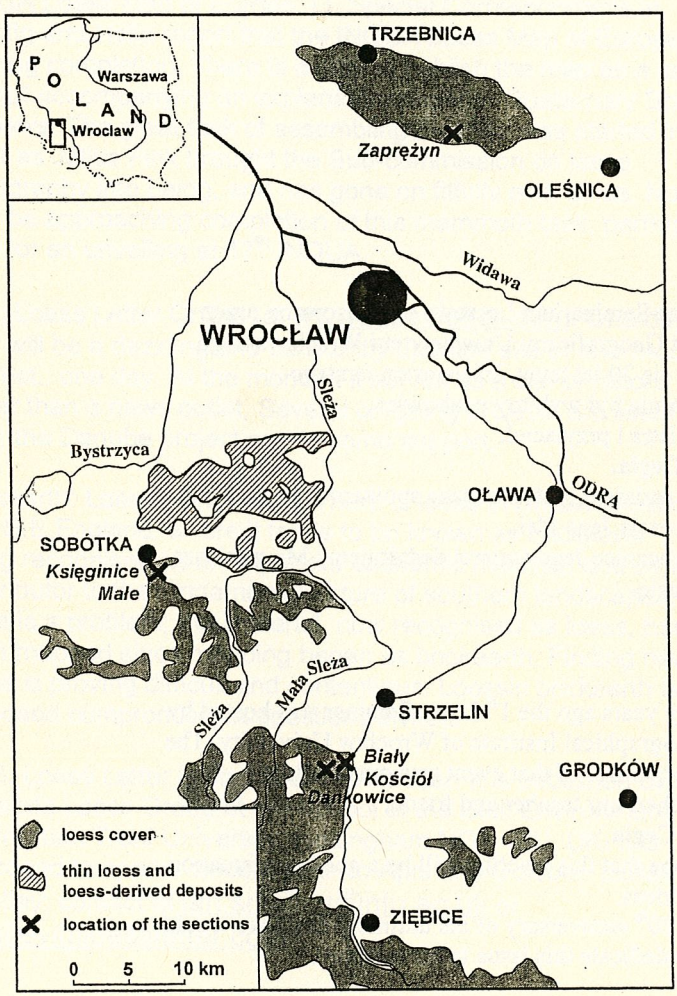
53

NOTTINGHAM TRENT UNIVERSITY

LL53 April 2005 ISSN 0110-7658

LOESS LETTER 53 LISTY LESSOWE

An INQUA Newsletter for Students of Loess Deposits, Loess Material, Loess Ground, Loess Soils & Loess as a'Climate Register'. Founded in 1979 at the New Zealand Soil Bureau.



Lokalizacja stanowisk prezentowanych w trakcie IV Seminarium Lessowego.
Location of the sections presented during 4-th Loess Seminar.

Pierwsze Seminarium Lessowe organizowane przez Instytut Geograficzny Uniwersytetu Wrocławskiego odbyło się 20 lat temu. Inicjatorem tamtego wydarzenia był wybitny naukowiec, nasz mistrz i przyjaciel,
Jerzy Cegła.
Mamy nadzieję, że tegoroczne spotkanie będzie dobrą kontynuacją Jego idei.
W 20-rocznicę Jego śmierci dedykujemy Mu poniższą publikację.

Twenty years ago the 1st Loess Seminar was hosted by the Geographical Institute of Wrocław University. The main organizer of that event was outstanding researcher, our teacher and friend,
Jerzy Cegła.
We hope that this meeting will be a good continuation of his ideas.
In the 20th anniversary of his untimely death we would like to dedicate this issue to his memory.

LL53 Loess Letter: Listy Lessowe: a special issue to celebrate Polish loess. Most of the material relates to the 4th Polish Loess Symposium held at Strzelin in S.W.Poland in October 2004. The first Polish loess symposium was organised by Jerzy Cegla- and the 4th Symposium commemerates this, and the death of Cegla, 20 years ago. More information on the 4th Symposium from Zdzislaw Jary at jary@geogr.uni.wroc.pl.

INQUA Loess Map of Europe. LL Special Correspondents in Leipzig and Halle report that the INQUA Loess Map of Europe is nearing completion. There is a plan to publish the map as a large foldout accompanying an explanatory paper in Quaternary Science Reviews. The great task of assembling the map was started in 1961 as Julius Fink brought the Sub-commission on loess stratigraphy into being, and has gone on fitfully ever since. Now we may be approaching completion of this mammoth task, perhaps in time for an unveiling at 17th INQUA.

LLO: Loess Letter Online- at www.loessletter.com. One day LLO will be a dazzling and constantly updated site of enormous interest.. one day. At the moment it serves as a site of record rather than a news outlet. Several on-going projects are listed on LLO; the Danube project needs some support.

Brickearth: Loessic brickearth. There is loess in Britain. Most of it is in S.E.England, where it tends to be known as brickearth. It is being recognised as an important economic material, and as a contributor to the fundamental nature of southern landscapes. But there is a problem; this material, now recognised as loess, has been mapped since mapping began as brickearth. Finding new terms is proving difficult and contentious. Loessic brickearth is a proposed compromise; suggestions invited.

LL53. Loess Letter is an INQUA newsletter. It is published by the Midlands Loess Group at the School of the Built Environment, Nottingham Trent University, Nottingham NG1 4BU, UK. It is supposed to appear twice a year- in April and October. Editor- Ian Smalley; contact at ian.smalley@ntu.ac.uk or smalley@loessletter.com.

