

WORLD METEOROLOGICAL ORGANIZATION

MANUAL ON THE GLOBAL OBSERVING SYSTEM

VOLUME II

REGIONAL ASPECTS

(revised edition 1995)

WMO-No. 544

**Secretariat of the World Meteorological
Organization – Geneva – Switzerland
1995**

2. REGION II — ASIA

2.1 Regional basic synoptic network of surface and upper-air observing stations

2.1.1 Composition of the regional basic synoptic network

2.1.1.1 The regional basic synoptic network of surface and upper-air observing stations is reviewed and revised at each session of the Association. The list of stations constituting the current regional basic synoptic network is given in the report of the most recent session of the Association. Changes are announced in the monthly "Operational Newsletter" issued by the Secretariat (see paragraph 2.1.4 below).

2.1.1.2 Manned surface land stations included in the regional basic synoptic network shall conform to the specifications laid down for principal land stations in Volume I of this Manual.

2.1.2 Surface synoptic observations

All surface stations included in the regional basic synoptic network should make surface observations at the four main standard times of observation, i.e. 0000, 0600, 1200 and 1800 UTC, and at the four intermediate standard times of observation, i.e. 0300, 0900, 1500 and 2100 UTC. Any surface station that cannot carry out the full observational programme should give priority to the carrying out of the observations at the main standard times.

2.1.3 Upper-air synoptic observations

2.1.3.1 All the upper-air stations included in the regional basic synoptic network should carry out radiosonde and radiowind observations at 0000 and 1200 UTC, and radiowind observations at 0600 and 1800 UTC. The radiosonde/radiowind observations carried out at 0000 and 1200 should reach the 30 hPa level for 50 per cent of the ascents. The carrying out of the radiowind

observations at 0000 and 1200 UTC should receive priority over the radiowind observations at 0600 and 1800 UTC.

2.1.3.2 Radiowind stations in the areas affected by tropical cyclones should, during the cyclone season, also make radiowind observations at 0600 and 1800 UTC which should reach as far as practicable the 70 hPa level.

2.1.4 Arrangements and procedures for updating and amending the regional basic synoptic network
Certain minor changes in the regional basic synoptic network of surface and upper-air synoptic stations which do not affect the data requirements of the Region as a whole are inevitable from time to time. To provide a simple and rapid means of effecting changes by the Members concerned, the following procedures shall be followed:

(a) Regional Association II authorizes the president of the Association to approve, at the request of the Members concerned and in consultation with the Secretary-General, minor changes to the regional basic synoptic network without a formal consultation with the Members of the Association, it being understood that any change of substance, i.e. one adversely affecting the density of the network within the Region or proposing a change in observational hours, would still require the formal agreement of Members through the adoption of a resolution by postal ballot;

(b) The Secretary-General shall notify all Members of WMO by circular letter of changes agreed with the president of the Association.

2.1.5 The following selecting principals should be used when revising the RBSN list.

(a) The revised RBSN should have a maximum spatial resolution of 150 km for the surface and 250 km for upper-air stations;

(b) If an RBSN station had been "silent" according to monitoring results and another RBSN station located nearby (less than 100 km) had regularly reported its observation, the "silent" station should be replaced by the neighbouring station. If there were no regularly reporting RBSN station nearby, the

“silent” station should remain on the list;

(c) In data sparse areas, existing stations should fill gaps (according to Vol. A, publication No. 9) although these may have been previously included in the RBSN;

(d) Those stations that Members propose include the RBSN list should remain in or be added to the new RBSN list.

2.2 Regional basic climate network of surface and upper-air observing stations

2.2.1 The regional basic climate network of surface and upper-air observing stations is reviewed and revised at each session of the Association. The list of stations constituting the current regional basic climate network is given in the report of the most recent session of the Association. The changes to the regional basic climate network should apply the same procedure as Regional basic Synoptic network.

2.2.2 The stations in the regional basic climate network should provide CLIMAT and/or CLIMAT TEMP report monthly.

2.3 Regional arrangements and procedures for observations

2.3.1 Pressure-reduction method

2.3.1.1 According to the WMO Technical Regulations, Annex V, Manual on the Global Observing System, Volume I, Part III, Regulation 2.10.3.2.5, the atmospheric pressure at a station shall be reduced to mean sea-level.

