U. S. DEPARTMENT OF COMMERCE
ENVIRONMENTAL SCIENCE SERVICES ADMINISTRATION
RESEARCH LABORATORIES
BOULDER, COLORADO 80302

October 4, 1969

IN REPLY REFER TO:
Rx6

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

Dear Jule:

Before leaving for a Space Congress in Buenos Aires, I would like to write you a few personal thoughts on GARP.

I will be back in Boulder on the 13th of October and hope to see you on Wednesday the 15th in Boulder or whenever you arrive. Unfortunately, I will have to leave on the afternoon of the same day for the Skyland Conference on Weather Modification in Virginia (which has been smartly scheduled to coincide with the GARP meeting). I will, therefore, miss your talk on Thursday and the discussion on the coming field projects which I would have been highly interested in.

Monika wants to see you too and have you for lunch (possible on the 15th before the start of the Conference?). Let me know what your plans are (345 17th Street, Boulder; phone 303-443-0632 (home), 447-1000, ext. 6250 (office) ).

Now to the GARP Conference: In reading the blue book again, I feel that the BOMEX experience probably affects some of the proposed projects. On the other side, it may be more important to have a documented plan in order to get the ball (and the funding) rolling than to change it again, reprint it and lose a year. Therefore, the following thoughts are not suggestions to tear up the book and rewrite it, but to help analyse what has to be done next.

Among the lessons I personally learned in BOMEX are the following:

1. Logistics is not the overwhelming problem for large field project that it was thought to be provided it is put into experienced hands. It certainly is not the pacing item for the time table.

2. Flight operations on the basis of "real-time" satellite information are possible. While they can be considerably improved they worked surprisingly well on the first attempt.

3. The different phenomena and scales which the participating scientists were interested in seem to be coupled to a much higher degree than expected. To study them in separate special projects would not be meaningful (cloud clusters, tradewinds, etc.).

4. The pacing item for another tropical project would be the aircraft, their instrumentation, data recording and performance. To have uniform, reliable, immediately reducible data collection systems (e.g., wind) on modern aircraft available requires an early start. In this case, one can be in the field in summer 1973.

5. Planning of data processing must be improved. (By the way, the first revalidated BOMEX aircraft data should become available in four weeks.)

From many viewpoints, some kind of a modified TROMEX plan appears to be the logical next step. If we don't want to lose the momentum from BOMEX this should have priority. Very specialized projects such as "Tropical Cloud Cluster" or "Popcorn Cumulonimbus" are probably not the way to go. On the other hand, a very sophisticated TROMEX Project (as proposed a few years ago) may not be needed either--but a Tropical Circulation Project (or a Tropical-Oceanographic-Meteorological Project) which is essentially an improved version of our "Tropical Convection Phase" should be done as early as possible.

A reasonable number of ships (plus possibly some island stations) and the new satellite sounding technique should make this possible. Since the Europeans (as they told me in London, two weeks ago) are much more interested in the Atlantic than in the Pacific, an early Atlantic Project under GARP may deserve second thoughts, although the Pacific will be ultimately needed.

I would like to know your reaction to these thoughts. Since I cannot attend the Boulder Conference after Wednesday, I thought I would send them to you. Perhaps we will find some time in Boulder to exchange views.

With kind regards from house to house.

Sincerely,

Joachim

Joachim P. Kuettner