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Interactive comment on "Forecast, observation and modelling of a deep stratospheric intrusion event over Europe" *by* P. Zanis et al.

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Review of manuscript No. ACP2002si05-9: Zanis et al., Forecast, observation and modelling of a deep stratospheric intrusion event over Europe

The paper describes a case study of a stratospheric intrusion over central and southern Europe. The intrusion was successfully predicted by a trajectory model and verified by sonde, lidar, satellite and surface observations. In addition, predictions of the O3 enhancement associated with the stratospheric intrusion based on FLEXPART simulations and modelled O3 from ECMWF are made and compared successfully to observations. In general this paper is well written and describes one of the best characterized stratosphere troposphere transport events described in the literature. There is only one weak point in the paper and this is the description of the surface measurements in section 3.3, in particular the interpretation of the radionuclide measurements. In general, these measurements suffered from a very low time resolution (24 hours at

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Zugspitze and 48 hours at Jungfraujoch), which is long compared to the time period of stratospheric influence at Jungfraujoch (15 hours according to the predictions as described in the lower part of page 1117). In addition, it is not clear whether the observed enhancements of the ratio of 10Be to 7Be are statistically significant or not. For example, a reference value for this ratio without stratospheric influence at Zugspitze is not given and a comparison to all measurements obtained during the years 2000 and 2001 shows that the ratio is not very high at all. The same is true for the observations at Jungfraujoch. Although the authors state that the 10Be to 7 Be ratio during the intrusion is among the highest values measured during the whole observation period, the relative changes shown in Fig. 7 b are quite small. In addition, I had a hard time to follow the authors in their interpretation of the wet scavenging effect: They argue that the low absolute concentrations of 10Be and 7Be during the intrusion are low due to wet scavenging associated with high RH on June 21. But RH on June 18 and 19 seems to be comparable, nevertheless 10Be and 7Be concentrations are very high.

Interactive comment on Atmos. Chem. Phys. Discuss., 3, 1109, 2003.