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The role of extreme noise in explaining climate records, interpretation of an ice core record.

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The understanding of natural climate variability as a simple linear stochastic process, a red noise, as proposed by Hasselmann (1976) works remarkably well for present days ocean temperature records. However, when it comes to the paleclimatic records obtained from the ice cores non-linearities and abrupt changes are apparent. Furthermore, careful analysis of the high resolution dust record from the GRIP ice core shows that if this is to be generated by a stochastic process the noise needs to be α-stable, that is so extreme that the central limit theorem no longer holds.