Uniwersytet Wrocławski
Instytut Geografii i Rozwoju Regionalnego

Państwowy Instytut Geologiczny
Oddział Dolnośląski

Polskie Towarzystwo Geograficzne

IV Seminarium Lessowe
4th Loess Seminar

Zmiany klimatu zapisane w sekwencjach lessowych

Record of climatic changes in loess successions

Strzelin, 13 – 16 października 2004

Materiały konferencyjne
pod redakcją Zdzisława Jarego

WYSTĘPOWANIE ORAZ GŁÓWNE CECHY LESSÓW I OSADÓW LESSOPOCHODNYCH NA TERENIE POLSKI SW

Janusz KIDA, Zdzisław JARY

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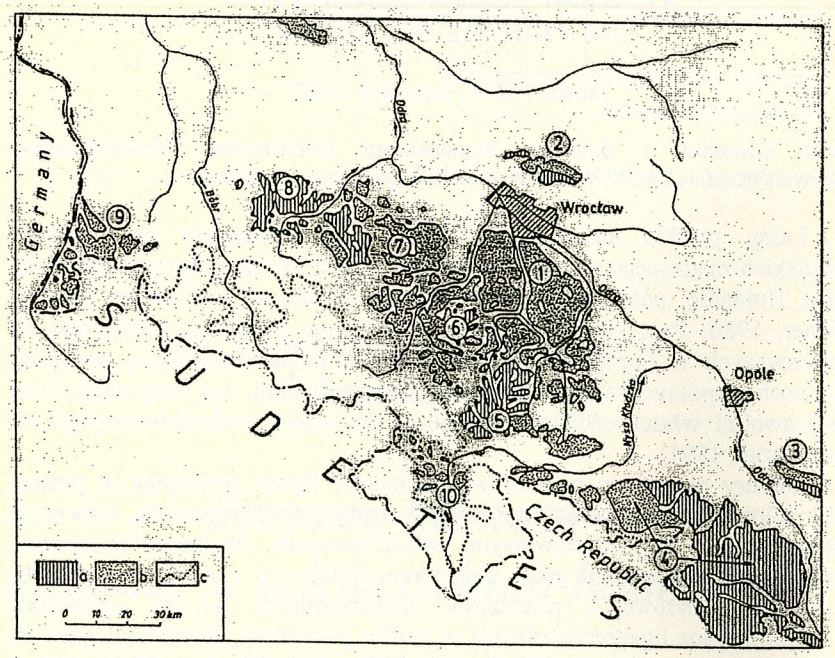
Lessy polskie stanowią środkową część rozległego pasa lessów europejskich ciągnącego się od południowej części Wielkiej Brytanii, poprzez Belgię, Holandię, północną Francję, Niemcy, Polskę aż po Ukrainę i Rosję (Mücher, 1986; Pye, 1987). Ze względu na swoje położenie należą one do najciekawszych w Europie - pokrywy lessowe Polski wschodniej posiadają wiele cech wspólnych z lessami wschodnioeuropejskimi, zaś lessy zachodniej Polski swoimi właściwościami zbliżone są do lessów zachodnioeuropejskich (Maruszczak, 1991).

Utwory pyłowe w południowo-zachodniej Polsce występują w postaci wielu izolowanych płatów, które różnią się między sobą miąższością, sekwencją stratygraficzną oraz podstawowymi właściwościami fizykomechanicznymi. Można je podzielić na dwie grupy (Jary i inni, 2002):

1. pokrywy lessowe o miąższości przekraczającej 2-3 m, najczęściej zróżnicowane litostratygraficznie w profilu pionowym, charakteryzujące się specyficzną morfologią (Płaskowyż Głubczycki, Wzgórza Trzebnickie i Niemczańsko-Strzelińskie, Masyw Ślęży, Kotlina Kłodzka – Ryc. 1.);
2. płytkie, zazwyczaj bezwęglanowe pokrywy pyłowe (0,3 do 2m), często z domieszkami piasku i frakcji grubszych, nie zróżnicowane stratygraficznie, występujące jako nieciągłe płaty bez charakterystycznej morfologii. Pokrywy takie występują w pobliżu płatów lessowych lub wręcz w ich obrębie (co może przemawiać za ich wspólną genezą). Utwory te pokrywają również znaczną część powierzchni Równiny Wrocławskiej.

Niewielkie miąższości lessów Polski SW oraz częsta odmienność ich cech litologiczno-strukturalnych (w porównaniu z centralną i wschodnią częścią kraju) spowodowały, że osady tego regionu były traktowane w polskiej powojennej literaturze lessowej marginesowo. Dość powszechne było mniemanie, że lessy na tym obszarze występują niezwykle rzadko, a dominują tutaj osady lessopodobne, których już sama nazwa wskazuje, są jedynie podobne do lessu. Również ujęciu genetycznym, z lessem mają niewiele wspólnego. Przeczy temu jednak bogaty XIX i XX-wieczny dorobek badaczy niemieckich z terytorium szeroko pojętego Śląska. Autorzy niemieckich map geologicznych w wielu miejscach udokumentowali występowanie nieciągłej i zróżnicowanej



Ryc. 1. Rozmieszczenie lessów i osadów lessopochodnych w południowo-zachodniej Polsce (wg Jary i inni, 2002).

a - pokrywy lessowe o miąższości przekraczającej 2-3 m; b - płytkie pokrywy pyłowe (0,3 do 2m); niezróżnicowane stratygraficznie; c – północna granica obszarów powyżej 400 m n.p.m.

