, all obtained from mudstones provide a more continuous biostratigraphic history. All groups also provide data on palaeoenvironment. For over a quarter of a century now, CASP has routinely sampled onshore mudrocks as well as macrofauna from a variety of sedimentary rock types, which allows close associations to be recognised between important biostratigraphic indicators. A significant collection of identified macrofossils has been built up that can be used for comparative biostratigraphic purposes. Detailed *Stratabugs* distribution charts have been drawn up for many sections using macro-and micro biota. Construction of an integrated biostratigraphic scheme has resulted in significant advances, such as the recalibration of parts of the palynological scheme for the region. At the same time our understanding of the age of part of the ammonite succession has been improved by knowledge of the associated dinoflagellate cyst succession. Thus the integrated scheme helps to avoid some of the pitfalls generated by using single taxonomic groups only. Diagenetic history may obscure the biostratigraphic value of some groups of biostratigraphic indicators, but knowledge of others from the same or adjacent horizons may compensate for the ommission.

This fully integrated scheme will be of value not just to field geologists, but also to the hydrocarbon industry, working in wells both on- and offshore in the Norway-Greenland Sea region and adjacent areas, such as the Barents Shelf and the North Atlantic.