Rivers

12.001 – November 14, 2012

Courtesy of Taylor Perron. Used with permission.
We know what the skeleton of a landscape looks like, but lack a general theory that explains its shape.
erosion = river incision + soil creep

Valleys grow deeper
Valleys fill in
Mathematical models based on this simple competition generate dynamic, branching river networks.

Warmer colors = higher elevation

[Image of a map with color gradients indicating elevation]
We know what the skeleton of a landscape looks like, but lack a general theory that explains its shape.

Courtesy of Geological Society of America. Used with permission.
San Juan River, Argentina

Courtesy of Taylor Perron. Used with permission.
Figure 14.24c

Silt carried by Atchafalaya River discharge

Silt carried by Mississippi River discharge

Atchafalaya River

New Orleans

Mississippi River

Courtesy of NASA. Image in the public domain.
Mississippi Delta Forma Eon

1. Sale - Cypremont
   4600 years BP

2. Teche
   3500 - 2800 years BP

3. St. Bernard
   2800 - 1000 years BP

4. Lafourche
   1000 - 300 years BP

5. Plaquemine
   750 - 500 years BP

6. Balize
   550 years BP

Atchafalaya Bay

New Orleans

Mississippi "Bird Foot" Delta

Gulf of Mexico

Courtesy of NASA. Image in the public domain.