

# *The factor of climate in the life of the nomads of the North Black Sea region*

From the end of the fifth to the seventh century

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Recent studies of the history of the north Black Sea region from the fifth to the seventh century CE<sup>1</sup> do not contain any significant mention of the climatic setting. It seems that the factor of climate was not important at that time and natural conditions have not changed since the first millennium. A good example of such a statement could be theoretical ecological researches of O. Tortika, who has counted the possible nomad population of "Great Bulgaria" using data about the modern climate.<sup>2</sup>

Tortika's calculations populate the North Black Sea and Azov Sea regions in the sixth-seventh centuries with 140,000–200,000 nomads. However, archaeological search for such a large mass of population still cannot give any satisfactory result. In comparison with the Scythian period (c. 700–450 BCE, about 240 burials; c. 450–300 BCE, about 3500 burials) and the Sarmathian period (c. 200–1 BCE, about 60 burials; c. 1–250 CE, 1200 burials; c. 250–400 CE, about 50 burials) and the central medieval period (c. 1000–1300, about 1300 burials) the size of the nomad population in the North Black Sea region circa 480–650 appears to have been extremely small.

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<sup>1</sup> А. И. Айбабин, *Этническая история ранневизантийского Крыма*. Симферополь 1999. С. А. Плетнева, *Очерки хазарской археологии*. Москва 1999. С. А. Плетнева, *Кочевники южнорусских степей в эпоху средневековья – IV–XIII. века*. Воронеж 2003. О. М. Приходнюк, *Степове населення України та східні слов'яни (друга половина I тис. н. е.)*. Київ–Чернівці 2001. Р. Ращев, *Прабългарите през V–VII век*. София 2004. П. П. Толочко, *Кочевые народы степей и Киевская Русь*. Киев 1999. О. О. Тортика, *Історична географія та населення Великої Болгарії (630–660 рр. н.е.): методика дослідження кочових суспільств середньовіччя*. Автореф. дис. канд. іст. наук. Харків 1999.

<sup>2</sup> Тортика, *Історична географія*.

M. Artamonov proposed one of the earliest explanations, the theory of the "pastyrska culture".<sup>3</sup> The answer was simple: if the Kutrigurs did not leave their graves in the steppe, the reason is that they were not nomads but a semi-sedentary population of the forest and forest-steppe zones. D. Dimitrov proposed the next explanation. He accepted the theory of "pastyrska culture" but only as part of his own "chameleon culture" theory.<sup>4</sup> Dimitrov thought that borrowing elements of the cultures of separate neighbouring Bulgarian tribes created separate cultures similar to their neighbours. Many scholars have tried to apply these explanations,<sup>5</sup> but no one has given a satisfactory explanation for why nomadic Bulgarians came to be leading a semi-sedentary or even sedentary life.

In 1985 R. Orlov published reports on four nomad burials of the second half of the sixth century and number of burials of the seventh century.<sup>6</sup> In 1988 E. Gorokhovskiy distinguished the chronological group of nomad burials of the end of the fifth to the first half of the sixth centuries.<sup>7</sup> Later these groups were attributed to two separate cultural types; the Likhachevka type (circa 480–551) and the Sukhanovo type (circa 551–625) left by the Bulgarian tribes of Kutrigurs and Utigurs ("tribes of Akkaga").<sup>8</sup> The mystery has gone. Nomad burials of Bulgarians do really exist, but their very small number needs further explanation.

<sup>3</sup> М. И. Артамонов, *История хазар*. Москва-Ленинград 1962, 291–295; М. И. Артамонов, „Етническата принадлежност и историческото значение на пастирската култура,” *Археология* 3 (1969), 1–10. М. И. Артамонов, „Болгарские культуры Северного и Западного Причерноморья,” *Доклады Географического общества СССР* 15 (1970), 3–37.

<sup>4</sup> Д. Димитров, *Прабългарите по Северното и Западното Черноморие*. Варна 1987.

