

Palaeoecology using organic geochemistry and fossils

Prerequisites / Requirements:

GEOS710/920

Supervisors / Research Group / Project Partners:

Supervisor: Prof. Simon George

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Co-Supervisor: A/Prof Glenn Brock (Biol Sci)

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Organic Geochemistry and Palaeobiology groups.

Project Description:

Whereas organic geochemists typically crush rocks to smithereens and then analyse the organic content in great detail to obtain palaeoenvironmental and palaeoecological information, palaeobiologists take a gentler approach to tease out macroscopic and microscopic fossils from their host rocks, and assess their morphology to assess palaeoecology. Of course there is a middle ground, and in fact both approaches provide complementary information. In the project you will utilise both palaeobiological and organic geochemical techniques to assess the palaeoecology of a measured sampled section that will be decided by mutual agreement with your supervisors. You will especially investigate the remarkable preservation of fossils and biomarkers that has recently been reported from inside carbonate concretions, which appear to slow the rate of degradation of organic tissues. One source of concretions that may be utilised is the Wandrawandian Siltstone that you may have visited on a GEOS206 fieldtrip.

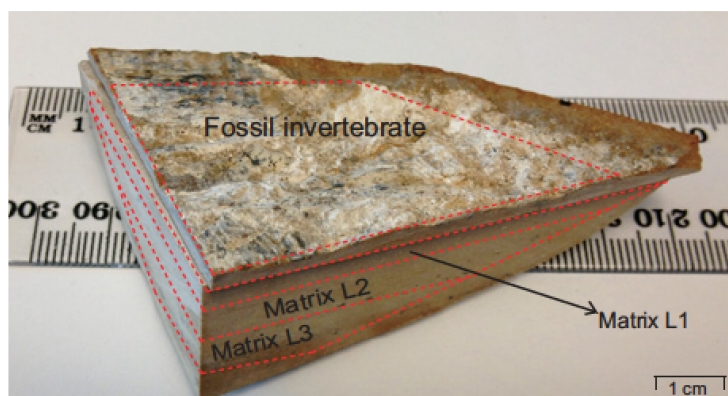


Figure: Concretion part showing thin fossil layer surrounded by carbonate matrix, Upper Devonian Gogo Formation Lagerstätte of Australia. Different subsamples, i.e., fossil and three different layers within matrix, were taken from concretion. Concentrations of selected biomarkers in each layer and after decarbonation (asterisk) are shown. Data from Melendez et al. 2013a and b (Geology; Scientific Reports).

