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Eruption and emplacement dynamics of a cinder cone named Karnıyarık Tepe in Cappadocia region (Turkey).

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The Cappadocian Volcanic Province (CVP) is a Neogene-Quaternary volcanic field located in the central Anatolia (Turkey) that extends in NE–SW direction for a length of 300 km and a width of 20–50 km. One of the most striking features of the CVP is the presence of the numerous polygenetic volcanoes and monogenetic cones scattered throughout the province. More than 800 monogenetic volcanoes exist within the CVP. Most of these volcanoes are in the form of cinder cones. The eruption and emplacement dynamics of cinder cones in Cappadocia region were not studied before except their lineation and structural investigation. However, recent studies in monogenetic basaltic volcanoes designates the necessity of understanding conduit dynamics in order to understand controls on eruption styles and transitions between them. Here, we present our first findings about the eruption and emplacement dynamics of a cinder cone named Karnıyarık Tepe in Cappadocia region. In order to better characterize the samples with respect to their size-distribution, and highlight possible changes in the fragmentation processes occurred during eruptions, the SFT (Sequential Fragmentation/Transport) theory has been applied to tephra which was sufficient in amount to allow grain-size analysis. In order to find how the water/magma mass ratio (R) varied during the course of the Dikkartın eruption, the fraction of phreatomagmatic constituents was assumed as a measure of water abundance and that for magmatic constituents as a measure of magma abundance. The alternating water effect on the eruption dynamics was observed. The eruption sequence produced purely magmatic layers or layers with water/magma ratios near to 0.6.