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Climatic Change in the Fifth and Sixth Centuries?

Importance of Climate for History
At the beginning of my paper I would like to quote statements of Helge Salvesen, who in a communication, published in 1992, stressed the "close connection between socio-cultural systems and the surrounding environment". The environment of a people, of course, might not be "exclusively characterized by the given natural conditions, but also by the structured ways in which a people organizes its existence. The climate belongs, however, to the more prominent given natural variables in diachronic investigations of socio-economic change in the long term". Following Salvesen's argument, the right answer to the question of causality between climate and history should not rely on a simple natural determinism, but on the consideration that the climate is "an impact factor limiting or offering possibilities of cultural choice, but which in itself does not determine a culture's response to climatic change". The author further distinguishes between climate as a real factor of causation and a motive only for cultural changes.¹

Further, one could make the following general observations: the lower the development of civilisation, culture and technical knowledge of a people, the higher the importance of climate as a relevant factor of historical causation,² and this, for the time being, is independent of whether short-term or long-term fluctuations in the climate are the more decisive with regard to possible human reactions that might leave traces in history.

Climatic Areas
Another preliminary remark should be made on the climatic zone we are concerned with: the whole of the Mediterranean basin, with which we are concerned mainly in the history of Byzantium, represents one isoclimatic area (fig. 1). Nevertheless we have to bear in mind also the adjacent areas to the north and northwest, because most of the migrations and invasions of tribes, which are important for the historical development of the late Roman and early Byzantine empire, originated in certain regions of central

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¹ "The climate as a factor of historical causation", European climate reconstructed from documentary data: methods and results = Paläoklimaforschung / Palaeoclimate Research 7 (1992), Special Issue: ESF Project "European Palaeoclimate and Man" 2, 219-233, esp. 219 (hereafter, Salvesen 1992).


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Asia.

Sources for Climatic History

Our information about the climatic situation from the fourth to the sixth century and about possible changes of climate come from historical — written or archaeological — sources on the one hand, and on the other hand from scientific research, from palaeobotanical data, especially tree-rings and pollen, and palaeogeographical data, especially concerning the water régime (changing sea and lake levels and development of fluvial systems).

Before discussing historical data, let me first give a synopsis of the scientific approaches to the reconstruction of palaeoclimate.

Palaeogeographical Data

I shall begin with palaeogeographical data: research on the development of the sea level in the central Mediterranean shows a difference on average of minus 1-2m, or even less, for the last two millenia in comparison with present. Some authors concede the possibility that changes of sea level might depend on climate changes, but also on a number of other processes, so that these data should be handled cautiously. It is well known, for example, that the sea level has risen continuously since 1800 B.P. — at least 2 m, but recent estimates reach even 4.5m —, whereas independently of this development the western coast of Asia Minor has sunk c. 1m during the last 3000 years and the southern coast has risen slightly.

The situation is similar for lake levels: data exist for five lakes in Greece (Vegoritis, Khimatidis, Kastoria, Ioannina, Xinas) and two in Yugoslavia (Palu, Malo Jezero), which show a maximum level at 6000 B.P. and a gradually increasing desiccation since then. But until now the scarcity of data has allowed no precise information concerning whether insolation changes or change in atmospheric circulation patterns are the main reason for level changes; nor do we know when exactly changes happened.

The study of fluvial systems and environments (landform developments, such as sedimentation and aggradation) seems to be also important, but especially for long-term changes. Therefore it still remains difficult to differentiate between fluvial phenomena, between an extreme flood event with following relaxation, and a prolonged phase of a lower flood frequency. A problem which differs in its importance according to the circumstances is whether the anthropogenic influence, about which there is no doubt

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5 W.D. Brice (ed.), The environmental history of the Near and Middle East since the last Ice Age (London-New York-San Francisco 1978).

6 S.P. Harrison, L. Saarse and G. Digerfeldt, "Holocene changes in lake levels as climate proxy data in Europe", "European Palaeoclimatic and Man" 1, 159-169.

7 L. Starkel, "Fluvial environments as a source of information on climatic changes and human impact in Europe", "European Palaeoclimatic and Man" 1, 241-254, esp. 250.