

CONTROL ID: 2815466

TITLE: Washboard Terrain on Pluto

ABSTRACT BODY:

Abstract (2,250 Maximum Characters): Washboard texture or patterning consists of fields of parallel to sub-parallel ridges typically spaced ~1-2 km crest to crest and a few 100 m in amplitude (Fig. 4a in Moore et al., 2016, Science, 351, 1284-1293). For the most part, underlying topography can be easily discerned. We will refer to discrete, well-bounded patches of these landforms as Washboard Terrain (WT). WT is observed to occur along the rim, and just beyond the rim, of Sputnik basin from the West to NNW. Where it is seen in high-resolution data, it has clearly defined limits, beyond which it would be able to be seen if it were there. WT doesn't occur at very low latitudes or very high latitudes (ranging from 22°N to 62°N). WT seems to occur most conspicuously on relatively level, gently sloping terrain. It is restricted to elevations between ~-2 km to <+1.5 km (i.e. not at high elevations). The most noticeable regional aspect of the area in which WT occurs is the sinuous valley network, which is suspected to have been formed, or at least substantially modified, by glaciation. WT also appears to occur mainly on an intermediate-albedo reddish material, where seen in enhanced color data. Where it occurs in level terrain, WT tends to trend ENE – there doesn't seem to be a strong local control of its orientation in response to valley drainage directions. WT can display a greater range of orientations where it occurs in higher-relief (not higher elevation) settings such as spurs. WT appears superposed on very ancient landscapes, but is itself cratered locally by clusters of small (~1-3 km) craters, which may be secondaries. This implies that WT may be intermediate in age. Of several working hypotheses, we currently provisionally favor that WT may be akin to terrestrial recessional moraines (or de Geer moraines) associated with the retreat of a higher stand of N₂ glaciation that once overfilled Sputnik basin. These putative moraine features may owe their spacing to superseasonal retreat on Milankovitch timescales of ~1 Ma. If this hypothesis has validity, then perhaps the intermediate-albedo reddish material may be akin to ground moraine deposits.

CURRENT CATEGORY: Pluto System

CURRENT : None

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