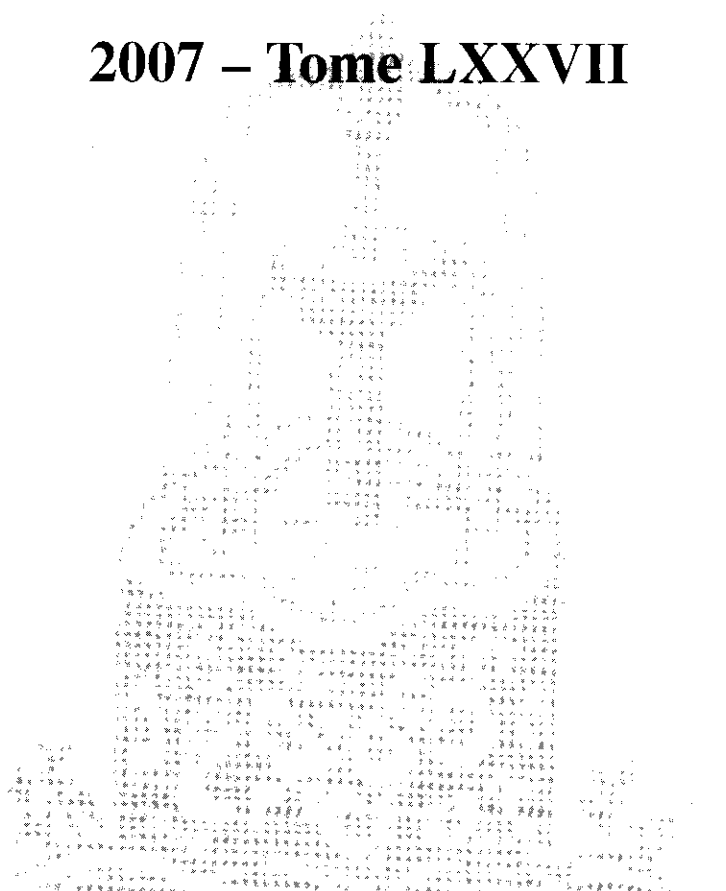


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WEATHER AND CLIMATE AS FACTORS AFFECTING LAND TRANSPORT AND COMMUNICATIONS IN BYZANTIUM (*)

I. INTRODUCTION

Byzantinists have recently become aware of the geographical conditions that affected the evolution of the Byzantine society and economy. The implication of environmental – physical factors in the configuration and evolution of landscapes and their socio-cultural impact in local or regional scale has become a new core subject in the study of the historical geography of the Byzantine world. The bibliography on the historical geography of Byzantium is vast and is increasing almost in geometrical progression every year, as one can infer from the growth of the relevant section in the *Byzantinische Zeitschrift* (1).

(*) Full version of a panel paper read in the *21st International Congress of Byzantine Studies* (London, 21-26 August 2006). I wish to thank Prof. Dr. Peter Van Deun and Dionysios Stathakopoulos for suggestions and remarks.

(1) A renewed interest on the historical geography of Byzantium can be detected in the initiation of the *Tabula Imperii Byzantini* project (1966) with 10 published and 4 under preparation volumes. For an overview of the establishment, the activities and the publications of *TIB*, cf. J. KODER, *Auf den Spuren eines Weltreichs – Die Tabula Imperii Byzantini. Rekonstruktion der spätantiken und mittelalterlichen Siedlungsrealität in Südosteuropa und im östlichen Mittelmeerraum*, in *Lese-Buch*, ed. Praesidium der Österreichischen Akademie der Wissenschaften, Wien, 1997, pp. 107-110 and WIKIPEDIA, *Tabula Imperii Byzantini*, http://de.wikipedia.org/wiki/Tabula_Imperii_Byzantini (2 May 2006). The important work of J. KODER, *Der Lebensraum der Byzantiner. Historisch-geographischer Abriß ihres mittelalterlichen Staates im östlichen Mittelmeerraum* (*Byzantinische Geschichtsschreiber*, Erg. Bd. 1), Graz - Wien - Köln, 1984 is a reference book for the various fields of research in the historical geography of Byzantium (now available in Greek translation with updated bibliography : J. KODER, *Το Βυζάντιο ως χώρος. Εισαγωγή στην ιστορική γεωγραφία της ανατολικής Μεσογείου στη βυζαντινή εποχή*, Thessaloniki, 2004).

In this context, travel, transport and communications of the Byzantine world have received much attention by scholars. Several studies have been published, most of them highlighting the economic, social and cultural parameters of movement in the Byzantine world. In two recent international conferences dedicated to Byzantine travel and travellers, the long tradition of Byzantine texts concerning travel has been discussed to a considerable extent and depth and light was shed on various aspects of the history of communications and travel of the Byzantine period⁽²⁾. From a methodological point of view, a common characteristic of these studies is the emphasis laid on the economic, social and cultural framework of causes and results related to travel and transport phenomena. Historical research on Byzantine texts as well as the study of archaeological remains all over the Mediterranean have demonstrated an extended network of land- and sea-routes that traders, armies, public officers, monks and civilians were using during travel⁽³⁾, and have managed to figure out the duration of the journeys for fixed courses of travel⁽⁴⁾. Subjects related to travellers' mentality or the transformation of the surviving travel narratives have also been investigated in depth⁽⁵⁾. Never-

(2) Cf. A. DIERKENS - J.-M. SANSTERRE (eds.), *Voyages et voyageurs à Byzance et en Occident du VI^e au XI^e siècle. Actes du colloque international organisé par la Section d'Histoire de l'Université Libre de Bruxelles en collaboration avec le Département des Sciences Historiques de l'Université de Liège (5-7 mai 1994)* (Bibliothèque de la Faculté de Philosophie et Lettres de l'Université de Liège, 278), Genève, 2000, and R. MACRIDES (ed.), *Travel in the Byzantine World. Papers from the Thirty-fourth Spring Symposium of Byzantine Studies, Birmingham, April 2000* (Society for the Promotion of Byzantine Studies, Publications, 10), Aldershot, 2002.

(3) A. AVRAMEA, *Land and Sea Communications, Fourth-Fifteenth Centuries*, in A. E. LAIOU (ed.), *The Economic History of Byzantium: From the Seventh through the Fifteenth Century*, Washington, 2002, pp. 57-90.

(4) Speed of travels overland and by ship has been studied, particularly in reference to the axes connecting Constantinople to other centers of the Byzantine empire and the West or East; cf. I. DEMETROUKAS, *Ενδείξεις για τη διάρκεια των χερσαίων ταξιδιών και μετακινήσεων στο Βυζάντιο (6ος-11ος αιώνας)*, in *Σύμμεικτα* 12 (1998), pp. 8-35.

(5) C. ANGELIDI, *Εμπορικοί και Αγιολογικοί Δρόμοι (4ος-7ος αι.). Οι μεταμορφώσεις της ταξιδιωτικής αφήγησης*, in *Πρακτικά του Α΄ Διεθνούς Συμποσίου, Η καθημερινή ζωή στο Βυζάντιο, τομές και συνέχειες στην ελληνιστική και ρωμαϊκή παράδοση*, Αθήνα 15-17 Σεπτεμβρίου 1988, Athens, 1989, pp. 675-685; A. P. KAZHDAN - A. WHARTON EPSTEIN, *Change in Byzantine Culture in the Eleventh and Twelfth Centuries*, Berkeley - Los Angeles

theless, as Michael McCormick admits, “the study of communications in the Middle Ages is in its infancy” (6), and this conclusion allows further research to be carried out.

Beyond the social, economic and cultural dimensions of travel, transport and communications, there is also a material basis in the reality of travellers. This is configured not only by subjective factors related to people’s physical condition, economic status, motives and selection of transport means, but also by external-environmental factors and conditions. Sometimes, these conditions may play a decisive role in the whole procedure of communication. The Byzantine Empire, as any other preindustrial society, was highly exposed to the impact of environmental factors. Given that all medieval journeys had to be made on foot, on horseback or by water, travellers – either on land or on sea – were sensitive to external conditions. These conditions could affect the above-mentioned subjective factors in various ways. Circulation of goods and people in ancient and medieval times was slow, irregular, subject to the whims of weather, and thus largely seasonal. Therefore, among the environmental factors involved in travel, transport and communications, meteorological phenomena and climate played an important role (7). This role may be approached either in a long-term or in a short-term context, and in a regional or local scale.

In this paper I explore various aspects of impact that the meteorological factor had upon travel, travellers and communications overland. I selected as topic for this study overland trips, because journeys by sea during the Byzantine period have been studied far more systematically. Travellers in this period used to opt to travel by ship – if choice was avail-

- London, 1990, pp. 48-49 ; C. GALATARIOTOU, *Travel and Perception in Byzantium*, in *DOP*, 47 (1993), pp. 221-241 ; E. KISLINGER, *Reisen und Verkehrswege zwischen Byzanz und dem Abendland vom neunten bis in die Mitte des elften Jahrhunderts*, in E. G. KONSTANTINOU (ed.), *Byzanz und das Abendland im 10. und 11. Jahrhundert*, Köln - Weimar - Wien, 1997, pp. 231-257 ; L. ELLIS and F. L. KIDNER, *Travel, Communication and Geography in Late Antiquity : Sacred and Profane*, Aldershot, 2004.

(6) M. McCORMICK, *Origins of the European Economy : Communications and Commerce AD 300-900*, Cambridge, 2002, p. 16.

(7) For the seasonal character of travel in antiquity cf. L. CASSON, *Travel in the Ancient World*, Toronto, 1974, and B. RAPSKE, *Acts, Travel and Shipwreck*, in D. W. J. GILL and C. H. GEMPF (eds.), *The Book of Acts in Its Graeco-Roman Setting*, Grand Rapids (Michigan), 1994, pp. 1-48.

lable – because it was easier and faster⁽⁸⁾. Consequently, among the dangers of the sea, stormy weather might have had a negative effect on either the length or the safety of a voyage. Storms and the terror they could cause dominated Byzantine writers' attitudes toward the sea⁽⁹⁾. Weather events and their impact upon sea voyages have been investigated by the application of exemplified modern navigational data to the written evidence of the Middle Ages⁽¹⁰⁾. As far as land transport and communication are concerned, there are no specialized studies investigating weather and climate as factors affecting people during overland travel⁽¹¹⁾. This paper, therefore, attempts to fill this gap. It sets in from a macroscopic point of view by examining the possibility of regional long-term consequences of climatic change upon overland travel, transport and communications during the Byzantine period. Then, short-term local implications of weather phenomena are discussed through examples derived from narrative sources of the period. The main effort focuses on the critical examination of weather- and climate-related accounts derived from Byzantine historiographic and hagiographical texts. The factual material of the relevant accounts is presented, and problems of perception and attitude are discussed. By posing questions about the sensitivity of travellers against weather and climate, the types of weather phenomena described in the Byzantine sources as affecting them, as well as the concepts of weather that travellers had, I attempt to combine the travellers' factual reality during the process of medieval overland communication with their emotions concerning weather and climate.

(8) A. KARPOZILOS and A. KAZHDAN, *Travel*, in *ODB*, p. 2109.

(9) For a catalogue of known shipwrecks in the Mediterranean from 7th century BC through 549 AD cf. G. SCHMIDT, R. BÖKER and H. GUNDEL, *Winde*, in *RE*, vol. 8A.2, Stuttgart, 1958, coll. 2211-2387, especially coll. 2265-2280, and A. J. PARKER, *Ancient Shipwrecks of the Mediterranean and the Roman Provinces (BAR. International Series, 580)*, Oxford, 1992. For Byzantine shipping see now G. MAKRI, *Ships*, in LAIOU, *The Economic History of Byzantium*, pp. 91-100.

(10) Such a procedure has reinforced the continuity in climatic phenomena in the maritime Mediterranean since at least the 5th century AD; cf. J. H. PRYOR, *The Voyage of Rutilius Namatianus: From Rome to Gaul in 417 CE*, in *Mediterranean Historical Review* 4 (1989), pp. 271-280; ID., *Geography, Technology and War: Studies in the Maritime History of the Mediterranean, 649-1571*, Cambridge, 1988, pp. 649-1571.

