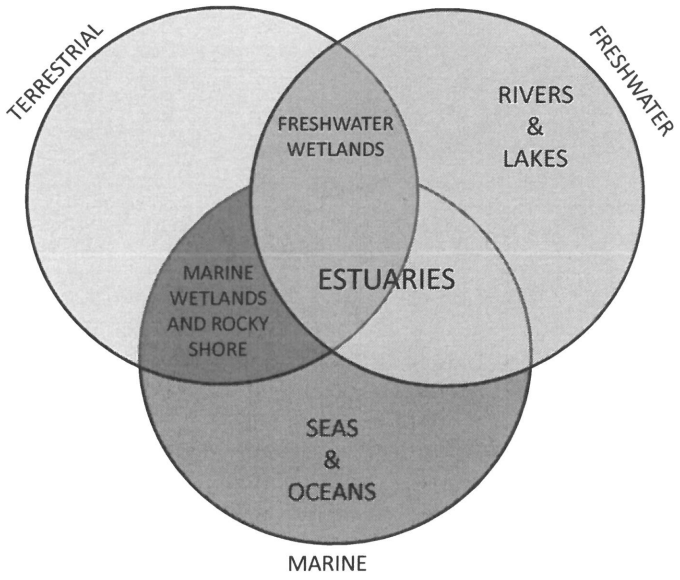
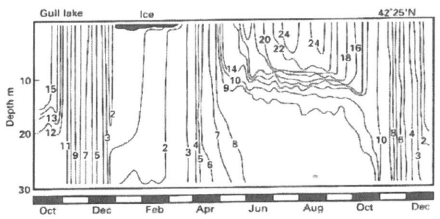
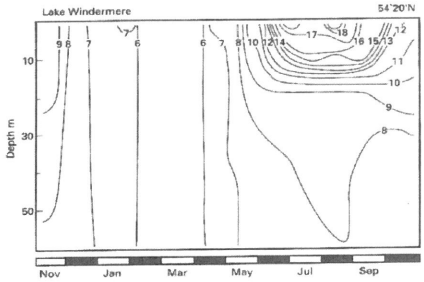
AQUATIC ECOSYSTEMS



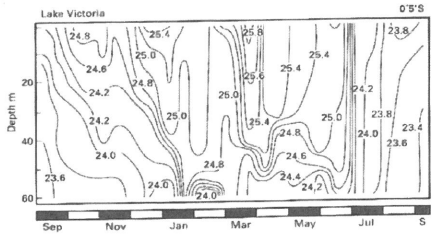
Cold temperate - freezing





Cool temperate – non-freezing

Tropics



Dissolved oxygen

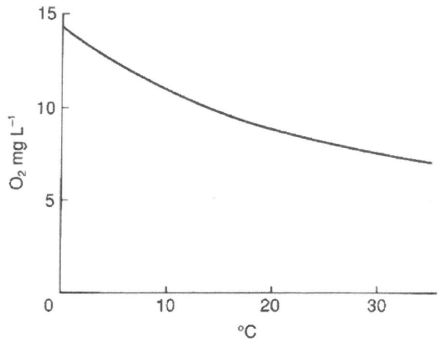


Fig. 3.2 Oxygen is covalent and very little oxygen can be dissolved (in fact physically mixed) in water. This is an important issue for the respiration of freshwater organisms and indeed for many other aspects of water chemistry.

Biological oxygen demand

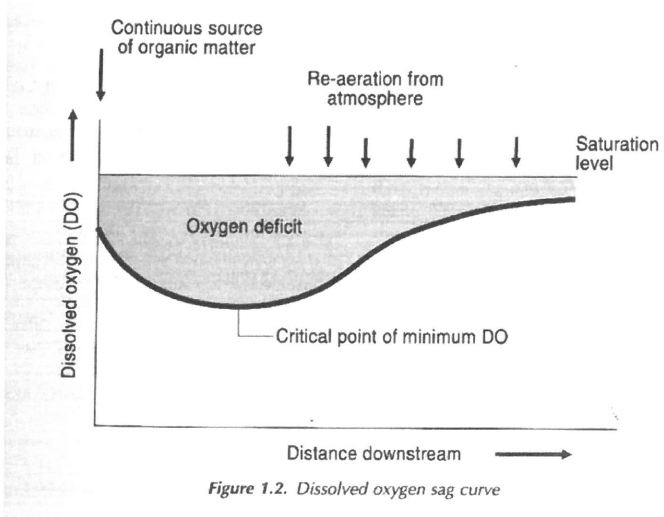
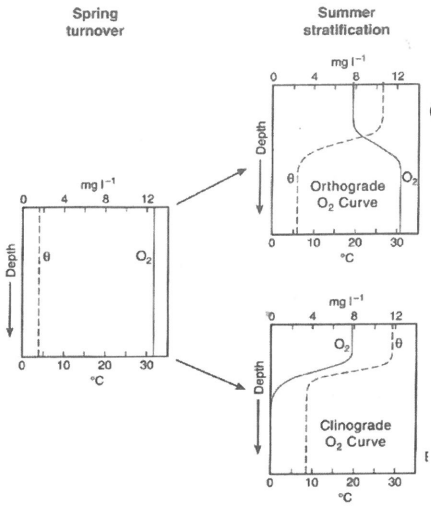


Figure 1.2. Dissolved oxygen sag curve

- Bacterial decomposition of organic matter will depress O_2 concentration; this is mediated with distance in streams

