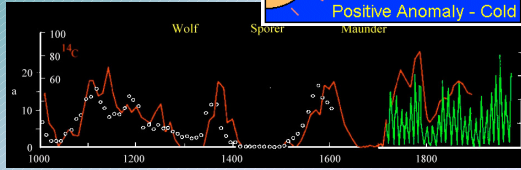
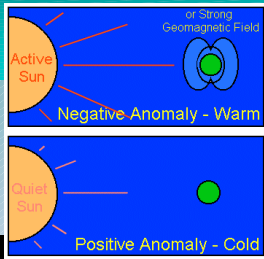
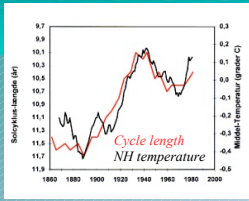
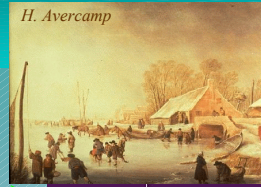


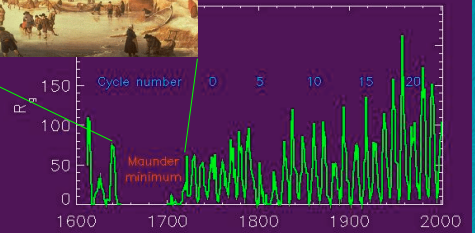
SUN - EARTH



SUN - EARTH



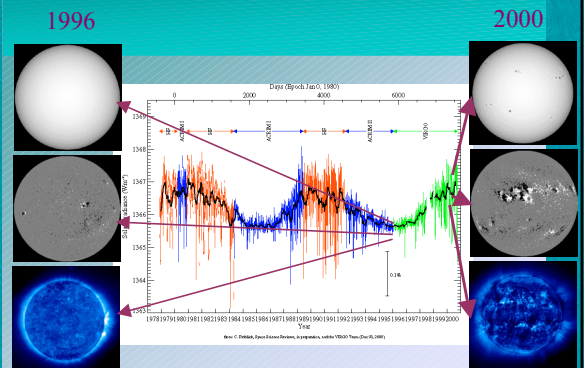
Correlations between solar activity and climate indicators



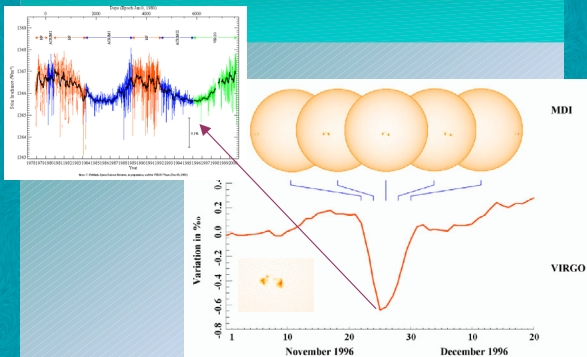
SUN - EARTH: Possible Mechanisms

- **Total irradiance variations:**
energy input into the Earth's atmosphere
- **UV irradiance variations:**
changes in stratospheric chemistry
- **Modulation of cosmic ray flux by solar magnetism:**
changes in cloud cover

