

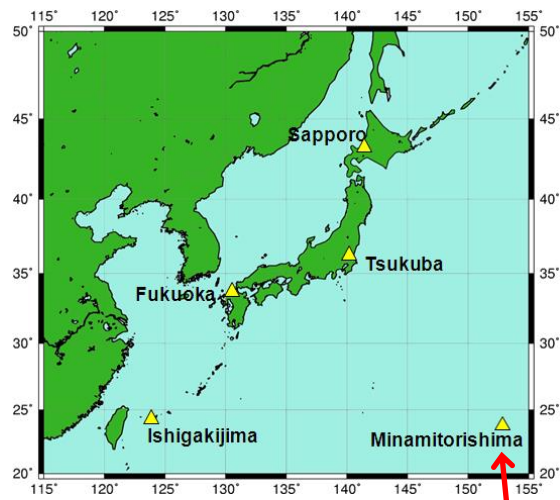
# Status of Japanese BSRN stations

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## Status of stations

JMA operates 5 BSRN stations in Japan (Sapporo, Tsukuba, Fukuoka, Ishigakijima and Minamitorishima) and 1 station in Antarctica (Syowa). Observation data are reported regularly to WRMC every month. The exterior of domes or optical surfaces of each instrument is kept clean manually or automatically. The instruments are calibrated at least every 5 years to be traceable to the world radiation references such as WRR.



Minamitorishima is a small island on the western North Pacific with a coast line of about 6 kilometers, and designated one of the WMO/GAW global stations.

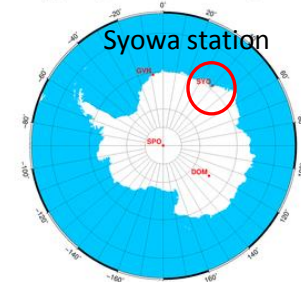


Syowa station was designated as a BSRN station in 1991, and has been conducting observation of the BSRN basic set of parameters. In addition, upward flux observation started in 1998. At present, Observation data from 1991 to January 2015 are available at WRMC. The height of instruments for upward radiation can be easily adjusted at appropriate height from the surface.

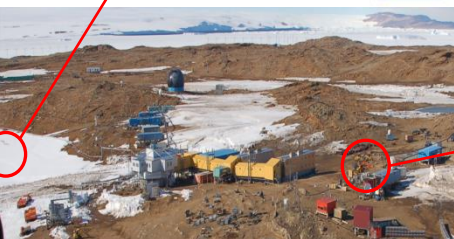
## Upward flux



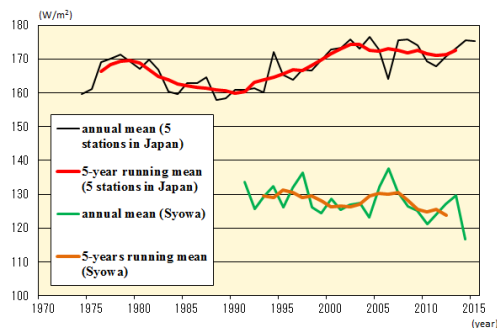
Running, planned, and closed BSRN Stations, March 2015



## Downward flux

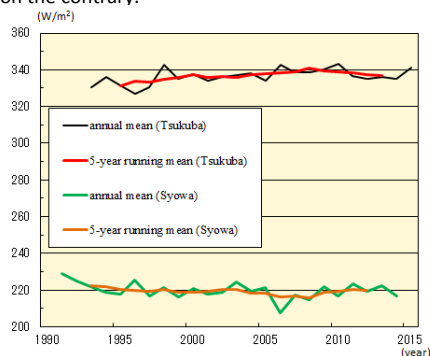


## Time-series at Japanese BSRN stations



Time-series representations of annual and five-year-running means of global solar radiation.

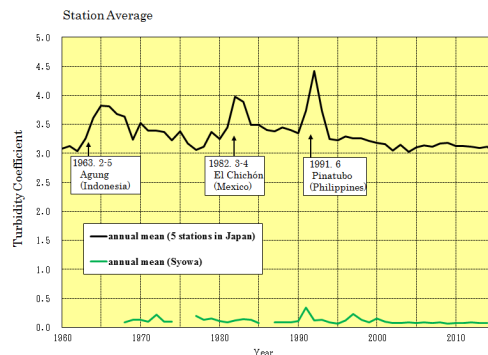
In Japan, global solar radiation declined rapidly from the late 1970s to around 1990 before increasing rapidly from around 1990 to the early 2000s. Since then, observations at the five stations show no obvious changes. These long-term variations are consistent with global trend. At Syowa, it has been declining gradually from the late 1990s on the contrary.



Time-series representations of annual and five-year-running means of downward infrared radiation at Tsukuba and Syowa.

At Tsukuba, downward longwave radiation shows an increasing trend at a rate of about 0.3 W/m<sup>2</sup> per year during the period from 1993 to 2015. This is consistent with the trend seen in the results of analysis using data from 20 BSRN stations worldwide (+0.3 W/m<sup>2</sup> per year during the period from 1992 to 2009) (\*WCRP, 2010). At Syowa, there is no obvious change on the other hand.

\*Reference  
WCRP, 2010: Summary Report from the Eleventh Baseline Surface Radiation Network (BSRN) Scientific Review and Workshop. WCRP Informal Report No. 08/2010, 21 pp.



Time-series representation of annual mean atmospheric turbidity coefficients calculated from direct solar measurements (1960 - 2015 for 5 stations in Japan, 1968 - 2014 for Syowa). Interannual variations in the atmospheric turbidity coefficient at five stations in Japan show sudden increase of stratospheric aerosols resulting from volcanic eruptions.