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Early pottery in Transbaikal Siberia: New data from Krasnaya Gorka

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ABSTRACT

The paper presents new results of the site Krasnaya Gorka located in Transbaikal Siberia. New AMS dates from this site now attest to a Late Pleistocene occupation phase with early pottery. The evidence from this site enables the study of the development of pottery types and of lithic technology as two main parts of material culture at the Pleistocene-Holocene transition on the materials of Krasnaya Gorka. On a wider scale, the complex is compared with other sites with early ceramics in Transbaikal. Some biogeochemical proxies like pyrogenic carbon, phosphorus, total organic carbon, potassium, magnesium and the stable isotope 15N were analyzed to get an idea about the intensity of human occupation.

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1. Introduction

During the last years, the discussion about the appearance and distribution of ceramic traditions has become a topical one due to new discoveries of Late Pleistocene ceramics in China, Japan, Russian Far East and the Transbaikal region (Derevianko, Medvedev, 1993; Boaretto et al., 2009; Jordan and Zvelebil, 2009; Wu et al., 2012; Sato et al., 2011; Hommel, 2012; Shewkomud and Yanshina, 2012; Kuzmin, 2015; Jordan et al., 2016). In the context of the appearance of ceramic producing economies in these areas, it is accepted that ceramic vessels of hunter-gatherer societies mark the beginning of the Neolithic. While around 18,000 cal BC large areas of the northern hemisphere were still glaciated, East Asian hunter-gatherers were already making ceramic pots (Boaretto et al., 2009; Wu et al., 2012; Cohen, 2013). Up to now it's discussed whether the ceramic innovation spread continually from the earliest centers in China, Japan and the Russian Far East towards the west all the way to Europe, or whether several different groups invented pottery independently in this huge area (Gibbs and Jordan, 2013; Jordan et al., 2016). With regard to this debate, the natural and cultural environment in which early pottery appeared is of special importance.

The area east of Lake Baikal in Siberia is one of the few regions in Eurasia where pottery was already used during the Late Pleistocene and Early Holocene. Such early pottery complexes were identified in Ust'-Karenga XII (7), Studenoye 1 (7-9), Ust'-Menza 1 (5–8), and Ust'-Khyakhta 3 (Fig. 1) (Jull et al., 2001; Razgildeeva et al., 2013; Hommel et al., 2013) (Fig. 1) dated at about 12-11 ka BP. Here we present the new results and materials from the Krasnaya Gorka site.

2. Materials and methods

The study is based on our own Initial Neolithic data from the Krasnaya Gorka site, as well as published data from other sites of the Late Paleolithic-Initial Neolithic of the Transbaikal region. The paper presents the technology of the stone reduction and ceramic production of the early ceramic complex of Krasnaya Gorka in comparison to the materials of the same period from other sites in Transbaikal.

New dates are presented in the paper and these radiocarbon analyses were carried out at different the radiocarbon laboratories. Table 2 informs about the materials analyses and about the absolute ages found.

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For biogeochemical analyses mixed soil samples were taken from 0 to 5 cm, 5–12 cm, 12–30 cm, 30–45 cm and 45–60 cm depth, representing a typical artifact rich section of the trench. This profile has similar properties as Anthrosols (WRB, 2015) due to the influence of man. For comparison two artifact free soil profiles with similar topographic conditions were studied: one ca. 50 m distance from the excavation, having similar morphological properties as the Anthrosol like profile, the other one about 400 m away, having a 50 cm thick (WRB, 2015) which were sampled every 10 cm. Soil samples were air-dried and sieved (<2 mm). Total organic carbon (TOC) and $\delta^{15}N$ were measured using a EURO EA Elemental Analyzer (EuroVector, Hekatech, Germany) coupled via a Conflow III interface to an isotope mass spectrometer (IRMS, Finnigan Delta V Advantage, Thermo Scientific, Bremen, Germany). Precision of $\delta^{15}N$ measurements was 0.3‰. For P, K, Mg extraction, 3 g of freeze-dried soil was digested with 21 mL HCl and 7 mL HNO3 for 16 h. Samples were then analyzed using an inductively-coupled plasma optical emission spectrometer. Pyrolized carbon (Black Carbon, BC) contents and its composition were determined by measuring the benzene polycarboxylic acids (BPCAs) following Glaser et al. (1998) with the modification of Brodowski et al. (2005). BPCAs were separated and quantified by GC/FID using an HP 5 column (see also Kappenberg et al., 2016).

3. Results

3.1. Krasnaya Gorka: description

Krasnaya Gorka is located in the north-eastern part of Western Transbaikal on the northern bank of Lake Bol'shoe Eravnoe (Fig. 2). Located 6 m above the actual water level, it occupies the terraced gentle slopes framing the northern shore of Lake Bol'shoe Yeravnoe. At present, the site is grass covered and periodically grazed.

The discovery of the site, excavations and descriptions of the materials were carried out by N. Tsydenova. The archaeological materials associated with the Initial Neolithic were found in the lithological layer 4 corresponding to cultural level 2. Table 1 and Fig. 3 inform in detail about the stratigraphy of the excavation.

