

Smyrak-Sikora et al., Phanerozoic paleoenvironmental and paleoclimatic evolution in Svalbard

This is an admirably ambitious review of the literature re Svalbard's paleoenvironmental and paleoclimatic history. It will serve as a great resource for anyone interested in the long-term history and data available for Svalbard. It is not intended to present new data with substantial new ideas, but to review the record of this region that-- like the Indian subcontinent-- has traversed across latitudes through the Phanerozoic.

It's nicely written, albeit can become a little dense at times— e.g. the Cenozoic is nearly all in one gargantuan paragraph. Breaking this up a bit might make for easier reading.

[It's possible that the Intro could be shortened a bit, and parts of it put into Geologic Setting or such?]

The figures are nicely done summaries of substantial data, although the font and symbol sizes are quite tiny in places, and thus difficult to decipher.

Other than that, I have only a few comments and suggestions, listed by line number below.

143— “twice to nearly four times AS FAST AS...”

144-149— the point about using Svalbard as an interesting case study, so to speak, for the phenomenon of polar amplification is interesting, but it has really only been situated in an arctic locale since the Cretaceous (from Fig. 3). So perhaps this statement should be qualified a bit.

146— a bit unclear (to me) what is meant by model “gradients”

506— Some might argue that it started in the latest Devonian (Fammenian)— with the late Devonian glaciation— well documented in South America, eastern North America, and other regions (albeit with minimal evidence for ice in the early Mississippian).

593— the rockS

597— check author spelling here (Beauchamp?)

689— space needed

809— consider replacing “modest” with “low-resolution”

826— space needed

1144— Consider qualifying the statement re “remarkable continuous stratigraphic succession” — yes, it is indeed a remarkable record with significant representation through much of the Phanerozoic, but it is not without unconformities, so is not, strictly speaking, continuous.

Figure 13 is a very interesting figure (reminds me of the path of India from polar latitudes to low latitudes— the opposite of Svalbard's path).