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ΑΝΑΚΟΙΝΩΣΕΙΣ ΜΗ ΜΕΛΩΝ

ΜΕΤΕΩΡΟΛΟΓΙΑ. — A correlation between the coefficient of continentality and the excentricity of the ellipse of the mean monthly air temperatures in the temperate zones, *by* ***John Xanthakis****. Ἀνεκοινώθη ὑπὸ τοῦ κ. Ἰωάνν. Τρικκαλινοῦ.

In a previous paper[1] I have pointed out that the excentricity e of the ellipse:

$$\frac{T_{13-i}}{T_i} = \frac{P}{1 - e \cdot \cos(L_i - W)} \qquad i = 1, 2, \ldots 6 \tag{1}$$

seems to depend partly on the annual range of temperature.

In equation (1) T_i and T_{13-i}, $i = 1, 2, \ldots 6$ represent the mean monthly air temperatures in 180 stations of the Northeen hemisphere.

Mr. R. G. Stone in a letter to the author expresses the opinion that this element of the ellipse (1) is possible to relate to the indices of continentality. Taking that as an indication, we calculated the coefficient of continentality C in every considered station by the relation:

$$C = \frac{1{,}7\,A}{\sin\varphi} - 20{,}^{\circ}4 \tag{2}$$

where C is the coefficient of Continentality per cent, A the annual range of temperature in degrees of centigrade and φ the geographical latitude.

The results of our calculations are represented by the figures 1 to 4, where the values of coefficient of Continentality C are in apsiscae and the values of the excentricity e in ordinates.

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* ΙΩ. ΞΑΝΘΑΚΗ, Σχέσις τοῦ συντελεστοῦ ἠπειρωτικότητος καὶ ἐκκεντρότητος τῆς ἐλλείψεως τῆς μέσης μηνιαίας θερμοκρασίας τοῦ ἀέρος εἰς τὰς εὐκράτους ζώνας.

[1] JOHN XANTHAKIS, Relation between the mean monthly air temperatures in the temperate zones, *Thessaloniki University Press* 1948 and *Bulletin of the American Met, Soc.* V. 29, No 10, December 1948 pp. 550-552.

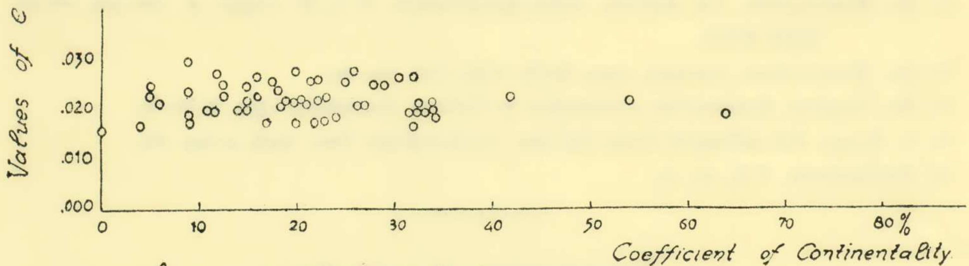

fig. 1 North Africa 10 Stations
Europe: 46 "

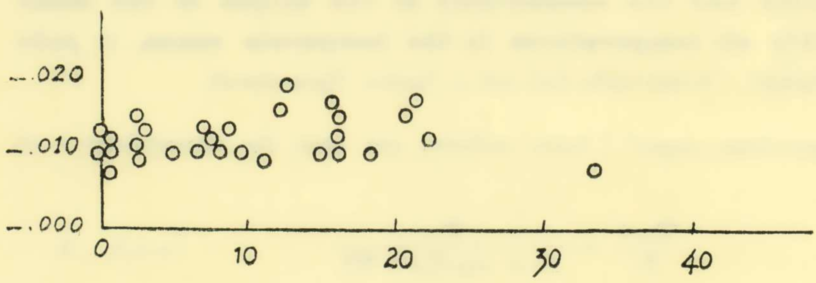

fig. 2. South Hemisphere. 30 Stations

It appears from fig. 1 that the values of the excentricity are fluctuating in a mean value $\bar{e}=0{,}023$. The same is valid for the 30 examined stations of the southern hemisphere (fig. 2) where the excentricity varies lightly around the mean value $\bar{e}=0{,}012$.