(11) There is no study on the seasonal rhythms of land travel in the Carolingian or Byzantine world; cf. M. MCCORMICK, *op. cit.*, p. 445.

II. LONG TERM CLIMATIC CHANGE AND OVERLAND COMMUNICATION

There is no doubt that several examples of recent meteorologically induced disasters show that the vagaries of weather and the changes of climate may become at any moment a critical factor not only in travel, transport and communications, but also in the whole spectrum of social and economic life. The susceptibility of modern societies – either in industrialized Europe, America and Oceania, or in developing Asia and Africa – to the whims of climate has increased man's awareness of climatic change and has led during the last decades to a widening international and interdisciplinary cooperation aiming at the reconstruction of climatic change in historical time. The discipline of historical climatology has undertaken the task of unearthing, processing and analyzing meteorological data hidden in documentary historical evidence aiming to correlate them with all available types of physical and anthropogenic paleoclimatic data to achieve the goal of reconstructing climatic change of the past⁽¹²⁾.

If we focus our interest on the Eastern Mediterranean and the Middle East and try to outline the results of historical climatology in the study of climatic change during the Byzantine period, it is clear that no consensus about the long-term characteristics or changes of the ancient and medieval climate has been reached so far⁽¹³⁾. During the last decades, under the pressure of the increasing interest in environmental issues and the debate on the causes and the future of modern global warming, the

(12) For a good overview concerning recent trends in the discipline of historical climatology see: R. BRÁZDIL, C. PFISTER, H. WANNER, H. VON STORCH and J. LUTERBACHER, *Historical Climatology in Europe. The State of the Art*, in *Climatic Change*, 70 (3) (2005), pp. 363-430.

(13) For a presentation of problems and the state of the research in the historical climatology of the Byzantine period cf. D. STATHAKOPOULOS, *Reconstructing the Climate of the Byzantine World: State of the Problem and Case Studies*, in J. LASZLOVSKY and P. SZABÓ (eds.), *People and Nature in Historical Perspective*, Budapest, 2003, pp. 241-250. For a synthesis that covers the Byzantine period from the point of view of historical climatology and presents, analyzes and discusses documentary evidence of meteorological phenomena from the Byzantine sources cf. I. TELELIS, *Μετεωρολογικά φαινόμενα και κλίμα στο Βυζάντιο*, 2 vols. (*Πονήματα. Συμβολές στην έρευνα της ελληνικής και λατινικής γραμματείας*, 5, 1-2), Athens, 2004.

rise of disciplines such as palynology, sedimentology and limnology has allowed scientists to infer climatic variables from proxies in absence of real meteorological measurements. Though modern paleoclimatic research has figured out – not without controversy – the evolution of climatic conditions from antiquity through modern time for central, western and northern Europe, paleoclimatic evidence for the Eastern Mediterranean and the Middle East during the Byzantine period has not become conclusive⁽¹⁴⁾. Whereas it is generally accepted that the natural world in ancient and medieval times did not differ entirely from that of today, it may not have been quite as similar as we often believe. Physical conditions in the Mediterranean basin during the first millennium are little known and, thus, differences between changes of climate and the living conditions of past societies are topics that attract scientific interest⁽¹⁵⁾. In this framework, many authors have come to the conclusion that, since classical times the Mediterranean has been experiencing a continuous trend towards drier conditions; others argue against aridification and discuss whether there have been major climatic changes in the arid, semiarid and sub-humid regions of the Levant since Late Antiquity⁽¹⁶⁾.

The debate about climatic change during historical times has arisen since scientists in the early 20th century attempted to interpret major

(14) For an appraisal of the recent trends in the interdisciplinary study of the European climate history cf. R. BRÁZDIL e.a., *op. cit.* For an updated discussion about climatic change in the Eastern Mediterranean and the Middle East during the Byzantine period cf. I. TELELIS, *Historical-climatological Information from the Time of the Byzantine Empire (4th-15th Centuries AD)*, in *History of Meteorology*, 2 (2005), pp. 41-50 (<http://www.meteohistory.org/2005historyofmeteorology/04telelis.pdf>); Id., *Climatic Fluctuations in the Eastern Mediterranean and the Middle East AD 300-1500 from Byzantine Documentary and Proxy Physical Paleoclimatic Evidence – a Comparison*, in *JÖB*, 58 (2008), forthcoming.

(15) K. RANDSBORG, *The First Millennium AD in Europe and the Mediterranean: An Archaeological Essay*, Cambridge - New York, 1991.

(16) For a brief climate history of the Mediterranean region since classical times cf. O. REALE and P. DIRMEYER, *Modeling the Effects of Vegetation on Mediterranean Climate During the Roman Classical Period*, I, *Climate History and Model Sensitivity*, in *Global and Planetary Change*, 25 (2000), pp. 163-184, especially pp. 170-171. Cf. also N. HEISKA, *The Economy and Livelihoods of the Early Christian Monasteries in Palestine*, Ms. A. Thesis, Helsinki, 2003, p. 18. There are paleoclimatic studies indicating that the period 4th-6th centuries AD was humid in the Levant; cf. Y. HIRSCHFELD, *A Climatic Change in the Early Byzantine Period? Some Archaeological Evidence*, in *Palestine Exploration Quarterly*, 136 (2004), pp. 133-149.

changes in the historical past by using the environmental and climatic factor as deterministic parameters in the analysis of historical causation. A significant aspect of this debate was the timing and the causation of population migrations in Eurasia. This phenomenon was associated with major events of the recent climatic history. For instance, it has been speculated that the *Völkerwanderung*, that culminated during the barbarian invasions in the Roman Empire in Late Antiquity was triggered by increased dryness. I will set aside the interpretation of population migrations and the possible role that the climatic factor has played in this historical phenomenon⁽¹⁷⁾. But the answer to the question whether and of what kind of possible major climatic changes or less significant climatic oscillations deduced from existing physical and anthropogenic paleoclimatic evidence, can particularly affect in a regional long-term basis overland travel, transport and communication during the Byzantine period comes within the focus of this paper. Can we observe the abandonment of the use of certain land routes and changes in the network of road systems that might be explained by the climatic factor? In order to approach this problem I will try to put forward some case-studies aiming not to exaggerate the importance of the climatic factor, but to question the possibility of regional long-term effects of climatic change upon overland travel, transport and communications.

Stobi is an ancient city ca. 150 km north of Thessalonica, lying in the juncture of the Erigon and the Axios rivers. The site flourished as a Hellenistic town, a Roman city, and finally as a provincial capital in Late Antiquity through to late 6th century. Excavations since 1970 have contributed significantly to the understanding of the history of Stobi and its decline in the late 6th century⁽¹⁸⁾. Robert Folk attributed the abandonment of Stobi to political reasons, barbaric invasions and climatic change. Geoarchaeological data from Stobi corroborates the worsening of

(17) The epistemological debate concerning environmental determinism is still open. For a discussion about the school of thought established by Ellsworth Huntington that introduced climatic change in historical causation of the Eurasiatic past and the use of the climatic factor as interpretive tool in Byzantine history see I. TELELIS, *op. cit.*, n. 13, pp. 35-50.

(18) J. WISEMAN, *Multidisciplinary Research in Classical Archaeology. An Example From the Balkans*, in N. WILKIE and W. COULSON (eds.), *Contributions to Aegean Archaeology. Studies in Honor of W. A. McDonald*, Minneapolis, 1985, pp. 259-281.

climatic conditions during the first half of the 1st millennium AD towards drought⁽¹⁹⁾. To this example several others from various regions of the Eastern Mediterranean and the Middle East can be added.

In 1977 Clive Foss put forward the question whether the decline of urban life in Anatolia during Late Antiquity and the early Byzantine period (4th-7th centuries) can be explained not only by socio-economic changes, but also by changing natural environment and climate⁽²⁰⁾.

In the case of the Negev Highlands – an area situated in the desert fringe of Israel – climatic change seems to have played a clearer role. During periods of strong central governments (especially during the Roman and early Byzantine periods), permanent settlements were established. The settlers subsisted on a combination of herding and farming by enabling optimal distribution of water in irrigating the fields through the systematic construction of water-harvesting installations. Until the Islamic period (9th-10th centuries), Negev settlements reached their zenith in terms of number of sites and density of population. An abrupt cut in population and agriculture attested by physical and archaeological evidence has led scientists to conclude that this marginal area experienced a change of climate towards arid conditions around the 7th century⁽²¹⁾.

The Decapolis region in Northern Jordan flourished during the Roman, Byzantine and Umayyad period, leading to the construction of great monuments. The region was abandoned in the 10th century. Thereafter, no significant resettlement took place. Earthquakes, diseases and political reasons are thought to be responsible for its decline. However, climatic

(19) R. FOLK, *The Geologic Framework of Stobi*, in J. WISEMAN and D. MANO-ZISSI (eds.), *Studies in the Antiquities of Stobi*, 1, Beograd, 1973, pp. 37-57.

(20) C. FOSS, *Archaeology and the "Twenty Cities" of Byzantine Asia*, in *American Journal of Archaeology*, 81 (1977), pp. 469-486, and *Id.*, *Ephesus After Antiquity: a Late Antique, Byzantine and Turkish City*, Cambridge, 1979, p. 187. Cf. also C. MANGO, *Byzantium. The Empire of the New Rome*, London, 1980, p. 68ff. and J. KODER, *Climatic Change in the Fifth and Sixth Centuries?*, in P. ALLEN and E. JEFFREYS (ed.), *The Sixth Century - End or Beginning?* (*Byzantina Australiensia*, 10), Sydney - Brisbane, 1996, pp. 270-285. For a recent discussion about the decline of late Roman cities cf. J. H. W. G. LIEBESCHUETZ, *Decline and Fall of the Roman City*, New York, 2001.

(21) A. YAIR and S. BERKOWICZ, *Climatic and Non-climatic Controls of Aridity: The Case of the Northern Negev of Israel*, in *Catena Suppl.* 14 (1989), pp. 145-158.

change could have been also responsible for the abandonment of the area (22).

As it becomes clear from the above cases, there is evidence of climatic shifts in various areas of the Byzantine Empire. Among the socio-economic consequences of environmental change in these cases, one should consider possible effects in the existence and function of local land routes that were serving the needs of overland communication. The abandonment of previously inhabited and wealthy towns and cities must have contributed to the relocation of local and regional networks of communication and potentially made people to trace new land routes suitable for their new needs. Nevertheless, this scheme is rather theoretical and I was not able to verify it from archaeological and literary evidence for the above-mentioned cases of study.

In another example, information from the Byzantine sources is clear enough to let us conclude about possible long term impacts of – possible – climatic change upon overland transport and communication. In the war against the Avars, in 600 during the reign of Maurice, the Byzantine commander Comentiolos tried to lead his army across the mountains of Haimos from Novae to Philippopolis (modern Gigen to Plovdiv, Bulgaria). This route was part of the Roman “via Traiana” (23). At Novae, Comentiolos consulted the indigenous people about the possibility of transiting with his army the “Trajan pass”, the most elevated site of the route (24). Theophylaktos Simokattes and Theophanes Confessor have delivered interesting references regarding the arguments that an 88-year-old man used to discourage Comentiolos from using the Trajan pass. According to Theophanes, the old man alleged that the pass was difficult to transit: ἔφασκε δυσχερῆ ταύτην εἶναι καὶ ἀδιόδευτον ἀπὸ ἐτῶν πολλῶν καὶ χειμῶνος ὄντος, ὑψηλὰ ὄρη καὶ χιόνας κεκτημένην. Theophylaktos Simokattes adds that the route was out of use during the

(22) B. LUCKE, M. SCHMIDT, Z. AL-SAAD, O. BENS AND R. HÜTTL, *The Abandonment of the Decapolis Region in Northern Jordan – Forced by Environmental Change ?*, in *Quaternary International*, 135 (2005), pp. 65-81.

