## Natural Geo-engineering and Precipitation Chemistry in India

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The concept of geo-engineering to spread sulphur in the stratosphere to counter global warming is one of the great ideas which may be turning point for future atmospheric research. But nature has booned India with soil-dust as natural tool of geo-engineering to fight with acidification and climate change. Soil dust is abundant in India. This soil dust is rich in calcium carbonate which buffers the acidity caused by oxides of sulphur and nitrogen resulting in alkaline pH of rain water (pH> 5.6). The natural pH of rain water is around 5.6 due to equilibrium of CO<sub>2</sub> in the atmosphere. Most soils of India are highly alkaline which contribute alkaline suspended dust into the atmosphere during dry weather conditions. The SO<sub>2</sub> is taken up by the soil derived SPM/dust rich in CaCO<sub>3</sub>. In the presence of sufficient humidity, SO<sub>2</sub> is then adsorbed onto dust particles which after oxidation forms calcium sulphate. When it rains, calcium sulphate is scavenged by below cloud scavenging resulting in alkaline rain in India. It is established by our recent findings that due to this reason, SO<sub>2</sub> concentrations are not recorded very high in ambient air in India.

Key words: Soil dust; geo-engineering; alkaline rain; calcium carbonate; oxidation onto particles.