

ON SELECTIVE INFLUENCE OF COSMOPHYSICAL FACTORS ONTO VARIATIONS OF UNITIOL TEST RESULTS

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These studies involve the problem of determining the mechanisms cosmobiological ties and draw attention to the role and involvement of redox processes and systems in these mechanisms. However, some features of "conduct" the unithiol's tests clearly need special discussion. These include, for example, the presence of correlation between the unithiol semi-oxidation's duration (*USOD*) in the atmospheric surface layer and the total ozone content (*TOC*) in the stratosphere, and the periodical change of the sign this correlation. Another curious phenomenon of this kind emerged in the transition of the research vessel (*RV*) of the Russian Antarctic Expedition (*RAE*) from the southern hemisphere to the northern crossing the equator.

Fig. 1-a. Comparison of polynomial trends obtained for the average daily fluctuations *USOD* (curve 1-a) with 1-st (2-a) components of the equation of time.

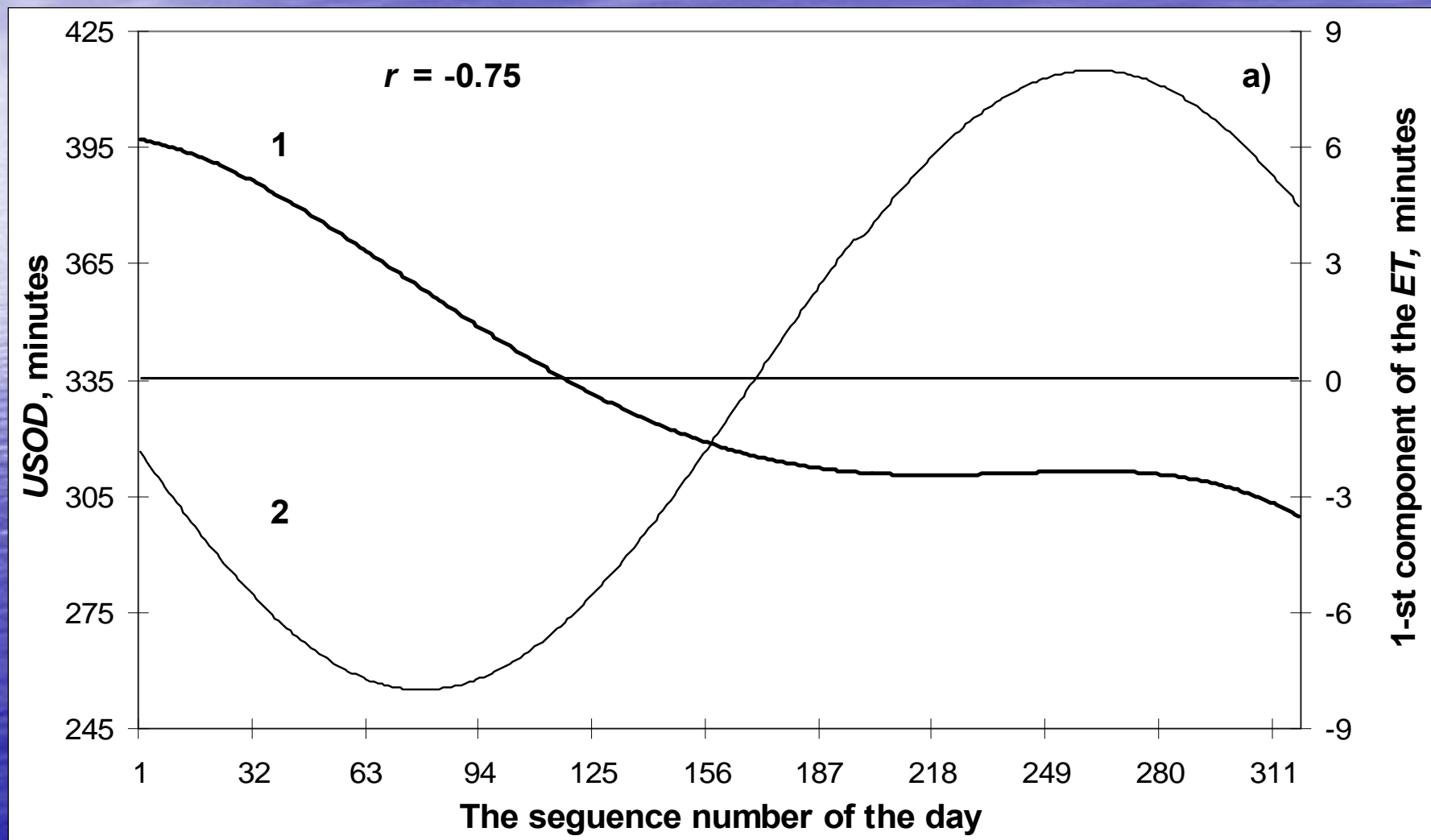


Fig. 1-b. Comparison of polynomial trends obtained for the average daily fluctuations their deviations *USOD* (curve 1-b) with 2-st (2-b) components of the equation of time.

