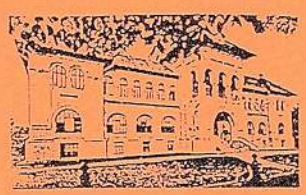
ANUARUL INSTITUTULUI GEOLOGIC AL ROMÂNIEI

ISSN 1453-357X



Vol. 72
Supplement

SESIUNEA DE COMUNICĂRI A INSTITUTULUI GEOLOGIC AL ROMÂNIEI

15–16 martie 2001

ABSTRACTE

Institutul Geologic al României
Bucureşti – 2001

GEOLOGICAL INSTITUTE OF ROMANIA

Director General Dr. **G. Udubaşa** Member of the Romanian Academy

The **Geological Institute of Romania** is now publishing the following periodicals:

Romanian Journal of Mineralogy
Romanian Journal of Petrology
Romanian Journal of Mineral Deposits
Romanian Journal of Paleontology
Romanian Journal of Stratigraphy
Romanian Journal of Tectonics and Regional Geology
Romanian Journal of Geophysics
Anuarul Institutului Geologic al României
Memoriile Institutului Geologic al României

Romanian Journals supersede "Dări de Seamă ale Şedinţelor" and "Studii Tehnice şi Economice", whose first issues go back to 1910. Besides regular volumes, each series may occasionally contain Supplements (for abstracts and excursion guides to congresses and symposia held in Romania) and Special Issues (for larger papers of special interest). "Anuarul Institutului Geologic al României" appears also in a new form, containing both the annual activity report and review papers.

Editorial Office:
Geological Institute of Romania
Str. Caransebeş Nr. 1
RO - 79678 Bucureşti - 32
Tel. (+40) 1 224 20 91, 224 15 30
Fax (+40) 1 224 04 04
e-mail GEOL@IGR.RO

The editor has changed the name as follows: Institutul Geologic al României (1906–1952), Comitetul Geologic (1953–1966), Comitetul de Stat al Geologiei (1967–1969), Institutul Geologic (1970–1974), Institutul de Geologie şi Geofizică (1975–1993), Institutul Geologic al României (since 1994).

ANUARUL INSTITUTULUI GEOLOGIC AL ROMÂNIEI supersedes ANUARUL INSTITUTULUI DE GEOLOGIE ŞI GEOFIZICĂ.

The manuscripts should be sent to the scientific editor and/or executive secretary. Correspondence concerning advertisments, announcements and subscriptions should be sent to the Managing Editor.

ISSN 1453-357X
Classification index for libraries 55(058)

Printed by the Geological Institute of Romania
Bucharest

ANUARUL INSTITUTULUI GEOLOGIC AL ROMÂNIEI

ISSN 1453-357X

Vol. 72
Supplement

SESIUNEA DE COMUNICĂRI A INSTITUTULUI GEOLOGIC AL ROMÂNIEI

15–16 martie 2001

ABSTRACTE

Institutul Geologic al României
Bucureşti – 2001

CUVÂNT ÎNAINTE

O tradiție reluată. Sau cel puțin o încercare de a revitaliza cunoscutele ședințe de comunicări de vineri ale Institutului Geologic al României, care au fost suspendate (și amânate) mai mult de un deceniu, din motive extrem de variate. Printre acestea pot fi menționate: (1) slăbirea interesului pentru astfel de manifestări; încercări anterioare (de exemplu în 1999) au polarizat puțină lume care să asiste la comunicări; (2) înmulțirea manifestărilor științifice interne și internaționale și, prin aceasta, epuizarea treptată a portofoliului de probleme; (3) preferința generalizată a cercetărilor pentru manifestări specializate și (4) (dar nu în ultimul rând) distrugerea deliberată a celebrei săli de ședințe de comunicări din clădirea istorică a Institutului din șos. Kiseleff nr. 2, prin ''efortul'' de necontestat al fostului ministru al minelor, B. Almășan.

Sperăm într-un început nou, de concentrare a interesului cercetătorilor (în special din IGR) spre obținerea, prezentarea și dezbaterea publică a rezultatelor științifice, care ar trebui să diminueze risipa de eforturi spre alte tipuri de activități, colaterale cercetării științifice. Condițiile ospitaliere oferite de sălile de conferințe ale Muzeului Geologic ar trebui să constituie un stimulent suplimentar, spre regăsirea menirii noastre de a duce mai departe tradiția și de a identifica alternativele de a continua activitatea.

În final, un cuvânt de mulțumire pentru colegul nostru, Stănilă Iamandei, pentru insistența și tenacitatea de a convinge, de a aduna titluri și abstracte și de a ordona materialul într-o primă formă.

Mulțumiri, de asemenea, colectivului de editare din IGR care, în ciuda dificultăților de moment ale institutului, au înțeles să-și facă în continuare datoria.

G. Udubașa

Director

Martie 2001

CUPRINSUL

Programul sesiunii de comunicari

15.03.2001

Sala "L. Mrazec"

9.30 – Festivitate de deschidere

SECTIUNEA MINERALOGIE-PETROLOGIE

Moderatori: M. Seclăman, M. Maruntiu.

10.00 – 10.20: Ioan Seghedi, Alexandru Szakacs, Zoltan Pecskay, Paul Mason. Age and constraints of magmatic processes in the Calimani volcanic structure.

10.20 – 10.40: Marin Seclaman, Anca Luca, Peter Luffi, Gelu Costin. Evidences of dehydration melting related to high-grade metamorphism in the Jidostita complex (Getic Nappe, Iron Gate -Romania).

10.40 – 11.00: Gelu Costin, Peter Luffi. Cr-rich phases in eclogites from Râul Târgului (Iezer Mts. - South Carpathians – Romania).

11.00 – 11.20: Gelu Costin, Peter Luffi. Eclogite - granite relationships in Râul Târgului occurences (Iezer Mts. - South Carpathians – Romania).

11.20 – 11.40: Peter Luffi, Ioan Seghedi. Garnet-bearing ultramafites in Quaternary alkali-basalts from Persani Mts. (Romania) - possible parental rocks of the basaltic melt?

11.40 – 12.00: Anca Dobrescu, Jean-Paul Liegeois. Isotopic data concerning the source of the trondhjemitic magmatism from north Sebes-Cibin Mountains (South Carpathians)

12.00 – 12.20: Antoneta Seghedi, Haino Uwe Kasper, Marcel Maruntiu. Neoproterozoic Intraplate Magmatism in Moesia: petrologic and geochemical data.

12.20 – 12.40: Marcel Maruntiu, R.P. Ménot. Processus mantelliques dans les webstérites et peridotites a plagioclase des ophiolites de l'Unité de Severin (Carpates Méridionales).

12.40 – 13.00: Emilian Rosu, Cristian Panaiotu, Zoltan Pecskay, Cristina Emilia Panaiotu, Avram Stefan, Serban Anastase, Veronica Alexe, Anca Uscatescu, Ioan Tiepac. Neogene magmatism in the South Apuseni Mountains, Romania.

13.00-14.00 Pauza

SECTIUNEA PALEONTOLOGIE – STRATIGRAFIE

Moderatori: A. Baltres, P. Constantin

14.00 - 14.20: Magdalena Iordan. The Palaeozoic Brachiopods of Romania.

14.20 - 14.40: Mihaela Carmen Melinte. Palaeobiogeography and palaeo-environmental changes in the Barremian / Aptian Boundary Interval from the Romanian Carpathians.

14.40 - 15.00: Ion Stanoiu, Ion Stelea, Paul Constantin, Mihai Iavorschi. Modelul paleogeografic al bazinului Resita - Codlea. Implicatii tectonice.

15.00 - 15.20: Ion Stanoiu, Mircea Ticleanu, Dorina Diaconita, Mihai Popa, Paul Constantin. Stratigraphic, facial and palaeoenvironmental aspects regarding the Upper Carboniferrous-Permian Formations of Resita Basin (Romania).

Sala "Al. Popescu-Voitesti"

SECTIUNEA PALEONTOLOGIE – STRATIGRAFIE

Moderatori: Gh. Popescu, Mariana Marunteanu

10.00 - 10.20: Bogdan Marinescu, Rodica Macalet. Aspecte privind ecologia si paleoecologia cardiidelor.

10.20 - 10.40: Rodica Macalet. Consideratii privind faunele de Congerii din depozitele pannoniene si pontiene din Bazinul Pannonic.