(23) M. WENDEL, *Karasura III : Die Verkehrsanbindung in frühbyzantinischer Zeit (4.-8. Jh. n. Chr.)* (Schriften des Zentrums für Archäologie und Kulturgeschichte des Schwarzmeerraumes, 6), Langenweißbach, 2005.

(24) On the “Trajan pass” cf. P. SCHREINER, *Theophylaktos Simokattes Geschichte* (Bibliothek der griechischen Literatur, 20), Stuttgart, 1985, p. 357, n. 1071.

last 90 years and that the transit was difficult due to the bad condition of the path and the winter : προηγόρευε τήν τε δυσχωρίαν τόν τε χειμῶνα καί τὸ τῆς τρίβου ἀνήμερον διεξήρχετο (25). The details of both passages are striking and could be favorable to the hypothesis that for a long time the Trajan pass, which had been the main Roman road across the Haimos Mountain, was out of use at least during winter. The transit would take place under extreme and dangerous conditions, an insufficiently maintained or abandoned path through a narrow pass the transiting of which was becoming more dangerous because of the cold, ice and the accumulation of snow (26).

If we consider the old man's account concerning the usability of the Trajan pass as true (despite the almost one century spanning chronological depth of this episode) it can be interpreted as an indication of possible consequences of weather and climate to overland travel, transport and communication. We are probably facing a regional long-term effect of climatic change upon overland communication : as the climate of the Balkan alpine zone deteriorated to harsher conditions – especially during winter – the use of the route Nova -Philippopolis became problematic (27). Whatever the truth is from a macroscopic point of view, this

(25) Theophanes, *Chronographia*, p. 282, 27 - p. 283, 3, ed. C. DE BOOR, *Theophanis chronographia*, Leipzig, 1883-1885, and Theophylaktos Simokattes, *Histories VIII*, 4, 3-6, ed. C. DE BOOR, ed. corr. P. WIRTH, *Theophylacti Simocattae historiae (Bibliotheca Scriptorum Graecorum et Romanorum Teubneriana)*, Stuttgart, 1972. Cf. translation of C. MANGO and R. SCOTT, *The Chronicle of Theophanes Confessor, Byzantine and Near Eastern History AD 284-813*, Oxford, 1997, pp. 407-408.

(26) SCHREINER, *op. cit.*, n. 24, claims that Theophylaktos Simokattes' account is the unique written reference about the use of this route ; cf. V. BEŠEVĽIEV, *Bemerkungen über die antiken Heerstraßen in Ostteil der Balkanhalbinsel*, in *Klio*, 51 (1969), pp. 483-495, cf. p. 489. HALDON interprets this account as indicative of what contemporaries thought about the road system in the region and points out that long-term changes, exacerbated by constant devastation and raiding in the Balkans from the later sixth century, led to the near total collapse of the late Roman urban network and the abandonment of maintaining the roads by local authorities ; cf. J. HALDON, *Warfare, State and Society in the Byzantine World 565-1204*, London, 1999, p. 52.

(27) L. and M. WHITBY point out that it is difficult to accept the claim of the old man about the abandonment of the Trajan pass for 90 years since Justinian had constructed numerous refuge-forts in the Haimos Mountains. Thus, it would have been surprising if some had not been located near the route across the

episode provides some key-characteristics for the impact that weather could have during overland travel on a short-term and local basis. This impact is analyzed in the next section.

III. WEATHER IMPACT UPON OVERLAND TRAVEL : DOCUMENTARY EVIDENCE

The impact that weather and climate had upon overland travel, transport and communications during the Byzantine period is approached in this section through the analysis of the consequences that specific weather phenomena had upon travellers on one hand, and through the calibration of travellers' reactions to weather and climate on the other. This approach can offer conclusions regarding the concept of and people's attitudes towards weather and climate during overland travel. In the following, a synthesis of documentary evidence derived from Byzantine narrative sources relative to the climatology of overland travel is presented.

The chronological spectrum covered by this presentation is as wide as the chronological limits of Byzantine history. Scattered references from all periods of Byzantium are pooled and compared under the focus of meteorological impact upon overland travel. An overview of the recorded meteorological references may let us figure out the general character of our textual material. Weather-related references arise mainly from historiographic and hagiographical texts⁽²⁸⁾. Byzantine chronographers have delivered several reports on extreme or catastrophic weather events that have afflicted individuals or groups. Usually, such reports reflect the religious and eschatological preconceptions of the authors⁽²⁹⁾. In the texts

Trajan pass ; cf. L. and M. WHITBY, *The History of Theophylact Simocatta. An English Translation with Introduction and Notes*, Oxford - New York, 1986, pp. 334-335 ; cf. also MANGO-SCOTT, *op. cit.*, n. 25, p. 408, n. 8.

(28) For the distinction of the Byzantine historiographic genres (i.e. historia, chronicon, historia ecclesiastica) I follow the traditional classification as elaborated by K. KRUMBACHER ; cf. briefly A. KAZHDAN, *Historiography*, in *ODB*, pp. 937-938.

(29) Exactly as nowadays, natural disasters were phenomena that used to attract peoples' attention in Antiquity and the Middle Ages. For the perception and the interpretation of natural disasters as signs of the approaching end of the world during Late Antiquity see P. BARCELÓ, *Die Darstellung von Naturkatastrophen in der spätantiken Literatur*, in E. OLSHAUSEN and H. SONNABEND (eds.), *Naturkatastrophen in der antiken Welt. Stuttgarter Kolloquium zur historischen*

of historians, weather phenomena are serving the needs of the historical narrative, i.e. the demonstration of the initiatives or the deeds of the heroes who are usually the benefactors of the authors. Thus, such accounts function as supplementary material in shaping the background of military and imperial action. The writings of the church historians, who stand between the classicizing political historians and the chronographers in literacy and exactness, include meteorological references as well. Within the Christian scope of those texts, weather events either appear as manifestations of the divine will or supplement the action of historical personages. Lastly, in hagiography the spontaneous references to meteorological phenomena are either incorporated in the hagiographical texts by producing – in many cases – formulaic structures of miraculous narratives of the holy men's deeds and acts, or they shape the background of vivid details of everyday life ⁽³⁰⁾.

In a general sense, weather records from Byzantine sources express complaint and dissatisfaction. Weather and climate became memorable in the consciousness of the Byzantine authors when the consequences of a meteorological event were “extraordinary” and/or “abnormal”. Actually, one must expect that this deviation from “normality” had influenced the

Geographie des Altertums, 6, 1996 (*Geographica Historica*, 10), Stuttgart, 1998, pp. 99-104 and M. MEIER, *Zur Wahrnehmung und Deutung von Naturkatastrophen in 6. Jahrhundert n. Chr.*, in D. GROH, M. KEMPE, and F. MAUELSHAGEN (eds.), *Beiträge zu ihrer Deutung, Wahrnehmung und Darstellung in Text und Bild von der Antike bis ins 20. Jahrhundert (Literatur und Anthropologie*, 13), Konstanz, 2003, pp. 45-64.

(30) For a qualitative approach of weather references from the Byzantine narrative sources see I. TELELIS, *op. cit.*, n. 13, pp. 780-782. Recently it has been proposed that the natural disasters of the 6th century AD played a significant role to the transformation of the classicizing late antique historiography and the early ecclesiastical history : M. MEIER, *Prokop, Agathias, die Pest und das ‚Ende‘ der antiken Historiographie. Naturkatastrophen und Geschichtsschreibung in der ausgehenden Spätantike*, in *Historische Zeitschrift*, 278 (2004), pp. 281-310 ; P. SCHREINER has expressed objections to this approach, cf. *BZ*, 97 (2004), pp. 646-647. For an analysis of weather references – especially on drought and rainfall – in some miracle narratives of early Byzantine Saints' Lives see D. STATHAKOPOULOS, *Rain Miracles in Late Antiquity. An Essay in Typology*, in *JÖB*, 52 (2002), pp. 73-87. For a typology of natural phenomena and their implications in the hagiographical texts see now T. PRATSCH, *Der hagiographische Topos : Griechische Heiligenviten in mittelbyzantinischer Zeit (Millenium-Studien zu Kultur und Geschichte des ersten Jahrtausends n. Chr.*, 6), Berlin-New York, 2005, pp. 270-289.

way in which the Byzantine authors used to combine weather events with travel, transport and communications ⁽³¹⁾. There is sufficient documentary evidence reflecting complain and dissatisfaction towards adverse weather phenomena which were causing inconvenience and trouble to travellers. However, which weather phenomena do the Byzantine authors describe as affecting people in overland travel and what was the impact of specific weather events upon land transport and communications ? A survey of the relevant records provides some patterns of impact that differentiate according to the season of the year during which a land trip is carried out, the geographical region in which the trip takes place and the purpose of overland travel.

1. COLD, SNOW AND ICE

Closure of overland travel and communications could happen due to thick snow cover or frost during winter season. Georgios Pachymeres provides a vivid description of harsh wintry conditions in Constantinople AD 1299 and their consequences to overland communications : *Τότε τοίνυν καὶ χειμῶν ἐφειστήκει καὶ χειμῶνων ὁ μέγιστος, καὶ τῶν ἐξαισίων, καὶ ὃν ἰδεῖν πω καὶ γηράσκουσιν οὐδαμῶς ἐξεγένετο. τόση γὰρ χιῶν ἐπεστίβαστο ὡς κλεισθῆναι μὲν οἰκιῶν τῶν χθαμαλῶν διεξόδους, σημεῖοις δέ τισι καὶ κοντοῖς τοῖς μὲν στοχαζομένους, τοῖς δ' ὀργάνοις χρωμένους, τινὰς ὑπανοίγειν τοῖς ἐγκλεισθεῖσι τὰ δώματα, καὶ ἐπὶ πλείσταις ἡμέραις μηδένα γῆν ἢ ἰδεῖν ἢ πατεῖν, ἀλλ' ἐπὶ πεπλημένης χιόνος, ὡς στεροῶς γεγυμνίας γῆς, μέχρι καὶ ἐγγὺς ἔαρος τοὺς ὀδίτας διέρχεσθαι, καὶ μάταιον εἶναι τὸ ἐφ' ἵππου ὀχεῖσθαι, πλὴν τοῦ καὶ μᾶλλον ἐξολισθεῖν κινδυνεύειν* ⁽³²⁾. The features of this lengthy account are common. Analogous details may be found in references from various Late Byzantine authors. Therefore, in the Miracles of Saint Eugenios of Trebizond we learn about the winter of 1035 in Trebizond, Asia Minor : *χειμῶν ἦν, καὶ τῶν πάποτε μνημονευομένων*

(31) The problem of “normality/abnormality” in recording weather phenomena by the chronographers of the western Middle Ages has been extensively discussed, cf. E. ORNATO, *L'exploitation des sources narratives médiévales dans l'histoire du climat : à propos d'un ouvrage récent*, in *Histoire et Mesure*, 3(3) (1988), pp. 403-449.

(32) Georgios Pachymeres, *Συγγραφικαὶ ἱστορίαι*, p. 305, 18-26, ed. A. FAILLER, *Georges Pachymères, Relations historiques*, III, *Livres VII-IX* (CFHB, 24/3), Paris, 1999.

