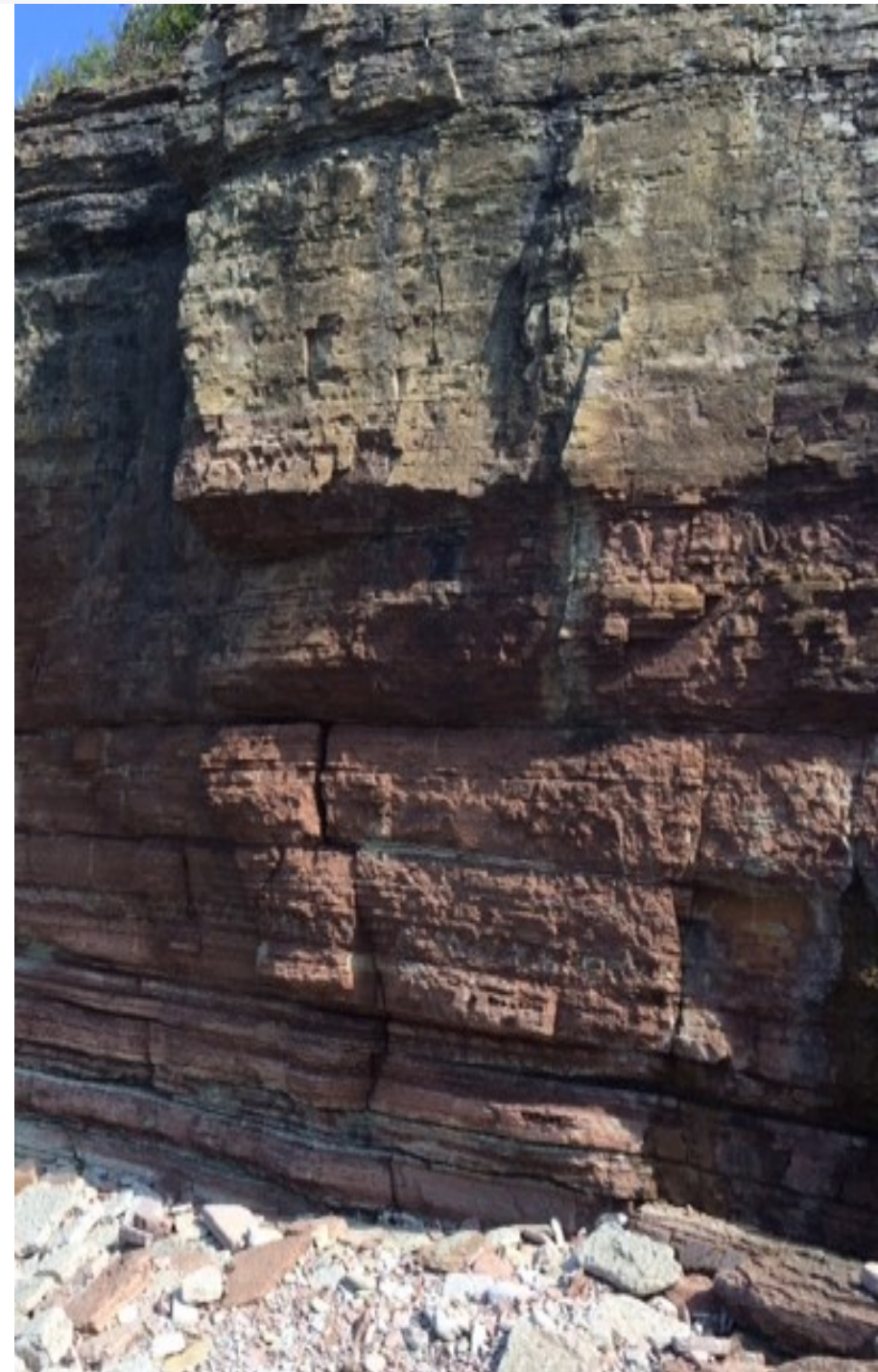
