



Morphology and factors controlling formation of aeolian ripple marks on the Earth and Mars

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Mars and Earth are characterised by different physical conditions on their surface: e.g. the atmosphere is less dense, gravity is less than Earth's. This has an impact on the morphology and dynamics of aeolian ripple marks. As a result, on Mars there are some features that are absent on Earth: large ripples in fine sand, which can reach a length of up to 5 m. Martian large ripples in fine sand are diverse morphologically, oriented transversely and longitudinally to the direction of the wind, they may have asymmetrical and symmetrical cross-sections, sinuous or straight crests. Granule ripples occur on both planets, but on Mars some of them are active and non-active. Earth's aeolian ripples form transversely to the wind direction, have an asymmetrical cross-section and straight ridges. Aeolian ripple marks are diverse also in components of ripples: e.g. on Earth mainly of quartz grains (rarely of "mafic" grains, on Mars of crushed basalt, olivine and plagioclase grains.