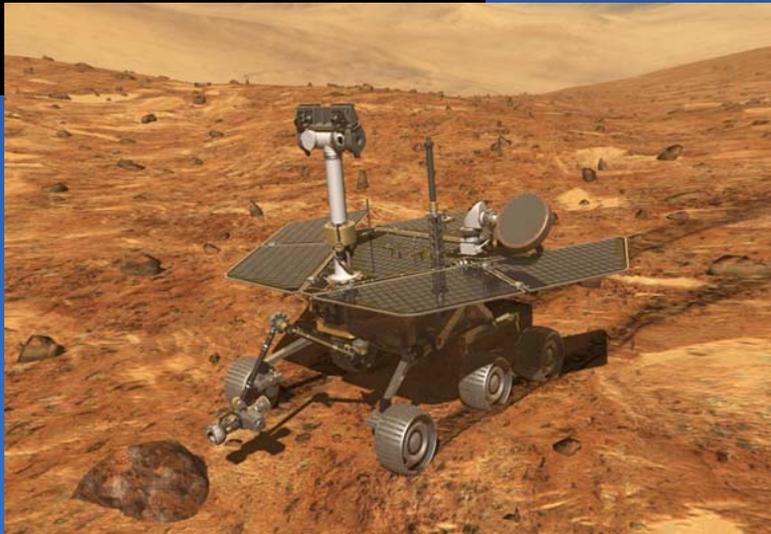


WINDS IN GUSEV: JOINT *MARS EXPRESS* AND *MER* OBSERVATIONS

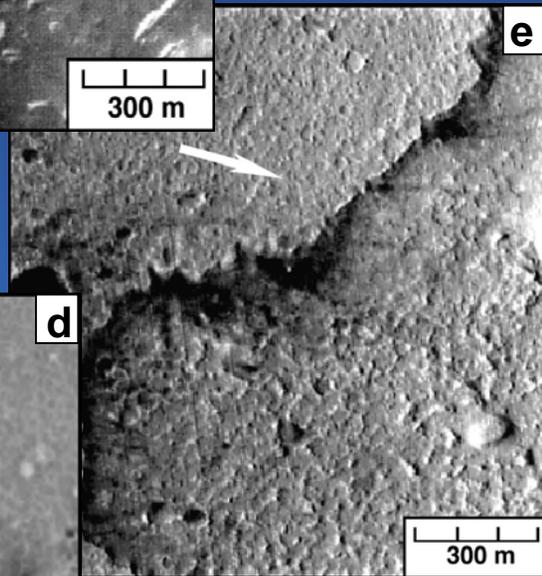
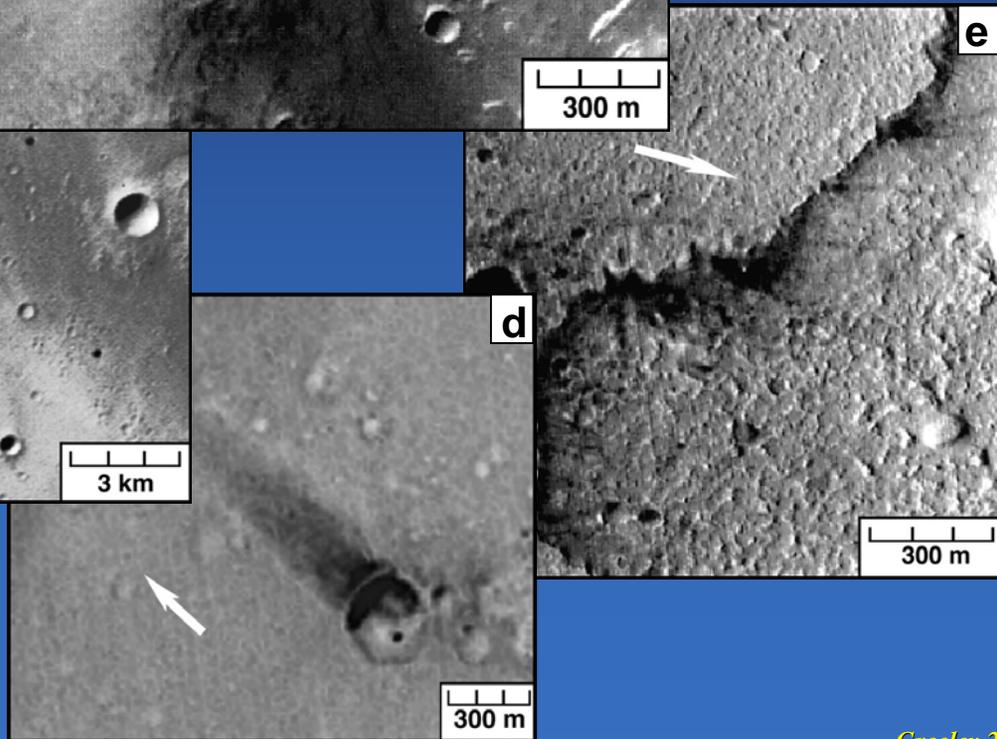
