

ECOLOGY AND CULTURAL DEVELOPMENT ON THE TERRITORY OF THE UKRAINE DURING ISOTOPIC STAGES 2 AND 3

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Despite of the long history of investigation and high quantity of Palaeolithic sites, the process of paleoecological changes on the territory of the Ukraine and its correlation with archaeological records are studied far not satisfactory detail. This statement for the less extent is concerned the time of the 2d isotopic stage, and, generally, is regarded the time of the 3d stage.

The generalised current view on the evolution of paleolandscapes and climates can be described as consequent substitution of only a few long cold and warm episodes, ultimately resulted in floristic (and sometimes faunistic) shifts. Although there are more detailed environmental evidence for certain sites - especially dated to the Late Upper Palaeolithic - which allows to restore more exact and complex sequence of paleoecological changes, nevertheless such a data are still rather scrappy.

So called Bug interval ("Bug time") is more or less correspond to the beginning and the major part of the 3d stage time span. This interval is characterised by the prevalence of periglacial circumstances through the almost all territory of the Ukraine. Stratigraphically it is reflected in accumulation of loessic sediments in the continental part of the country. The replacement of periglacial forest steppe by periglacial steppe and then by xerotic steppe is reconstructed in latitude extending from the North to the South. Average winter temperatures were constitute -18/19

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C, while summer temperatures were about 6/7

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C.

Arid steppe is reconstructed for the Crimea, Right-bank Don area and Azov Sea region, as well as for the middle Black Sea region. Periglacial steppes with prevailed Poaceae/ Artemisiae vegetation are characterised by the presence of single birch/ pine groupings and embrace the territory of Middle Dniester, Middle Dnieper, and Right-bank Don areas. Polissya, i.e. the areas on the North and Northern West of the Ukraine (roughly: Upper Dnieper area) are characterised by prevalence of birch/ pine communities and meadow/ steppe grass species. Forest steppe with pine, birch, juniper, spruce and Varia/ Poaceae grassy vegetation were spread through the upper part of the Middle Dniester area. Certain well stratified loessic sites, especially known in the Dniester area, are provide the evidence of warm fluctuation within Bug interval. These climatic fluctuations are associated with processes of formation of soils, provide comparatively numerous pollens of deciduous species (including oak and alder) alongside with usual pine and birch, and are compared with Hengelo or Moershofd of western schemes.

Faunistic records of the Bug interval is characterised mainly by presence of Mammoth, wooly rhinoceros, Asynus hydruntinus, horse, different deers including giant and reindeer. There is certain tendency of prevalance of bison in the East of the Ukraine, antelope saiga, Mammoth, domkey and horse in the Crimea, mammoth, reindeer, horse in

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the Western and Northern Ukraine.

The next interval going after "Bug time" it is so called Dofinovka, that is dated to approximately 30/22 Kyr BP. Dofinovka is principally correlate with the complex of the West European episodes of Arcy-Paudorf-Tursac.

Accordingly to the paleobotany data only the far Northern extremity of the Ukraine was covered by the forests consisted by dominated pine with admixture of oak, elm, lime. Broadly extended forest steppe was characterised by temperate humid climate. Wood associations are represented by birch and pine forests with insignificant participation of deciduous species. Steppe component of vegetation is represented by grassy *Herbetum mixtum*, including *Artemisia*, *Chenopodiaceae* and *Poaceae*.

The steppes of the southern Ukraine were constituted *Poaceae/ Artemisiae/ Chenopodiaceae* vegetation. The subzone of mesothic dry steppe is well distinguished throughout the areas of the Crimea and northern Black Sea region. Average winter temperatures were c. -6/9

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C, and summer temperatures reached up to +17/18

