

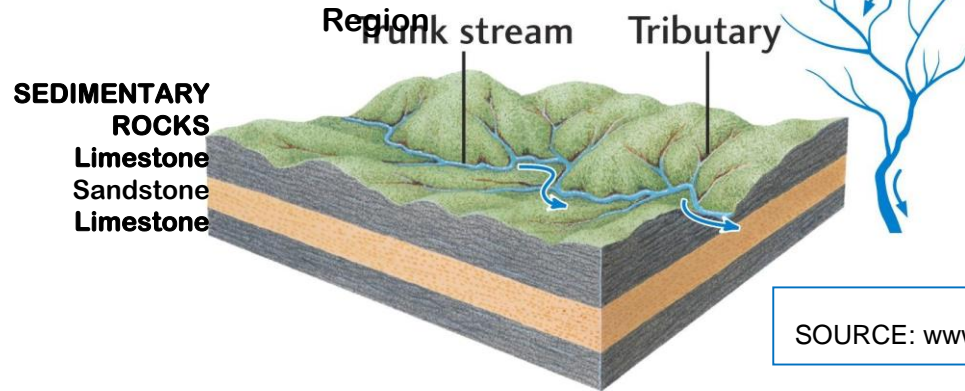
# GEOLOGY & DRAINAGE PATTERNS

Shape of the stream systems draining a particular region

## Dendritic: "Tree Trunk & Branches"

Most common drainage pattern resulting from flow of water over gently inclined flat-lying rock formations.

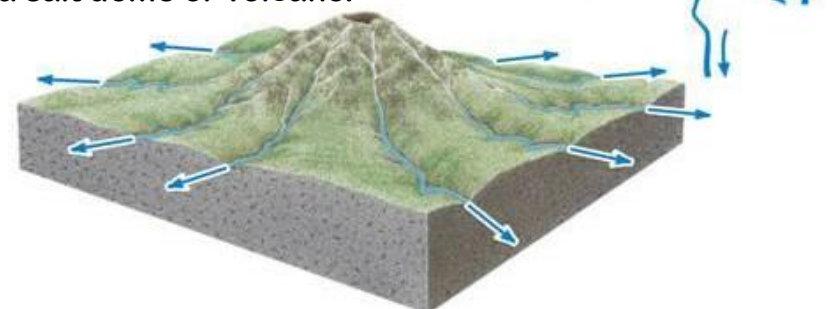
Example: Springfield Plateau Ozark Region



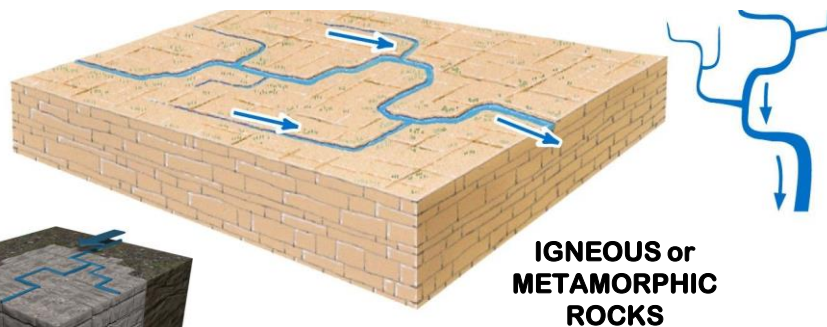
SOURCE: [www.studyblue.com](http://www.studyblue.com)

## Radial: "Wheel Spokes"

Develops on a large single peak, such as a salt dome or volcano.



