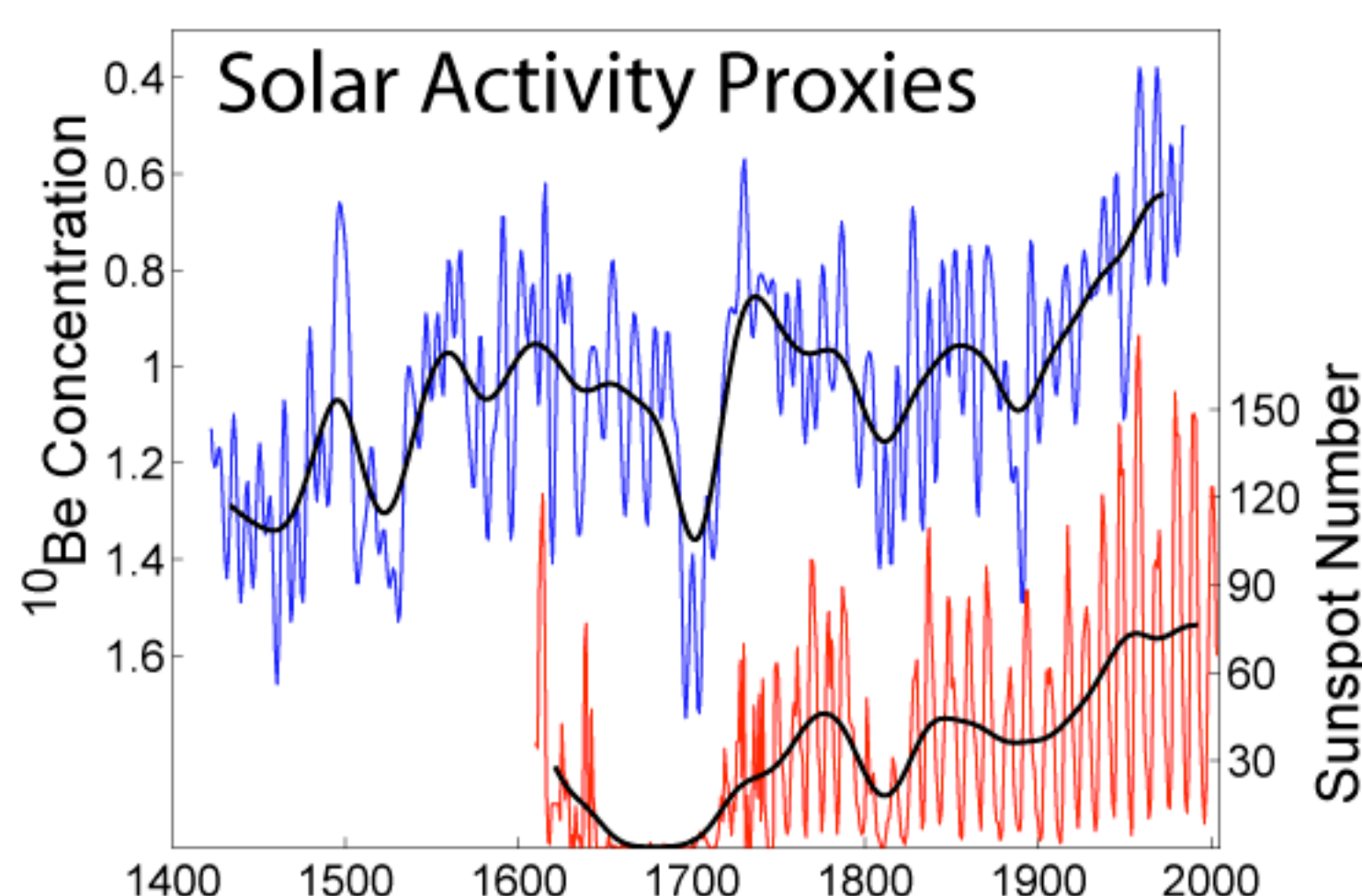


# File:Solar Activity Proxies.png

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[Solar\\_Activity\\_Proxies.png](#) (559 × 361 pixels, file size: 29 KB, MIME type: image/png)

## Description

[[edit](#)]

This figure shows two different proxies of [solar activity](#) during the last several hundred years. In red is shown the Group [Sunspot Number](#) ( $R_g$ ) as reconstructed from historical observations by Hoyt and Schatten (1998a, 1998b) [1]. In blue is shown the [beryllium-10](#) concentration ( $10^4$  atoms/(gram of ice)) as measured in an annually layered [ice core](#) from Dye-3, [Greenland](#) (Beer et al. 1994).

Both of these proxies are related to solar magnetic activity. Sunspots are darker, cooler regions of the sun's surface associated with high magnetic flux. Higher numbers of sunspots indicate a more active sun with stronger and more complicated magnetic fields. The dominant change in sunspots reflects the quasi-11 year [solar magnetic cycle](#). The quiet period observed from 1645 to 1710 is known as the [Maunder Minimum](#) and is associated with a near zero abundance of sunspots.

Beryllium-10 is a [cosmogenic isotope](#) created in the [atmosphere](#) by galactic [cosmic rays](#). Because the flux of such cosmic rays is affected by the intensity of the [interplanetary magnetic field](#) carried by the [solar wind](#), the rate at which Beryllium-10 is created reflects changes in solar activity. A more active sun results in lower beryllium concentrations (**note inverted scale on plot**). Since the atmospheric residence time for beryllium is not more than a few years, it is also possible to resolve the solar magnetic cycle in beryllium concentrations. Beryllium measurements, such as these, are the best evidence that the solar magnetic cycle did not cease even during the period with no evident sunspots.

The dark curves are 30 year averages of the data.

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- [http://www.globalwarmingart.com/wiki/Image:Solar\\_Activity\\_Proxies.png](http://www.globalwarmingart.com/wiki/Image:Solar_Activity_Proxies.png)

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## References

[[edit](#)]

- Hoyt, D. V., and K. H. Schatten (1998a) Group sunspot numbers: A new solar activity reconstruction. Part 1. *Solar Physics* , 179, 189-219.
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