

The Monsoon

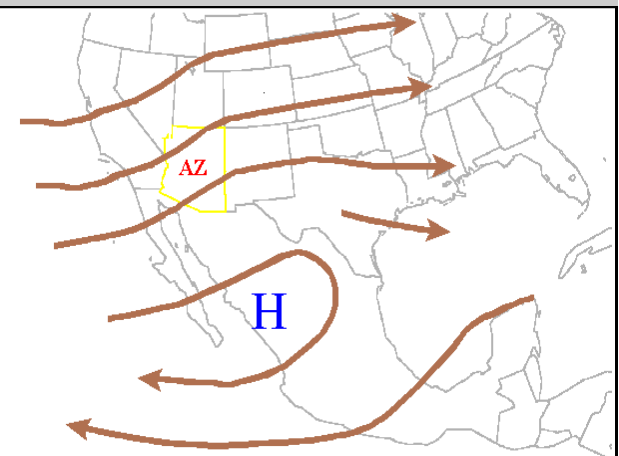
June 15 - September 30

The North American Monsoon is a regional-scale circulation that develops over southwest North America during the months of June through September. It is associated with a dramatic increase in rainfall that occurs over what is normally an arid region of North America.

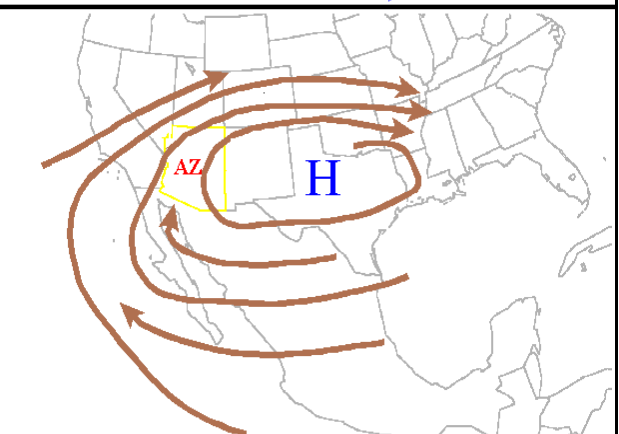
The term "North American Monsoon" is used because of similarities to the better known Southwest Asian Monsoon. The similarities between the two monsoons include a shift in the mid-level flow from westerly to easterly, the mean diurnal low-level flow changes from offshore to onshore, extremely hot and dry conditions preceding the onset of rainfall and a rapid increase in the areal coverage of rainfall during the early summer.

By July the 500 mb subtropical ridge normally shifts northward with the center of circulation located over west Texas and New Mexico. As a result easterly flow develops over northwest Mexico in the mid-levels and hot temperatures over the continent result in a general onshore flow in the low-levels. The shift in the 500 mb subtropical ridge is followed by a dramatic increase in thunderstorm activity over northwest Mexico. Arizona lies on the northern fringes of this area of enhanced thunderstorm activity. It is during this time that Arizona experiences periodic increases in moisture from the south and east that can lead to thunderstorms.

In early June the 500 mb subtropical ridge (18,000 feet above sea level) is located over northwest Mexico. As a result, the flow across Arizona is usually from the southwest. The hot and dry weather conditions experienced across Arizona during the month of June are a direct result of the position of the 500 mb subtropical ridge and dry southwest flow.



June Mean Flow at 18,000 Feet



July Mean Flow at 18,000 Feet