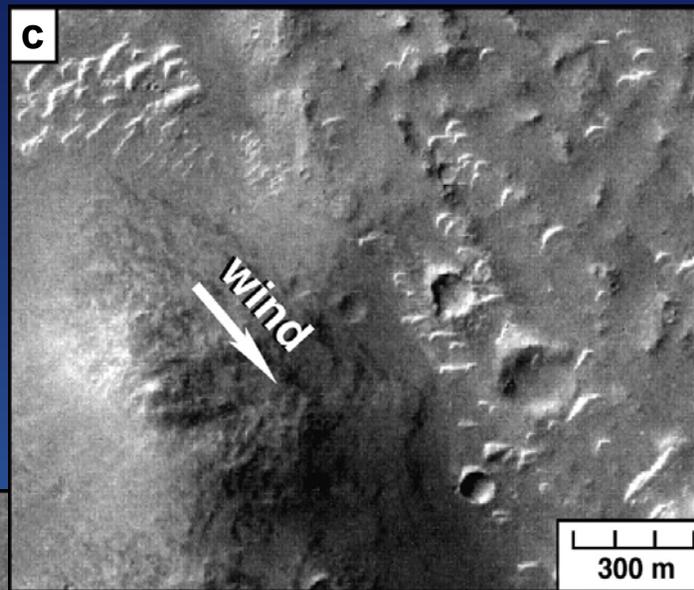
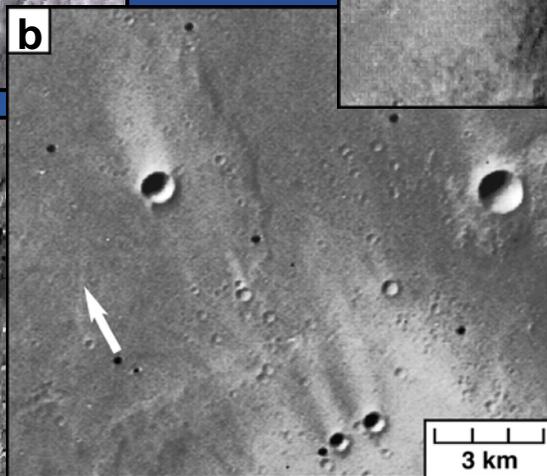
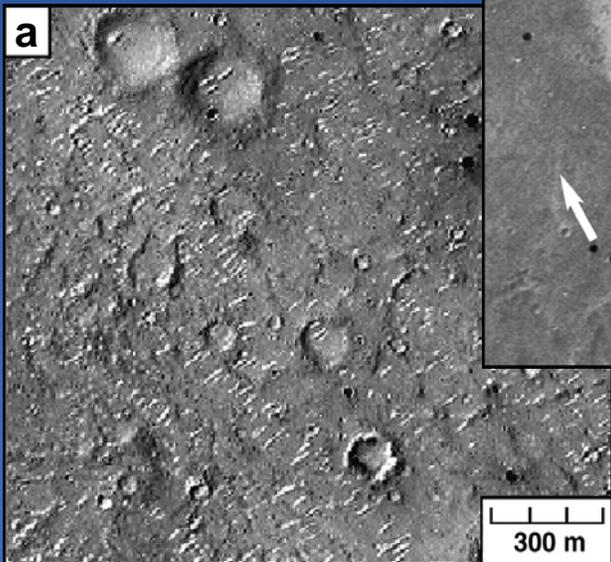
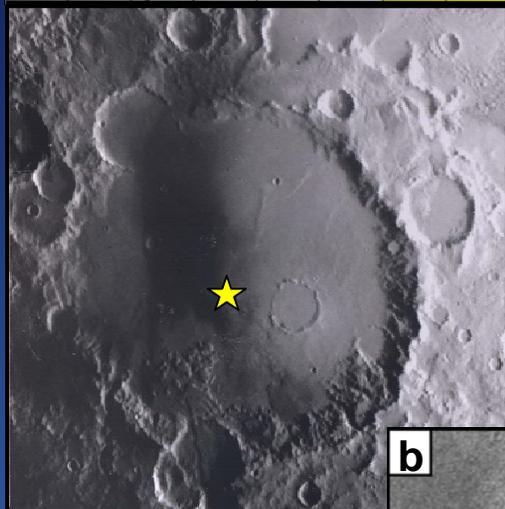
Ronald Greeley and the HRSC and Athena Teams



