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Variation of the chemical composition of wet precipitation in Mexico

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Rain water was collected in 2 mm rain fractions within entire rain events, at Mexico City and Rancho Viejo, a wooded rural area. The results indicated that as the rain event progressed, the analysed ions except H+ decreased. These decrements were more pronounced on the first fourth fractions. From the fifth up to the last fraction the variation was less accentuated. It is important to mention that the same variation pattern was observed in the two years that wet precipitation was collected in Mexico City, but in Rancho Viejo more variability was observed, the ionic concentrations decreased, increased, or remained the same within the rain event. The variability of the ionic concentration through the entire rain event in explained by two scavenging mechanisms: (1) The simultaneous action of water wapor condensation within the cloud and the capture of air pollutants

as condensation nuclei (rainout), and (2) The capture of dust particles, mainly alkaline, and some gases below cloud level (washout). Due to the heavily polluted atmosphere of Mexico City, much higher concentrations of the analysed ions were found in samples collected in the city than in samples from Rancho Viejo, indicating the effects that air pollutants have upon the chemistry of wet precipitation. When the Wilcoxon-Mann-Whitney statistical test was applied, significant differences between these two places were found. Finally, the rainout seems to be the predominant scavenging mechanism in Rancho Viejo.