

EROSION AND REGOLITH ON OUTER SOLAR SYSTEM SATELLITES.

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Mass movement and landform degradation reduces topographic relief by moving surface materials to a lower gravitational potential. In addition to the obvious role of gravity, abrasive mechanical erosion plays a role, often in combination with the lowering of cohesion, which allows disaggregation of the relief-forming material. The identification of specific landform types associated with mass movement and landform degradation provides information about local sediment particle size and abundance and transportation processes. Generally, mass movements can be classified in terms of the particle sizes of the transported material and the speed the material moved during transport. Most degradation on outer planet satellites appears consistent with sliding or slumping, impact erosion, and regolith evolution. Some satellites, such as Callisto and perhaps Hyperion and Iapetus, have an appearance that implies that some additional process is at work, most likely sublimation-driven landform modification and mass wasting. A variant on this process is thermally driven frost segregation as seen on all three icy Galilean satellites and perhaps elsewhere. Titan is unique among outer planet satellites in that Aeolian and fluvial processes also operate to erode, transport, and deposit material.