<sup>5</sup> Л. М. Рутківська, „До питання про найдавніші болгарські племена на території України,” *Вісник АН УРСР* 10 (1972), 44–52; Л. М. Рутковская, *О стратиграфии и хронологии поселения около с. Стецовки на р. Тясмине*. Раннесредневековые восточнославянские древности. Ленинград 1974, 22–39; Л. М. Рутковская, *История племён степного Поднепръвья в середине I тысячелетия нашей эры*. Автореф. дис. док. ист. наук. Москва 1986; Ст. Ваклинов, *Формиране на старобългарската култура VI–XI век*. София 1977; И. А. Баранов-В. В. Майко, *Среднеднепровские элементы в культуре населения раннесредневековой Таврики*. Старожитності Русі-України. Київ 1994, 96–103. И. А. Баранов-В. В. Майко, „Пастирско-пенковската култура и проблемът за разселването на прабългарските племена от Средното Поднепровие и Таврика,” *Българите в Северното Причерноморие*. В. Търнов 4 (1995), 71–88; В. В. Майко, *Этнокультурные связи Крыма с Поднепръвьем и Северным Кавказом в VII–X вв*. Дис. канд. ист. наук. Киев 1997, НА ІА НАНУ ф.12, № 785; Р. Рашев, „К вопросу о происхождении праболгар,” *МАИЭТ* 3 (1993), 250–254; Рашев, *Прабългарите през V–VII век*.

<sup>6</sup> Р. С. Орлов, *Култура кочевников IV–VIII вв. Этнокультурная карта территории Украинской ССР в 1 тыс. н. э.* Киев 1985.

<sup>7</sup> Гороховский, *Хронология ювелирных*, 93, 176–177, 316–318; E. Gorokhovskiy, *The nomads of South-East Europe at the beginning of the Middle Ages*. Medieval Europe. Death and Burial 4. York 1992, 147.

<sup>8</sup> О.В. Комар, *Населення степів Північного Причорномор'я VI – початку VIII ст.* Автореф. дис. канд. ист. наук. Киев 2002; А. В. Комар, *Кутригури и утигури в Северном*

In searching for the origin of the Saltovo-Majaki culture, I. Baranov has examined different hypotheses of nomad sedentarization including climatic factors. He collected data about climatic changes in the Crimea and found that the sixth-seventh centuries CE was a very arid period, unfavourable for nomad cattle-breeding.<sup>9</sup> Later, in 1992, Š. Polin proved that the very dry conditions in the third century BCE had caused the fall of the Scythian nomad civilization.<sup>10</sup>

In 551 Utigur ambassadors told the Byzantine emperor that they lived "in country desert and unfertile".<sup>11</sup> Was the situation in the sixth and seventh centuries really so serious as it was in the third century BCE? Can we reconstruct a full picture of the South Ukraine climate at the time of the Great Migration period on the basis of studies using modern data?

The modern moderate sub-Atlantic climate of the Ukraine has succeeded the ancient sub-Boreal climate in the middle of the eighth century CE. The difference between average summer temperature and average winter temperature was much greater then than now. Summer was warmer and winter was colder. It is also important that the warmer were the summers, the winters become only colder. In J. Rauner's classification period, 100-650 CE is marked as "xerothermal phase II-5".<sup>12</sup> But we also know from Greek sources that some winters of this period were abnormally cold, for example, the winters of 402, 609 and 670, when the sea near Constantinople was frozen.<sup>13</sup>

A lower level of humidity was the second difference. Thanks to the research of G. Shvets we have detailed information about humidity fluctuations in the Dnieper basin during the whole historical period.<sup>14</sup> Shvets's system is based on year-stripe stratigraphy of the lake bottom. Connected by the spring floods with the Lower Dnieper, this lake gives a unique possibility to measure the water level every year of its existence and to date the beginning of every dry period with an accuracy of one or two years. Figure 1 shows fluctuations of humidity during the third-ninth centuries CE in comparison with the modern average (1.0 = average for mid twentieth century).

