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Reference section of Neogene–Quarternary deposits in the Uimon Basin (*Gorny Altai*)

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Abstract

An extraordinary-thick (400 m) section of the Neogene–Quaternary deposits is for the first time exposed by well No. 1 in the central Uimon Basin. The Miocene–Pliocene lacustrine Tueryk Formation is recognized at the base of the continuous section, verified by new paleontological data (ostracods, spores, and pollen). As assumed, overlaying deposits are represented by the Lower Pleistocene lacustrine-alluvial Beken Formation, Middle Pleistocene alluvial-proluvial Bashkaus Formation, undifferentiated Middle Pleistocene glacial, fluvioglacial, and alluvial deposits, and Upper Pleistocene lacustrine-glacial deposits. The data obtained from the core of well No. 1 undisputably demonstrate that the Uimon Basin had been developed prior the beginning of the Miocene Epoch, when it was characterized by accumulation of the lacustrine Tueryk Formation, incompletely exposed within the studied section. The presence of thick unexposed lower-Ohm interval of sedimentary filling of the basin suggests that the Uimon Basin was developed as early as the Paleogene. Therefore, the tectonic evolution and sedimentation history of the basin are assumed to have features similar to those of the Chuya and Kurai Basins of Gorny Altai.

Keywords: Neogene; Pleistocene; ostracods; palynology; Uimon Basin; Gorny Altai

Introduction

Aspects of stratigraphic subdivision, correlation and dating of certain stratigraphic units within the Neogene–Quaternary sedimentary complex of Gorny Altai are still at great controversy. A vast majority of stratotypes and parastratotypes for the Neogene and Quaternary deposits are localized in south-eastern Gorny Altai, within the Chuya and Kurai intramontane basins, filled with 1 km-thick sedimentary complex (Deev et al., 2011, 2012a; Devyatkin, 1965; Nevedrova et al., 2001, 2014; Rusanov and Vazhov, 2014; Svitoch et al., 1978). In contrast, there have been no representative continuous Neogene–Quaternary sections documented in the other regions of Gorny Altai thus far.

The Uimon intramontane basin, being third in size (300 km^2) and least-studied among the analogous structures of Gorny Altai, is one of the most perspective objects for search of representative Neogene–Quaternary sections (Fig. 1*A*, *B*). In 1960–90s, several low-depth (up to 110 m-deep) exploration and hydrogeological wells with no core recovery were drilled in certain areas within the Basin. These wells exposed the Quaternary gravels and gravely sands, which have not been further genetically-interpreted and age-constrained.

For the first time, 53-m thick succession of supposedly Neogene-age deposits, comprised by reddish-brown clays with rounded clasts of quartz and crystalline schists, was exposed in 1951 by two wells (depths 62 and 82.5 m, respectively) in footwall of a thrust at the foot of the Terekta Range, near the Margala Village (Neshumaeva and Studenikin, 1952). Small (up to 10 m-thick) natural outcrops of reddish-brown clay with

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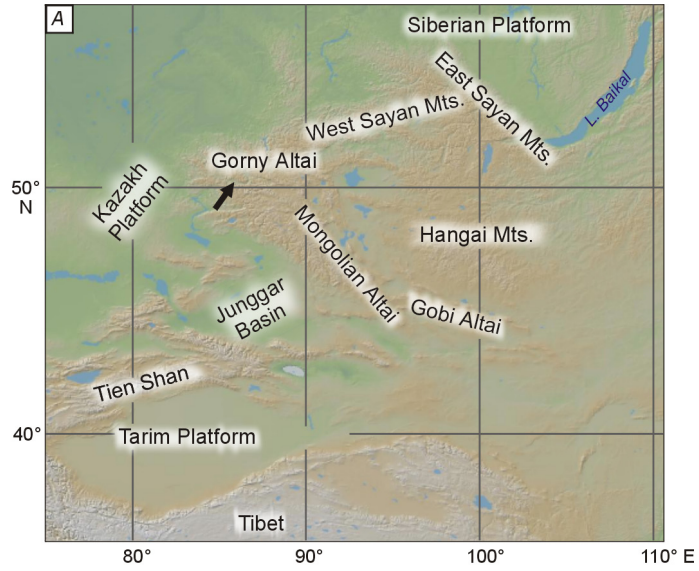

