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New insights in the global cycle of acetonitrile: release from the ocean and dry deposition in the tropical savanna of Venezuela

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Abstract. Using the proton transfer reaction mass spectrometry (PTR-MS) technique, acetonitrile was measured during the wet season in a Venezuelan woodland savanna. The site was located downwind of the Caribbean Sea and no biomass burning events were observed in the region. High boundary layer concentrations of 211 ± 36 pmol/mol (median, \pm standard deviation) were observed during daytime in the well mixed boundary layer, which is about 60 pmol/mol above background concentrations recently measured over the Mediterranean Sea and the Pacific Ocean. Most likely acetonitrile is released from the warm waters of the Caribbean Sea thereby enhancing mixing ratios over Venezuela. Acetonitrile concentrations will probably still be much higher in biomass burning plumes, however, the general suitability of acetonitrile as a biomass burning marker should be treated with care. During nights, acetonitrile dropped to levels typically around 120 pmol/mol, which is consistent with a dry deposition velocity of ~ 0.14 cm/s when a nocturnal boundary layer height of 100 m is assumed.

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