1 – Równina Wrocławska; 2 – Wał Trzebnicki; 3 – Garb Chełma; 4 – Płaskowyż Głubczycki; 5 – Wzgórza Niemczańsko-Strzelińskie; 6 – Masyw Ślęży; 7 – Wzgórza Strzegomskie; 8 – Pogórze Kaczawskie; 9 – Pogórze Izerskie oraz Obniżenie Żytawsko-Zgorzeleckie; 10 – Kotlina Kłodzka

Fig. 1. Distribution of loess and loess-derived deposits in SW Poland (Jary et al., 2002).

a - loess covers thicker than 2m, stratigraphically differentiated within the sections and characterised by a specific loess relief; b - thin (from 0,3 to 2,0m), loamy (sandy and/or clayey) loess and loess-derived discontinuous patches of no specific surface relief. They are stratigraphically undifferentiated point of view; c – northern boundary of the areas above 400 m a.s.l.

1 – Wrocław Plain; 2 – Trzebnica Hills; 3 – Chełm Hump; 4 – Głubczyce Upland; 5 – Niemcza-Strzelin Hills; 6 – Ślęża Massif; 7 – Strzegom Hills; 8 – Kaczawa Foothills; 9 – Izera Foothills; 10 - Kłodzko Basin

Wiek lessów

Większość odsłonięć jest zbudowana z lessów deponowanych w trakcie ostatniego zlodowacenia. W części odsłonięć występują dobrze wykształcone leśne gleby kopalne z ostatniego okresu interglacjalnego rozwinięte na lessach akumulowanych przed zlodowaceniem wisły.

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LOESS AND LOESS-DERIVED SEDIMENTS IN SW POLAND – OVERALL CHARACTERISTIC

Loess in Poland is a common deposit in Southern part of the country. Polish loess covers are situated in the central part of the European loess belt. Because of its characteristic position, they belong to the most interesting in Europe. Loess in the Eastern part of the country has relatively big thickness and is similar to the Ukrainian loess both from stratigraphical and engineering-geological points of view. Loess patches in SW Poland have a small thickness and differ from loesses of central and eastern Poland in being not so "typical". They are similar to the western European loesses.

Development of loess covers in Poland reflects therefore present and pleistocene climatic condition; continental in the east and more oceanic in the west.

Aeolian origin of the shallow silt deposits among Ślęża Massif and Trzebnica Hills was postulated already by Orth in 1872. It is probably the first published aeolian genetic interpretation of loess within the present borders of Poland. Loess patches in SW Poland have a small thickness and often contain significant admixture of clay and sand fractions. Probably it was one of the reasons, why Polish scientists did not investigate them in detail after the second war. As a result there is general opinion that large area of SW Poland is covered by hard to define loess-like deposits.

Loesses in SW Poland occur in several isolated patches, which differ one from another in sediment thickness, stratigraphy and physical properties. On the basis of the features mentioned above, we can divide loess patches in SW Poland into two groups: 1) - loess covers thicker than 2m, stratigraphically differentiated within the sections and characterised by a specific loess relief. Thick loess covers occur mainly on the forefield of the Sudetes Mountains, where Głubczyce Upland is the most spectacular example. They can also be found far from the Sudetes Mountains (e. g. Trzebnica Hills) and within the mountainous depressions (e. g. Kłodzko Basin) 2) - thin (from 0,3 to 2,0m), loamy (sandy and/or clayey) loess and loess-derived discontinuous patches, which are geomorphologically unrecognizable. They are not differentiated from the stratigraphical point of view. Thin loess and loess-derived patches occur in the surrounding and within the thick loess covers. Thin silty covers are common on the Silesian Lowland (Fig. 1.).

On the basis of authors investigations of loess in SW Poland it can be stated, that there is lack of clear regularities in grain-size distribution among individual loess covers as well as within individual patches considered separately. Plentiful structural content is one from the most important features of loess in SW Poland. It is also quite easy to notice the relationships of individual periglacial structures with definite stratigraphical position.

Coexistence of different lithofacial types of loess and loess-derived deposits is the characteristic feature of loess areas in SW Poland. It is expressed through the large differentiation of basic lithological features of these sediments. Specific conditions of sedimentary and early diagenesis environments in SW Poland are the cause of such differentiation.

Loess sedimentation in SW Poland is mainly connected with the last glaciation (Weichselian). However certain amount of loess was deposited during Warthanian (Saalian II) glaciation. We may suppose that the first covers of aeolian dusty and sandy deposits were accumulated during the retreat of Odranian Ice Sheet. Loesses older than Weichselian age are recognized only in a few sections and they occur as thin layers (about 1 m) strongly modified by pedogenic and/or slope processes.

TOWARDS VALIDATION OF WIGGLE MATCHING USING A MULTI-PROXY APPROACH (APPLIED ON TWO LOESS SECTIONS IN THE CARPATHIAN BASIN)