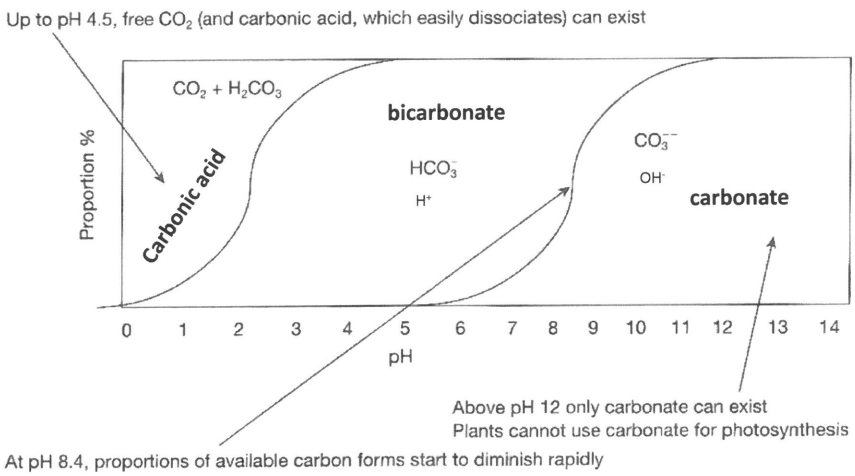
Oxyen, decomposition, and lake stratification



Oligotrophic lake

Eutrophic lake

pH buffering in fresh waters



- Sediment transport is driven by the strength of flooding events

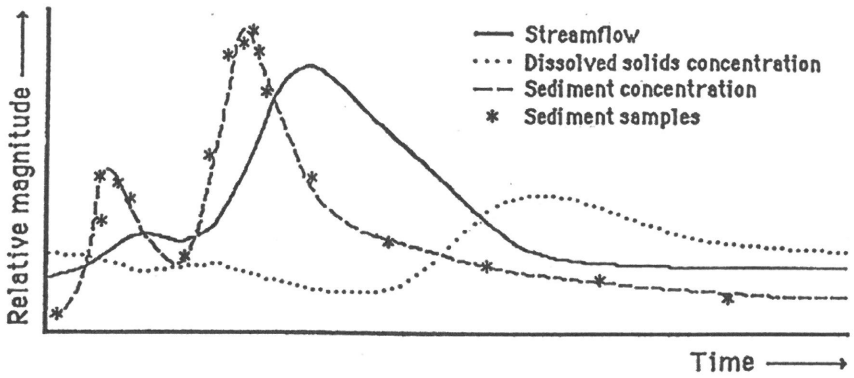
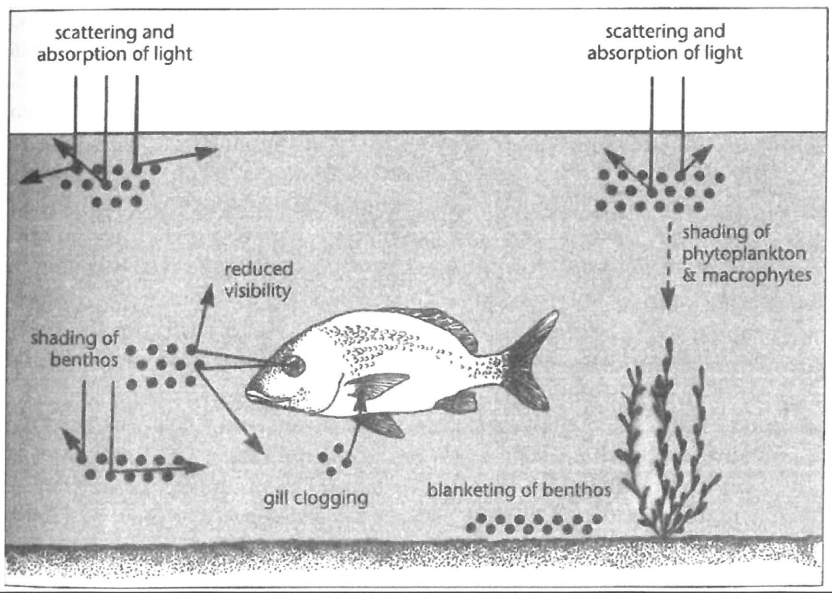
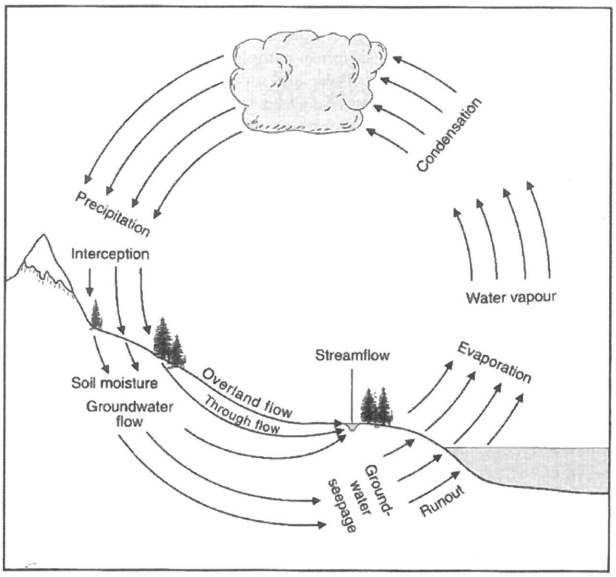


Figure 7.21. Generalized graphs showing the change in streamflow, sediment load and dissolved load during a runoff event

