

MICROFACIES AND GEOCHEMICAL VARIATION WITHIN THE EARLY JURASSIC (EARLY TOARCIC) OF YORKSHIRE, ENGLAND

PRICE, G.D., HYLTON M.D. and HART, M.B. Dept. Geological Sciences,
University of Plymouth, Plymouth, PL4 8AA, UK

The early Jurassic was characterised by a rapid rise of sea level (culminating within the *falciferum* Zone) and is associated with extensive anoxic bottom waters. Geochemical variation within Lower Toarcian sediments from Yorkshire, England have been examined as a means of determining palaeoenvironmental change and sea level variation during deposition. The Lower Toarcian sediments consist frequently of highly organic-rich shales where the sequence stratigraphic significance is somewhat obscure. A suite of trace elements (including Mn, Ca, Fe, and Al) have been analysed following nitric and hydrofluoric acid digestion. Mn, in particular, has been considered to be a robust indicator of sea level change. Maxima of Ca and Mn occur at the base of the *falciferum* subzone. Al values show minimum values at this horizon. It is suggested that these maxima are an artefact of condensation of carbonate fossiliferous material due to sediment starvation and correspond to published estimates of a maximum flooding surface. This study demonstrates that geochemical variation can effectively be used as a proxy to reconstruct sea level histories and palaeoenvironmental change in mudrock dominated successions within which sequence stratigraphic interpretation can sometimes be problematic.