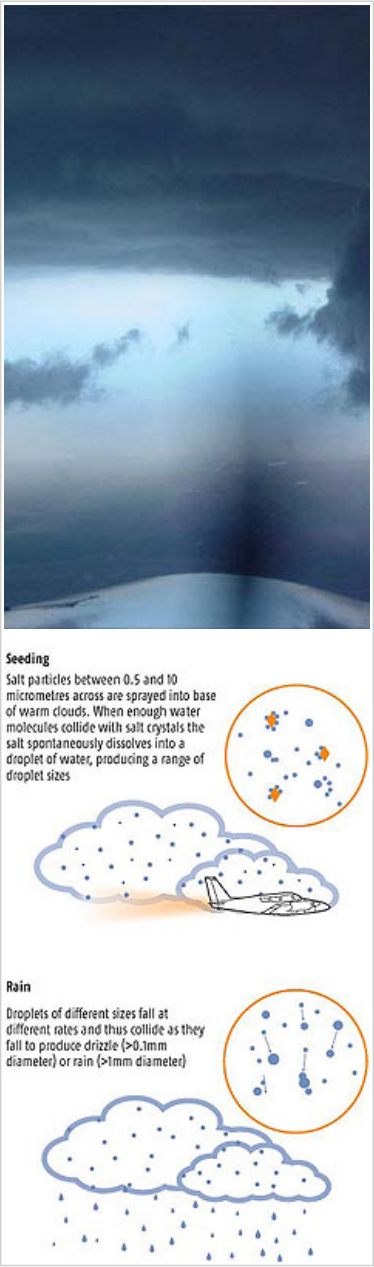

Hygroscopic Cloud Seeding

The term “hygroscopic seeding” has been associated with warm cloud seeding. The objective is to enhance rainfall by promoting the coalescence process using hygroscopic salt nuclei generated by pyrotechnic flares or a fine spray of a highly concentrated salt solution. In addition, Cooper et al. (1997) illustrated that hygroscopic seeding might have a beneficial effect on precipitation development through either of two distinct mechanisms:

- **introduction of embryos on which raindrops form; or**
- **broadening of the initial droplet size distribution resulting in acceleration of all stages of the coalescence process.**

In 1990, G. Mather reported a case of inadvertent seeding of clouds by hygroscopic particles emitted from a Kraft paper mill in South Africa that resulted in enhanced coalescence and rainfall. This observation led to further hygroscopic cloud seeding experiments in South Africa, (Mather et al, 1997), Thailand (Silverman and Sukarnjanaset, 2000), Mexico (Bruintjes et al., 2001, Fowler et al., 2001) and India (Murty et al., 2000) with highly encouraging results. Additional experiments have been conducted more recently in Texas using powdered salt having particle diameters of 2 to 5 microns.

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Mather, G. K., D. E. Terblanche, F. E. Steffens, and L. Fletcher, 1997: Results of the South African cloud-seeding experiments using hygroscopic flares. Journal of Applied Meteorology: Vol. 36, No. 11, pp. 1433-1447.

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