Suspended solids and Turbidity



Hydrological cycle



Surface porosity and runoff

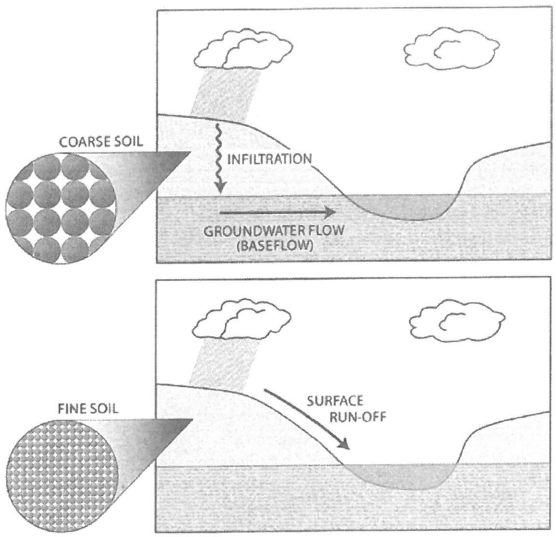


FIGURE 2-5. Influence of Basin Surficial Geology on Water Flow

Residence time of groundwater

- Depth and confinement of aquifers dictate recharge time

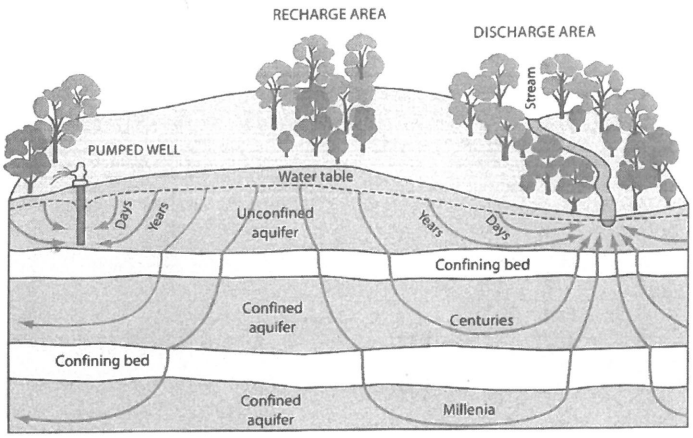
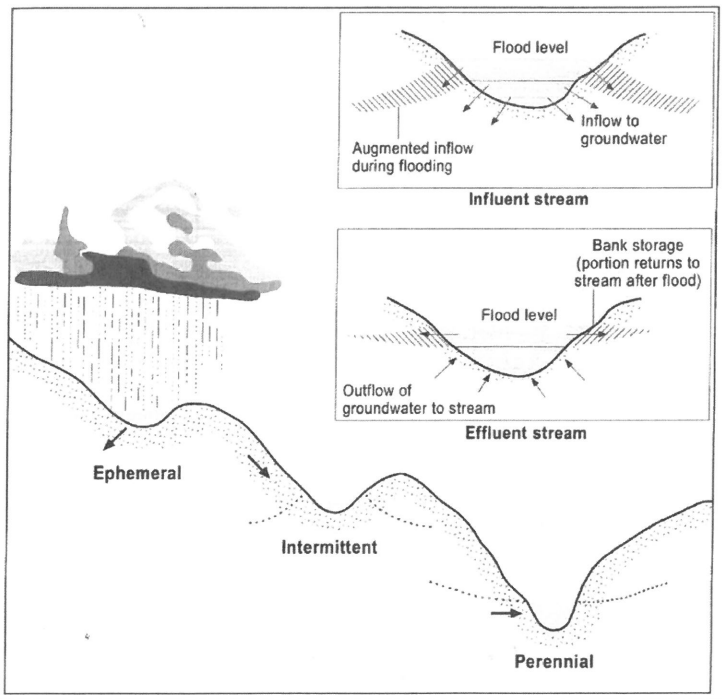


FIGURE 2-4. Confined and Unconfined Aquifers

Source: T.C. Winter, J.W. Harvey, O.L. Franke, W.M. Alley. 1998. Ground Water and Surface Water: A Single Resource. USGS Circular 1139. Denver: USGS.



South Africa's inland waters

Key terms and characteristics

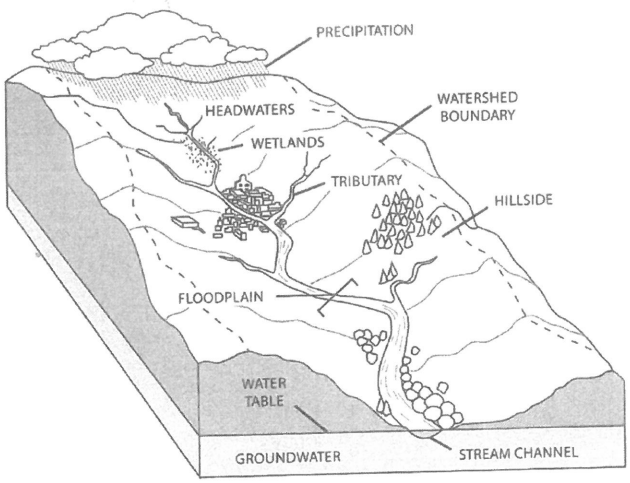


FIGURE 2-1. Large River Watershed

Source: Adapted from USEPA, Office of Water. 1997. Volunteer Stream Monitoring: A Methods Manual.

