INTERANNUAL VARIABILITY OF GLOBAL DUST STORMS ON MARS; R.M. Haberle, NASA-Ames Research Center, Moffett Field CA 94035

Global dust storms on Mars occur in some years but not in others. In years with global dust storms, dust is raised in the southern hemisphere and spread over much of the planet by an intensified Hadley circulation. In years without global dust storms, dust is raised in the northern hemisphere by relatively active midlatitude storm systems, but does not spread globally. In both cases the dusty season is winter in the north. It is shown from numerical simulations that a northern hemisphere dust haze weakens the intensity of the cross-equatorial Hadley circulation and the contribution it makes to the surface stress in the southern hemisphere. This, in turn, reduces the possibility of global dust storm development. The interannual variability is the result either of a competition between circulations in opposite hemispheres, in which case the variability has a random component; or it is the result of the cycling of dust between hemispheres, in which case the variability is related to the characteristics of global dust storms themselves.