It seams therefore that there does not exist any connection between this element and the coefficient of Continentality in these areas.

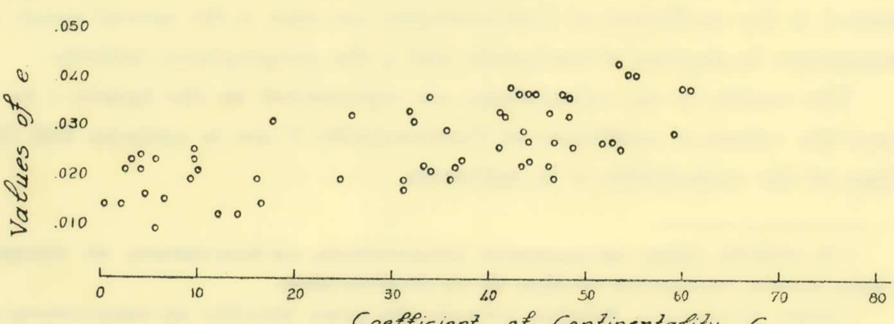

fig 3. North America 60 Stations.

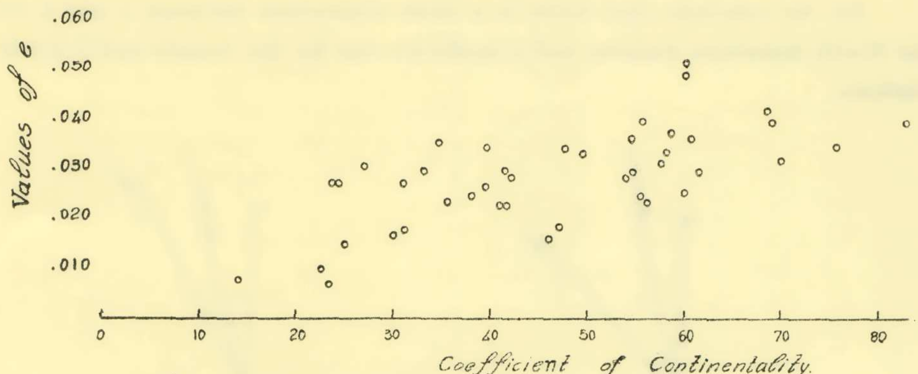

fig 4. Asia: 23 Stations
U.S.S.R. 21 »

We do not have, however, the same thing in the North American, Asiatic and U.S.S.R. stations (fig. 3 and 4). The coefficient of correlation $r_{c,e}$ between the excentricity e and the continental degree C, calculated by the relation,

$$r_{c,e} = \frac{\sum c_i e_i - n\,\bar{c}\,\bar{e}}{\sqrt{(\sum c_i^2 - n\,\bar{c}^2)(\sum e_i^2 - n\,\bar{e}^2)}}$$

in the stations of these areas, are:

a) North American stations

$$r_{c,e} = 0{,}80$$

p. e.: $$f = 0{,}6745\ \frac{1 - r_{c,e}}{n} = 0{,}017$$

b) Asiatic and U. S. S. R. stations:

$$r_{c,e} = 0{,}68$$

$$f = 0{,}031$$

The regression equations

$$y = r\frac{\sigma_y}{\sigma_x}x$$

$$x = r\frac{\sigma_x}{\sigma_y}y$$

represented by the figures 5 and 6 are:

a) North American stations

$$y = 1{,}82\ x$$

$$x = 0{,}35\ y$$

b) Asiatic and U. S. S. R. stations

$$y = 1{,}15\ x$$

$$x = 0{,}41\ y$$

So, we conclude that there is a close connection between e and C for the North American stations and a moderate one for the Asiatic and U.S.S.R. stations.

