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Atmospheric Chemistry and Physics Discussions

Interactive comment on "Polar organic compounds in rural $PM_{2.5}$ aerosols from K-puszta, Hungary, during a 2003 summer field campaign: sources and diurnal variations" *by* A. C. Ion et al.

Anonymous Referee #3

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Seven polar organic compounds (methylglyceric acid, malic acid, methylthreitol, methylerythritol, levoglucosan, arabitol and mannitol) were measured in the PM2.5 fraction of ambient rural aerosol. In addition EC, OC and WSOC were determined. To provide information on sources and source processes, day- and night-time samples were collected for 30 days in summer 2003.

Due to the need of environmental data, especially on polar compounds in ambient aerosol, I recommend the publication, but it still needs some improvement (many of them already mentioned by referee #1 and #5).

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Additional remarks: Cavalho et al (2003) (already cited in the reference list) showed a clear size dependency for mannitol and malic acid. Whereas malic acid was observed mainly on particles smaller than 1μm, mannitol had a significant amount even in the coarse fraction $>$ 2.5μm (about 50% in the size range 2,1-4.2μm at the German site). The work discussed here deals only with PM2.5, although 2,5-10μm particles were also sampled. Particle swelling due to higher humidity in night-time may shift the cut point towards smaller particles and may also contribute to lower night-time concentrations of mannitol in PM2.5. Another recent study (Yu et al., 2005) found some differences in day and nighttime samples (PM2.1 of rural aerosol) for eg. malic and succinic acid. The concentration profiles were strongly influenced by the global meteorological situation.

Section 2.1: I missed some data on the meteorological situation (global transport, rain, humidity and temperature). How was the WSOC determined? Section 2.2, page 1869 line 5: Calibration curves were build up using a standard mixture. What concentration range was covered by the calibration, was the response linear, what was the limit of determination/quantification? Section 2.2, page 1869 line 14: Does the excellent precision of about 10% include the extraction and derivatisation step? Section 3.1, page 1870 line 4-8: The recovery rates $>$65 to 72% were determined by spiking blank filters, and "are expected to be higher for real samples due to carrier effects" - are there any data on spiked loaded filters? Table 2: N=63 for all samples, but day-time and night-time samples are 27+28=55? Fig.1: Should not be cancelled as suggested by referee #1.

Additional Literature which should be worked in: Yu, L.E.; Shulman, M.L.; Kopperud, R; Hildemann, L.M.: Characterization of organic compounds collected during south-eastern aerosol and visibility study: Water soluble organic species. Env. Sci. Technol. 39, 707-715 (2005)

Interactive comment on Atmos. Chem. Phys. Discuss., 5, 1863, 2005.