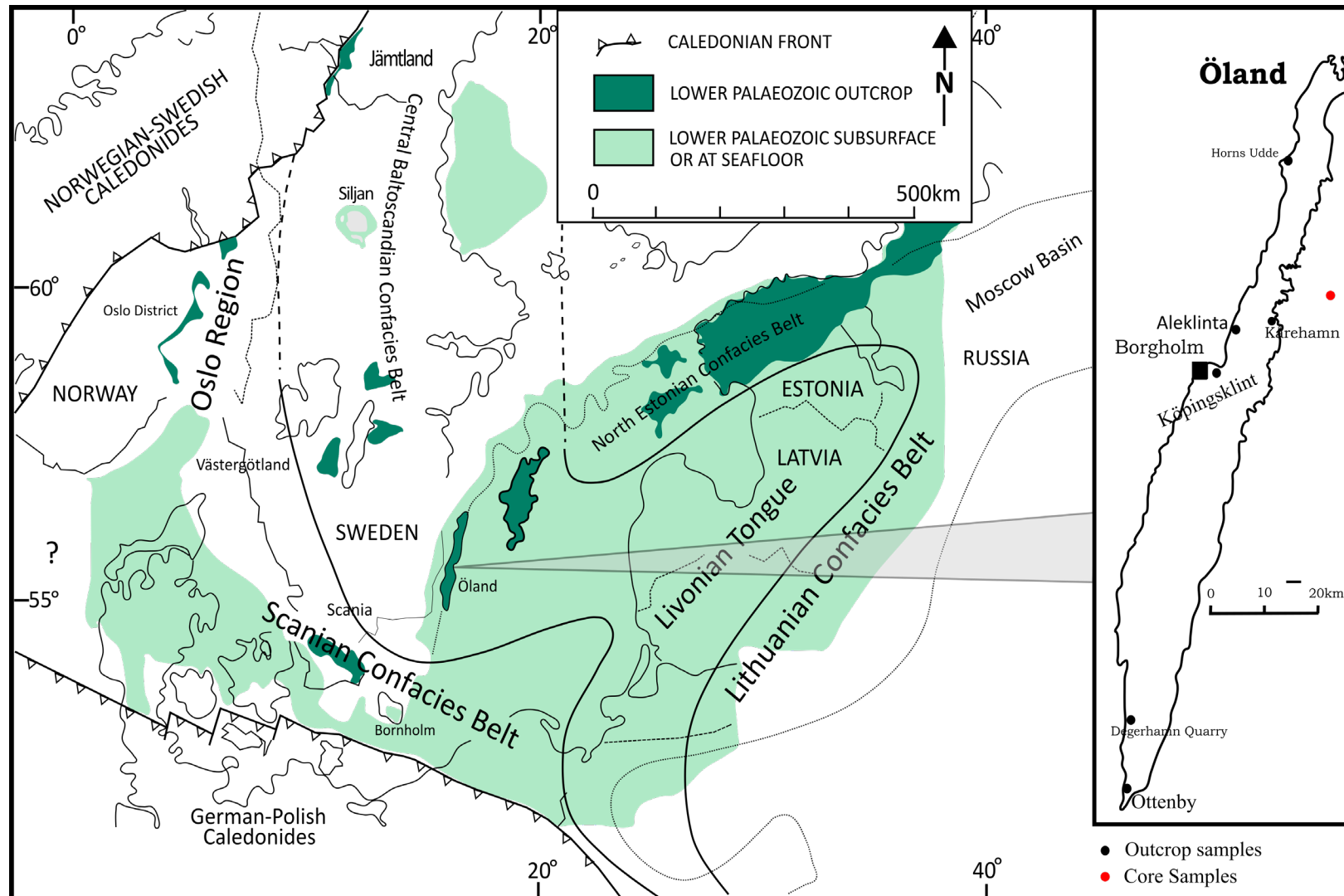


