

Early Permian oncoids related to glaciation in South China

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A large amount of oncoids popularly named "Chuanshan ball" occurs universally in the Lower Permian Chuanshan Formation in South China. This kind of oncoids exhibit the following characteristics: wide distribution (several tens to hundreds Km²), huge quantities, large sedimentary thickness (several meters to hundreds meters) and similar characters (few encrusted layers, complicated internal textures and structures and diverse nuclear constituents), which constitute a specific "fashion facies" in geological history.

According to investigation, a number of oncoids also exists in the Lower Permian of America, France, Italy, Japan and so forth. So, the authors consider that oncoids of South China and other areas were mainly formed due to intense differentiation of the global climate at that time, which resulted in a universal regression (a large-scale glaciation during the Early Permian occurred in the polar continents, a great amount of water in the hydrosphere was stockpiled on continental ice sheets) and the appearance of a large amount of algae in the sea water at low-latitude areas, thus producing favorable conditions (a large amount of binding microbes and nuclear components and proper hydrodynamic with stirring intensity) for an extensive accumulation of oncoids.

Oncoids are formed in the following way: binding microbes (mainly algae) secrete viscous substance and capture sedimentary particles around the nuclei under the proper hydrodynamic conditions. The formational course of oncoids can be divided into three stages: formation of nuclei, formation of coated layers, and sedimentation-transportation. Study also reveals that oncolites are a favorable reservoir rock in the area.