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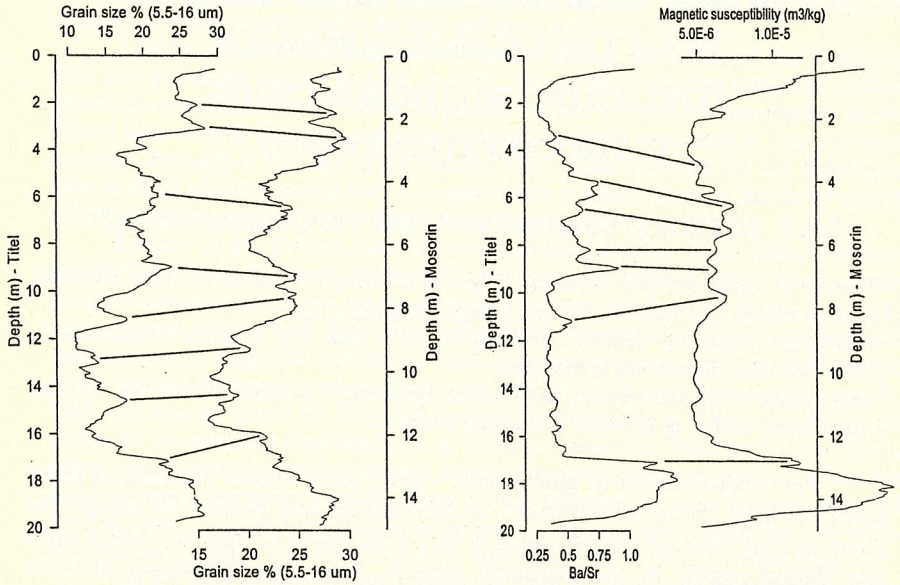
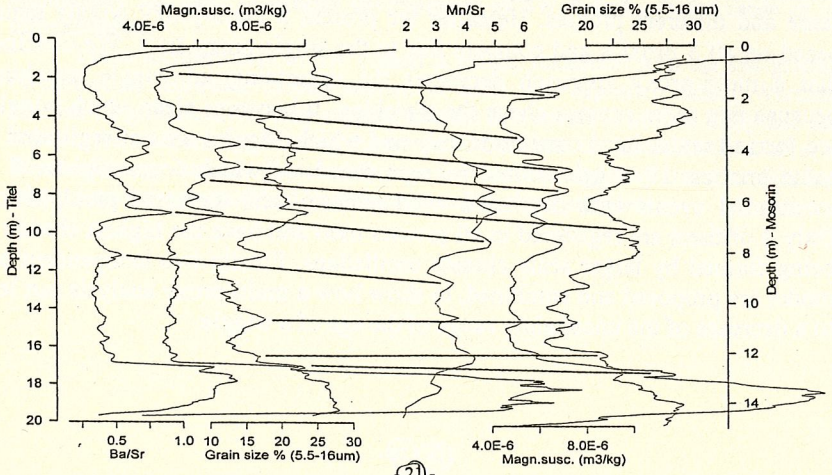
For reconstruction of global scale – short term climate oscillations many scientists have measured variations in different climate proxies all around the globe. A long distance wiggle match is very often based on only one proxy and a few dating results in the measured records. However, the dating methods nowadays are not accurate enough to date these short-term wiggles.

To improve the accuracy of wiggle matching, we propose a multi-proxy approach of two records located close to each other. The method is tested by an application on two of the highest resolution loess sections of last glacial age in Europe. These sections from Vojvodina, Serbia and Montenegro, have been measured for grain size as a proxy for wind intensity. Magnetic susceptibility and pedochemistry results are used as proxies for paleo-precipitation. First we demonstrate single proxy-wiggle matches between both sections, both with the same and different proxies. Hereafter we present a multi-proxy wiggle match based on all 3 proxies and compare this to the single-proxy tests. We conclude that a multi-proxy approach decreases the uncertainty of wiggle matching, because two more proxies check the matching. It becomes clear which wiggles are formed under local conditions only and which wiggles are not registered in some proxies. 10 wiggles could be reproduced, of which 6 are registered as interstadial events with decreased wind intensity and increased precipitation. Only 4 of them are registered in all proxies used and have the highest chance of being formed by larger scale climate oscillations. Finally two independent age model are proposed and combined, to show how a multi-proxy analysis can lead to a decrease of the uncertainty range of the age of a wiggle.



Top: Two examples of independent wiggle matches between two sections of last glacial age separated 5 km (Titel and Mosorin). Titel is plotted left and Mosorin right in both examples, while different proxies are shown. Note that the depths of the connected wiggles differ in the given examples, while the combined ages of the sections (not shown here) remain in chronological order.

Below: combined information leads to more information on each wiggle, making a correct wiggle match possible. Now it becomes clear which wiggles were reproduced and which wiggles were not during the last glacial.