Late diagenetic versus near-primary isotopic compositions in Ordovician carbonate rocks and fossils: A Baltoscandian example

Oluwaseun Edward, Christoph Korte,
Clemens Ullmann, Christian Mac Ørum
Rasmussen

UNIVERSITY OF COPENHAGEN





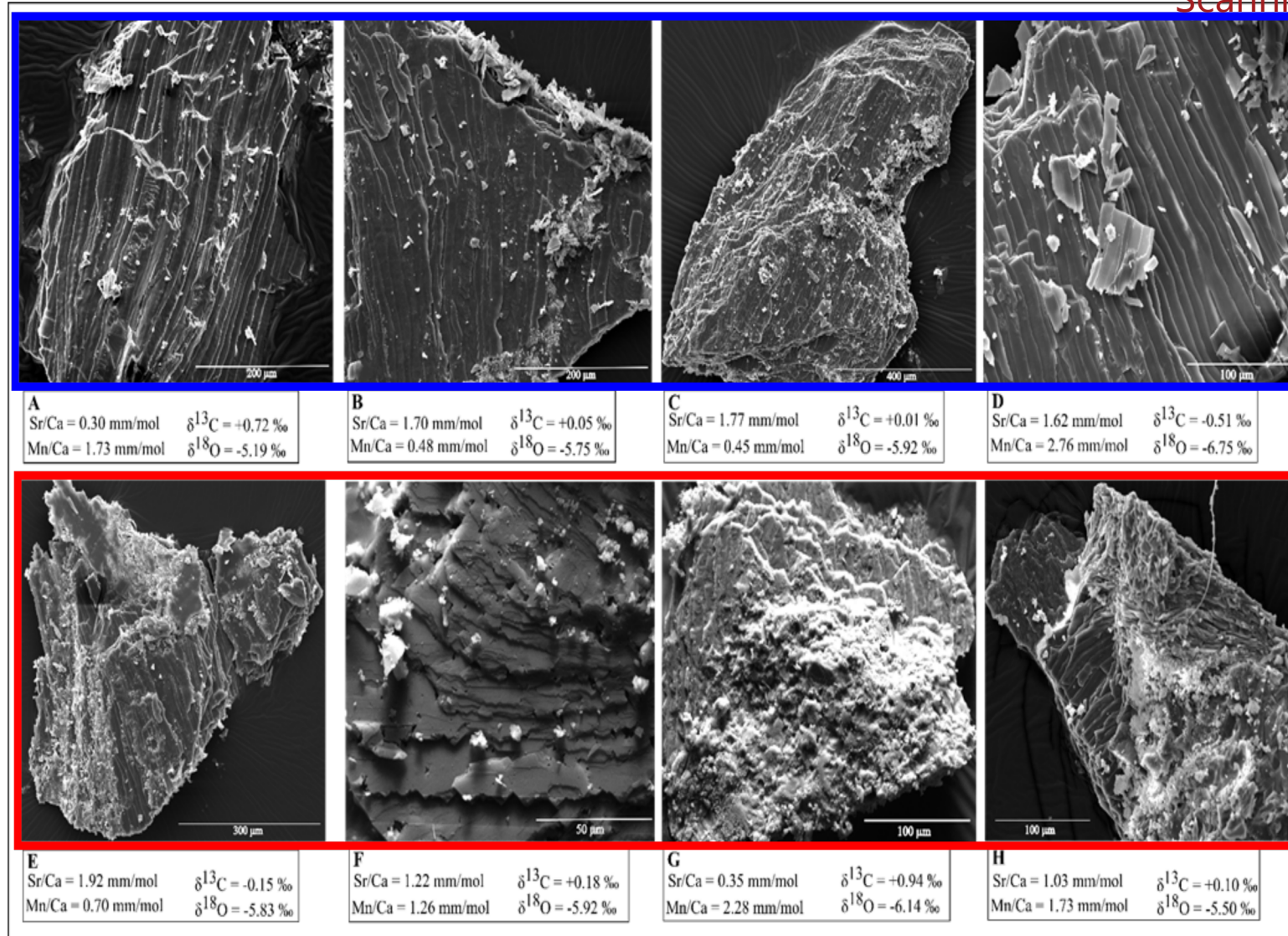
Outcrop samples: Floian to Darriwilian carbonates

Core samples: Darriwilian to Sandbian. Kärhamn core drilled offshore Öland, Sweden.

The Baltoscandia Palaeobasin with Ordovician facies belts outlined (modified from Stouge, 2004).