Rivers can drain the landscape in many different patterns

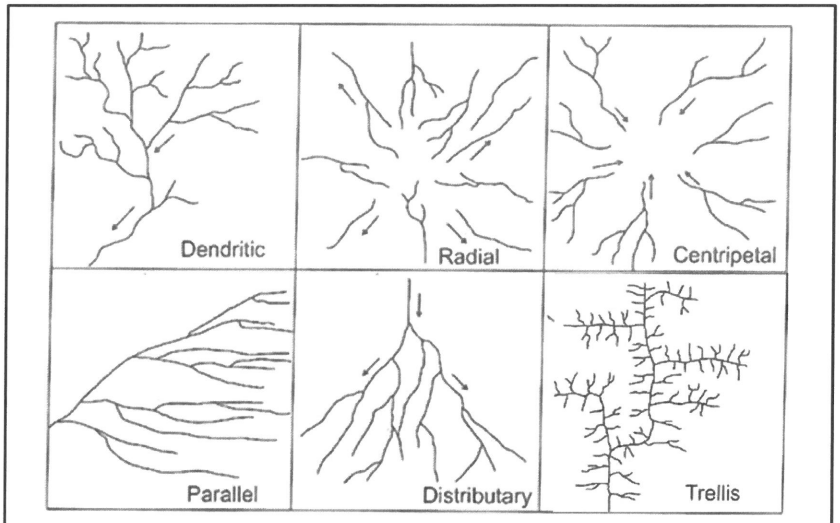
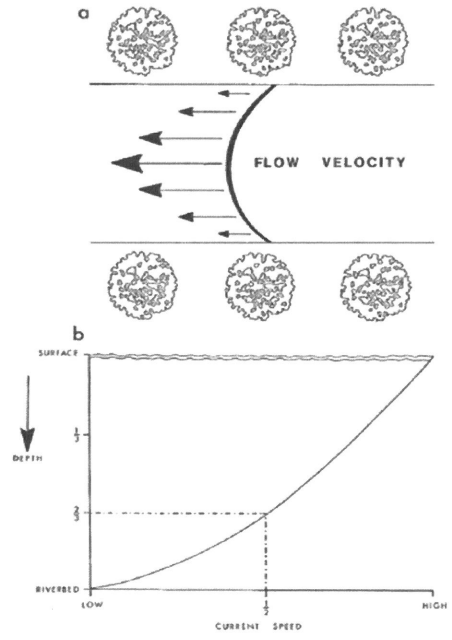
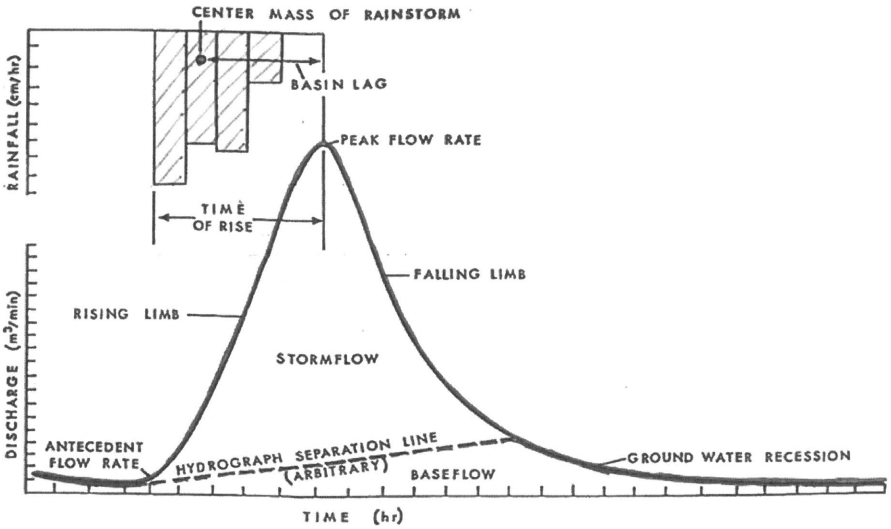


Figure 4.9. Basic drainage patterns

Measuring water velocity



Storm hydrograph and key definitions



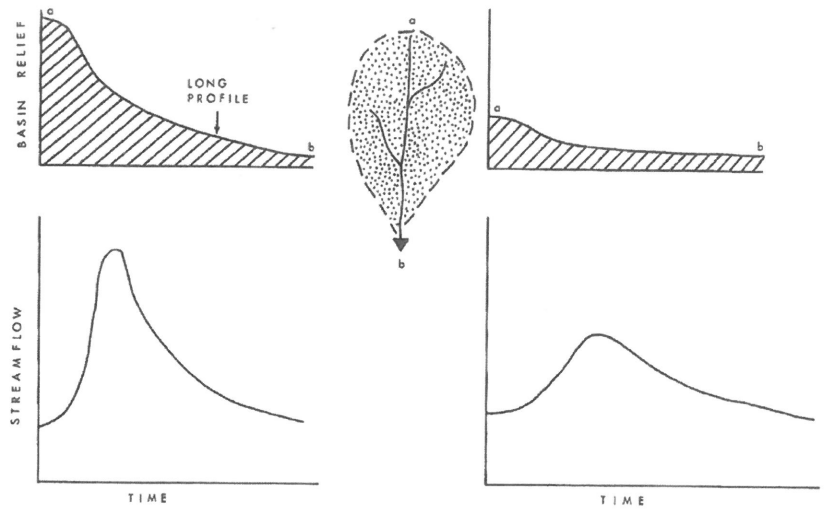


FIGURE 5.5 Different gradings on the same length of slope would generally influence the hydrograph form as shown above, but it must be emphasized the river profile and slope of the river flanks may override the effect of gradient.

