Quaternary International xxx (2018) 1–18

Contents lists available at ScienceDirect

Quaternary International

journal homepage: www.elsevier.com/locate/quaint

Human settlement, landscapes and environmental change in the Russian Altai Mountains during the Holocene

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ARTICLE INFO

Article history:
Received 5 March 2017
Received in revised form
21 December 2017
Accepted 4 January 2018
Available online xxx

Keywords:
Altai Mountains
Landscapes
Archaeological sites
Climate change in the Holocene
GIS

ABSTRACT

Human settlement within the landscapes of the Altai Mountains, especially in ancient times depended on natural factors. Change in natural conditions led to the mobility of people. This paper analyzes the identification of the relationship between landscapes and placement of cultures in the territory of the Altai Mountains in the Holocene. Additionally, the rhythms of Holocene climate change in the mountains are taken into account. To reach the aim of the study the landscape-archaeological GIS was created. The database of archaeological sites was created with the help of literature sources, archive materials and own field studies. The landscape maps were used to characterize the environmental conditions. The distribution of archaeological sites by types of landscapes proves that the reclaiming of landscapes was irregular in both space and time. There were periods of relative regression because of climatic, political and military factors. Comparison of climatic periods and stages of human exploration of the natural landscape shows that the most active development was during the periods of moist climate.

1. Introduction

The study of natural and anthropogenic factors forming the landscape in the Holocene is one of the major problems in historical geography. Regretfully, the farther from the present time the period under study, the less data we have about it. Within this framework a need arises to use historical, paleographic and archaeological facts that might facilitate a more detailed consideration of the historical development of a particular region and the relationship between nature and society in the historical past. For these reasons, this study examines the Mountain Altai region. It is a unique historical and cultural region of Russia that in ancient times served as a center of the formation of many cultures and way of transit during the migration of various peoples from the Central Asian steppes to the West. 'Traces' of these processes have survived in the form of numerous archaeological sites - complexes of stone burial mounds, complexes of burial memorial structures, stelae, settlements, petroglyphs, etc.

The Altai landscape's features exerted a great impact on the processes of human settlement in ancient times. The traditional management of natural resources were developed under the influence of natural and anthropogenic factors, including the individual landscape preferences of different ethnic groups. These questions are especially difficult to study in the Altai Mountains, where, despite a long history of development, there is little direct written evidence about the events of the past and where it is only possible to deduce indirect propositions based on comparisons of the placement of archaeological sites with natural features of the local landscape. One can, however, ascertain the degree of landscape development for the different historical periods through the examination of preserved archaeological sites.

Altai Mountains have a rich cultural and archaeological heritage, to the study of which many archeological investigations have been devoted. The placement of monuments has been well studied but insufficiently systematized. Most of the publications include the mapping of individual archaeological sites, their analysis and typologies (Derevianko and Markin, 1987). Some publications consider archaeological sites of only one historical period (Kiryushin and Tishkin, 1997, 2003). At the present moment, a common informational database of archaeological sites in the Altai

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https://doi.org/10.1016/j.quaint.2018.01.002
1040-6182/

Mountains does not exist. The question of the chronology of Altai's archaeological cultures also drives widespread debate among archaeologists (Tishkin, 2007).

Gaps remain in our perception of the paleogeographic developments of the Holocene, during which human settlement of the Altai Mountains occurred. The paleogeographical information available at present is correlated with considerably difficulty correlated and therefore establishing the overall pattern of changes in the landscapes is problematic. Furthermore, climactic reconstructions of the Holocene differ among various authors. There is research in which attempts have been made to generalize from the available paleogeographical material, and these works mostly regard the Southeastern Altai (Agatova et al., 2014a, 2014b; Chistyakov et al., 2010) or the Altai-Sayan mountain country as a whole (Climate, 2013).

In this regard, there is an obvious need for a more detailed reconstruction of progress of natural processes and human interaction, on the one hand, and the region's environment, on the other hand. This paper is devoted to the analysis of the landscape and location of archaeological sites from different historical periods. At the same time, the rhythm of the Holocene climate change in the mountains has been taken into account. The result of this historico-landscape research is an identification of the spatial and temporal patterns and specifics of human settlement on the landscapes of the Altai Mountains in the Holocene.