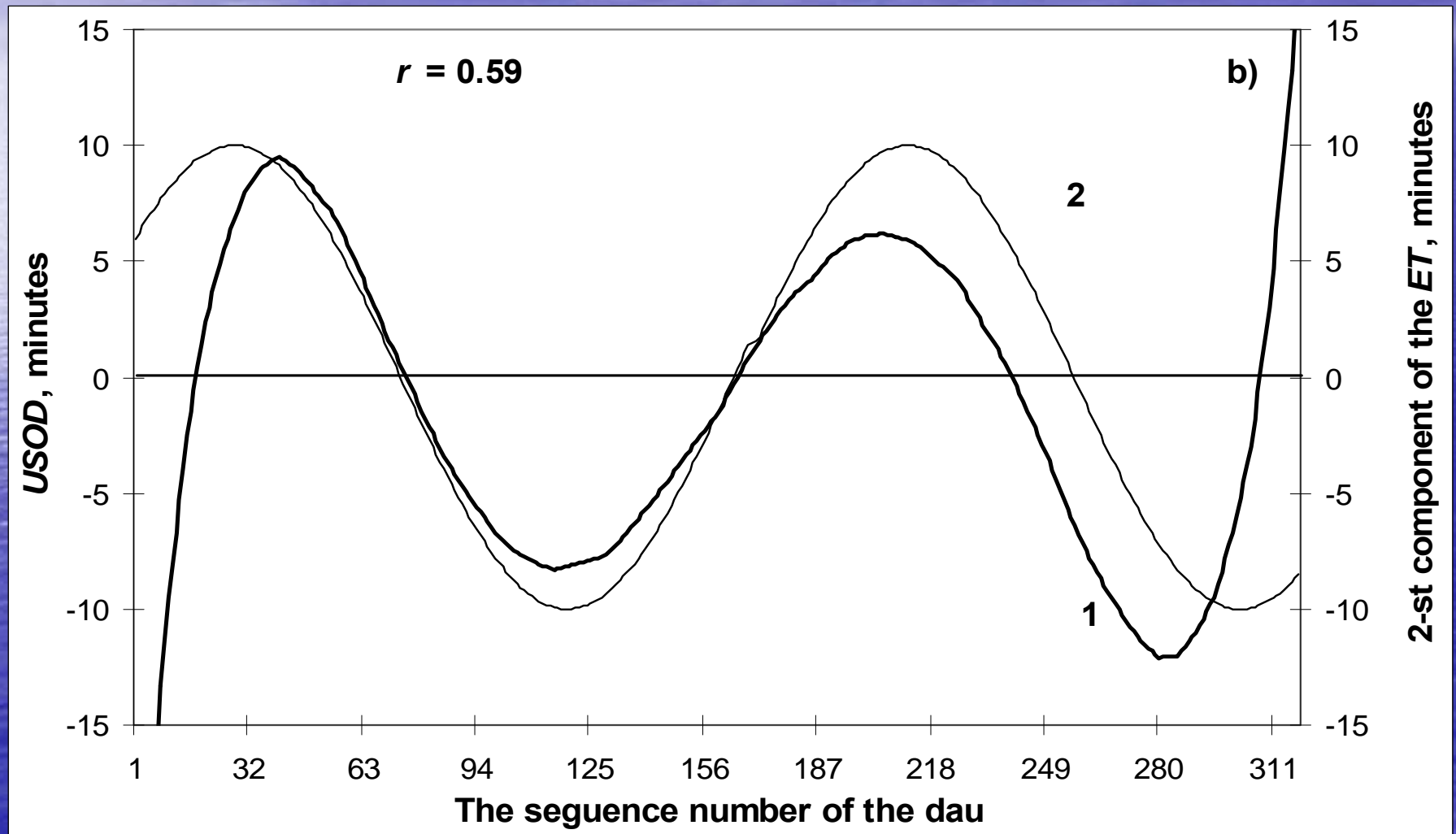


Fig. 2. *EMF*-components variations: X (curve 1), Y (2), Z (3) in the Antarctic (polar station Vostok) in 2001.

