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Atmospheric Chemistry and Physics Discussions

Interactive comment on "New insights in the global cycle of acetonitrile: release from the ocean and dry deposition in the tropical savanna of Venezuela" *by* E. Sanhueza et al.

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Thanks also to this referee for spending time for reading and thinking about the paper. In the following we give answer to issues that have been raised:

1. To keep Figure 1 easy we omitted standard deviation (this information is given in the Table); also we superimposed all individual days, since there was no strong day-to-day variation. However, we understand the necessity to show ŞmoreŤ when surprising conclusions are drawn. Therefore another Figure will be included (see below).

2. The referee is wondering if the dataset is containing information whether acetonitrile mixing ratios are lower for air masses that havenŠt passed the Caribbean Sea. We

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think so! New Figure 3 (unfortunately it is not possible to submit it along with the comment) will show average daytime acetonitrile levels (1100-1600) versus average wind speeds. This graph will include all days with average daytime wind directions (1100-1600) deviating less than 50o from the main wind direction (NE). Acetonitrile mixing ratios tended to be higher on days with higher wind speeds, i.e. when the air masses spent less time over the land. Since acetonitrile is effectively deposited into the savanna ecosystem such a linear relation is expected. In this way Figure 3 supports both assumptions (i) that acetonitrile concentrations were higher over the Caribbean Sea and (ii) that dry deposition is a loss mechanism for this compound in savanna ecosystems. The parameter of a linear fit are: slope 0.019, intercept 0,18, pearson r 0.69.

3. The somewhat higher acetonitrile concentrations measured over the tropical rainforest of Suriname are likely due to biomass burning influence. The vertical profiles over the ocean neither indicate ocean uptake nor an ocean source of acetonitrile (see also reply to ref 1). We want to point out that the LBA-CLAIRE campaign was conducted in a different season and that time the tropical Atlantic Ocean was cooler than the Caribbean Sea in fall; therefore a potential oceanic source of acetonitrile is expected to be less productive. The LBA-CLAIRE dataset in no way contradicts the conclusions we draw.

4. We do not agree with this statement and consider our argumentation to be strong. All biogenic emissions that are triggered by solar radiation do not result in constant concentrations during daytime as observed. All biogenic emissions that are (in addition) triggered by other parameters show some other features that should have been observed.

5. We gladly notice that the referee agrees on our argumentation concerning dry deposition.

Minor comments:

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1. Will be corrected. It is October, not August.

2. See discussion of new Figure 1 in the reply to referee 1.

3. Thanks for this very good suggestion; unfortunately it is not possible to get useful lower limits for acetonitrile from automobile emissions. The concentrations of the traffic tracers were much too low.

4. According to Qinbin Li et al. acetonitrile mixing ratios have been globally modeled for April 2001. Over Venezuela mixing ratios of 200-250 pmol/mol are predicted. This is in agreement with results of another campaign we have made at the same site during the dry season (April 2000) where we measured average acetonitrile levels of 245 pmol/mol (226 and 69 pmol/mol median and standard deviation respectively; range 158-387).

Interactive comment on Atmos. Chem. Phys. Discuss., 3, 5275, 2003.