

SHORTER CONTRIBUTIONS

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Further Note on the Periodic Variation of About 7 Years

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In the previous reports, the periodic fluctuation of about 7 years are recognized in southern Europe, southern India and the neighbourhood of Japan for August monthly mean pressure and temperature. The geographical distribution is described in the previous report [1].

Further, the author should like to emphasize the following interpreted fact.

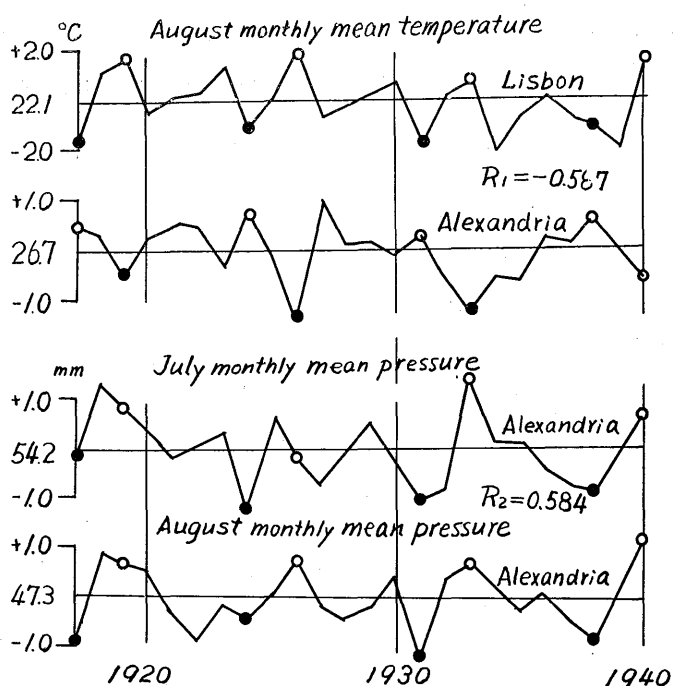


Fig. 1. From the upper series, 1st series show the monthly mean temperature of August in Lisbon, 2nd series for Alexandria, R_1 shows the correlation coefficient between their series, 3rd and 4th series show the monthly mean pressure of July and August for Alexandria, R_2 shows the correlation coefficient between the two series.

The monthly mean temperature series for August in Lisbon ($38^{\circ}43' N$, $9^{\circ}9' W$), and Alexandria ($31^{\circ}12' N$, $29^{\circ}53' E$) are shown in Fig. 1. The correlation coefficient between these two series is -0.567 , obviously on the level of significance, 1%. The distance of these two stations is about 4000 km from east to west. The author wishes to point out that the negative high correlation for monthly mean values should be watched with keen interest in the atmospheric general circulation.

In order to investigate the above phenomena from the standpoint of dynamic climatology, the author applied to the catalog of weather patterns by P. Hess and

H. BREZOWSKY [2], and further the author roughly classified "Zonale, meridionale, und Gemischte Zirkulation" by their notation in the catalog. In western Europe, corresponding to the maximum and minimum years for August mean temperature, the frequency of each weather type is shown in the accompanying Table. From the Table, the maximum year has a large number of the zonal type, on the other hand the minimum year has a large number of the meridional type in Europe. In the phenomena of this negative correlation, the author should like to report later in detail from the two aspects of statistics and meteorological analysis.

The one more point should be noticed. It is recognized that a periodicity of about 7 years follows from July monthly mean pressure to August and even to September, in Alexandria. The series of the monthly mean pressure for July and August in Alexandria are shown on Fig. 1. The correlation coefficient between the two series is 0.584 and also is significant on the level of significance, 1%. It is worthy of note that there is a high correlation of the persistence and the periodicity between the successive monthly mean values.

Table. 1. The frequency distribution of the pattern type by P. HESS and H. BREZOWSKY corresponding to the maximum (left) and minimum (right) years for the periodic fluctuation in Europe.

Year \ Type	M	G	Z	Year \ Type	M	G	Z
1919	0	58.0	42.0	1917	71.1	16.1	12.8
# 26	16.1	12.8	71.1	# 24	67.8	32.2	0
# 33	0	61.3	38.7	# 31	58.1	9.7	32.2
# 40	16.1	41.9 ₅	41.9 ₅	# 38	51.6	19.4	29.0

The numbers show percentages

References

- [1] OZAWA, T. and FUJITA, T., 1954: The Periodic Fluctuations of About Seven Years for August mean Pressure and Temperature in the Northern Hemisphere, Pap. Met. Geophys. 5, p. 153.
- [2] HESS, P. und BREZOWSKY, H., 1952: Katalog der grosswetterlagen Europas. Berichte des Deutschen Wetterdienstes, Band V. Nr. 33.