WIEK TL PRÓBEK Z PROFILI LESSOWYCH: DANKOWICE, BIAŁY KOŚCIÓŁ, KSIĘGINICE MAŁE I ZAPRĘŻYN

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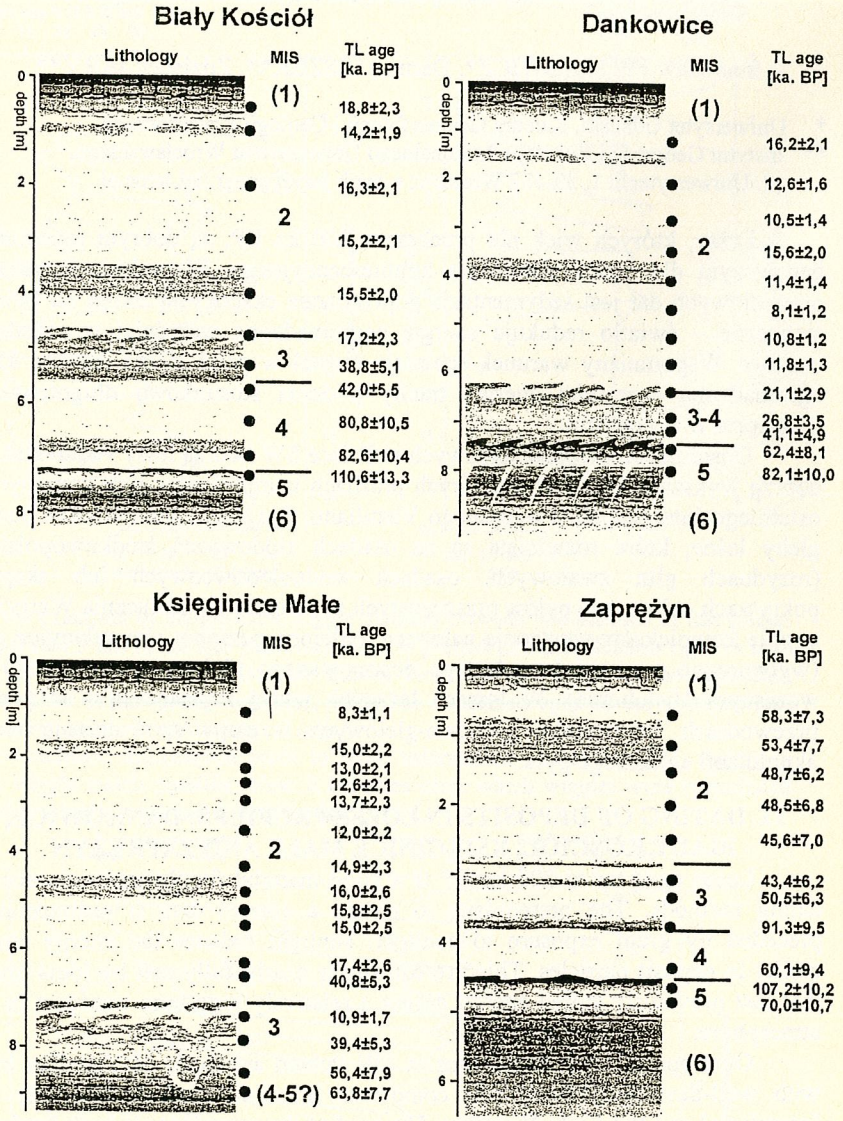
Lessy, których wiek nie przekracza 200 ka BP, są dobrym materiałem badawczym dla metod datowania luminescencyjnego. Warunkiem uzyskania prawidłowych dat jest sedymentacja poprzedzona ekspozycją ziaren na światło słoneczne – światło redukuje energię nagromadzoną wcześniej w cząstkach osadów. Wspomniany warunek spełniają niemal w pełni ziarna lessów, które zgromadzoną wcześniej energię traciły podczas stosunkowo długotrwałego transportu w atmosferze.

Odsłonięcia utworów lessowych w Polsce SW tworzą lessy vistuliańskie z dobrze wykształconymi w niektórych profilach kompleksami gleb kopalnych z ostatniego interglacjału i wczesnego Vistulianu. Spąg tych kompleksów budują gleby leśne, które rozwinięte są na osadach zlodowaceń środkowopolskich (rezyduach glin zwałowych, osadach wodnolodowcowych lub skąpych pokrywach eolicznych pyłów piaszczystych ze schyłku zlodowacenia Warty). W stropie kompleksów występują nałożone, oglejone poziomy akumulacyjne gleb (wytworzone z materiału pylastego deponowanego i/lub redeponowanego we wczesnym Vistulianie). W lessach leżących wyżej zapisane są – w postaci przewodnich horyzontów glebowo-glejowych – etapy spowolnienia tempa akumulacji eolicznego pyłu.

TL DATING OF DEPOSITS IN LOESS PROFILES: DANKOWICE, BIAŁY KOŚCIÓŁ, KSIĘGINICE MAŁE AND ZAPRĘŻYN

Loess aged up to 200 ka BP is a good material for thermoluminescence dating methods. The prerequisite to obtain a correct date is sedimentation preceded by grain exposure to sunlight: sunlight reduces the energy stored earlier in deposit particles. This prerequisite is nearly fully met by loess grains that lost previously stored energy during a relatively long-term transport in the atmosphere.

Outcrops of loess formations in SW Poland are made of Vistulian loess with well-developed fossil soil complexes in some profiles from the last Interglacial and the Early Vistulian. The roof of the complexes is built by forest soil developed on Central Poland glaciation deposits (residual boulder clay, hydroglacial deposits or sparse covers of Aeolian sand dust from the end of Warta glaciation). The roof of complexes contains overlaid gleyed accumulation levels of soil (formed of dusty material deposited and/or redeposited in the Early



Ryc. 1. Wiek TL próbek z profili lessowych: Dankowice, Biały Kościół, Księginice Małe i Zaprężyn

Fig. 1. TL dating of the less deposits in profiles : Dankowice, Biały Kościół, Księginice Małe and Zaprężyn

Vistulian). Loess that is located at a higher level evidences phases of slowdown in the Aeolian dust accumulation rate.

Loess levels and main soil horizons allowed for the initial correlation of loess sedimentation periods in SW Poland with the rhythm of global climatic changes shown in the composition of stable oxygen isotopes from ocean floor deposits, i.e. marine isotopic stages (MIS – Fig. 1). The correctness of this correlation was verified by deposit date calculations.

In 2003-2004, 51 loess samples were collected for TL dating from the four profiles listed in the title. The sequence of deposits from three stations (Biały Kościół, Dankowice and Zaprężyn) shows a clear evidence of environmental changes, probably starting from the Eemian Interglacial to the end of Vistula glaciation. In one profile (Księginice Małe) the sequence starts with the soil-gley level which is younger than the Eemian Interglacial, probably from the Middle Plenivistulian.