ὁ βαρύτατος· πεδίον τε γὰρ ἅπαν ὑπὸ τῆς χιόνος ἐγίνετο ἄβατον καὶ ὁδὸς πᾶσα ἀπεκέκλειστο⁽³³⁾. Anna Comnena mentions for the winter 1091 : καὶ ὁ χειμῶν σφοδρὸς ἐπικείμενος τὰς ἐξόδους παντάπασιν ἔκλειεν, ὥστε μὴδ' ἀποξυνοῦσθαι τὰς τῶν οἰκημάτων θύρας διὰ τὸ τῆς χιόνος ἐπιβροθῆς (συνέβη γὰρ τότε πολλὴν ἐπιφορηθῆναι καὶ ὄσπην οὐδεὶς πω πρότερον ἔγνωκεν)⁽³⁴⁾. An account of a severe winter between 1091 and 1105 in Thebes, Greece from the Life of St Meletios contains similar descriptive elements : χειμῶνος ἦν ἀκμή, καὶ χιῶν ἡ μὲν ἦδη τὴν γῆν κατεκάλυψεν, ἡ δὲ καὶ ἔτι πολλὴ κατεφέροτο, τὴν δὲ καὶ ἄνεμοι σφοδρὸν πνέοντες μετέωρον συνεσκεύαζον, ὡς εἶναι τῶ τηνικαῦτα πάσας μὲν τὰς ὁδοὺς ἀβάτους, πάσας δὲ θύρας τῶν οἰκιῶν ἀπροσίτους⁽³⁵⁾. So much was the snow in the Middle East during the winter of 1172-1173 that : “men were imprisoned in their houses as in tombs, and they were unable to travel even from one village to another, and many dwellers in tents and many travellers on the roads were suffocated by the snow”⁽³⁶⁾.

The fear of the hardships that snow, ice and low temperatures during winter season could bring had its impact on strategic planning and could accelerate military movements⁽³⁷⁾. The logistics of moving troops

(33) *Miracula S. Eugenii Trapezuntini a. Ioanne Xiphilino c. 11* (BHG 610), ed. A. PAPADOPOULOS-KERAMEUS, *Fontes Historiae Imperii Trapezuntini*, I, St. Petersburg, 1897, pp. 33-51.

(34) Anna Comnena, *Alexiad VIII*, 3, 3, ed. D. R. REINSCH and A. KAMBYLIS, *Annae Comnenae Alexias*, I, *Prolegomena et textus* (CFHB, 40/1), Berlin - New York, 2001.

(35) *Life of St Meletios the Younger c. 20* (BHG 1247), ed. C. PAPADOPOULOS, *Συμβολαὶ εἰς τὴν ἱστορίαν τοῦ μοναχικοῦ βίου ἐν Ἑλλάδι*, II, Ὁ ὄσιος Μελέτιος ὁ “νέος” (1035-1105), Athens, 1935, pp. 34-66.

(36) Gregorius Barhebraeus, *Chronography*, p. 299, transl. E. BUDGE, *The Chronography of Gregory Abu'l-Faraj (1225-1286), the Son of Aaron, the Hebrew Physician Commonly Known as Bar Hebraeus, being the First Part of His Political History of the World*, 2 vols., London 1932.

(37) E.g. : John Malalas, *Chronicle* 13, 27, 18-21, ed. I. THURN, *Ioannis Malalae Chronographia* (CFHB, 35), Berlin - New York, 2000 ; *Chronicon Paschale*, p. 555, 3, ed. L. DINDORF, *Chronicon Paschale* (CSHB), Bonnae, 1832 ; Zacharias of Mytilene, *Chronicle* IX, 6 (p. 229), transl. F. J. HAMILTON - E. BROOKS, *The Syriac Chronicle known as that of Zachariah of Mytilene*, London, 1899. On the role of environmental conditions in military action in late antiquity cf. A. LEE, *Information and Frontiers : Roman Foreign Relations in Late Antiquity*, Cambridge, 1993, pp. 90-101.

(lodging, supplying and equipment) could be negatively affected by wintry conditions. In winter 1187-1188 the Byzantine emperor Isaac decided to leave his army at Triaditza (Sofia), Bulgaria to spend the winter with the hope that winter would not afflict the troops much : *ἐκείθεν γὰρ ἠκηκόει μὴ δυσπορεύτους εἶναι κατὰ πολὺ τὰς εἰς τὸν Αἴμον τροχιάς, ἀλλ' ἔσθ' ὅπη καὶ εἰς εὐθείας ἀνοίγεσθαι καὶ ὕδωρ εἶναι εἰς ἄντλημα ἰκανώτατον καὶ χιλὸν τοῖς ὑποζυγίοις ἐνόδιον, εἰ κατὰ καιρὸν ἐκεῖ τις πορεύοιτο* ⁽³⁸⁾.

The case of the Trajan pass, mentioned above, makes obvious that acute dangers existed when travellers were caught atop mountains or on high plateaus by low temperatures or heavy snowfalls. A similar case is reflected in Ammianus Marcellinus' *Res Gestae*. During Valentinian's campaign against Alamanni in 374 in Germany : "... since autumn was waning and many difficulties stood in the way, all the principal men at the court strove by entreaties and prayers to hold him [emperor Valentinian] back until the beginning of spring. In the first place, they urged that the roads, hardened with frost ... could not be penetrated" ⁽³⁹⁾.

Snow-blanketed land could make it difficult for marching soldiers to orientate and could get the troops off-road. Kinnamos reports that during a campaign in Phrygia in 1158 the army was disorientated because of the thick snow which covered the roads : *ὁ δὲ Ῥωμαίων στρατός, χιόνος κατενεχθείσης σφοδρᾶς τῶν ὁδῶν τε παντάπασιν ἠφανισμένων, ἐπὶ πλεῖστον τῆς ἐφ' ἣν ἐφέρετο ἀποπλανηθεὶς μικροῦ καὶ εἰς ὀλεθρίου ἀν καὶ κινδυνώδεις διεξέπεσε χώρους, εἰ μὴ ταχὺ τῆς πλάνης αἰσθόμενος βασιλεὺς λαμπτήρᾳ τε εἴλετο, καὶ ἔνθα καὶ ἔνθα περιελθὼν ἀνέγνω τε τὴν πορείαν καὶ ἐπὶ τὴν προκειμένην τὸ στρατεύμα εὐώδωσεν* ⁽⁴⁰⁾.

(38) Nicetas Choniates, *History*, p. 398, 32-36, ed. J. A. VAN DIETEN, *Nicetae Choniatae Historia*, I (CFHB, 11/1), Berlin - New York, 1975 ; AD 1343 in Didymoteicho, Thrace : Nikephoros Gregoras, *History*, p. 648, 9-16, ed. L. SCHOPEN and I. BEKKER, *Nicephori Gregorae Byzantina Historia*, 3 vols. (CSHB), Bonnae, 1829, 1830 and 1855.

(39) Ammianus Marcellinus, *Res Gestae* XXX, 3, 3, ed. J. C. ROLFE, *Ammianus Marcellinus*, 3 vols. (*The Loeb Classical Library*), London - Cambridge (MA), 1963-1964.

(40) John Kinnamos, *Epitome historiarum*, p. 196, 3-9, ed. A. MEINEKE, *Ioannis Cinnami Epitome rerum ab Ioanne et Alexio Comnenis gestarum* (CSHB), Bonnae, 1836.

Extreme weather conditions during winter could have a negative impact on the physical condition of marching troops, especially if soldiers were coming from temperate climatic regimes. Injuries of body tissues (e.g. nose, fingers, or toes) due to freezing were common. The Armenian historian Aristakes Lastivert records that in 1022 the army of the Byzantine emperor Basil II in Armenia suffered badly from sudden rain, wind and snow. A number of infantry soldiers lost fingers and toes during this trip and they fled the cold as an enemy ; but finally they were able to ride to Vaspurakan⁽⁴¹⁾. In 1068 the army of emperor Romanos IV was passing the Tauros mountains, Asia Minor, when it suffered badly from the cold : ἐκ τόπων θερμῶν ἀναγόμενοι (περὶ τὸ τέλος γὰρ ἦν ὁ δεκέμβριος μῆν), πολλῆς ἥσθοντο τῆς δριμύτητος, ὁπότε συνέβη καὶ ἵππους καὶ ἡμίονους καὶ ἀνθρώπους, ὅσοι μὴ εὐσαρκοῦντες ἦσαν ἢ μὴ εὐειματοῦντες, τῷ ἀθροῦ τῆς ψύξεως ἀποψῦσαι καὶ τῆς ὁδοῦ προβεβλησθαι θέαμα οἴκτιστον⁽⁴²⁾. A similar case in 1149-1150 in Thrace is cited by Kinnamos : ἐπεὶ δὲ χειμῶν ἤδη κατέσχε δεινός, ὡς τοῦ φύσει θερμοῦ περὶ τὴν καρδίαν ἀντιπεριϋσταμένου τῷ γένει τῷ ζωικῷ πολλοῖς ἤδη λώβην περὶ τοῖς ἄκροις ἐμπεπτωκέναι, τότε μὲν τῆς ἐπὶ Βυζάντιον ἐμέμνητο⁽⁴³⁾.

References to travellers' death because of cold and snow are also common in the sources. During the winter of 1133-1134 a caravan of Persian and some Christian merchants set out from Constantinople, presumably for Iran, and all perished in the snow⁽⁴⁴⁾. In December 1242 snowfalls

(41) Vardapet Aristakes Lastivert'e'i, *History* IV (p. 24), transl. M. CANARD and H. BERBÉRIAN, *Aristakés Lastivert. Récit des malheurs de la nation arménienne (Bibliothèque de Byzantion, 5)*, Brussels, 1973. Analogous case : XVIII (pp. 93-94) and XXI (p. 106).

(42) Michael Attaliates, *History*, p. 91, 11-15, ed. I. PÉREZ MARTIN, *Miguel Atalates, Historia (Nueva Roma, 15)*, Madrid, 2002.

(43) John Kinnamos, *Epitome historiarum*, p. 103, 20-23. Further references : AD 1352 in Prinkipo (Buyukada), in the Sea of Marmara : John VI Kantakouzenos, *History*, vol. III, p. 220, 7-11, ed. L. SCHOPEN, *Ioannis Cantacuzeni historiarum libri IV, 3 vols. (CSHB)*, Bonnae, 1828, 1831 and 1832 ; in Constantinople : *Id.*, p. 227, 7-13 ; AD 1456 in Constantinople : Kritoboulos, *History* 2, 14, 2, 5-10, ed. D. R. REINSCH, *Critobuli Imbriotae Historiae (CFHB, 22)*, Berlin - New York, 1983.

(44) Michael the Syrian, *Chronicle* XVI, 5 (3, 236), transl. J.-B. CHABOT, *Chronique de Michel le Syrien patriarche jacobite d'Antioche (1166-1199)*, 3 vols., Paris, 1899-1910.

afflicted the army of emperor John Vatatzes near Lampsakos, Asia Minor and a lot of soldiers perished : ἡμέρας δύο δὲ τῇ δριμύτητι τούτου καὶ τῇ σφοδρότάτῃ φορᾶ τῆς χιόνος τεταλαιπώρηκε, μέχρις ἂν κατηντήκει ἐς τὸ τῶν Πηγῶν ἄστυ. πολλοὶ γοῦν καθ' ὁδὸν ἐτεθνήκεισαν καὶ πολλαί· μέχρι γοῦν τριακοσίων, ὡς οἱ ἀριθμήσαντες ἔφασκον, ὑπὸ τῆς χιόνος κατεχώσθησαν, μὴ δυνάμενοι ἀντωπῆσαι τῇ τοῦ πνεύματος φορᾶ⁽⁴⁵⁾.

Though journeys during wintry weather were to be avoided if possible, the motive and the urgency of the trip could make the hardships of the winter season bearable. Between 1325 and 1328 the author of the Life of St Gregorios Sinaites and his colleagues opted to stay in Constantinople, so that the harsh winter passed and they avoid the risks of a wintry trip⁽⁴⁶⁾. On the contrary, St Melania had made the opposite choice in February 437. After she had remained in Constantinople for 40 days, she then braved winter snowfalls and storms to reach Jerusalem in time for Easter : ἡμεῖς δὲ δι' ὄλης χιονιζόμενοι τῆς ἡμέρας ἀνευδότης τὴν πορείαν ἐποιούμεθα, οὔτε γῆν οὔτε ὄρος βλέποντες πλὴν τῶν πανδοχείων, ἐν οἷς κατελύομεν ἐσπέρας⁽⁴⁷⁾.

