

Day 2 (28 May)

9:00-11:20: lectures

Session IV - Use of obsidian by chronological periods

9:00-9:20

Markó, A.: The use of the Slovakian and Hungarian obsidian: the earliest data

9:20-9:40

Shimada, K.: A local behavior system for obsidian acquisition in a source area: Integrative lithic analyses focused on the Early Upper Palaeolithic industry of Hiroppara II in the Central Highlands, Japan

9:40-10:00

Ono, A.: Acquisition patterns of obsidian at the Upper Palaeolithic Mattobara site in north-central Japan

10:00-10:20

Doronicheva, E. - Shackley, S. M. - Golovanova, L. V. - Doronichev, V. B.: Exploitation of the Zayukovo (Baksan) obsidian in the Paleolithic of the Northern Caucasus: new discoveries and new sites

10:20-10:40

Wilczyński, J. - Lengyel, Gy.: Obsidian as a determinant of the migration routes of Gravettian and Epigravettian hunter-gatherers

10:40-11:00

Kaminská, L.: Use of obsidian from the Paleolithic to the Bronze Age in Slovakia

11:00-11:20

General discussion on session IV (part 1)

11:40-14:00: lectures

Session IV - Use of obsidian by chronological periods

11:40-12:00

Szilágyi, K.: Some thoughts about the cultural traditions and raw material selection strategies connected to obsidian in the Neolithic Carpathian basin

12:00-12:20

Jovanović, I. - Sommer, U.: The distribution of obsidian in the Middle Danube area in the Neolithic

12:20-12:40

Sztáncsuj, S. J. - Biró, K. T. - Nagy-Korodi, I. - Constantinescu, B.† - Hágó, A. - Berecki, S. - Mirea, P. - Szilágyi, V. - Maróti, B. - Kasztovszky, Zs.: Nuclear analytical investigations on prehistoric obsidian artefacts from Romania

12:40-13:00

Boroneanț, A. - Bonsall, C.: Geochemical characterization of obsidian artefacts from Mesolithic and Neolithic sites in the Iron Gates, Southeast Europe

Session V - Lithic technology and use-wear

13:00-13:20

Jovanović, I. - Bogosavljević Petrović, V.: Technology of obsidian assemblage from the Late Neolithic site of Potporanj (Serbia)

13:20-13:40

Nemergut, A. - Cheben, M.: Unique grinded obsidian finds from Eneolithic site at Nitra-Selenec

13:40-14:00

General discussion on session IV (part 2) and session V.

Day 1 (27 May)

15:50-17:00: Poster session

Session IV - Use of obsidian by chronological periods

Oyokawa, M. - Suda, Y. - Inata, Y. - Nada, T.: Upper Palaeolithic obsidian exploitation and human behavior in the Oki Islands and Chūgoku Mountains of the Southwestern part of the Japanese archipelago

Le Bourdonnec, F.-X. - Orange, M. - Bellot-Gurlet, L. - Dubernet, S. - Lugliè, C. - Leandri, C.: Circulation and origin of the obsidian in the Tyrrhenian zone: the example of prehistoric Corsica

Szeliga, M.: The inflow of obsidian north of the Carpathians during the Neolithic: chronological variability of distribution

Szeliga, M. - Kasztovszky, Zs. - Szilágyi, V.: New PGAA data on the origin of Early Neolithic (LPC) obsidian in the upper Vistula Basin

The use of the Slovakian and Hungarian obsidian: the earliest data

Author:

Markó, András (Hungarian National Museum, Budapest, Hungary - markoa@hnm.hu)

Session IV - Use of obsidian by chronological periods

Form of communication: oral

Day 2 (28 May) 9:00-9:20

The occurrence of obsidian in geological outcrops in the north-eastern part of the present-day Hungary and the eastern part of Slovakia as well as in the archaeological assemblages has been known for more than 150 years ago.

The occurrence of the raw material on the Lower Palaeolithic site of Rusko (MIS 11 or 9) or the Early Middle Palaeolithic locality of Rybnik (MIS 6), both in Poland should be verified by analytical methods. Similarly, the isolated artefacts collected in the vicinity of the outcrops of the obsidian and placed to the Lower Palaeolithic only after typological considerations should also According to the present-day information first use of this volcanic glass is securely dated to the last Interglacial and the Early Würm (MIS 5 and 4) in the cave localities of the Bükk Mountains. At the same time, obsidian artefacts were found in the Taubachian and Charentian assemblages of the Obłazowa cave in the Polish Carpathians, dated to the same period and to the Interpleniglacial, respectively. These data clearly show that the raw material was transported over 160 km even during the Middle Palaeolithic period.