- **Unique opportunity to study the formation and evolution of wind-related features**

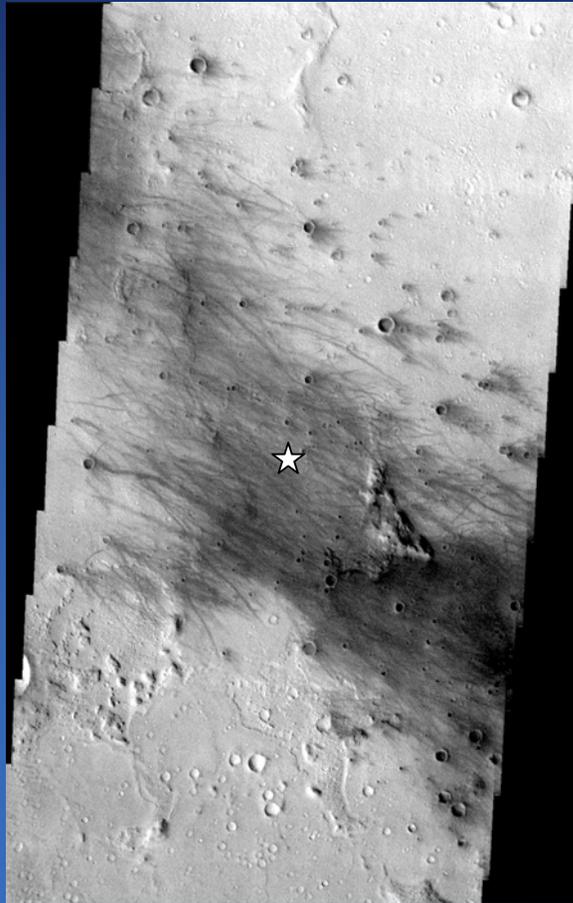
GUSEV CRATER WIND FEATURES

Fall		Winter		Spring		Summer	
L_s 0°-45°	L_s 45°-90°	L_s 90°-135°	L_s 135°-180°	L_s 180°-225°	L_s 225°-270°	L_s 270°-315°	L_s 315°-360°

