

Soil development

1. Origins of soil science
2. General characteristics of soils
3. Jenny's state factor equation $s=f(Cl,o,r,p,t)$
4. Soil description and classification

Figures: 3.10 3.13 Allaby; 3.14 Allaby; 4.14 Schlesinger

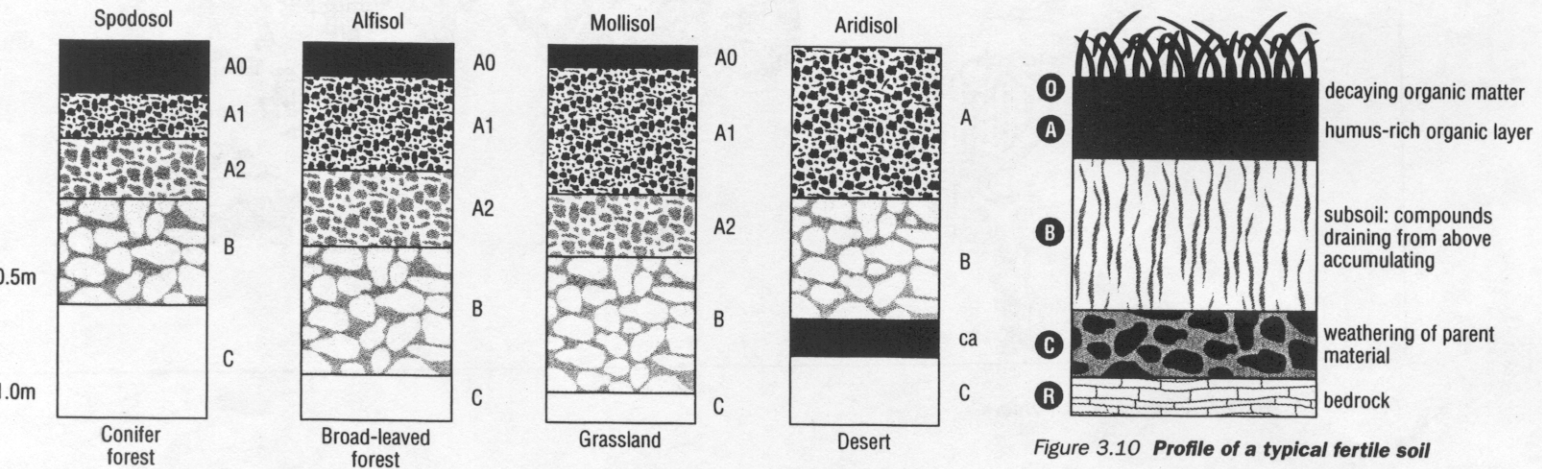


Figure 3.13 Profiles of four soils, with the vegetation associated with them

The 11 soil orders of the US soil taxonomy

- Alfisols** Soils of climates with 510–1270 mm annual rainfall; most develop under forests; clay accumulates in the B horizon.
- Andisols** Volcanic soils, deep and light in texture; contain iron and aluminium compounds.
- Aridisols** Desert soils with accumulations of lime or gypsum; often with salt layers; little organic matter.
- Entisols** Little or no horizon development; often found in recent flood plains, under recent volcanic ash, as wind-blown sand.
- Histosols** Organic soils; found in bogs and swamps.
- Inceptisols** Young soils; horizons starting to develop; often wet conditions.
- Mollisols** Very dark soils; upper layers rich in organic matter; form mainly under grassland.
- Oxisols** Deeply weathered soils; acid; low fertility; contain clays of iron and aluminium oxides.
- Spodosols** Sandy soils found in forests, mainly coniferous; organic matter, iron and aluminium oxides accumulated in B horizon; strongly acid.
- Ultisols** Deeply weathered tropical and subtropical soils; strongly acid; clay accumulated in B horizon.
- Vertisols** Clay soils that swell when wet; develop in climates with pronounced wet and dry seasons; deep cracks appear when dry.

