



Indicative Significance of Coarse Tephra Detritus Characteristics to Volcanic Clastic Sedimentary Facies in Changbai Mountain

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Abstract: Changbaishan volcano is the most active volcano in China. The eruption of Changbaishan volcano in 969±20 AD generated a total tephra volume of 100-172 km³. Based on the particulate size description analyser and scanning electron microscopy, the grain size distribution and morphological characteristics of coarse tephra detritus between 1φ~5φ were discussed. And the relationship between coarse tephra detritus and volcanic sedimentary facies were analyzed. At the near source area, the size distribution characteristics of coarse tephra detritus is similar with the fallout deposit. It is single peak and the slopes on both sides of the peak is slower. It has larger area. It shows that coarse tephra detritus in a wide distribution of 2φ to 5φ. Scanning electron microscopy of volcanic debris is developed by piping porosity. The sharp is most chicken bone particles with sharp edges. The distribution characteristics of the base-surge coarse tephra detritus particle size is the peak and higher on the right. It has a large number of granular non-porous crumb particles besides chicken bone particles with sharp edges. Two Lahar deposits occur in the primary and secondary after the eruption of Changbaishan. The Lahar deposit contains a large amount of primary volcanic debris. Its coarse tephra detritus size distribution is concentrated and large. The sharp is most chicken bone particles with sharp edges and granular non-porous crumb

particles. It is similar with the base-surge. The distribution of coarse tephra detritus in secondary Lahar is single peak and the slope on the left side is gentle. Its slope on the right side is steep. Scanning electron microscopy basically only sees non-porous granular debris. We can distinguish between native volcanic eruption products, primary Lahar and secondary Lahar under the help of distribution characteristics and scanning electron microscopy of coarse tephra detritus.

Key words: Changbaishan volcano, Pyroclastic deposits, Coarse tephra detritus

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