2. Study site

That part of the Altai Mountains, which is located within the Republic of Altai, belonging to the Russian Federation, covers a huge area of over 140 thousand sq. km (Fig. 1). The relief of the Altai Mountains is composed of a system of strongly dissected mountain ranges mountain of the alpine and mid-mountain type with narrow and deep river valleys, as well as plateaus and intermountain depressions. The Altai is characterized by the predominance of the mountain ranges' two directions (east-west and north-west), an overall increase in height from the northwest to southeast; slopes of asymmetry with steep north-western and western slopes, and low-gradient southwestern and southern slopes; and bench-like forms of relief expressed in successive change from low-mountain to mid-mountain to high-mountain relief. The Altai Mountains are composed of the following mountain ranges: Anuyskogo, Cherginsky, Baschelakskogo, Shapshalskogo, North-Chuya, South-Chuya, Katun, Terektinsky, Ulba, Kargon, Tigiretskogo, Saldzhar, Sumultinsky, Iolgo, Chikhacheva, Sajlugem, array Tabyn-Bogdo-Ola, Chulyshman Highlands, etc. Among the

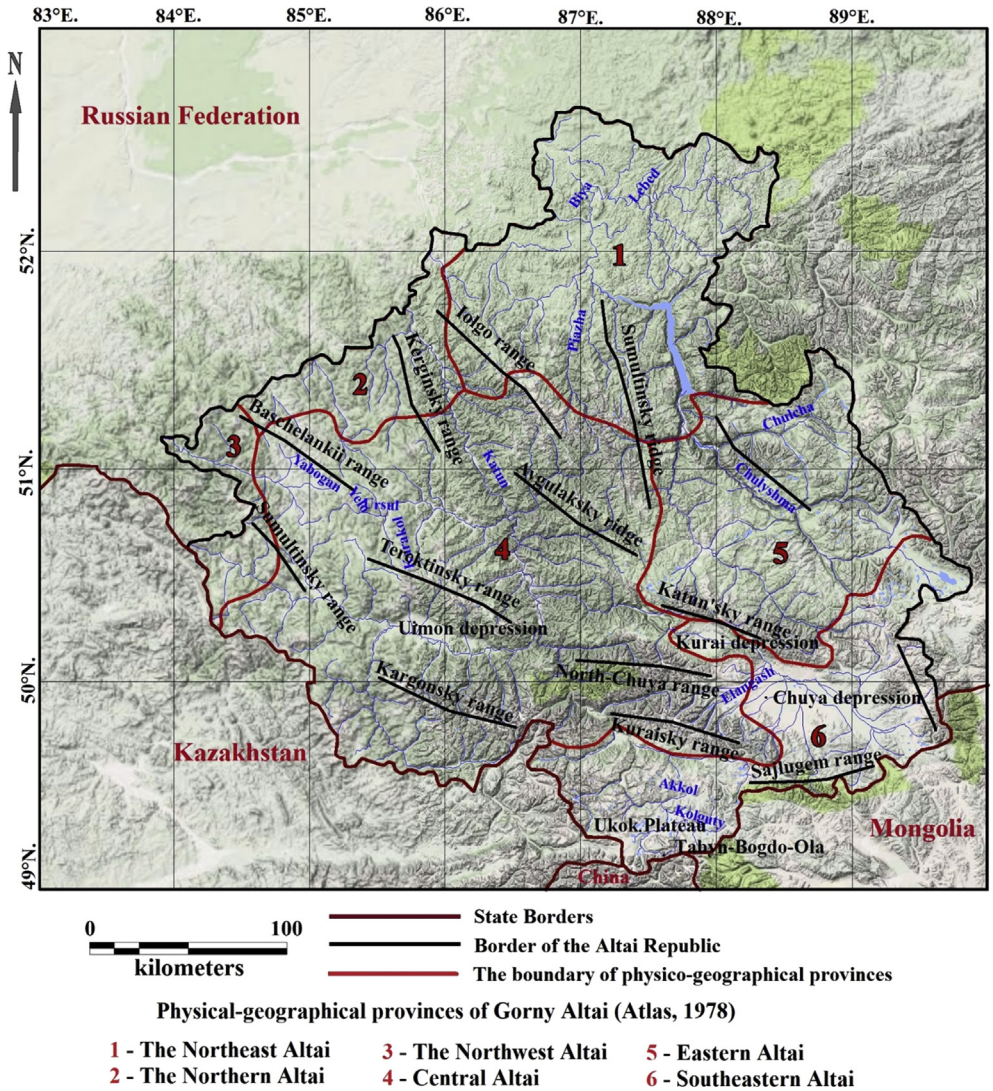

Fig. 1. Geographic location of the study area - Altai Republic.

Please cite this article in press as: Glebova, A., Sergeev, I., Human settlement, landscapes and environmental change in the Russian Altai Mountains during the Holocene, Quaternary International (2018), https://doi.org/10.1016/j.quaint.2018.01.002