Fragile earth history – geological, societal and ethical perspectives on the planetary memory

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The geological record of earth history is a fragile document, which enables us to extract information on past planetary processes, e.g. natural hazard events or fluctuations of the earth's climate, which are increasingly used as the basis for future regulatory frameworks in modern societies. However, due to an intense interference of humans with the earth surface in the Anthropocene, this unique document of earth history is endangered. It is crucial to consider that the geological record is not continuous and primarily incomplete, although the exact extent is still elusive. Human activities such as mining and construction works heavily alter, disturb or even entirely destroy parts of the earth history. Also, inadequate sampling strategies of earth scientists can contribute to a loss of earth-historical information at key sites for understanding the earth's past. Most societies are well aware of the conservation of the human history indicated by standardized archaeological surveys. At the same time, such procedures are hardly formalized for earth history archives, revealing an anthropocentric narrowing of the perception of pasts. Humans are seen as a major geological agent during the Anthropocene – but how does the destructive facet of anthropogenic activities compare to natural destructive processes throughout the earth history and what are implications for the protection of geo-archives? I argue that anthropogenic disturbance is distinctively different from natural processes regarding the rates and the final fate of manipulated earth materials. Pushing the spatio-temporal assessment of the completeness of the geological record, e.g. by hiatus mapping, would help to identify a baseline for the protection of earth history records during the Anthropocene. Promoting Geoethics, in particular the sustainable knowledge exchange with society to create awareness for planetary history as a basis for a responsible handling of nature, is a key for an effective protection of earth history records. In particular, understanding psychological aspects of landscapes and the environment plays a vital role. Therefore, post-normal science approaches and the consideration of extended spheres of knowledge bear a great potential for future perspectives.