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Kasimovian Stage in marine sequence of the Later Pennsylvanian of Russia and definition of lower boundary

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The Kasimovian Stage constitutes the Upper Pennsylvanian Series of the Carboniferous System, but a biostratigraphic marker and GSSP for it have not yet been designated. The biogeography differences during this interval led to provincialism and high degree of endemism of the fossils group, therefore, problems of definition and global correlation of the Moscovian/Kasimovian boundary is still uncertain. The Kasimovian stage was established in the early 1920s in the Moscow Basin of Russia not far from Moscow. It spite of its name, type area, for the lower part, is in the vicinity of Voskresensk alone the lower extent of the Moscow River and, for the upper part, the Moscow city region. In the southern Moscow Basin, the Kasimovian succession averages about 45-50 m in thickness, and is composed of distinctly alternating, sparsely fossiliferous fine-grained limestones, and variegated marls and shales with thin interbeds limestone. According to the unified Carboniferous stratigraphic chart of the Russian platform (1990), the Kasimovian Stage includes three regional substages: Krevyakinian, Khamovnikian, and Dorogomilovian. The great progress in the biostratigraphy of Kasimovian stage in type and references sections was achieved during the last two decades. Each substages corresponds to one provincial or local fusulinid zone, or to several conodont zones (Goreva and Alekseev, 2010). The distinguishing of the Global Stratotype Section and GSSP for the Kasimovian stage is the crucial concept of the investigation in the network of the problem of the creation of the International Chronostratigraphic Scale of the Carboniferous System. The Task Group to establish a GSSP close to the existing Moscovian-Kasimovian boundary suggested several potential markers among foraminifers and conodonts. The most promising marker for the establishment of the boundary appears to be the FAD of conodont Idiognathodus turbatus. Biostratigraphical analysis of the Moscovian-Kasimovian transition was done at the neostratotype of the Kasimovian Stage, Afanasievo Section (Moscow Syneclise, Russia) (Goreva et al., 2009). This interval contains fusulinids, brachiopods, bryozoans, corals and conodonts. The most important signature is presence of conodonts Idiognathodus sagittalis-Id. turbatus plexus in the lower part of the Neverovo Formation close to the first appearance fusulinid Montiparus. The disadvantage of Afanasievo section as GSSP candidate is the occurrences, in this shallow-water facies, of erosional unconformities of uncertain duration. Also, Id. turbatus has been documented in more deepwater facies of the Neverovo Formation at the Stsherbatovka section (Oka-Tsna Swell), Moscow city and Perkhurovo borehole (Voskresensk region). Id. turbatus was found in the deepwater Dalnyi Tulkas 2 section (South Urals, Bashkiria). So, the FAD of I. turbatus reflects global transgressive pulse, well-established in the Moscow Basin and the South Urals. This find closes a geographical gap (about 800 km) between the Moscow Basin and the South Urals in the distribution of I. turbatus and confirms importance of these taxa for the definition of the base of the Kasimovian Stage.