

Hayasaka, T., 2016: The long-term variation in surface shortwave irradiance in China and Japan: A review. *J. Meteor. Soc. Japan*, **94**, 393-414.

<https://doi.org/10.2151/jmsj.2016-024>

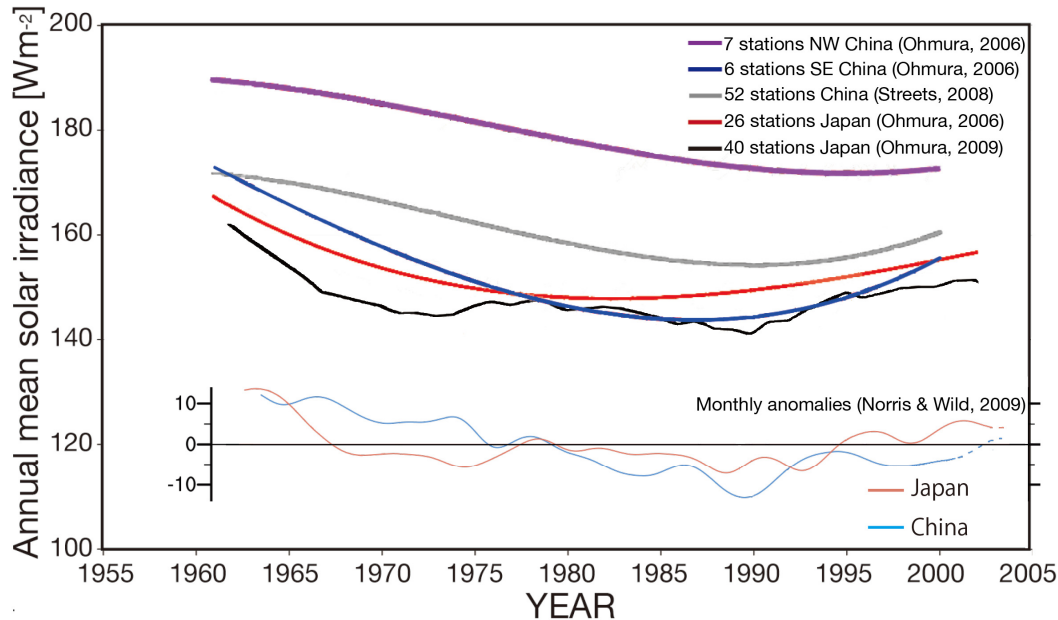


Figure 2. The long-term variations in the surface shortwave irradiance averaged over China and Japan. It indicates that a recovery in shortwave irradiance occurred earlier in Japan than in China. The decreasing trend changed around 1990 in China, while the long-term trend was small during the 1970s and 1980s in Japan.

- We reviewed the long-term trends and inter-annual variations in surface shortwave irradiance in China and Japan. Pyranometer observations indicated a decrease followed by an increase in shortwave irradiance in China and Japan during the period from the 1960s to 2000s, while obvious long-term trends were not found from satellite observations after 1983.
- In China, surface shortwave irradiance decreased from 1961 to around 1990, but then began to increase. In Japan, on the other hand, the decreasing trend stopped in the 1960s, with little inter-annual variation during the 1970s and 1980s, and an increase that began around 1990.
- The causes of the difference in shortwave irradiance trends between China and Japan were ascribed to an increase in light-absorbing aerosols in China since the 1960s and a decrease in absorbing aerosols in Japan since the late 1970s. Although these aerosol influences are generally found under clear-sky conditions, absorbing aerosol could have a direct effect even under cloudy-sky conditions.