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Climate Change and Aquifers: Adaptive Governance

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Why is governance necessary?

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Avoid conflict

Exchange data

Minimize harm

Balance demands

Protect ecosystems

Effect of Climate Change on Aquifers

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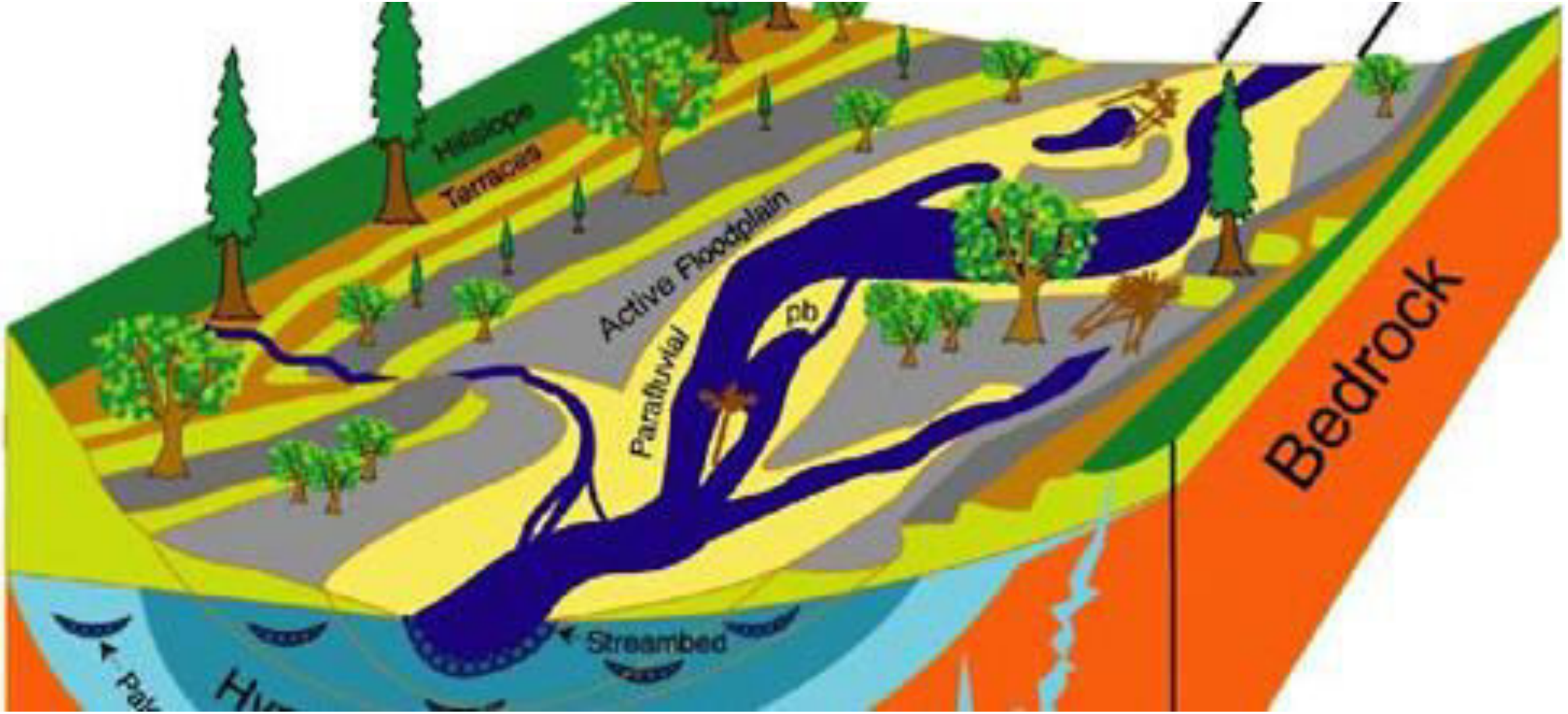
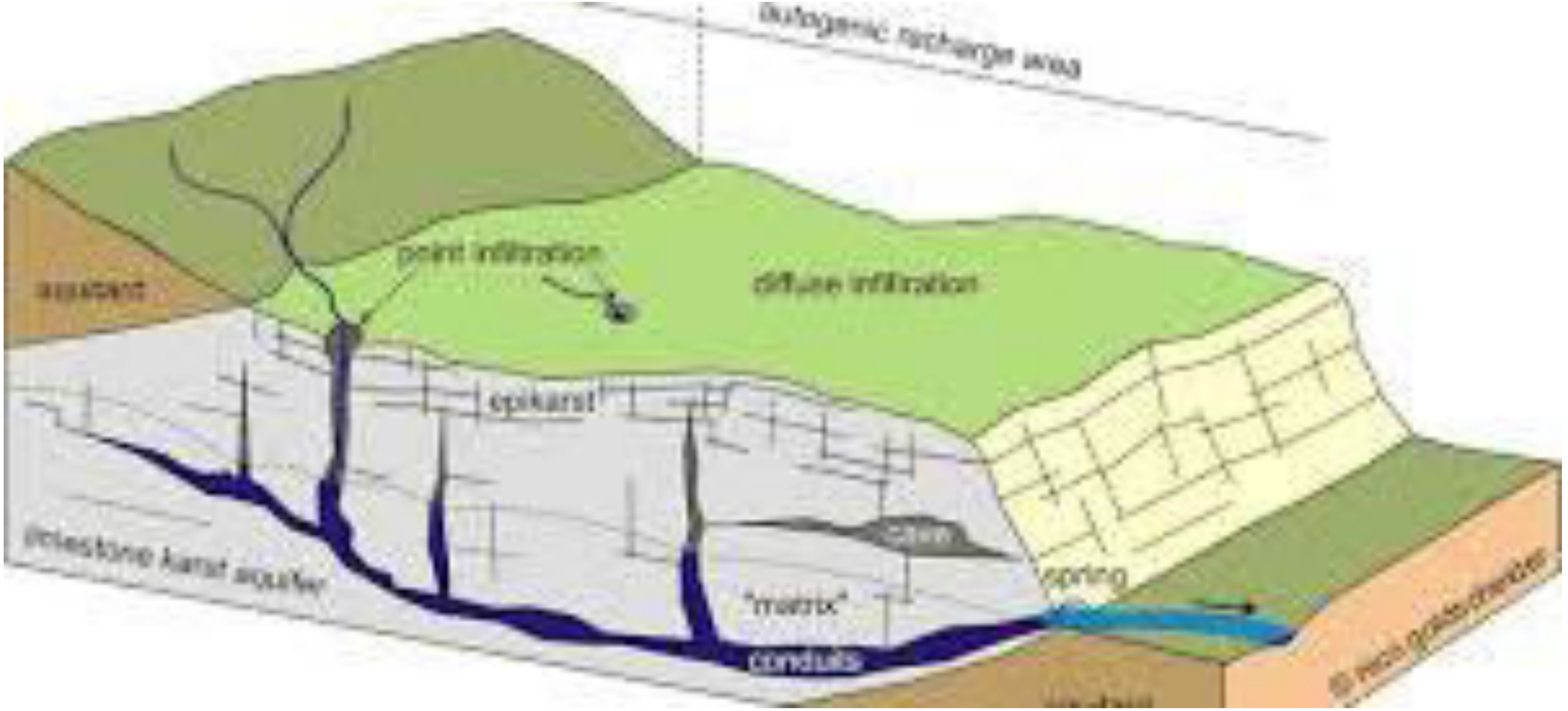
- More droughts
  - Less recharge
  - More abstraction
- Higher temperatures
  - More evaporation
  - Less recharge
- More intense storms
  - More runoff = less recharge
  - More erosion = less recharge