RESULTS

Scanning Electron Microscopy

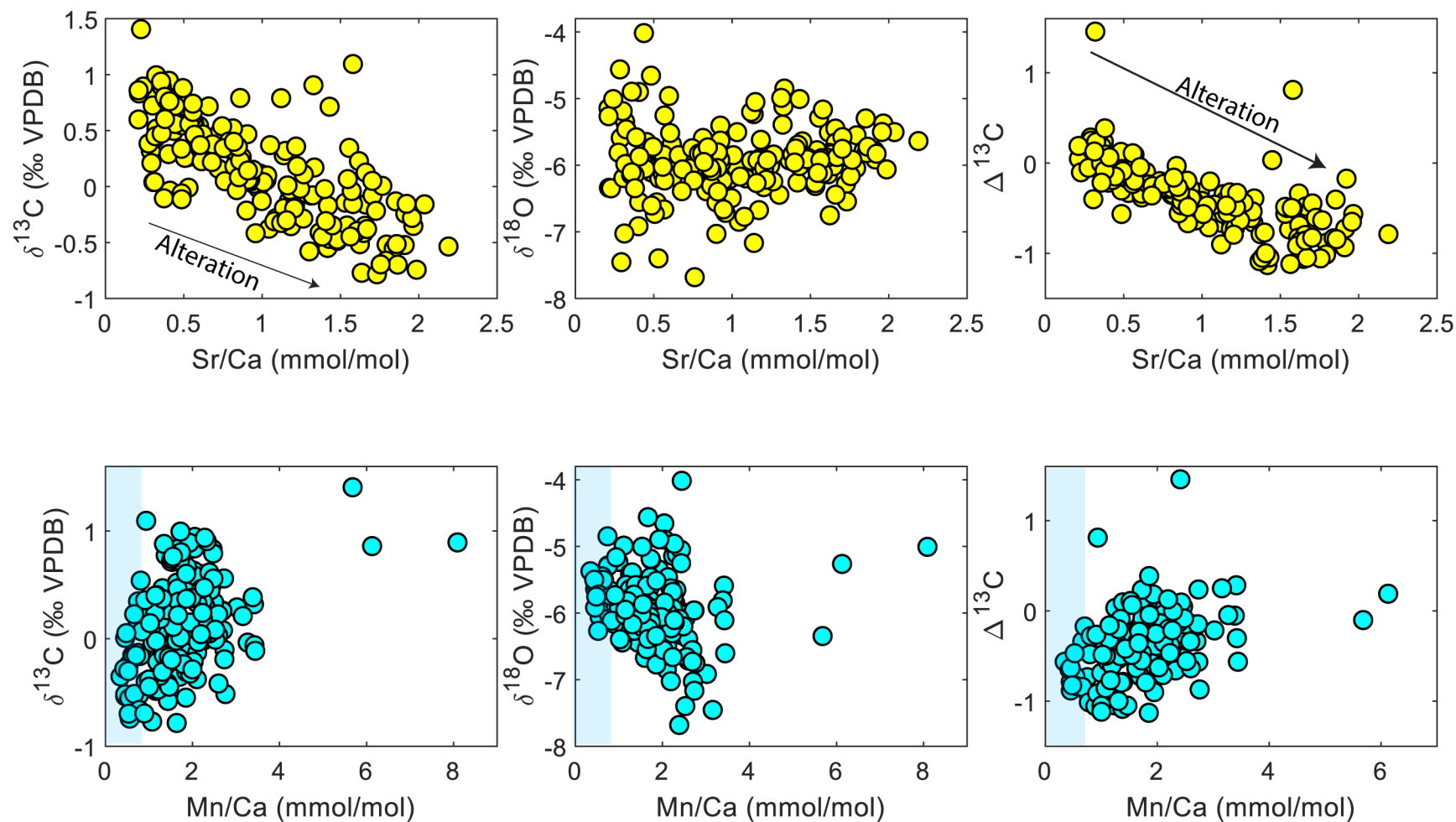


Well Preserved

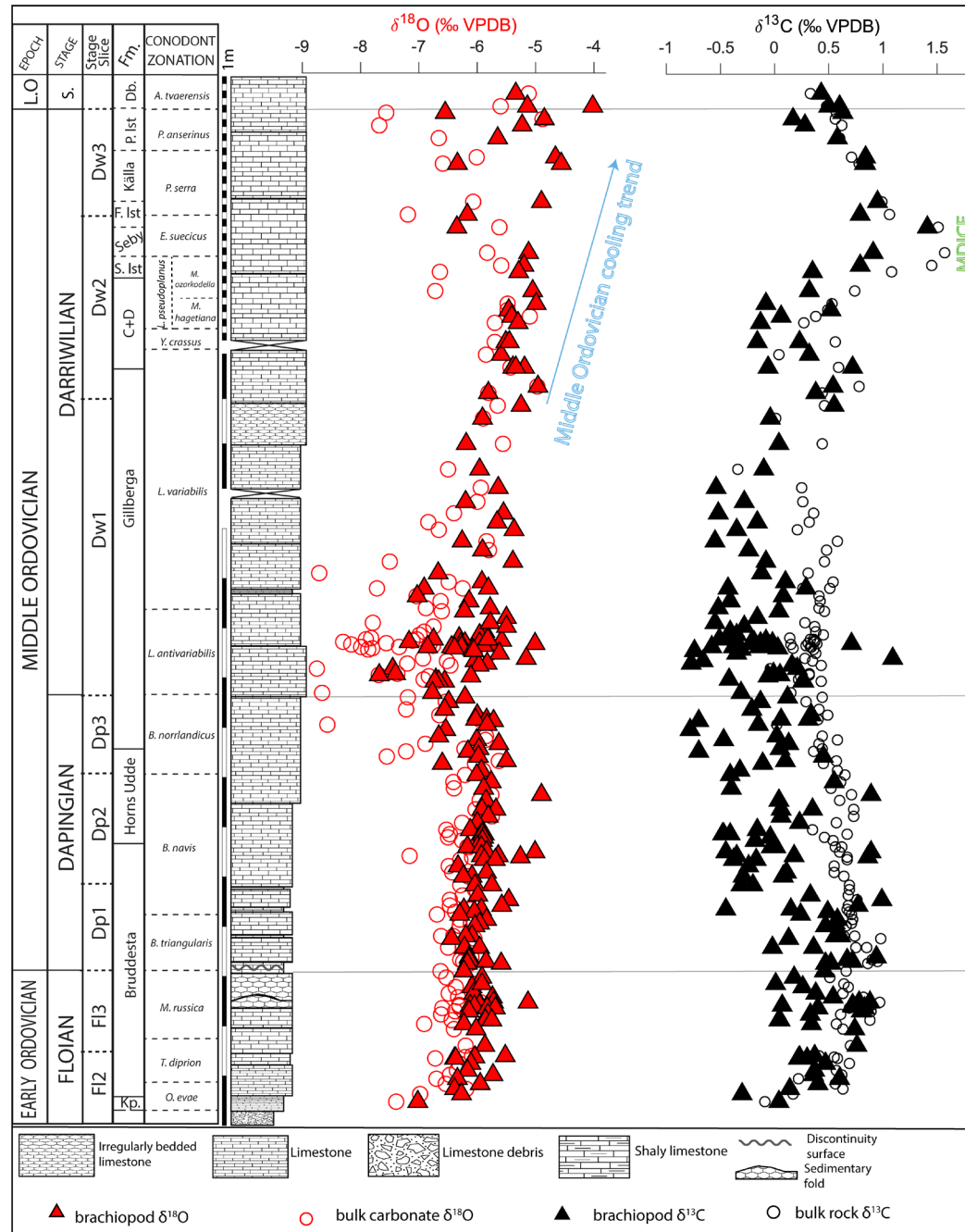
Poorly Preserved

SEM photomicrographs showing varying degrees of shell preservation

- **Mn/Ca ratios do not systematically vary with C nor O isotope data.**
- **Heaviest C & O isotope values are associated with elevated Mn/Ca and depleted Sr/Ca**
- **Sr/Ca ratios show negative correlation with C isotope data suggesting that diagenetic alteration is associated with heavier C isotope values**



Sr/Ca and Mn/Ca ratios plotted against brachiopod oxygen and carbon isotope data



- Bulk carbonate and brachiopods show similar carbon isotope trends
- Brachiopods are offset by -0.5 ‰ wrt C isotopes.
- The prominent Middle Darriwilian carbon isotope excursion – MDICE – is preserved in both bulk rocks and brachiopods.
- O isotopes show a clear Darriwilian increase similar to coeval trend documented in the east Baltic (Rasmussen et al. 2016).
- Although partially altered, these fossil brachiopods are interpreted to retain a record of Middle Ordovician climate amelioration.