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The 2d Pleniglacial includes so called maximum of Ostashkovo glaciation roughly dated to between 18-22 Kyr BP and is described as Prichernomorski cold interval. This interval lasted up to c. 10 Kyr BP comprises the series of warm fluctuations usually compared with such well known terminal Pleistocene interstadials as Allerod, Bolling etc. The cold "phone" of the Prichernomorski interval is characterised by the coexistence of several landscape zones, i.e. periglacial forest steppe in the Northern and Western Ukraine, periglacial steppe in the Middle and south-eastern Ukraine and xerotic steppe in the Crimea and Azov sea region. Cold forest steppe was composed by birch/ pine rare forest patches and *Poaceae/ Artemisiae/ Chenopodiaceae* grassy vegetation. Periglacial cold steppe was represented generally by *Poaceae-Chenopodiaceae* grassy plants with single birch/ pine groupings. During warm fluctuations, the expansion of forest vegetation is restored. Northern territory of the Ukraine was covered by birch/ pine forests including thermophilic species like elm, lime. The major part of the latter areas were characterised by the existence of forest steppe landscapes with wood components progressively decreased southward. The Bolling interstadial is characterised by explicit overweight of forest vegetation spectrum (up to 60 %) rich in fir-tree and pine pollens with saturated structure of the water-meadow areas, while Allerodian associations embraced alder and pine alongside with significant rate of broad-leaf forests. There is all grounds to suggest that Allerodian sequence represents a rather complex data embraced several distinct humid and dry fluctuations. Existing evidences allow to consider late Allerodian phases as much more humid and warm than foregone ones through over Ukraine. Four faunistic variants are distinguished for the Late Pleistocene, namely: 1) mammoth variant connected with Dnieper depression, 2) bison variant in the Northern Black sea region and Right-bank Don area, 3) reindeer/ horse/ mammoth one in the Dniester area, and 4) saiga/ deers

variant in the Crimea. All these teriovariants include several more or less independent faunistic groupings, characterized by specificity of composition, geographical location and by certain chronological shifts. Nevertheless, it is worthy to note that these variants are stable for all the time concerned, has clear correlation with more early faunas of the Bug time and, as it must be especially stressed, directly reflect the phone fauna species of corresponding geographical areas.

The dynamic of terrestrial paleoclimatic changes has accordance with the cycles of transgression/ regression of Azov-Black sea basin. The fluctuation of sea level was especially significant during the period of the 2d Pleniglacial, when the Azov sea was absolutely disappeared and the Crimea was a part of the continent (sea level was fall up to the mark -110 m). This, so called Novoevksinsk regression of the Black see is dated to between 32-18 Kyr BP.

Specifically geographical setting of the Crimean peninsula in the extreme south of the East European plain sufficiently soften the influence of glacials on the regional changes of climatic regime. The data in hands points to absence of crucial climatic changes in the Crimea during the Wurm and steppe still remain dominated. Open landscapes, changed with more/less forested ones were especially characteristic for the whole East European Plain and Crimea during Late Pleistocene. Paleolandscapes of Crimean Mts. during the time cold intervals were characterised by decline of deciduous forests and invasion of boreal vegetation. At the same time Crimea paid no data on Alpine flora. Species well adapted to Steppe are dominated among megafauna. The most common are mammoth, woolly rhinoceros, bison, horse, donkey, saiga, as well as giant, red, and reindeers. Comparatively high frequency of antelope saiga and deers allows to distinguish a local type of fauna in frames of so called Mammoth Complex. There are also cave bear, wolf, fox, polar fox, hair etc. The main part of Crimean microteriofauna is represented by Steppe species. MP ornitofauna is characterised by dominated forest species. Saiga hunting specialisation existed until the Dryas I chronological span and was replaced by ovicaprines specialisation, which in turn was changed by mixed forest-steppe Fauna assemblage as hunting game to be chosen.

The available archaeological records associated with essential paleoenvironmental data and dated to the period of oxygen isotope stage 3 are concentrate, mostly, in the West of the Ukraine (River Dniester area) and in the South of the country (Crimean peninsula). Single reliable evidence are also known in the Eastern Ukraine (right-bank Don area). Less firm records are also known in Dnieper Ridge region as well as in the Upper Dnieper area. Although almost the all latter territories provide rather numerous archaeological locations, but they in general have not geological and natural sciences background and due to this are not significant in regards to purpose of the discussed topic. Thus, although the fact of human occupation can not be immediately proved, nevertheless it also cannot be rejected.

