4. In India observations of the nocturnal long wave radiation recorded with Angstrom's pyrgeometer at 2030, 2330 0230 and 0530 IST are available for a number of stations for over a decade. These observations cover a wide range of sky conditions ranging from clear to partly cloudy skies of the non-monsoon months to cloudy to overcast skies of the monsoon months. For each observation the ratio of net long wave to back radiation would be valid for the cloud cover prevailing at the time of observation. For a given month and station the mean of the cloud cover at the 4 hours of observation over a number of years would be a reliable climatological measure of the average cloud cover. Therefore, for the pyrgeometric station the average monthly values of the ratio of net to back radiation multiplied by $a T_a^4$, where $T_a$ is the mean air temperature, in °C of the corresponding month would give climatological estimates of the mean daily net long wave flux in the different months over a green crop cover.

5. The author is thankful to Dr. R.P. Sarker, Director, Agricultural Meteorology Division and Dr. R. R. Kelkar, Meteorologist for helpful discussions.

S. VENKATARAMAN

REFERENCES


SYNOPTIC CONDITIONS OVER THE ARABIAN SEA SOUTH OF LATITUDE 10°N DURING 23-27 MAY 1973

Godbole and Ghosh (1975) have discussed the structure of the Inter-tropical Convergence Zone (ITCZ) and equatorial westerlies for the period 23 to 27 May 1973 on the basis of observations of the Russian vessels along the meridian 55°E and 65°E between the latitudes 22°N and 4°S. They have stated that the ITCZ was located near 10°N with an equatorward inclination with height and that it extended from the surface to about 300 mb. They have assumed that, although the observations obtained during the ships cruises were not of the same synoptic hours, the atmosphere remained quasi-stationary in the meridional direction during the period of observations. They have further stated, with reference to the satellite photographs for the period in question, that an active portion of the ITCZ was located near 10°S although there was an indication of zonal propagation of disturbance activity along 10°N.

2. On an examination of the synoptic charts for the period it was found that a cyclonic circulation in the lower and middle troposphere moved into Lakshadweep area from southwest Bay across the Peninsula and under its influence a trough of low pressure developed in east Arabian Sea along off Kerala-Karnataka coasts on the 23rd. With the temporary advancement of the southern hemisphere air the trough developed into a well marked low pressure area by the 24th evening. It rapidly moved westwards and concentrated into a depression on the 26th morning. It further intensified into a deep depression by the 27th morning and was centred near 12-5°N, 56-5°E. Moving westwards it weakened into a low pressure area over the Gulf of Aden on the 29th morning. The track of the disturbance is given in Fig. 1.

3. Taking data along 65°E and 55°E over a period of 6 days to discuss the structure of the ITCZ would not appear justified, particularly when the westward moving disturbance mentioned above was present. Godbole and Ghosh have stated
that the ITCZ extended up to 300 mb. In this
connection it may be mentioned that even in July,
when active monsoon conditions prevail, the depth of
the westerly current over the east Arabian Sea
does not extend beyond 400 mb level, the
depth being still lower over the west Arabian Sea.
Easterlies are normally found at 500 and 300 mb
level even at the equator. During 1973, the monsoon
had established over the Kerala coast only after
3rd June, the extension during the last week of May
was purely temporary and had reeded immediately
after the system moved westwards. Thus the exten-
sion of the ITCZ up to 300 mb in the last week of
May, even to a higher level than in July, when the
monsoon is fully established, was only due to the
presence of the disturbance.

4. They have also found that the equatorial
westerlies are drier than the westerlies to their
north and to the south of the ITCZ or the easterlies
to the south of the southern hemisphere equatorial
trough and on this basis they have concluded that
the moisture to the north of the equatorial wester-
lies does not come from the southern hemisphere,
att least, not directly from across the southern hemi-
sphere trough and its source lies in the equatorial
westerlies in the northern hemisphere being due to
either evaporation from the ocean or advection
from west of longitude 55°E or both. The ships
observations during MONEX 1973 period near
45°E just to the south of the equator, showed very
high humidity (more than 80 percent) in the middle
and upper troposphere (Desai et al. 1976). As such
the westerlies to the north of about 5°N, which are
in continuation of the southerlies crossing equator
would also have high humidity, although the air
which crosses the equator will pick up some moisture
from the sea surface while moving northeastwards
over warmer latitudes in the Arabian Sea. ITCZ
by definition is the convergence zone between the
airmasses from the southern and northern hemis-
pheres and if one is to accept Godbole and Ghosh’s
argument that the moist westerlies have their
origin in the northern hemisphere itself one cannot
describe the boundary between such westerlies and
the easterlies as ITCZ. Thus the conclusions of
Godbole and Ghosh on the structure of the ITCZ
during the last week of May are only with reference
to the westward moving disturbance and as such
cannot be generalised. Their conclusions on the
origin of equatorial westerlies and its role on mon-
soon activity are also not acceptable.

5. I wish to express my sincere gratitude to
Dr. B. N. Desai for his valuable suggestions.

S. K. SUBRAMANIAN

REFERENCES

Desai, B. N., Rangachary, N., Subramanian, S. K.
and Sambamurthy, T. M.
Godbole, B. V. and Ghosh, S. K.

1976 Indian J. Meteorol. Geophys., 27, 2,
pp. 141-156.

MOISTURE CONSERVATION IN SOIL UNDER
A VEGETAL COVER

The dry weight percentage of soil-moisture under
a 15 cm thick grass cover was found to be constantly
in excess over that under bare soil. In a uniform
soil plot of 50 m \times 50 m area, one half is left barren
and in another half grass was grown. The soil
belongs to red loamy type formed due to weather-
ing of local Khondalite rocks of Eastern Ghats.
The barren half is maintained by weekly mowing
the grass without disturbing the surface soil.

A simultaneous collection of soil samples at 15
em, depth in both halves was made repeatedly
during the rainy season of 1976. Samples were
collected after a six hour lapse if and when there
was a rainfall to ensure completion of ‘infiltra-
tion’.

2. The variation of soil moisture in the two
conditions during the observation period is shown
in Fig. 1 along with the rainfall. The moisture per-
centage under vegetal cover is regularly in excess
over that in the bare soil. The ‘excess’ amount,
however, varied during the period. The amount