Altogether the cultural level 2 encompass 1603 artifacts and 20 small fragments of bone remnants.

Lithic artifacts of this cultural horizon have a Paleolithic appearance.

They include, among others, *cores and preforms*, divided in some types.

Total number of cores is 29 pieces.

1. Wedge-shaped microcores: 19 pieces (Fig. 4 – *1, 2, 4*).
2. Microprismatic (conical) cores: 9 pieces (Fig. 4–*3*).
3. Prismatic core: 1 piece.

The core reduction is illustrated also by *preforms* and technical spalls.

Preforms: 15 pieces.

1. Different wedge-shaped performs with rough bifacial preparation: 14 pieces (Fig. 4–*5, 6*).
2. Orthogonal: 1 piece.

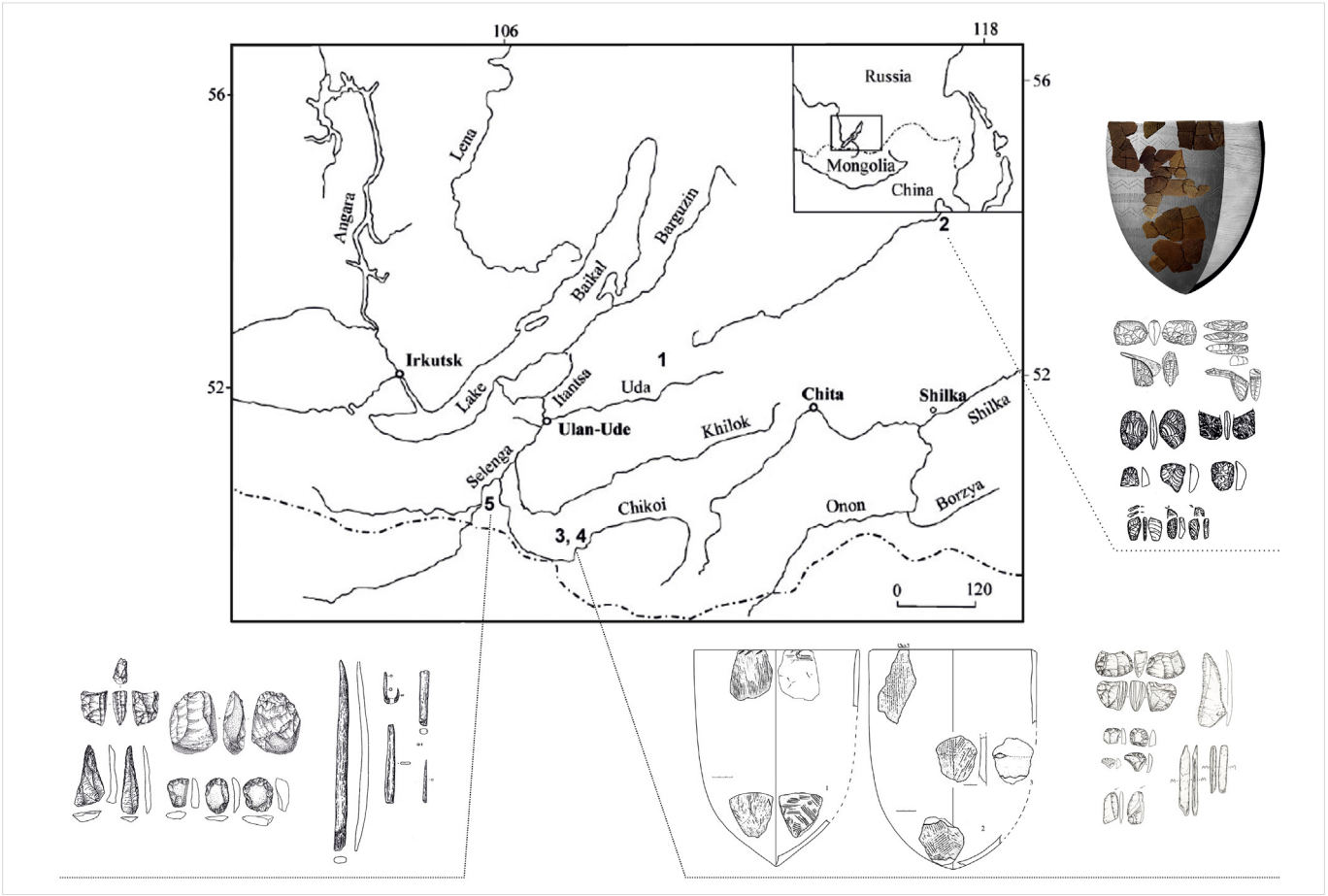

Fig. 1. Map of the Baikal region and the Initial Neolithic sites: 1 – Krasnaya Gorka; 2 – Ust'-Karenga XII; 3, 4 – Studenoye 1, Ust'-Menza 1; 5 – Ust'-Khyakhta 3.

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