

Technical Notes

The Role of Catastrophic Floods Generated by Collapse of Natural Dams Since the Neolithic in the Oases of Bukhara and Qaraqöl: Preliminary Results

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Abstract: The history of the civilizations of the oases of Bukhara and Qaraqöl (south-eastern Uzbekistan) since the Neolithic in relation to environmental changes is studied by the French/Uzbekistan Archaeological Mission in Bukhara¹ following pioneering Russian studies². Using a methodology tested in Afghanistan, the geoarchaeological side of the program focused on the drawing of a regional geomorphological map then on the identification, mapping and dating of the paleochannels of the river Zerafshan. We established the chronology of several generations of fluvial channels in relation to archaeological settlements of different eras (Early Neolithic, Neolithic, Bronze Age, Iron Age and Islamic period) and with optically stimulated luminescence dating of alluvial deposits. Based on preliminary results of these OSL dates we propose and discuss a regional environmental reconstruction. We hypothesize that the main cause of avulsion could be catastrophic floods generated by collapse of natural dams in the upper part of the Zerafshan River.

Keywords: geoarchaeology, fluvial geomorphology, geohazard, OSL dating, tributary migration, Uzbekistan

1 Introduction

In 2009, the Department of Islamic Art of the Louvre Museum, in collaboration with the French Ministry of Foreign Affairs and the Archaeological Institute of Samarkand and the Uzbek Academy of Sciences, opened an archaeological mission in the Bukhara oasis and started a program of surveys and excavations over

the whole oasis, recording more than 1173 archaeological sites, from the Neolithic to present times, including the extension of Qaraqöl area, as far as the Amu Daria (Oxus) (Fig. 1). Today the river Zerafshan flows in a North-East/South-West main channel to which a dense network of irrigation and drainage channels is connected. Looking at a regional map or a satellite image (Fig. 1), it is obvious that many of these channels

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