

## ***Interactive comment on “Observations of the diurnal and seasonal trends in nitrogen oxides in the western Sierra Nevada” by J. G. Murphy et al.***

### **Anonymous Referee #1**

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The manuscript “Observations of the diurnal and seasonal trends in nitrogen oxides in the western Sierra Nevada” by Murphy et al. discusses variability and speciation of reactive nitrogen species over the course of one year at an elevated site in the western Sierra Nevada. Measurements were made by thermal dissociation laser induced fluorescence (TD-LIF). Data seems to be of high quality and demonstrates the great potential of this analytical technique to make accurate measurements of speciated NO<sub>y</sub>. The interpretation of the data is convincing but not surprising for most of the findings. The probably most valuable result is the significant contribution of alkyl nitrates to total NO<sub>y</sub> and its potential to be exported in the free troposphere. The manuscript should be published in ACP after considering the following minor issues:

General Comments:

The paper is relatively long and I would like to encourage the authors explore the possibility of shortening. For example Figure 3 is not really necessary because it is already sufficiently described in the text.

#### Specific Comments:

p 4420, line 11 and 14: Temperature to dissociate alkyl nitrates is 350°C (line 11) and the second oven is 330°C (line 14) to make measurements of HNO<sub>3</sub>. Should not the second oven should be at  $\geq 350^\circ\text{C}$  for such measurements?

p 4425, line 21: It is maybe worth to mention that another reason why maximum values are measured in winter could also be the fact that the mixing ratio height is much lower during the winter, leading to less dilution and consequently higher values.

Figure 4 and 5: Consider to show monthly box plots instead of individual 3-min data points. It should also be considered to merge these two figures into one figure.

Figure 12: The average wind direction should be removed from this figure. Wind direction in degrees cannot simply be averaged.

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Interactive comment on Atmos. Chem. Phys. Discuss., 6, 4415, 2006.

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Interactive Discussion

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