10.40 - 11.00: Paul Constantin. Ichtiofauna oligocena din litofaciesul de Valea Caselor (Sudul Carpatilor Orientali). Semnificatii paleoecologice.

11.00 - 11.20: Eugenia Iamandei, Stanila Iamandei. Fossil Wood from the Badenian of Cheia, Turda Valley.

11.20 - 11.40: Stanila Iamandei, Eugenia Iamandei. Some fossil wood from the Subcarpathic Miocene.

11.40 - 12.00: Eugenia Iamandei, Stanila Iamandei, Bogdan Marinescu. The Fossil Tree just in front of the Romanian Geological Museum.

12.00 - 12.20: Alexandru Lungu, Theodor Obada. Discovery of *Platybelodon* Borissiac 1928, (Proboscidea, Mamalia), a representative genus in the territory of the Republic of Moldova.

12.20 - 12.40: Mihai Branzila. Variatiile lito si biofaciale ale depozitelor basarabiene in partea de est a Platformei Moldovenesti.

12.40 - 13.00: Paul Tibuleac. Fauna de moluste atipica (lacustra si terestra) din Volhinianul zonei Falticeni-Bogata-Sacuta (judetul Suceava), Platforma Moldoveneasca.

13.00 - 14.00 Pauza

Moderatori: N. Ticleanu, E. Avram.

14.00 - 14.20: Mircea Ticleanu, Carmen Dinulescu, Simona Pestrea, Alexandru Szakacs, Nicolae Ticleanu. Tuffites and diatomitic tuffaceous level of the Lower Romanian deposits in NE Oltenia.

14.20 - 14.40: Emilia Munteanu, Mihai-Tudor Munteanu. Sarmatianul din aria Sipotele-Tufani (Dobrogea de Sud).

14.40 - 15.00: Dan Grigore, Stanila Iamandei, Valentin Paraschiv. Plante si amoniti in Jurasicul superior de la Lacu Rosu cantonate in depozitele detritice ale Formatiunii cu *Acanthicum*.

15.00 - 15.20: Dan Grigore. Valoarea stiintifica si "economica" a zacamantului fosilifer din Jurasicul superior de la Lacul Rosu (Formatiunea cu *Acanthicum* – Haghimas).

15.20 - 15.40: Emil Avram. Formatiunea de Murguceva (Tithonic superior-Hauterivian inferior) si Formatiunea de Svinita (Hauterivian superior-Aptian inferior) la NW de Falia Svinita.

16.03.2001

Sala "L. Mrazec"

SECTIUNEA GEOLOGIE SI GEOFIZICA REGIONALA

Moderatori: I. Stelea, L. Besutiu

9.30 – 9.50: Paulina Hartopanu. The structural and metamorphic evolution of Mn-metamorphosed ore from Bistrita Mts, East Carpathians, Romania.

9.50 – 10.10: Ion Gheuca. Comparatie intre secventele de metamorfite din pinzele bucovinica si subbucovinica.

10.10 – 10.30: Calin Ricman. Semnificatia distributiei diferitelor tipuri texturale in cadrul zonei de forfecare Sibisel din Muntii Lotru si Cibin.

10.30 – 10.50: Ion Stelea. Structura interna a masivului Fagaras.

10.50 – 11.10: Mihaela Dimitrescu. Analiza microtectonica a metaconglomeratelor paleozoice din Muntii Bihor.

11.10 – 11.30: Dumitru Ioane. Continental tectonics and crustal structure as inferred from gravity and geoidal anomalies.

11.30 – 11.50: Rodica Stan, Puste Adrian. Schita evolutiva a sistemului Pânzelor de Biharia în contextul evolutiei Muntilor Apuseni.

11.50 – 12.10: Lucian Besutiu, Adrian Nicolescu, Vlad Rosca. Integration of the Romanian gravity standard into the Central-Europe gravity system.

12.10 – 12.30: Lucian Besutiu. Several considerations on the Peceneaga-Camena Fault.

12.30 – 12.50. Laurentiu Asimopolos, Dumitru Stanica, Maria Stanica, Ana Ivanov, Horia Nistor. Studiul crustei si mantalei superioare in sectorul sudic al Depresiunii Transilvaniei prin metoda magnetotelurica.

Sala "A. Popescu-Voitesti"

SECTIUNEA GEOLOGIE SI GEOFIZICA AMBIENTALA

Moderatori: S. Veliciu, E. Rosu

9.30 – 9.50: Serban Veliciu. Reconstruction from borehole temperature data of the climatic changes for the last millenium, in the South-Eastern Europe.

9.50 – 10.10: Viorica Milu, J. L. Leroy, C. Peiffert. Pollution degree of the water downstream from the Rosia Poieni ore deposit (Metaliferi Mts.).

10.10 – 10.30: Petre Craciun, Florenta Berindei. Sistemul geotermal din partea centrala a Platformei Moesice. Elemente de baza pentru un model conceptual.

10.30 – 10.50: Petru Enciu, Florenta Berindei. Analiza sistemelor acvifere din România. Interfluviul Dunare-Jiu.

10.50 - 11.10: Paul Cristea, Dan Svoronos, Bogdan Stanchevici, Adrian Nicolescu. Cercetari geofizice in zona cu alunecari de teren Bustenari (SE Campina).

11.10 - 11.30: Raluca-Mihaela Maftei, Mihai Coman, Emil Rusu, Emilian Eniu, Ovidiu Avram. Studiul geologic ingineresc si geoelectric al alunecarii de teren din perimetrul localitatii Breaza, jud. Prahova.

11.30 - 11.50: Nelu Floria. Flotatia cu purtator utilizata la valorificarea minereurilor auroargentifere.

11.50 - 12.10: Dan Grigore. Studiul privind fenomenul seismic, factorii declansatori determinanti si evolutia fenomenelor naturale dintr-o regiune seismica. Studiu de caz: seismele din Vrancea si o posibila metoda de calcul a momentelor critice.

12.10 - 12.30: Dan Grigore, Mihai Diaconescu, Mihaela Popa. Paralela intre activitatea solara, fluctuatiile campului magnetic terestru din Romania si activitatea seismica vranceana.

13.10 - Inchiderea lucrarilor (Concluzii)

AGE CONSTRAINTS OF MAGMATIC PROCESSES IN THE CALIMANI VOLCANIC STRUCTURE

Ioan SEGHEDI[1], Alexandru SZAKACS[1], Zoltan PECSKAY[2], Paul MASON[3]
[1] Geological Institute of Romania, str. Caransebes 1, 78344, Bucuresti 32
[2] Institute of Nuclear Research of the Hungarian Academy of Sciences, P.O. Box 51, Bemter 18/c, H-4001 Debrecen, Hungary
[3] Utrecht University, Budapestlaan, 4, 3584, Utrecht, The Netherlands

The Calimani Mountains is a highly complex volcanic structure at the northern part of the 160km long Calimani-Gurghiu-Harghita chain in the East Carpathians. 32 new K-Ar ages, besides other 34 already published ones, of different types of magmatic rocks (lava flows, intrusions, and blocks in volcaniclastics) document the reconstruction of the eruptive and magmatic history of the volcanic edifice. The new data suggest an interval of magmatic activity between 11.3 and 6.7 Ma.

Fractional crystallisation of the mafic phenocryst phases was important in the generation of different magma series at mid and shallow crustal depths, where plagioclase was able to crystallise. Crustal assimilation affected most of the analyzed samples to some degree through assimilation-fractional-crystallisation (AFC) processes in mid- to upper-crustal magma chambers. Source enrichment processes affected the most parental magmas, as reflected by isotopic enrichment of the most basic rocks.

The initial stages of the volcanism were most complex from the petrologic point of view. They belong to the Dragoiasa dacitic dome complex (9.3-8.4 Ma), the low-K andesite and dacite complex (8.6 Ma), the peripheral dacite and andesite domes (8.7-7.1 Ma), the Sarmas basalts (8.3-7.3 Ma) and the Budacu andesitic-dacitic complex (9.0-8.5 Ma), suggesting that most of them were active before the construction of the big Rusca-Tihu volcano. Dragoiasa dacites and rhyolites probably fractionated from a more basic parental magma and mixed with garnet-rich partial melts, displaying extreme isotopic enrichment and strong HREE-depleted geochemical signature. Low-K andesites and dacites, produced almost in the same time-interval, are the most primitive and reached the surface with minimal interaction with crustal material. They probably represent the isotopic composition of the mantle source beneath the Calimani volcano.

