

## ***Interactive comment on “Dedradation of buried ice and permafrost in the Veleta Cirque (Sierra Nevada, Spain) from 2006–2013” by A. Gómez-Ortiz et al.***

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We acknowledge the referee for bringing this very interesting discussion about the origin of the glacier ice in the Veleta cirque. Although we know that during the LIA there was a glacier there, some of the ice may have formed before this period.

The fact of sheltering a glacier during the Little Ice Age does not mean that the glacier ice preserved in this cirque is JUST from this period. This is what we said in our first comment. There are several texts written during the Muslim occupation of southern Iberian Peninsula describing the presence of permanent snow in the massif, which may be assumed as due to the presence of glaciers in the high lands of the massif.

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Here are these descriptions:

Abi Baku al-Zuhri (1137): “And this mountain is one of the wonders of the world because it is free of snow neither in winter nor in summer. There can be found the snow of past years, which, darkened and solid, looks like black stone, but when it is broken open white snow is to be found on the inside. Plants do not grow at the summit of this mountain, nor can animals live there. Nobody can climb this mountain, nor walk upon it, except in the warm season, when the Sun is in the sign of Scorpio, access then being possible”

Al-Idrisi (1154): “This range extends across two days’ journey; it is of considerable height and perpetually covered in snow”

Mahmud al-Qazwini (1263): “Mount Sulayr of al-Andalus, from which the snow disappears neither in winter nor in summer and from where can be seen most of the territory of al-Andalus due to its height. And the cold there is intense and continuous”

The accumulation of ice during the generally colder and wetter conditions prevailing between the XIV and XIX may have covered these ice bodies. Therefore, it may be risky to assume that the glacier ice existing in the Veleta cirque was of LIA age, since it may also have remnants of older ice. However, these ideas are not opposed to the fact that during the Little Ice Age, a small glacier existed in this cirque, as sedimentological and historical evidence have shown in former studies (Gómez Ortiz et al., 1999, 2004, 2012).

Regarding the comments of the referee about changing the title, we keep considering that the title does not need to be modified since it may bring more confusion to the idea discussed in this paper. However, we have modified some parts of the text where this may cause confusion.

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Interactive comment on Solid Earth Discuss., 6, 1037, 2014.

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