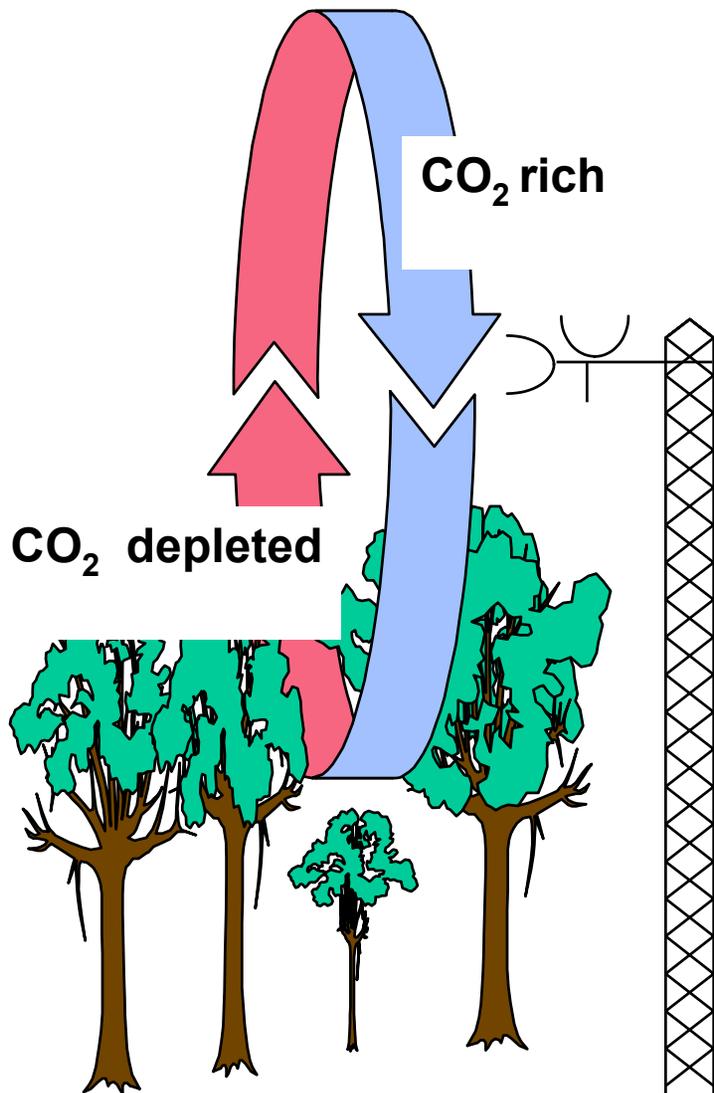


Mike Goulden

Department of Earth
System Science
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and Evolutionary
Biology

