

Suspended Load Encyclopedia Article

Suspended Load

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Suspended Load

Suspended load consists of sediment particles that are mechanically transported by suspension within a stream or river. This is in contrast to **bed or traction load**, which consists of particles that are moved along the bed of a stream, and dissolved load, which consists of material that has been dissolved in the stream **water**. In most streams, the suspended load is composed primarily of silt and **clay** size particles. Sand-size particles can also be part of the suspended load if the stream flow velocity and turbulence are great enough to hold them in suspension.

The suspended load can consist of particles that are intermittently lifted into suspension from the stream bed and of wash load, which remains continuously suspended unless there is a significant decrease in stream flow velocity. Wash load particles are finer than those along the stream bed, and therefore must be supplied by bank **erosion**, **mass wasting**, and mass transport of sediment from adjacent watersheds into the stream during rainstorms.

Water density is proportional to the amount of suspended load being carried. Muddy water high in suspended sediment will therefore increase the particle buoyancy and reduce the critical shear stress required to move the bed load of the stream.

The ratio of suspended load to bed load in a stream depends on the ratio of the shear velocity (a property of the flowing water that reflects the degree of turbulence) and the fall velocity (a property of the sediment grains). The fall velocity is that at which a sediment particle will fall through still water, and thus depends on both grain size and **mineralogy** (density). Bed-load transport predominates when the shear velocity is significantly less than half the fall velocity and suspended load transport predominates when the shear velocity is two to three times greater than the fall velocity. Mixed-mode transport occurs when the ratio falls within a range of approximately 0.4 to 2.5.

See Also

Erosion; Rivers; Sedimentation; Stream Valleys, Channels, and Floodplains