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## ***Interactive comment on* “Lidar observations of Nabro volcano aerosol layers in the stratosphere over Gwangju, Korea” by D. Shin et al.**

### **Anonymous Referee #3**

Received and published: 21 February 2015

Review of Lidar observations of Nabro volcano aerosol layers in the stratosphere over Gwangju, Korea

#### General comments

This paper uses lidar observations of aerosol from the Nabru eruption, taken over a several month period. Two wavelengths and a polarization channel are used to constrain aerosol light-scattering properties. The aerosol timing and altitudes are shown to be consistent with a transport model. This paper is well written and needs only minor modifications. As stated in the paper, there are not many stratospheric aerosol measurements in this part of the world, and this is a good demonstration of the capabilities of the lidar.

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## Specific comments

Abstract: no comments.

1 Introduction: no comments

2 Methodology:

2.1 Lidar system MRS.LEA, the laser has a 355 nm meter wavelength emission but there is no data. Is there a reason those data aren't used? What are the raman wavelengths at 387 and 607 used for? Is the extinction through the Nabru layer too small to measure?

Page 10, line 10: I thought the name Angstrom exponent was used for the ratio of extinctions (or aerosol optical depth) at two wavelengths. This is not the same as the ratio of lidar backscatter, which has been called the lidar color ratio.

Figure 2: I don't believe the RH data are used in the text, but the radiosonde RH is not accurate above about 12 km (Temp less than -55 C). It might be clearer to leave it out. Why is there no 1064 nm data?

Figure 3: same as figure 2 except for the additional 1064 nm profile.

Technical corrections

Page 10, line 2: figure 2 should be Figure 3.

Page 11, line 17: ...the stratospheric pattern was (were)...

Page 12 , line 18: ...eruption of (on) the volcano.

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Interactive comment on Atmos. Chem. Phys. Discuss., 15, 1171, 2015.

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