The Micoquian or Keilmessergruppe is characterised by the use of bifacial working. In Hungary a series of surface collected assemblages (including Sajóbáony in the Bükk Mountains and Legénd in the Cserhát area) yielded obsidian artefacts and the use of the raw material was also reported from the Ciemna cave, Poland.

Finally, during the surface collections and a single excavation of the Middle Palaeolithic sites with leaf points (erroneously named as 'Szeletian') yielded also some obsidian artefacts. The occurrence of the obsidian published from the assemblage of Zeitlarn (near Regensburg, Bavaria) and the „amorphous volcanic glass” from the Remete Upper cave (Budapest, Hungary) should be removed from the technical literature. Finally, the revision of the available evidences from the excavations of the Pilisszántó II rockshelter, the rather atypical lithics (including a piece of obsidian) cannot be placed to the Middle Palaeolithic period.

Keywords: obsidian, Middle Palaeolithic, Micoquian, leaf point industry, distance of raw material transport

**A local behavior system for obsidian acquisition in a source area:
Integrative lithic analyses focused on the Early Upper Palaeolithic industry
of Hiroppara II in the Central Highlands, Japan**

Author:

Shimada, Kazutaka (Meiji University Museum, Tokyo, Japan - moirai3sis2@gmail.com)

Session IV - Use of obsidian by chronological periods

Form of communication: oral

Day 2 (28 May) 9:20-9:40

This paper focuses on local activities for obsidian acquisition in the Early Upper Palaeolithic (EUP) in a large obsidian source area of the Central Highlands, central Japan. A catchment area used for obsidian acquisition around the EUP site of Hiroppara II is determined. The site is located in the east bank of the Wada River, 1,400 m. The obsidian lithic industry from Hiroppara II assigned to 35-34 ka cal BP indicates the site was a lithic workshop for obsidian-blade manufacturing. To reconstruct the catchment area in detail, geochemical and geographic analyses of obsidian were integrated into the debitage analysis. 1) As multiple outcrops geochemically characterized are dispersed around the site, WD- and ED-XRF analyses of 2,401 obsidian tools and debitage from the site were performed to determine the provenances. 2) A distribution map based on roundness and cortex patterns of obsidian sampled along the bed of the Wada River illustrated five geographical areas divided by different appearances of cortex. Comparing cortex remained on the artifacts with the index map enables to specify obsidian-gathering spots extending from the outcrops. Results of the integrative analysis of the Hiroppara II industry indicate that 1) the outcrops of Higashi-Mochiya (58.5%: a chemical group “MT”), Wada pass (18.0%: “W”), and Hoshigadai-Hoshigato (16.6%: “HH”) were dominantly exploited; 2) Obsidian acquisition around Hiroppara II depended not only on those outcrops but also on the gathering spots yielding MT obsidian along the basin of the Wada River. Thus, the catchment area reaches a distance of ca. 15 km and a relative elevation difference of ca. 450 m; and 3) the obsidian processing at Hiroppara II represents a component of a behavior system repeatedly exploiting the catchment area. This implies a number of the EUP obsidian-blade workshops similar to the site still remain buried along the area.

Keywords: Early Upper Palaeolithic, provenance analysis, catchment area, Central Highlands

Acquisition patterns of obsidian at the Upper Palaeolithic Mattobara site in north-central Japan

Author:

Ono, Akira (Meiji University, Tokyo, Japan - ono@tmu.ac.jp)

