

Supporting Information for

An orbital comparison of a late mantling unit on Aeolis Mons with other erosion-resistant strata explored by MSL in Gale crater, Mars

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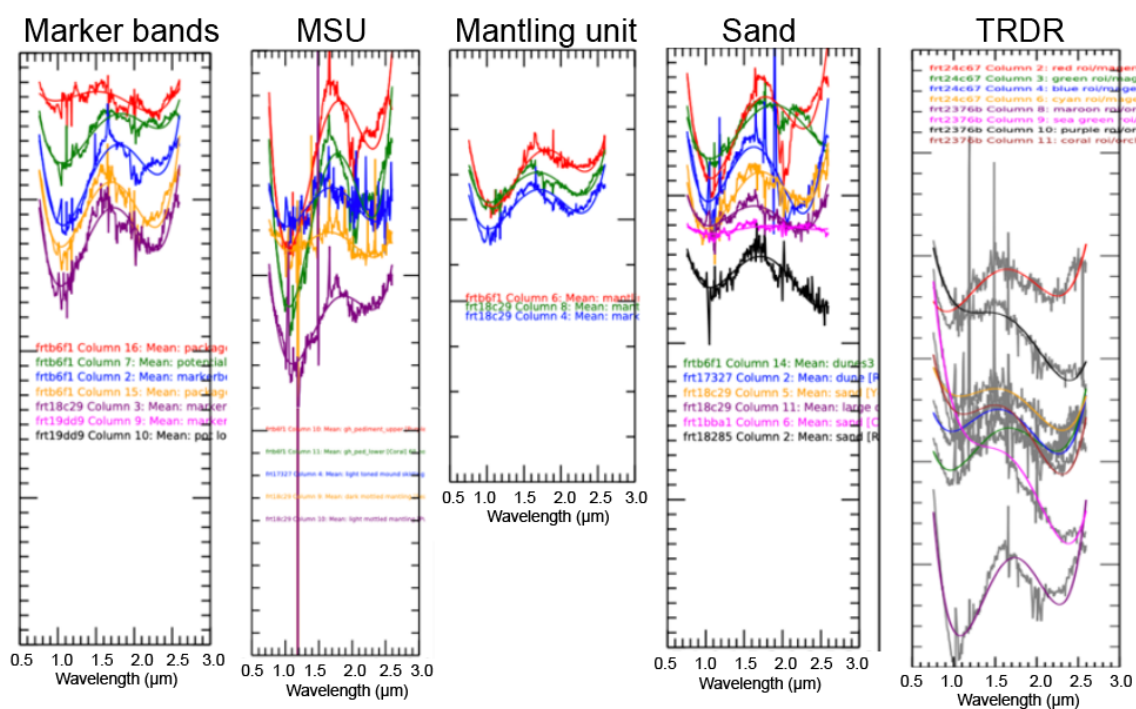


Figure S1. Fourth order polynomial fit spectra (smoother line) overlain on raw spectra. Plots are divided by units with Map-Projected Targeted Reduced Data Record (MTRDR) Compact Reconnaissance Imaging Spectrometer for Mars (CRISM) cubes (marker bands, mound skirting unit (MSU), mantling unit, and sand), while all Target Reduced Data Record (TRDR) CRISM spectra are on the far right.

