OPERATIONAL METEOROLOGY AND THE METEO-CLIMATOLOGICAL ANTARCTIC OBSERVATORY: an overview and plans for XXIX Italian Expedition in Antarctica

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1. New regulatory framework and organizations in charge

As a result of the 30th September 2010 Interministerial Decree, the PNRA Consortium has been closed and the management of the Italian National Antarctic Research Program (PNRA) assigned to CNR and ENEA under the supervision of the Italian Ministry of Education, University and Research (MIUR), which provide funding for logistic and scientific activities.
CNR is in charge for planning and coordination of scientific activities, while ENEA is the actuator of the Campaigns in the antarctic territory and in charge for the management of existing structures therein.

For this purpose ENEA has created a specific Antarctic Technical Unit (UTA).

In order to manage meteorological services and infrastructures UTA takes advantage of the scientific and technical support made available by the personnel of the Meteo-Climatological Antarctic Observatory.

2. Field instrumentation

The italian Meteo-Climatological Antarctic Observatory operates 16 Automatic Weather Stations (AWS), active throughout the year.
The AWS's monitoring network covers all the Victoria Lands territory, from the italian Base "Mario Zucchelli" (MZS, 74° 41' S, 164° 07' E) to the innermost area of the Antarctic Plateau at the French-Italian Base “Concordia” (DC, 75° 06’ S, 123° 24’ E), and towards the Wilkes Lands territory in the direction of the French Scientific Base “Dumont D'Urville” (DDU, 66° 40' S, 140° 01' E).

Meteorological data acquired by these AWSs are collected using various methods: most of them send data via Argos data collection system, an additional real-time query can be addressed to the 3 AWSs located on the Antarctic Plateau via Iridium, and for AWSs located in the vicinity of respective Base a radiomodem data link is used.

Among these AWSs, 7 of them has a WMO identifier and their Synop messages are disseminated to the GTS network.
Upper air weather data are collected by two radiosounding stations: one at MZS (since 1987 two lanches per day, at 00 and 12 UTC) and one at DC (since 2005 one launch per day, at 12 UTC).
Temp messages automatically generated from both stations are disseminated to the GTS network.

Flight operations at MZS are performed by a system of airways and at DC by two airstrips: all of them are instrumented with a total of 7 dedicated AWSs which send data via radiomodem to respective Base’s Weather Office.

MZS is equipped with two receiving stations for NOAA and DMSP satellites: acquired images and data are used for assistance to flight and ship operations.

3. Main planned activities for XXIX Italian Antarctic Campaign

The realization of each antarctic Campaign requires a series of preliminary tasks which must comply with a strict time schedule. This year, these preliminary actions are in a significant delay, also because of the recent change of the italian political scenario, therefore planned italian Campaign may vary in duration and performed activities.

Assuming we can perform a traditional Campaign, beyond routine maintenance operations, we plan to perform the following activities:

- An agreement with the AMRC (referents M. Lazzara / P. Grigioni) is being finalized, providing for the maintenance of the AWS American Manuela (Inexpressible Island) by the staff of the Italian Observatory. The agreement provides that the Manuela data are sent via radiomodem to the Operations Room at MZS.

- We will install a laser precipitation monitor at MZS for measuring quantity and type of precipitation and the particle spectrum.

- The AWS Irene (Sitry point), located halfway between MZS and DDU, will be removed as a result of the decommission of this intermediate refueling point.

- Due to the increasing frequence of use of the Enigma Lake airstrip in MZS, we will replace the anemometric station, presently in use only during the summer, with a standard AWS equipped with an additional Present Weather sensor.
This new AWS will operate throughout the year.

- Due to the recent availability of a permanent Internet connection at MZS, it will be possible to implement a centralized management of the compilation and transmission of meteorological messages using a software platform developed and operated by the Italian Air Force.

- National and international research projects operating at DC are requesting Meteo-Climatological Observatory to take charge of the conventional meteorological instrumentation installed on the 45m tower at Concordia. Currently the tower is instrumented at 6 levels with wind, temperature and humidity sensors.
Presently the agreement is still under discussion.

- Complete redesign of interface and part of contents of the website *www.climantartide.it* is currently being completed.

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