NEOGENE MAGMATISM IN THE SOUTH APUSENI MOUNTAINS, ROMANIA

Emilian ROSU[1], Cristian PANAIOTU[2], Zoltan PECSKAY[3], Cristina Emilia PANAIOTU[2], Avram STEFAN[1]
Serban ANASTASE[1], Veronica ALEXE[1], Anca USCATESCU[1], Ioan TIEPAC[1]
[1]Geological Institute of Romania, 1 Caransebes St., 78344, Bucuresti 34, rosu@ns.igr.ro
[2]University of Bucharest, 1 Balcescu Street, RO – 70111, Bucharest 32 epanaiotu@pcnet.pcnet.ro
[3]Institute of Nuclear Research of the Hungarian Academy of Sciences, PO Box 51, Bemter 18/c, H-4001 Debrecen, Hungary, e-mail: pecskay@moon.atomki.hu

The K – Ar and biostratigraphic data relies that the Neogene volcanic activity in South Apuseni Mountains took place between Lower Badenian (Langhian) - Early Pleistocene, in three main episodes.

The first volcanic products are cineritic tuffs, poorly developed, hosted by marls with *Globigerina* (Langhian). The main episode, represented by calc-alkaline medium to high-K quartz

andesites with amphibole, pyroxene ± biotite to dacite, has beginning around 15 Ma with an explosive character giving a widespread volcano-sedimentary formation interbedded with *Spirialis* bearing marls.

Two intrusive activities events, forming complex volcano-plutonic structures with lavas, high-density necks and intrusive bodies, are distinguish by corroboration of K-Ar, paleomagnetic data and spatial distribution.

First ones, spatially restricted at Zarand-Barza-Zlatna-Rosia Montana-Bucium area, run between 14.8 – 12.5 Ma, showing a progressive clockwise rotation (60^0 at 14 Ma to 28^0 at 13 Ma).

Second events developed between 12.6 – 7.4 Ma, without paleomagnetic rotation, display an enlarged area to Baia de Aries and Deva - Sacaramb.

Small bodies with alkaline features (trachyandesites, microdiorites) and basaltic andesites, bearing an asthenospheric geochemical signature, are the latest products.

The last episode display an alkaline character and occur only in Uroiu Hill, after a gap about 6 Ma, on different geostructural context.

The geochemical signature based on geochemical data display two rock series: "low - Sr andesites" (oldest ones) and "high - Sr andesites" for the products with age under 12.5 Ma - exception for young products developed on first stage structures (12 to 11 Ma). Regionally and for each volcano-plutonic structure the geochemical features display systematical differences for the first and second series (enrichment on LILE specially, alkalis, distinct pattern for REE etc.) The rock of the "low- Sr andesites " show a negative Eu anomaly mainly in the western and eastern of the South Apuseni Mts.; this anomaly is reduced in central part of the area (Eu/Eu*=0.89-1.0); "high - Sr andesites" show mainly a insignificant negative Eu anomaly. Rb/Sr values are well grouped for the first group (Rb/Sr=0.1-0.3); the second group values a more scattered from 0.1 to 0.01. The degrees of partial melting is higher for the older group (lower La/Sm ratios) and the higher Ba/La ratios of "high - Sr andesites" indicate that greater proportions of fluid are involved in their genesis. Regionally and for each volcano-plutonic structure the Mg# increase and $^{87}Sr/^{86}Sr$ decrease with age and suggest increasing of mantle component contribution. A decoupling of magmatogenesis process for second stage products, with significant enrichment on fluids and changed source features, can be invocated. The magmatism genesis and evolution is directed by an deep seated extensional fault systems on a relative thin crust. An metasomatised upper mantle, which have long histories of previous magmatic events, reactivated by decompression and generating partial melting, represent the source of the calc-alkaline magmatism.

EVIDENCE OF DEHYDRATION MELTING RELATED TO HIGH-GRADE METAMORFISM WITHIN JIDOSTITA COMPLEX (GETIC UNIT / IRON GATE / SOUTH CARPATHIANS)

Marin SECLAMAN, Anca LUCA, Peter LUFFI, Gelu COSTIN
University of Bucharest, Department of Mineralogy, 6 Traian Vuia Str., 70139 Bucharest 37

The „Jidostita" formation, separated as a distinct lithological sub-unit within the "Iron Gate" - Getic Unit, mainly consists of microblastic biotite schists. Similar rocks were also mentioned within other areas of the Getic unit. The fine grained structure of these rocks was considered by other authors to represent a result of low grade metamorphism or a mylonitization during a sinkinematical blasthesis.

We point out that migmatitic structures are present within the upper part of this "Jidostita" formation. Herein, the microblastic biotite schists represent the paleosoma of the magmatic system, whereas the granitic bodies (kyanite and/or garnet bearing granites) represent the leucosoma.

The paleosoma mineral assemblage consists of: biotite + quartz + plagioclase ± muscovite ± garnet ± K-feldspar ± Al-silicate.

The most frequent Al-silicate is the micro-crystalline kyanite. The range of mineral proportion within the foliated paleosoma, as well as the micro-textural evidences suggest that micas were involved within two types of incongruent melting reactions:

(1) $Ms + Pl_1 + + Qtz = Ky + Kfs + melt$

(2) $Bt_1 + Pl_1 + Qtz = Grt + Bt_2 + Pl_2 + Kfs + melt$

By reaction (1), the muscovite was almost completely eliminated from the paleosoma. The plagioclase just partially melted and recrystallized in the presence of melt, achieving a higher An content.

Reaction (2) produced partial melting of large biotite grains together with their re-organization within smaller grains, sometimes perfect idiomorphic.

The observed migmatitic structures proves that partial melting degree over-passed the limit which allows melt segregation and thus new formed crystals were locally transported by leucosoma.

According to recent experimental data (Castro et al., 2000), the melting of micas to form kyanite and garnet should occur at P=10-15 kb and T=725-850°C. The Grt-Bt-Plg-Ms thermobarometry shows only P=4.5-5 kb around T=550°C. Probably, this discordance is the effect of a relatively late chemical disequilibrium of the mineral assemblage at lower PT conditions.

Cr-RICH MINERALS IN ECLOGITES FROM RAUL TARGULUI (IEZER MTS., SOUTH CARPATHIANS)

Gelu COSTIN, Peter LUFFI
University of Bucharest, Department of Mineralogy, 6 Traian Vuia St., 70139 Bucharest 37

Lenses of eclogites, high-pressure granites and Grt-Ky-Zo-Phe-Qz schists occur within the amphibolites-micaschists complex of Bughea (Râul Târgului, Leresti).

The eclogitic lenses show two main types of modal compositions:

- type I (Cr-eclogites, and/or Cr-rich ultrabasic bodies, spatial related to granitic lenses): garnet, omphacite, Cr phases (Cr-omphacite, Cr-staurolite, Cr-spinel, Cr-kyanite, Cr-phengite, Cr-amphibole), talc, zoisite, calcite, phlogopite, phengite;
- type II (layered with Grt-Ky-Zo-Phe-Qz schists): garnet-omphacite-kyanite-zoisite-phengite-amphibole.

The Cr-eclogites are isotropic, fine grained and they consist of small garnets ($Prp_{54-34}Alm_{23-42}Gross_{20-18}$) within a mass of omphacite ($Jd_{36.3-42.6}$) and amphibole (tremolite, tremolitic hornblende and pargasite). The Cr-rich phases are marked by small, greenish aggregates (up to 2 mm in diameter). The inner part of these aggregates mainly consists of Cr-spinel (Cr_2O_3=49.8-60.3 wt%) and Cr-staurolite (up to 12.7 wt% Cr_2O_3). Often, the two phases show graphic-like intergrowths. Grains of staurolite with a lower Cr content (Cr_2O_3=9-10 wt%) tend to bord the intergrowths. The outer part of the aggregates is represented by Cr-omphacite (Cr_2O_3=1.67-3.98 wt%), Cr-phengite (Cr_2O_3=3.25.9 wt%) and Cr-kyanite (Cr_2O_3=5.9-7.6 wt%). The kyanite could include relicts of Cr-spinel and rutile. Some larger grains of Cr-staurolite exhibit fine cracks, filled out with a fine

intergrowth of Cr-spinel and Cr-pyroxene. Kyanite and phengite occur exclusively associated to the Cr-aggregates.