2.3.1.2 The Association has not taken any decision regarding the introduction of a uniform method of pressure reduction throughout the Region as it considers that a uniform method of pressure reduction could be used only in areas which have similar lapse rates of temperature and humidity in the lower troposphere. On this general principle, it is of the opinion that different formulae may be needed for different climatic areas. A number of selected methods of pressure reduction were consequently elaborated and were included in WMO Publication No. 154 (Technical Note No. 61) — Note on the standardization of pressure reduction methods in the international network of synoptic stations (out of print).

2.3.2 Regional comparison of barometers

2.3.2.1 Each Member in the Region should ensure that the barometer of each synoptic station in its territory is compared with a fixed national standard barometer at least every three years.

2.3.2.2 Each national standard barometer should be compared with one of the absolute standard barometers recognized by WMO, within or outside the Region, at least every ten years.

2.3.2.3 The standard barometer in Calcutta, India, shall be recognized as the reference standard barometer for the Region.

2.3.3 Ground weather radar observations

Considering the value of ground weather radar observations for forecasting purposes and their essential role in detecting and tracking tropical cyclones, Members which have not already done so are invited to establish and maintain ground weather radar stations for synoptic and particularly tropical cyclone warning purposes. Weather radars have also demonstrated their usefulness for short-range weather forecasting in particular for the assessment of area precipitation.

2.3.4 Regional Instrument Centres (RICs)

2.3.4.1 The instrument centres in Beijing (China) and Tsukuba (Japan) are designated as Regional Instrument Centres.

2.3.4.2 The functions of the Regional Instrument Centres are:

(a) To keep a set of meteorological standard instruments linked with recognized international or national standards and to log their performance and elements of comparison;

- (b) To assist Members of the Region in calibrating their national standard meteorological instruments or in comparing them with the standard instrument mentioned in (c) and to keep the Members of the Region and the WMO Secretariat informed on the available standard instruments;
- (c) To be prepared to certify the instruments' conformity with the standards with reference to WMO recommendations;
- (d) To organize instrument evaluations and comparisons;
- (e) To advise Members of the Region concerned on their enquiries regarding instrument performance and the availability of relevant guidance material;
- (f) To assist WMO in organizing regional symposia, seminars or workshops on the maintenance, calibration and comparison of meteorological instruments by providing laboratory and field installations, as well as assistance with regard to demonstration equipment and expert advice;
- (g) To keep a library of books and periodicals on instrument theory and practices;
- (h) To cooperate with other Regional Instrument Centres to provide standardization of meteorological instruments.

2.3.5 Regional Radiation Centres (RRCs)

2.3.5.1 Considering the usefulness of the calibration of national and regional standard pyrhemeters against pyrhemeters of the World Standard Group (WSG) at five-year intervals for guaranteeing the high quality of radiation data, and noting Resolution 11 (EC-XXX) — National,

Regional and World Radiation Centres — Regional Radiation Centres should be established with the following terms of reference:

- (a) To possess and maintain a standard group of radiometers, consisting of either: (i) three standard radiometers of the Ångström, silver disk or absolute radiometer type; or (ii) two absolute radiometers;
- (b) To compare at least once every five years one of the standard radiometers against the World Standard Group;
- (c) To intercompare, at least once a year, the standard radiometers with the aim of checking the stability of the individual instruments. If the ratio has changed by more than $\pm 0.2\%$ and if the erroneous instruments cannot be identified, a recalibration at the World Radiation Centre (WRC) has to be performed prior to further use as a standard;
- (d) To make available the necessary facilities and laboratory for checking and maintaining the accuracy of the auxiliary measuring equipment;
- (e) To provide the necessary outdoor facilities for simultaneous comparison of national standard radiometers from the Region;
- (f) To provide qualified staff with wide experience in radiation for continuity of the performance of the RRC;
- (g) To organize and carry out comparisons of national radiation standards within the Region in close collaboration with the other RRCs and to maintain the standard instruments necessary for this purpose.

2.3.5.2 Each Regional Radiation Centre should satisfy the above conditions before it is designated as such and should continue to fulfil them after being designated.

2.3.5.3 The Pune (India) and Tokyo (Japan) National Radiation Centres are designated to serve as Regional Radiation Centres in RA II.
