

SONDA - National Network of Environmental Data for Renewable Energy Resource Assessment

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The main purpose of the project SONDA is to expand the national capacity to develop and improve models for solar and wind resource assessment. One of its chief tasks is to provide high quality environmental data through the setup and development of a national network of environment ground data acquisition stations positioned in characteristic climatic regions of Brazil. At the same time, the project will bring together the existing national expertise and infrastructure in meteorology and climatic modeling to develop specific models for the assessment of the renewable energy resources in Brazil.

The SONDA project was conceived during the initial implementation phases of project SWERA when it was realized that the national infrastructure of data acquisition necessary for the assessment of our solar and wind energy resources was very poor. Furthermore, it was recognized that most of the established national expertise in climatic and meteorology modeling did not respond to the specific demands from the energy sector. Under this scenario, the SONDA project was implemented in 2001.

SONDA network is an upgradable and expandable system of ground stations for solar, wind, and meteorological data acquisition intended to match the best standards for monitoring environmental data. The stations are composed of first grade radiometers for direct, diffuse and global radiation measurements collocated with ancillary instrumentation for basic meteorological measurements and others such as sun photometers, all-sky cameras and 50 m anemometric towers. The network is supervised by INPE-CPTEC and managed in cooperation with local partners. At the present stage, this network is composed of four different categories of stations. Fifteen standard solar stations, two BSRN-WMO (Baseline Solar Radiation Network – World Meteorological Organization) and five reference stations both for solar and wind monitoring representing essentially the five most representative climatic environments prevailing in Brazil. Besides those there are four anemometric towers specifically set up to give support to the wind activities of SWERA in Northeast Brazil. Some solar stations are already in transition or already joined international monitoring programs such as the BSRN and the AERONET (AEROSOL ROBOTIC NETWORK) that ensures both data quality and worldwide dissemination. Others are easily upgradeable to this stage in the near future pending on additional funding.

Most stations have direct Internet access for better control. The network makes the use of same hierarchy as Internet networks. Large capacity of local storage and redundant data collection to local and central control center increase data collection reliability. Besides, the network has a flexibility to communicate through Internet, satellite, cellular, radio or serial to reduce data loss and increase fault tolerance during data acquisition. The network is also capable of being upgraded as communication technology advances. The central data qualification, archiving and distribution site is located in at CPTEC-INPE, Cachoeira Paulista and data will soon be freely available to users worldwide through the SONDA website (www.cptec.inpe.br/sonda). A brief description covering the technical details of the network will be provided during this workshop.