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**The Cambrian revolutions: Trace-fossil record, timing, links and
geobiological impact**

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information revolution; ichnology; bioturbation, ecosystem engineering

Abstract

Several concepts pertaining to the dramatic changes that occurred during the Cambrian have been proposed, namely the Agronomic Revolution (AR), the Cambrian Substrate Revolution (CSR) and the Cambrian Information Revolution (CIR). The original concept of the AR refers to the replacement of Precambrian-type substrates (“matgrounds”) by Phanerozoic-type ones (“mixgrounds”). The CSR highlights the evolutionary and ecological effects of Cambrian substrate changes on epifaunal sessile metazoans. The CIR involves the distribution of signals in an environment that an organism can potentially respond to, underscoring an increased complexity and heterogeneity of marine ecosystems, which may have played a major role as a driving force of further evolutionary change during the Cambrian. A systematic review of the

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