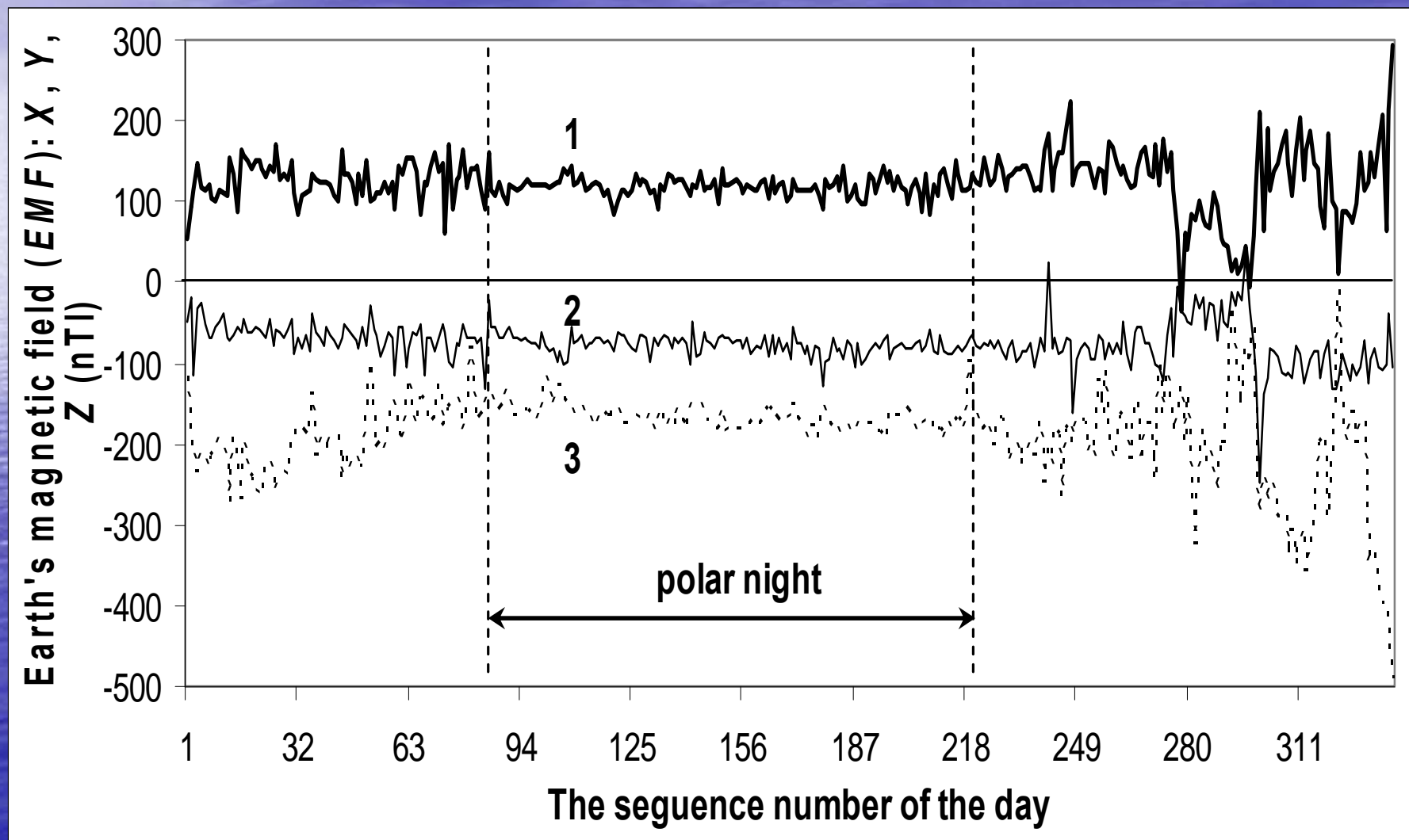


Fig. 3. Comparison of the average cycle obtained for the 5 intervals of fluctuations *USOD* in duration 25.6 months, with a time of onset of connections and oppositions of the planets Earth, Mars.