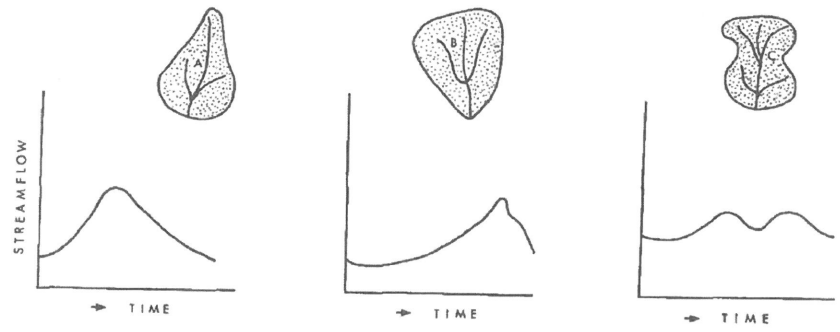


FIGURE 5.4 Possible effects that basin shape could have on the hydrograph form.

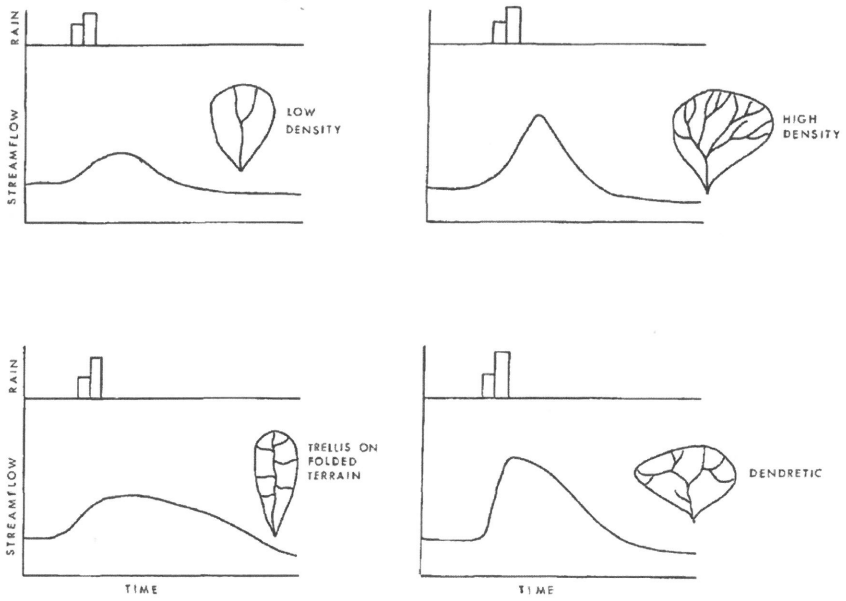


FIGURE 5.6 General affects of stream density and pattern on the hydrograph.

Variable source area concept

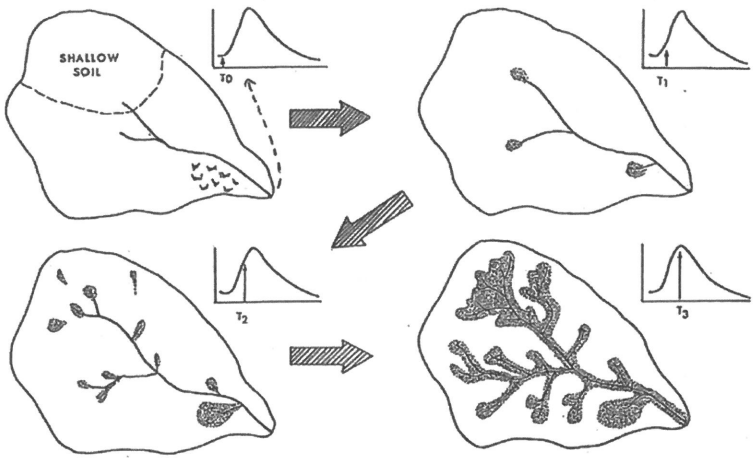
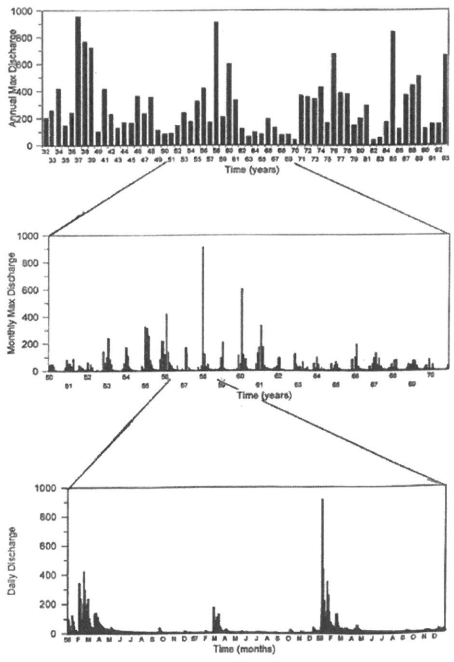
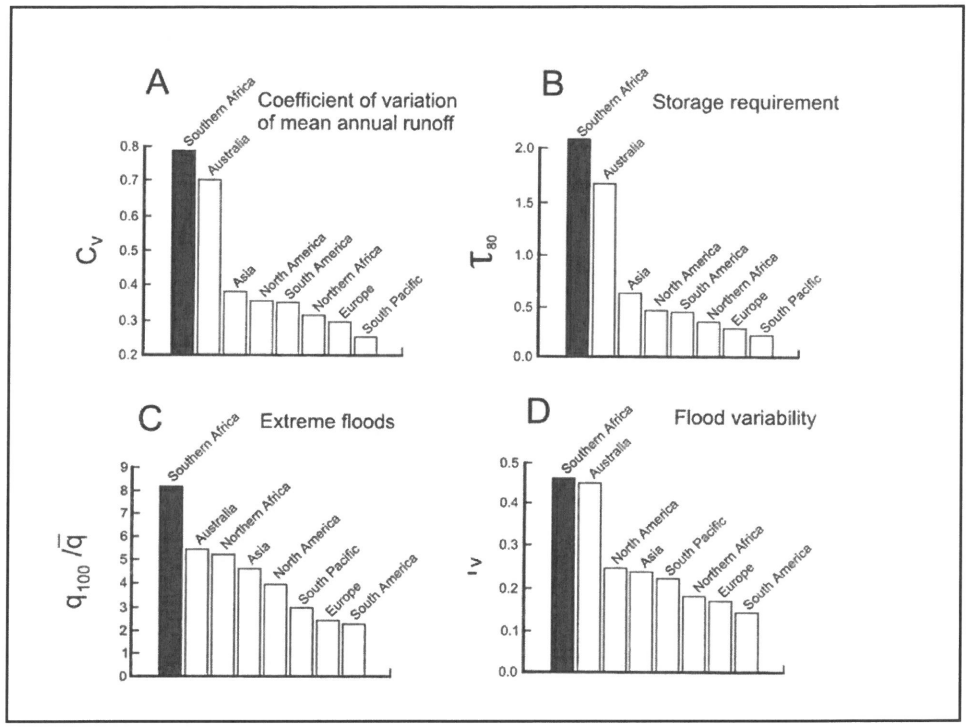
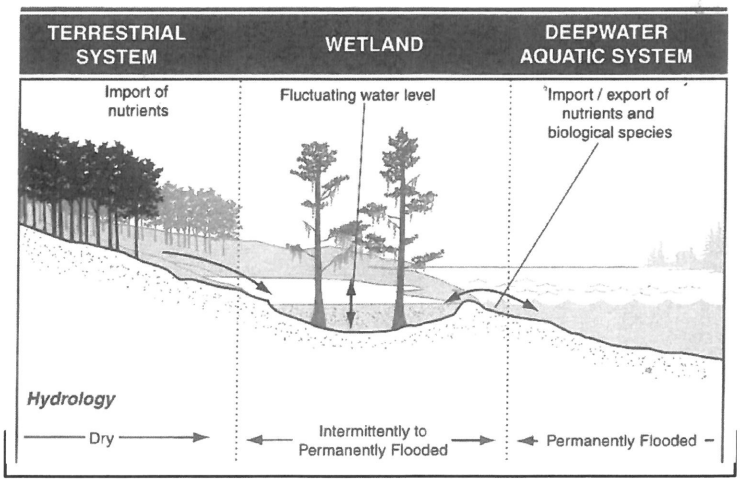


