GEOÖKO VOLUME/BAND XLIII, 102 - 133 GÖTTINGEN 2022

KLIMAWANDEL UND UNTERGANG VON HOCHKULTUREN

CLIMATE CHANGE AND COLLAPSE OF ANCIENT HIGH CIVILIZATIONS

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SUMMARY

Since 200-300 years mankind has decisively changed the natural environment on earth and with climate change is heading for a new significantly increased temperature level, as it was last in the Pliocene 2.6-5.3 million years ago with 380-427 ppm CO_2 content in the atmosphere. Climate change and collapse of ancient high civilizations have always existed in human Earth history. Regarding the evolution of the Earth system, thresholds of natural subsystems („tipping points") are scientifically revealed. Knowing from the past when and why thresholds occurred in high civilizations that suffered collapse can warn us of similar behavior today and help develop better resource management strategies.

Based on new evidence from archaeology, geoarchaeology, history, and paleoclimate research, this paper provides an example of the collapse of a major advanced civilization in the context of economic development and climate change. Since the early Bronze Age, the Near East (Fertile Crescent) developed into a highly cultural center of the world. The basis of economic prosperity in the Middle Bronze Age was grain surplus production with large storage facilities in the palace district and transregional trade. In the Late Bronze Age, a globalized trading world developed in the eastern Mediterranean, which reached its peak in the exchange of goods with the peace treaty between Hittites and Egypt. Extensive trade routes, diversified production and administrative systems in the palace cities characterized the cultural heyday until the Late Bronze Age.

However, within 100 years from the 12th century onward, the advanced civilization collapsed, famines occurred, and kingdoms and palace cities were destroyed. While in the Middle Late Bronze Age around 1500 BC the climate was still much wetter and warmer and settlement and land use together with trans-regional trade reached a peak, recent paleoclimatic studies indicate a pronounced drought period with the increased occurrence of dry years in the period 1200-850 BC, interrupted by a short wetter period from 1000-950 BC. The climate change with aridization included the total area of the Aegean, Asia Minor (Turkey), the Levant to Egypt. From 1150 to beyond 1100 BC, it became dry on a previously unprecedented scale after the 4.2 ka event (drought phase), so that a re-establishment of the