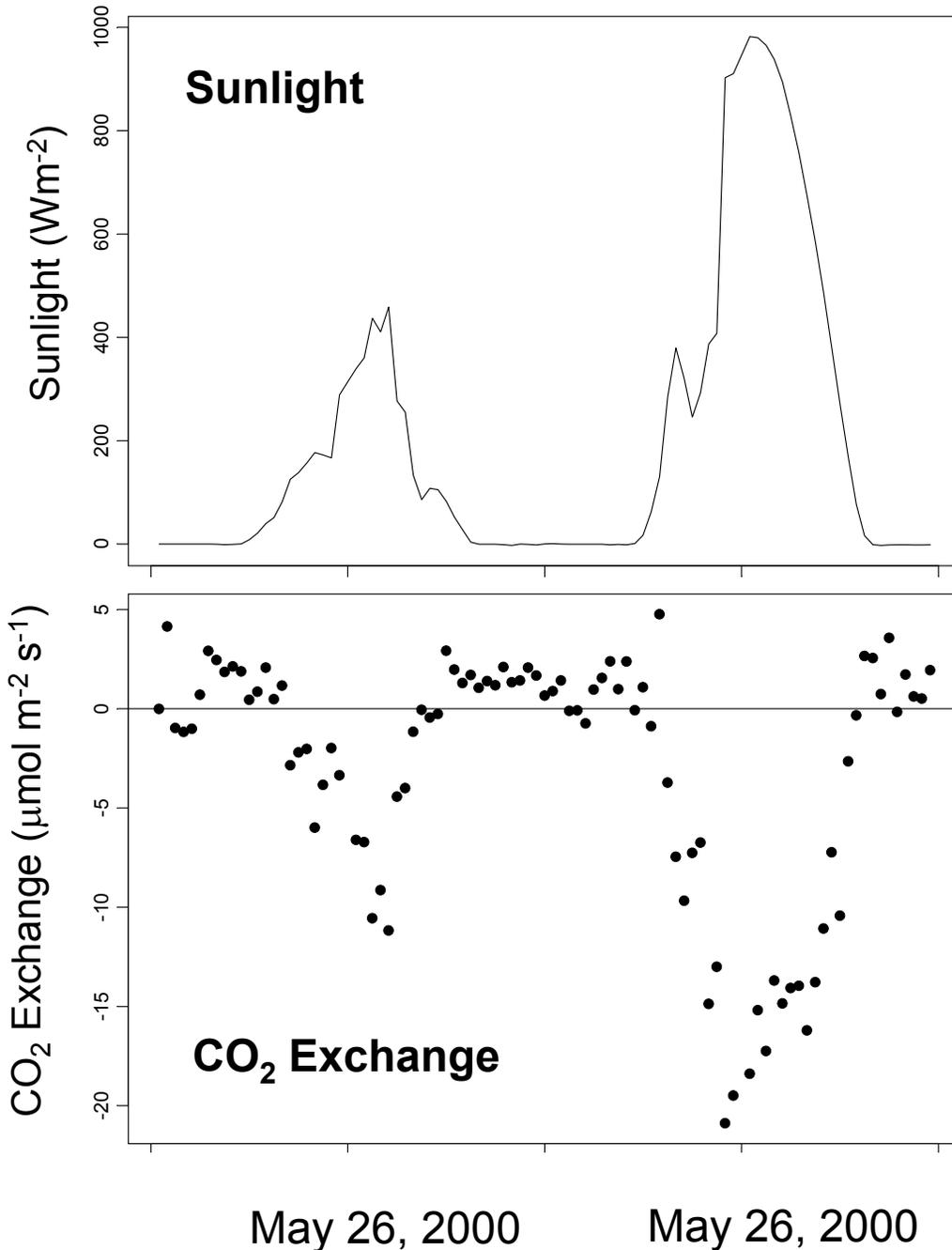
University of California,
Irvine



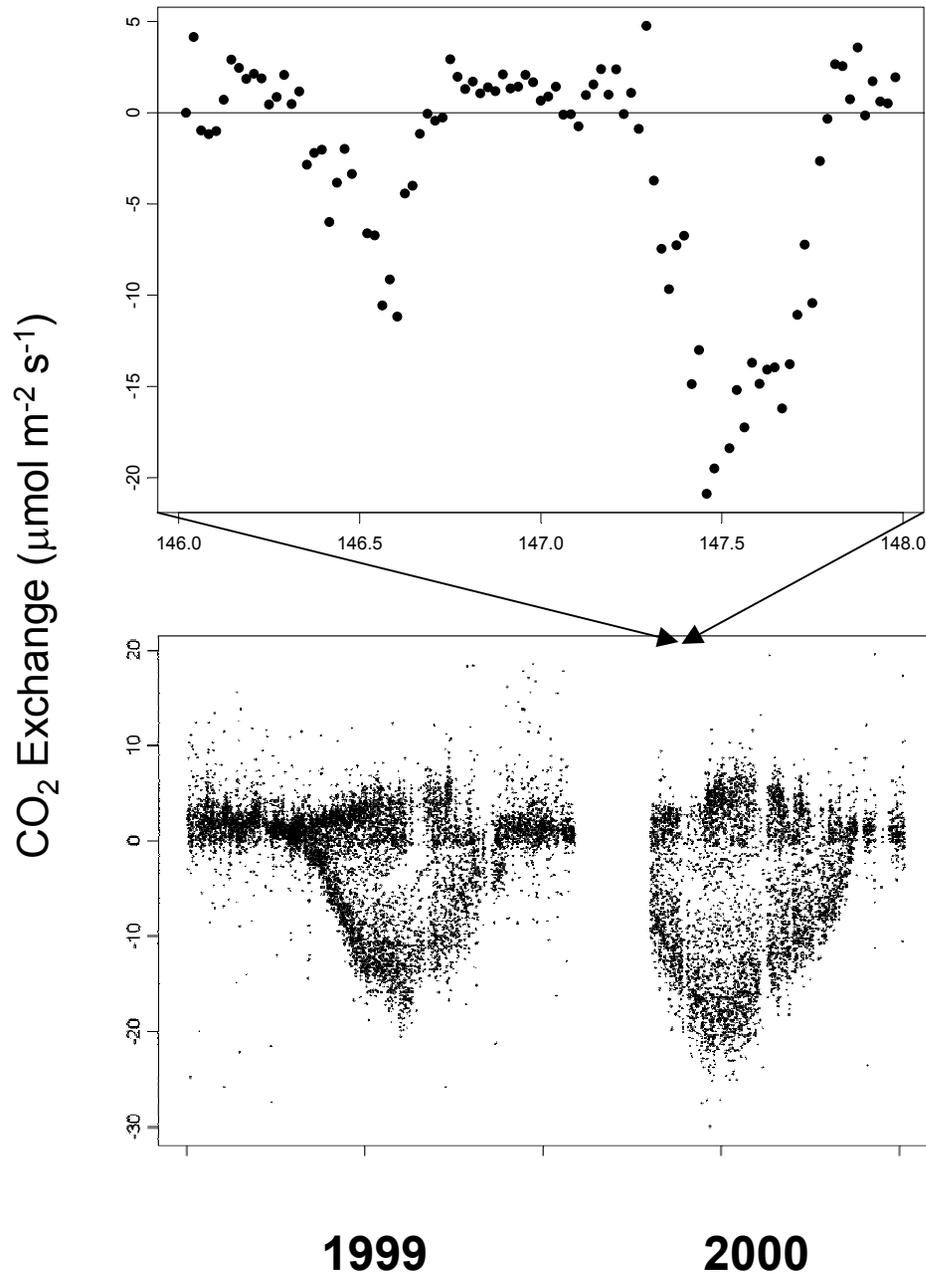


Eddy Covariance

Directly measure how much CO₂ blows in or out of a site in wind gusts.

