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New Data on the Litho- and Biostratigraphy of the J/K Boundary Interval of the Lower Reaches of the Lena River (Eastern Siberia)

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Abstract

New data on the litho- and biostratigraphy of the Jurassic/Cretaceous (J/K) boundary interval of the lower reaches of the Lena river, at the Cape Chekurovka and Cape Chucha, are presented. Volgian-Valanginian interval of the Chekurovka section is represented by Buolkalakh and Kigilyakh formations and corresponds to beds with *Buchia fisheriana*, beds with *B. unschensis*, beds with *B. okensis* and *B. volgensis*, beds with *B. volgensis*, beds with *B. volgensis* and *B. tolmatschowi* and beds with *B. keyserlingi*. Volgian-Valanginian interval of the Chucha section is represented by Chonoko, Khairgass and Kigilyakh formations and corresponds to beds with *B. unschensis*, beds with *B. volgensis* and *B. okensis*, beds with *B. volgensis* and *B. tolmatschowi* and beds with *B. keyserlingi*.

Keywords

Stratigraphy, Jurassic, Cretaceous, Siberia, Lena River

In the summer 2018 expedition group of IPGG SB RAS has studied the J/K boundary interval in the sections of Chekurovka and Chucha located in the lower reaches of the Lena river (Figure 1). As a result, bio- and lithostratigraphy have been clarified.

On the Cape Chekurovka Volgian-Valanginian deposits with stratigraphic unconformity overlie condensated Oxfordian sandstones (Figure 1). Volgian-Ryazanian part of the section belongs to the Buolkalakh Formation and consists of alternated greenish-grey and grey siltstones and light-grey sandstones

