

# THE UPPER AIR AT MANILA

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## (A) THE DATA

The data consist of the records of airplane flights taken by the United States Navy at Manila Bay from October 1930 to February 1932. A few records are also included from the Subic Bay area which is not more than a hundred kilometers from Manila, and hence an area where conditions in the upper air are practically the same as at Manila.

The meteorograph was of the Friez and Son type, giving in ink on one sheet records of barometric pressure, humidity and temperature. The trace is quite broad, and the instrument was calibrated for ground conditions only. Although no stops were made at definite altitudes, still the rate of ascent was comparatively slow, and it is hoped that lag effects, though probably present in inversion measurements, will not be prohibitive. It is evident, therefore, that the records can not be used for exact quantitative work, but for a qualitative, general outline of upper air conditions, for which purpose the records are almost exclusively used in this paper, the records appear sufficiently accurate and give consistent results. Delay of publication to await further data seems inadvisable, due to existing conditions in the Philippines.

The data for standard heights and for significant points are assembled in Table 1, and are arranged according to the hour and month, in order to facilitate the taking of means.

Owing to the fact that the U. S. Navy unit in Asiatic water is stationed most usually in China from April to September, there are no flights available for this period. This is extremely to be regretted since the most interesting time for upper air study is precisely this period, the typhoon season. As a result, very few airplane flights are at hand made during what with certainty could be classed a SW monsoon air mass. However, as will be seen in the course of this paper, those records actually taken give just the characteristics we would expect, and hence they can with fair security be taken as representative of their class. Additional confidence is gained from the fact that flights, very probably in SW monsoon air though not certainly so, give the same general characteristics also.

## (B) TEMPERATURE

Fig. 1 is a chart of the mean monthly temperature-altitude values, compiled from the data for standard heights, i. e. 500 meters, 1,000 m., 2,000 m., 3,000 m., etc. The means above 3,000 m. are not very reliable especially those for February, since the flights reaching to 4,000 m. are comparatively rare.

Another point to be noticed is this, that the flights were taken at various hours in the morning. This would not affect the means, provided the hours were indiscriminately chosen for each of the months, but this unfortunately is not the case. In some months some hours seem to have been preferred, and in other months others. For this reason, Fig. 2 is also given, and presents an average temperature-altitude chart up to