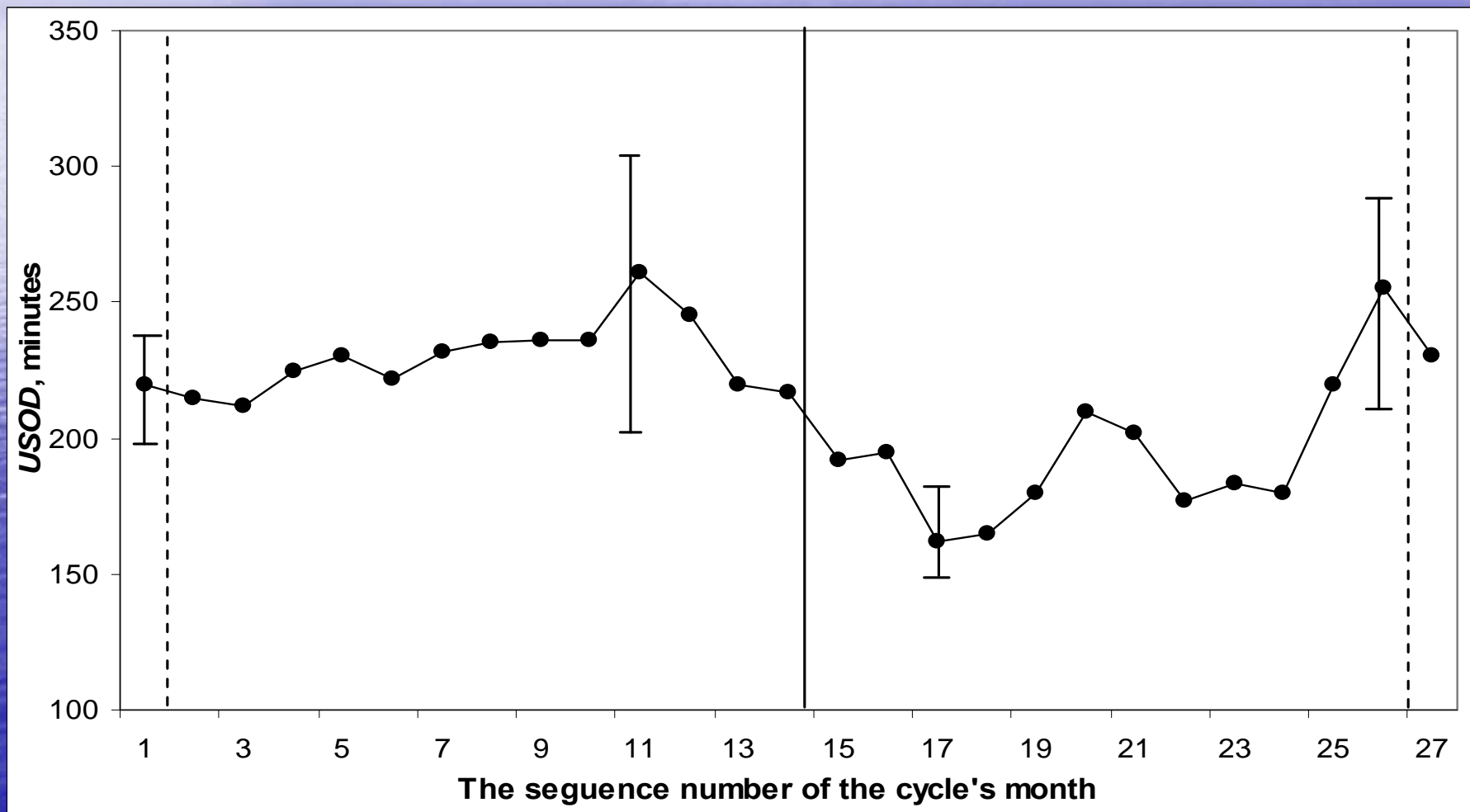


Fig. 4. Comparison of the average daily fluctuations *USOD* recorded in the Antarctic (Curve 1) and in vitro (2 - St. Petersburg during the period of 15.08.79 – 27.06.80) combined with time-stamp of connections of the planets Earth, Mars (vertical line).