The TL dating of deposits was conducted in the Gdańsk University laboratory. An annual dose was measured spectrometrically with the MAZAR spectrometer. A geological dose was computed on multiple portions with the regeneration method by examining quartz grains of 80-100 μm diameter with the reader-analyser RA'94. Dating results are presented and compared to synthetic lithologic profiles in the sections (Fig. 1).

TL dates of deposits in the profiles studied are confirmed by the Vistulian origin of loess and gley horizons. TL dates range from 8.3 to 110.6 ka BP.

The roof of profiles consists of 5-meter deep loess bed of adequate deposits thickness is correlated with 2 MIS (LMg according to the Maruszczak stratigraphic schema, 1991). As a rule, the TL date of this deposit does not exceed 19,000 BP years. It is only the loess bed in the Zaprężyn profile that shows an older TL date – more than 45,000 years. It may be a result of energy zeroing in grains before they were deposited in the bed. Such situation might have taken place because (if deposits from the foreland of continental glacier are the source of Aeolian dust) in the case of Zaprężyn, Aeolian transport took place at a small distance (50-60 km). Results obtained for LMg layer samples (MIS2) show numerous inversions in all profiles while samples collected from the highest part always show a date that differs significantly from the others.

Medium (MIS 3) and Lower Plenivistulian (MIS 4) deposits are infrequently represented in TL dates. Their dates are similar to TL dates obtained for the majority of Polish loess profiles (Maruszczak, 1991).

This work was partly supported by KBN - grant no 3P04E 019 23.

NASTĘPSTWA ZESPOŁÓW MIĘCZAKÓW W PROFILU LESSÓW W WOLI CHROBERSKIEJ KOŁO PIŃCZOWA

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Jednym z większych stanowisk lessów w okolicach Pińczowa jest profil znajdujący się w Woli Chroberskiej. Omawiane stanowisko jest położone na prawym brzegu doliny Nidy, około 20 km na południe od Pińczowa. Osady lessowe tworzą tu płat usytuowany na południowo-zachodnim zboczu pasma wzniesień stanowiących wschodnie zakończenie Garbu Wodzisławskiego zbudowanego z utworów górnej kredy przykrytych osadami czwartorzędu.

Na omawianym stanowisku utwory pylaste tworzą pionową ścianę o wysokości do 8 m i szerokości do 30 m. W obrębie profilu można wydzielić od dołu:

8.0 – 7.5 m – rdzawe, miejscami brunatne lessy z wyraźnymi śladami oglejenia. Spąg tej warstwy nie został osiągnięty.

7.5 – 6.5 m – żółte lessy z bardzo niewyraźnym warstwowaniem. W obrębie tego interwału pojawiają się dość liczne konkrecje węglanowe o rozmiarach do 5 cm, a także ostrokrawędziste bloczki margli kredowych. Dość znaczny jest także udział piasku.

6.5 – 5.25 m – żółte lessy dość silnie zapiaszczone. Miejscami zaznacza się laminacja podkreślona obecnością warstewek wyraźnie wzbogaconych w materiał piaszczysty.

5.25 – 0.5 m – żółte lessy z pionowymi spękaniami.

0.5 – 0.0 m – gleba współczesna.

W całym omówionym powyżej profilu występowały skorupki mięczaków. Analiza malakologiczna została przeprowadzona na materiale uzyskanym z dwudziestu jeden prób. Stosunkowo bogata malakofauna obejmowała 9 gatunków ślimaków reprezentowanych przez 2303 okazy. Liczebność taksonów w poszczególnych próbkach wahała się między 2 a 7, osiągając maksymalne wartości w części spągowej, a minimalne w środkowym interwale profilu.

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SUCCESION OF MOLLUSCAN ASSEMBLAGES OF LOESS PROFILE FROM WOLA CHROBERSKA NEAR PIŃCZÓW

The profile in Wola Chroberska represents the sequence of silt and sandy silt. In the lower part the occurrence of the small, angular fragments of cretaceous marls and with poorly visible lamination. The total thickness of the profile is about 8 m. Rich and differentiated molluscan assemblages have been found in the described sequence. The fauna is dominated by typical "loess species" - *Pupilla muscorum loessica* Ložek, *Succinea oblonga* Drap., *Trichia hispida* (L.) and a few others. The whole studied material comprises 9 species and 2303 specimens.

Several molluscan assemblages can be distinguished in profile in Wola Chroberska.

The assemblage with Trichia hispida – it is a relatively rich and differentiated community containing two ecological groups of molluscs (mesophile and open-country species). This fauna correspond with cold and humid climate.

The assemblage with Succinea oblonga and Pupilla muscorum represents more dry and open environment.

Fauna with Trichia hispida and with Succinea oblonga and Pupilla muscorum were found in the lowermost part of the sequence (interval 8.0 – 6.0 m). Similar communities were described from numerous profiles of loesses in the South Poland. They correspond with period 25 – 21 KA BP (S.W. Alexandrowicz 1985, 1995).

The assemblage with Pupilla muscorum loessica – it is a most typical fauna dominated by nominal taxon. The described community is indicative of the severe and dry climate. This fauna is typical for the phases of increase of intensity of loess accumulation. The assemblage with Pupilla muscorum loessica was commonly noted from loess series connected with the coldest phase of Vistulian (21 – 15 KA BP). This fauna was recognized in the middle and upper part of the sequence (interval 6.0 – 1.0 m.) (S.W. Alexandrowicz 1985, 1995).

The assemblage with Succinea oblonga is characteristic for the uppermost part of the profile (interval 1.0 – 0.0 m). It indicate the stage of more mild and humid climate with limited intensity of loess deposition and corresponds with period 15 – 14 KA BP (S.W. Alexandrowicz 1985, 1995).