Anyway, the available to the date data are point, as it seems, to the more intensive and continuous occupation of the Dniester area and, especially, of the Crimea. The territories extended northward provide evidence of occupation at least during warm periods of the

Bug interval (e.g. Betovo at the border between Russia and Ukraine). Eastern Ukraine, as well as Middle Dnieper area provide records dated to cold periods of the Bug interval, too.

It is worthy to note as a remark, that unbalanced dispersion of the Late Middle Palaeolithic records through the territory of the country equally can be rooted both in objective features of the paleo-reality and in subjectively emerged and developed trends of archaeological research.

The Crimean sites provide evidence of durable continuous occupation during the time span after Brorup interstadial. The most demonstrative in this respect are the multilayered sites of Zaskal'naya V and Kabazi II. The first site is characterised by the consistent re-occupation by the bearers of the Eastern Micoquian, whose anthropological definition as *Homo sapiens neanderthalensis* is solidly argued by discoveries at other Crimean sites with the same industry. Kabazi II provides evidence of steady occupation of Typical Mousterian. Besides these two traditions, the peninsula provides data witnessed to the co-existence of several more distinct traditions, namely Charentian (?) and para-Micoquian.

Para-Micoquian occupations are also known in the Dnieper Ridge area (the site of Orel). Late para-Micoquian or Micoquian influences are also traced in this region at the transitional site of Mira. It cannot be excluded that the same geographical region provides contemporaneous records of Levallois Mousterian occupation.

Right-bank Don area, territory neighbouring to the far North of the Ukraine (upper part of Middle Dnieper area), Middle Dniester and Transcarpathia provide the data pointed to the existence of roughly contemporaneous (in the frames of the Bug interval) Denticulate Mousterian. These evidences were discovered, correspondingly, at the sites of Belokuzminovka, Betovo, Stinka, Cherna X and Korolevo I.I. Despite of the fact that all these assemblages are described by the same taxon, the real kindred liaisons between them are very doubtful. Transcarpathian assemblages of the Cherna type are compared with Central European assemblage of the Shipka site, while the Dniestr site Stinka has a row of close analogies in surrounding areas of the Moldova and gives a name of a distinct industry (cf.: Stinkovian), and Betovo is constituted, probably, the late reminiscence of the Eemian Taubachian. As to the assemblage of Belokuzminovka, it constitutes, most probably, one more variant of Denticulate Mousterian based on blade-oriented technology.

Thus, for the time of the 3d stage, the Ukraine is characterised by surviving of a row of Middle Palaeolithic traditions, namely different facies of Denticulate Mousterian, Micoquian, para-Micoquian, Levallois-Mousterian and probably Charentian. The most densely occupied territories seemed to be Dniester area and Crimea. The most constant and continuous kind of occupation is known from the Crimea. Must be stressed, that to the age ca. 40+/-5 Kyr BP only the Crimean records are still rich for to allow the definition of the type of industry, whereas the Dniester assemblages known at Molodova V and Korman' IV are very weak and indefinable. Must also be pointed out the certain trend of agreement between warm climatic fluctuations and spreading of population

northward.

Another intriguing issue is the fact the Crimean Middle Palaeolithic is survived up to the very late date c. 30 Kyr BP and for a while is contemporaneous with early records of Dufour Aurignacian in the peninsula. To the date this situation is confirmed by a series of absolute dates, provided by different dating methods (AMS, ESR, U-ser). The chronological position of the Late Middle Palaeolithic in the Crimea is practically unique for the territory of the country save for the Levallois-Mousterian assemblage of Zhornov in the Upper Dnieper area geologically dated to the beginning of Dofinovka interval (Paudorf ?). Nevertheless, the date (or the appearance of industry) of the latter site needs in additional arguments.

Seems to be rather exceptional the chronological position of Transcarpathian Korolevo I: Ia assemblage, typologically Upper Palaeolithic, but geologically dated to pre-Brorup. Nevertheless, the ^{14}C date for this layer is pointed to Paudorf. This contradiction needs in further elucidation.