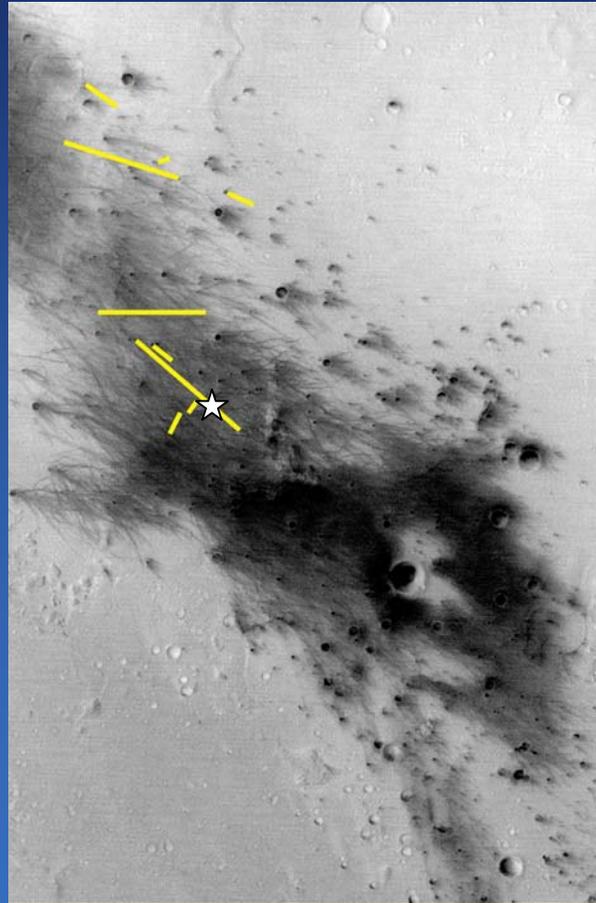


CHANGES WITH TIME

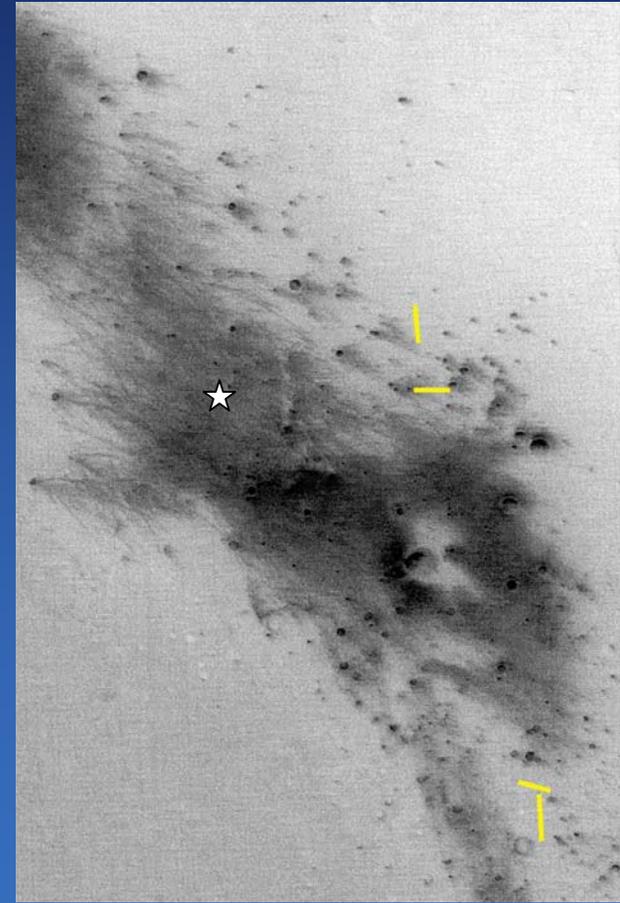
THEMIS *September 26, 2003*



HRSC *January 16, 2004*



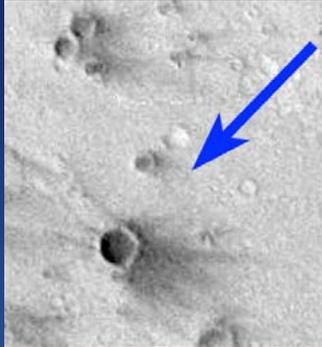
HRSC *February 1, 2004*



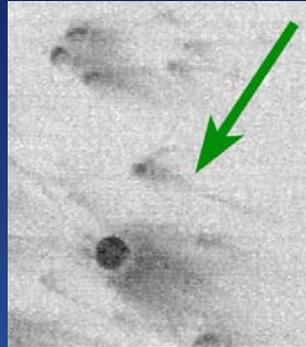
★ *Indicates Spirit landing site*

GUSEV CRATER CHANGES

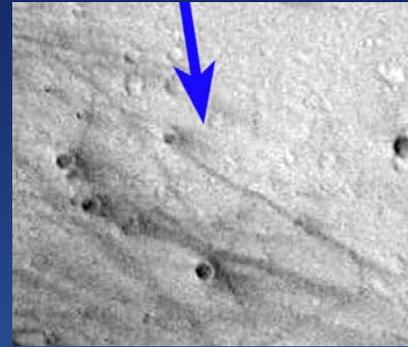
