



**Figure 8.** TES 16 pixels/degree compositional coverage superimposed on a composite MOC image of Chryse Planitia with the Mars Pathfinder landing site and Ares and Tiu Valles source regions.

## 5.2. Low-Albedo Intracrater Materials and Wind Streaks

[38] The physical properties of, and genetic link between, low-albedo intracrater materials and wind streaks in Oxia Palus and western Arabia Terra have been the subject of considerable study and debate for three decades [e.g., Sagan *et al.*, 1972; Arvidson, 1974; Peterfreund, 1981; Christensen, 1983; Thomas, 1984; Edgett and Christensen, 1994; Edgett and Malin, 2000]. Most models describing the origin and formation of these features are based on visible observations and thermal inertia measurements. We attempt to fit the TES compositional interpretations of basalt and andesite/weathered basalt for surface type 1 and type 2 materials into various origin hypotheses to provide insight into formational processes.

### 5.2.1. Low-Albedo Intracrater Materials

[39] Models for the formation of dark intracrater floor material generally involve the entrapment of sand-sized

particles that can be transported into, but not out of, craters by wind [e.g., Arvidson, 1974; Christensen, 1983; Thomas, 1984]. These features correlate with surface type 1 basaltic compositions identified in the low-albedo floors of impact craters (Figure 6). Supporting evidence for an eolian origin of these materials comes from Mariner 9, Viking, and MOC high-resolution observations of barchan dune fields [e.g., Sagan *et al.*, 1972; Arvidson, 1974; Peterfreund, 1981; Christensen, 1983; Thomas, 1984; Edgett and Christensen, 1994; Edgett and Malin, 2000]. Observations of a consistent orientation in a downwind direction for many dark intracrater features and high thermal inertia values further support the hypothesis that these materials are eolian in origin, sand-sized, and marginally mobile.

[40] High-resolution MOC images have shown that dunes are not observed in low-albedo material covering the southern walls and rims of the same impact craters. This material correlates with surface type 2 compositions