
RADAR MIT: Characteristics of Mesoscale Convective Systems over Sahel and relationships with land surface conditions (vegetation) using a C-band Radar

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Résumé

During the AMMA Special Observing Period in the summer of 2006, the forecasting tools and the synthetic analyses and forecasts performed at ACMAD were prepared using all available information, both land and space based, i.e. NWP model output, synoptic and satellite observations. One extra observational tool that added much value to weather analyses and forecasts was the MIT radar. We proposed to maintain the MIT radar in Niamey (Niger) considering that there are many features which can be seen on a radar image, but not on a satellite image and which can be very useful in weather analysis and forecasting. No one rain season is exactly the same as another. An additional one year of radar deployment would provide very useful material for our understanding of rain producing systems. A combination of the satellite and radar provides a wealth of information, which would be incomplete with only one of the two systems: vertical distribution of rain droplets and movement characteristics or shape of radar echoes may indicate the potential for severe weather (large hail, damaging winds and/or very heavy rain). Moreover, a very slow moving cell or the repeated passage of a number of cells over a particular location could indicate potential for flash flooding. The maintenance of the radar deployed during AMMA SOP contributed greatly to the improvement of forecasts and Early Warning Systems. This initiative, endorsed also by the Niger Meteorological Office in the frame of RIPIECSA also targeted some studies aimed at improving our understanding (1) of precipitating systems, rainfall variability at small scales (2) of diurnal cycle, life cycle of deep convection in combination with satellite images, and (3) of the spatial and temporal incidence of malaria in Niger's capital city. When the MIT radar was deployed lately in 2006, only 3 Africans was involved. But in 2007, under joint sponsorship of NASA Hydrology (USA) and RIPIECSA, 15 Africans participated to the operation with 5 engineer from National Met. Office, 6 students, researcher from the University of Niamey and 4 engineers from ACMAD.

Mots-Clés: radar, floods, dry spell, convective system, malaria

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