Pacific Science Board
National Research Council
Washington 25, D. C.

Coral Atoll Symposia
12 January 1951, Washington
5 and 6 February 1951, Honolulu

III. PACIFIC METEOROLOGIC PROBLEMS

The science of meteorology stands at a point where additional insight into the mechanisms and characteristics of the general circulation or hemispheric-flow patterns has become a problem of foremost interest. To have attained this point, it must be recognized that climatologic data and climatic research have been important stepping stones. It happens, however, that there are still great areas of the earth's surface for which inadequate, and in places, negligible climatologic data are available. In fact, there are areas where generalized upper air patterns are perhaps better known through the process of interpolation than detailed surface climatology. This is perhaps the case over broad ocean areas of the central and western Pacific.

Research in that part of the Pacific characterized by atoll development provides an opportunity for the collection of meteorologic data not only valuable to a knowledge of local biology and physical geography but also to broad problems of meteorology and climatology.

Intensive research in Pacific meteorology would demand resources far more widespread than those contemplated for any atoll research project. It is the purpose of this brief statement only to point out that date of regional as well as local significance can be obtained with the left hand, as it were, of any scientific project in the Pacific area. A very few of the possible problems are listed on which specific data might be readily obtained in connection with other work:

1) Estimates of the mean annual rainfall over the open ocean are, for large areas, very crude. Small islands of little relief offer opportunity for obtaining rainfall data which approximate the fall over the open sea.

2) Data on rainfall amounts in conjunction with indications of time of beginning and ending of rain, and concurrent observations of the time of day of specific shifts of wind direction, provide data for the analysis of the effect of the land mass on sea-land breezes. A problem of some interest is the minimum size of island required to cause sea-land breeze effects.

3) One of the important low-latitude meteorologic problems of the upper air is the nature and distribution of pressure waves in easterly wind currents. Though radiosonde data are required for detailed analysis, daily or twice daily observation of the direction of movement of clouds, particularly middle and high clouds, can be useful.

4) Temperature records are less significant meteorologically, from small island masses, than some other types of record. In oceanic areas, air temperature very near the beach can be compared with water surface temperature with profit. Temperature data requirements, however, should probably be dictated by biologic rather than meteorologic research needs.

Luna B. Leopold