

2003 Dynamic Planet Event

Topic: Lakes

Lakes lack the extremely active dynamics associated with rivers, therefore far less information may be found about the geologic history of lakes on the World Wide Web and Earth Science Textbooks than may be found about rivers. The facts below were gleaned from **Physical Geography: A Landscape Appreciation** by Tom L. McKnight, and published by Prentice-Hall, Inc., 1984.

- A **lake** is a body of water completely surrounded by land.
- More than 90% of Earth's surface waters are contained in lakes.
- Less than 1% of Earth's surface waters are found in rivers and streams at any moment in time.
- The origin of most lakes is not related to stream activity.
- Conditions necessary for the formation and continued existence of a lake:
 1. A natural basin with a restricted outlet.
 2. Sufficient input of water to keep the basin at least partially filled.
- Most of the world's lakes contain fresh water. Less than 40% of lake waters are salty.
- Any lake that has no natural drainage outlet, either as a surface stream or as a sustained subsurface flow, will become saline.
- The water balance of most lakes is maintained by surface inflow, sometimes combined with springs and seeps from below the lake surface.
- Lakes are most common in regions that were glaciated within the relatively recent geologic past because glacial erosion and deposition have deranged the normal drainage patterns and have created innumerable basins.
- The series of large lakes in eastern and central Africa is due to major crustal movements and volcanic activity.
- Thousands of small lakes in Florida were formed by sinkhole collapse where rainwater dissolved calcium from massive limestone bedrock.
- Most lakes are very temporary features in the natural landscape, geologically speaking. Few have been in existence for more than a few thousand years.
 1. Inflowing streams bring sediments to fill them up.
 2. Outflowing streams cut channels that progressively deepen and drain lakes.

3. As lakes become more shallow, an increase in plant growth accelerates the process of infilling.
- Dry lake beds located in desert regions are called **playas**. When temporarily filled by intermittent streams these bodies of water are called **playa lakes**.
 - Permanent desert lakes are nearly always products of either subsurface structural conditions that provide water from a permanent spring or of exotic streams that have their source in nearby mountain.
 - Lakes may affect climate and weather.
 1. It is generally more humid around lake areas.
 2. Because water warms and cools more slowly than land, temperatures near lakes are generally milder than temperatures at the same latitude but more distant from lakes.
 - Other lakes Science Olympiad participants may wish to research include kettle lakes, moraine lakes, oxbow lakes and man-made reservoirs.