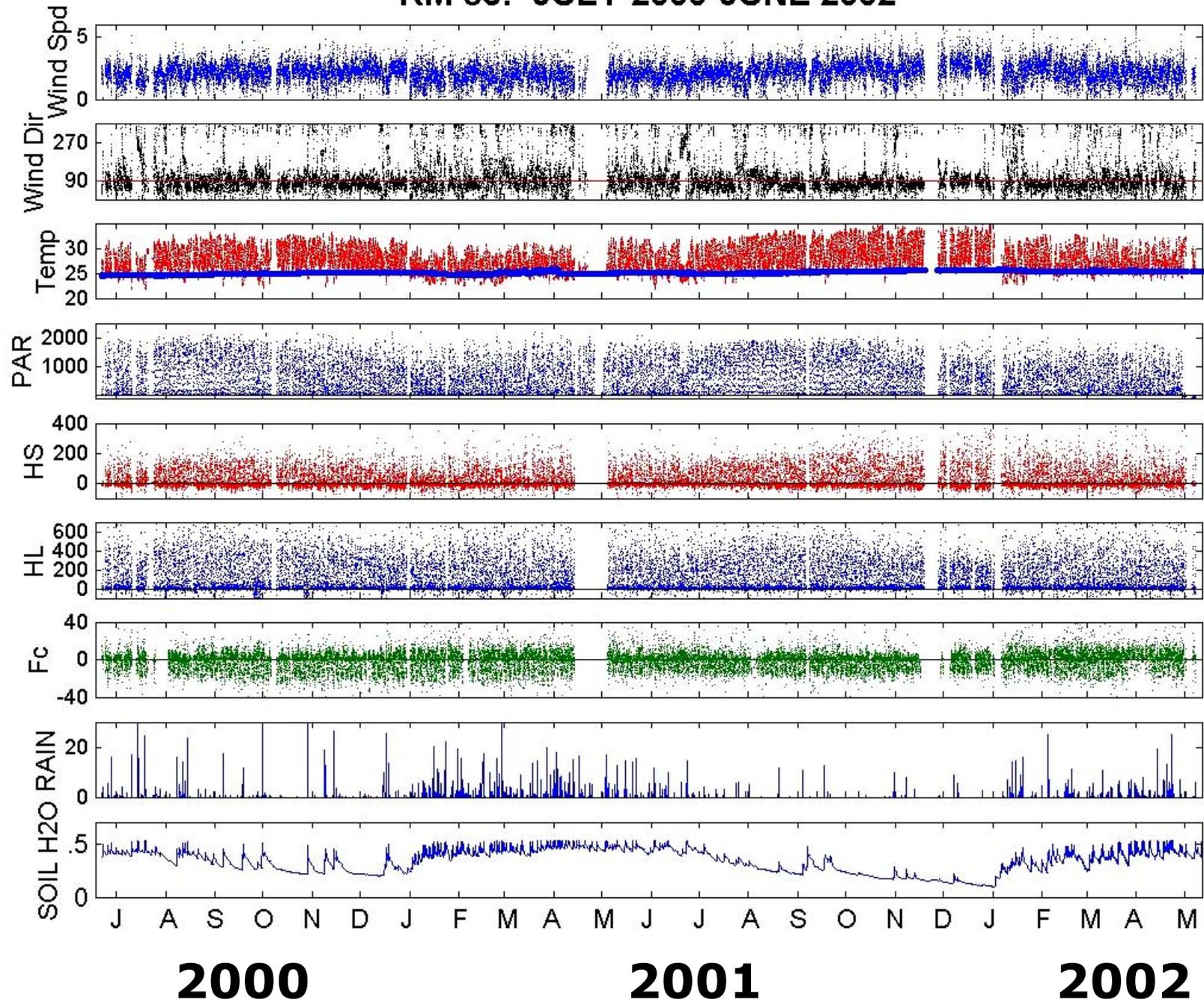


- The net CO₂ flux is calculated for each half hour from the measurements of vertical wind and CO₂ concentration.
- A positive flux indicates a net loss of CO₂ from the surface (respiration) and a negative flux indicates the net uptake of CO₂ (photosynthesis)



- The measurements continue 24 hours a day, year round.
- The seasonal patterns of CO₂ exchange coincide with the activity of the plants.