Session IV - Use of obsidian by chronological periods

Form of communication: oral

Day 2 (28 May) 9:40-10:00

The presentation focuses on the combination between acquisition patterns and migration range of an Upper Palaeolithic social group, with particular emphasis on the Mattobara site case study. The site is located on the left bank of the latest Pleistocene river terrace in the middle course of the Shinano River in Niigata Prefecture, north-central Japan. Among three locations at the Mattobara site – A, B, and C – very small amounts of obsidian have been found at Locations A and C, and no obsidian was found at Location B. According to the results of obsidian provenance analysis by Energy Dispersive X-ray Fluorescence analysis, obsidian from Location C was brought from Kirigaine and West Kirigamine sources in Nagano Prefecture of the Central Highlands (Honshu Island) with a migration range of ca. 170 km; and, in the case of Location A, from Fukaura and Oga sources, ca. 400 and 310 km north of the site, respectively. From the beginning of the 1970s up to the present, obsidian provenance analyses in the central Japanese Islands have reached 86,523 samples, and many empirical results regarding maximum obsidian transportation or migration ranges fit into area with a radius of ca. 200 km. The range roughly corresponds to the morpho-typological distribution of diagnostic lithic artifacts. It is highly possible to predict the appearance of common morpho-typological features of diagnostic tool types that might have originated in these repeated communicative processes of lithic acquisition activities. At Mattobara Location A, this is not the case, and obsidian from the distant Fukaura and Oga sources has been brought to Location A by a certain exchange network system.

Keywords: Upper Palaeolithic, Mattobara site, Japan, obsidian, migration range

Exploitation of the Zayukovo (Baksan) obsidian in the Paleolithic of the Northern Caucasus: new discoveries and new sites

Authors:

Doronicheva, Ekaterina V. (ANO Laboratory of Prehistory, St. Petersburg, Russia - edoronicheva87@yandex.ru)

Shackley, Steven M. (Geoarchaeological XRF Laboratory, Albuquerque, New Mexico, United States - shackley@berkeley.edu)

Golovanova, Liubov V. (ANO Laboratory of Prehistory, St. Petersburg, Russia)

Doronichev, Vladimir B. (ANO Laboratory of Prehistory, St. Petersburg, Russia)

Session IV - Use of obsidian by chronological periods

Form of communication: oral

Day 2 (28 May) 10:00-10:20

The Elbrus region, dividing the Greater Caucasus Mountains into the Western (Black Sea basin) and Eastern (Caspian Sea basin) parts, also contains the main mountain passes between the Southern and Northern Caucasus and is the location of the Zayukovo (Baksan) obsidian source. In 2016-2018 we made special field surveys in the Zayukovo (Baksan) source region between the modern towns of Zayukovo and Atazhukino in the Baksan River valley in order to get new information about geology and accumulation of obsidians in the region. Several outcrops of obsidian within the Zayukovo (Baksan) area were discovered, sampled, and studied. They were named Zayukovo-1-4. Obsidian samples were analysed using the ThermoScientific *Quant'X* EDXRF spectrometer in the Geoarchaeological XRF Laboratory, Albuquerque (USA; <http://www.swxrflab.net/>).

Our research show, that Zayukovo (Baksan) obsidian was actively used in the Paleolithic of the Northern Caucasus. During the Middle Palaeolithic, this obsidian was transported almost 250 km away from the source to several sites in the Northwestern Caucasus, and was intensively exploited in Saradj-Chuko grotto, located 5-7 km from the source. The Zayukovo (Baksan) obsidian is concentrated in the Upper Paleolithic layers 1A-1C in Mezmaiskaya cave, dated from 38 to 24 ka, and in the Epipalaeolithic (16 – 12/11.5 ka) layers in Mezmaiskaya, Kasojkaya caves, and also in the Gubs VII Rockshelter in the Northwestern Caucasus. Also, in the Epipalaeolithic layers in Sosruko Rockshelter, located about 25-30 km from the Zayukovo (Baksan) obsidian source, and in discovered by our team in 2018 Psytujaje Rockshelter, located 5-7 km far, this obsidian was one of the main raw materials.

This research was supported by the Russian Scientific Foundation grant No. 17-78-20082, "Human-nature interaction in ancient in the Central Caucasus: dynamics of environmental change and technological innovations, and adaptations of subsistence strategies".

