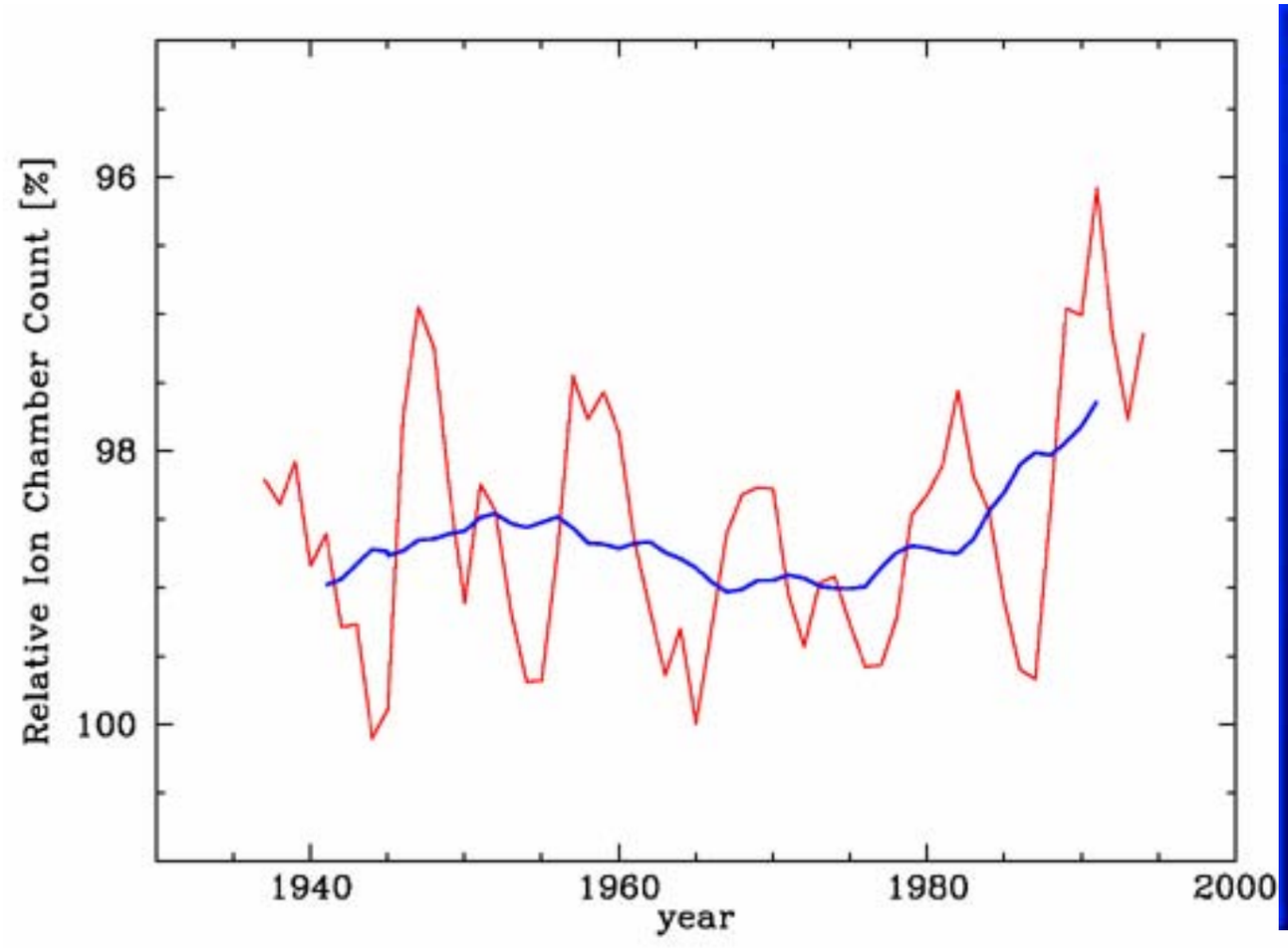
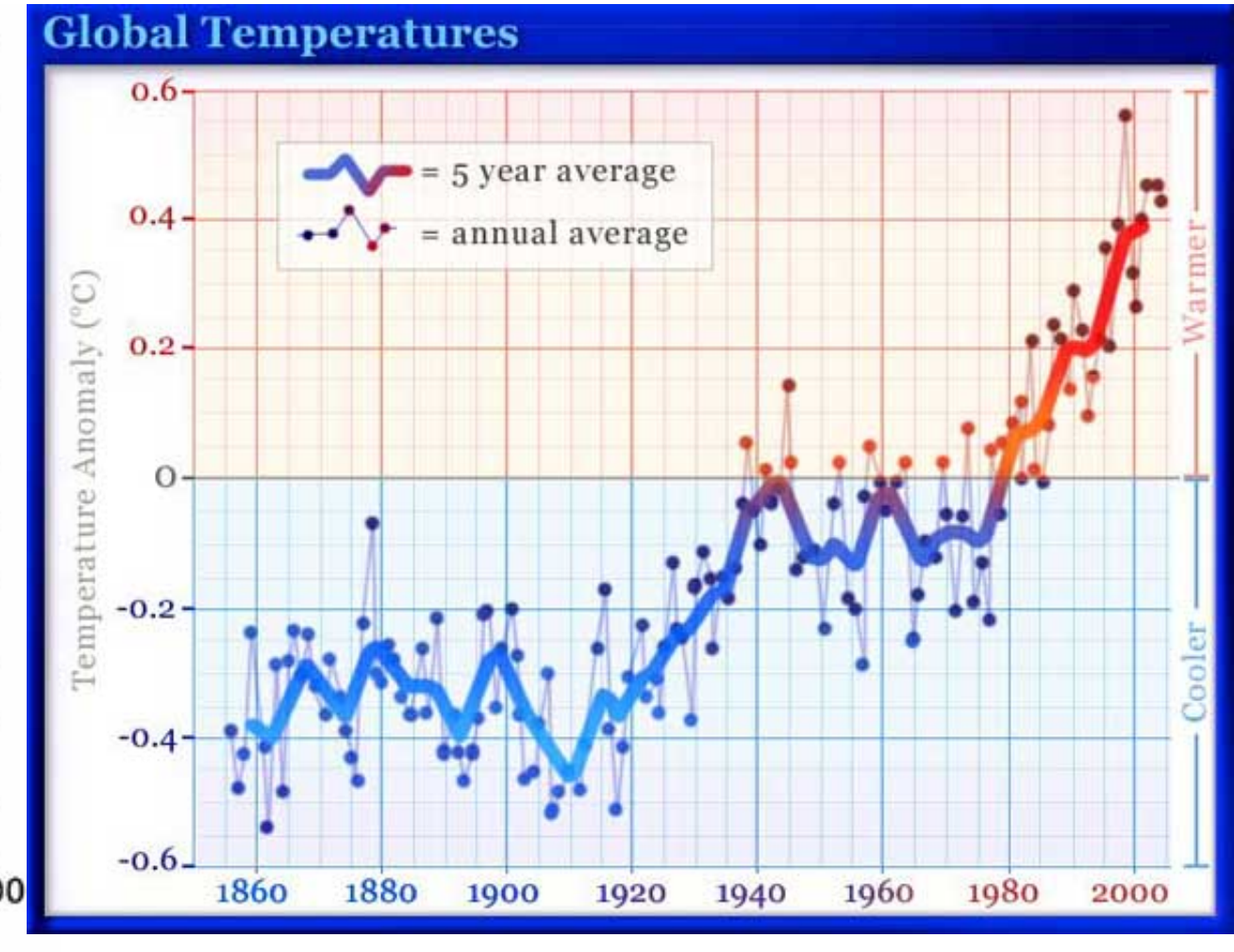
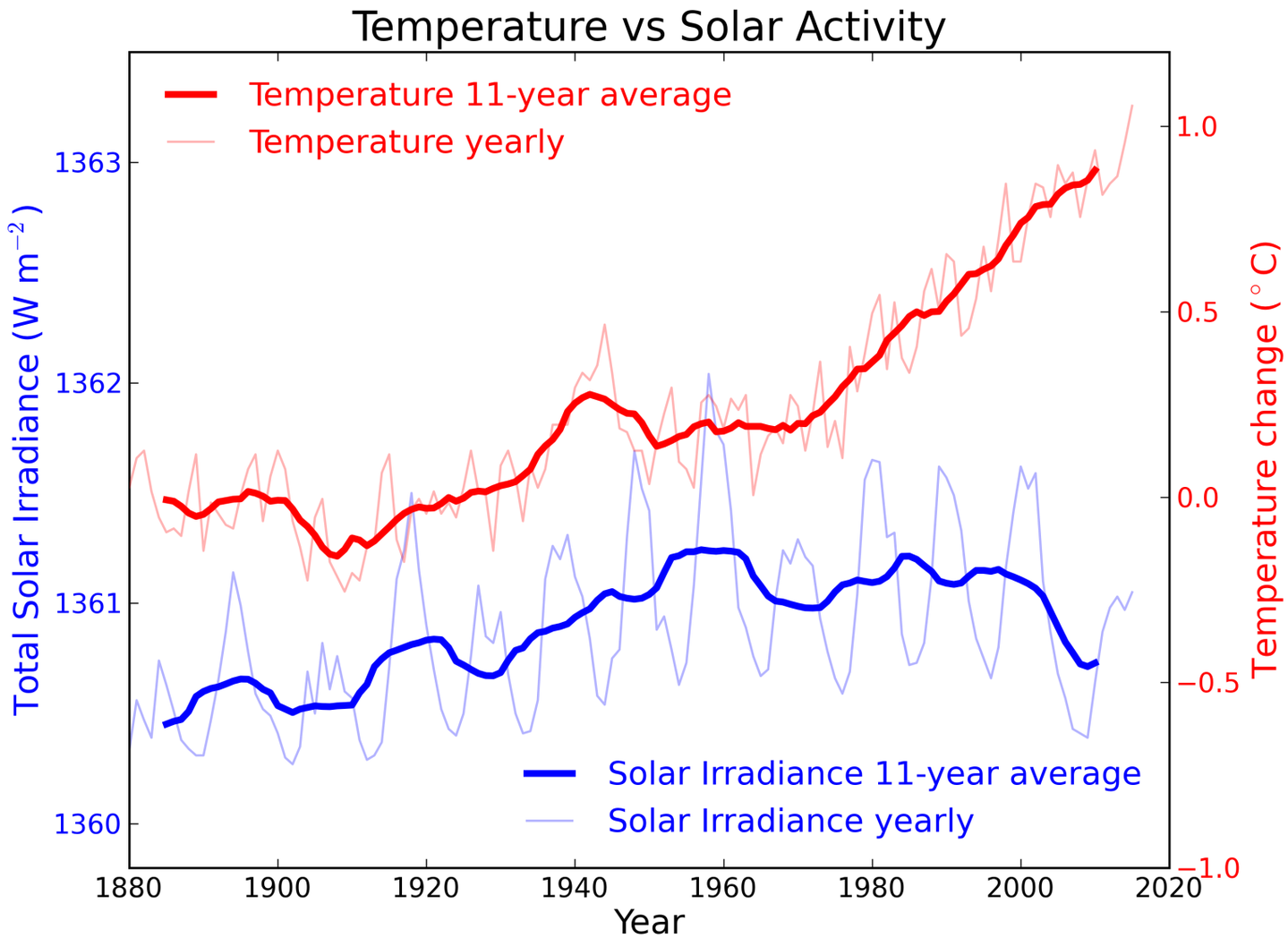
Global temperature vs cosmic rays





From Shaviv blog: Fig. 6: The flux of cosmic rays reaching Earth, as measured by ion chambers. Red line - annual averages, Blue line - 11 yr moving average. Note that ion chambers are sensitive to particles at relatively high energy (several 10's of GeV, which is higher than the energies responsible for the atmospheric ionization [~10 GeV], and much higher than the energies responsible for the ^{10}Be production [~1 GeV]). Plot redrawn using data from Ahluwalia (1997). Moreover, the decrease in high energy cosmic rays since the 1970's is less pronounced in low energy proxies of solar activity, implying that cosmogenic isotopes (such as ^{10}Be) or direct solar activity proxies (e.g., sun spots, *aa* index, etc) are less accurate in quantifying the solar → cosmic ray → climate link and its contribution to 20th century global warming.

an update (skepticalscience.com)



https://skepticalscience.com/solar-activity-sunspots-global-warming.htm

Figure 1: Annual global temperature change (thin light red) with 11 year moving average of temperature (thick dark red). Temperature from NASA GISS. Annual Total Solar Irradiance(thin light blue) with 11 year moving average of TSI (thick dark blue). TSI from 1880 to 1978 from Krivova et al 2007. TSI from 1979 to 2015 from the World Radiation Center (see their PMOD index page for data updates). Plots of the most recent solar irradiance can be found at the Laboratory for Atmospheric and Space Physics LISIRD site.