Example: Hawaiian Islands, Mt. Shasta/CA

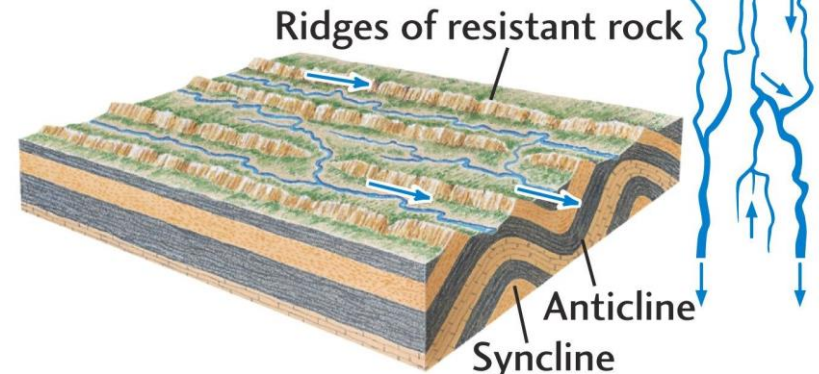


SOURCE: [www.onegeology.org](http://www.onegeology.org)

## Rectangular: "Square-Corners"

Forms on rocks with well-developed joint system.

Example: Canadian Shield



## Trellis: "Trained Vine"

Streams flowing on "folded" SEDIMENTARY rock units follow valleys bounded by ridges of erosion resistant rock.

Example: Appalachian Mountains Virginia & Pennsylvania

# CLIMATE:

**THE AVERAGE WEATHER (INCLUDING RAINFALL, TEMPERATURE, WIND) OVER A LONG TIME PERIOD THAT IS CHARACTERISTIC OF A REGION**

## DESERTS: Rainfall Negligible

**Arid:** <0-10 centimeters = <0-4 inches per year  
**Semi-Arid:** <10-30 centimeters = <4-12 inches



Source:  
[www.weaselinthebarley.com/scenic\\_wallpapers/desert.htm](http://www.weaselinthebarley.com/scenic_wallpapers/desert.htm)



Source:  
[www.airphotona.com/image.asp?im\\_ageid=1742](http://www.airphotona.com/image.asp?im_ageid=1742)

## GRASSLANDS: Rainfall Minimal

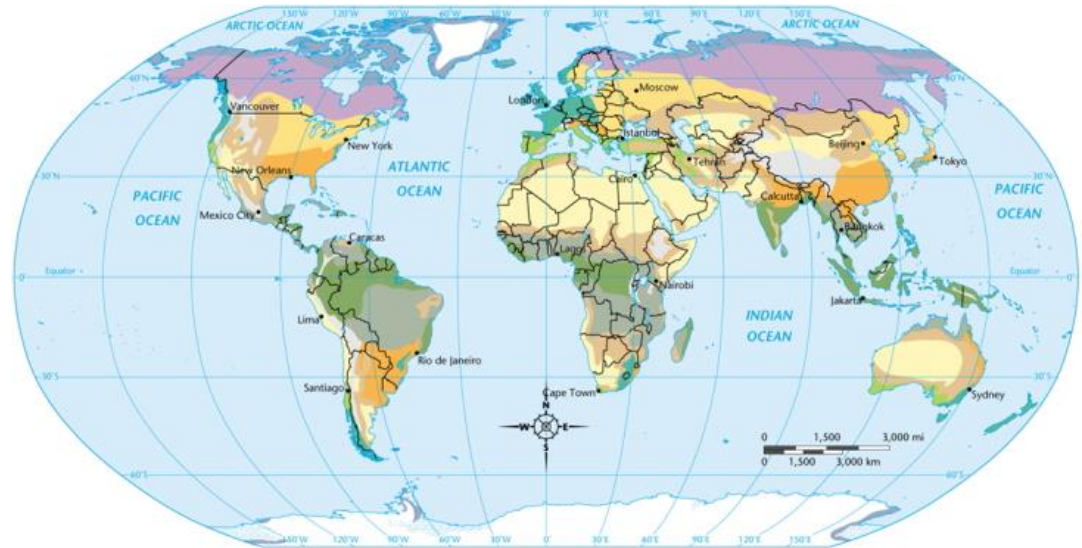
**Temperate:** <25-75 centimeters = <10-30 inches per year  
**Tropical:** <64-150 centimeters = <25-60 inches per year