Keywords: Obsidian industry, lithic technology, obsidian transport, Paleolithic, Northern Caucasus

Obsidian as a determinant of the migration routes of Gravettian and Epigravettian hunter-gatherers

Authors:

Wilczyński, Jarosław (Institute of Systematics and Evolution of Animals, Polish Academy of Sciences, Krakow, Poland - jaslov@wp.pl)

Lengyel, György (Institute of Systematics and Evolution of Animals, Polish Academy of Sciences, Krakow, Poland)

Session IV - Use of obsidian by chronological periods

Form of communication: oral

Day 2 (28 May) 10:20-10:40

The Western Carpathians covers approximately 90,000 square kilometers and include territories of Austria, Czechia, Hungary, Slovakia and Poland. Due to the mapping of distances between lithic raw material sources and archaeological site, it can be stated that this vast geographic area was the foraging territory of hunter-gatherers in the Upper Palaeolithic. One of the lithic raw materials involved in the technological organization of hunter-gatherers was the obsidian. Although the obsidian is a high quality knapping raw material, it hardly travelled over the arch of the Carpathians during Gravettian, where we can find just a single piece of that raw material. But general, obsidian is rarely found at Gravettian sites located even closer to the outcrops of this raw material, except for sites located directly on its outcrops from eastern Slovakia. The first largest quantity of obsidian in the northern territory of the Western Carpathians was dated to 18 ka calBP at Targowisko 10 in Lesser Poland, but still on Epigravettian sites obsidian material is discovered rarely, which makes us think that the raw material has not been used so frequently, like for example, Jurassic or Cretaceous erratic flint, numerously found in Czech locations. Perhaps this indicates the lack of convenient passages through the Slovak Carpathians, what forced the Gravettian and Epigravettian hunter-gatherers to use mainly the Moravian Gate as a kind of corridor for flint raw materials transportation.

Keywords: Upper Palaeolithic, raw materials

Use of obsidian from the Palaeolithic to the Bronze Age in Slovakia

Author:

Kaminská, Ľubomíra (Archaeological Institute, Slovakian Academy of Sciences, Nitra, Slovakia - kaminska@saske.sk)

Session IV - Use of obsidian by chronological periods

Form of communication: oral

Day 2 (28 May) 10:40-11:00

Near the Zemplínske vrchy hills, autochthonous sources of obsidian are known in Viničky and secondary ones between Cejkov and Brehov. Most artefacts on archaeological sites were made of obsidians with sculpturing suggesting the utilisation of secondary sources. In Aurignacian culture obsidian was only marginally used, however, it dominated in the Gravettian and Epigravettian. It sporadically occurred in western Slovakia as well. It is documented in the Šwiderian in the Spiš region (Eastern Slovakia) in the Late Palaeolithic and at other Epipalaeolithic to Mesolithic sites in Spiš, Orava and in southern Slovakia. The Mesolithic industry from Košice-Barca I was exclusively made of obsidian.

Obsidian prevailed in all stages of the Eastern Linear Pottery culture at sites in the Východoslovenská nížina lowland. On the other hand, it was less frequent in the Košická kotlina basin. In the Bükk culture, it prevailed at the sites situated closer to the sources; on the rest of the territory, it was a minor raw material. In the west of Slovakia, obsidian first appeared as early as the later stage of the Linear Pottery Culture. There is higher frequency of occurrence at sites of the Želiezovce group – Lengyel I culture, when it arrived to Moravia and Austria. The occurrence of obsidian decreased in the subsequent periods.

By the end of the Neolithic (Csőszhalom-Čičarovce group) and in the Early Eneolithic (Tiszapolgár culture), obsidian artefacts were more frequent at settlements than burial grounds. Use of obsidian survived until the Early Bronze Age (the Košťany and Otomani cultures).

Keywords: obsidian, use, archaeological cultures, Slovakia

Some thoughts about the cultural traditions and raw material selection strategies connected to obsidian in the Neolithic Carpathian basin

Author:

Szilágyi, Kata (Móra Ferenc Museum, Szeged, Hungary / University of Szeged, Szeged, Hungary - szil.szvetlana@gmail.com)

Session IV - Use of obsidian by chronological periods

Form of communication: oral

Day 2 (28 May) 11:40-12:00

This presentation focuses on a number of lithic assemblages of several LBK and Lengyel communities in Transdanubia. These assemblages are of special interest as they are located at the periphery of these two cultural areas? In this area we can study different patterns of change which involve in some cases a change of raw materials, in other instances a switch to a new technological tradition.

The main questions are: 1. How can we interpret the raw material selection criteria and use in different regions and periods? 2. What was the value of the obsidian in the Middle and the Late Neolithic periods? 3. What did the obsidian and raw material choices depend on in different regions and in the context of different cultural traditions?