Types of aquifers -- alluvial

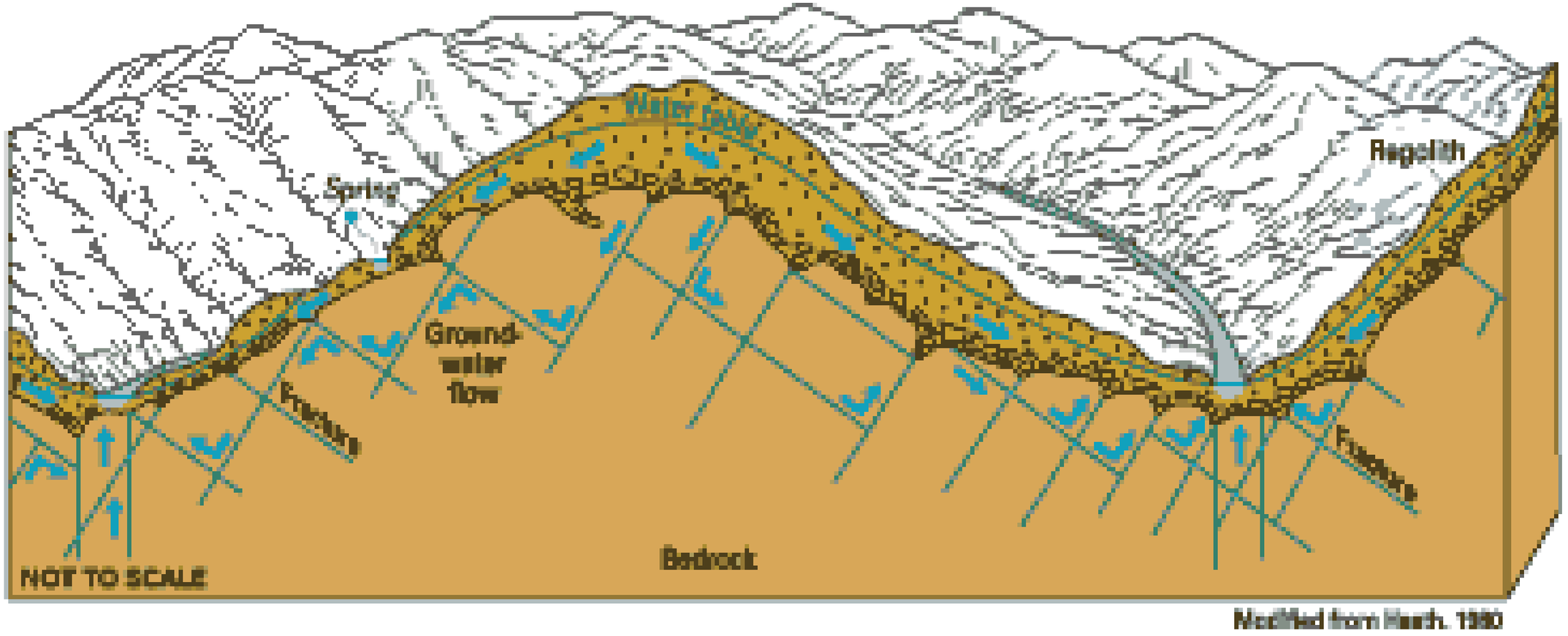


Types of aquifers -- sandstone

Types of aquifers -- karst



Types of aquifers -- volcanic



Adaptive governance ideas

- Alluvial -- choose appropriate crops; use barrages, dams, etc. to slow/retain rain
- Sandstone – choose appropriate crops; price water to reduce demand
- Karst – avoid pollution in recharge areas; use catchments at outflows
- Volcanic -- use barrages, dams, etc. to slow/retain rain; avoid pollution in recharge areas

Conclusions

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- Climate change will cause changes in quality and quantity of groundwater
- Some aquifers will receive adequate recharge
- Others will suffer from drought and over-use
- Planning for sustainable utilization now will ensure sufficient supplies later

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