In the Life of St Theodora of Thessalonike we find an interesting passage that highlights all hardships that cold, rain and snow could bring to an individual. A woman was obliged to walk and stay outdoors all night during wintry weather : ταῦτα δὴ ταῦτα ἀκούσασα, τὴν ἐξ ἔθους καὶ αὐθις βαλοῦσα μετάνοιαν εἰς τὸν ὀρισθέντα τόπον ἐξήει, τῆς δριμυτάτης ὥρας καταφρονήσασα καὶ τοῦ ῥαγδαίως τότε καταφερομένου ὑετοῦ καὶ τῆς δεινῆς ἐκείνης καὶ βιαίας τῶν ἀνέμων πνοῆς. τοιγαροῦν ἀφ' ἐσπέρας ἐπ' ἀμφοτέροις καθεσθεῖσα ποσὶν διενυκτέρευεν αἴθριος· οὐδὲ γὰρ τέλεον καθεσθῆναι ἐδύνατο διὰ τὸ ἐκ τοῦ

(45) George Akropolites, *History*, p. 41, 7-12, ed. A. HEISENBERG - P. WIRTH, *Georgii Acropolitae opera*, I (*Bibliotheca Scriptorum Graecorum et Romanorum Teubneriana*), Stuttgart, 1978², and Theodore Skoutariotes, *Σύνοψις χρονική*, p. 488, 26, ed. K. SATHAS, in *Μεσαιωνική Βιβλιοθήκη*, VII, Paris, 1894 (= Hildesheim - New York, 1972), pp. 1-556. Further references : AD 1256 George Akropolites, *History*, p. 59, 74-78, and Theodore Skoutariotes, *Σύνοψις χρονική*, p. 519, 17.

(46) *Vita Gregorii Sinaitae* c. 15 (BHG 722), ed. I. POMJALOVSKIJ, *Žitie iže vo svjatyh otca našego Grigorija Sinaita*, in *Zapiski ist.-filol. Fak. Imp. St. Peterburgskago Universiteta*, 35 (1894), pp. 1-46 and *Id.*, c. 16.

(47) *Life of St Melania* c. 56 (BHG 1240z-12442b), ed. D. GORCE, *Vie de Sainte Mélanie* (SC, 90), Paris, 1962.

ἔτεοῦ κάτωθεν ὑπορρέον ὕδωρ. ὃ τοῦ θαύματος· ἐξέστησαν ἄγγελοι τοῦτο τὸ φορικτὸν ὄραμα βλέποντες, γυναῖκα τὸ ἀσθενέστατον καὶ μαλακὸν σκεῦος οὕτως αἴθριον διανυκτερεύουσαν, πυκναῖς νιφάσι βαλλομένην τοῦ ὄμβρου καὶ πηγνυμένην διὰ τὴν τῆς μητρὸς ἐντολήν. τίς ἔγνω τῶν νῦν ἢ τῶν πώποτε τοιαύτην ὑπακοήν καὶ τοιαῦτα παλαιόματα γυναῖκα ἐνδείξασθαι περὶ δὲ τὸ μεσονύκτιον λήξαντος τοῦ ὄμβρου καὶ δριμυτέρας γενομένης τῆς τοῦ ἀέρος πικρίας διὰ τὸ χιόνα καταβληθῆναι πολλήν, αἱ τοῦ ὄμβρου σταγόνες κατὰ τοῦ ἐπὶ τῆς κεφαλῆς αὐτῆς καὶ τῶν ὤμων κειμένου ῥάκους κρυσταλλωθεῖσαι ἐκρέμαντο⁽⁴⁸⁾. In the Life of St Cyril Phileotes, a foot traveller visited the Saint in his shelter during a wintry snow storm. The visitor had suffered from the cold : ὑπὸ τοῦ ψύχους καταπεπονημένος⁽⁴⁹⁾. When autochthons from Stirion, Boeotia were informed about the coming death of St Lucas the Younger in 953, they hastened to his residence and ignored the severity of the winter : καίτοι σφοδροῦ τοῦ χειμῶνος ὄντος καὶ χιόνος ἀμυθῆτου καταπεσοῦσης, ὡς σχεδὸν καὶ ὁδοὺς ἀβάτους καὶ οἰκίας ἀνεκβάτους γενέσθαι, ὅμως οὐδὲν ἐκείνους τῆς πρὸς αὐτὸν ἐπέσχε πορείας. ἀλλὰ πανδημεὶ πάντες συνέρρεον καὶ παρ' αὐτῷ μέχρι καὶ ἐνάτης ὥρας παρέμενον⁽⁵⁰⁾. Snow cover did not keep Byzantine soldiers from moving in early December 1072 from Nis to Skorje : Οἱ δὴ τὴν ἀγγελίαν δεξάμενοι, ἄραντες ἐκ τοῦ Νίσου, πρὸς τὰ Σκόπια ἴεντο, χιόνι κεκαλυμμένης οὔσης τῆς γῆς· χειμῶν γὰρ ἦν, Δεκεμβρίου ἐνισταμένου⁽⁵¹⁾.

Frost could endanger walking of people and pack animals. In winter 1256 moving troops near Tzepaina, Thrace faced difficulties because of the icy roads : καὶ ἦν μὲν πάντη ἀνάτης ὁ χώρος τὴν ἄνοδον, καὶ

(48) *Life of St Theodora of Thessalonike* c. 33 (BHG 1737-1741), ed. E. KURTZ, *Des Klerikers Georgios Bericht über Leben, Wunderthaten und Translation der Hl. Theodora von Thessalonich nebst der Metaphrase des Johannes Staurakios*, in *Mémoires de l'Académie impériale des sciences de Saint Pétersbourg*, VIII sér., VI, 1, St. Petersburg, 1902, pp. 1-36.

(49) *Life of St Cyril Phileotes* c. 12, 1 (BHG 468), ed. E. SARGOLOGOS, *La Vie de saint Cyrille le Philéote, moine byzantin (†1110)* (Subsidia Hagiographica, 39), Bruxelles, 1964.

(50) *Life of St Lucas the Younger of Stiris* c. 77 (BHG 994), ed. D. SOFIANOS, "Όσιος Λουκάς. Ό βίος τοῦ ὁσίου Λουκά τοῦ Στειριώτη (Άγιολογική Βιβλιοθήκη, 1), Athens, 1989.

(51) Skylitzes Continuatus, *Chronicle*, p. 165. 13, ed. E. Th. TSOLAKIS, *Η Συνέχεια τῆς Χρονογραφίας τοῦ Ἰωάννου Σκυλίτζη*, Thessalonike, 1968.

παγετός τὴν ὁδὸν πᾶσαν παχύτερός τε καὶ λειῶς βαδίσαι δυσχερεστέραν ἐποίει⁽⁵²⁾. In the *Life of St Athanasios of Meteora* there is an interesting description of how the saint managed to keep in motion on snowblanketed mountain slopes during a winter in late 14th century : ἐκεῖνος τῇ τῶν πατέρων εὐχῇ θαρρήσας καὶ τῷ σημείῳ τοῦ σταυροῦ καθοπλισθείς, συνδεσμήσας τοῖς ποσὶν τὰ ἐνδύματα καὶ ἐπάνω γενόμενος τῆς χιόνος, ἐφέρετο ὡς ἐν θαλάσῃ κατὰ πρानοῦς⁽⁵³⁾. Georgios Pachymeres singles out as memorable the falling of the emperor Michael VIII (1261-1282) off the horse when slipped on ice in Adrianople, Thrace : χεῖμωνος δ' ἐξελθὼν καὶ πάγοις ἐπιών, πάσχει τι καὶ τῶν ἀνηκέστων· συμποδίζεται γὰρ ὁ ἵππος ἐπὶ πάγων βαίνων τῷ βασιλεῖ, καὶ συμπεσὼν ἐκείνῳ ὁ ἐποχούμενος πτώμα δεινὸν χεῖρας τε καὶ πρόσωπον δρύπτεται οὕτω χαλεπῶς ὡς μηδ' ἀρκέσαι τὸν ἐκστρατείας ὄλον χρόνον ἀπαλεῖψαι τὰ τραύματα⁽⁵⁴⁾.

Nevertheless, frost was not always hostile to travellers. There are cases when freezing winters turned waterways into solid fords and made the surface of the rivers easy to cross on foot or horseback. There are several accounts about the freezing of the Danube and the Rhine, a natural phenomenon that was connected in the consciousness of some Byzantine authors with the invasions of people living beyond the river's boundary⁽⁵⁵⁾. Some references in the sources single out the freezing of the

(52) George Akropolites, *History*, p. 59, 124-126, and Theodore Skoutariotes, *Σύνοψις χρονική*, p. 520, 23.

(53) *Life of St Athanasios of Meteora*, p. 243 (BHG 195), ed. N. VEIS, *Συμβολὴ εἰς τὴν ἱστορίαν τῶν μονῶν τῶν Μετεώρων*, in *Βυζαντις* 1 (1909), pp. 191-332.

(54) George Pachymeres, *Συγγραφικαὶ ἱστορίαι*, p. 551, 27 - p. 553, 2, ed. A. FAILLER, *Georges Pachymères, Relations historiques*, II, *Livres IV-VI* (CFHB, 24/2), Paris, 1984.

(55) Ammianus Marcellinus, *Res Gestae* XIX, 11, 4. Freezing of the Rhine in February AD 378 : XXXI, 10, 4. Other cases of crossing river's Danube frozen surface by northern tribes : between AD 388 and 392 : Philostorgios, *Ecclesiastical History* X, 6, ed. J. BIDEZ and F. WINKELMANN, *Philostorgius Kirchengeschichte* (*Die Griechischen Christlichen Schriftsteller*), Berlin, 1972², and Nikephoros Kallistos Xanthopoulos, *Ecclesiastical History* XII, 29, ed. PG vol. 145, 557-1332, vol. 146, 9-1274, and vol. 147, 9-448 ; AD 394-395 : Philostorgios, *Ecclesiastical History* XI, 8, and Nikephoros Kallistos Xanthopoulos, *Ecclesiastical History* XIII, 5 ; AD 1035 : John Skylitzes, *Synopsis historiarum* 9, p. 399, ed. J. THURN, *Ioannis Scylitzae synopsis historiarum* (CFHB, 5), Berlin - New York, 1973 ; AD 1047 : Michael Psellos, *Chronography* 7, LXVII, ed. E.

Danube explicitly as a regular phenomenon. Pseudo-Kaisarios' report for the freezing of the Danube in 558 is striking: Χειμῶνος πηγνυμένου, καὶ εἰς λιθώδη ἀντιτυπίαν μεθισταμένης τῆς μαλακῆς τοῦ ρείθρου φύσεως, ὡς οἶαν τε φέρειν ἐπιπορευομένων πολεμίων, καὶ πρὸς τὰ Ῥωμαίων Ἰλλυρία τε καὶ Θράκεια μέρη διαφοριούντων πλῆθος, οὕτω τοι καὶ τὸ αὐτὸ ἐκ τοῦ ὕδατος παγὲν στερέωμα ... ὑπεροτέγει δὲ ἵππον καὶ ἀναβάτην ἐν χιλιάσιν δέκα πολλάκις ὀρώμενον⁽⁵⁶⁾.

Crossing over the frozen surface of a river was not always safe for pedestrians. Aristakes Lastivertc'i reports that on the day of Epiphany (January 6) 1056, in the Armenian province of Hark, while the Turks were crossing over the frozen river Arsanias (Murad Su), the ice broke and Turks and Armenians alike plunged into a watery death⁽⁵⁷⁾. The Byzantine army experienced an analogous situation in the bank of the river Hebros, in Thrace in 1341. The river was not frozen over enough and the cavalry could not pass: οὔτε δὲ τοσοῦτον εἶχε στερορότητος ὁ πάγος, ὥστε στέγειν τοὺς ἰππέας ἐπ' αὐτὸν περαιουμένους, οὔτε τοῖς συνήθεσιν ἀκατίοις πρὸς τὸν πόρον δίοδον παρεῖχεν. ἀλλὰ τοῦ μὲν στερορότερος ἐφαίνετο, τοῦ στέγειν δὲ τοὺς ἵππους ἀδρανέστερος.