FIGURE 5.3 The small arrows in the hydrographs show how streamflow increases as the variable source extends into swamps, shallow soils and ephemeral channels. The process reverses as streamflow declines. From Hewlett (1982).



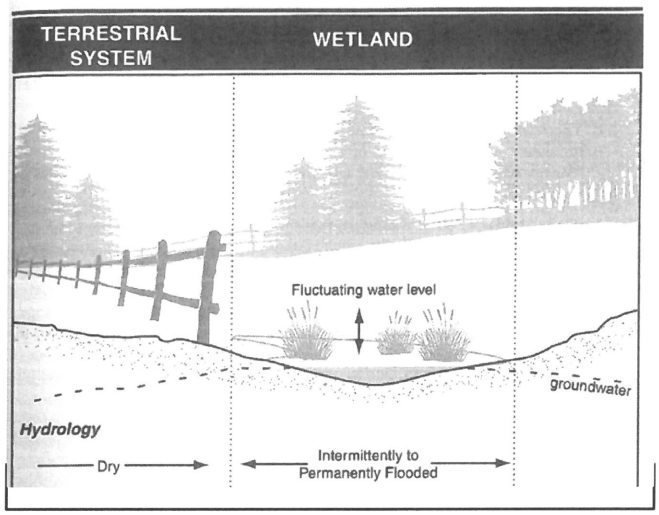


Riparian and Lakeshore (Exorheic) Wetlands



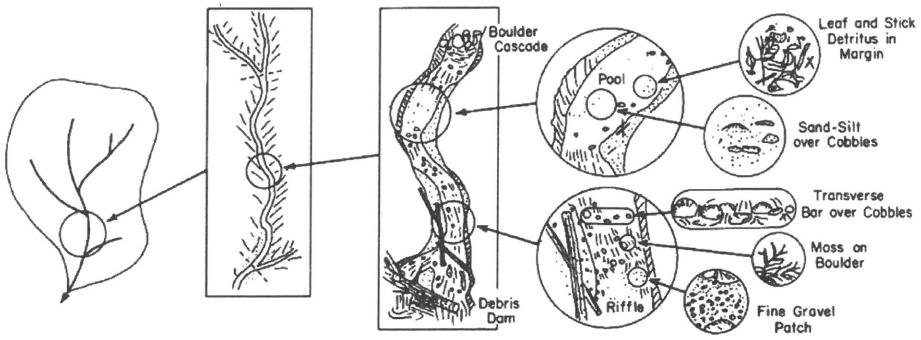
Surface runoff drains though the wetland into the adjacent water body