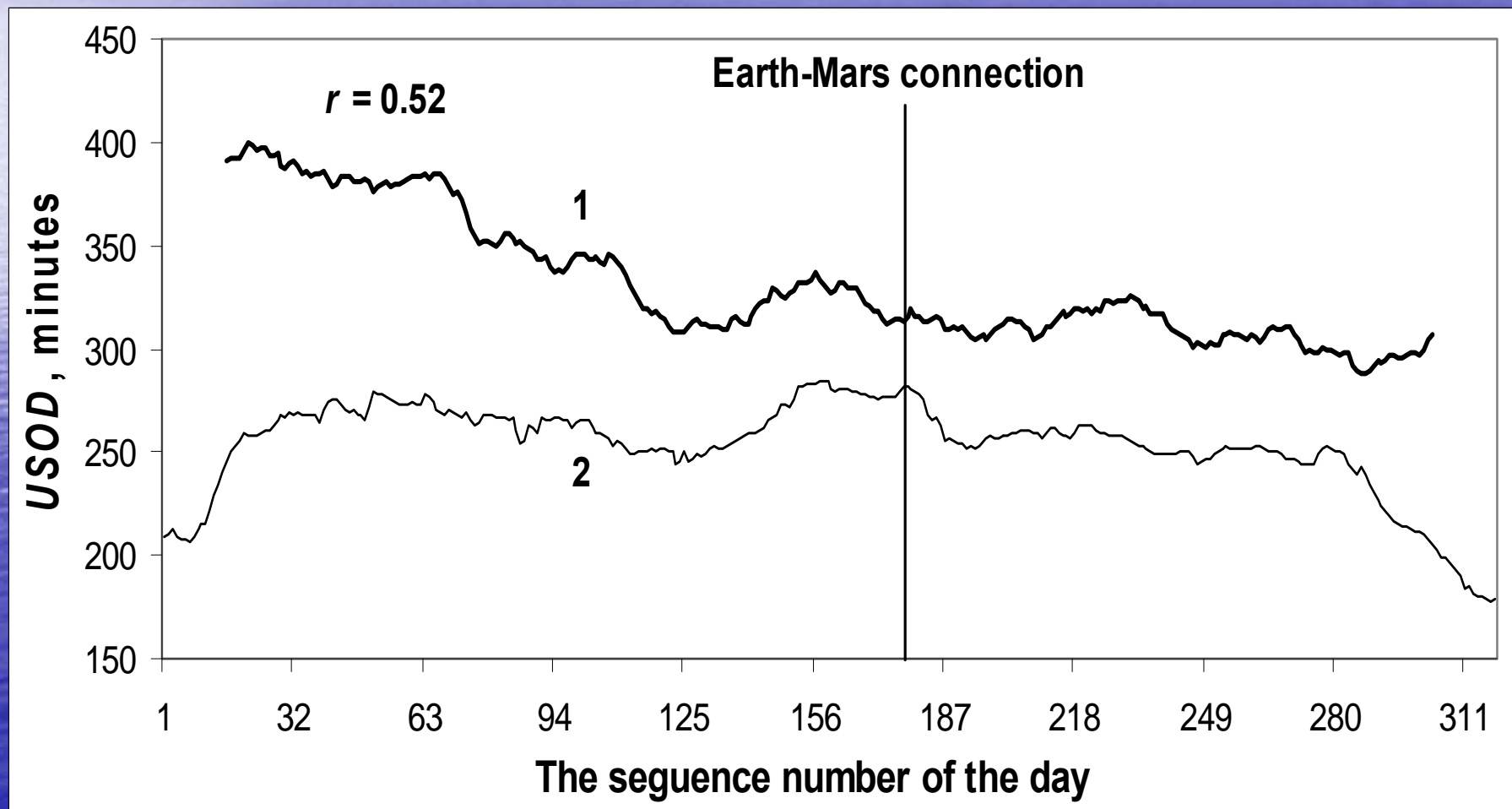


Fig. 5. Dynamics of the correlation coefficients (for each annual interval) polynomial trends of variations of the *SA* and the 1-st part of the equation of time for the period 1975-1984.



Fig. 6. Comparison of the average cycle obtained for the 5 intervals of *SA* in duration of 25.6 months, with a time of onset of connections and oppositions of the planets Earth, Mars.