Keywords: Middle and Late Neolithic, Carpathian basin, LBK, Lengyel culture, cultural tradition

The distribution of obsidian in the Middle Danube area in the Neolithic

Authors:

Jovanović, Ivana (UCL Institute of Archaeology, United Kingdom - ivana.jovanovic.14@ucl.ac.uk)

Sommer, Ulrike (UCL Institute of Archaeology, United Kingdom - U.sommer@ucl.ac.uk)

Session IV - Use of obsidian by chronological periods

Form of communication: oral

Day 2 (28 May) 12:00-12:20

In the Middle Danube area, Carpathian obsidian has been used in the Starčevo-Körös-Criș period as well as in the late Neolithic (Vinča, Alföld Linear Pottery culture, Bükk). During the early Neolithic, it is the most common raw material in Northern Hungary and the Upper Tisza region, but is quite rare further South. We have mapped the presence and percentage of obsidian for Bosnia and Hercegovina, Hungary, Slovakia, Serbia, Montenegro, Romania, and the Transcarpathian Ukraine as well as Poland, mainly using published sources. The available data are often not very detailed, so this can only present a very sketchy overview, which will hopefully lead the way to a more detailed discussion the mechanisms of raw material transport and distribution, which will help to put exceptional sites like Potporanj in the South Banat (paper by Jovanović and Bogosavljević Petrović) into context. The limited scientific analysis points to the use of mainly the Carpathian 1 and 2 sources.

We are very aware of the shortcomings of this approach. Data on size, weight and the stages of reduction sequence are needed to understand the organisation of production.

In the southern part of the study area, Jovanović has analysed a number of unpublished assemblages in detail, and information about the technological aspects of obsidian working will be presented. This is complemented by a case study from NW-Romania.

Keywords: Starcevo-Körös culture, obsidian

Nuclear analytical investigations on prehistoric obsidian artefacts from Romania

Authors:

Sztáncsuj, Sándor József (Székely National Museum, Sfântu Gheorghe, Romania - sztanacsuj@gmail.com)

Biró, Katalin T. (Hungarian National Museum, Budapest, Hungary)

Nagy-Korodi, István (Babeş–Bolyai University, Cluj-Napoca, Romania)

Constantinescu, Bogdan†

Hágó, Attila (Carei Municipal Museum, Carei, Romania)

Berecki, Sándor (Mureş County Museum, Târgu Mureş, Romania)

Mirea, Pavel (Teleorman County Museum, Alexandria, Romania)

Szilágyi, Veronika (Centre for Energy Research, Hungarian Academy of Sciences, Budapest, Hungary)

Maróti, Boglárka (Centre for Energy Research, Hungarian Academy of Sciences, Budapest, Hungary)

Kasztovszky, Zsolt (Centre for Energy Research, Hungarian Academy of Sciences, Budapest, Hungary)

Session IV - Use of obsidian by chronological periods

Form of communication: oral

Day 2 (28 May) 12:20-12:40

We briefly review the results of the nuclear analytical investigations carried out on a series of obsidian artefacts from Romania, during the past years in the Centre of Energy Research, Hungarian Academy of Sciences. Several Romanian and Hungarian museums and academic centers provided a total of 72 samples, found in different parts of the country. The samples show great dispersion not only geographically but also in cultural and chronological sense: most of them belong to the Early Neolithic Starčevo-Criş culture, but more samples come also from the Upper Paleolithic, Middle and Late Neolithic, Copper Age and Late Bronze Age. Their archaeological contexts are also varied. Although most of the studied artefacts come from excavations, the exact provenance and find-circumstances of some samples are unknown or at least uncertain.

The obsidian samples were subjected to non-destructive Prompt Gamma Activation Analysis (PGAA) at the Budapest Neutron Centre. The main goal of the research was to determine the origin of raw materials through the geochemical composition of the samples. Therefore, the chemical compositions of the artefacts have been compared to those of reference samples collected from different European and Western Asian sources, measured by PGAA. Based on characteristic major and trace element concentrations, most of the studied Romanian obsidian artefacts can be characterized as Carpathian 1 type obsidians, whose outcrops can be found in the Slovakian side of the Tokaj-Eperjes Mountains. However, some samples from Banat and Muntenia have been identified as Carpathian 2 type. Meanwhile, the origin of distant regions can be completely excluded. Apart from the cultural and territorial dispersion of the samples, the information obtained and compared to the results of other previous studies can expand our knowledge about the prehistoric use of the obsidian in the Carpathian Basin and major surrounding areas.