The time span between 40/30 Kyr BP is marked by emergence of transitional Middle to Upper Palaeolithic assemblages. These phenomena are gravitate to warm episodes Hengelo, Arcy and Stiefried B and typologically can be defined as Szeletian (Transcarpathian site Korelovo II layer 2), specifically transitional assemblages embraced features of Micoquian and early Upper Palaeolithic flake-oriented industries of the Don area, namely Streletskaya and Gorodtsovskaya cultures (Lower Dnieper site Mira), and Kremenician in Vholynia (the site of Kulychivka). The latter multilayered site yielded unusual combination of Levallois reminiscence in technology and features of Blade Aurignacian in typology. Geological and absolute dates points to the Early Paudorf position of this site. Techno-typological diversity of transitional assemblages alongside with their geographical position probably marks differences of their origins. Anyhow, both Korolevo II: 2 and Kulychivka more or less gravitate toward Central European Szeletian and Bohunician, respectively, whereas Lower Dnieper records provide original type of transitional industry.

The earliest Upper Palaeolithic records in the country are defined as Eastern Gravettian and Dufour Aurignacian, dated to immediately after c. 30 Kyr BP and known in the Crimea and Dnieper Ridges area. Approximately since that time the territory of the Ukraine demonstrate specimen of practically general and continuous occupation, although there are certain exceptions. To the number of the latter can be referred almost absolutely absence of Palaeolithic sites in the Upper Dniester area and absence of archaeological records dated to c. 40-20 Kyr BP in the Right-bank Don area. If the first case can plausibly be explained in terms of insufficient search strategies, than for the second item such kind of explanation is hardly applicable.

Nevertheless, even for the more intensively occupied areas, such as Middle Dniester, river Dnieper basin area and so on, certain tendency of gravitation of sites toward warm episodes is rather perceptible. This situation is drastically changed only after c. 17 Kyr BP. There is no grounds to suspect migrations of population elsewhere during more cold

episodes. Instead, the reasons can lay in changes of subsistence pattern and increasing of the level of mobility of utilisation of the territory. By the other hand, good representation of sites dated to cold episodes of the terminal Pleistocene, can satisfactory be explained by sufficient rise of population. Due to occupation density the Ukrainian territory was not uniform at the LGM time. So Dniester area registered well represented and defined sequence in Kosautsi (Moldova) and Korman' IV (Ukraine). Both are practically the same in archaeological context. At the same time the extended Middle Dnieper and adjacent areas were unsettled, while Northern Black sea coast steppe occupation was firmly connected with expressive epi-Gravettian evidences. Needless to say that features of so-called steppe zone, namely open xerothermic steppe landscape, bison hunting specialisation and lack of semi-residential sites should be recognised within specified above episode neither prior or later.

