NOTES AND CORRESPONDENCE

Comments on "Low-Level Flows over the GATE Area during Summer 1972"[1]

JAMES C. SADLER

Department of Meteorology, University of Hawaii, Honolulu 96822

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The exercise by Tripoli and Krishnamurti (1975) is an excellent example of the current inadequacy of objective analysis in the tropics. However, this fact is not apparent in their discussion. A most serious shortcoming is the elimination of the summer monsoon systems of the eastern North Pacific and the eastern North Atlantic-West Africa.

Consider first the coastal area of West Africa between 5 and 10°N west of 0°. Considerable literature exists (e.g., Flohn, 1965; Frost, 1969) to show that the mean 850 mb flow in this region is westerly during July and August as opposed to easterly as shown in their Fig. 3. The observed 850 mb mean wind in July 1972 at Abidjan (5°15N, 3°56′W) was northwest (Free University of Berlin, 1972) and not east as shown in Fig. 7. In August 1972 the observed 850 mb mean wind at Abidjan was light northerly (U. S. Department of Commerce, 1972) and further east at Douala (4°1′N, 9°43′E) it was west-northwesterly. These observations bear little resemblance to the analyzed mean shown in Fig. 8. An additional check is provided by the twice daily ATOLL (Analysis of the Tropical Ocean Lower Layer) charts (National Hurricane Center, 1972) for July and August 1972; along the coastal region between 5 and 10°N the charts show that on every day of the 2-month period the gradient level winds had a westerly component.

Consider next the eastern North Pacific in the region between the equator and 8°N and east of 90°W. Here the mean summer flow from the south or southwest is reasonably depicted in the climatological field of their Fig. 3, although the speeds are excessive. However, their objective analyses for 1972 (Figs. 6–9), far from resembling their first-guess climatological field, are in fact directly opposed. The southwest monsoon is eliminated and replaced by a mean northeast flow in each month. The subjective analyses for this area (National Hurricane Center, 1972), which also used satellite-derived winds, do not contain a single example of analyzed northeast winds in the 184 charts for June–August. The winds were southerly in the equatorila zone and generally turned to westerly near 5°N.

An indirect assessment of the validity of the objective analyses is contained in the satellite-observed cloudiness. The mean cloudiness for June, July and August, 1972 is shown in my Fig. 1. Note that zones of maximum cloudiness were observed in the two regions discussed earlier. The cloudiness was slightly less than normal (Atkinson and Sadler, 1970) which would indicate that the monsoon circulation was weaker than normal but certainly not absent. The observed cloudiness pattern is not one which can be related to the low-level flow of the authors' objective analyses.

The poor analyses make their discussion of energetics essentially invalid. They also lead to a poor choice of their "homogeneous" areas X, Y and Z, and in particular area X (their Fig. 12). It is hard to find any other pair of adjacent oceanic regions more meteorologically dissimilar than the Caribbean (low-level easterly regime) and the equatorial northeast Pacific (low-level summer monsoon regime).

The analyses also lead to some peculiar discussions of ITCZ positions. In this regard, it would seem desirable to define their ITCZ for it appears that another definition has been added to the growing list (Sadler, 1975). On p. 201 they state "The Intertropical Convergence Zone (ITCZ) is associated with the zone of convergence over the oceans," which implies that it is associated with a zone of cloudiness. Let us then compare the observed mean cloudiness of my Fig. 1 with their mean monthly positions of the ITCZ as discussed on p. 205. Their ITCZ positions have been added to my Fig. 1 for easy reference. In June their ITCZ in the Atlantic crosses the observed maximum cloud zone and in the eastern Pacific, at 16°N, it lies in the area of minimum cloudiness. In July, at 15°N in the eastern Pacific, it remains in the area of minimum cloudiness while in the mid-Atlantic, at 15°N, it is in the area of maximum low-level stratus. In August their position at 10°N in the central Atlantic is near the