THEMIS V07909002
26 September 2003



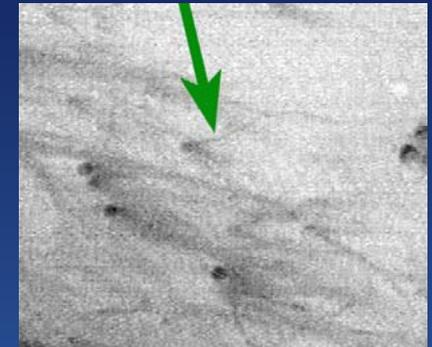
HRSC Orbit 024
16 January 2004



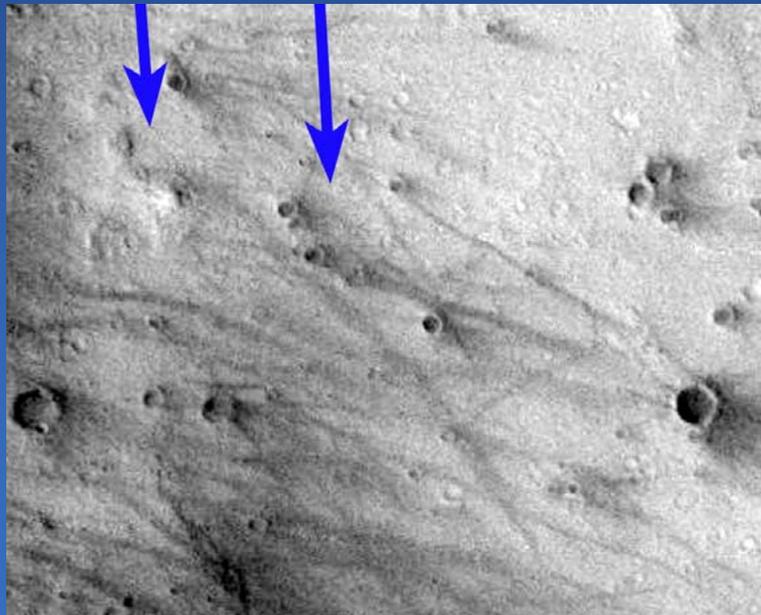
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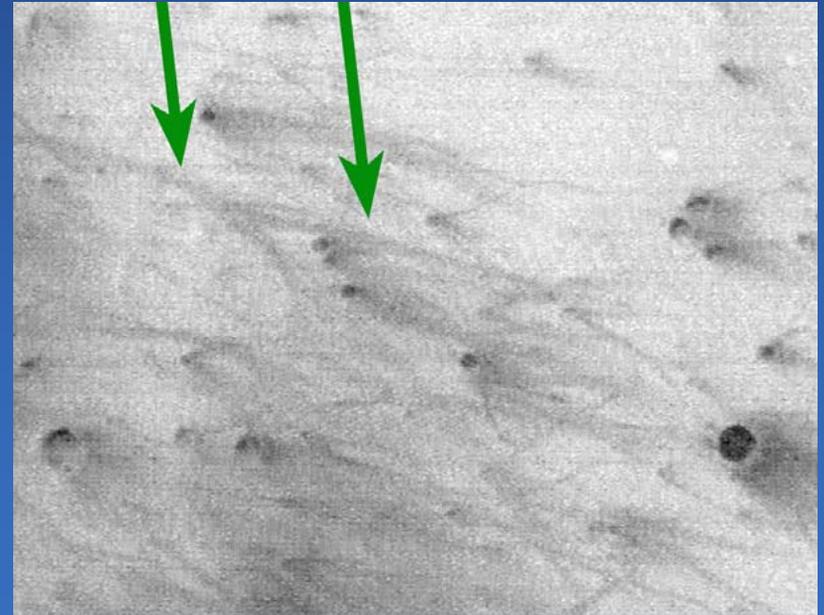
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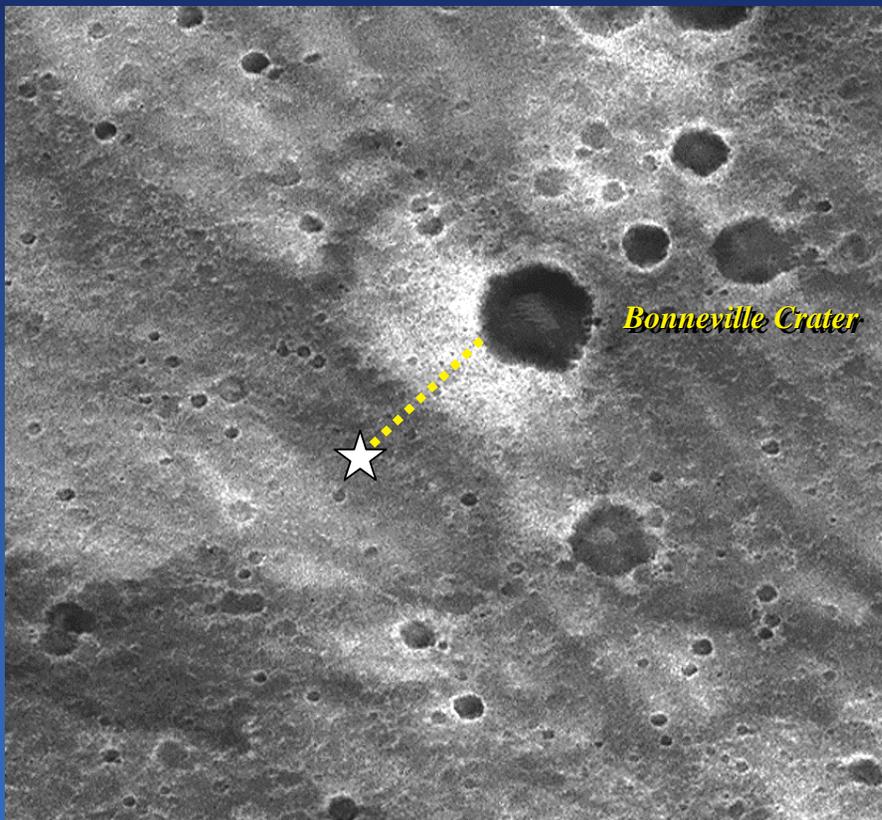
THEMIS V07909002 - 26 September 2003