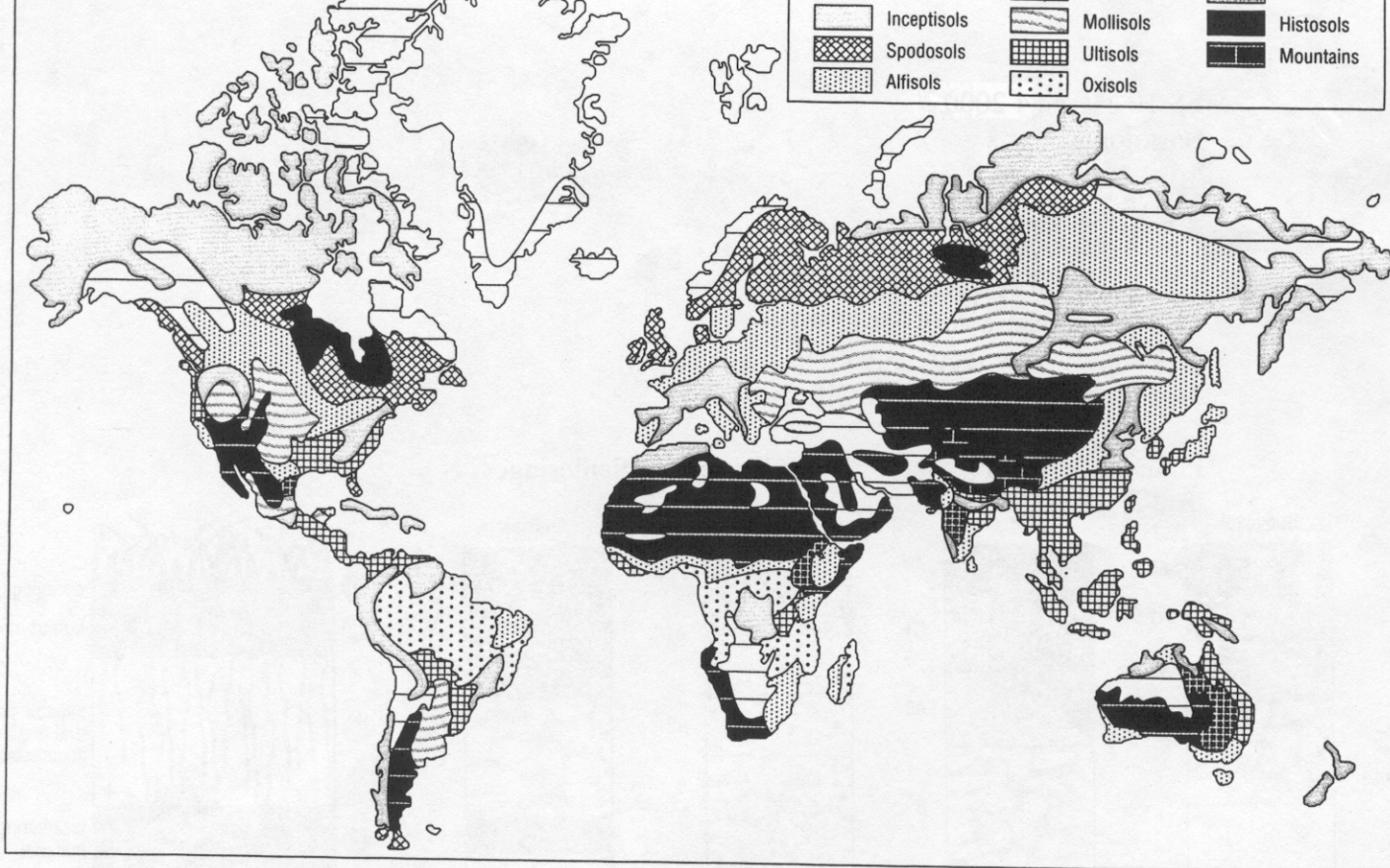


Figure 3.14 World distribution of soil orders

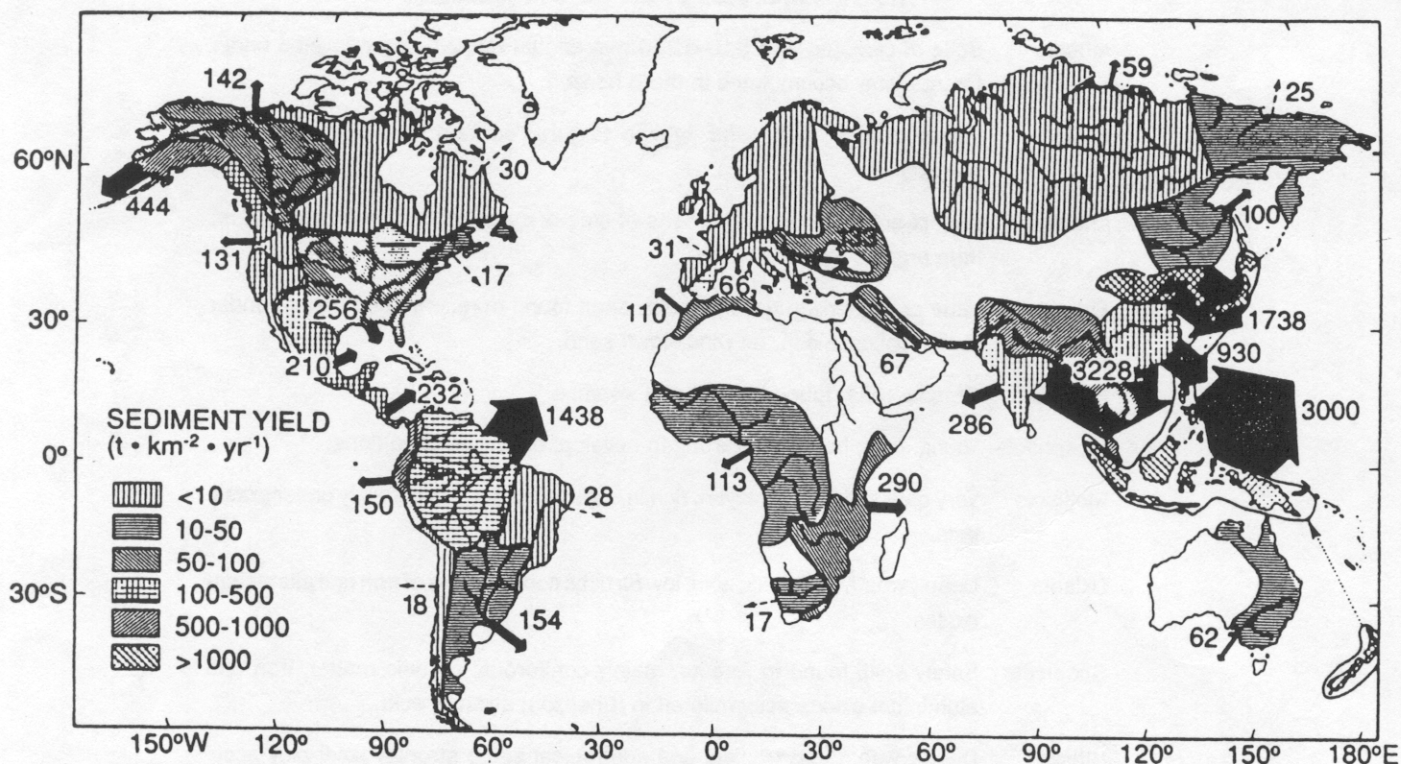


Figure 4.14 Annual sediment flux from major drainage basins to the world's oceans. Data are millions of tons (10¹² g) per year, and arrows are drawn proportional to the flux. From Milliman and Meade (1983).

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