Summary Background: The BSRN project was conceived by the WCRP Working Group on Radiative Fluxes in 1988 to address extensive concerns about the overall lack of high-quality, globally-remote and diverse, in-situ, surface irradiance observations. After four years of preparation within WCRP for an on-going continuous observational program, the BSRN began operations in 1992. Nine qualified observing sites submitted solar and infrared surface irradiance data for that year. The program continues today and has grown in size and reach, having now received data from 56 stations and is serving as an affiliated global surface radiation network for multiple additional organizations as indicated by the logos above. NDACC was added in 2011.

BSRN Station Status, Sept. 2011

BSRN Field Observations

- Spectrally selected irradiances
- Primary (required)
  - Direct-beam solar
  - Diffuse-sky solar
  - Diffuse-sky downward thermal IR
  - Total (global) downward solar
- Secondary (highly recommended)
  - Upwelling (reflected) solar
  - Upwelling thermal IR
  - Surface meteorological variables
  - Upper-air soundings (neary)
  - Sat. precip. observations
  - Cloud base height

Data Acquisition, Processing and Archival

- BSRN established and provided standardized specifications and recommendations for field data collection.
- Individual Site Scientists are responsible for the acquisition, processing, and quality assurance of the data.
- Irradiances and most other observations are sampled near 1-h with 1-minute averages recorded and scaled.
- The scaled data calibrated relative to international calibration reference standards, some developed as a direct result of the needs of BSRN.
- Data are archived to the central BSRN archive (now at ETHE, now NAU) for review and distribution.
- The Archive-qualified data (here) has been useful. Nonetheless, users are urged to review the retrieved data for suitability to their applications, and establish contact with the Site Scientist responsible for the data.

Data Availability and Quality

Below are station-months (by year) of 1-3 minute avg. downward irradiances available from archive as of 4 Oct 2011 (www.bsrn.de).

BSRN Field Observations

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Applications and Results

Example BSRN Data Applications

- Satellite product validation/comparison
- Radiative transfer model comparisons
- Surface energy budget studies
- Local and regional climatologies

Satellite Product Validation and Comparisons

Climate Model comparisons

- Climate Model Approach BSRN Downwelling IR Results (global means)

Radiative Transfer model studies

References and bibliography

See next page for additional references on a reasonably complete list of 12 publications and reports.