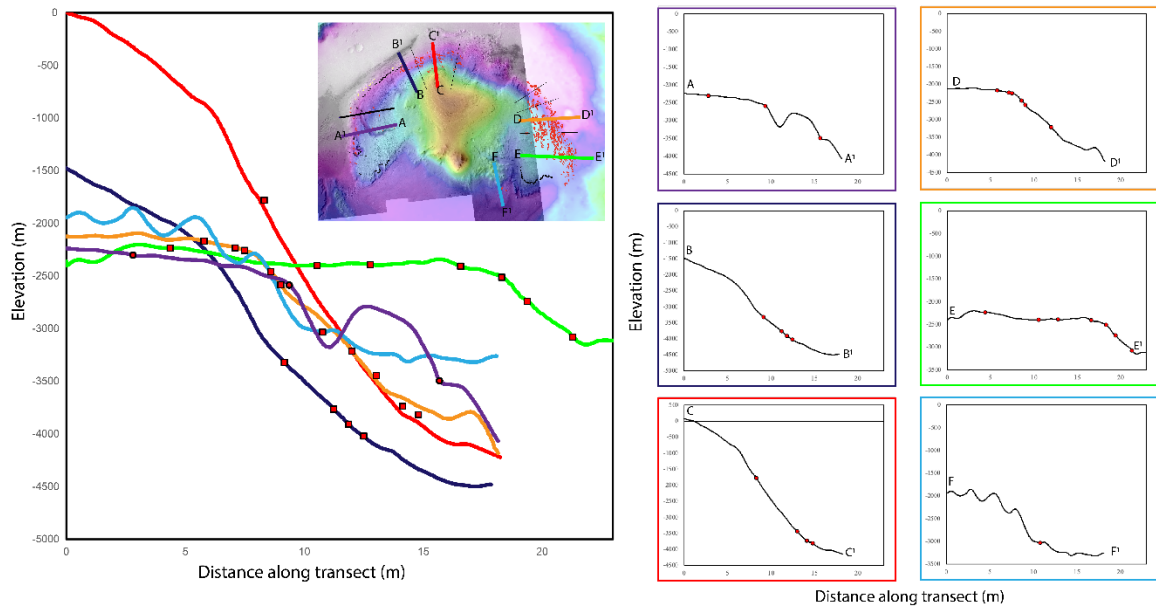


Figure S2. (Left) Elevation profiles on same y-axis of transects shown on inset map. Red squares correspond with mapped exposures of the mantling unit. (Right) Individual transects along different y-axes.

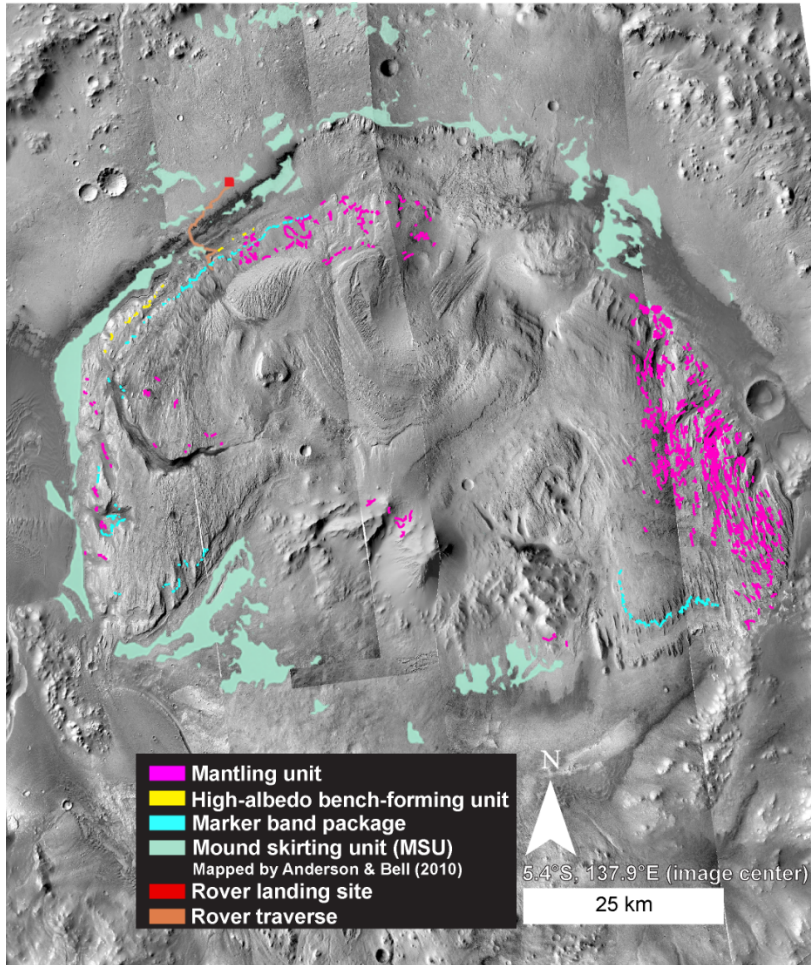


Figure S3. Clean version of Figure 3 from the main manuscript. Context Camera (CTX) mosaic of mapped exposures of marker band packages, the high-albedo bench-forming unit, and the mantling unit along with mound skirting unit (MSU) polygons from Anderson & Bell (2010). Lines are located at the bench-side of each marker band layer or surrounding exposures of the mantling unit.