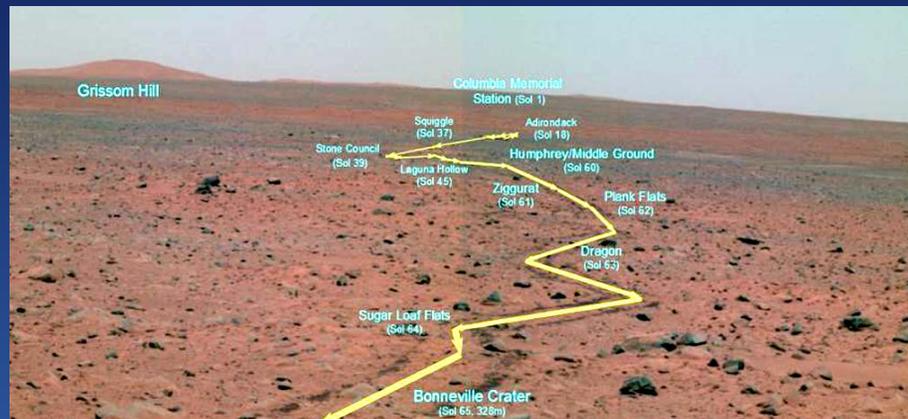
HRSC Orbit 024 - 16 January 2004



JOINT HRSC-MER OBSERVATIONS GUSEV CRATER



★ *Indicates Spirit landing site*



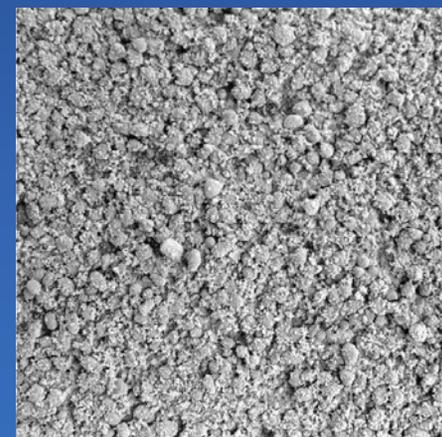
INSIDE

OUTSIDE



MI

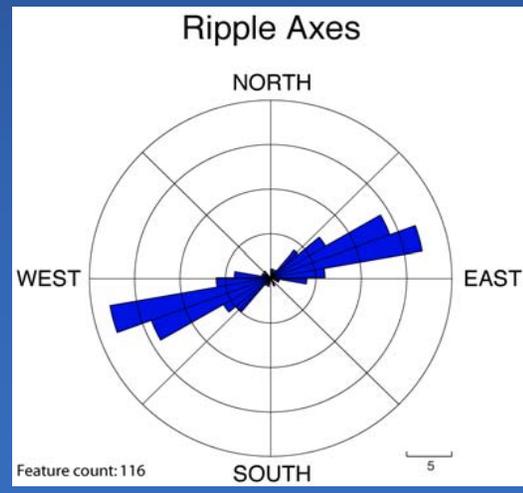
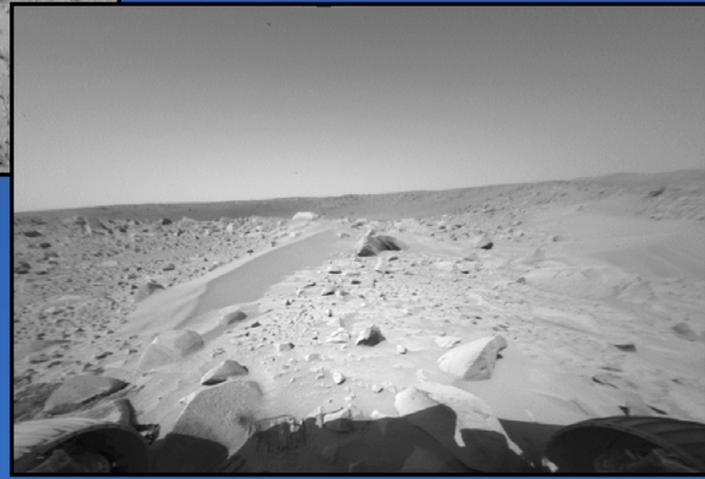
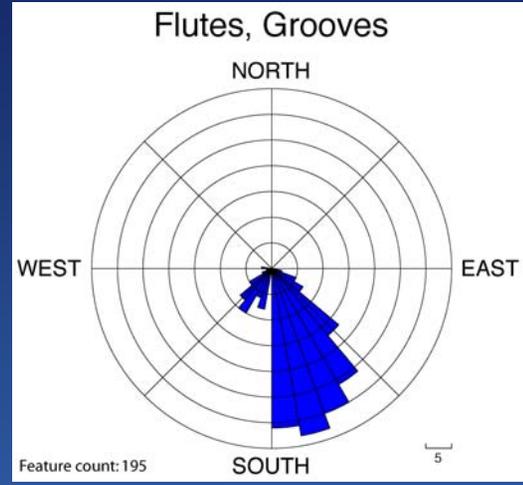
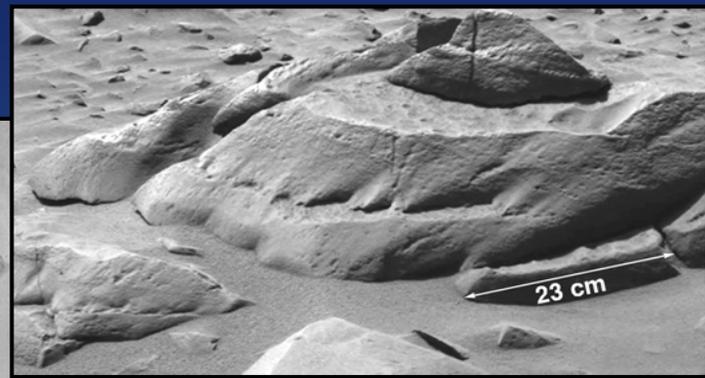
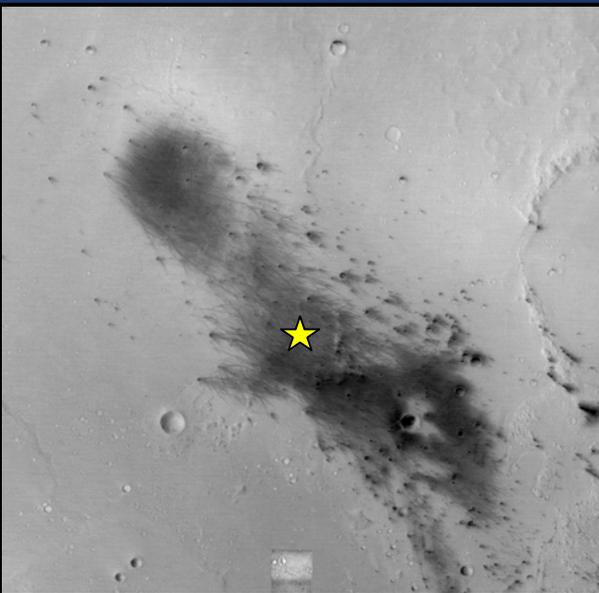
Sol 39