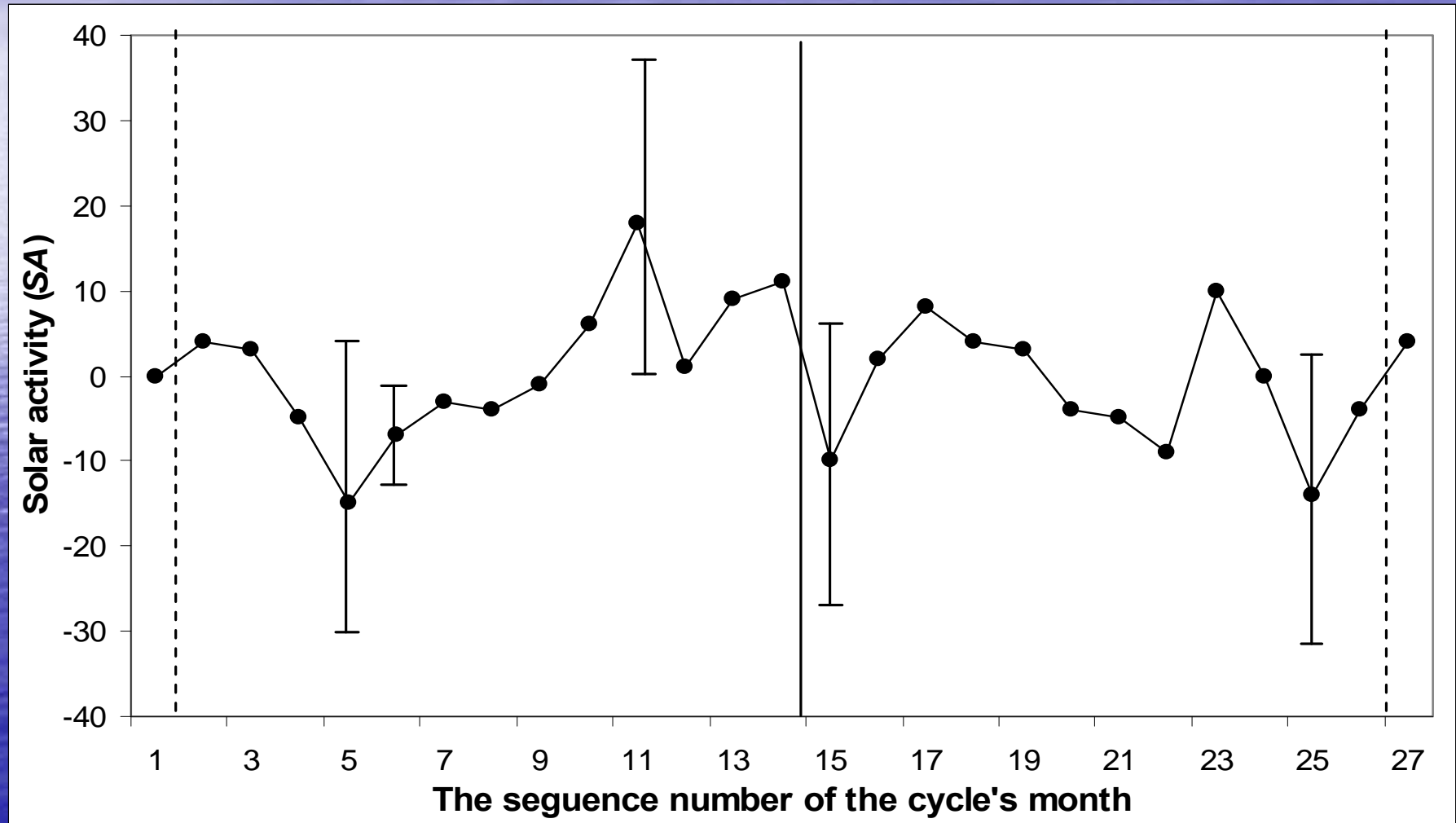


Fig. 7-a. Dynamics of the sign of the sectoral structure *IMF* (curve 1) and *SA* (2) in the loop of *IMF* on the minimum of *SA* 21th cycle of *SA*

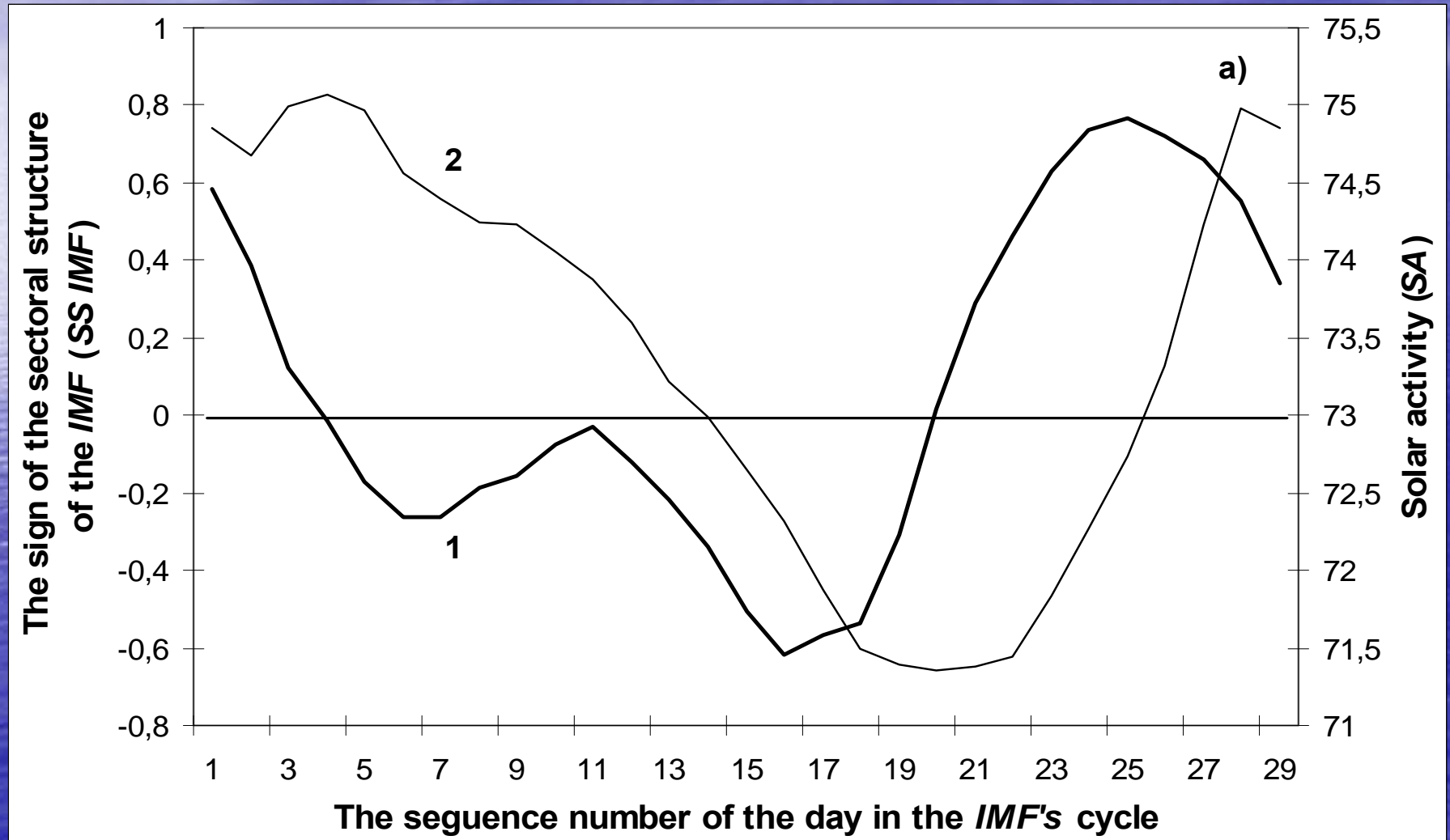


Fig. 7-b. Dynamics of the sign of the sectoral structure *IMF* (curve 1) and *SA* (2) in the loop of *IMF* on the maximum of *SA* 21th cycle of *SA*

