



Moon Dust as a Solar Shield

Why in News?

Recently, a team of Researchers have published a study titled- “**Dust as a Solar Shield**”, proposing that launching Moon Dust into the stratosphere can slow down [Global-Warming](#).

What was the Proposal?

- **Solar Radiation Management:**
 - They proposed the **regular transport of moon dust to a gravity point (Lagrange Point) between Earth and Sun** to temper the ravages of global warming.
 - They called it [Solar Radiation Management \(SRM\)](#) or Stratospheric Aerosol Injection, because by spraying aerosols in the stratosphere, it controls the Radiation of Sunlight reaching the Earth.
 - Ideas for filtering solar radiation to keep Earth from overheating have been kicking around for decades, ranging from giant space-based screens to churning out reflective white clouds.
- **Analogy with Volcanic Spew and Moon Dust:**
 - Artificially spraying Moon Dust into the stratosphere has been motivated from the fact that a **sufficiently powerful Volcanic Eruption can spew sulphates** and other aerosols into the stratosphere and thus cool the air there.
 - Aerosols in the stratosphere, especially radiation-scattering ones such as sulphates, do have a cooling effect.
 - Dimming of the amount of incoming sunlight with stratospheric aerosols **will have similar outcomes as compared to the Moon Dust**.
 - When Mount Pinatubo in the **Philippines blew its top in 1991**, it lowered temperatures in the northern hemisphere by **about 0.5C for nearly a year**.
- **Efficacy:**
 - Blocking 1 or 2 % of the Sun's rays is all it would take to lower Earth's surface by a degree or two Celsius - roughly the amount it has warmed over the last century.

What can be the Consequences of this Technique?

- Spraying dust in the Stratosphere may cool summer but can **lead to widespread Drought across the earth**, sending crop yields plummeting, leading to disease and starvation.
- Any projections related to changes in rainfall, as a result of throwing dust into the atmosphere or in space to block **sunlight, will be highly uncertain**.
- Other climate mitigation strategies, such as the use of [Renewable Energy](#), emissions reductions schemes, [Carbon-Capture Technologies](#), and bioenergy, are not expected to **have any dangerous unintended consequences**. On the other hand, spraying aerosols even in a small pocket of the **stratosphere will have global consequences** that can't fully be quantified at present.

UPSC Civil Services Examination Previous Year Question (PYQ)

Q. In the context of which of the following do some scientists suggest the use of cirrus cloud thinning technique and the injection of sulphate aerosol into stratosphere? (2019)

- (a) Creating the artificial rains in some regions
- (b) Reducing the frequency and intensity of tropical cyclones
- (c) Reducing the adverse effects of solar wind on the Earth
- (d) Reducing the global warming

Ans: (d)

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