Keywords: Obsidian, Romania, prehistory, nuclear analytical investigations

Geochemical characterization of obsidian artefacts from Mesolithic and Neolithic sites in the Iron Gates, Southeast Europe

Authors:

Boroneanț, Adina (Romanian Academy Institute of Archaeology, Bucharest, Romania - boro30@gmail.com)

Bonsall, Clive (Archaeology, University of Edinburgh, United Kingdom - C.Bonsall@ed.ac.uk)

Session IV - Use of obsidian by chronological periods

Form of communication: oral

Day 2 (28 May) 12:40-13:00

Artefacts made from obsidian were recovered from Mesolithic and Early Neolithic sites in the Iron Gates section of the Lower Danube Valley during excavations in the 1960s. Archaeologists of the time disagreed over the likely provenance of the obsidian, variously attributing it to Carpathian, Aegean, or even 'local' sources. We present the results of non-destructive pXRF analyses of museum-curated obsidian from sites on the Romanian bank of the Danube. The obsidian is shown to originate from at least three distinct sources. Comparisons are made with geological obsidian samples from sources in the Aegean, Anatolia, Carpathians and Central Mediterranean.

Keywords: obsidian provenancing, Iron Gates, Mesolithic, Neolithic

Technology of obsidian assemblage from the Late Neolithic site of Potporanj (Serbia)

Authors:

Jovanović, Ivana (UCL Institute of Archaeology, United Kingdom -
ivana.jovanovic.14@ucl.ac.uk)

Bogosavljević Petrović, Vera (National Museum, Belgrade, Serbia)

Session V - Lithic technology and use-wear

Form of communication: oral

Day 2 (28 May) 13:00-13:20

Studies of obsidian artefacts found within the territory of modern-day Serbia have focused on their identification and provenance, considering them as an indicator of prestige and trade. However, no technological analysis of these artefacts has been done. Several large assemblages are available (*e.g.*, the sites of Vinča Belo Brdo, Potporanj, and Selevac) and, although recent studies have indicated their origin from Carpathian 1 sources, the corresponding reduction sequences, knapping methods and techniques remain unknown.

In order to fill in this gap, we focus on the assemblage from the site of Potporanj. Morpho-technological analysis of this material demonstrates the presence of all phases of the reduction sequence. Combining this evidence with provenance studies, it becomes possible to address questions regarding models of acquisition, trade, exchange, and technological interaction networks.

Keywords: obsidian, technology, reduction sequence, Late Neolithic, Potporanj, Serbia

Unique grinded obsidian finds from Eneolithic site at Nitra-Selenec

Authors:

Nemergut, Adrián (Institute of Archaeology Slovak Academy of Sciences, Slovakia, adrian.nemergut@gmail.com)

Cheben, Michal (Institute of Archaeology Slovak Academy of Sciences, Slovakia, michal.cheben@savba.sk)

Session V - Lithic technology and use-wear

Form of communication: oral

Day 2 (28 May) 13:20-13:40

The Nitra-Chrenová, Selenec site, dated to Eneolithic, Bronze and Middle Age was discovered during the rescue excavation in 2009-2010. A total number of 137 pits and cemetery were found at the site. Most of the pits are dated to the Eneolithic period - Ludanice group.

The assemblage of lithic industry from Eneolithic pits consists of a total of 161 chipped stone artefacts. As regards raw materials, limnosilicite prevailing, followed by radiolarite, Jurassic flint from Cracow-Czestochowa upland, obsidian, burnt and unidentified raw material. The most common lithics are unretouched blades, bladelets and their fragments. Other unretouched flakes, small flakes and their fragments, tools and cores were also registered.

In the collection there are two unique finds of obsidian. The first represents a single-platform miniature prismatic core with maximum precise and standardized rectilinear regularly parallel scars. The flaking angle is 90°. The pressure was used most probably for knapping of this core. There were three various surfaces recognized from three sequences. The oldest part is a natural cortical surface. The core was knapped during the next phase. At the final stage, the piece was grinded at two areas. Besides, there was a fragment of flake with grinded dorsal face in the assemblage too.