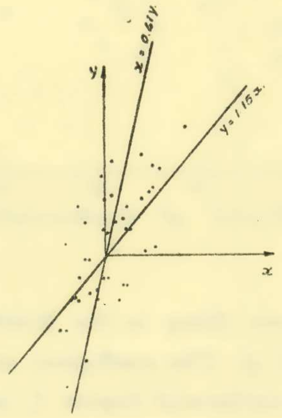

fig 6. The regression equations for Asias and U.S.S.R stations

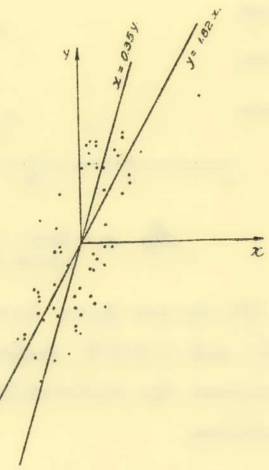

fig 5. The regression equations for North American stations

Fig. 7 and 8 represent the values of excentricity e on all stations considered. Fig. 7 includes only those stations which have a less than 35 % degree of continentality, while fig. 8 those which have more than that. It can be seem from fig. 7 the excentricity does not seem as depending on the degree of continentality. It is not, however, the same with the stations withs a greater degree of continentality (fig. 8) where the value of e are increasing with C.

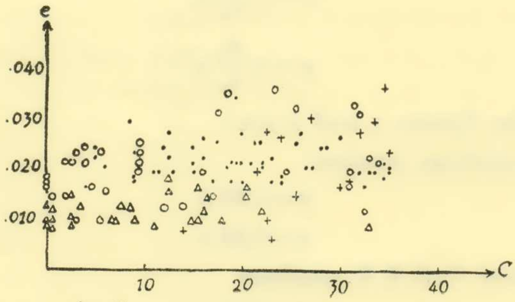

fig. 7.

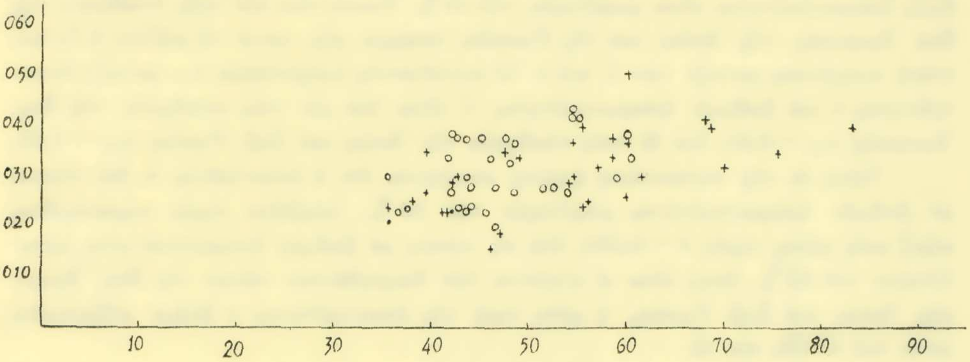

fig. 8.

. Stations of North Africa and Europe
Δ " " South Hemisphere
+ " " Asia and U.S.S.R.
o " " North America.

This is more clearly seem in fig. 9 giving the mean value of e for the northern hemisphere stations as a function of C. Thus, up to the value of 32 per cent of the degree of continentality, e remain almost constant, while from this degree on wards e presents a gradual increase.

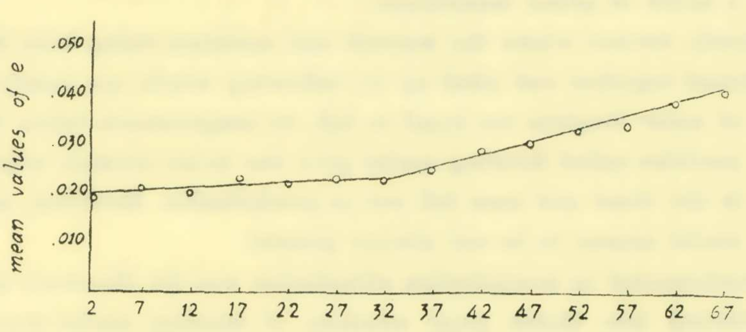

Fig. 9. Coefficient of Continentality

ΠΕΡΙΛΗΨΙΣ

Ἡ σύγκρισις μεταξὺ τοῦ βαθμοῦ ἠπειρωτικότητος C καὶ τῆς ἐκκεντρότητος e τῆς ἐλλείψεως τῆς παριστώσης τὸν λόγον

