



Radar networking in the South-southeast Brazil - The SINAL-SOS Project

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The Meteorological Research Institute (IPMet) of the São Paulo State University (UNESP) has been monitoring the three-dimensional structure of thunderstorms, since 1992 and 1994, respectively, using two S-band Doppler radars in the central and western part of the State of São Paulo. Recently a research opportunity was called to develop tools that could be deployed for monitoring larger areas of the country where existing meteorological radars could be integrated, primarily in the south and southeastern regions of Brazil. Limited funds for radar hardware and to establish communications for data dissemination were also included and made available in the project. The Meta 2 of the project is designed to integrate the currently existing nine radars in the region to supply infrastructure in support of Aviation, Civil Defense and many other sectors of society. In short, it should provide a technical platform whereby radar data in polar format are exchanged in real time and then processed according to local needs, using algorithms incorporated in the TITAN (Thunderstorm Identification Tracking Analysis and Nowcasting) system. The technology already exists and is freely available, which will allow the radar community to step forward quickly. Therefore it is proposed that one of the tools presently used by IPMet for monitoring and warning of storm systems with their radars, viz. the latest version of NCAR's (National Center for Atmospheric Research) TITAN Software, should be deployed to mosaic these nine radar systems, six of them being operated by the Brazilian Air Force using the GAMIC data format, while the other three, two of IPMet and one of Simepar, are using the SIGMET data format.

For this pilot study, the TITAN system was successfully deployed to compose the integrated network of radars during a period of six days, from 01 to 06 April 2010, when severe weather had resulted in widespread damage, with many people losing their lives due to mudslides in the State of Rio de Janeiro. Each individual data set was first converted to a TITAN readable format, named MDV (Meteorological Data Volume) file format. After this first step, they were integrated into one full volumetric data set for all eight available radar data (Simepar volumetric data was not available in time). The possibility of selecting areas of interest within the mosaic for a more detailed picture of storms developing and advancing, as well as performing storm analysis, are some of the highlights of deploying TITAN, which certainly is a major step forward in establishing a radar network in the south-southeast of Brazil.