



Mapping global extraction of abiotic and biotic raw materials

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Reducing global environmental and social impacts related to final consumption is a significant societal as well as scientific challenge, especially as production and consumption are increasingly geographically disconnected via complex supply chains. Tracing the interlinkages between consumption and production as well as related impacts in a spatially explicit way can contribute to overcoming this challenge. Currently, the spatial resolution of global models of raw material extraction, trade and consumption is limited to the national level. Thus, they fail to link specific supply chains to the actual geographical location of production and related impacts. Detailed global spatiotemporal datasets would allow tracing the heterogeneity of environmental and social conditions within producing countries. In this contribution, we present our preliminary results mapping global biotic and abiotic raw materials extraction in 5-arc-minutes (around 10 km x 10 km at the equator) grid cell level, starting from the year 2000. Our datasets will include around 60 different raw materials, covering crops, fishery, fossil energy resources, metal ores and non-metallic minerals. In the future, our database will also include spatially explicit data on environmental and social impacts related to the extraction of these raw materials. The new database, methods, and algorithms will be openly available to the research community and the wider public, supporting open and reproducible science. Our novel database will allow developing new methods to assess the interlinkages between consumption and various environmental and social impacts related to extraction on a grid cell level. It can boost the spatially explicit assessments of supply chains and consumption patterns in both developed and developing countries, which is crucial for the design of international policy instruments to achieve sustainable production and consumption patterns.