

Volcanology of Muposan Tuff in the Southeastern Cheongsong, Kyeongsangbuk-do: Flow Indicator and Direction

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The Muposan Tuff is a stratigraphic unit of Cretaceous volcanic rocks which are included in to the Yucheon Group of the Kyeongsang Supergroup in the northeastern Kyeongsang Basin.

The Muposan Tuff belongs to tuffs according to the granulometric classification and to vitric tuffs according to the constituent classification. The crystal content is more or less concentrated in the matrix than in the pumices of the tuffs. This may mean that the tuffs have suffered crystal enrichment during volcanic processes. The tuffs are mostly densely to partially welded and their pumices and shards are very flattened and sometimes stretched.

The elongate pumices and lithic fragments are aligned and pumices are sometimes stretched on the welding foliation. The lineations from their alignment and stretchment are roled on an excellent indicator of flow direction of pyroclastic flow that have deposited the Muposan tuff. The flow direction which is measured from the lineations is lain along about SE-NW trend. And the elongate pumices and lithic fragments are sometimes imbricated on the vertical sections parallel to the lineations, and welding foliations are asymmetrically folded into the trend normal to the lineation. Accordingly the imbrications and an asymmetrical fold indicate flow azimuth of which pyroclastic flow was derived from the southeastern part. In Addition, maximum clast size of pumices and lithic fragments respectively decrease from southeastern part to northwestern one. The variations also support that the source area of the Muposan Tuff is located in southeastern part of the study area.

The Muposan Tuff is thought to have transported as a laminar flow during the final stage because the alignment, stretchment and imbrication of elongate pumice and/or lithic fragment, and flow fold might represent the effect of shearing within the moving flow.