The eclogitic pyroxenes and the amphiboles from the vicinity of the Cr-aggregates are also chromian. The amphibole in contact with the Cr-aggregates could also have up to 6 wt% Cr_2O_3.

Some lenses only consist of tremolite and garnet ± Cr-aggregates (Cr-spinel and staurolite seem to be developed on scarcely preserved relict pyroxenes).

The chromium content in staurolite from Râul Târgului eclogites is the highest so far recorded. The maximum Cr content reported was 6.43 wt% Cr_2O_3 in metamorphosed ultrabasic rocks (Ibarguchi et al., 1991) and 2.2 wt% Cr_2O_3 in metatroctolites from Madagascar (Nicollet, 1986). The Cr-kyanite and Cr-pyroxens from this work are also richer in Cr_2O_3 than reported by Ibarguchi et al., 1991.

The X_{Mg} range of Cr-staurolite is 0.583-0.706, which is relatively high, but still not so high to be a Mg-staurolite. A strong correlation between Cr and Al suggests a Cr-Al substitution. The relationship between Cr (%wt) and Cr occupancy proves a non-ideal substitution.

Staurolite seems to have a greater affinity for Cr relative to Al than the kyanite. It is not clear if this substitution is related to the initial composition of the protolith rather than to the high pressure event. The presence of relict chromite (high Cr-spinel) together with staurolite and kyanite proves the Cr local saturation.

The textural evidences and the similar ratios Mg/Fe in staurolite and spinel lead to an interpretetion of a complex reaction, where a Cr-rich igneous basic/ultrabasic rock was eclogitized and than up-lifted. A possible reaction could involve fluids and could be generally written as:
chromite+K-Al-OH phase?Cr-spinel+Cr-staurolite+Cr-phengite±Cr-kyanite.
Another possible explanation (within an ultrabasic rock) could be the reaction:
chromite+Ca-Ts pyroxene+orthopyroxene+pargasite+Cr-staurolite+tremolite+garnet.

ECLOGITE - GRANITE RELATIONSHIPS IN LERESTI - DOBRIASU OCCURRENCES (IEZER MTS., SOUTH CARPATHIANS, ROMANIA)

Gelu COSTIN, Peter LUFFI
University of Bucharest, Department of Mineralogy, 6 Traian Vuia St., 70139 Bucharest 37

Two types of eclogites occur at Leresti (Leaota-Iezer Mts., South Carpathians) within the so called "Bughea level" of amphibolites:

1. small, tabular-isotropic, fine grained lenses of Cr-eclogites, showing a direct contact with the Albesti;
2. large tabular lenses of eclogites (grt-omph-ky-amph-qtz) layered with grt-phe-ky-zo-qtz schists.

Type (1) eclogite. The field evidences show a direct contact between type (1)Cr-eclogites and Albesti granite. Several thin (0.3-1.5 m) tabular lenses of eclogites are spatiated at 2-5 m within the granite. The eclogite consists of garnet, omphacite, tremolite, Cr-phases (Cr-omphacite, Cr-staurolite, Cr-spinel, Cr-kyanite, Cr-phengite, Cr-amphibole) ± talc ± zoisite ± calcite ± phlogopite.

The outcrop relationships show dyke-like forms of the eclogite within the granite, suggesting a primary igneous contact. At these the close contacts, the granite is slightly anisotropic whereas the eclogite is sharply isotropic. Far from leaving the contact, the granite tends to become first strongly anisotropic, than isotropic, with a porhyric type structure given by large K-feldspar

phenocrystals. There is no amphibolite to border the eclogite.

At thin section scale, the eclogite-granite contact is often rough and irregular in respect with the foliation, fact also suggesting an igneous type contact.

There were recognized continous compositional (modal), micro-textural and deformational transitions from isotropic granite to higher anisotropic schists closer to eclogite.

Close to the contact, the deformed granite contains isolated, more or less elongated, greenish, polygranular aggregates, having a pseudomorph-like feature. These aggregates consist of fine grained albite, quartz, small euhedral garnets (tending to atol type microstructures), muscovite, zoisite. Small amounts of K-feldspar could also be present. These aggregates contain garnet only when closer to eclogite. The forms and dimensions of these aggregates suggest a pseudomorph on a granitic phase (K-feldspar?). The genesis of the garnet here is not yet clear.

The muscovite and quartz bands give a strong anisotropy of the rock. The biotite (more or less re-equilibrated or chloritized) contains small zircons and relics of coronitic garnets (typical features for the Albesti granite). Milimetric garnets are also present as related to the muscovite and quartz shear-bands. They have a slight tendency of atol-growth and include muscovite and quartz. The formation of garnet and muscovite could be considered to be related to a sinkynematical reaction between granitic plagioclase and biotite. It is a strong similarity between these rocks (clearly derived from Albesti granites) and the the so called Bughea micaschists.

The field evidences as well as the observed micro-textures lead us to propose two important and related hypothesis:

1) the Bughea type micaschists could be considered as derived by the Albesti granite;

2) the igneous type contact between eclogites and Albesti granite is a primary contact, prior to (or during) the eclogitic event and clearly prior to the main phase of deformation.

These two hypotheses, if accepted, give no real meaning for the „tectonic melange" interpretation for the Bughea complex. By contrary, the rocks and their relationships analysed herein could be considered as representing an uplifted lower crustal (granitic) slab.

GARNET-BEARING ULTRAMAFITES IN QUATERNARY ALKALI-BASALTS FROM PERSANI MTS. (ROMANIA) - POSSIBLE PARENTAL ROCKS OF THE BASALTIC MELT?

Peter LUFFI[1], Ioan SEGHEDI[2]
[1]University of Bucharest, Department of Mineralogy, 6 Traian Vuia St., 70139 Bucharest 37
[2]Geological Institute of Romania, 1 Caransebes St., 78344, Bucuresti 34

In contrast to the abundant spinel-bearing peridotite and pyroxenite xenoliths from the phreato-magmatic pyroclastic products of Quaternary alkali-basalt volcanism of Persani Mts., garnet-pyroxenites [clinopyroxene (30-40%) - orthopyroxene (10-30%) - garnet (20-50%) - spinel (0-10%) ± amphibole (0-10%) ± olivine (0-10%) ± plagioclase (0-1%)] occur sparsely, forming small, cm-scale nodules.

Individual nodules show fairly constant compositions of their constituent minerals, but may vary considerably from one sample to another, especially by their mg-number (clinopyroxene ($Na_{0.07-0.13}Ca_{0.79-0.81}Mg_{0.6-0.8}Fe_{0.08-0.26}Al_{0.3-0.41}Si_{1.8-1.9}O_6$), orthopyroxene ($Mg_{1.4-1.7}Fe_{0.18-0.41}Al_{0.22-0.35}Si_{1.8-1.9}O_6$), garnet ($Py_{62-78}Alm_{14-23}Grs_{8-13}$), amphibole (mg-hastingsite-pargasite)). On the other hand, the pyroxenes from garnet-pyroxenites are systematically

richer in Fe and Al than those from the spinel bearing peridotites and pyroxenites. The peculiar fabric of garnet-pyroxenites is an inequigranular isotropic one, due the large, frequently poikilitic garnet porphyroblasts; mylonitic fabric is sparse. Three types of garnet-associated disequilibrium-microtextures can be distinguished:

(A) Two-mineral, very fine symplectitic kelyphite coronas of uncertain compositions;
(B) Coronas defined by symplectitic pyroxene + spinel ± plagioclase;
(C) Coronas and included pockets containing pyroxene + melt-derived glass ± plagioclase ± olivine.

Whole modal compositions of the C-type coronas and pockets are similar to those of basalts. In contrast to the associated spinel ± amphibole bearing, garnet-absent ultramafic nodules, which display insignificant partial melting evidence, the relative abundance of the C-type microtextures within the garnet-pyroxenites are considered to be a results of an effective partial melting process. The obvious Al-richness of the garnet-pyroxenites compared with all of the known associated garnet-absent ultramafic nodules, as well as the garnet-related extensive partial melting evidences suggest that the alkali-basaltic melts from Quaternary volcanism in the Persani Mts. Could be most effectively generated by partial melting of these rocks, clearly disequilibrated at shallow mantle levels.

