

# COLORADO STATE UNIVERSITY

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DEPARTMENT OF ATMOSPHERIC SCIENCE

6 November 1969

Dr. Jule Charney  
Department of Meteorology  
Massachusetts Institute of Technology  
Cambridge, Massachusetts 02139

Dear Jule:

With reference to our recent phone conversation, I would like to report to you, as chairman of the U.S.GARP committee, very briefly on a week's visit to Brazil which I made in October subsequent to the termination of the tropical field observation program in Venezuela. One purpose of this visit was to study the suitability of the observing network now being developed in Northeast Brazil under joint arrangement between WMO and the government of Brazil as a possible site for a GARP tropical experiment. In this way I have followed up in taking a first step toward implementing the recommendations concerning tropical observation and prediction experiments contained on pages 13 and 14 of the Report to USC/GARP, GARP Working Group on the Structure of the Tropical Atmosphere, dated March, 1969.

A very brief description of the Northeast Brazil experiment and some of the ideas we have had here with regard to it is contained in a small report entitled, "Comments on the Northeast Brazil Project", a copy of which is attached herewith for your convenience. On the WMO side, the project is headed by Mr. John O'Byrne, and for the Brazilian Government by Coronel Teodoro Rodriguez Texeiro. These gentlemen were most accommodating in providing me with detailed information on the status on the future outlook for the project. They also enabled me to have a site visit of a part of their operational area with the use of an aircraft placed especially at my disposal for this purpose.

The surface and rawinsonde network of the Northeast Brazil Project, plus additional installations being made under World Weather Watch, have progressed to the point that full operational capability may be expected in late 1970 or early 1971. The area covered by these observations and the density of the network in my opinion would be satisfactory for a limited numerical prediction experiment over a

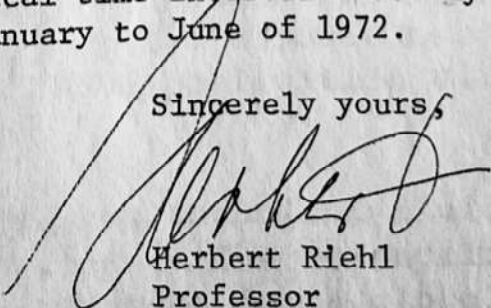
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continental region on the synoptic scale. Within the setting of this large effort, not overlooking also its present administrative facilities, I find that it would be very easy, and relatively inexpensive, to locate a special aircraft observation program of the type that you are also considering for other areas. Several interior airports with good new runways are available for the staging of prop aircraft. Jet aircraft would be based at Recife and, for some purposes, probably at Belem. After the ascent of such aircraft to observational levels, which takes about 200 miles, they would be well over the experimental area. Supply and other logistics problems appear to be considerably less difficult than I would estimate them to be in many other parts of the globe. Again, the value of a strong existing administrative and research organization for staging a GARP program could not be overestimated.

Scientifically, it is my feeling that the area would provide what might be termed a rigorous testing ground for models developed for global prediction purposes in and across the tropics. The variety of climates, ranging from the driest to the rainiest in a manner not readily taken care of by ad hoc explanations, the variety of mountain and coastal features, oceanic as well as continental influences, and effects of extratropical circulations reaching almost to the equator, especially on the southern side, these all combine to make this the continental part of the tropics which is perhaps the most complex and most difficult to understand. If we should find that our prediction equations including the interaction between events of various scales, all compressed in a rather small area, yield reasonable results, then I indeed feel that we can believe that we have reached a sound formulation of the physics of the tropical atmosphere and can look forward with confidence to the projected world-wide prediction experiment.

In conclusion then, I wish to strongly recommend Northeast Brazil for consideration for a GARP tropical experiment. I would also like to suggest that a practical time interval that may be considered for this purpose would be January to June of 1972.

Sincerely yours,



Herbert Riehl  
Professor

HR:as

cc: GARP Committee  
Tropical Subcommittee