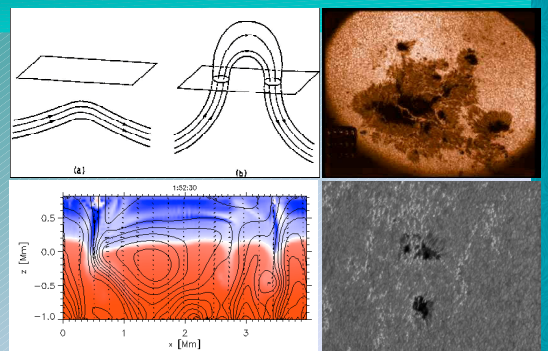
VARIABLE SUN



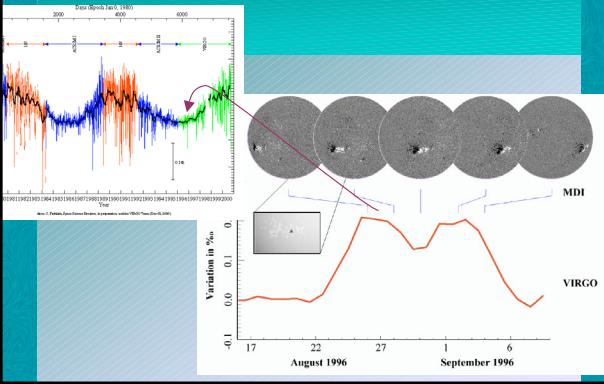
PASSAGE OF A SUNSPOT GROUP



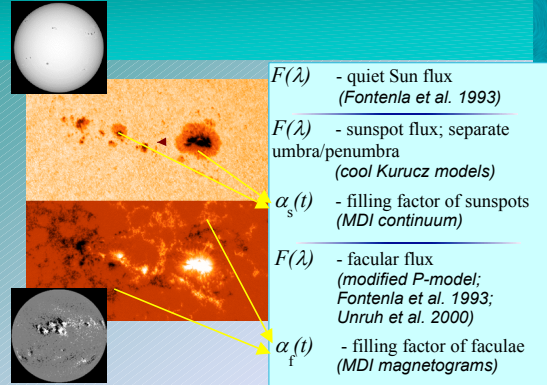
FLUX TUBES



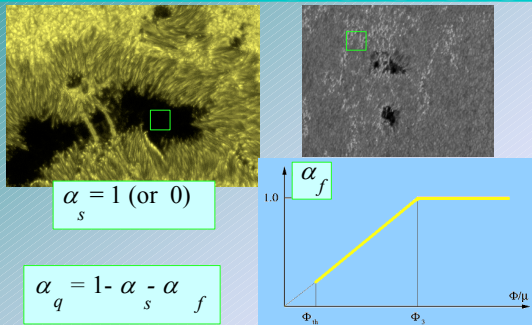
PASSAGE OF A FACULAR GROUP



3- COMPONENT MODEL



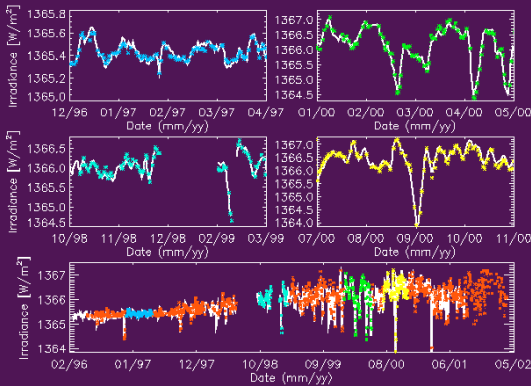
FILLING FACTORS



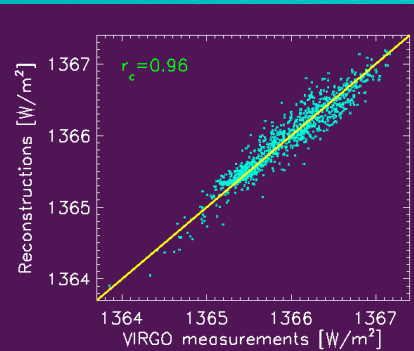
TOTAL FLUX

$$F(\lambda, t) = \alpha_s(t)F_s(\lambda) + \alpha_f(t)F_f(\lambda) + (1 - \alpha_s(t) - \alpha_f(t))F_q(\lambda)$$

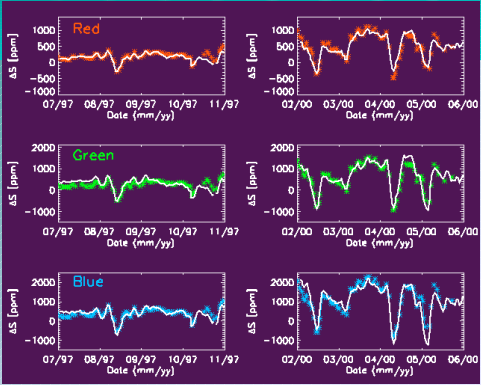
TSI: 1996 - 2001



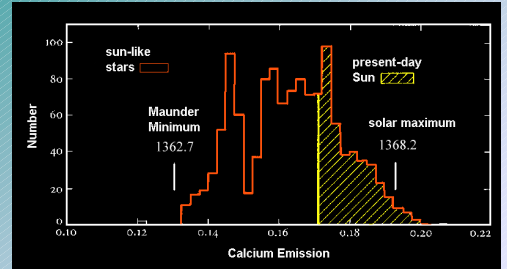
MODEL VS. OBSERVATIONS



SPECTRAL IRRADIANCE

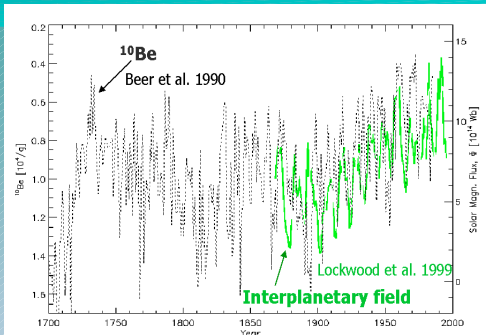


SECULAR CHANGE: Stellar Evidence

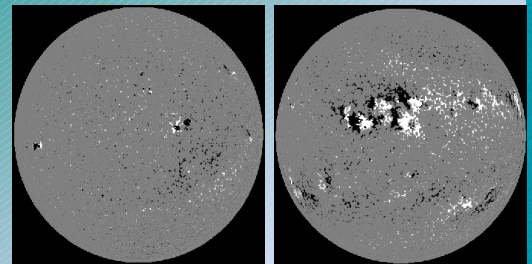


Baliunas & Jastrow 1990

SECULAR CHANGE: Heliospheric Evidence



SECULAR CHANGE: Heliospheric Evidence

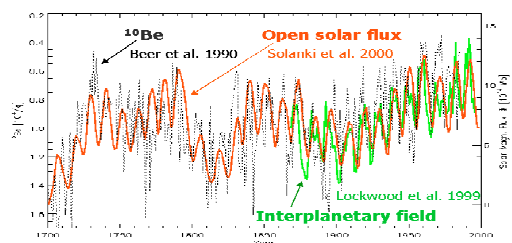


1996

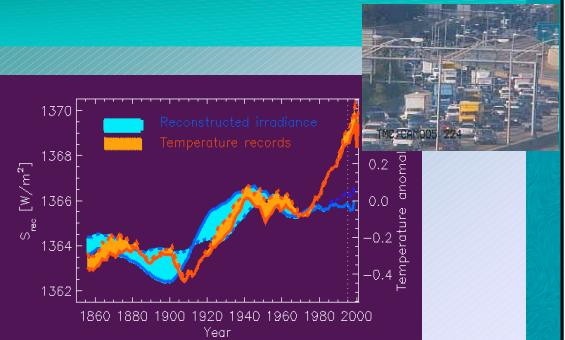
2000

SECULAR CHANGE: Heliospheric Evidence

Reconstruction of the open flux back to 1700



SOLAR VARIABILITY AND CLIMATE



Solanki & Krivova 2002