There are two possible interpretations of grinding obsidian artefacts: (1) repairing of the core during debitage to smooth out the irregularities or (2) to make personal adornment.

The study was supported by project APVV-14-0742: “The dynamics of use of raw material sources in the Paleolithic and Neolithic in Western Slovakia” and project VEGA 2/0101/19: „Technology and economics of raw materials in the context of the development of Postpaleolithic lithic stone industries in Slovakia“.

Keywords: Slovakia, lithic industry, obsidian, grinded artifacts

Upper Palaeolithic obsidian exploitation and human behavior in the Oki Islands and Chūgoku Mountains of the Southwestern part of the Japanese archipelago

Authors:

Oyokawa, Minoru (Shimane University, Shimane, Japan –
m_oyokawa4120@soc.shimane-u.ac.jp)

Suda, Yoshimitsu (Nagasaki University, Nagasaki, Japan)

Inata, Yosuke (Shimane Prefectural Government, Shimane, Japan)

Nada, Tomoka (Shimane University, Shimane Japan)

Session IV - Use of obsidian by chronological periods

Form of communication: poster

Day 1 (27 May) 15:50-17:00

Our main research objective is to develop a model of Upper Palaeolithic (ca. 30–40 ka) exploitation of Oki Islands' obsidian sources that correlates with the consumption patterns observed at sites distant from the sources. This exploitation is considered one of the first cases of sea transport of obsidian by *Homo sapiens* in East Asia, and it is possible to draw from it some social characteristics of early *Homo sapiens*.

We will explain the chronological transition and regional variation of the consumption of Oki obsidian during the late Palaeolithic up to the Jomon period in the Chūgoku Mountains. Next, we will clarify behavioral territories and the production sites of trapezoid tools by the assemblage and lithic reduction sequence of each site.

Results so far are as follows. Oki obsidian was used more in the period 30–40 ka (trapezoid tool industry) than during the last glacial maximum (land bridge period). Referring to studies of global climate and sea level fluctuations, the Oki landscape in 30–40 ka consisted of separate at the Sea of Japan or was unstable. The behavior territories of *Homo sapiens*, as analyzed from the lithic reduction sequences, are assumed to be about 100–150 km in extent, depending on the embedded strategy.

Most of the Oki obsidian produced in the late Palaeolithic to the Jomon period was consumed in the Mt. Daisen area. We evaluated this area as the center of the hunting and gathering territory, also containing the landing sites for seaborne obsidian. In addition, the top of Mt. Daisen (altitude 1,729 m) is interpreted as a terminal that recognizes the landscape up to the Chūgoku Mountains area and the Oki Islands. Because we can visually recognize the range of about 100 km radius from the Oki Islands to the Chūgoku Mountains area, it can be discussed that this particular *Homo sapiens* group specialized in obsidian procurement by sea transfer with this place as a terminal.

Keywords: obsidian sources, obsidian procurement, Upper Paleolithic, trapezoid tool industry

Circulation and origin of the obsidian in the Tyrrhenian zone: the example of prehistoric Corsica

Authors:

Le Bourdonnec, François-Xavier (Université Bordeaux Montaigne, France - Francois-Xavier.Le-Bourdonnec@u-bordeaux-montaigne.fr)

Orange, Marie (University of New England, Australia)

Bellot-Gurlet, Ludovic (Sorbonne Université, France)

Dubernet, Stéphan (Université Bordeaux Montaigne, France)

Lugliè, Carlo (Università degli Studi di Cagliari, Italy)

Leandri, Céline (Ministère de la Culture et de la Communication, DRAC de Corse, France)

Session IV - Use of obsidian by chronological periods

Form of communication: poster

Day 1 (27 May) 15:50-17:00

In the western Mediterranean, the obsidian sources are only located on four Italian islands: Lipari (Aeolian archipelago), Palmarola (Pontine archipelago), Pantelleria (between Sicily and Tunisia), and Sardinia. For over 15 years, our team has been striving to try and understand how this raw material was acquired, especially in prehistoric Corsica.

The flexible multi-method analytical strategy deployed has made it possible to characterise more than 2,300 artefacts originating from about twenty Corsican Neolithic sites. The results obtained offer a renewed diachronic vision of obsidian procurements in this specific part of the Tyrrhenian zone, from the Early Neolithic to the Late Neolithic. These results notably point to the close links that existed between Corsica and Sardinia during these periods but also reveal epiphenomena that remain to be explained, such as the occasional presence of obsidians from the Pontines or the Aeolian archipelago.