The data of Shvets's system (Fig. 1.) shows that the arid period started not with the beginning of Rauner's xerothermal phase II-5, but two centuries later – circa 297 CE. A short moderately humid phase from 339 to 347 did not change sit-

*Причерноморье. Сугдейский сборник II. Киев–Судак 2002; А. В. Комар – А. И. Кубышев – Р. С. Орлов, Погребения кочевников VI–VII вв. из Северо-Западного Приазовья. Степи Европы в эпоху средневековья 5. Донецк 2006.*

<sup>9</sup> И. А. Баранов, *Таврика в эпоху раннего средневековья (салтово-маяцкая культура)*. Киев 1990, 17-18.

<sup>10</sup> С. В. Полин, *От Скифии к Сарматии*. Киев 1992, 101-107.

<sup>11</sup> Прокопий Кессарийский, *Война с готами. О постройках*. Москва 1996, 78.

<sup>12</sup> Ю. Л. Раунер, „Динамика экстремумов увлажнения за исторический период,“ *Известия АН СССР: серия географическая* 6 (1981), Tabl. 1, Ris. 5.

<sup>13</sup> Д. Е. Афиногенов, „Новые сведения о климате Понта Эвксинского в историческую эпоху,“ *Вестник древней истории* 1 (1999), 144-145; И. Е. Бучинский, *Климат Украины в прошлом, настоящем и будущем*. Киев 1963, 81.

<sup>14</sup> Г. И. Швец, *Многовековая изменчивость стока Днепра*. Ленинград 1978, Tabl. 6.

uation because of a new arid phase from 347 to 396. The average coefficient of the period 297–396 was equal to 0.9. Next we see a period of great fluctuations from 396 to 475 which, however, had an average coefficient of 0.98, close to the modern. During the period 475–598, fluctuations of humidity were more moderate, with the exception of an arid phase from 502 to 525, but the average coefficient was equal to 0.99, again very close to the modern. Only after that we see a long dry period from 598 to 677, with average coefficient 0.9 and new periods of fluctuations in 677–735 and 735–787, with growing average coefficients of 0.94 and 1.0. Changes in humidity with the beginning of the sub-Atlantic climate around the year 735 developed during the next extra humid period, from 787 to 881, when the average coefficient reached 1.15.

The critical point of drying for the Ukrainian steppes is the coefficient 0.9 which we can observe in the periods 297–396 and 598–677 CE. Such a reduction of moisture with the addition of higher summer temperatures is sufficient for changing the arid southern steppe zone to semi-desert that exists now only at the northern Crimea and to the north of Perekop (Fig. 2, I). Theoretically these changes of temperature and humidity could also affect the southern part of the northern steppe zone but only as reduction of soil fertility.

The modern Ukrainian semi-desert zone almost perfectly matches the salted brown chernozem soil. The southern steppe zone matches the southern brown loamy chernozem soil which was also salted in the middle and second half of the first millennium CE. Recent studies of ancient soils in the territory of European Russia using new technologies and cooperation with archaeologists have given more exact dates for these processes. The steppe chernozem soil was salted from the fifth to the eleventh century, and only the very humid twelfth–fourteenth centuries repaired this.<sup>15</sup> Archaeological samples of southern brown chernozem soil from the northern Azov Sea region of the eighth century CE confirm that at the eighth century the soil of this region was already salted and evaporation was equal to 0.8 of the modern level.<sup>16</sup> The process of soil salting needs not only an average coefficient of evaporation lower than 1.0, it also needs great fluctuations of humidity when very arid years succeed very humid years. This situation we can observe in the period 396–475 CE (Fig. 1) and soil salting in this region had really started in the fifth century CE.