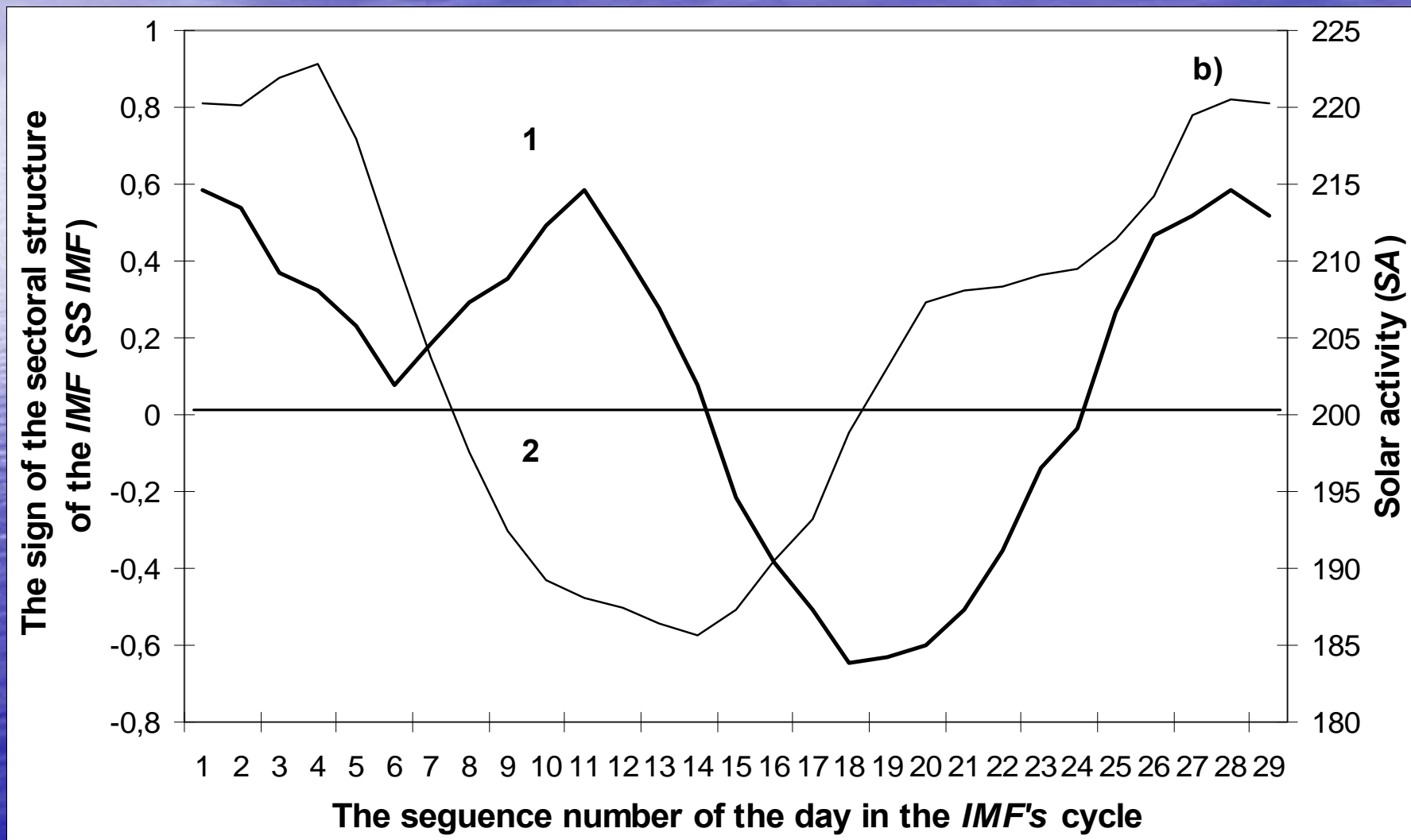
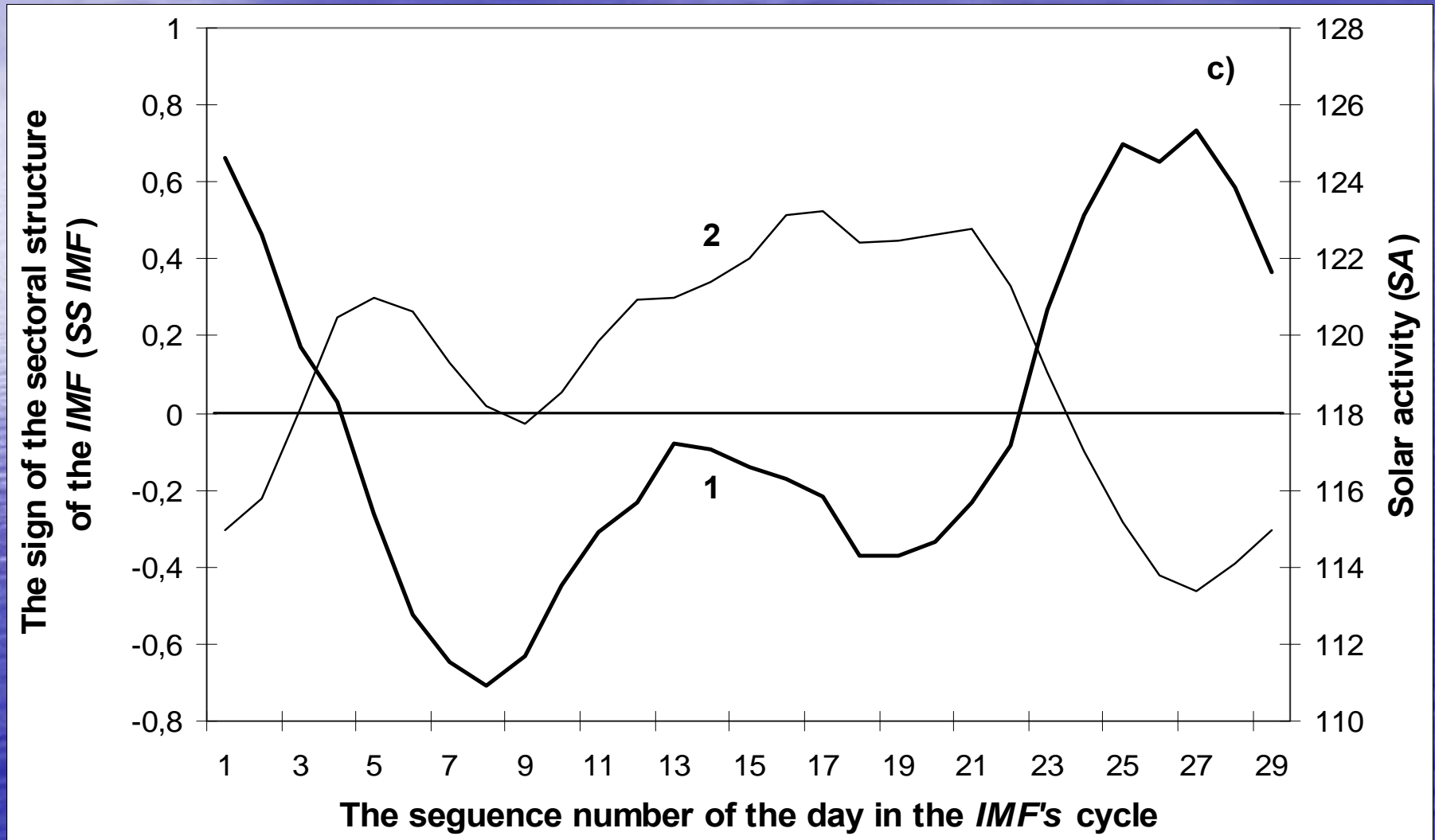


