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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Analysis of elevated spring-time levels of Peroxy Acetyl Nitrate (PAN) at the High Alpine research sites Jungfraujoch and Zugspitze" *by* S. Pandey Deolal et al.

Anonymous Referee #1

Received and published: 13 June 2014

Title: Analysis of Elevated Spring-time Levels of Peroxy Acetyl Nitrate (PAN) at the High Alpine Research Sites Jungfraujoch and Zugspitze Author(s): S. Pandey Deolal et al. MS No.: acp-2014-272 MS Type: Research Article

Summary: This paper presents a detailed meteorological analysis of PAN data from the Junggraujoch and Zugspitze sites during May 2008. The study presents the PAN data alongside several other trace gases, and segregates the data by meteorological patterns (clusters). The paper presents and adequately explains a very thorough analysis of 1 month of data. This is not a groundbreaking piece of work, but it is certainly suitable for publication in ACP with relatively minor changes.

Specific Comments:

Figure 2 Discussion, pg 12739: Do the authors have any insight on why there appears to be larger interannual variability at the lower sites? Why have the authors chosen to not shade the area including 2005 (JFJ) and 2003 (ZUG)? If there is not a suspected problem with the data, it is very interesting to acknowledge and understand the interannual variability in PAN. There are very few measurements of PAN globally that can offer any information on interannual variability of either production or venting to the free troposphere.

Pg 12744, Lines 2-3: PAN could also decompose during transit.

Figures: Please add the cluster descriptors (i.e. "westerly advection" to all the plots and captions. It really slows down the reader to have to constantly refer to the text and remember your color schemes.

Overall Comment: This is my largest concern. The authors should attempt to determine how representative May 2008 is compared to the other years of data. I have confidence that the elevated PAN observed at JFJ during May 2008 was the result of recent boundary layer production; but in reality, this analysis is only based on approximately 10 days of data. Is this weather pattern common in spring? Does it occur frequently in other years? Can the analysis be quickly re-run for another year, and quickly compared to see if that also resulted in elevated PAN?

Interactive comment on Atmos. Chem. Phys. Discuss., 14, 12727, 2014.