



CGMS-36, WMO-WP-24
v1, 10 October 2008
Prepared by WMO
Agenda Item: E.1
Discussed in Plenary

TROPICAL CYCLONE PROGRAMME REQUIREMENTS

The purpose of this document is to inform CGMS Members on WMO's Tropical Cyclone Programme activities and related satellite needs.

It describes recent and planned activities related to the use of satellite data in tropical cyclone applications. It draws attention to the vital importance of satellite data to the detection, monitoring and structure characterization of tropical cyclones and for predicting their evolution.

TROPICAL CYCLONE PROGRAMME REQUIREMENTS

The ESCAP/WMO Typhoon Committee at its 40th session (Macao, China, 21 – 26 November 2007) was informed that China Meteorological Administration (CMA) started-up the multi-temporal twin satellite observation mode to provide typhoon monitoring every 15 minutes during the 2007 typhoon season. The Committee was also informed that Japan Meteorological Agency (JMA) extended its service to provide all Multi Functional Transport Satellite (MTSAT) High Rate Information Transmission (HRIT) imagery for registered National Meteorological and Hydrological Services (NMHSs) through the Internet as a backup to the direct broadcast from the satellites in March 2007. JMA provided small data capacity Joint Photographic Experts Group (JPEG) imagery through the Internet by the end of 2007.

The Typhoon Committee expressed its concern that most of its Members were not ready to exchange Satellite Report (SAREP) in BUFR because of lack of decoding software and/or means of telecommunication. Meanwhile, several Members expressed interest in undertaking development of a satellite-based rainfall – runoff modelling system in the coming years.

During the 35th session of the WMO/ESCAP Panel on Tropical Cyclone (Manama, Bahrain, 5 – 9 May 2008), the Panel noted that operational or R&D satellites specifically related to tropical cyclones are particularly useful for the detection, monitoring and structure characterization of tropical cyclones and for predicting their evolution. Observations of particular relevance are the permanent high resolution visible and infrared imagery from geostationary spacecraft, microwave sounding from LEO satellites (e.g. with AMSU instrument) to derive total precipitable water, microwave imagery associated with active microwave sensors for precipitation rate (like TRMM and the future GPM), as well as scatterometry altimetry and/or microwave imagery to derive ocean surface wind fields (e.g. with Quikscat, Jason-1, or METOP/ASCAT) and sea state. In particular, the Panel stressed the need for continuity of sea surface wind observations by satellites over the next decade, noting that this data is indispensable to monitoring and forecasting of tropical cyclones.

The RA IV Hurricane Committee at its 30th session (Orlando, USA, 23 – 28 April 2008) was informed that operational weather forecasting relies heavily on space-based observations acquired by the operational geostationary and LEO satellites, namely for cloud imagery and characterization, vertical temperature and humidity sounding, atmospheric motion vectors, and sea surface temperature. R&D satellites provide a useful complement to these operational observations. They provide advanced visible and infrared imagers for cloud tracking and sea surface temperature, additional microwave and infrared sounders for vertical temperature and humidity profiles, GPS radio-occultation sounders for temperature and humidity sounding mainly in stratosphere and high troposphere, radar altimeters for sea state and scatterometers for ocean surface wind fields.

The Hurricane Committee considered development of value-added products combining meteorological, oceanographic, and hydrological information and forecasts with high resolution satellite imagery, building on innovative examples emerging from the collaboration of WMO with UNOSAT and RSMCS-ECMWF.

The Hurricane Committee also took note that the RMTTC of Costa Rica has continued its support of multimedia and computer aided learning for continuing education by translating COMET's modules on Ensemble Forecasting, Aviation Weather, Climate Change, Hurricane Strike, Hydrology, Satellite Meteorology, Numerical Weather Prediction into Spanish.

International Satellite Communication System (ISCS): Through the Voluntary Cooperation Programme (VCP), a satellite data distribution system operated by NOAA, was upgraded to add increased data exchange capacity and a communication protocol that allows greater flexibility for the display and manipulation of meteorological products by end users. The ISCS supports the World Area Forecast System (WAFS). The purpose of ISCS is to provide timely delivery of critical aviation-related weather information to support air traffic management and flight operations in over 80 countries, and regional meteorological telecommunications between the United States and nations in the Caribbean and Central America. The service is available through a coordinated effort of the US National Weather Service (NWS), the US Federal Aviation Administration (FAA), the International Civil Aviation Organization (ICAO), and the World Meteorological Organization (WMO).

The contract for the current version of ISCS-G2 will expire on 31 December 2009. Meteorological and aviation weather products will then be available on ISCS-G3. A contract will be awarded for the provision of ISCS G-3 service in early 2009.

With regards to the issues reported by the NOAA/International Activities Office, the Hurricane Committee noted that Members requested a status update of the transition from current EMWIN operations (EMWIN I) to the GOES-N series era EMWIN operations (EMWIN-N). The last satellite of the GOES-I to -M series will be decommissioned some time before 2011 as it will be replaced by the GOES-N to -P series that necessitated the development of EMWIN-N. All current EMWIN users will need to migrate to this newer technology due to frequency, power and modulation changes. The NWS IAO will request a status update from the EMWIN programme manager and report to the Committee.

The RA V Tropical Cyclone Committee (RA V TCC) at its 12th session (Alofi, Niue, 11 - 17 July 2008) was informed that the Regional Training Course on the Use of Environmental Satellite Data in Meteorological Applications for RA V took place in Melbourne, Australia, from 16 to 27 October 2006. Thirty-five participants from thirteen countries participated in the training course which discussed application of data from environmental satellites both present and future systems; and trained instructors on the use of satellite data and products in the identification of tropical cyclone development and movement. The RA V TCC noted that during the period from January 2006 to June 2008, three VCP project requests were submitted by several of its members towards upgrading satellite receiving equipment for Low Rate Information Transmission (LRIT). The RA V TCC further noted that various actions have been taken since July 2006 to address RSMC Nadi issues that include upgrading Fiji Meteorological Services' integrated meteorological system, including upgrades to its satellite data receiving systems and computing facilities.