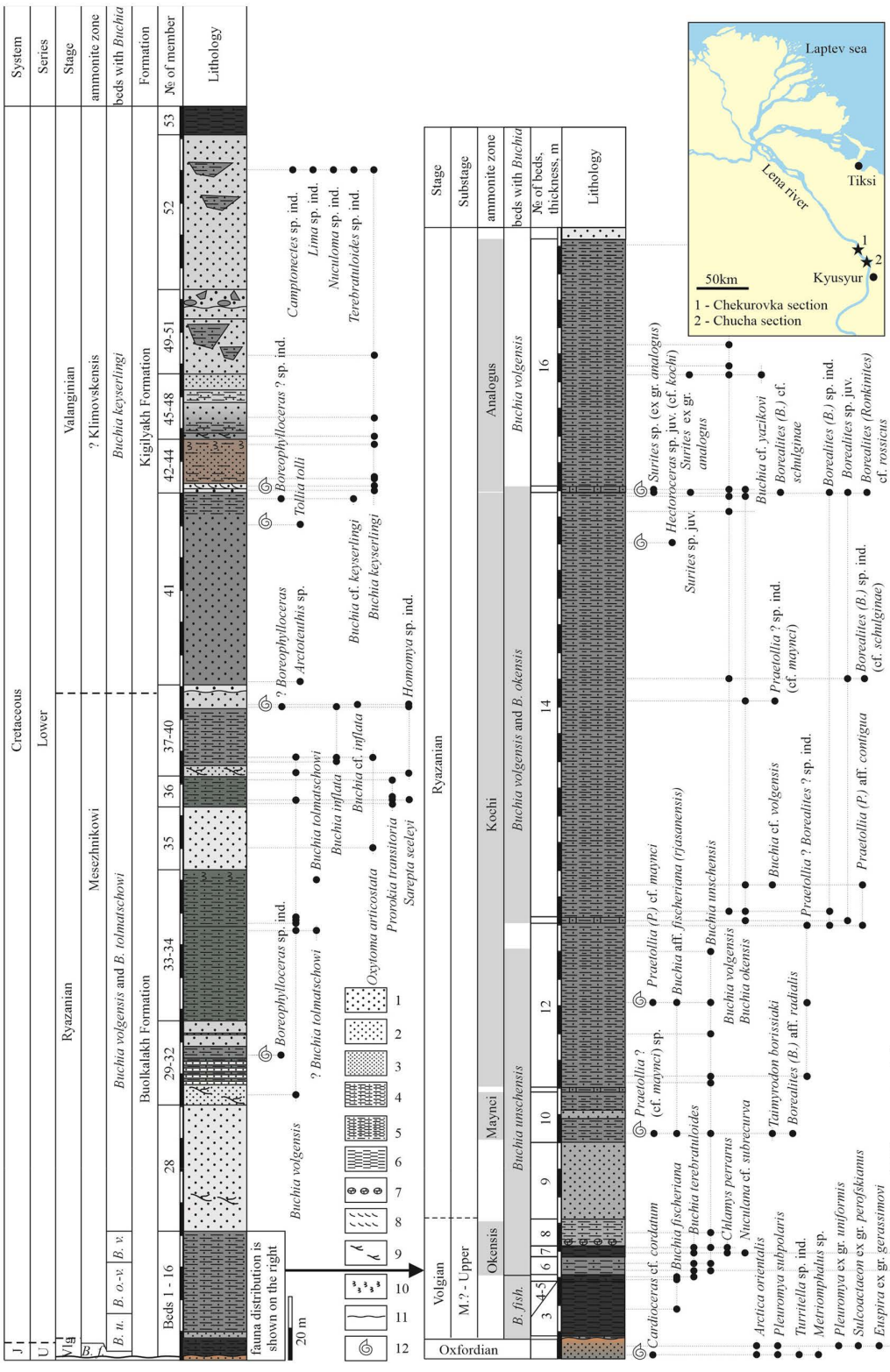

Figure 1. Litho- and biostratigraphy of the Chekurovka section and map with locations of the Chekurovka and the Chucha sections. Numeration of beds and members is given after [1]. Legend: 1: coarse sandstone, 2: medium-grained sandstone, 3: fine-grained sandstone, 4: siltstone, 5: clayey siltstone, 6: silty argillite and argillite, 7: carbonate nodules, 8: oblique lamination, 9: carbonized plant detritus, 10: bioturbation, 11: erosional surface, 12: finding of ammonites.

with black and dark-grey argillites and siltstones in the lower part. The total thickness of the formation is more than 220 m. The Valanginian Kigilyakh Formation which overlies the Buolkalakh Formation consists of sandstones with breccias and silty argillites in the upper part. The boundary between Buolkalakh and Kigilyakh formations is marked by an erosional surface. The total thickness of the Kigilyakh Formation is more than 180 m.

Succession of *Buchia*, typical for the Boreal Scale, has been identified in the Chekurovka section: beds with *B. fisheriana*, beds with *B. unschensis*, beds with *B. okensis* and *B. volgensis*, beds with *B. volgensis*, beds with *B. volgensis* and *B. tolmatschowi*, and beds with *B. keyserlingi* (**Figure 1**). Beds with *B. fisheriana* comprise also *B. terebratuloides* in the upper part. Based on ammonite *Praechetaites* sp. nov. this interval previously has been correlated with uppermost Middle Volgian [1]. Beds with *B. unschensis* comprise *B. terebratuloides* in the lower part. Beds with *B. okensis* contain single *B.* cf. *yazikovi*. Beds with *B. volgensis* and *B. tolmatschowi* also contain *B. inflata* in the upper part. The Ryazanian/Valanginian boundary is conventionally marked on the erosional surface between members 39 and 40 [1]. The Valanginian part of the section corresponds to beds with *B. keyserlingi*.

Section on the Cape Chucha is located approximately 20 km south of the Chekurovka section. It differs from the Chekurovka section by its lithostratigraphic construction. This is linked with its position near the boundary of Olenek and Lower Lena facial regions where sedimentation occurred in shallower part of sea compared to Chekurovka [2]. Volgian part of the Chucha section with stratigraphic unconformity overlies Oxfordian sediments and consists of sandstones and siltstones of the Chonoko Formation. The Ryazanian Khairgass Formation mainly consists of whitish-grey sandstones alternated with greenish-grey and grey siltstones. It is conformable overlaid by the Kigilyakh Formation represented here by rhythmic alternating of fine-grained sandstones and siltstones with beds of sandstones and silty argillites. The total thickness of Volgian-Valanginian deposits is more than 300 m. The following succession of beds with *Buchia* is identified in the Chucha section: beds with *B. unschensis*, beds with *B. volgensis* and *B. okensis*, beds with *B. volgensis* and *B. tolmatschowi*, and beds with *B. keyserlingi*.

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Conflicts of Interest

The authors declare no conflicts of interest regarding the publication of this paper.

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