

Eolian Processes Encyclopedia Article

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Eolian Processes

Eolian processes are processes of **relief** formation resulting from the action of **wind**. The term comes from the name of the Greek god of winds, Aeolus, and is sometimes referred to as Aeolian processes.

The effectiveness of Eolian processes depend on several factors: the average wind speed in a given **area**, the availability of transportable material, the factors hindering this transportation (such factors are mainly rich vegetation coverage on the surface and high moisture of **soil** and sediments). Eolian processes are inherent mostly in deserts and in areas with arid climates, but they occur also on beaches, glacial outwash valleys, snow surfaces, and in several other kinds of environment.

There are various modes of Eolian transport. **Creep** refers to a rolling and sliding transport. **Saltation** involves short hops ranging from centimeters to a meter. During reptation, numerous particles are displaced as splash close to the surface by impact bombardment of higher energy saltating grains. In suspension, short (up to hundreds of meters) and long term (up to thousands of kilometers) of fine-grained silts and **clay** sized sediment are transported.

Spatial and temporal variations in the Eolian transport processes and in the conditions of their development give rise to various erosional and depositional **landforms**. Ventifacts, rocks abraded and fluted by constant impact of **sand** grains, are an example of erosional landforms. Yardangs are abrasion ridges aligned in the direction of transporting winds. Other erosional landforms include **desert** pavement and deflation lag deposits. Depositional landforms are massive fine-grained deposits of windblown loess (silt), giving rise to sand sheets, ripples, and **dunes**. **Superposition** of forms of different orders is characteristic of Eolian landforms.

Eolian processes are of interest to scientists of applied **geology**. For example, they can influence the formation of gold placers in several regions.

See Also

Dune Fields; Erosion