Fig. 7-c. Dynamics of the sign of the sectoral structure *IMF* (curve 1) and *SA* (2) in the loop of *IMF* on the descending branch of *SA* 21th cycle of *SA*



Thus, the observed cases of coincidence maximums of the unithiol semi-oxidation's duration (*USOD*) and total ozone content (*TOC*), *USOD* and solar activity (*SA*) and changes in relationships between them, changes in the sign of the correlation *USOD* and sectoral structure of the interplanetary magnetic field (*SS IMF*) due to action of cosmophysical factors (*CPF*) (electromagnetic or non-electromagnetic origin), and (or) due to specific of meteorological conditions at the site of research lead us to believe that this relationship is objective and is determined by two mechanisms, one of which contributes to the development or inhibition of oxidative reaction in the atmospheric surface layer, other - an increase or decrease in intensity of ozone depletion.

The executed researches of the influence of cosmophysical factors, especially the Interplanetary magnetic field (*IMF*) and the Earth's magnetic field (*EMF*), at the dynamics of unithiol's tests allow to consider the variation of magnetic field (*MF*) (seasonal, daily, etc.) and their components, as a physical agent capable of exerting influence on the rate of oxidation-reduction reactions in the model conditions of unithiol's tests. It is quite probable that this agent is involved in the mechanism of actions of the Space Physics factors on the redox processes in the atmosphere and biosphere of the Earth.