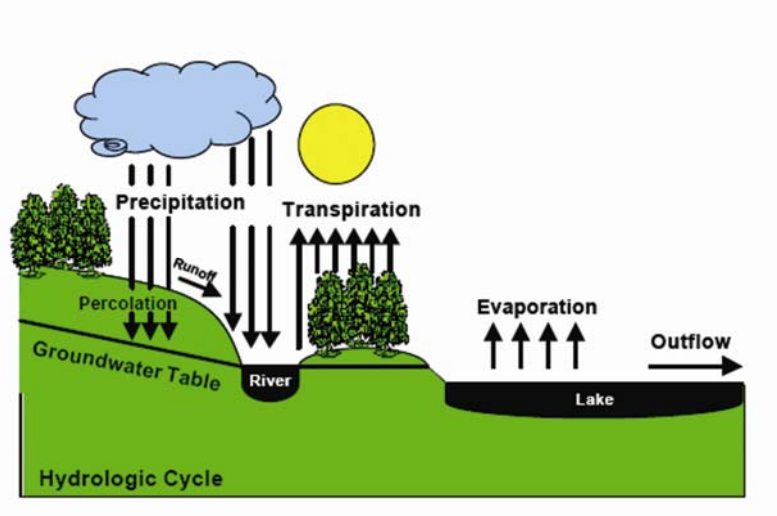
US Army Corps of Engineers
Mobile District

Inflows and Outflows

Apalachicola, Chattahoochee & Flint (ACF) River Basin Fact Sheet

How does water get into our lakes? Water, a renewable resource, is continually recycled and returned to the eco-system through the hydrologic cycle (see diagram). As weather systems move through, precipitation (typically rain in our area) is deposited. Rainfall is a major source of inflow into our lakes. However, rain does not need to fall directly over the lakes to increase lake levels. Actually, much of the inflow into our lakes originates as runoff– rainwater that falls outside of the actual lake (but within the basin/watershed).



Runoff follows the laws of gravity– it may run down slopes directly into a lake, or it may arrive indirectly such as by reaching a small stream or river that flows into a lake, or it may reach the lake under the surface because it soaked into the ground through percolation and became groundwater.

In addition to rainfall, runoff, and groundwater, another very important source of inflow into our lakes is through upstream water releases. These controlled releases at the dams can have a direct affect on the river and lake level below the dam. These releases are very important as they provide power during peak demand periods as well as maintain water supply and water quality needs of the Apalachicola, Chattahoochee and Flint River Basin from Buford, Georgia to Apalachicola, Florida.

At the same time water is coming into a lake, some of it is leaving– we call this outflow. Downstream water releases from hydropower generation are the most well known source of outflows. However, evaporation from the lake surface is a major means by which water leaves a lake. Water also leaves a lake system by groundwater outflow as well as through consumptive uses such as water supply for municipalities and industries.

The difference between the amount of water coming into a lake (inflow) and the amount of water going out (outflow) is the determining factor in whether the water level will rise, fall, or remain stable. When several months of above-average precipitation occur with cooler, cloudy conditions that cause less evaporation the levels tend to rise. Likewise, hot, sunny, windy weather and prolonged drought conditions result in lower water levels due to increases in evaporation and the decrease in inflows.

Why are inflows significantly decreased during drought? Because the ground is so dry that it acts like a sponge and absorbs rainfall before it can become runoff– which means less water reaching the lakes. In addition, the groundwater is typically reduced during a drought and it is not until the ground becomes resaturated that the runoff will significantly increase. This is why lake levels are not affected as much by rain during a drought as compared to under normal weather conditions; it can take many months of “normal” rainfall to build the inflows back up to their normal level.