DEVELOPMENT OF A COMPOSITE STANDARD BIOSTRATIGRAPHIC DATABASE FOR THE LATE PALEOZOIC OF EURASIA

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A composite standard is a biostratigraphic database in which the ranges of fossil taxa are determined relative to an isochron-denominated scale (Ma or dimensionless composite standard units). The correct sequence of global or regional FAD and LAD datums is determined by graphically correlating a number of sections in order to achieve a composite of local FADs and LADs. The composite standard/graphic correlation approach is used in the petroleum industry for high resolution biostratigraphy at both the regional and reservoir scales. Increasingly, academic researchers are employing this approach to constrain sequence stratigraphic interpretations and as a data management tool in international chronostratigraphy. Once mature, a composite standard is not only a tool for correlating individual sections, but the information it contains can be used for analyzing extinction and radiation patterns as well as other biodiversity trends.A Late Paleozoic composite standard is used here to illustrate its applicability in both biostratigraphic and biodiversity studies. This database spans the Upper Devonian through Upper Permian of Eurasia and has been constructed by compositing data from over 40 localities throughout the Arctic, Spain, Russian Platform, western Urals, Pricaspian Basin, Pamir Mountains, and Tarim Basin. FAD and LAD datums for ~3,500 conodonts, smaller foraminifers, fusulinaceans, palynomorphs, ammonoids, brachiopods, and corals, are sequenced relative to the Australian Geological Survey Organization’s time scale.