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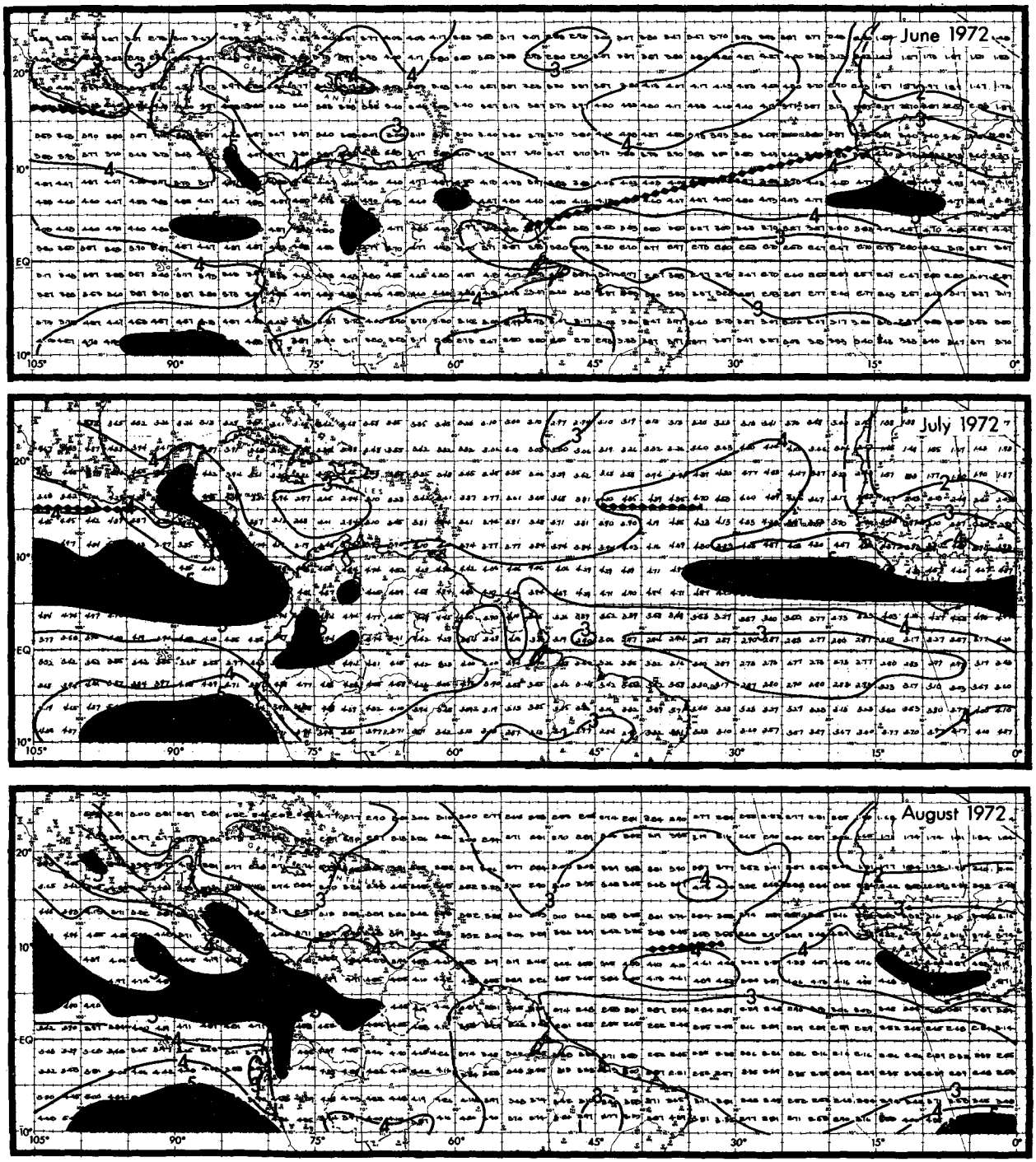

FIG. 1. Monthly mean cloudiness (octas) from satellite observations for June, July, and August, 1972. Positions of an ITCZ from Tripoli and Krishnamurti (1975) are shown by diamond-shaped lines.

minimum cloud zone between the near-equatorial maximum and the stratus maximum. They also state that a convergence zone was not associated with the ITCZ over West Africa, yet maximum observed cloudiness was most persistent there throughout the summer.

While I have used the results in this paper as a particular example, there is a more general motivation for making these comments. My concern, shared by many synoptic meteorologists, is the increasing domination, in the description of the tropics, of numerical analyses and simulation. These are often inadequately compared with observations, but model-generated re-

sults tend to find their way into the research archives as "data" (partly because they are readily accessible and computer compatible). After being published and quoted a few times (among modelers), the results are treated as if they are, in fact, reality.

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