NEOPROTEROZOIC INTRAPLATE MAGMATISM IN MOESIA: PETROLOGIC AND GEOCHEMICAL DATA

Antoneta SEGHEDI[1], Haino UWE KASPER[2], Marcel MARUNTIU[1]
[1] Geological Institute of Romania, 1 Caransebes St., RO-78344, Bucharest 32, Romania
[2] Geologisches Institut, Universitaet zu Koeln, Zuelpicher Str. 49 a, D-50674 Koeln, Deutschland

Rocks from drilling cores revealed the development of Neoproterozoic basaltic volcanism (Cocosu Group) in the Precambrian basement of South Dobrogea - a sunken block of the Moesian Platform. Below the Jurassic limestones of the platform cover, the Cocosu Group overlies amphibolites and magnetite-bearing quartzites of a Middle Proterozoic Banded Iron Formation (BIF) (Palazu Mare Group, correlated with the Krivoi-Rog series from Baltica).

The mafic volcanic products make up the lower part of the Cocosu Group, previously correlated to the Blovice-Tepla ("spilitic") group from the Bohemian massif (Kräutner et al., 1988). The upper part of the Cocosu Group is an upward coarsening terrigeneous sequence of shales, clays and conglomerates. A Cadomian deformation in very low grade metamorphic conditions is responsible for the development of a penetrative cleavage in all lithologies of the Cocosu Group.

The volcano-sedimentary formation of the Cocosu Group, about 400 m thick, consists of two layers of basalt flows, of 50 and 70 m, respectively; the flows are separated by pyroclastic and epiclastic sequences which represent two main upward thinning cycles of basaltic pyroclastics and epiclastics. The mafic rock suite varies from massive to porphyritic basalts and dolerites. Petrographic features indicate submarine volcanism, while the abundance of limestone clasts suggests a shallow-marine depositional environment for the epiclastic deposits.

High quality major and trace element ICP-MS analyses were performed on the presented rocks of the Cocosu Group. According to their geochemistry, all the studied rocks are alkali basalts (tephrites and basanites). Distribution of Zr-Nb-Y and Zr/Y-Zr suggests typical withinplate alkali basalts. Nb/Y and Nb/Zr ratios indicate an enriched mantle source, similar to OIB-type sources. Chondrite normalization shows strong enrichment in LREE attesting high, uniform fractionation,

whereas E-MORB normalization denotes enrichment of the LILE and LREE as compared to E-MORB. Except for Sr, Rb, Ba (with initial values probably modified due to high element mobility), the best fit is that with OIB sources. High Th/Yb and Ta/Yb ratios may evidence crustal contamination of the magma.

Considering the geochemical and geological data, Late Proterozoic alkali-basaltic volcanism in the Moesian microcontinent took place in an intraplate geotectonic setting. Dykes of porphyritic diabases emplaced into the Archaean gneisses underlying the BIF probably represent feeder channels of this Late Proterozoic volcanism, suggesting that mafic magma was extruded in an intracontinental rift basin.

ISOTOPIC DATA CONCERNING THE SOURCE OF THE TRONDHJEMITIC MAGMATISM FROM NORTH SEBES-CIBIN MOUNTAINS (SOUTH CARPATHIANS)

Anca DOBRESCU[1] Jean-Paul LIEGEOIS[2]
[1] Department of Petrology, Geological Institute of Romania, 1 Caransebes St., RO-78344, Bucharest 32, Romania
[2] Isotope Geology Africa Museum, Tervuren, Belgium

The initial Sr and Nd isotopic composition has been determined in the porphyritic trondhjemites and granodiorites from the north Sebes-Cibin mountains (South Carpathians). The initial ratios for both isotopic systems have been calculated using 40Ar/39Ar approximated cooling age of 105 m.y. (Dobrescu & Smith, 1998). The values of the initial ratios vary between narrow limits, implying common sources for the two petrographic types of the investigated rocks. The general trend determined by the correlated isotopic composition of eNd/Sri (+0.31/0.7039 up to -3.26/0.7045), may suggest a depleted mantle source contaminated with a lower crust material.
The trend is better revealed by the TDM - eNd correlation that involves a mantle source older than ~730 m.y. and a supposed Archean contaminant (at least Ptz.), or a Variscan one contaminated with an Archean material. All the analysed samples plot in the EM1-OIB area, approximating enriched mantle isotopic values with low Sri values. The low Sm/Nd and Rb/Sr ratios preclude an important crustal contamination (Carter et al., 1978 in Hawkesworth & van Calsteren, 1984), but the time period between TDM (of 980 - 730 m.y.) and the intrusion moment (of 108 - 109 m.y.) implies a considerable residence time and probably intermediate crustal recycling by a partial melting process, to produce the final trondhjemitic and granodioritic products of the swarm dikes and sills and minor bodies.

PROCESSUS MANTELLIQUES DANS LES WEBSTÉRITES ET PERIDOTITES A PLAGIOCLASE DES OPHIOLITES DE L'UNITÉ DE SEVERIN (CARPATES MÉRIDIONALES)

Marcel MARUNTIU[1], R.P. MÉNOT[2]
[1] Institut Geologique de la Roumanie
[2] Université Jean Monnet, Saint Etienne

Les travaux expérimentaux et les observations faites principalement sur ophiolites montrent que le magma issu des niveaux plus profonds et traversant un manteau lithospherique des lherzolites résiduelles peut induire la formation des harzburgites et des dunites par dissolution des

pyroxenes et précipitation d'olivine. Dans ce processus la péridotite résiduelle peut etre re-enrichie en éléments incompatibles. L'évidence de la migration de magma inclut la présence dans la matrice peridotitique des filons de pyroxenite/gabbro ou des zones tabulaires représentées par une alternance harzburgite/dunite représentant les conduits magmatiques.

De telles roches péridotitiques et pyroxénitiques en provenant de l'Unité de Severin ont été examinées du point de vue textural et minéralogique.

L'association pétrographique est représentée par des péridotites a spinelle et plagioclase, généralement de type harzburgite, riche en clinopyroxene, et des roches pyroxénitiques a spinelle et plagioclase (websterite ou clinopyroxénite a olivine). Les données texturales montrent la succession de plusieurs événements tectoniques associés avec plusieures étapes de fusion partielle et de cristallisation dans les conditions physiques spécifiques des facies a spinelle, puis a plagioclase. Parce que les péridotites ont des textures des tectonites mantelliques, leur genese a du se produire pendant le mouvement ascendant du manteau. Dans ce contexte, les roches pyroxénitiques a spinelle représentent les produits d'une premiere fusion partielle accompagnée d'une migration/ cristallisation du magma dans les zones mantelliques les plus profondes. Les relations texturales particulieres de l'assemblage a plagioclase avec les assemblages plus anciens et de plus haute température a spinelle suggerent leurs développement en présence d'une fraction liquide (magma ou autre fluide) imprégnant les ultramafites. Cependant on note toujours l'occurrence de poches a clinopyroxene + plagioclase ce qui montre que quelque fraction du magma piégé a pu cristalliser pendant le refroidissement dans un systeme fermé a la transition de l'asthénospere a lithosphere.

Ces caracteres pétrographiques et minéralogiques suggerent que ces ultramafites plus au moins résiduelles ne peuvent pas simplement résulter d'une cristallisation locale et partielle du magma dans le manteau supérieur en cours de refroidissement. Ils résultent d'une forte interaction a haute température entre magma et la péridotite résiduelle, ce qui a profondément modifié la composition modale et chimique des roches résiduelles.

FLOTATIA CU PURTATOR, UTILIZATA LA VALORIFICAREA MINEREURILOR AUROARGENTIFERE

Nelu FLORIA
Geological Institute of Romania, 1 Caransebes St., RO-78344, Bucharest 32, Romania

Pornind de la o proba bruta cu continut in alimentare de Au=6,805g/t si Ag=14,24g/t, s-au efectuat analize chimice si rationale atat pentru minereul auro-argentifer de Firizan, cat si pentru pirita de Zlatna:

- Analiza chimica generala, %, SiO_2=94,04; Fe_2O_3=8,13; Al_2O_3=6,84, CaO=0,16; MgO=0,08; MnO=0,02; K2O=0,60; TiO2=0,50; S==0,25; Pb=0,02; Zn=0,02; Cu=0,02; Fe=0,65; PC=4,16.
- Analiza rationala: Au natural=33,3% (liber); aur pelicular=21,02%; aur in cuart=38,01%; aur sulfuri=6.92
- Py Zlatna: Au=5,84g/t; Ag=45,97g/t; S=44-45%; Pb=1,64%; Cu=0,35%; Zn=5,55%.