$$R_i = \frac{T_{13-i}}{T_i}, \qquad i = 1, 2, \ldots 6$$

τῶν μέσων μηνιαίων θερμοκρασιῶν τοῦ ἀέρος εἰς 56 σταθμοὺς τῆς Εὐρώπης καὶ τῆς Βορ. Ἀφρικῆς δεικνύει ὅτι δὲν ὑφίσταται σχέσις τις μεταξὺ τῶν δύο τούτων στοιχείων. Τὸ αὐτὸ συμβαίνει καὶ διὰ 30 σταθμοὺς τοῦ Νοτίου ἡμισφαιρίου τῶν ὁποίων ὁ βαθμὸς ἠπειρωτικότητος εἶναι μικρότερος τῶν 30 %. Τουναντίον, διὰ τοὺς σταθμοὺς τῆς Βορ. Ἀμερικῆς, τῆς Ἀσίας καὶ τῆς Ρωσσίας ὑπάρχει μία, κατὰ τὸ μᾶλλον ἢ ἧττον, στενὴ συσχέτισις μεταξὺ τῶν C καὶ e. Ὁ συντελεστὴς συσχετίσεως $r_{c,e}$ μεταξὺ ἐκκεντρότητος e καὶ βαθμοῦ ἠπειρωτικότητος C εἶναι διὰ μὲν τοὺς σταθμοὺς τῆς Βορ. Ἀμερικῆς $r_{c,e}=0{,}80$, διὰ δὲ τοὺς σταθμοὺς τῆς Ἀσίας καὶ Σοβ. Ρωσίας $r_{c,e}=0{,}68$.

Τέλος ἐκ τῆς γενικωτέρας ἐρεύνης συνάγεται ὅτι ἡ ἐκκεντρότης e, διὰ τόπους μὲ βαθμὸν ἠπειρωτικότητος μικρότερον τῶν 35 %, λαμβάνει τιμὰς κυμαινομένας πέριξ μιᾶς μέσης τιμῆς $\bar{e}=0{,}023$, ἐνῷ εἰς τόπους μὲ βαθμὸν ἠπειρωτικότητος μεγαλύτερον τοῦ 35 %, ὅπως εἶναι οἱ πλεῖστοι τῶν θεωρηθέντων τόπων τῆς Βορ. Ἀμερικῆς, Ἀσίας καὶ Σοβ. Ρωσίας, ἡ μέση τιμὴ τῆς ἐκκεντρότητος e βαίνει αὐξανομένη μετὰ τοῦ C (ἴδε εἰκ. 9).

ΜΕΤΕΩΡΟΛΟΓΙΑ. —Interpretation of the rainfall climate of Marathon, Greece, *by* ***Wallace E. Howell*** *and* ***Photios P. Karapiperis****.

Ἀνεκοινώθη ὑπὸ τοῦ κ. Ἰωάννου Τρικκαλινοῦ.

Introduction

Although many questions remain unresolved regarding the physics and efficacy of precipitation stimulation, it is clear that the prevailing climate is a factor of prime importance.

Clouds, formed where the warmth and moisture rising from the earth are gathered together and piled up by inflowing winds, are mostly aggregations of water droplets too small to fall. At temperatures below freezing, natural particles called freezing nuclei give rise to ice crystals which grow rapidly in the cloud and soon fall out as precipitation. However, sufficient natural nuclei appear to be not always present.

Fundamental to precipitation stimulation was the discovery of means of introducing into clouds great numbers of freezing nuclei much more active than nearly all natural ones. The seeding of clouds with these nuclei may frequently speed up their conversion to precipitation. If the consequences are to be of important magnitude, however, the seeding must be eombined with thermal or dynamic instability of the atmosphere so that the initial increase gives rise to a further increase instead of being followed by dissipation of the clouds.

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* **WALLACE E. HOWELL** καὶ **ΦΩΤ. ΚΑΡΑΠΙΠΕΡΗ**, **Ἀνάλυσις τοῦ κλίματος τοῦ Μαραθῶνος ἀπὸ βροχομετρικῆς ἀπόψεως.**

(Ἡ μελέτη αὕτη ἐγένετο ἐν τῷ Πανεπιστημίῳ τοῦ Harvard τῶν Ἡν. Πολιτειῶν τῆς Ἀμερικῆς κατὰ τὸ 1951).