



AGU™ FALL MEETING

San Francisco | 14 – 18 December 2015

A31A-0010: OH observations in a tropical rain forest environment using a chemical ionization mass spectrometry technique during GOAmazon intensive campaigns

Wednesday, 16 December 2015

08:00 - 12:20

📍 Moscone South - Poster Hall

We will present observed OH in the Amazon rain forest using a chemical ionization mass spectrometer (CIMS). The observation was conducted at the T3 site in Manacapuru, Amazonas Brazil. It had been accepted almost as an axiom that very low OH is expected in low NO environments such as a pristine rain forest. However, recent studies in the pristine rain forest environments consistently reported significantly higher than expected OH levels. This sparked extensive and intensive studies to explore any possibility of OH regeneration from isoprene photo-oxidation processes in the low NO condition. Four OH regeneration processes related with isoprene photochemistry have been proposed since 2008. However, the levels of the expected OH enhancement vary greatly among the proposed OH regeneration processes mediated by the isoprene oxidation processes. As all enhanced OH observations from the pristine areas with high isoprene conditions have used the laser induced fluorescence (LIF) technique, the possibilities of potential positive artifacts have also been explored. In this context, the first tropical forest CIMS OH dataset will be discussed in the context of 1) comparisons with previously reported OH using the LIF technique, 2) comparisons with box model calculated OH with different isoprene oxidation scenarios to reconcile measured and calculated OH, and 3) comparisons with regional model calculated OH. The CIMS observational dataset along with a comprehensive trace gas dataset provides a constraint to assess current uncertainty in oxidation capacity of the pristine forested region, which has tremendous implications towards global fates of short lived climate forcers.

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