The outcrop of loess and the malacological sequence in Wola Chroberska might be accounted to the most representative sites of younger loesses in South Poland (W.P. Alexandrowicz, Urban 2002).

CZERWONE GLINY: NEOGEŃSKIE HORYZONTY PEDOGENICZNE W POLSCE SW

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RED CLAYS – PEDOGENIC HORIZONS IN NEOGENE SEDIMENTS OF SW POLAND

In SW Poland, the glacial sediments are commonly underlain by the Neogene sediments of the Poznań Formation. Thickness of this formation changes in space – in the Kędzierzyn and Nysa region it reaches up to 200 metres, in the Ostrów Wielkopolski and Wrocław region it reaches up to 160 metres, while in the Głogów region it is about 100 metres, and becomes thinner towards north. The sediments of the Poznań Formation are commonly divided into three units of grey, green and motley clays. The latter term – motley clays is based on the characteristic, changeable colour of the pelitic and aleuritic sediments. The term clays does not really reflect the lithological characteristics of the sediments and is based on the term used in the brick industry. In fact, the granulometric composition matches silt, clayey silt, sandy silt and even finer grain size fractions. A characteristic feature of the mottled clays is occurrence of the irregular stains, with dully edges, showing brown, yellow, red and even purple colours. These stains usually appear on the background of the grey clays. The mottled clay horizon, occurring at the top of the green clays, reflects the relief of the surface created before the Pliocene - Eopleistocene accumulation of the Gozdnica formation. Often, a horizontal belt pattern of changing colours can be observed in the outcrops. The width of such belts varies between 1.0 to 2.5 metres. Between the individual belts the narrow, monochromatic pale grey zones occur. Within these zones the fine carbonate concretions or carbonate dust can be found. Diversity of the stains indicates the intensive gley processes. Within the sediments the first phase of transition can be recognised as well as the uneven oxidation of some parts of the sediments, from which the Fe^{2+} irons have not been removed yet.

SEDIMENTS AND PALAEOSOILS IN THE LOESS-LANDSCAPE NEAR TRZEBNICA REGION

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This presentation shows the results of our practical training in March 2004 dealing with soil forming processes and Quaternary stratigraphy of the South-western Polish loess - landscape. The students investigated several exposures in the north of Wroclaw near Trzebnica. This arrangement represents a comprising report of our fieldwork by means of two examples.

Trzebnica brickyard (Fig. 1)

This exposure has already been investigated in detail by JARY, Z. & K. KRZYSZKOWSKI in 1994. The loess section (Profiles 1-3) can be divided into three general units. The lowermost consists of calcareous loess with sandy and clayed lamina (~ 5m – 3,50m). The following unit is composed of decalcified laminated loess (~ 3,50m - 2m). The uppermost part represents the soil horizon. It can be subdivided into a reddish-brown palaeosoil (~ 2,00m – 0,60m) and the recent soil (~0.60 m).

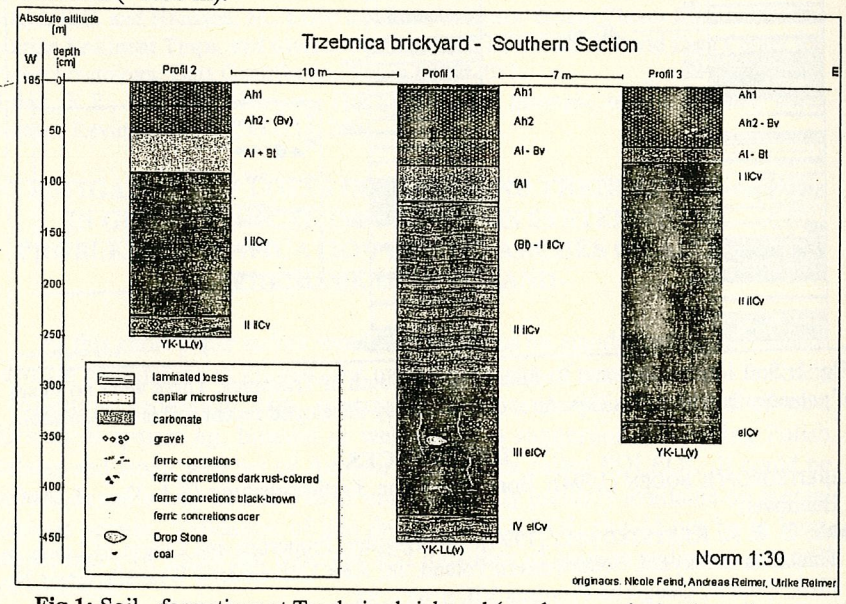

Fig.1: Soil - formations at Trzebnica brickyard (southern section). The soils were specified with the KA4 (Bodenkundliche Kartieranleitung).

Trzebnica South (Fig. 2)

Two profiles have been investigated in detail at this outcrop, being located south of Trzebnica near Bedkowo. The sediments represent the remains of a palaeolake. Calcareous beds, consisting of relicts of shells in the northern profile prove this theory. Sandy layers and the slight dip of strata in profile 2 belong to fluvial sedimentation and represent the mouth of a river discharging into the lake. The profile is underlain by till, the material belongs presumably to the Odranian stage (compare WINNICKI, J. - 1997).

The southern profile is completely decalcified and consists of laminated loess. The content of sand increases with rising depth. There was no till found in profile 1, but the actual Groundwater-level was discovered by 5,95 m.

