



Vienna's anthropogenic sediments

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Anthropocene is a widely used term, a symbol that denotes the rising anthropogenic influence on the Earth System, especially on geological processes and strata. Potential Anthropocene geological units are thin but distinct and globally widespread, changes are long-lived or irreversible. The Vienna WWTF (Vienna Science and Technology Fund) project aims at looking at the growth of the Anthropocene signal in the urban environments of Vienna. The Anthropocene Surge refers to the accelerating growth of urban deposits under cities such as Vienna from pre-historic and historic to recent times, caused by a combination of human and geological forces. The interdisciplinary project, combining natural sciences, social sciences and art, is regarded as a unique chance for a holistic view on the Anthropocene and its stratigraphy.

The key hypothesis of the project is the Anthropocene surge, the accelerating and propagating wave of human influence on the environments and urban geology. The main research question is how the Anthropocene evolved in the urban environments of Vienna and what anthropogenic markers can be identified.

The project includes: (1) Genetic classification of anthropogenic sediments - the stratigraphy of Vienna's Anthropocene growth. (2) Geometry and topography of anthropogenic units and horizons. (3) 3D models of anthropogenic units, showing not only their present form but also how they have developed through time (post WWII, pre-WWII, medieval, Roman to pre-Roman). (4) Geochemistry - the record of the Anthropocene surge in the sedimentary archive using trace metal contamination. (5) An essay film accompanying the research and reflecting on the trajectories of the Anthropocene within different fields and methods. (6) A review of mid-19th century growth of Vienna by historical maps.

Vienna is a prominent place to carry out this study given that the first geological city map recognizing anthropogenic strata was published by the famous Austrian geologist Eduard Suess in 1862. The topic of the Anthropocene is clearly multidisciplinary, involving Earth Sciences, Archaeology, Geography, Social Sciences, Humanities and Arts. Anthropogenic deposits have to be characterized and dated by their sedimentological features but also by artefacts ('technofossils'). 3D models of the anthropogenic strata will thus benefit from archaeological data. On the other hand, geochemical methods will provide further characterization of archaeological sites. All those data will then be implemented into a common GIS and for the first time into 3D models of the ground of Vienna, and its evolution in time. The essay film will re-edit the collected data over the period of the project, allowing different viewpoints from other fields such as Humanities and Arts to accompany the discussion and the discourse with social sciences.