Our picture of climate changes starts from situation of the first–second centuries CE, when a very humid period had created in southern Ukraine the ordinary brown chernozem soil that was rich in humus. It was the time of the demographic maximum of Sarmathian culture. In the third century, humidity reduced and the number of Sarmathian burials also decreased. The long arid period from 297 to 396 CE slowly changed the ordinary brown chernozem soil to southern brown chernozem soil. It was very arid in the steppe zone, less fertile than earlier but

<sup>15</sup> *Среда обитания человека в голоцене по данным изотопно-геохимических и почвенно-археологических исследований (Европейская часть России)*. Москва 2002, 76–81.

<sup>16</sup> Л. С. Песочина, *Закономерности изменчивости почв и природных условий Приазовья за историческое время*. Проблемы эволюции почв. Пуццино 2003, 145–151.

still not salted. Salting of the soil, caused by great humidity fluctuations, had started in the fifth century. Up to the end of the century, the situation had become stable. During the period 475–598 the average coefficient of humidity was close to the modern but higher summer temperatures caused higher evaporation. The dry and salted southern brown chernozem soil was not favourable for vegetation by feather-grass. Instead it was favourable for wormwood and variable halophytes that caused the development of semi-desert. A new long arid phase from 598 to 677 and a dry period from 677 to 735 only fixed these changes in the borders of the modern salted chernozem soils. Real steppe vegetation had moved far to the north and covered the modern forest-steppe zone. However, the black soil of the Left Dnieper bank region still keeps the remains of salt,<sup>17</sup> so the fertility of all steppe soils in the fifth–eighth centuries was probably much reduced. Another consequence of aridization was drying and salting of the small steppe rivers and lakes. Some of them just disappeared, others became salted and useless for cattle-rearing.

Similar climate changes in the northern Black Sea region are known only from the twentieth–seventeenth centuries BCE and the third–first centuries BCE. The early medieval climate crisis was much longer and therefore more serious than these. The Ukrainian steppes concentrated large populations of nomads in Scythian and Sarmathian times, here were found the richest graves. Later, no Huns, nor Avars, nor Turks occupied these steppes for themselves. Only in the Polovetz period, when excessive humidity was able to wash out the salt, did the number of graves reach the level of Sarmathian times.

Unfavourable climate conditions can explain the great demographical changes in the size of the nomad population in the middle of the first millennium CE. This also explains the situation of Likhachevka type burials (c. 480–551 CE). At the present moment, not one Kutrigur burial or burial of Likhachevka type has been found in the south steppe zone, which probably was semi-desert at that time. Moreover, burials from Staraja Sarata, Likhachevka, Krasnograd and Zhivotino are located in the present forest-steppe zone (Fig. 2, 1, 10–12). A Crimean burial from Saharnaja Golovka, probably left by the Utigurs, is also situated in the forest-steppe zone (Fig. 2, 5). Only an Ogur burial of that type from Abganerovo is located to the east of the Don river in palaeosemidessert (Fig. 2, 13).

We can find an impressive regularity by correlation of historical events and fluctuations of humidity:

Humid phase 475–485 CE: circa 475 – Bulgarians crossed Don River and appeared in Ukrainian steppes; 479 – Bulgarians had spread to Danube and were used as freelancers by Emperor Zenon.

Next humid phase 493–502 CE: 491, 499, 502 – invasions of Bulgarians in Thrace. 491 seems to be exceptional but it is the end of the shortest and most moderate arid phase in the Bulgarian period (coefficient 0.95).

<sup>17</sup> *Атлас природных условий и естественных ресурсов Украинской ССР*. Москва 1978, 116–117. *Географія Української РСР*. Киев 1982, 40.

Humid phase 525–534 CE: 527 – embassy of Grod to Constantinople; 528 – capture of European Bosphorus by Bulgars; 530, 535 – invasions of Bulgarians in Thrace. The accuracy of Shvetz's system is two years, so 535 could be the last year of the humid phase or just the first year of a new arid phase.

Humid phase 547–564 CE: 551, 559 – invasions of Kutrigurs in Byzantium and its rout by Utigurs, Kutrigur migration to Lower Danube; 559–561 – wars of Avars with Utigurs, Kutrigurs and Antes; 561 – appearance of Turks; Avars crossed Danube.