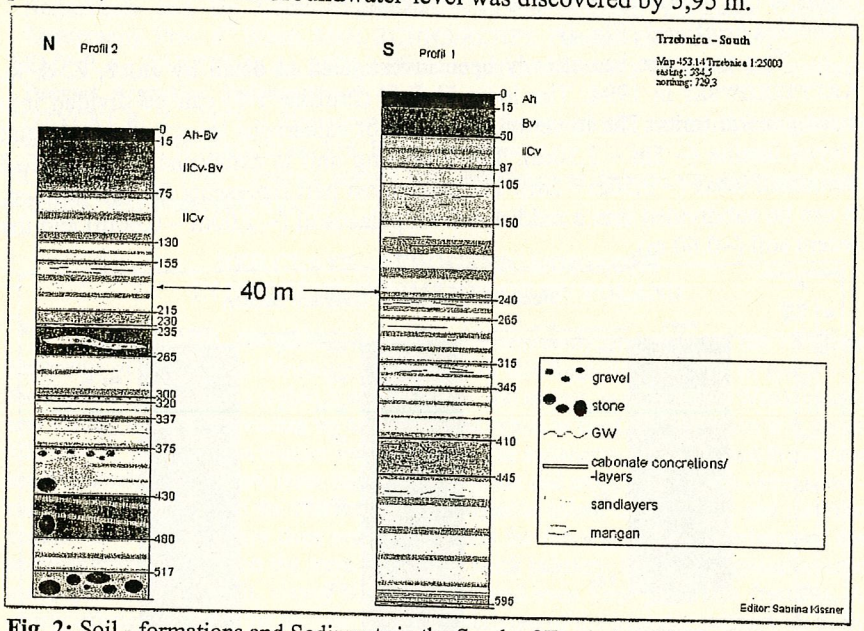

Fig. 2: Soil - formations and Sediments in the South of Trzebnica. There were no traces of palaeosoils within this exposure, only a weakly developed recent soil is recognizable.

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BADANIA OSADÓW LESSOWYCH I ICH WYKORZYSTANIE W GEOGRAFICZNYCH SYSTEMACH INFORMACYJNYCH (GIS) PROBLEM UNIFIKACJI BADAŃ ZAGADNIEŃ EOLICZNYCH W POLSCE

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INVESTIGATONS OF LOESS DEPOSITS AND THEIR APPLICATION IN GEOGRAPHICAL INFORMATION SYSTEMS (GIS): PROBLEM OF UNIFICATION OF RESEARCHES OF AEOLIAN PHENOMENA IN POLAND-

At this short paper author would like to focus on standarization in research of aeolian phenomena in Poland, and utilization some of new numerical methods in collecting geological data, especially in time of GIS and a lot of new informatical system eg. Internet or web net. It is suggestion of creating Polish database and small web net of Aeolian Phenomena called POLEOL .It could be prepared in same way as DIRTMAP and practically publicly available on special computer serwer. Validation of this dataset of POLEOL should not be to long, because many of important outcrops and localities of aeolian sediment are still approachable.

Present day Internet is publicly available There are no barriers to organize POLEOL dataset, which should be full consistet and compatible with DIRTMAP.

SHORT-DURATION CLIMATIC CYCLES RECORDED IN THE MIDDLE AND UPPER PLENIGLACIAL SEQUENCES IN EASTERN UKRAINE

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In the Ukrainian stratigraphical framework, the Middle Pleniglacial is represented by Vytachiv unit, dated to 35-45 kyr BP (Shelkoplyas et al., 1996). In the stratigraphically complete sequences, Vytachiv unit is represented by three paleosols, separated by thin loess and loam beds. Two lower paleosols vt_{1b} are brown boreal soils, brown gleys in the north of Ukraine, and dark-brown soils in the south. The upper soils vt_3 are rendzinas, relatively rich in humus. In the southern Ukraine, they have high content of salts, particularly of gypsum. The general characteristics of the Vytachiv soils are enrichment in clay, sesquioxides of iron and aluminium (R_2O_3), as well as presence of small iron-manganese hydroxides nodules in the lower soils. In the north, these soils are frequently leached of carbonates and have the initial signs of clay translocation. By pollen data, the lower soils vt_{1b1} and vt_{1b2} were formed under forest-steppe vegetation. The pollen of boreal trees (*Pinus, Betula, Alnus*) dominate in AP, and *Picea* pollen is present in the northern sections. Microfossils of broad-leaved species also occur (especially in the western Crimean foothills) and indicate the environment similar to the southern border of the present boreal belt. The steppe vegetation consisted of mainly mesophytic herbs.

In the north, gley loam, separating the vt_{1b1} and vt_{1b2} soils, is poor in clay and R_20_3, and, by pollen data, was formed in cold tundra-steppe environment – firstly spore plants dominated (Bryales, Lycopodiaceae and *Botrychium boreale*), and few *Juniperus* grew; later on, Cyperaceae-Poaceae coenoses spread and shrub *Betula* occurred. Cryoturbations of the vt_{1b1} soil are connected with the gley loam above it. In the south, thin loess layer was formed at the corresponding time span under dry steppe. The vt_{1b2} soil has been dated between 36 and 44 kyr BP (Gerasimenko, 1999; Chabai et al., 1999, 2001) and, thus, can be correlated with Molodovo interstadial (Bolikhovskaya, 1995), or Hengelo interstadial of Western Europe. The lower gleyed soil vt_{1b1} can be then correlated with the older Baylovo interstadial of Dniester area (Bolikhovskaya, 1995) or with Moershoofd. In the west Europe, the latter is shown as the wettest part of the Middle Pleniglacial (Hammen, 1995).