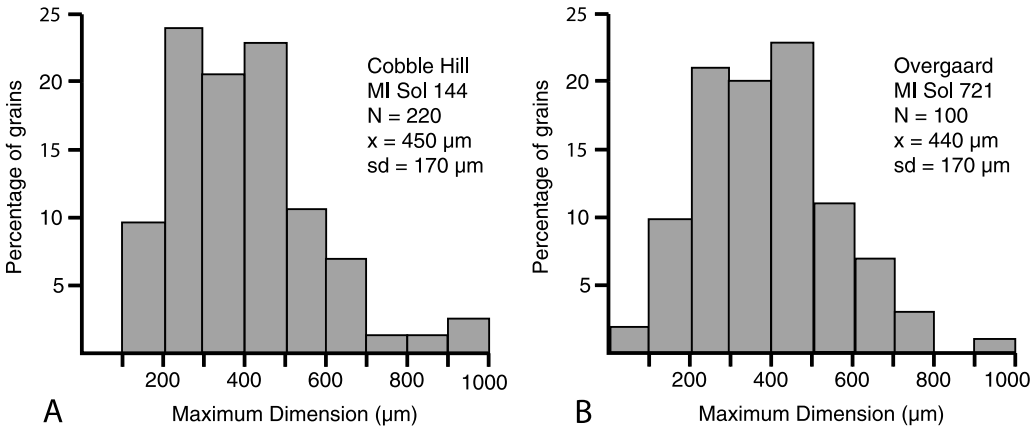

Figure 29. Grain size frequency distribution for Meridiani outcrop rocks imaged by the MI. (a) Cobble Hill, from a bed exposed within Endurance Crater. (b) Overgaard, from an outcrop block near Erebus Crater. N is the number of grains measured; x is mean grain size; and sd is standard deviation.

4.2. Interpretations

[61] The textures viewed by the MI are subject to three major influences. They may reveal details of depositional (or, in the case of volcanic or meteorite samples, igneous) origin and/or transport, they may reflect diagenesis, and they may reflect late stage alteration imparted since the outcrop rocks were exposed at the surface [*Knoll et al.*, 2008]. Furthermore, the apparent textures may reflect target orientation, such that laminated rocks viewed perpendicular to the depositional surface may appear massive. All of these influences are apparent in targets illustrated above. Depositional features can be seen in the lamination, sedimentary structures, and grain size–frequency distribution of outcrop strata. Diagenesis is clearly recorded in the secondary (e.g., moldic) porosity, hematite concretions ("spherules"), and cement textures that envelop concretions. Postexposure features include sand abrasion textures as well as thin surficial veneers that appear to reflect limited interaction with fluids since formation of the present plains surface.

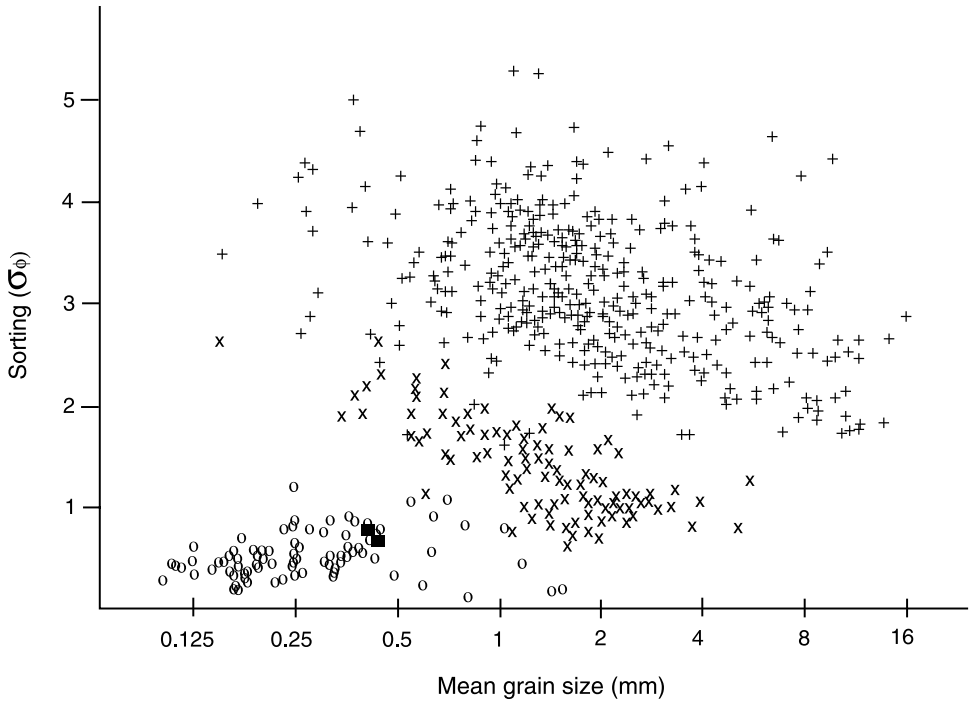

Figure 30. Mean grain size versus sorting for terrestrial surge deposits (pluses; data from *Sparks* [1976]), a subset of surge deposits separated into individual components and eliminating the fraction smaller than 125 μm (crosses; data from *Sparks* [1976]), terrestrial eolian sand deposits (circles; data from *Ahlbrandt* [1979]), and Meridiani Planum outcrop rocks (squares). For description of the sorting statistic, σ_φ, see text. Note that eolian sands and surge deposits occupy nonoverlapping portions of the field; Meridiani rocks unambiguously plot with eolian deposits.