



## ***Interactive comment on “Significant mass loss in the accumulation area of the Adamello glacier indicated by the chronology of a 46 m ice core” by Daniela Festi et al.***

### **Anonymous Referee #4**

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The paper presents new data about the accumulation/ablation rate of the Adamello Glacier, the largest in Italy, estimated from a new ice core. Results are interesting, however some weaknesses need some improvements.

#### Abstract

It seems there is a contraddiction when stating that the surface is clearly old and that the drilling is in the accumulation zone. Scientific literature about the Adamello glacier mass balance indicates that the area is not in the accumulation zone.

Line 45. I am quite surprised by this conclusion. Being the altitude at Pian di Neve 759

m below the Alto Ortles Glacier we expect a 4°C-5°C mean temperature below and so definitely stronger temperate glacier conditions than Ortles.

Maragno et al. 2009 indicated an area loss of 19% and not a mass loss in the period 1983-2003. A more precise description of the meteorological and mass balance context is recommended also based on a more complete literature review of mass balance in the region.

Line 126 Because of the melting conditions at the surface I ask to comment how the exact timing of the radionuclides can be ensured. I have doubts about the correspondence between ice core depth and age.

Figure 2. I do not see a clear correspondence between Pollen&Spores and rBC in Figure 2A and 2B if any was expected. The timing seems to be fairly kept but the correlation seems to be very weak. Can the authors plot a scatter plot with the two variables.

Figure 3 shows a fair correspondence. Can the Authors plot a moving average line to better identify the peaks in 210Pb at Silvretta and Adamello?

Figure 5 is quite problematic. With just three points in the 1-40 years range it seems difficult to fit the Dansgaard Johnsen flow model up to 10000 years also considering the morphology of the bedrock underneath Pian di Neve. So I agree with the Author's comment at line 260-261. I would ad 'very crude'.

Conclusions. In the conclusions I would better stress the estimated accumulation rate of 0.8-0.9 m w.e. yr<sup>-1</sup> which is quite convincing than the Dansgaard-Johnsen model age estimate which is very uncertain.

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Discussion paper