<http://www.americansouthwest.net/wyoming/yellowstone/pelican-grasslands.html>



<http://www.kidcyber.com.au/topics/biomegrass.htm>



| Tropical             | Dry       | Moderate          | Continental       | Polar             |
|----------------------|-----------|-------------------|-------------------|-------------------|
| Tropical wet         | Semi-arid | Mediterranean     | Humid continental | Tundra            |
| Tropical wet and dry | Arid      | Humid subtropical | Subarctic         | Ice cap           |
|                      |           | Marine west coast |                   | Non-permanent ice |
|                      |           |                   |                   | Highlands         |

Source: <http://commons.wikimedia.org/wiki/File:ClimateMapWorld.png>

## WOODLANDS: Rainfall Moderate

<75-150 centimeters = <30-60 inches per year



Source:  
<http://www.kansasforests.org/newindex.shtml>



Source:  
<http://www.geograph.org.uk/photo/2427529>

## RAINFORESTS: Rainfall Maximum

<175-200 centimeters = <69-79 inches per year



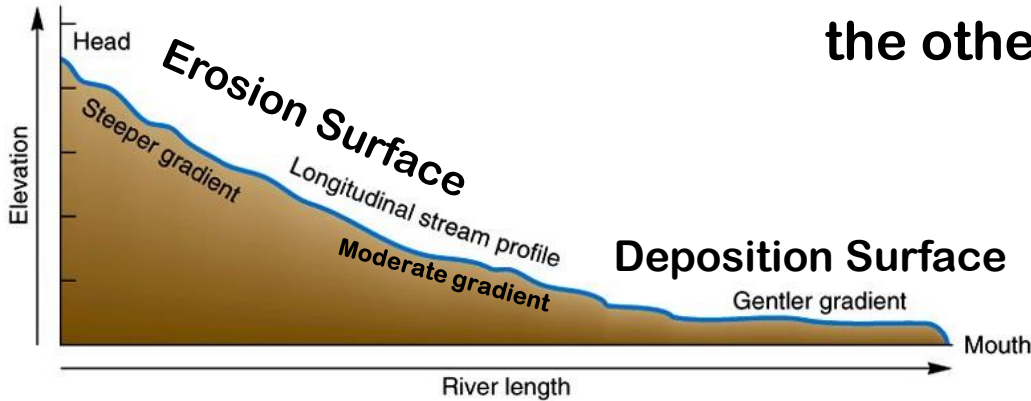
Source:  
<http://burns1.wikispaces.com/Southeast+Asian+Rainforest>



Source:  
[http://photos.igougo.com/pictures-photos-p211084-rain\\_forest.html](http://photos.igougo.com/pictures-photos-p211084-rain_forest.html)

# SLOPE

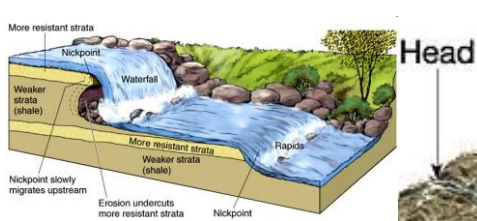
An inclined surface of which one end or side is at a higher level than the other



Source: [www.sci.uidaho.edu/scripiter/geog100/lect/11-rivers/11-rivers.htm](http://www.sci.uidaho.edu/scripiter/geog100/lect/11-rivers/11-rivers.htm)