Datorita continutului mic de sulf in proba bruta (0,25%) nu s-a putut realiza in urma experimentarilor de flotatie, un produs finit (concentrat).

Pentru a se obtine un concentrat s-a utilizat "flotatia cu purtator", care consta in combinatia dintre minereu brut de Firizan si pirita de Zlatna. Ponderea piritei in amestec a fost de pana la 20%. In aceste conditii, la un consum relativ mic de reactivi de flotatie (moara – silicat de Na, acid

sulfuric; celula – xantat amilic: Dowfrot) s-au obtinut rezultate bune, atat in privinta continutului de Au si Ag in concentratul final, cat si in privinta extractiei de metale (cAu=50,37g/t; cAg=165,03g/t; Au=72,52% ; Ag=7158%).

In paralel cu incercarile de flotatie s-au efectuat si incercari de cianurare pe minereu brut (spalat si nespalat), la diferite concentratii si timpi de conditionare, rezultand un produs final unde Au si Ag s-au dizolvat in proportie de peste 90%.

OBSERVATII ASUPRA STRUCTURII INTERNE A MASIVULUI FAGARAS

Ion STELEA
Geological Institute of Romania, 1 Caransebes St., RO-78344, Bucharest 32, Romania

Spre deosebire de alte masive cristaline din Carpatii Meridionali, slab afectate de deformari interne alpine, Masivul Fagaras a suferit deformari compresionale penetrative in timpul tectogenezelor cretacice. In consecinta, toate modelele structurale referitoare la aceast masiv releva o structura compresionala, fie cutata (ex. Dimitrescu, 1978), fie in panze de sariaj (ex. Balintoni, 1986).

Pe profile transversale pe structura se poate observa usor, in special pe versantul sudic, mai putin afectat de retromorfism, repetarea unor formatiuni metamorfice, precum si alternanta unor litoni cu foliatii metamorfice de varste diferite, hercinica (S_2) si alpina (S_3). Aceste date concorda cu un model de structura cutata in care sunt implicate aceleasi formatiuni metamorfice care, la vest de Olt, alcatuiesc structura tabulara a masivului Sebes-Cibin.

STRATIGRAPHIC, FACIAL AND PALAEOENVIRONMENTAL ASPECTS REGARDING THE UPPER CARBONIFEROUS-PERMIAN FORMATIONS OF RESITA BASIN, ROMANIA

Ion STANOIU*, Mircea TICLEANU*, Dorina DIACONITA*, Mihai POPA**, Paul CONSTANTIN*
* Geological Institute of Romania, 1 Caransebes St., RO-78344, Bucharest 32, Romania
** University of Bucharest, Dept. Geol.&Geoph., Lab. Paleontology, Romania. E-mail: mihaip@math.math.unibuc.ro

Within the Upper Carboniferous - Lower Permian formations of Resita Basin (Getic Realm), two distinct lithostratigraphic units were separated: the Resita Formation and the Ciudanovita Formation. The Resita Formation is divided in two partially juxtaposed members: the Doman Member (100-400 m thickness, with conglomerates and sandstones, with Neuropterids of Early Westpahlian D type, suggesting an alluvial palaeoenvironment) and the Secu-Lupac member (500-700m thickness, with sandstones, conglomerates and coals, containing Neuropterids of Late Westphalian D type and Pecopterids of Stephanian type, suggesting a fluvial-lacustrine palaeoenvironment).

The Ciudanovita Formation, Autunian dated, is divided in two partially juxtaposed members: the Garliste member and the Lisava Member. The first one is predominantly argillitic, to 300 m thickness, with *Autunia conferta* (Krasser) Kerp and the second one is up to 700 m thickness, represented by sandstones, clays, conglomerates, with *Autunia conferta* (Krasser) Kerp, being developed especially within the marginal areas, suggesting dry climate, continental

palaecenvironments (alluvial, fluviatile, swamp-lacustrine).

The regions which had a central occurrence during the Carboniferous became marginal during the Permian and the marginal ones had a contrary evolution.

The stratigraphic, facial and palaeoenvironmental context suggests that during the Carboniferous, the systems and facies migrated centrifugal from the central zones (at Secu) towards the marginal zones of the basin (at Lupac-Clocotici-Garliste). During the Permian, this migration had a centripetal character, from the marginal zones (at Secu) towards the central zones (at Lupac-Clocotici-Garliste).

The mentioned migration is a consequence of the transgressive-regressive character of the Late Carboniferous - Early Permian cycle. The Upper Carboniferous deposits represent the transgressive succession, which is characterized by the coarse lithofacies (Doman Member) in the basal part, fining upwards (Secu-Lupac Member). The lithostratigraphic units are partially heteropical ('uxtaposed), being older in the centml areas of the basin (at Secu) and younger in the marginal areas (Lupac-Clocotici-Garliste).

The regressive sequence is represented by the Ciudanovita Formation which is characterized by a finer, basal lithofacies (Garliste Member) and by coarser, upper lithofacies (Lisava Member). The Permian lithostratigraphic units are either characterized by older sequences in the marginal areas and by younger sequences in the central areas of the basin.

The coal bearing sequence, included in the Secu-Lupac Member, is also characterized by a heterochronous facies, older (Upper Westphalian D - Stephanian) in the central zones (at Secu) and younger (Stephanian) in the marginal zones (at Lupac-Clocotici-Garliste).

MODELUL PALEOGEOGRAFIC AL BAZINULUI RESITA - CODLEA. IMPLICATII TECTONICE

Ion STANOIU*, Ion STELEA*, Paul CONSTANTIN*, MIHAI IAVORSCHI**
*Geological Institute of Romania, 1 Caransebes St., RO-78344, Bucharest 32, Romania
**S.C PROSPECTIUNI – SA, Bucharest 32, Romania

Bazinului Resita - Codlea ii corespunde succesiunea stratigrafica jurasic - cretacic inferioara a Zonei Resita, caracteristica Panzei de Godeanu.

Succesiunea stratigrafica a Bazinului Resita - Codlea evidentiaza un ciclu transgresiv - regresiv, in cadrul caruia se contureaza alte subcicluri.

In cadrul succesiunii stratigrafice transgresive (batimetric crescatoare) se deosebesc doua faciesuri distincte: un facies central, de apa mai adanca, corespunzand ariei depozitionale centrale si un facies marginal, de apa mai putin adanca, corespunzand ariei depozitionale marginale. Atat faciesurile, cat si repartizarea areala a formatiunilor sugereaza o extindere temporala progresiva a Bazinului Resita - Codlea.

Succesiunea stratigrafica transgresiva din aria depozitionala centrala a Bazinului Resita - Codlea debuteaza prin formatiuni liasice continentale: aluviale, detritice grosiere, in baza; fluvio-lacustre, grezo-argiloase cu carbuni, la partea mediana; lacustre, argiloase, la partea superioara. Intervalul Toarcian-Dogger este reprezentat printr-un facies marnos, cu amoniti, ce devine din ce in ce mai calcaros la partea superioara. Callovian-Hauterivianul evidentiaza un facies carbonatic, predominant micritic, cu secvente marnoase si amoniti.

Succesiunea stratigrafica transgresiva din aria depozitionala marginala evidentiaza un facies

continental, aluvial, detritic grosier (grezos-conglomeratic) pentru Liasic; un facies marin, grezos, cu matrice carbonatica, pentru Dogger si un facies carbonatic, cu fragmente detritice, pentru intervalul Callovian-Hauterivian.

Succesiunea stratigrafica regresiva, barremian-aptiana, evidentiaza un facies de platforma carbonatica pentru intreaga arie depozitionala a Bazinului Resita - Codlea.

Faciesul marginal vestic lipseste aproape in intregime, fiind acoperit prin sariajul Panzei Supragetice, in timp ce faciesul marginal estic este reprezentat prin succesiunile stratigrafice care afloreaza pe aliniamentul Gura Vaii - Sovarna - Vanturarita.

Succesiunea stratigrafica a Bazinului Resita - Codlea caracterizeaza Panza de Godeanu care poate fi considerata ca apartinand grupului Panzelor Getice faza a I-a (austrice).

Atat faciesurile, cat si distributia lor cartografica sugereaza faptul ca Panza de Sasca - Gorjac alaturi de Panza de Resita ca si de alte cute-solzi mai importante, pot fi considerate ca digitatii ale Panzei de Godeanu.