KM 83: JULY 2000-JUNE 2002



BOREAS NSA-Chronosequence Study



1989

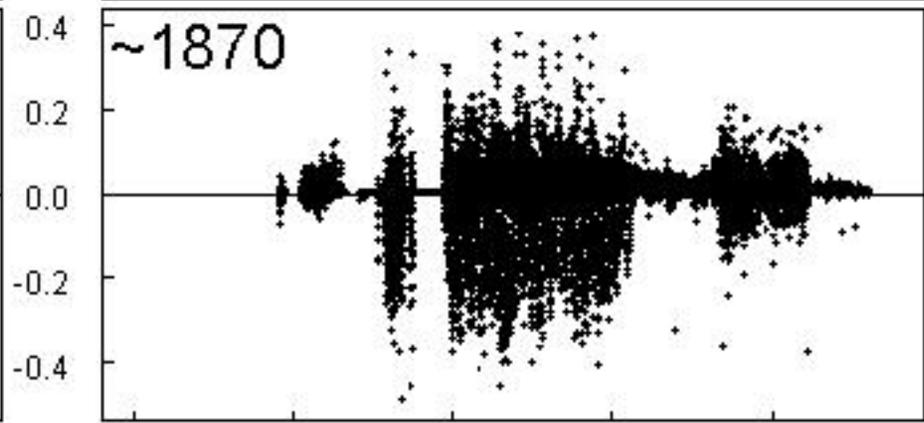
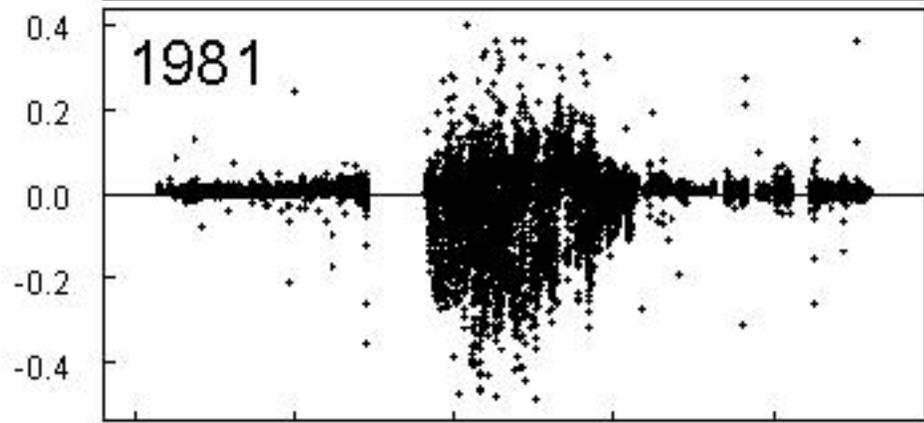
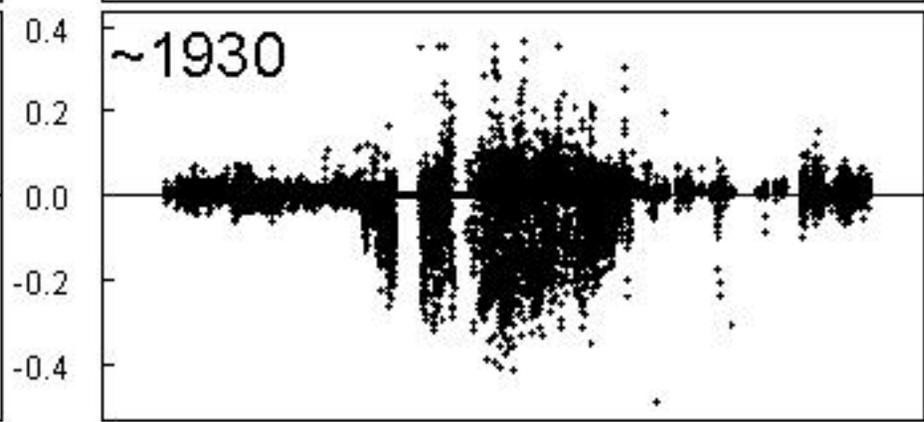
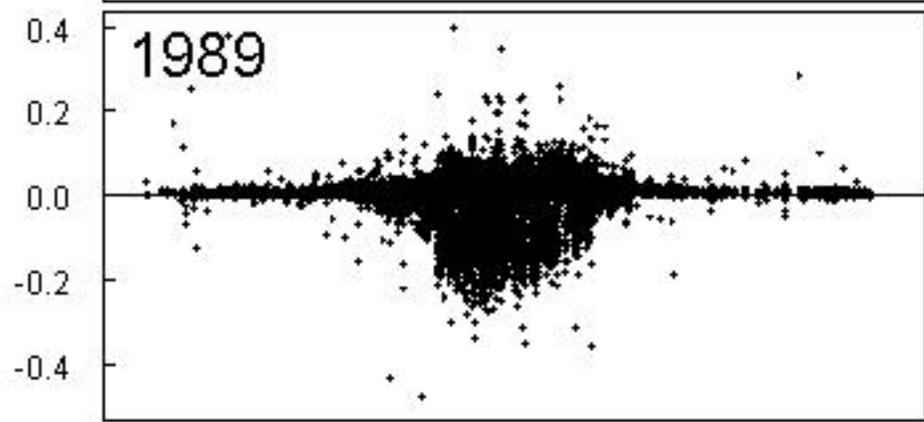
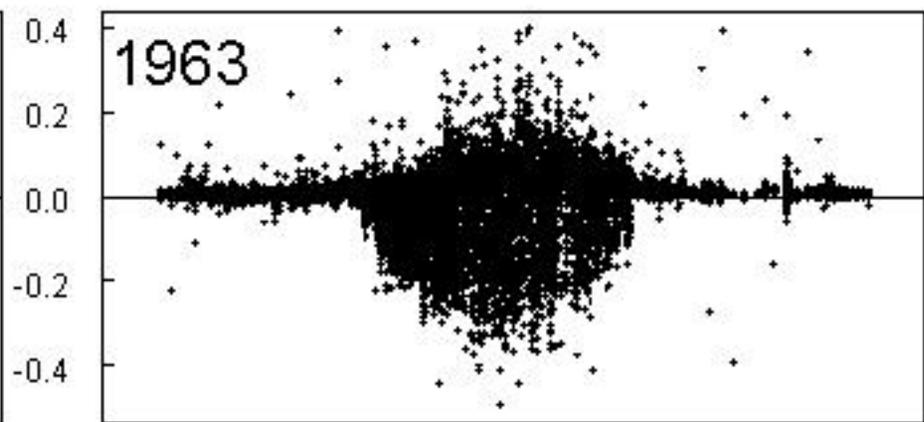
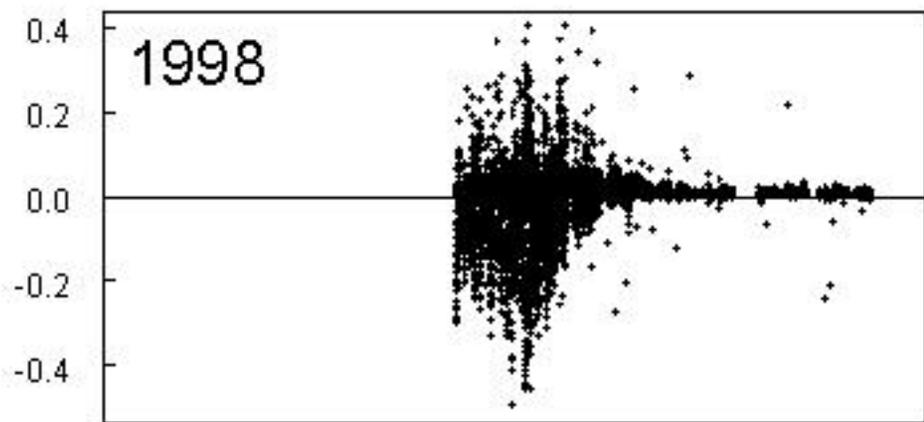
1981

1963

1934

1850





Jan 1 Apr 1 July 1 Oct 1 Jan 1

Jan 1 Apr 1 July 1 Oct 1 Jan 1

Plans

- Move some or all 6 towers now in Canada to Sierras in ~summer 2004. Deploy along elevation/climate/vegetation gradient.
- Measurements/research integrated with other methods and groups

Science questions

- Effect of environmental change on water and carbon budgets (e.g., fire suppression/forest thickening/climate/air pollution)
- Biophysical controls on land-surface climate (e.g., denser vegetation α darker surface α warming α greater growth)
- Plant physiological controls on distribution of vegetation and productivity