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Interactive Comment

Interactive comment on "Ozone production and trace gas correlations during the June 2000 MINATROC intensive measurement campaign at Mt. Cimone" *by* H. Fischer et al.

Anonymous Referee #1

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General Comments This paper describes the overall behavior of a number of trace gases observed during the MINATROC study at Mt. Cimone, Italy. The instrumentation used to make the observations is briefly discussed, and overviews of the data are presented. Here the authors discuss upslope/downslope flow as observed at other mountainous sites; some of the present data are compared with these previous studies. The data are also parsed based on the airmass origin using modeled back trajectories. This paper is apparently one of several describing the MINATROC campaign. The paper is generally well-written, but is somewhat superficial in its coverage of some topics. For example, in the discussion of the daytime-nighttime differences in concentrations, the authors could attempt to isolate those air masses that are truly free tropospheric in nature (if that is possible). Likely, though, air masses that originate from altitudes



higher than the measurement site are contaminated by continental air from lower altitudes due to recirculation or convective injection. Also, regarding net ozone tendency calculations, discussion should be added as to what the observed values mean, and an attempt to describe why they are different than, say, the MLOPEX results. It is stated (Summary and Abstract) that the concentrations of trace gases are low. This should be expanded to say that they are representative of continental background air. The values of NO_x, for example, are certainly much higher than observed over the remote Pacific Ocean. In other words, saying concentrations are low is relative, and one must declare to what the values are being compared.

Specific Comments In Table 4, the data from previous (and the present study) are parsed by upslope and downslope. I could not find in the references given this parsing always stated explicitly. For example, the downslope ozone in MLOPEX was usually much higher than the upslope, but in this table the differences are small. The authors should also be careful not to necessarily associate downslope with free troposphere samples, or upslope with boundary layer air. These mountainous sites are great for begin able to sample different regimes, but one must use tracers and trajectories (and much care) before assigning air masses to specific source regions (here meaning altitude regions rather than geographical locations). I would like to see this distinction discussed in more detail, or least the assumptions carefully stated. In the discussion of RO₂ measurements, it is stated that correction for water vapor on the calibration of the chemical amplifier was performed for the Mt. Cimone observations. I do not believe, however, that all of the other data in Table 4 had this correction performed. The authors may want to attempt to make this correction, or at least comment on it. When performing fits of a measured quantity versus another, one should use a bivariate fit that accounts for errors in both variables. Has this been done in the present paper? The paper should state exactly how the various fits were performed, and what assumptions were made.

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Interactive Comment

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