MI

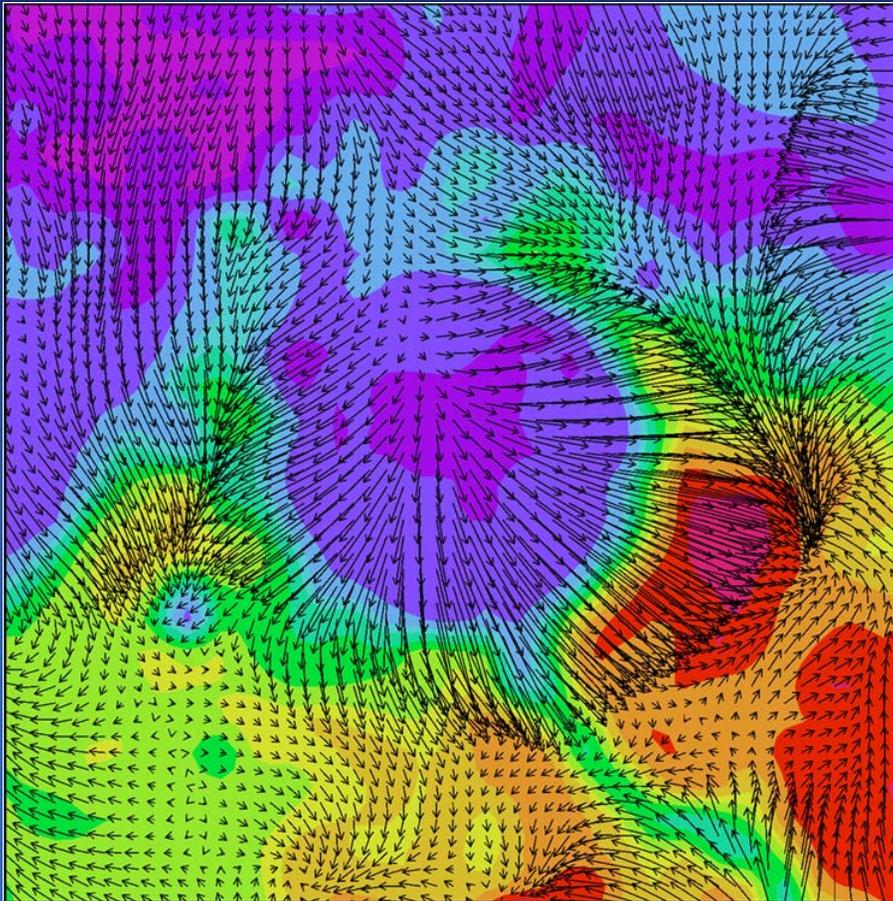
Sol 52

GUSEV - SPIRIT SITE

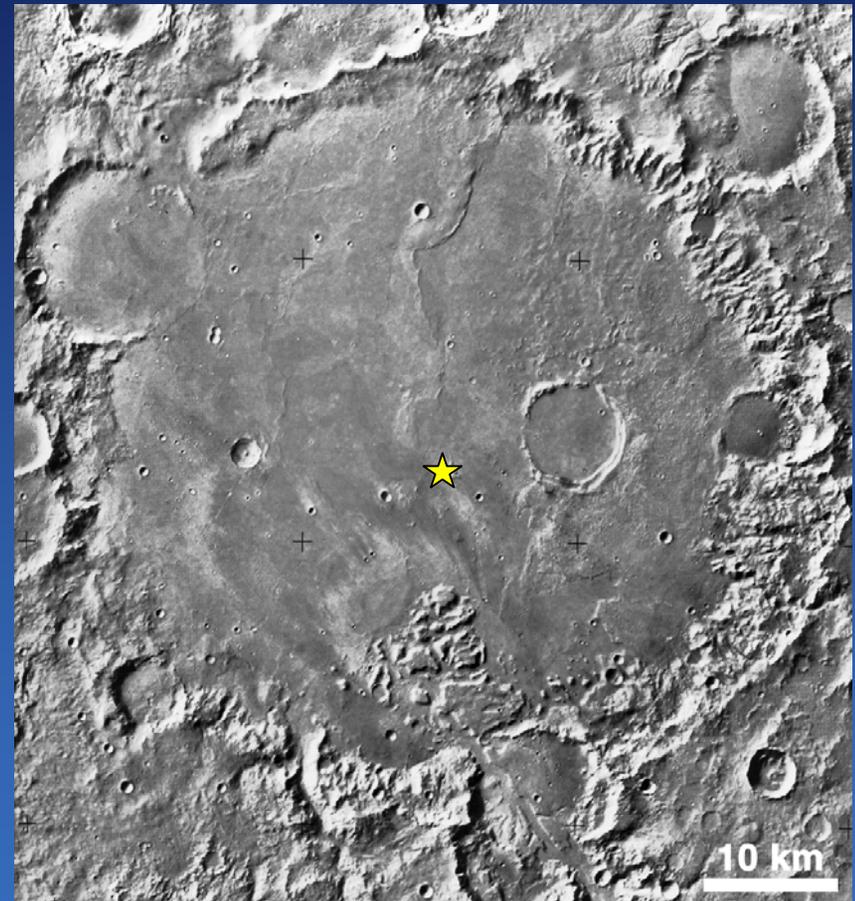


MESOSCALE WINDS AT 14m HEIGHT

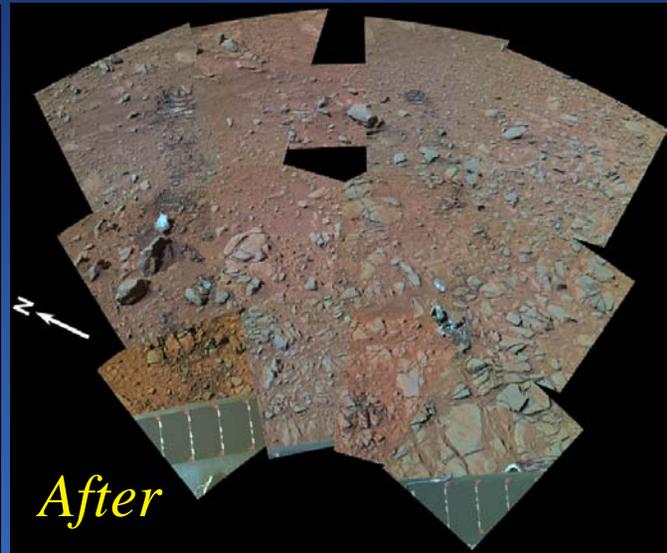
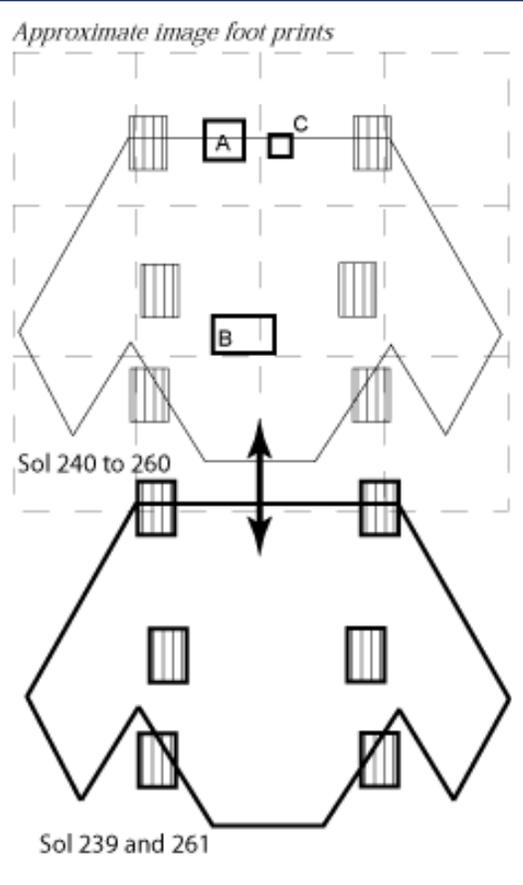
Local time: 1525



