A Glacioeustatic Origin for the Upper Devonian Foreknobs Formation, South-Central Appalachian Basin, West Virginia-Virginia

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Foreknobs Fm. inferred to have been deposited during a time span of ~4.5 Myr. (Kaufmann, 2006).

Vertical juxtaposition of lithofacies and stacking patterns indicate recognition of 3 scales of cyclicity.
- "Short-term" (4th Order) (Val et al., 1991) 70 cycles ~68 Kyr each
- "Intermediate term" (4th Order) 12 cycles ~800 Kyr each
- "Long term" (4th Order) ~1.12 Myr each

Conclusions
1) Stacking pattern of facies associations suggest 5-7 oscillations = what you would expect with glacigenic sediments.
2) 21st, 15th, and 2nd order system can be recognized
3) A 3.5-cycle curve generated for the Foreknobs Formation agrees well with published 3rd order cycle curves
4) Palaeoecological studies indicate stratigraphic sequences within the Foreknobs Fm.
5) One of the important factors that affects the sediments deposited during the Ordovician is the repetition of similar facies patterns, which are controlled by several factors, including depositional processes in the area.

Questions?