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Interactive comment on “Evaluation of the initial stage of the reactivated Cotopaxi volcano – analysis of the first ejected fine-grained material” by T. Toulkeridis et al.

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Dear Anonymous Referee #2,

1) We have carefully read the paper about the Mt. St. Helens (Cashman and Hoblitt, 2004), and we came to the following conclusions:

- First of all, let's remind to the referee that the electron microscopy techniques have tremendously improved in the last 30 years. The cited paper talks about a reinterpretation of ash samples done 24 years after the explosion. The authors have used different techniques and knowledge not available by the authors of the original paper on 1981.

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The goals are completely different from ours. We have reported information about the first ejected material in order to help for taking decisions. - In the cited paper of 2004, the ashes were embedded with an epoxy resin. A polishing method (not a cleaning method as mentioned by the referee) was used to observe crystalline structures in the ash samples. Due to the high local heating, the polishing method could have introduced structural changes on the samples. Finally, the ash samples ejected long time ago could also suffer physicochemical changes from natural environmental processes. Both effects have been largely reported in material science.

2) Let's clarify that the X-rays comes from several micrometers inside the sample, therefore the superficial fragments observed on the ash samples are not relevant on the chemical analysis. We strongly recommend the papers and textbooks written by Goldstein and/or Newburry. By other hand, any cleaning method will change the chemical properties of the samples leading to misinterpretation of the data. Moreover, the referenced paper that the Referee #2 suggests for the cleaning ash methods does not mention in any way that the samples were cleaned. This paper used a method to study the embedded crystalline structure of ashes by a polishing method.

Interactive comment on Nat. Hazards Earth Syst. Sci. Discuss., 3, 6947, 2015.

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