RENAULD, Michel *Psellos, Chronographie ou Histoire d'un siècle de Byzance* (976-1077), 2 vols. (*Collection byzantine*), Paris, 1926 et 1928; Anna Comnena, *Alexiad* III, 8, 6; John Skylitzes, *Synopsis historiarum* 17, p. 458; John Zonaras, *Chronicle* XVII, 26, 12-13, ed. T. BÜTTNER-WOBST, *Ioannis Zonarae epitomae historiarum libri XVIII*, vol. III (*CSHB*), Bonnae, 1897. Freezing of the Euphrates; the river became passable on foot: AD 610: *Chronicon Miscellaneum*, p. 113, 4, transl. J.-B. CHABOT, *Chronicon Miscellaneum ad annum domini 724 pertinens (Corpus Scriptorum Christianorum Orientalium, Scriptores Syri, 4, Chronica Minora, II)*, Louvain, 1903 (= 1960), pp. 61-119; freezing of rivers in Syria (?) that became passable on foot: AD 746: Michael the Syrian, *Chronicle* XI, 22 (2, 506); freezing of Euphrates and Tigris rivers that became passable on foot: AD 918-919: Elias Bar Shināyā, *Chronicle* p. 97, 11, transl. J.-B. CHABOT and E. W. BROOKS, *Eliae metropolitanae Nisibeni opus chronologicum, I-II (Corpus Scriptorum Christianorum Orientalium, Scriptores Syri, 24)*, Louvain 1910; freezing of the Euphrates that became passable on foot: AD 1120-1121: Michael the Syrian, *Chronicle* XV, 12 (3, 209); AD. 1139-40: Michael the Syrian, *Chronicle* XVI, 9 (3, 250).

(56) Ps.-Kaisarios, *Quaestiones et Responsiones* 67, 15-19, ed. R. RIEDINGER, *Pseudo-Kaisarios. Die Erotapokriseis (Die Griechischen Christlichen Schriftsteller)*, Berlin, 1989; cf. also Agathias, *History* V, 11, 6, ed. R. KEYDELL, *Agathiae Myrinaei historiarum libri quinque (CFHB, 2 A)*, Berlin, 1967.

(57) Vardapet Aristakes Lastivertc'i, *History* XVII (p. 90).

διὸ καὶ ἀπορίαν πολλήν παρεῖχε πρὸς τὸν πόρον. Due to this situation, a delay of 12 days in the campaign was caused ⁽⁵⁸⁾.

Freezing of the sea fringes could happen during some harsh winters. There are accounts in the sources about freezing events in Bosphoros and Black Sea. A characteristic case is that of the harsh winter in 763/764. Theophanes Confessor left a vivid eye-witness account concerning his adventures as a child on the surface of the passing ice sheets on the waters of Bosphorus: ὢν αὐτόπται καὶ ἡμεῖς γεγόναμεν ἐπιβάντες ἐπὶ ἐνὸς αὐτῶν σὺν καὶ τισιν ὀμίλιξι λ' καὶ παίζοντες ἐπάνω αὐτοῦ ⁽⁵⁹⁾.

2. RAINFALL AND CONSEQUENT PHENOMENA

Though there exist marked climatic variations between coastal, Mediterranean-type conditions and inland/highland, continental-type conditions, we can generally accept that mild, humid winters and long, dry, hot summers with few rainy days are the principal characteristics of the eastern Mediterranean climate ⁽⁶⁰⁾. In this context, it is not surprising that the second key-meteorological phenomenon that affected travel, transport and communications during the Byzantine period was rainfall and its consequences.

Sudden bursts of rain could cause unexpected torrential overflowing of streams and rivers. Floods could affect negatively the safety of moving groups or individuals and might be related in the conscience of local people to negative consequences, as can be inferred from Byzantine place

(58) John VI Kantakouzenos, *History*, vol. II, p. 188, 2-7.

(59) Theophanes, *Chronographia*, p. 434, 6 - p. 435, 5. There are several accounts on this winter. For a detailed presentation of this event based on Byzantine and western medieval accounts see I. TELELIS and E. CHRYSOS, *The Byzantine Sources as Documentary Evidence for the Reconstruction of Historical Climate*, in B. FRENZEL (ed.), *European Climate Reconstructed From Documentary Data: Methods and Results (European Palaeoclimate and Man, 2)*, Stuttgart - Jena - New York, 1992, pp. 17-31. For the paleoclimatology of the freezing of the Bosphoros cf. V. YAVUZ, N. AKÇAR and C. SCHLÜCHTER, *The Frozen Bosphorus and its Paleoclimatic Implications Based on a Summary of the Historical Data*, in V. YANKO-HOMBACH, A. GILBERT, N. PANIN and P. DOLUKHANOV (eds.), *The Black Sea Flood Question: Changes in Coastline, Climate and Human Settlement*, Dordrecht, 2006, pp. 633-649.

(60) For a quick reference to the characteristics of the various climatic regions of the eastern Mediterranean cf. B. GEYER, *Physical Factors in the Evolution of the Landscape and Land Use*, in A. LAIOU, *op. cit.*, n. 3, pp. 34-35.

names. In Pteleai of Bithynia, around 821-826, people gave the name "Onopniktes" (donkey-drowner) to a local torrent because of its harmful impact : ... τῶν ἀχθοφόρων ἐναποπνίγειν ... οὗτος πολλάκις οἰδαίων καὶ τὸ πολὺ τοῦ ρεύματος ἀποπτύων, οὐ μόνον ζῶα καὶ ἄλλα τῶν ὑπὸ ζυγὸν συναρπάξει, ἀλλὰ καὶ τὸν ἐν Πτελέαις μικροῦ πάντα χῶρον ... ⁽⁶¹⁾.

Flood of rivers and streams as a result of continuous rains and snowfalls during winter could endanger land trips. This pattern is described in a characteristic passage of Procopius : ἔστι δέ τις ἐν Βιθυνοῖς ὁδὸς ἐς τὰ Φρυγῶν ἤθη ἐνθένδε ἰόντι, ἔνθα δὴ ἀνθρώποις τε ἀναριθμοῖς καὶ ζώοις ἑτέροις χειμῶνος ὥρα διολωλέναι ξυνέβαινε· γεώδης γὰρ ὑπεράγαν ἢ χώρα οὖσα, μὴ ὅτι ὄμβρων ἐξαισιῶν καταρραγέντων ἢ χιόνων πολλῶν ἐπιχεχυμένων τε καὶ διαλυθεισῶν ἐν ἐσχάτῳ, ἀλλὰ καὶ ψεκᾶδων ἐπιπεπτωκυῶν, ἂν οὕτω τύχη, ἐς τέλμα βαθὺ καὶ ἀπόρευτον ξυνισταμένη, τὰς τε ὁδοὺς τεναγώδεις ἐργαζομένη, τοὺς τῆδε ἰόντας ἐκ τοῦ ἐπὶ πλεῖστον ἀπέπνιγεν ⁽⁶²⁾. In January 504 the Roman army under Patricius, when campaigning in Persian territory near Amida, experienced the flood of a river: "in their haste, not knowing where they were going, they came upon the river Kallath [Nymphius]; and because it was winter and there was a great flood in it, they were not able to cross it, but everyone of them who hastened to cross was drowned in the river with his horse" ⁽⁶³⁾.

Travellers, when faced a flooded river, were obliged to wait until the water level subsided. This distress has been traced in a miracle of Saint Peter of Atroa at the bank of Halys river in western Asia Minor in the early 9th century : Πορευομένων δὲ τῶν δύο κατὰ πάροδον καὶ τὸν

(61) *Life of St Theodore of Stoudios* c. 108 (col. 212B) (BHG 1755), ed. PG 99, 113-232 ; cf. T. PRATSCH, *op. cit.*, n. 30, p. 278, and the *Prosopographie der mittelbyzantinischen Zeit, Erste Abteilung* (641-867), IV, Berlin - New York, 2001, no. 7574 (pp. 429-433).

(62) Prokopios of Caesarea, *Buildings* V, 3, 12-13, ed. J. HAURY - G. WIRTH, *Procopii Caesariensis Opera omnia*, IV (Bibliotheca Scriptorum Graecorum et Romanorum Teubneriana), Leipzig, 1964². Imperial intervention through the construction of bridges, drainage ditches and watercourse-protecting walls is common in *De aedificiis* aiming at the improvement of land communications ; cf. *Id.* V, 4, 1-3 and II, 2, 13-16.

(63) Joshua the Stylite, *Chronicle* c. 66, transl. F. TROMBLEY and W. WATT, *Chronicle of Pseudo-Joshua the Stylite*, Liverpool, 2001. AD 1341 for the Hebros river, Thrace : Nikephoros Gregoras, *History* 2, 621, 5-16.

Ἄλυν ποταμὸν καταλαβόντων, εὗρον αὐτὸν ὑδάτων πεπληρωμένον καὶ πολὺν ὄχλον παροδιτῶν ἔνθεν καὶ ἔνθεν παρὰ τὰς ὄχθας καθημένον τοῦ ποταμοῦ καὶ τὴν ἐλάττωσιν τοῦ ὕδατος προσμένοντα· αὐτοὶ δὲ οἱ ὄσιοι, ὡς τὸ κατ' εἰκόνα τοῦ Θεοῦ ἀπαράτρεπτον ἔχοντες, τοῖς ὕδασι τοῦ ποταμοῦ πιστῶς ἐπέβησαν ὡσπερ διὰ ξηρᾶς καὶ τῇ χέρσῳ ἀπεκατεστάθησαν, ὥστε πάντας ἐκπλαγέντας τοὺς ἐκεῖσε παρόντας καὶ θεωμένους παροδίτας καὶ ἐγχωρίους τῶν ἰχνῶν ... Εὐξαμένων δὲ τῶν ὀσίων, ὁ μὲν ποταμὸς εὐθὺς τὴν ἑαυτοῦ πλείστην συστείλας ῥύμην δέδωκε τοῖς χρήζουσιν διάβασιν ἀνενόχλητον, τὸ δὲ πλῆθος τῶν μυσσαρῶν ἐκ τοῦ αὐτῶν τόπου αὐθωρὸν ἠφανίσθη⁽⁶⁴⁾.

There are descriptions of miracles in which an individual drifted during the crossing of a river by the impetuous current of the flood, finally is rescued by the miraculous intervention of the saint⁽⁶⁵⁾. A miracle of St Eugenios of Trebizond is associated with the interference of the supernatural power of the saint after his death. During the translation of the saint's relics in Paipert, northern Asia Minor between 1115 and 1223 the meteorological conditions were harsh: χειμῶν δὲ τούτοις ἐν τῇ ὁδῷ ἐπαχθῆς ἐπέπεσε πρῶιμος, βίαιοι ὄμβροι ὁμοῦ καὶ ῥαγδαῖοι καὶ πυκνοὶ τε καὶ συνεχεῖς, κἀντεῦθεν ἡ ὁδὸς αὐτοῖς τραχυτέρα ἦν καὶ δυσπρόσοδος. τέως δ' οὖν ὁμως εἰς τὸ Φαγασὲ ἐπανιόντες, ἐκεῖ τὸν δεκέμβριον ὄλον διεβιβάκασιν ἐξ ἀνάγκης, ἐπεὶ δ' οὐκ εἶχον πῶς ἐκεῖθεν ἀπάραι τῷ σφοδρῷ τοῦ χειμῶνος καὶ ἦσαν πάνυ ἀλύοντες, ἐπὶ τὸν τῶν ἀμηχάνων εὐμήχανον ποριστὴν καταφεύγουσιν, "Εὐγένιε", λέγοντες, "μέγιστε καὶ ὀξύτατε βοηθέ, δὸς ἵνα κἀν τὸ τοῦ Ζυχολίτου καλούμενον διέλθομεν, ὅτι σοὶ ἔσμεν ἡμεῖς. The Saint helped the travellers to overcome their severe situation during the trip and accomplish their mission⁽⁶⁶⁾.

