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A study of the climatic crisis of the end of the Third millennium BC in Southeastern Iran through the lens of geomorphology and archaeology

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The geomorphological and archaeological background of Southeastern Iran is a good illustration of the complex interaction between human occupancy and climatic variability. At the end of the Third millennium, the region shows a collapse of the urban societies of the Bronze Age and of the agricultural development of the land, especially irrigation. It took a whole millennium before agriculture was developed again, particularly thanks to a new irrigation technique, the qanats (draining galleries), which makes up for the scarcity of running water. Our study will be focused on three regions in particular: the Halil Rud Valley (sites of Konar Sandal North and South); the Helmand Basin (site of Shahr-i Sokhta) and the region of Bam. The three regions are very different as far as water resources and vulnerability to long cycles of drought are concerned. The Halil Rud Valley has the most important resources and it is very unlikely that the archaeological sites of this area were abandoned due to climatic determinism. On the Helmand Basin, on the other hand, the sites around Shahr-i Sokhta were most certainly abandoned because the delta changed place. The region of Bam more clearly suggests that men had already settled there by the Neolithic and Chalcolithic, around the 5th- 4th millennium BC, thanks to a favorable climate. At the beginning, the running water seems to have been abundant enough to be collected and distributed by canals, but later it became scarcer and the level of underground water started to drop. The Bam scarp seems to have played a must important role in the creation and the development of new technologies for the usage of underground waters thanks to innovative methods for boring irrigation tunnels later called qanats.