

Sun-Weather Relationships in Taiwan

By

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ABSTRACT

The study of meteorological and climatic responses to solar variations has been of interest since the recognition of the sunspot cycle in the early 1800's. Many people have suggested in the past that the weather is influenced by the 11 and 22 year sunspot cycles. In this report, the temperature and rainfall data obtained at 7 sites in Taiwan from 1897 to 1967 were used to investigate the possible relationships between the weather and sunspot cycles in Taiwan. No statistically significant connection between the weather and sunspot cycles was found.

I. INTRODUCTION

The study of meteorological and climatic response to solar variations has been of interest since the recognition of the sunspot cycle in the early 1800's. Many workers have suggested in the past that the weather is influenced by the 11 and 22 year sunspot cycles. For examples, Xanthakis (1973) observed that at high northern latitudes, the 11 year solar cycle was positively correlated with the annual rainfall total; at latitudes between 60 and 70°N the opposite behavior occurred; while at still lower latitudes a negative correlation existed before about 1915 and a positive one after that. Bowen (1974) reported that, in the southern hemisphere, the correlation between the 11-year solar cycle and difference from normal rainfall exhibit opposite phase at 17°S and 4.3°S. King (1973) also reported that the sunspot cycle influences the rainfall in opposite ways at 55°N and 35°N. Markham (1974) reported that the annual rainfall totals at Fortaleza, Brazil, and at three sites in South Africa were positively correlated with the double sunspot cycle. Cornish (1954) reported that the ten year smoothed means of annual rainfall quartile date at Adelaide (35°S; 139°E) oscillate between August 15 and May 25 in phase with the double sunspot cycle. The July temperature in Central England was found to exhibit an oscillation in phase with the double sunspot cycle. Many other examples have been reviewed by King (1975).