Endorheic Wetlands

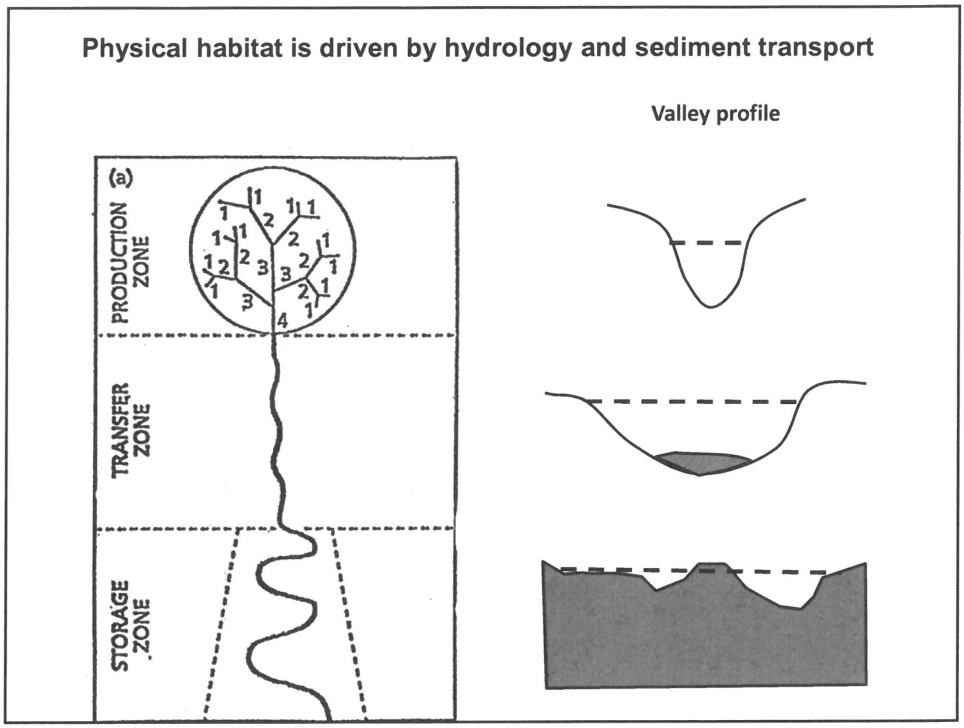


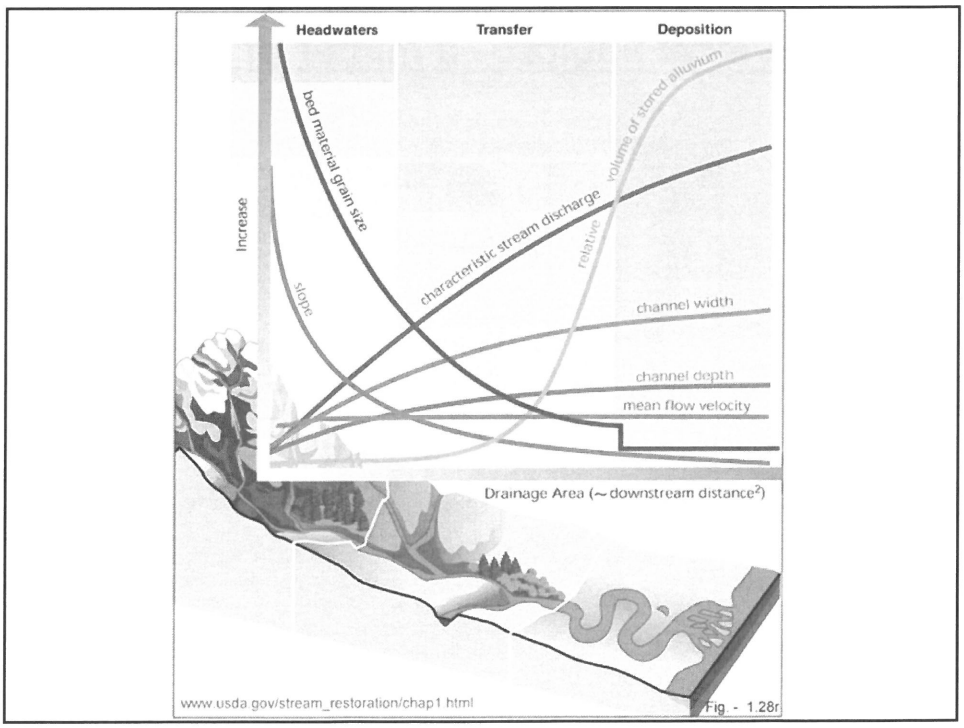
All surface runoff ends up in the waterbody at the centre of a depression

