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# QUALITY MONITORING OF SURFACE DATA IN RSMC BUENOS AIRES

*(Submitted by Mr M.J. Garcia*)

**Summary and Purpose of Document**

The document contains a review of surface data quality monitoring activities carried out by the Regional Specialized Meteorologocal Centre (RSMC) Buenos Aires in Region III.

**ACTION PROPOSED**

The meeting is invited to take into consideration the information appended to this document when discussing how the existing arrangements can be used to improve monitoring of CLIMAT and CLIMAT TEMP reports.

**Appendix:** **Quality Monitoring of Surface Data in RSMC Buenos Aires**

# Quality Monitoring of Surface Data in RSMC Buenos Aires

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The quality control of the SYNOP reports from the surface meteorological stations of Argentina is of permanent concern of the Servicio Meteorológico Nacional (SMN).The first step to improve the quality of the data was the development of an automatic system of the meteorological observations called SOM that began in 1995 and progressively was being installed at the meteorological stations that constitute the basic synoptic network of Argentina. This system consists of a number of programmes, developed by professional meteorologists of the SMN and allows the following :

- To carry out all calculations automatically that at the moment are in charge of the observers, controlling the results with values limits for each parameter and each station.

- Recording and transfer all observations in real or near-real time to the national data base.

- Recording of the graphical values obtained from the register instruments (thermograph, hygrograph, barograph)

- Automatic generation of SYNOP reports (Section 0,1,3,5) and also CLIMAT reports.

The software for SHIP reports is in preparation process, and the interrogation system for the automatic stations was concluded.

Simultaneously, RSMC Buenos Aires implemented from the end of 1995 a quality control programme for SYNOP messages arriving RTH Buenos Aires. The methodology used in this programme comprises identification of the heading of messages inside the group of received data and generation of a file that contains all the messages of this type without any correction.

Later on, by means of another process, the determination of the formal consistency of each message begins, verifying the hour that appears in the heading, the quantity of present groups according to the hour of the message, the order of those groups, the quantity of digits for each group, etc.

If the message is formally correct, it proceeds toward the internal consistency. If not, it appears in a correction screen.
During 24 hours of the day, a shift operator, supe revised by a professional meteorologist, is carrying out a revision and correction of the errors.

Once completed this step, the determination of the internal consistency begins by applying a statistical method to ensure that the variables rest in an acceptable range and to establish relationships among these variables. To define this consistency, the recommendations of the World Meteorological Organization and well-known local factors were taken into account.

The control of internal consistency of the SYNOP is composed of 43 different steps that applied to the following: wind direction and wind speed, relationship between temperature of the air and temperature of the dew point, relationship between the code of reduced visibility and the presence of some phenomenon of present time, relationship between the

atmospheric pressure measured at the level of the station and the pressure at the mean sea level, sign and value of the tendency of the atmospheric pressure, relationship between current weather the sky coverage, relationship between the phenomenon observed in present time and the visibility, relationship between the phenomenon observed and the temperature of the air or with the difference between the temperature of the air and the temperature of dew point , relationship between clouds observed and the quantity of covered sky, control of the measured precipitation at corresponding reported times and control of the maximum and minimum temperatures in connection with the temperatures reported in previous hours.

At the end of this process, the messages with error appear in a screen highlighting the inconsistencies detected within different groups of the messages and also those errors corrected by the operator. Normally, the data become quality-controlled one hour after the observation, being classified according to the corrections made. This allows to evaluate the percentage of data corrected for each station and what type of errors was detected, what leads to a constant improvement of quality of the available synoptic information.

The TEMP messages undergo the similar process described above, where the consistency refers to the maximum possible variation of the temperature with height and the wind shield.

Any consultation related to the quality control of the SYNOP messages indicated before can be obtained through the Web page of the Servicio Meteorológico Nacional at: www.meteofa.mil.ar to Departamento Procesos Automatizados and also using the following e mail address: dpd@meteofa.mil.ar

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