These correlations show that during the period 475–561 CE almost all the events of Bulgarian history that needed long-distance travel through the arid Ukrainian steppe or semi-desert zones happened only in humid years. Partly we can explain this by the needs for grass and water.<sup>18</sup> But many of the Bulgarian attacks on Byzantium were made in winter time. Probably, there was also important social factor. In humid years, nomad tribes were richer and stronger, they did not need to make long-distance seasonal migrations, they had enough horses and could buy new equipment.

The situation changed after the appearance of the Turks. This nomad people definitely did not depend on the climatic situation in the east European steppes. During the arid phase 564–581, the Turks conquered the Ogurs, Utigurs, Savirs, Alans and other Caucasian peoples, they captured the Bosphorus and tried to capture Chersones in 580.

We can observe similar changes in the location of burials of the period 551–626. Burials of the Sukhanovo type are located in a palaeosemidessert zone but only in the close vicinity of rivers (Fig. 2, 2–4, 6–8). The funeral rite is close to Kutrigurian, but some new elements and buckles of Byzantine *phoederati* (Sucidava type) say that these nomads were Utigurs. Procopius (VIII. 4) says that Utigurs were the southern neighbors of the Ants.<sup>19</sup> This land the Utigurs obtained after 551 when they had defeated the Kutrigurs. Later, in 576, the Byzantine embassy of Valentine "passed through the region called Akkagas, which is the name of the woman who rules the Scythians there, having been appointed at that time by Anagai, chief of the tribe of the Utigurs".<sup>20</sup>

Kutrigurs in the first half of the sixth century and Utigurs in the second half of this century probably had different kinds of nomadic cattle-breeding. While Kutrigurs had to use the northern part of the steppe, spending a lot of time in seasonal migrations, Utigurs used humid river valleys. The "Armenian Geography" says that north Caucasian Bulgarian tribes of the seventh century were called by the names of rivers.<sup>21</sup> O. Tortika supposed that this could be caused by the determining of tribal territory borders by the river basins.<sup>22</sup> I think that it also depends on the system of seasonal migrations. This system seems to be the best way

<sup>18</sup> O. Pritsak, *The origin of Rus' I*. Cambridge MA 1981, 11.

<sup>19</sup> Прокопий Кессарийский, *Война с готами*, 20, 21.

<sup>20</sup> R. C. Blockley, *The History of Menander the Gardsman*. Liverpool 1985, 173.

<sup>21</sup> R. H. Hewsen, *The Geography of Ananias of Sirak*. Wiesbaden 1992, 55.

<sup>22</sup> Тортика, *Історична географія*, 10.

of adaptation to arid steppe and semi-desert conditions, but it hardly could feed very large herds of cattle. Bulgarians depended on river basins and humid steppe.

The new group of nomads that inhabited the North Black Sea region in the second half of the seventh century, at the time of the Chazarian invasion, had no such limits. Burials of the Sivashovka type are in modern semi-desert, in arid and humid steppe and present forest-steppe. Summer cloth from Sivashovka and Sivashskoe graves means that these nomads could stay and feed their livestock any-time in the most salted semi-desert. They definitely had species of sheep and horses accustomed to halophytes. Such kinds of species came later with the Kalmyks who migrated into Europe from Kazakhstan and possessed part of the ancient Chazarian lands.

Chazars, the same as Turks, did not depend on humid years for war and travel. They started war against Bulgarians circa 665 during a long arid phase. Asparukh crossed all of the north Black Sea region and did not stay in the steppe. He chose the place "Oglos" and "settled between the former and the latter ... on the near side it is marshy, while on the far side it is encircled by the rivers".<sup>23</sup> Greek authors explain this only by matters of security, but we also have to remember the Bulgarian system of migration along the river valleys.