(64) *Life of St Peter of Atroa* c. 8 (BHG 2364-2365), ed. V. LAURENT, *La Vie merveilleuse de saint Pierre d'Atroa* (Subsidia Hagiographica, 29), Bruxelles, 1956, p. 65-225. The same motif of miracle, i.e. the saint who crosses over the surface of a flooded river without getting wet, can also be found in *Life of St Ioannikios* (auctore Saba monacho) c. 4 and 11, (BHG 935), ed. AASS *Novembris* II, 1, pp. 332-383; *Life of St Constantine the Jew* c. 36 (BHG 370) ed. AASS *Novembris* IV, pp. 628-656; *Life of St Nikon* c. 15 (BHG 1366), ed. D. F. SULLIVAN, *The Life of Saint Nikon* (Archbishop Iakovos Library of Ecclesiastical and Historical Sources, 14), Brookline (MA), 1987.

(65) *Life of St Constantine the Jew* c. 64 and c. 67.

(66) *Miracula S. Eugenii Trapezuntini a. Ioanne Lazaropulo* c. 18 (BHG 612), ed. A. PAPADOPOULOS-KERAMEUS, *Fontes Historiae Imperii Trapezuntini*, I, St. Petersburg, 1897, pp. 78-136.

Problems in transport and communications might also appear in cases of rain miracles because of heavy rain ⁽⁶⁷⁾. After St Euthymios put an end to a lasting drought in Palestine by a miraculous heavy rain, the rain lasted for many days causing problems to the saint : ἔμεινεν δὲ ἡ βροχὴ ῥαγδαίως καταφερομένη, ὥστε μὴ δύνασθαι αὐτὸν ἐπὶ πολλὰς ἡμέρας κατελθεῖν εἰς τὴν πανέροησαν ⁽⁶⁸⁾. In the *Life* of Makarios of Pelecete the miraculous rain bursts after the saint's prayers during a period of drought in late 8th century : σὺν τοῖς ὄχλοις τῆς ὁδοιπορίας ἐχομένου, αἰφνίδιον τὸν ἀέρα περιδρομοῦσα νεφέλη, λαβρὸν ὑέτὸν ἐπὶ τὴν γῆν ἀφίησιν, ὃ ἅπαντας τὸ τῆς ἐπομβρίας ἀνύποιστον μὴ φέροντας ἀνά τὸ ὄρος σκεδασθῆναι καὶ τὸ σφοδρὸν τῶν ὑδάτων διαδιδράσκειν πειρᾶσθαι ⁽⁶⁹⁾. In the *Life* of St Theodore Sykeotes the sudden rain that miraculously burst after recurrent processions during a prolonged period of drought was delightfully accepted by processing people : Καὶ ἤρξατο λάβρος κατιέναι ὑέτός, ὥστε δρόμῳ ὑποστρέψαι αὐτοὺς καταβροχέντας καὶ οὕτω τὴν λιτὴν καταπαῦσαι δοξάζοντας τὸν θεόν ⁽⁷⁰⁾. The mastery of St Theodore upon clouds and rain is highlighted in a case of lime transportation near Ankara. The anxiety of farmers who were driving carts loaded with lime for the construction of a church in front of menacing clouds and rainfall was diminished by another rain miracle : καὶ εὐθέως διεσχίσθη ἡ νεφέλη ἔνθα καὶ ἔνθα, καὶ ἔβροξεν ἐκ δεξιῶν καὶ ἐξ εὐωνύμων τῆς στρατάς αὐτῶν, ὥστε τὰ ὕδατα τὰ ἐξ ἐκατέρων τῶν μερῶν ὑποκάτω τῶν

(67) Analysis of rain miracles in the hagiographic tradition of Late Antiquity can be found in D. STATHAKOPOULOS, *Rain Miracles in Late Antiquity*, *op. cit.*, n. 30.

(68) First half of 5th century AD ; *Life* of St Euthymios c. 25 (BHG 647-648), ed. E. SCHWARTZ, *Kyrrillos von Skythopolis (Texte und Untersuchungen, 49, 2)*, Leipzig, 1939, pp. 5-85.

(69) *Life* of St Makarios of Pelekete c. 9 (BHG 1003), ed. J. VAN DEN GHEYN, *S. Macarii monasterii Pelecetes hegumeni acta Graeca*, in AB 16 (1897), pp. 142-163.

(70) *Life* of St Theodore of Sykeon c. 51 (BHG 1748), ed. A.-J. FESTUGIÈRE, *Vie de Théodore de Sykéôn*, 2 vols. (*Subsidia Hagiographica*, 48), Bruxelles, 1970. For miracles in the same motif see also c. 101 ; *Life* of St Evariste c. 36 (BHG 2153), ed. Ch. VAN DE VORST, *La vie de S. Evariste, higoumène à Constantinople*, in AB 41 (1923), pp. 295-325 ; *Life* of St Meletios the Younger c. 8 (BHG 1247).

ἀμαξῶν διέρχεσθαι, ἐπάνω δὲ αὐτῶν μηδόλως ἐκ τῆς βροχῆς ῥανίδα (71).

In another motif of rain miracle, St Spyridon of Trimythos managed to protect colleagues during a land travel from unwanted rain : καὶ σκεπᾶσαι ἡμᾶς ἀπὸ τῆς τοῦ ὄμβρου καταφορᾶς καὶ ἀβρόχους ἡμᾶς ἀποκαταστῆσαι διὰ τὴν τῆς ὁδοῦ δυσχέρειαν τὴν ἀπὸ τῶν πολλῶν ὑδάτων τε καὶ πηλῶν, οὐ μὴν ἀλλὰ καὶ διὰ τὸ μὴ τὰ ἱμάτια ἐκ τῶν ὑδάτων καταβραχέντα ἀφανισθῆναι (72). The miraculous action of Niketas Patrikios managed to succeed a delay of four days to the burst of a harsh rainfall, until his nephew Ignatios finished his trip from Katesia to Constantinople between 833 and 836 (73). In April 18 1453, forty days before the fall of Constantinople by the Ottomans, a harsh rain with hail burst during a litany. The flood in the streets of the city suspended the procession and endangered people (74).

Abrupt rise of rivers' level and floods were more frequent during spring and autumn and could endanger people and pack animals. Armies used to face many problems in campaigning during these transitional seasons because of stormy weather. The fear of experiencing trouble during the movements of the army because of spring floods – caused by thawing snow – is obvious in a report of Ammianus Marcellinus in 358 : “although the river Ister was in flood since the masses of snow and ice were now melted, having come to the most suitable place, he crossed it on a bridge built over the decks of ships” (75). The fear of drowning made

(71) *Life* of St Theodore of Sykeon c. 56. Analogous rain miracles also in *Life* of St Symeon the Stylite the Younger c. 97 and c. 172 (BHG 1689), ed. P. VAN DEN VEN, *La vie ancienne de S. Syméon Stylite le Jeune (521-592)*, II (*Subsidia Hagiographica*, 32), Bruxelles, 1962.

(72) *Life* of St Spyridon c. 23 (BHG 1647), ed. P. VAN DEN VEN, *La légende de S. Spyridon évêque de Trimithonte (Bibliothèque du Muséon)*, 33, Louvain, 1953. For miracles in the same motif, i.e. the saint who walks during a storm and remains dry cf. *Life* of St David, Symeon and George c. 34 (BHG 494), ed. J. VAN DEN GHEYN, *Acta graeca SS. Davidis, Symeonis et Georgii Mitylenae in insula Lesbo*, in *AB* 18 (1899), pp. 209-259.

(73) *Life* of St Niketas Patrikios c. 15 (BHG 1342b), ed. D. PAPACHRYSSANTHOU, *Un confesseur du second iconoclasme : la Vie du patrice Nicétas (†836)*, in *TM*, 3 (1968), pp. 309-351.

(74) George SPHRANTZES, *Chronicon minus*, p. 378, 13, ed. I. BEKKER, *Georgii Phrantzae chronicon minus (CSHB)*, Bonnae, 1838.

(75) Ammianus MARCELLINUS, *Res Gestae* XVI, 12, 4. Other cases of spring/autumn flooding events and their impact upon moving troops : *ibidem*, XIV, 10,

Roman soldiers refuse to cross a flooded river in Securisca, Serbia in 602: *Καὶ τούτου δὴ γιγνομένου ὑετοὶ ἐπιπίπτουσι λάβροι, συνεπιτίθεται δὲ καὶ ψύχους ἐπιβολή. ταύτη δὴτα ἐπιστασιάζει τὸ πλῆθος μὴ βουλόμενον τὸν ποταμὸν διανήξασθαι* (76). Encamping in river beds was dangerous because of the possibility of sudden flood. Barhebraeus reports in his chronicle in 960: "when the Egyptians, who had gone to pray at Makkah, were returning, they encamped in the bed of a brook in which water had not flowed for a long time. And during the night whilst they were sleeping, a flood of water poured down upon them all, and it swept them and all their possessions out into the Great Sea, and they all perished" (77).

Harsh rainfall and storm could affect visibility. The density of the clouds, the obscurity of the atmosphere and the severity of the winds could double the effect of rain or snow during a storm. When a group was travelling in Cerene in the late 4th century visibility was reduced by rain: *ὑετοῦ δὲ λάβρου γενομένου, καὶ λαίλαπος προσβαλοῦσης, διαμαρτάνουσι μὲν τῆς ὁδοῦ, τὰ πρόσω βλέπουν οὐ δυνάμενοι* (78). In the island of Lesbos in 761 a storm produced analogous difficulties: *μεσημβρίας οὔσης σταθηρᾶς καὶ τοῦ ἡλίου λαμπραῖς ταῖς ἀκτίσι τὴν γῆν καταμαρμαίροντος, ἀθρόον τὸ ἑαυτοῦ σέλας ἀποκρύψας ὁ ἥλιος, γίνεται γνόφος καὶ θύελλα, τὰ ἐκείσε ὄρη ἄρδην κατακαλύψασα. Ἐν ἀπορία δὲ μεγίστη συσχεθεῖς ὁ ἅγιος, καίτοι βαδίζειν διὰ τὴν ἀχλὺν ὁδὸν μὴ*

2; AD 399 in Sardes: Zosimos, *New History* V, 18, 5, ed. L. MENDELSSOHN, *Zosimi comitis et exadvocati fisci Historia nova*, Leipzig, 1887; AD 813 for the Riginas river, Thrace: Scriptor Incertus (de Leone Armenio), p. 346, 12, ed. I. BEKKER, *Historia de Leone Bardae Armenii filio (CSHB)*, Bonnae, 1842, pp. 35-362; Pseudo-Symeon Magistros, *Chronicle*, p. 616, 11, ed. I. BEKKER, *Theophanes Continuatus, Ioannes Caminiata, Symeon Magister, Georgius Monachus (CSHB)*, Bonnae, 1838, pp. 603-760; AD 1151 in Damaskos: Barhebraeus, *Chronography*, p. 278; AD 1296 in Mesopotamia: *ibidem*, p. 501; AD 1302 for the Sangarius river, Asia Minor: George Pachymeres, *Συγγραφικαὶ ἱστορίαι*, p. 363, 18-24 (ed. A. FAILLER, *Georges Pachymères, Relations historiques, IV, Livres X-XIII [CFHB, 24/4]*, Paris, 1999); AD 1342 for the Axios (Vardar) river, Macedonia: John VI Kantakouzenos, *History*, vol. II, p. 242, 13-21; and AD 1343 in the same river: *Id.*, vol. II, p. 358, 1-10.

(76) Theophylaktos Simokattes, *Histories* VIII, 6, 8-9.

(77) Barhebraeus, *Chronography*, p. 167.