Table S1. HiRISE images used in this work.

HiRISE Images	Image name	Image name	Image Name
	ESP_011562_755_RED_C_01_ORTHO	ESP_013540_1745_RED	ESP_014186_1745_RED
	PSP_009927_1750_RED	PSP_005998_1745_RED	PSP_006288_1740_RED
	PSP_008002_1750_RED	ESP_055433_1740_RED	PSP_007646_1745_RED
	ESP_026357_1755_RED	ESP_052954_1740_RED	ESP_014397_1745_RED
	ESP_024735_1755_RED	ESP_052242_1745_RED	PSP_003176_1745_RED
	ESP_024102_1755_RED	ESP_049130_1740_RED	PSP_010428_1745_RED
	ESP_018788_1755_RED	ESP_025012_1745_RED	ESP_019777_1745_RED
	ESP_039280_1750_RED_C_01_ORTHO	ESP_017931_1745_RED	PSP_005365_1750_RED
	ESP_028190_1755_RED	ESP_012195_1750_RED	PSP_001620_1750_RED
	ESP_024023_1755	ESP_027280_1750_RED	PSP_001422_1750_RED
	ESP_025790_1750_RED	ESP_017008_1750_RED	ESP_016085_1745_RED
	ESP_012841_1750_RED	ESP_056686_1750_RED	ESP_054589_1755_RED
	ESP_027834_1755_RED	PSP_007356_1750_RED	ESP_013263_1750_RED
	ESP_027557_1755_RED	PSP_007356_1750_RED	ESP_047139_1755_RED
	ESP_026146_1755_RED	ESP_027412_1750_RED	ESP_024379_1755_RED
	ESP_031948_1750_RED	ESP_027069_1745_RED	ESP_016731_1755_RED
	ESP_031803_1750_RED	PSP_010217_1745_RED	PSP_008437_1750_RED
	ESP_019988_1750_RED	PSP_001897_1745_RED	ESP_030748_1750_RED
	ESP_030102_1750_RED	PSP_001554_1745_RED	ESP_026647_1750_RED
	ESP_028269_1755_RED	ESP_053033_1745_RED	ESP_026502_1750_RED
	PSP_009650_1750_RED_C_01_ORTHO	ESP_042115_1745_RED	ESP_026291_1750_RED
	PSP_001752_1750_RED_C_01_ORTHO	ESP_019065_1745_RED	ESP_037407_1750_RED
	ESP_052598_1745_RED	ESP_017364_1745_RED	ESP_016520_1750_RED

Table S2. CRISM cubes used in this work.

CRISM Cubes	Type	Name
	MTRDR	FRTB6F1
	MTRDR	FRT17327
	MTRDR	FRT18C29
	MTRDR	FRT95EE
	MTRDR	FRT1BBA1
	MTRDR	FRTA091
	MTRDR	FRT18285
	MTRDR	FRT37DF
	MTRDR	FRT19DD9
	TRDR	FRT24C67
	TRDR	FRT2376B

Table S3. Information on spectra used in this paper.