Asparukh waited until 678–679 for his invasion of the Byzantine lands. An explanation again can be found in the traditional Bulgarian tactic of waiting for humid years. During the new humid phase from 677 to 687 they made several successful invasions of Byzantium and captured the present territory of Bulgaria which is situated in present forest-steppe zone. The "Great Bulgaria" of Kurt (Kuvrat) was situated to the north of Cuban river, which is forest-steppe zone now. The same southern borders of Volga Bulgaria match the borders of the present forest-steppe zone. In early medieval times these territories were partly moderate steppes, partly forest-steppes.

Climatic factors were definitely very important in the life of all nomad peoples of the north Black Sea region in the middle of the first millennium CE. It was especially important for Bulgarian tribes. We can suppose that the Bulgarians came to Europe with a complex of nomad cattle-breeding adapted to humid steppe conditions. That is why salted arid steppes and semi-deserts were not favourable for them. In the Ukrainian territory, Bulgarians at the beginning probably used long-distance seasonal migrations to northern steppe zones and present forest-steppe. Later, when the Kutrigurs had migrated with the Avars to Pannonia and the size of the Bulgarian population much decreased, Utigurs and other Bulgarian tribes could use the system of the river valleys for seasonal migration. However, all military activity of the Bulgarians over almost two centuries (475–685 CE) depended on cycles of humidity.

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<sup>23</sup> C. Mango and R. Scott, eds., *The Chronicle of Theophanes Confessor*. Oxford 1997, 498.

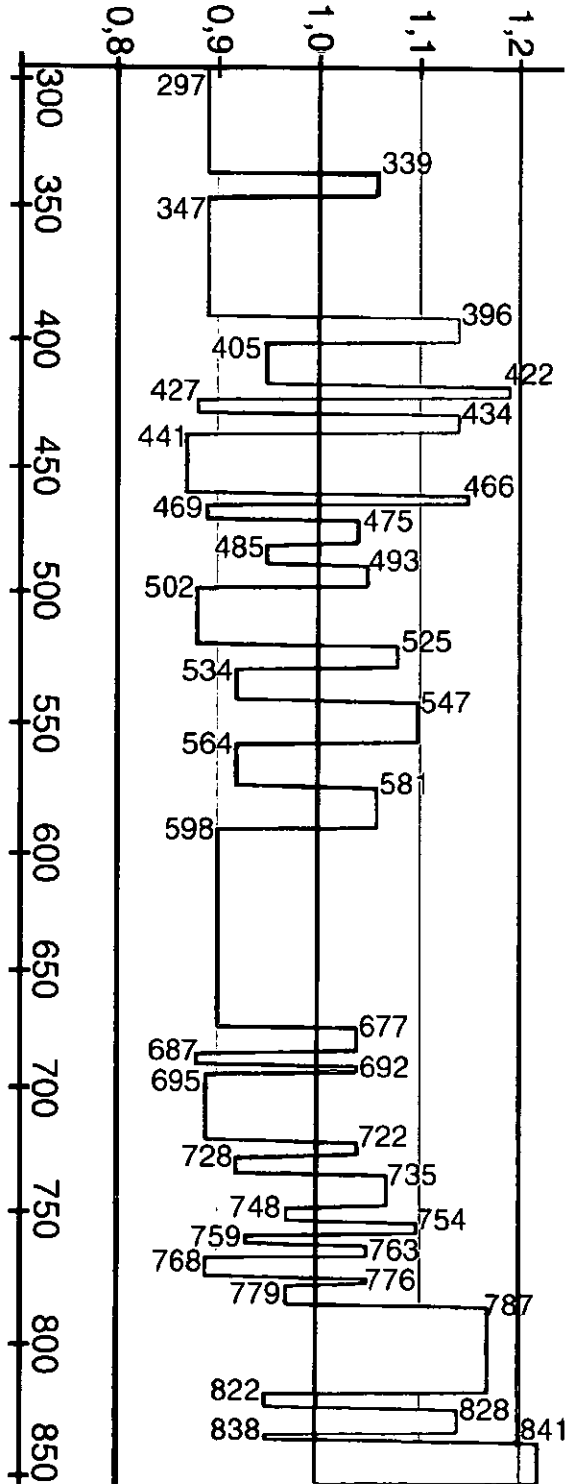


Fig. 1. Fluctuations of humidity in the Dnieper basin (297-859 CE)  
1.0 - modern (average for the mid-twentieth century)



