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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Exploring atmospheric boundary layer characteristics in a severe SO_2 episode in the north-eastern Adriatic" *by* M. T. Prtenjak et al.

Anonymous Referee #2

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The authors investigate a severe pollution episode in the Rijeka area by applying the EMEP model as well as fine resolution mesoscale meteorological models.

Since the results of MEMO seem not to be significant for the discussion, the mention and description of MEMO should be skipped.

With respect of the EMEP results it is necessary to show the contribution of local sources to the SO2 concentrations simulated for the Rijeka region.

The analysis of the mesoscale meteorological situation within the paper shows thorougly made simulations with WRF and very nice results. However, the conclusions are quite limited due the lack of simulated SO2 distributions. Some assumptions (e.g. the

assumed entrainment of high SO2 from aloft on Feb. 3) could only be maintained if this assumption were supported by simulated SO2 concentrations. The results of the WRF simulation indicate a regional meteorological sitation that is indeed very favourable for the accumulation of high SO2 concentrations. But as long as there are no chemistry transport simulations included, there is no proof that this meteorological situation will definitely result in that high SO2 concentrations.

Furthermore, there is no evidence given in the paper whether the simulated mesoscale features are unique and different from other stagnant situations which did not result in such a severe pollution situation. In the introduction the authors mention that weak wind speed and calms are frequent in the region, but are not necessarily indicators of severe pollution episodes. Therefore, the authors should discuss between this particular situation in comparison with other stagnant situations without very high SO2 concentrations.

The quality of figures 6 – 11 is quite poor and the figures are too small. Arrows for the observed wind could be included into the figures of the simulated wind. This would permit larger figures and also a better comparison of observations and model results.

Interactive comment on Atmos. Chem. Phys. Discuss., 9, 6283, 2009.