Keywords: Obsidian, provenance, Corsica, Neolithic

The inflow of obsidian north of the Carpathians during the Neolithic: chrono-cultural variability of distribution

Author:

Szeliga, Marcin (Institute of Archaeology, Maria Curie-Skłodowska University in Lublin,
Poland - marcin.szeliga@poczta.umcs.lublin.pl)

Session IV - Use of obsidian by chronological periods

Form of communication: poster

Day 1 (27 May) 15:50-17:00

The Neolithic inflow of obsidian north of the Carpathians closes between the end of 6th and the middle of 4th millennia BC, and is closely related to the Danubian communities. This phenomenon is documented by over 220 sites with diverse cultural affiliations, clustered mainly on the areas in the upper Vistula basin. The analysis of findings reveals the existence of certain clear differences regarding the form, intensity as well as directions and extent of obsidian distribution during this period. In the early stage of this period, through the entire 5th millennium BC, obsidian was imported to settlement centres in the upper Vistula basin only in the form of concretions and subjected to processing on the spot, and then its products were redistributed to more distant areas. This system, as well as the range of processing and tool production do not reveal any significant changes until the end of 5th millennium BC. Its breakdown took place in the first half of 4th millennium BC and is recorded at the stage of the Wyciąże-Złotniki group and the late Lublin-Volhynian culture development. Among such dated findings, there is currently no evidence unambiguously confirming the local treatment of obsidian, as well as its inflow in the form of concretions. In the inventories of these cultural groups only triangular arrowheads are known, which were imported from the Bodrogkeresztúr cultural environment. They are clustered on a relatively small area on the left bank of the upper Vistula, and their presence indicates a completely different role of this material and the nature of its distribution in this period.

The research was financed from the funds of the National Science Centre (DEC-2015/19/B/HS3/01720).

Keywords: obsidian, distribution systems, Upper Vistula Basin, Early and Middle Neolithic

New PGAA data on the origin of Early Neolithic (LPC) obsidian in the upper Vistula Basin

Authors:

Szeliga, Marcin (Institute of Archaeology, Maria Curie-Skłodowska University in Lublin, Poland - marcin.szeliga@poczta.umcs.lublin.pl)

Kasztovszky, Zsolt (Centre for Energy Research, Hungarian Academy of Sciences, Budapest, Hungary)

Szilágyi, Veronika (Centre for Energy Research, Hungarian Academy of Sciences, Budapest, Hungary)

Session IV - Use of obsidian by chronological periods

Form of communication: poster

Day 1 (27 May) 15:50-17:00

According to the current state of research, the artefacts made of obsidian are known from more than 100 LPC sites from Poland. They confirm the inflow of this raw material into the areas on the Northern side of the Carpathians, starting from the classical phase of LPC development, accumulating mainly on the settlement centres located in the loess uplands in the Upper Vistula Basin. One of the most numerous (118 pieces) collections of LPC obsidian products from this area was discovered at site No. 6 in Tominy, located on the Northern foreland of the loess Sandomierz Upland (central Poland). In order to determine the origin of the raw material from which these artefacts were made, 12 macroscopically different pieces were selected for detailed research. Their non-destructive analysis was done at the Prompt-Gamma Activation Analysis (PGAA) facility at the Budapest Neutron Centre (BNC), operated by the Centre for Energy Research, Hungarian Academy of Sciences. The aim of the analysis was to determine concentrations of characteristic fingerprinting chemical elements, without destruction of the objects. The results confirmed the exclusive existence of *Carpathian 1* type products, allowing the identification of its origin with outcrops located in the area between Kašov and Cejkov in Eastern Slovakia. They correspond also very well with results of previous PGAA measurements conducted for the series of obsidian artefacts, originating from a few other LPC sites from Poland, indicating the location of main obsidian outcrop during the LPC development in this relatively small area in Eastern Slovakia.

The PGAA measurement was supported by National Science Centre in Poland (grant number: 2015/19/B/HS3/01720).

Keywords: LPC, Provenance, PGAA, Upper Vistula Basin, Eastern Slovakia