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Interactive comment on "Monitoring water accumulation in a glacier using magnetic resonance imaging" *by* A. Legchenko et al.

Anonymous Referee #1

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The article "Monitoring water accumulation in a glacier using magnetic resonance imaging" by Legchenko et al. is suggested to application of 3D modification of the Nuclear Magnetic Resonance Imaging (NMRI) for delineation of the internal structure of the polythermal glacier Tete Rousse located at the altitudes of 3100-3300 m in the French Alps.

First of all is necessary to underline a physical uniqueness of this geophysical investigation carried out in difficult geological, topographic and environmental conditions.

A scientific importance of this investigation consists of the fact that firstly was demonstrated a noninvasive tool for the glacier body conditions operative monitoring. As it follows from analysis of the numerous avalanches in mountainous regions, the glacier physical monitoring is of high prominence. Boreholes drilling is not always possible,

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and for a reliable monitoring these boreholes should cover a significant part of the studied glacier.

The results demonstrated in this paper indicate that NMRI can reliably separate the studied glaciers on the various tectono-geological zones and estimate the water distribution within the glacier bodies. I suggest that this effective NMRI should be applied at other glaciers and not only in the Alps region.

The paper is logically constructed and nicely graphically supported.

I can propose only that the future NMRI observations at the Alps glaciers may be accompanied by the microgravity observations.

Interactive comment on The Cryosphere Discuss., 7, 2119, 2013.