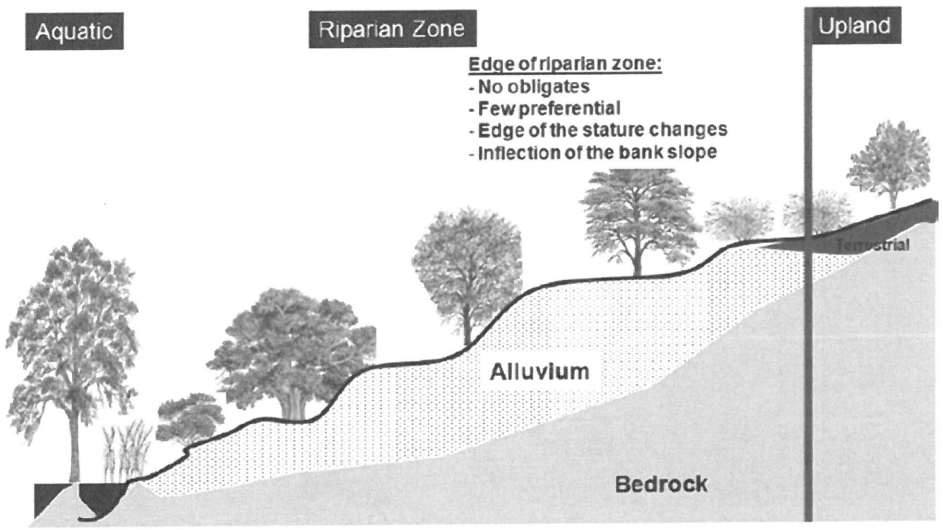
Physical habitat – a matter of scale



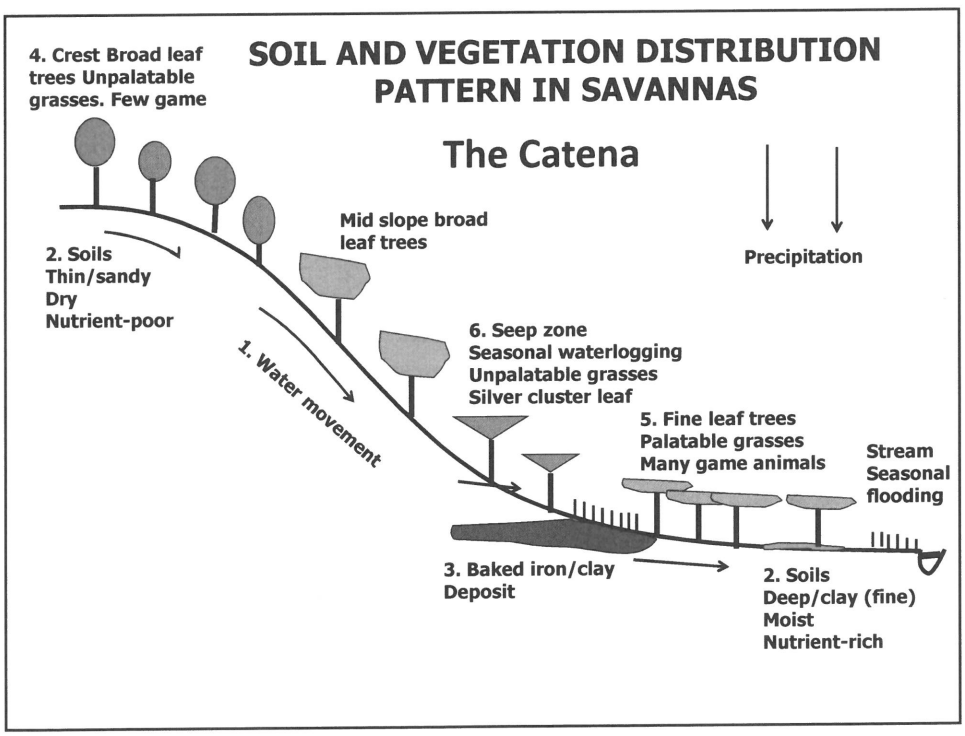
Physical habitat is driven by hydrology and sediment transport

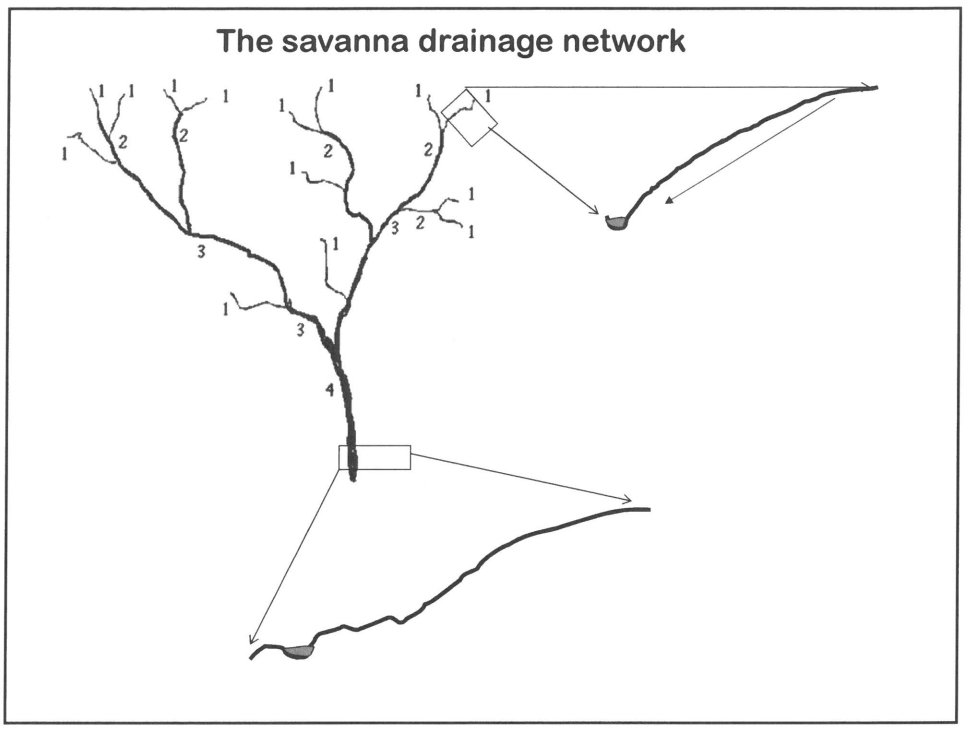






The edge of the riparian zone on one bank of a large river. The edge of the riparian zone coincides with an inflection point on the bank. The boundary also coincides with the outer edge of the stature differences (fluvial vs terrestrial dominance).




The savanna drainage network