



## **Timing the Great Acceleration as onset of the Anthropocene: a statistical approach**

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We argue that the Great Acceleration has great potential for being formally accepted as a definition of the onset of the Anthropocene as a geological epoch, which is socially responsible considering its implications for the term Anthropocene as a tool in the communication of global change. Since the quality of the data underlying the Great Acceleration graphs is currently insufficient to use advanced methods in data analysis that may justify the concept on a scientifically sound basis, however, it becomes apparent that an enormous transdisciplinary effort in data mining and analysis is needed to further research the phenomenon. To this end, we present results of a detailed statistical analysis applying methods of change point detection to socioeconomic and environmental time series covering the 20th and early 21st centuries. This analysis provides for the first time quantitative evidence for a timing of the Great Acceleration that is indeed constrained to around 1950.

An increased research focus on the Great Acceleration will not only make it possible to find a solid formal definition of the Anthropocene as a geological epoch, but also help us gain a profound understanding of the underlying social and natural processes and the coevolution of their complex interactions. The rewards of such an effort may be a powerful combination of the terms “Anthropocene” and “Great Acceleration” for the communication of both climate change and social issues as well as an improved understanding of the natural Earth system and social systems as a whole.