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Cometary Particles as a Tracer of Jupiter's  
Stratospheric Circulation

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The impact of fragments of comet Shoemaker-Levy 9 on Jupiter's atmosphere in July, 1994 may provide an unprecedented opportunity to study Jupiter's stratospheric circulation. Recent calculations (Z. Sekanina, paper submitted to Science, 1993) predict that much of the comet material will be deposited in Jupiter's stratosphere. If so, and if the material is deposited in a confined region (10000 km or less, horizontally) we can expect a situation analogous to an El Chichon or Pinatubo event for the terrestrial stratosphere. Initially the volatile material will be vaporized and will rapidly recondense. The large ice crystals and dust particles will rain out and be lost to the troposphere. The cloud of small particles which remain may have settling times of more than a year. These sub-micron to micron particles would probably be easily seen in methane filter images in the near-IR, and possibly in the ultraviolet. An observational program to monitor the dispersal of this cloud or clouds would reveal much about the nature of the circulation. Some predictions about the meridional evolution of the clouds can be made already, based on the meridional circulation model of West et al. (*Icarus* 100,245-259, 1992) unless the impact itself significantly disrupts the annual average circulation well after the initial transients die away.

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