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# Progress on the global Moscovian and Kasimovian stage boundaries in China

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## Abstract

No index fossils are yet selected for defining the global Moscovian and Kasimovian stages. Conodonts are regarded as the most potential boundary marker for the two stages. Based on conodonts from South China sections, the lineage *Diplognathodus benderi*–*D. ellesmerensis* across the Bashkirian-Moscovian boundary was recognized. *Diplognathodus ellesmerensis* has been found worldwide and its first appearance datum (FAD) is close to the traditional Bashkirian-Moscovian boundary in the type area of the Moscovian Stage. Therefore, the evolutionary FAD of *D. ellesmerensis* within the lineage *D. benderi*–*D. ellesmerensis* is considered the best marker for the base of the global Moscovian Stage. As for the global Kasimovian Stage, conodonts *Swadelina subexcelsa*, *Idiognathodus sagittalis*, and *I. heckeli* are potential markers for its basal boundary. All these species plus *I. turbatus* were found in the Naqing and Shanglong sections, South China, as well as the *I. swadei*–*I. heckeli*–*I. turbatus* lineage has been recorded. Among these conodonts, *I. heckeli* has a wider geographical distribution, an unambiguous species concept, and an evolutionary lineage, and its FAD marks extinction and biodiversification events and is closer to the traditional boundary than that of *I. turbatus* and *I. sagittalis*. Thus, *I. heckeli* has the most potential for globally correlating the base of the Kasimovian Stage at present. However, the FAD of *I. heckeli* is one substage higher than the traditional Moscovian-Kasimovian boundary that can be recognized by the FAD of *S. subexcelsa*.

**Keywords:** Carboniferous, Moscovian, Kasimovian, Stage boundary, China

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