MTRDRs					
Cube	roi	Unit	ROI size	target	Figure
FRT18C29	seagreen	MSU SW - dark	56	dark mottled mantling	5, 8 (params)
FRTB6F1	coral	MSU NW - Stimson formation	60	GH pediment - lower	5, 8 (params)
FRTB6F1	purple	MSU NW - Stimson formation	133	GH pediment - upper	5, 8 (params)
FRT18C29	purple	MSU SW - light	88	light mottled mantling	5, 8 (params)
FRT17327	blue	MSU SW - light	726	light toned mound skirting	5, 8 (params)
FRT18C29	cyan	Mantling - SW	56	mantling	8 (params)
FRT18C29	maroon	Mantling - SW	117	mantling	6, 8 (params)
FRT37DF	red	Mantling - SE	268	mantling	8 (params), migh
FRT37DF	blue	Mantling - SE	216	mantling	6, 8 (params)
FRTB6F1	cyan	Mantling - NW	88	mantling - right of pediment	6, 8 (params)
FRT18C29	blue	MB-Mantling - SW	21	marker band - mantling combo	6, 8 (params)
FRT18C29	aquamarine	MB-Mantling - SW	169	marker band - mantling combo	8 (params)
FRT37DF	magenta	Light toned Package D	45	maybe marker band package d?	8 (params), migh
FRT1BBA1	green	Package B	44	NW package - main layer	8 (params), Migh
FRTB6F1	thistle	Light-toned bench forming layer	55	package a - possible to right of gh pediment	4, 8 (params)
FRT1BBA1	seagreen	Light-toned bench forming layer	15	package a possible light toned marker band	8 (params)
FRTB6F1	chartreuse	NW Package - lower layer	17	package b - possible lower layer	4, 8 (params)
FRTB6F1	magenta	NW Package - upper layer	12	package b - potential upper layer	4, 8 (params)
FRTB6F1	maroon	NW Package - upper layer	15	package b - potential upper layer	8 (params)
FRTB6F1	green	NW Package - main layer	22	package b - textbook marker band (right of pediment)	8 (params)
FRTB6F1	red	NW Package - main layer	139	Package b textbook marker band - left of pediment	4, 8 (params)
FRT18C29	green	SW Layer	19	package c marker band	4, 8 (params)
FRT19DD9	seagreen	SE Package - main	121	package d marker band	4, 8 (params)
FRT19DD9	coral	SE Package - main	16	package d marker band	8 (params), migh
FRT19DD9	purple	SE Package - lower	38	package d potential lower marker band layer	4, 8 (params)
FRT19DD9	aquamarine	SE Package - lower	15	package d potential lower marker band layer	8 (params), migh
FRT1BBA1	cyan	Sand - NW	84	sand	7, 8 (params)
FRTA091	cyan	Sand-SW	70	sand	8 (params)
FRTA091	magenta	Sand-SW	88	sand	8 (params)
FRT18285	red	Sand - SE	88	sand	
FRT18C29	yellow	Sand - SW	56	sand dune	7, 8 (params)
FRT18C29	magenta	Sand - SW	72	sand dune	8 (params)
FRT17327	red	Sand - SW	1480	sand dune - west Mt. sharp	7, 8 (params)
FRT1BBA1	yellow	Sand - NW	9	sand in crater	8 (params)
FRT17327	yellow	Sand - SW	55	Small northern sand patch	8 (params)
FRT17327	cyan	Sand - SW	220	southern sand patch	8 (params)
FRTB6F1	orchid	Sand - NW	102	dunes below VRR	8 (params)
FRTB6F1	aquamarine	Sand - NW	77	dunes by GT and GH pediment	7, 8 (params)
FRTB6F1	sienna	Sand - NW	98	dunes in top right	7, 8 (params)
FRT18C29	coral	Sand - SW	60	large sand dune patch	7, 8 (params)
TRR3s					
Cube	roi	Unit	ROI size	target	
FRT24C67	red	Mantling - SE	54	mantling channel	8 (params)
FRT24C67	green	Mantling	23	mantling channel	8 (params)
FRT24C67	blue	Mantling - SE	36	mantling channel	6, 8 (params)
FRT24C67	cyan	Mantling	236	mantling channel	8 (params), migh
FRT2376B	purple	Mantling - NE	154	mantling channel	6, 8 (params)
FRT2376B	coral	Mantling	23	mantling channel p2	8 (params)
FRT2376B	seagreen	MSU - NE	682	maybe mottled mantling	8 (params)
FRT2376B	maroon	Sand - NE	240	sand	7, 8 (params)