



Western Transbaikalia (South East Siberia): desertification from the past towards present

Nadezhda Alexeeva, Margarita A. Erbajeva, and Fedora I. Khenzykhenova

Geological Institute SB RAS, Ulan-Ude, Russia (ochotona@mail.ru, erbajeva@gin.bscnet.ru, khenzy@gin.bscnet.ru)

Desertification is recognized as one of the most serious environmental problem in Asia, in particular in the Baikalian region including Transbaikalia and Prebaikalia. The Baikal Rift zone is a natural border between two biogeographical provinces: Siberian (north forests, taiga – Prebaikalia) and Central-Asian (arid steppes, semi-deserts and deserts – Transbaiklia).

At present time southern Transbaikal area is semi-arid region, in contrast to it, Prebaikalia is characterized by more humid environment. In the past, during Neogene paleoenvironment and biogeocoenosis of these two areas were close and they included similar faunal assemblages. However the formation of a series of south Siberian ranges and uplift of surrounding the Lake Baikal mountains have became as the main orographic barrier. As a result the West Transbaikalia has been isolated from the influence of West humid Atlantic cyclone. This evidence is considered to be the main reason of the onset the climate aridisation in the region. Moreover the influence of gradually global change of the climate change towards cool and dry was rather high too. The most important sources of information on past climate change are derived from paleoclimatic records such as terrestrial archives - deposits, paleoflora and paleofauna of the Pliocene, Pleistocene and Holocene.

The mammal associations and pollen flora evidenced that during the Pliocene the landscapes with predominance of forest inhabitants were replaced by savanna like areas and to the end of Pliocene the region was occupied by mammal assemblages inhabited the open landscapes. The dominant forms in the fauna were ground squirrels (*Spermophilus*). At that time the evidence of the first appearance of desert dweller animals – the genus *Allactaga* occurred.

The further aridisation and cooling strengthened during the Early Pleistocene when the mammal faunas are characterized by the predominance of ochotonids, high frequency of progressive type *Borsodia chinensis laguriforme*, appearance of the genus *Equus*. The Middle Pleistocene of the Western Transbaikalia is characterized by further changing of the climate towards arid. Significant changes in small mammal associations took place. The typical inhabitants of semideserts and deserts such as *Meriones* and *Ellobius* appeared in the fauna. This evidence as well as an increasing of frequency of *Eolagurus* and *Allactaga* and decrease of ochotonids and ground squirrels have indicating the strengthening of the climate aridization.

In the region dry steppes, semideserts and deserts wide spread at that time which is evidenced as well by the data of plant community. The Transbaikalian faunas of that time with the predominance of the Central Asian elements and vegetation resembled the recent condition of south Mongolia. To the Late Pleistocene the paleoenvironment of studied region have changed towards more or less periglacial. Dry steppes with the dominance of wormwood plants widely expanded in the region. The following intensive cooling of the climate led to the further reorganization of the mammal community and vegetation. The fauna is represented by the modern species however the distribution area of some of them were extended far to the North-East, far beyond their present limits. During whole Late Pleistocene the territory of Western Transbaikalia were occupied by open landscapes dwellers.

Because of arid climate and environment was predominant in Transbaikalia the species composition of the faunas of cold and warm periods in total are almost common? They differ mainly by the quantity ratio of taxa. By contrast the adjacent contemporaneous Prebaikalian fauna included the taxa which were ecologically mixed and this fauna is named as non-analogue, or tundra-forest-steppe, or mammoth fauna. The comparison of mammal faunas of these two regions show that they differ each other by the predominance of the Central-Asian elements in Transbaikalian faunas and European-Siberian one in Prebaikalian.