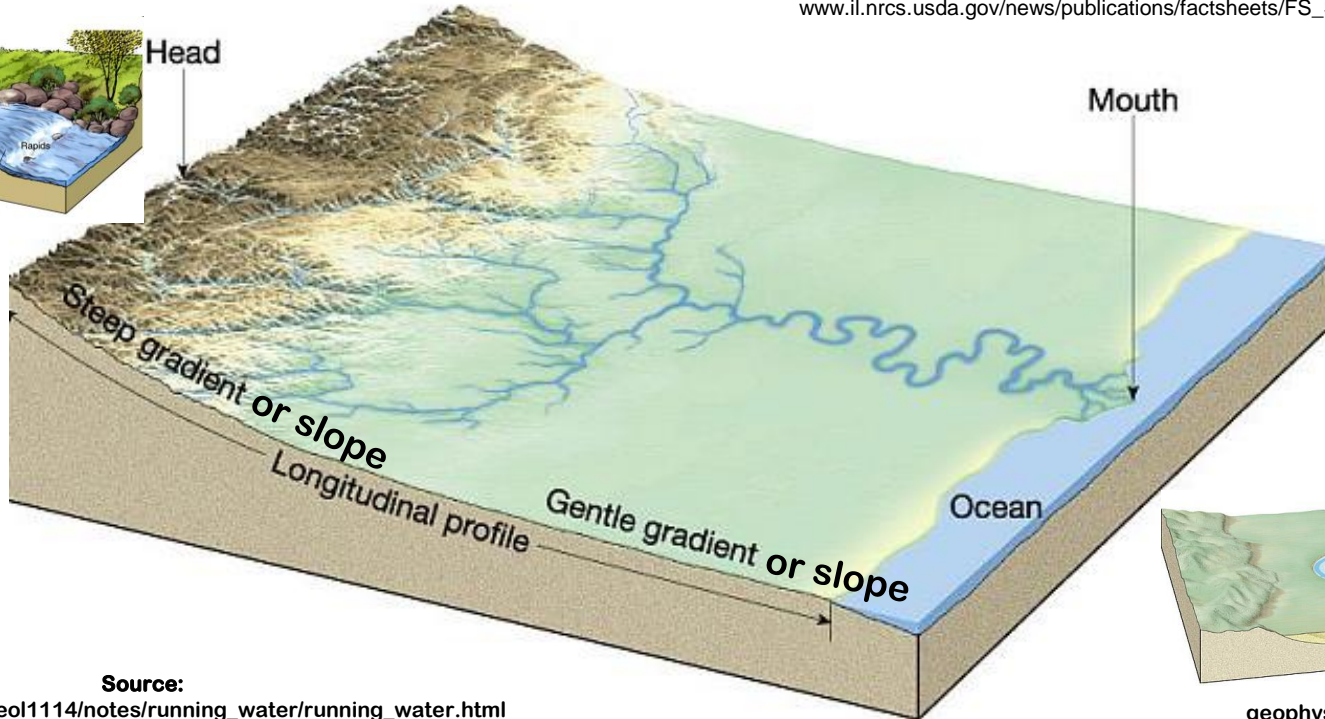
Over many years, streams develop their patterns and characteristics of transporting water and sediment from upland areas, through floodplains, and on to larger streams and rivers, and eventually, oceans.

Source: [www.il.nrcs.usda.gov/news/publications/factsheets/FS\\_StreamDynamics.html](http://www.il.nrcs.usda.gov/news/publications/factsheets/FS_StreamDynamics.html)

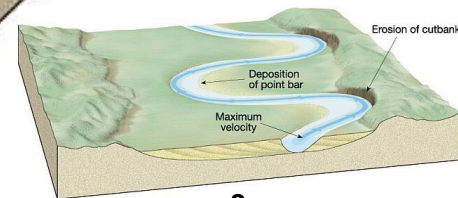


Headwater stream on steep slope  
Source:

[www.sci.uidaho.edu/scripiter/geog100/lect/11-rivers/11-rivers.htm](http://www.sci.uidaho.edu/scripiter/geog100/lect/11-rivers/11-rivers.htm)