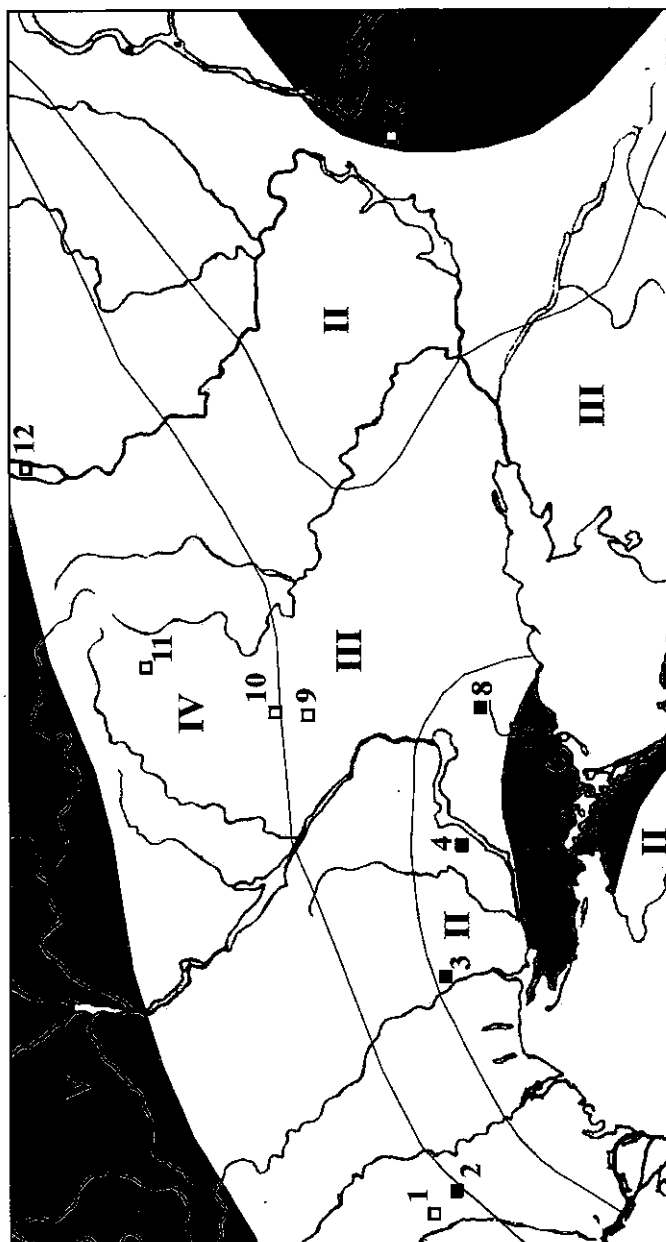


Fig. 2. Modern humidity zones and Bulgarian burials (c. 480-625 ce)

- I. arid (coefficient  $\leq 0.8$ ); II. dry (0.8-1); III. moderate dry (1-1.2); IV. moderate humid (1.2-1.9); V. humid (1.9-2.8)  
 a) Likhachevka type burials (c. 480-551 CE): 1. Staraja Sarata; 5. Sakharnaja Golovka; 9. Novo-Podkrajzhi; 10. Konstantinograd; 11. Likhachevka; 12. Zhivotino; 13. Abganerovo  
 b) Suhanovo type burials (551-c. 625 CE): 2. Selishte; 3. Novaja Odessa; 4. Suhanovo; 6. Sheljuzi; 7. Malaja Ternovka; 8. Bolshoj Tokmak.