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Aerosol Self-Cleansing by Dry Deposition in the Amazon Dry Season. FLORIAN DITAS, Christopher Pöhlker, Henrique Barbosa, Joel Brito, Samara Carbone, Xuguang Chi, Bruna A. Holanda, Isabella Hrabe de Angelis, Tobias Könemann, Jing Ming, Mira L. Pöhlker, Maria Prass, Daniel Moran-Zuloaga, Marta Sá, Jorge Saturno, Hang Su, Jian Wang, David Walter, Stefan Wolff, Alessandro Araujo, Paulo Artaxo, Ulrich Pöschl, Meinrat O. Andreae, *Max Planck Institute for Chemistry*

The Amazon rainforest is one of the few continental places where the atmospheric composition is episodically close to a pristine state. Local, regional and global anthropogenic pollution transported into the Amazon basin is chemically transformed and effectively deposited by wet and dry deposition.

This work focuses on observations in the central Amazon region – at the *Amazon Tall Tower Observatory* (ATTO). The ATTO site is equipped to measure aerosol microphysical, optical, chemical and morphological properties at two different measurement towers, which allows observations inside (5 m), close to (60 m) and well above (325 m) the forest canopy.

Vertically resolved meteorology and aerosol properties suggest a stable stratification during night resulting in a pronounced layering of aerosol particles. Frequent advection of pollution plumes during night leads to a massive increase of the aerosol burden above the canopy which is easily able to double the total number concentration. After sunrise, convection enables mixing and lofted aerosol layers are mixed downwards. Consequently, the particle concentration increases sharply close to and below the canopy. As soon as a well-mixed boundary layer is developed, particle properties are similar at all three measurement heights. In the course of the day, the total particle concentration features a pronounced decay which is to a certain degree related to the forest's self-cleansing capacity.

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