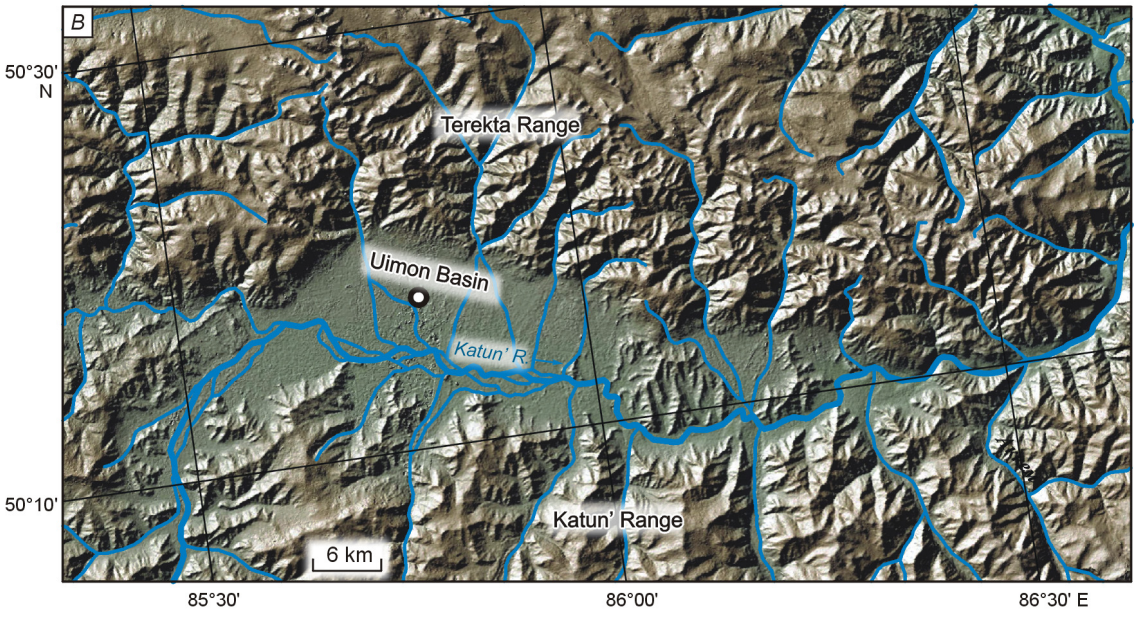

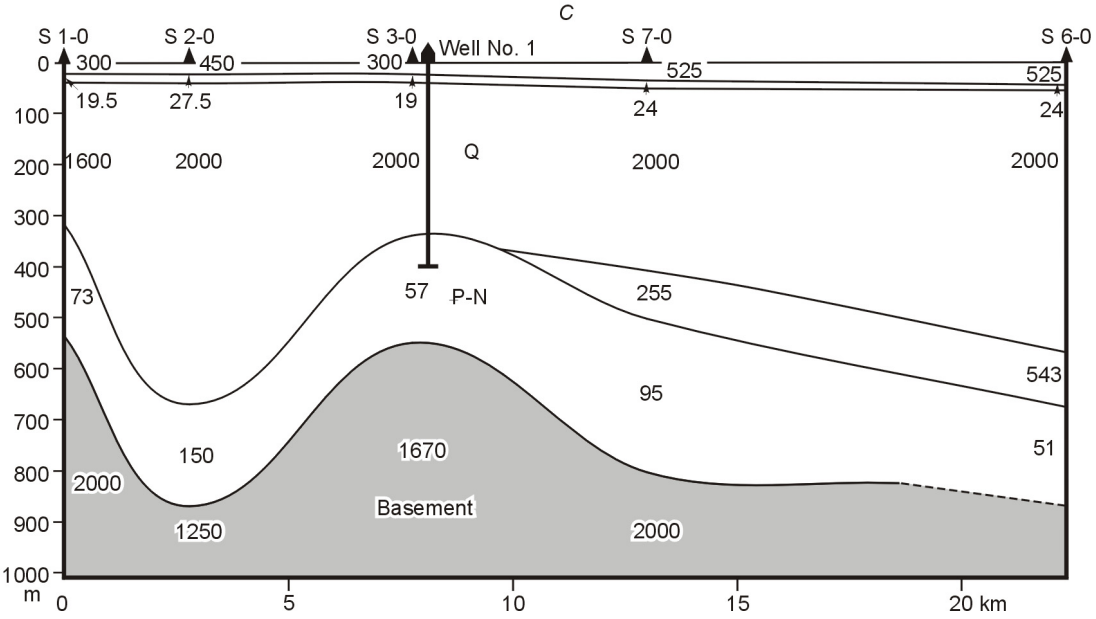

Fig. 1. *A*, Location map of the Uimon Basin (black arrow) within the Central Asia; *B*, shaded relief model of the Uimon intramontane basin; white dot marks location of well No. 1; *C*, tentative geoelectric model of the Uimon Basin, after Deev et al. (2012b), and location of well No. 1. The numbers determine electric resistivity (Ohm·m).