



## Quantification of the scavenging action of the north-east monsoonal rains over southern India

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The Neyveli Lignite Corporation (NLC) is among the largest lignite based power plants in South East Asia. The four elevated stacks from this power plant emanate a substantial amount of sulphur dioxide into a tropical boundary layer. Sulphur dioxide being a soluble pollutant gas is absorbed by falling raindrops. This is a first study that aims to quantify the scavenging action of the North Eastern monsoonal rains. Our quantification is based on data obtained from the NLC. In this study we have analyzed observations of precipitation events over southern India and have related the observed precipitation patterns to standard distributions. Thence we calculated the relative abundances of the small and large droplets in the modeled spectra. Having obtained some optimal size distributed raindrop spectra, we then proceeded to quantify the mass transfer rates of the pollutant into the dispersed phase. Since the droplets are embedded in a turbulent boundary layer we had to account for the ventilation effects also. Our study reveals that although the North Eastern monsoonal rains have a preponderance of very large droplets, the contribution of the small droplets cannot be neglected. We expect that the estimated scavenging coefficients can be used by large eddy and climate models.