

Brief Report of the IRC Working Group BSRN - Baseline Surface Radiation Network

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Current Status/Objectives/Activities

BSRN is a project of the Global Data and Assessments Panel (formerly the Radiation Panel) from the Global Energy and Water Cycle Experiment GEWEX under the umbrella of the World Climate Research Programme (WCRP) and as such is aimed at detecting important changes in the Earth's radiation field at the Earth's surface which may be related to climate changes. BSRN is designated as the global surface radiation network for the Global Climate Observing System (GCOS) and contribute to the Global Atmospheric Watch (GAW).

In September 2011, BSRN and the Network for the Detection of Atmospheric Composition Change (NDACC) have reached a formal agreement to become cooperative networks. This action was initiated with an invitation from NDACC to BSRN to become a Cooperating Network with the NDACC program. This relationship is intended to help promote the mutual interests of the two networks, which include modification of the Earth's radiation budget by the natural and anthropogenic related variations in the composition of the atmosphere. The modes of operation of the two networks will remain the same with an emphasis on the cross reference and mutual access to the networks' data bases.

At the moment 54 stations in contrasting climatic zones, covering a latitude range from 80°N to 90°S have provided data to the World Radiation Monitoring Center (<http://www.bsrn.awi.de/>), the central archive of the BSRN located at the Alfred Wegener Institute (AWI) in Bremerhaven, Germany. BSRN data are interactively available to external users for bona fide research purposes at no cost.

Central quality checks of the BSRN data at the archive restarted in 2012. Those checks are based on the BSRN Global Network recommended QC tests, V2.0 from C. N. Long and E. G. Dutton implemented in the BSRN-Toolbox (http://wiki.pangaea.de/wiki/BSRN_Toolbox).

The 12th meeting of BSRN is schedule for 1-3 August 2012. The meeting will be hosted by the Alfred Wegener Institute (AWI) Research Unit at the Albert Einstein Science Park in Potsdam, Germany. The BSRN meeting is coordinated in time with the nearby International Radiation Symposium 1212.

Research Results

Data from the BSRN are used in many publications to:

- monitor the background (least influenced by immediate human activities which are regionally concentrated) short-wave and long-wave radiative components and their changes with the best methods currently available
- provide data for the validation and evaluation of satellite-based estimates of the surface radiative fluxes and
- produce high-quality observational data for comparison to climate model (GCM) calculations and for the development of local regionally representative radiation climatologies

Additionally, the archive gets used more and more in the framework of solar energy research. A list of publication which bases on BSRN data can be found at <http://www.bsrn.awi.de/en/other/publications/>.

Recommendations for: A. IRC B. IAMAS and/or C. Other Groups

The BSRN desires IRC recognition of the importance of, and endorsement for, the establishment and maintenance of stable international consensus measurement reference standards for the various components of the broadband surface radiation budget. Exemplary related efforts are underway at the World Radiation Center in Davos, Switzerland but need the continued support and sanction from the scientific community. BSRN also seeks strong advocacy from the IRC for the development and continued operation of ground-based surface radiation measurement sites in developing countries and remote regions of the earth.

Plans

Additional stations have petitioned to join the BSRN and may soon be adequately certified. The central data quality check at the BSRN archive will be improved to further standardize and optimize the quality of the available archived data.