ANALIZA MICROTECTONICA A METACONGLOMERATELOR PALEOZOICE DIN MUNTII BIHOR

Mihaela DIMITRESCU
Geological Institute of Romania, 1 Caransebes St., RO-78344, Bucharest 32, Romania

In Muntii Bihor exista mai multe panze cu o geometrie complexa al caror fundament cristalin este acoperit de conglomerate laminate de varsta Carbonifer inferioara si Carbonifer superioara-Permian inferioara. Am analizat efectele la scara microscopica ale deformarii acestora, suferita in timpul producerii sariajului din Turonian. Pe teren am distins lineatii de intindere si de intersectie si mai multe foliatii succesive. Primele, definite de galeti deformati orientati NV-SE arata transportul tectonic al stivei de panze.

Analiza microscopica morfologica a foliatiilor ca si a mecanismului formarii lor ne-a condus la identificarea caracterelor unui strain finit, generat prin forfecare pura, progresiva. Pe de alta parte, metaconglomeratele analizate prezinta si efectele unei deformari progresive necoaxiale. Astfel in matricea lor am gasit urmatoarele microstructuri: benzi de forfecare, porfiroclaste de cuart rotite, orientari ale axelor "c" ale cuartului si umbre de presiune. Cele doua tipuri de strain trec continuu printr-un spectru de cresteri succesive care arata modificarea strainului, in functie de valoarea cresterii rotatiei.

Conform tuturor acestor observatii, analiza cinematica a deformarilor in Muntii Bihor are o semnificatie regionala si aduce argumente noi, indubitabile in sustinerea sensului de deplasare a panzelor alpine de la SE spre NV.

COMPARATIE INTRE SECVENTELE DE METAMORFITE DIN PINZELE BUCOVINICA SI SUBBUCOVINICA

Ion GHEUCA
Geological Institute of Romania, 1 Caransebes St., RO-78344, Bucharest 32, Romania

Cercetarile din anii '60 si '70 au acreditat ideea ca sisturile cristaline ale Panzei

Subbucovinice sunt reprezentate de metamorfite ale seriei de Tulghes si de serii paleozoice transgresive slab metamorfozate ("Tibau"). Balintoni (1981) emite ipoteza ca fiecare din cele doua panze sunt alcatuite din aceeasi succesiune de panze de varsta paleozoica "monocolore", adica fiind constituite dintr-o singura serie/grup: Bretila, Tulghes, Negrisoara si Rebra. In acest context secventa de metamorfite numita "Tibau" a devenit partea inferioara a Panzei Bucovinice, Seria/Grupul Rebra.

Cartarile ulterioare pentru foile Cosna si Carlibaba au evidentiat o structura mai complicata pentru Panza Subbucovinica, ceea ce a dus la admiterea unor complicatii tectonice alpine, punindu-se astfel in acord succesiunile bine stabilite din Panza Bucovinica cu cele din Panza Subbucovinica.

Rezultatul cartarilor noastre in zona Valea Putnei - Vaser ne indreptateste sa admitem ca metamorfitele din Panza Subbucovinica (in care se include si ceea ce s-a definit ca "Tibau") reprezinta o secventa net diferita de secventa litostratigrafica din panza superioara ei.

SEMNIFICATIA DISTRIBUTIEI DIFERITELOR TIPURI TEXTURALE IN CADRUL ZONEI DE FORFECARE SIBISEL DIN MUNTII LOTRU SI CIBIN

Calin RICMAN
Geological Institute of Romania, 1 Caransebes St., RO-78344, Bucharest 32, Romania

Lucrarea, care initial a avut ca obiectiv punerea in evidenta a unei zone de forfecare intre domeniile Getic si Supragetic in muntii Cibin si Lotru, isi propune sa abordeze aceasta zona ca pe un studiu de caz al unei zone de forfecare.

Dupa ce au fost discutate elementele structurale, relatia deformare-metamorfism in cadrul zonei de forfecare Sibisel, se abordeaza acum caracteristicile reologice ale acesteia.

Semnificatia distributiei diferitelor tipuri texturale relicte si neoformate este relevata in evolutia zonei de forfecare Sibisel. Se pune in evidenta aparitia "zonei de forfecare Sibisel" pe roci ale cristalinului Getic. Relictele litologice, paragenetice, structurale, apartinand diferitelor nivele ale litogrupului Sebes-Lotru, au dus la aprecierea existentei unei zone de forfecare majore ce a taiat intreaga stiva. Indiciile structurale au aratat o miscare de tip "strike-slip" N-S, suborizontala.

Evolutia in domeniul casant-ductil are atat cauze, cat si efecte ce pot fi regasite in relatia deformare -metamorfism de-a lungul evolutiei structurale a acestui domeniu crustal.

THE STRUCTURAL AND METAMORPHIC EVOLUTION OF Mn-METAMORPHOSED ORE FROM BISTRITA MTS, EAST CARPATHIANS, ROMANIA

Paulina HARTOPANU
Geological Institute of Romania, 1 Caransebes St., RO-78344, Bucharest 32, Romania

The Bistrita Mts belong to Crystalline Zone of the Eastern Carpathians, occurring between a Neogene volcanic chain to the west and a Flysch Zone to the east. The Crystalline Mesozoic Zone consists of superimposed Variscan and Alpine nappes, overthrusting eastwards over Flysch Zone. The manganese ore is contained in the Tulghes Group (TG2 Formation) of the Variscan Putna Nappe, which forms the crystalline basement of the Alpine Sub-Bucovinian Nappe. The Tg2 Formation is a polymetamorphic retrograde series, its evolution being marked, like Mn-ore, by three successive metamorphic events: Caledonian, Variscan and Alpine.The black quartzite, the host of

the Mn ore was in earlier sequences an essential constituent of layer 1 of the oceanic crust, becoming a typical indicator of an abyssal oceanic environment.The submarine hydrothermalism, derived from underlying oceanic basalts, was source of Mn, Ba and sulphides from TG2. We suppose that the same submarine hydrothermalism system produced the sulphides mineralisation from Tg3, linked of an acidic, predominantly rhyolitic, volcanism.The Vendian-lower Cambrian deposits, predominantly hydrothermal, were metamorphosed by a progressive Caledonian metamorphism (M_0) under HP/LT conditions, which probably, determined the forming of paragenesses with calderite, jadeite and glaucophane. These minerals belong to a metamorphism of subduction zone, characterized by low geothermal gradients, not exceeding 10-15^0/km. Nearly pure calderite can occur in these environments, but it has thus far not been found in nature. The first oldest garnet from Mn-ore, was probably calderite, formed probably from a hydrothermal mixtures of Mn2O3, Mn3O4, Fe2O3 and colloidal SiO2. It has break down to the less dense,pyroxmangite-hematite, pyroxmangite-magnetite paragenesses, as high pressure phases as well, during up-lifting.and continued in the Variscan orogeneses (M_1). In the same way, the jadeite+quartz paragenessis evolved to Mn-hedenbergite-johannsenite-augite and albite in Variscan metamorphism (M_1). In the first stage of Variscan metamorphism,there were also formed the following minerals: tephroite, mangangrunerite, grunerite, alabandite, some Ni-Co-As sulphides, magnetite, jacobsite, which belong to the amphibolite facies. In the second M_2 stage, of Variscan metamorphism the Mn-humites grown at the expense of tephroite, the rhodonite grown at the expense of tephroite, the mangangrunerite (II) grown at the expence of pyroxmangite.These new minerals belong to the amphibolite facies, at least, in its lower conditions. Until now, the basements rocks from Esthern Carpathians have been considered structurally as rigid blocks and unaffected by Alpine metamorphism. We consider that the Alpine metamorphism was not a cool one, but it was a HP/LT (M3), at least at its lowest conditions, widespread overprinting the amphibolite facies assemblages. Many types of alkali amphiboles (magnesioriebeckite, riebeckite, crossite, ferroglaucophane, kozulite, winchite, etc) grown now at the expense of nonalkali amphiboles. Most of them have zoned texture, with non-alkali core and alkali rim etc. We have found all the intermediary stages from non-alkali amphiboles to alkali ones. The aegirine-acmite, acmite (namansilite) with spectacular sectorial and concentric zoned textures also occur. In the second stage of Alpine metamorphism there were formed the following hydrated minerals, because of P_{H2O} increasing: stilpnomelane, talc, minnesotaite, bementite, caryopilite, greenalite, zussmanite (?), manganpyrosmalite, friedelite, nelenite etc. Also,the noncubic garnets occur now.