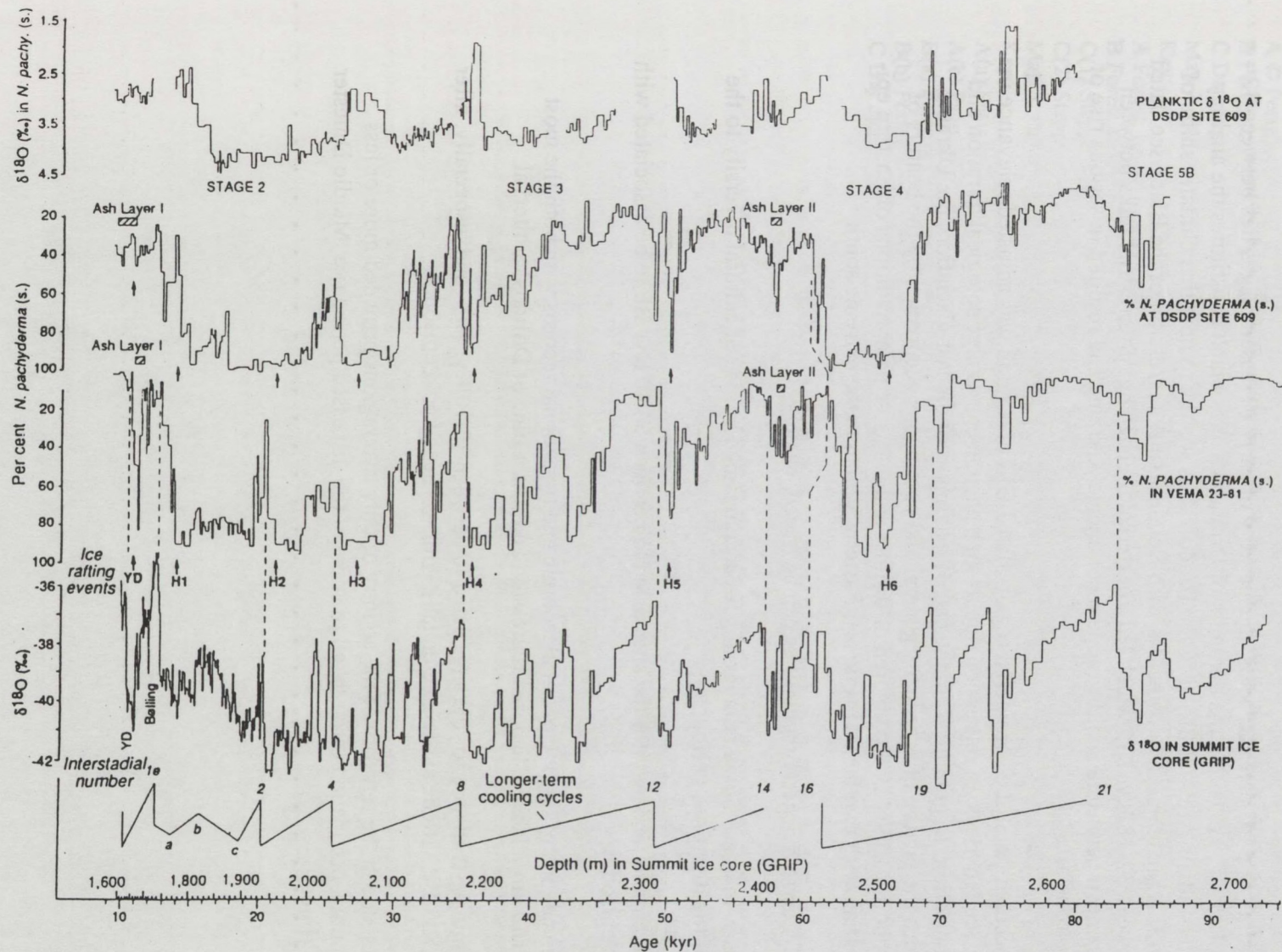
>From the paleoethnological point of view, archaeological records of the 2d stage are extremely mosaic and various. Several kinds of Aurignacian, Gravettian, epi-Gravettian, and Azilian can be distinguished and traced both chronologically and spatially. Aurignacian and Eastern Gravettian sites are coexisted chronologically and sometimes geographically. Although the both are started approximately simultaneously c. 30 Kyr BP, the first tradition is disappeared c. 25 Kyr BP, whilst the latter survived up to Tursac interstadial including classical phase "with shouldered points". A notable distinctive feature of the Northern Black sea coast area it is starting point of epi-Gravettian since beginning of LGM time. The Final Eastern epi-Gravettian cultures probably started at the beginning of Dryas I and are co-existed, at least chronologically, with Azilian during the Allerod and Dryas III.

Such is a brief review of current data concerned development of Palaeolithic on the territory of the Ukraine during isotope stages 2 and 3.

Following conclusions can be supposed.

During at least 30 thousand years, i.e. practically the whole duration of the 3d isotopic stage, the territory of the Ukraine provides rather scrappy picture of occupation, save for two regions, namely Middle Dniester and the Crimea, and herewith the latter area yielded more constant and continuous pattern of habitation. Northern, central and Eastern Ukraine provides isolate evidence of existence of sites, moreover seemingly gravitate to be associated with interstadials.

