N94- 33211

Our individual experiences shape our perceptions of martian geologic history. Because these experiences differ, and especially because Mars data are barely skin-deep, our concepts of martian history differ, often by ocean widths. It is necessary for Mars geologists to share the geological bases for our differing views with one another and with nongeologists in the Mars science community more than we have in the past. Just as with Earth scientists, it may be necessary to get out of the lecture hall and into the field. Ideally, we would all go to Mars, of course, but less than ideally, we should settle for Earth analog terrains as our field experiences. If expertly guided by Earth science specialists (who may or may not be members of the Mars science community), and if attended by representatives of all the subareas of Mars science, these field experiences may (1) teach the Mars community much about Mars, (2) educate the Mars community in the latest twists and turns and bruising battles in evolving thought of the Earth science community, and (3) inform Earth scientists of the latest shifts in thinking about Mars, including hypotheses and models that just might have bearing on matters pertaining to terrestrial geologic and climate evolution.

Probably all members of the Mars science community have something considerable to learn about somebody else's concepts of Mars. Of course, this is partly why we go to conferences and workshops. This is also the major reason why each of us should attend Mars-oriented field workshops, if such were available. At least in recent years, there has been no consistent framework in which anyone's field expertise could be shared with the wider Mars science community. Particularly now that it will be several more years before we can expect the next major infusion of Mars data, the time is right to establish a formal, Mars-oriented series of field workshops in which funded organizers would have a limited amount of money available for (1) preworkshop field work required for field trip planning, (2) organizing and conducting of the workshop and associated field trips, and (3) payment of expenses incurred by key invited personnel, who may include invited geological field experts, climate modeling specialists, and others who may be crucial to the success of the meeting (and who may or may not be members of the regular Mars science community).

The proposed field meetings do not need to be conducted in association with every topical meeting of the Mars science community, nor does every field trip have to be a multiday affair, complete with overflights. It would be relatively easy, if a few individuals are interested enough to put out a little effort, to organize day-long field trips to be conducted after or just prior to several meetings each year. Perhaps once each year there might be a more extensive field meeting, when the major purpose is to get scientists into the field in classic field areas that may pertain to Mars. The organizers of the northern plains MSATT meeting, and of the earlier Lake Bonneville field workshop (which was conducted in association with the Mars mappers' meeting in 1992), have found that it is all too easy to excite members of the Earth science community about Mars, and to obtain their expert leadership in the field. The Mars science community, as a community, should be taking full advantage of our existence on a very dynamic and, in some ways, a very Mars-like planet; we should not forget that there are many Earth science specialists who may want to share what they know about Earth so that we may learn more about Mars.

References: [1] Kargel et al., eds. (1993) *LPI Tech. Rpt. 93-04.*

TEMPORAL AND SPATIAL MAPPING OF ATMOSPHERIC DUST OPACITY AND SURFACE ALBEDO ON MARS. S. W. Lee[1], R. T. Clancy[1], G. R. Gladstone[2], and T. Z. Martin[3], [1]Laboratory for Atmospheric and Space Physics, University of Colorado, Boulder CO 80309, USA, [2]Southwest Research Institute, P. O. Drawer 28510, 6220 Culebra, San Antonio TX 78228, USA, [3]Mail Stop 169-237, Jet Propulsion Laboratory, 4800 Oak Grove Dr., Pasadena CA 91109, USA.

The Mariner 9 and Viking missions provided abundant evidence that eolian processes are active over much of the surface of Mars [1,2]. Past studies have demonstrated that variations in regional albedo and wind streak patterns are indicative of sediment transport through a region [3,4], while thermal inertia data [derived from the Viking Infrared Thermal Mapper (IRTM) dataset] are indicative of the degree of surface mantling by dust deposits [5–9]. The visual and thermal data are therefore diagnostic of whether net erosion or deposition of dust-storm fallout is taking place currently and whether such processes have been active in a region over the long term. These previous investigations, however, have not attempted to correct for the effects of atmospheric dust loading on observations of the martian surface, so quantitative studies of current sediment transport rates have included large errors due to uncertainty in the magnitude of this "atmospheric component" of the observations.

We are making use of the method developed by T. Z. Martin to determine dust opacity from IRTM thermal observations [10,11]. We have developed a radiative transfer model that allows corrections for the effects of atmospheric dust loading on observations of surface albedo to be made. This approach to determining "dust-corrected surface albedo" incorporates the atmospheric dust opacity, the single-scattering albedo and particle phase function of atmospheric dust, the bidirectional reflectance of the surface, and accounts for variable lighting and viewing geometry. The most recent dust particle properties [12,13] are utilized. The spatial and temporal variability of atmospheric dust opacity strongly influences the radiative transfer modeling results. This approach allows the atmospheric dust opacity to be determined at the highest spatial and temporal resolution supported by the IRTM mapping data; maps of "dust-corrected surface albedo" and atmospheric opacity can be constructed at a variety of times for selected regions. As a result, we obtain information on the spatial and temporal variability of surface albedo and atmospheric opacity and inferences of the amount of dust deposition/erosion related to such variability.

Analyses of IRTM mapping observations of the Syrtis Major region, covering a time span of more than a martian year, will be presented.

References: [1] Veverka J. et al. (1977) *JGR, 82,* 4167–4187. [2] Thomas P. et al. (1981) *Icarus, 45,* 124–153. [3] Lee S. W. et al. (1982) *JGR, 87,* 10025–10042. [4] Lee S. W. (1986) *LPI Tech. Rpt. 87-01,* 71–72. [5] Kieffer H. H. et al. (1977) *JGR, 82,* 4249–4295. [6] Christensen P. R. (1982) *JGR, 87,* 9985–9998. [7] Christensen P. R. (1986) *JGR, 91,* 3533–3545. [8] Christensen P. R. (1986) *Icarus, 68,* 217–238. [9] Jakosky B. M. (1986) *Icarus, 66,* 117–124. [10] Martin T. Z. (1986) *Icarus, 66,* 2–21. [11] Martin T. Z. (1993) *JGR,* in press. [12] Clancy R. T. and Lee S. W. (1991) *Icarus, 93,* 135–158. [13] Clancy R. T. et al. (1993) *Abstracts for the MSATT Workshop on Atmospheric Transport on Mars.*