MOLA topography



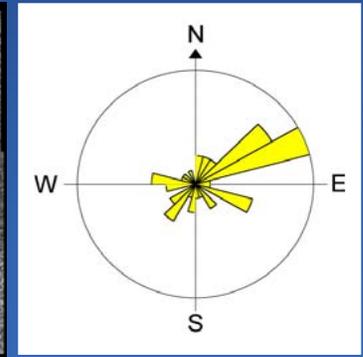
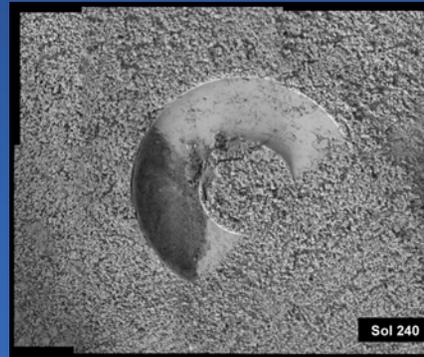
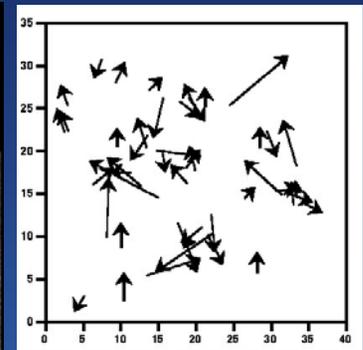
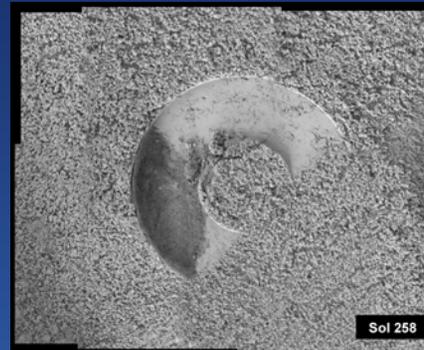
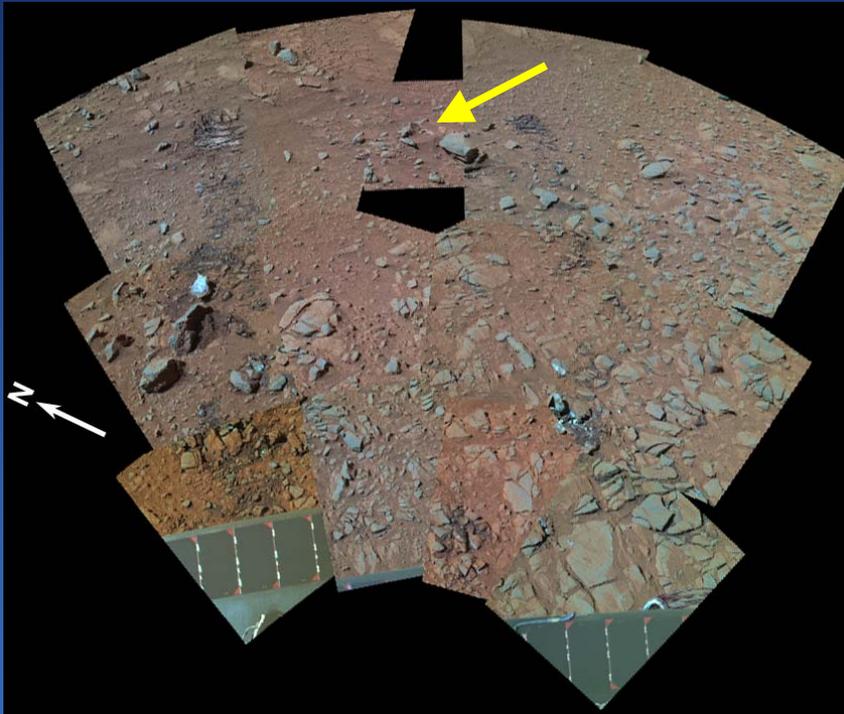
SOLAR CONJUNCTION "STAND DOWN"



CHANGES DETECTED

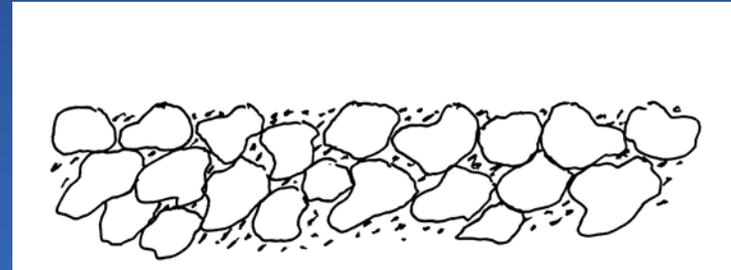
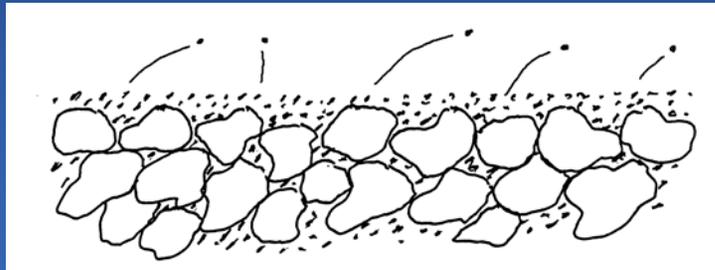


MICROSCOPIC IMAGER RESULTS



CONCLUSIONS FROM MEX-MER OBSERVATIONS

- Diurnal winds probably more important than regional winds for orientation of aeolian features
- Orientations in Gusev are consistent with mesoscale model predictions
- Dark variable features can result from removal of very small amounts of dust (e.g., Thomas et al., 1984)



- Dust “jostling” by sand grains also can lead to changes in albedo
- Dust devils are effective in removal and/or repositioning of dust