

---

September 11, 1990

## SCIENCE WATCH; Fires and Climate

LEAD: Specific climatic changes in the tropical Pacific appear to influence the occurrence of forest fires in the American Southwest, researchers are discovering.

Their findings, published in the Aug. 31 issue of the journal *Science*, highlight the intricate relations of ecosystem dynamics.

Changes in sea surface temperature and pressure around the Equator in the eastern Pacific go from one extreme to another every three to six years. El Niño is a massive strip of abnormally warm water that stretches westward from South America along the Equator. It periodically alternates with an abnormally cold stretch of equatorial water, sometimes called La Niña. These warm or cold phases take about two years to develop and play out, though each can vary in length and strength.

Scientists call the atmospheric changes that accompany these swings the southern oscillation. It has been found to precede weather patterns in the United States by one or more seasons. In the Southwest, El Niño tends to bring heavy precipitation, with La Niña ushering in unusual dryness. The pattern seems to be reversed in the Northwest, Professor Swetnam said.

Previous research found a significant relationship between El Niño and forest fires in the American Southeast over 57 years.

The new study, which looked at a much longer period in the Southwest, found that wildfires were associated with the southern oscillation about one-third of the time. The pattern is much stronger during extremely cold the 10 years with the most forest area burned, nine corresponded to La Niña. Among the 10 years with the least area burned, seven were preceded by El Niño.

The extensive fires in the Southwest in the early summer of 1989 were preceded by a dry winter and spring linked to La Niña in the tropical Pacific that developed in the fall of 1988.

Predicting the behavior of the southern oscillation could help officials better manage forest fires. In El Niño years, for example, Professor Swetnam said that it might be better to let naturally occurring forest fires burn themselves out, but in La Niña years, more caution might be necessary.