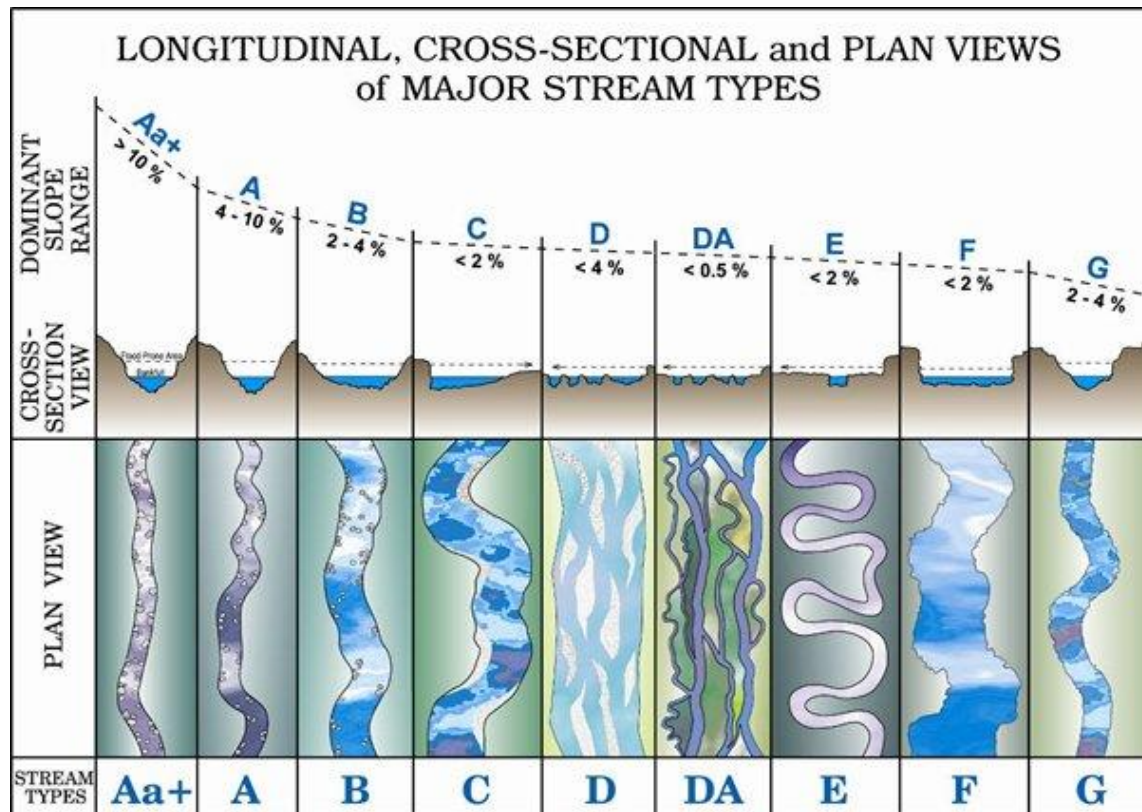


Meandering stream on nearly level or flat surface



Source: [geophysics.ou.edu/geol1114/notes/running\\_water/running\\_water.html](http://geophysics.ou.edu/geol1114/notes/running_water/running_water.html)

Source: [geophysics.ou.edu/geol1114/notes/running\\_water/running\\_water.html](http://geophysics.ou.edu/geol1114/notes/running_water/running_water.html)



(Rosgen, 1996, reprinted with permission from Wildland Hydrology)

- Aa Very steep, deeply entrenched, low width/depth ratio and laterally contained
- A Steep, entrenched, cascading with step/pool streams
- B Moderately entrenched, moderate gradient, riffle-dominated channel
- C Low gradient, meandering, point-bar, riffle/pool with broad floodplains
- D Braided channel with longitudinal and *transverse bars* – very wide with eroding banks
- DA Multiple channels, narrow and deep, with extensive well-vegetated floodplains and *wetlands*
- E Low gradient, meandering riffle/pool stream with low width/depth ratio, high meander width ratio
- F Entrenched meandering riffle/pool channel on low gradients with high width/depth ratio
- G Entrenched 'gully' step/pool and low width/depth ratio on moderate gradients