(78) Theodoret of Kyrrhos, *Religious History* VI, 2, ed. L. PARMENTIER, *Theodoret Kirchengeschichte (Die Griechischen Christlichen Schriftsteller)*, Leipzig, 1911.

εὐρίσκων, κατὰ συγκυρίαν τὰς ἀκρωρείας διερχόμενος, ἀνατείνας τὰ ὄμματα εἰς τὸν οὐρανὸν καὶ τὰς χεῖρας ἐκτείνας τὴν ἄνωθεν ἐπικουρίαν ἐξῆπτεῖτο ⁽⁷⁹⁾.

3. HIGH TEMPERATURES

The commonest meteorological phenomenon affecting land travel during summer is sweltering heat. High summer temperatures in combination with the constraint of adequate water supplies – especially in the eastern areas that enjoy hot rainless summers – could sap travellers' endurance and make campaigning military forces suffer ⁽⁸⁰⁾. In the Palestine desert in 492, during a trip with a pack animal, thirst was the major problem of a traveller who was walking under a heat wave : ἀδελφὸς κατελθὼν καὶ τὰ ἄλογα φορτώσας ἤρχετο διὰ τῆς ἐρήμου εἰς τὴν λαύραν, καύσωνος δὲ τότε σφοδροτάτου γεγονότος ἐδίψησεν λίαν καὶ ὀλιγοψυχῆσας κατὰ τὸ μέσον τῆς ὁδοῦ ἔπεσεν... ⁽⁸¹⁾. In Amyclae, Peloponnesos in 997 travellers suffered from thirst during the summer heat ⁽⁸²⁾.

4. HAIL

There are a few references in the sources combining hailstorms with negative effects during travel. The preconception of the authors in these cases is obvious. The description of death of moving soldiers because of a hailstorm around AD 319 – though exaggerated and featured to suggest divine intervention during a battle – may be indicative of another meteo-

(79) *Life of St David, Symeon and George* c. 6.

(80) Cases of suffering troops because of sweltering heat : AD 813 near Adrianople of Thrace : Scriptor Incertus (de Leone Armenio), p. 337, 13 ; AD 855 near Laodicia/Hierapolis : Theophanes Continuatus, *Chronicle* IV, 24, ed. ed. I. BEKKER, *Theophanes Continuatus, Ioannes Caminiata, Symeon Magister, Georgius Monachus (CSHB)*, Bonnæ, 1838, pp. 3-481, and Genesisios, *History of Emperors* IV, 14, 26, ed. A. LESMÜLLER-WERNER - I. THURN, *Iosephi Genesisii regum libri quattuor (CFHB, 14)*, Berlin - New York, 1978.

(81) *Life of St Sabas* c. 26 (p. 109) (BHG 1608), ed. E. SCHWARTZ, *Kyrrillos von Skythopolis (Texte und Untersuchungen, 49, 2)*, Leipzig, 1939, pp. 85-200.

(82) *Life of St Nikon* c. 42 ; cf. also *Life of St Ioannikios (auctore Petro monacho)* c. 42 (BHG 936), ed. AASS *Novembris* II, 1, pp. 384-435. Other cases : *Life of St Stephen the Sabaite* c. 36 and c. 103 (BHG 1670), ed. AASS *Iulii* III, pp. 531-613.

rological danger to which moving troops could be exposed : Πολλήν γὰρ μήπω πορευθεῖσιν ὁδὸν αὐθις ἕτερον ῥωμαϊκὸν στίφος στρατιωτῶν ἐπελθὸν ἐπὶ τὸ λεγόμενον Ὀμφαλίμου ὄρος τοὺς πολλοὺς ἐξανάλωσεν, τοὺς ὑπολοίπους δὲ φθάσαντας ἐπὶ τὸν λεγόμενον Λύκον ποταμὸν ὡσεὶ λίθων βολίδες χαλάξης πλῆθος καταπεμφθέν ἐξ οὐρανοῦ ἢ θεία δίκη ἐθανάτωσεν, ὡς μηδένα τῶν τὰ τοιαῦτα δεδρακότων εἰς τὰ οἰκεῖα ἐπανελθεῖν ⁽⁸³⁾. During a Persian campaign in 422 near Theodosiupolis, the power of God was favorable to the Roman army : ὑετῶ λαβροτάτῳ καὶ χαλάξῃ βαλὼν μεγίστη τὴν ἐπὶ τὰ πρόσω πορείαν ἐκόλυσε καὶ τὸν τῶν ἵππων ἐπέδησε δρόμον ⁽⁸⁴⁾. In any case, hail was a dreadful natural phenomenon not only for farmers, but also for travelling people. That is why during a trip in autumn the colleagues of St Hypatios begged him : Κύρι, εὔξαι μὴ χάλαζα ἐπέλθῃ ἐφ' ἡμᾶς, when they noticed heavy stormy clouds gathering above mount Olympus, Bithynia ⁽⁸⁵⁾. Nicolaos Mesarites was attacked by snow and hail, while sitting very uncomfortably, on a mule travelling from Constantinople to Nicaea. In a letter of AD 1208 he complains about this experience : ἐξ οὐρανοῦ ὑπὸ τῆς πυκνῆς χαλάξης πετροῦδὸν ἐβάλλομεθα καὶ ὑπὸ τῆς συχνῆς χιόνος ἠκροβολιζόμεθα κατὰ πρόσωπον ⁽⁸⁶⁾.

IV. PATTERNS OF IMPACT, PATTERNS OF PERCEPTION

The Byzantine sources yield a number of references to weather events that are closely related to overland travel, transport and communications. Before drawing any conclusion from the above presented material, we should mention that the pieces of evidence amount to a low number of reports, and derive from a few localities of the Byzantine Empire. Obviously, this fact raises the question of the references' representativity. The episodic character of the evidence is partly explained by the margi-

(83) *Life of St Theodore Tiron* c. 11 (BHG 1764), ed. H. DELEHAYE, *Les légendes grecques des saints militaires*, Paris, 1909, pp. 183-201.

(84) Theodoret of Kyrrhos, *Religious History* V, 37, 5 ; Nikephoros Kallistos Xanthopoulos, *Ecclesiastical History* XIV, 4.

(85) In early 5th century AD : *Vita S. Hypatii* c. 46 (BHG 760), ed. G. BARTELINK, *Callinicos. Vie d'Hypatios* (SC, 177), Paris, 1971.

(86) A. HEISENBERG, *Quellen und Studien zur späthbyzantinischen Geschichte* (Variorum Reprints, *Collected Studies*, 22), Aldershot, 1973, part 2, section 3, pp. 35-46 : here p. 40, 6-8 ; cf. C. GALATARIOTOU, *op. cit.*, n. 4, p. 228.

nal position that weather reports hold in the Byzantine sources and by the fact that “excessive” and “abnormal” conditions were chiefly worth mentioning in the sources. However sporadic, irregular and accidental this type of evidence may be, I consider that it does go beyond the purely episodic and reflects in an approximate sense what the Byzantines perceived as deviant from “normal” and expected. This assumption can support some generalizations that may allow the construction of some general patterns of impact.

Safety and ease are key-conditions determining the variety of options that travellers make (i.e. selection of a route, of the season and rate of the trip). In this framework weather and climate in combination with other factors such as terrain, determination and agenda of the travel, all played a role, so that very considerable variations in the selection of the route, the timing and rate of the trip must have been usual in the case of this research.

In theory, overland travel – unlike sea journeys that were restricted by *mare clausum* (the prohibition on sea travel for a period of four months each year) – could occur at any time of the year. In preindustrial societies overland travel was obviously more pleasant and secure in fine weather, when it was also easier to fodder one’s pack animals. However, favorable weather conditions could not occur throughout the year. Seasonal weather variations have definitely played an important role in the timing of overland travel, transport and communications. Flavius Vegetius Renuatus (4th century) in his *Epitome of Military Science* indicates that not only sea, but also overland travel, was generally closed from 11 November to 10 March due to bad weather conditions⁽⁸⁷⁾. During winter season travellers in Mediterranean continental regions could be impeded by cold, snow and ice, while in the maritime Mediterranean excessive storminess and flood were responsible for making journeys difficult. The existence of meteorological evidence from the Byzantine sources that describe off-season overland traffic suggests that safety and ease was the issue during these dangerous journeys.

(87) Vegetius, *Epitome of military science* IV, 39 : “Nam lux minima noxque prolixa, nubium densitas, aeris obscuritas, ventorum imbri vel nivibus geminata saevitia non solum classes a pelago sed etiam comiteantes a terrestri itinere deturbat” (ed. L. F. STELTEN, *Flavius Vegetius Renuatus. Epitoma Rei Militaris* [American University Studies, XVII, 11], New York - Bern - Frankfurt am Main - Paris, 1990) ; cf. B. RAPSKE, *op. cit.*, n. 7, p. 3.

The challenges of weather, as reflected in the Byzantine sources, may become a subject for various interpretations by the reader. As shown above, complaints about oppressive heat and all that goes with it are practically absent, while those about cold and wetness are relatively common. This fact might have its cause in the relative mildness of cold and rain in the generally hot and dry Mediterranean climatic regime, and therefore, in the unpreparedness of people to meet the challenge by means of appropriate clothing, housing and heating.

References on cold, snow and ice affecting travel, transport and communications illustrate the widespread sensitivity of Mediterranean people to the hardships of the winter season. A good number of the relevant accounts presented above is related to military action. This fact can be easily explained by the obvious impact of warfare on the Byzantine chronicle and historiographical literature as transmitted by classicizing traditional historical models ⁽⁸⁸⁾.

Reports of wet weather share a good number of references as well. Rain could mire the roads or swell streams and rivers. These consequences might cause considerable disturbance during a trip or endanger the safety of the travellers by making walking and riding difficult and occasionally impossible. The erosional effect of water on unpaved or deteriorated roads and tracks and the flooding of streams and rivers were also responsible for delays and difficulties that travellers could experience during overland trips. A number of the above presented accounts on rainfall and consequent phenomena is related to military action. However, there are enough reports related to rain miracles during overland travel, illustrating the concern of Byzantine hagiographers to cope with unexpected and excessive water-related natural phenomena. If we consider that the geographical frameworks of those narratives are the rainless regions of the Eastern Mediterranean, we may interpret these cases as expected complaints about the excess of a highly desired precious natural process : that of raining in semi-arid regions during rainless periods.

The sensitivity of Byzantine overland travellers to weather and climate is conditioned by factors that affect the physical and emotional perception of natural phenomena. These factors could be of external-environmental and/or internal-cultural context. Reports about suffering and injuries of travelling individuals or marching troops due to cold, snow and ice represent the external-environmental facet of effect to the tra-

(88) Cf. J. HALDON, *op. cit.*, n. 26, p. 254.

vellers' physical condition. In these cases weather is perceived negatively because of the bodily hardships it induces. Anything that could threaten safety and ease of a trip was undesirable and, thus, might be reflected in the accounts with negative emotion. Nevertheless, for the emotional perception of weather during travel internal-cultural preconceptions of the travellers might be involved. The above presented material does not provide sufficient information regarding this topic.

This paper focused on the impact and perception of weather and climate during travel, transport and communication process. Patterns of impact could be shaped as they are closely connected to the travellers' factual reality. However, much remains to be learned about how weather and climate were perceived by Byzantines on a psychological and emotional level. The study of texts from the vast Byzantine bodies of epistolography and rhetoric is expected to contribute towards the elucidation of problems related to the perception of weather and, generally, nature by the Byzantines.

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SUMMARY

This paper focuses on weather and climate as factors affecting certain facets of human activity during the Byzantine period. Various aspects of impact that weather phenomena and climatic conditions could have upon travel, travellers and communications by land, either in short-term or in long-term context, during the Byzantine period are discussed : Were there any long-term impacts of climatic change upon communications overland ? Which weather phenomena are described by the Byzantine authors as affecting people on move ? What was the impact of weather upon land transport and communications ? Which was the concept of weather that people on the move had and how can we combine weather reports with traveller's emotional and factual reality while experiencing meteorologically induced dangers during overland travel ?