>From the c. 30 Kyr BP occupation pattern became more stable, there is perceptible increase of the number of sites, although, the available data suggests rather still the same trend to be coincided with warm episodes for the settlements located in the continental Ukraine. Early Upper Palaeolithic records are represented by unanimously regarded as intrusive Aurignacian and Gravettian, as well as by several transitional Middle to Upper Palaeolithic assemblages rooted, as it seems, in local Middle Palaeolithic background and developed in frames of steppe/ forest steppe zones of the continental Ukraine. Must be emphasised the phenomenon of extremely late surviving of the Middle Palaeolithic in the Crimea, in fact chronologically coincided with EUP at this area. The time of broad



G. Bond, W. Broecker, S. Johnson, J. McManus, L. Labeyrie, J. Jouzel & G. Bonani, 1993-
 Correlations between climate records from North Atlantic sediments and Greenland Ice,
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spreading of new bread of people ultimately resulted in emergence of transitional phenomena in Lower Dnieper, West Ukraine, Transcarpathia, and, probably, in the Crimea is coincide with the time of serious environmental changes challenged by Novoevksin regression of Black sea basin.

According to 14 C dates at hands, the majority of early UP assemblages lies between 32 - 25/24 Kyr BP, i.e. within the optimum of Dofinovka age, which constitutes the analogy of interstadials Arcy, Stillfried B and Paudorf. It is worthy to note that climatic shifts of Wurm II stage temporally coincides with Novoevksinsk regression of the Black see dated to between 32-18 Kyr BP, which led to external broadening of terrestrial links between the Crimean peninsula and the modern continental Ukraine and resulted in serious rise of steppe zone area.

The occupation of the considered region after LGM maximum was adjusted relevance in Black sea Novoevksin regression due to such phenomena as chronological duration and recolonisation. Beginning from the end of maximum of the last glaciation, the Ukraine provides the picture of practically general and continuous occupation by the bearers of different in various extent kindred or distinct and intrusive paleotraditions of Eastern epi-Gravettian with two facies inside and Eastern Azilian in the extreme south.

Finally, certain general regularities can be traced, namely:

- a) steady increase of the number of sites accompanied by rise of cultural diversity to the end of the discussed period;
- b) perceptible tendency for the sites dated to between 60/30 Kyr BP to be associated with warm episodes;
- c) coincidence of Early Upper Palaeolithic and transitional records with both the most powerful late glacial Black sea regression and warm time of Dofinovka interval;
- d) dominate tendency for the sites dated to between 30/10 Kyr BP - and, especially, after c. 18 Kyr BP - to be associated equally with warm and cold episodes;
- e) presence in the territory of the country of only two regions provided more or less continuous occupation through all the time of the discussed period (i.e. Middle Dniester and Crimea);

Map 1. Paleo-landscapes during the Bug interval

Key:

A(a) Periglacial forest steppe: birch/ pine groupings with meadow-steppe grassy formations;

A(b) Periglacial steppe: birch/ pine groupings with *Herbetum mixtum*/ *Poaceae*/ *Artemisiae*/ *Chenopodiaceae* vegetation;

A © Periglacial steppe: pine/ birch groupings with juniper and spruce admixture and *Varia*/ *Poaceae* spc.;

B Periglacial steppe: *Poaceae*/ *Artemisiae*/ *Chenopodiaceae* vegetation with single birch/ pine patches;

C Dry steppe

Map 2. Paleo-landscapes during the Dofinovka interval

Key:

A Forest: birch/ pine + different deciduous spc

B Forest steppe: birch/ pine + different deciduous spc + *Herbetum mixtum* grass vegetation

C(1) Steppe: *Poaceae*/ *Artemisiae*/ *Chenopodiaceae* vegetation

C(2) Steppe: droughty vegetation

Map 3. Paleo-landscapes during the Prichernomorski interval

Key:

A(a) Periglacial forest steppe: birch/ pine patches + *Poaceae*/ *Artemisiae*/ *Chenopodiaceae* formations

A(b) Periglacial forest steppe: birch/ pine patches + *Poaceae*/ *Artemisiae*/ *Chenopodiaceae* formations

B(a) Periglacial steppe: *Poaceae*/ *Chenopodiaceae* vegetation + single birch/ pine patches

B(b) Periglacial steppe: *Poaceae*/ *Chenopodiaceae* vegetation + single birch/ pine patches

C Dry steppe