The presence of andalusite in the Rebra Group, formed by expence of staurolite, and the cordierite in the Negrisoara Group, is a good evidence for a lower P/T ratio metamorphism , as opposite to the relative high P/T ratio metamorphism of Tulghes Group, at least in the Alpine stage(M_3). The M_0 ancient Caledonian stage has been distroyed, it was a transient one. We suppose that the two metamorphic belts, Tulghes Group and Rebra + Negrisoara Groups, are paired metamorphic belts. The Tulghes Group with its relative high P/T ratio metamorphism , represents an ancient trench zone, whereas The Negrisoara + Rebra Groups, with the lower P/T ratio metamorphism represent a belt of granitoid plutons and arc volcanism at an island arc sitting. The metamorphism in the two paired belts was probable coeval. The two paired metamorphic belts, Tulghes Group and Negrisoara + Rebra Groups, may be a good evidence for arc-trench system in the geologic past of Crystalline Mezozoic Zone of East Carpathians. The Tulghes Group which represent a relative high P/T metamorphic of these complexes , formed in subduction zones along trench zones, underwent very strong syn- and post-metamorphic deformations, so that most of their

structures now observed on the surface may have resulted from these deformations. This is the cause of the big difference between the Tulghes Group and Negrisoara + Rebra Groups. The last ones are lesser deformed as compared to the Tulges Group.

VARIATIILE LITO SI BIOFACIALE ALE DEPOZITELOR BASARABIENE IN PARTEA DE EST A PLATFORMEI MOLDOVENESTI

Mihai BRANZILA
University "Al. I. Cuza" – Iasi, Romania

Depozitele atribuite Basarabianului pe Platforma Moldoveneasca au o dispozitie litofaciala cu o amplasare in general cunoscuta si caracterizata pe directia vest-est de o succesiune in care se regasesc pietrisuri, gresii, nisipuri, argile si calcare.

Alcatuirea litologica, precum si continutul asociatiilor de fauna ce caracterizeaza depozitele basarabiene din partea de est a Platformei Moldovenesti reflecta sectorial, conditiile sedimentologice si paleoecologice care s-au manifestat in timpul Sarmatianului mediu. Acestea nu sunt altceva decat consecinte ale relatiei dintre Orogenul Carpatic si Vorland, relatie care s-a concretizat intr-o serie de miscari geodinamice (pozitive sau negative) ce au influentat configuratia bazinului de sedimentare generand anumite particularitati zonale.

Procesele de sedimentare au fost marcate de acumularea preponderenta a pelitelor, determinata de conditiile batimetrice si relatiile cu sursele de material detritic.

Modificarile de configuratie a bazinelor de sedimentare au generat o serie de depozite, cu grosimi apreciabile, care biofacial sunt caracterizate de asociatii de fauna diferite de cele salmastre cunoscute pentru depozitele sarmatiene in general. Acestea sunt cuprinse intre "argilele cu *Cryptomactra* " ca depozite subjacente si "Calcarul Oolitic de Repedea" ca depozite suprajacente si sunt caracterizate de o fauna specifica cu mactre de talie mica si congerii.

TUFFITES AND DIATOMITIC TUFFACEOUS LEVELS OF THE LOWER ROMANIAN DEPOSITS IN NE OLTENIA

Mircea TICLEANU[1], Carmen DINULESCU[1], Simona PESTREA[2], Alexandru SZAKACS[1], Nicolae TICLEANU[2]
[1]Geological Institute of Romania, 1 Caransebes St., 78344, Bucharest, Romania
[2]University of Bucharest, Faculty of Geology and Geophysics, Bd. N. Balcescu no.1, 70111 Bucharest, Romania

The quarry research for coal, opened in NE Oltenia (Panga, Berbesti, Alunu and Ruget quarries), emphasized another interesting feature of the Romanian coal deposits, namely the existence of tuffaceous lenticular levels, having a small thickness. They have an ununiform development with an obvious lens character, with lateral narrowing disappearance and variable thickness, subdecimetrical generally. They have whitish grey colour and a small specific weight. In fact, they can be tuffaceous rocks, tuffaceous clays respectively, characterized by an advanced decay of the tuffaceous material; they can easily be mistaken with the weak phosphorous clays found at the same stratigraphical level (the level of VIII-XII coal beds or, by local names, III-IX coal beds).

The tuffaceous levels were also met in the Dacian-Romanian deposits in Oltenia, beginning

even with the Dacian-Pontian limit or to VI-VII coal beds level (eastern Blahnita Valley), but in this stratigraphical span (Lower Romanian), proper to VIII-XII coal beds, about 7 tuffite levels are to be found.

Among all these tuffaceous levels, most of them seem to be linked to the upper IX bank from Berbesti West quarry. The microscopical analysis indicates that they are tuffaceous diatomite clays or some clayey tuffitic diatomites whose tuffitic material is represented by volcanic glass, possibly redeposited, alkaline or acid, which seems to have an extra-Carpathian origin, probably a western one. The obvious presence of some diatoms species is also to be mentioned.

Also, the spectral analysis suggests that the number of elements included in the tuffaceous clays is quite reduced (5 elements- Cu, Pb, Mn, Ni and Ti) in comparison with the largest number of elements that can be found in the phosphorous clays that can be mistaken with the tuffaceous levels shown above.

PALAEOBIOGEOGRAPHY AND PALAEOENVIRONMENTAL CHANGES IN THE BARREMIAN/APTIAN BOUNDARY INTERVAL FROM THE ROMANIAN CARPATHIANS

Mihaela Carmen MELINTE
Geological Institute of Romania, 1 Caransebes St., 78344, Bucharest, Romania

The Barremian/Aptian Boundary Interval was one of the remarkable changes in the Earth history. This is the time of increased floor spreading rates and abnormal high intraplate volcanism, which produced the onset of the mid-Cretaceous greenhouse. These aleogeographical and palaeoenvironmental changes are reflected in the palaeobiological assemblages, characterized by an important turnover. The Berriasian-Barremian tethyan and boreal taxa, related to the Early Cretaceous Realms of the Northern Hemisphere, were replaced by the Early Aptian cosmopolitan ones.

The present paper present the palaeogeographical and palaeoenvironmental modifications of the Barremian/Aptian Boundary from the Carpathian Domain and how they are mirrored in the character of the palaeobiological assemblages related to this interval.

ICHTIOFAUNA OLIGOCENA DIN LITOFACIESUL DE VALEA CASELOR (SUDUL CARPATILOR ORIENTALI). SEMNIFICATII PALEOECOLOGICE

Paul CONSTANTIN
Geological Institute of Romania, 1 Caransebes St., 78344, Bucharest, Romania

Lithofaciesul de Valea Caselor (Stefanescu, 1970) este specific formatiunilor oligocen-miocen inferioare ce se dezvolta in sudul Carpatilor Orientali, in cadrul cuverturilor post-tectogenetice ale panzelor cu tectogeneza laramica. Cercetarile noastre recente, intreprinse in formatiuni apartinand acestui lithofacies, au pus in evidenta atat noi localitati ce au furnizat paleoichtiofauna (sau aflorimente noi in cadrul unor localitati deja cunoscute), cat si noi exemplare de pesti fosili, alaturi de cele deja cunoscute din literatura de specialitate.

Ichtiofauna (37 de specii de teleosteeni apartinand la 21 genuri si 18 familii) pusa in

evidenta pana acum ca urmare a cercetarii pe teren, completata cu investigarea colectiilor muzeale sau cu parcurgerea materialului bibliografic, provine din 5 localitati (Suslanesti, Fieni, Buciumeni-Valea Leurzii, Bezdeadul de Sus si Sotrile-Nistoresti). Peste tot formatiunea purtatoare de ichtiofauna este numai cea inferioara, rupeliana (numita "orizont al sisturilor disodilice cu menilite" - Stefanescu, 1970) ce reprezinta primul termen litostratigrafic al succesiunii Oligocen-Miocen inferior ce se dezvolta in faciesul de Valea Caselor.

Pe baza aspectelor tafonomice surprinse, s-a constatat ca ichtiofauna este una tipic marina, reprezentata in general prin indivizi conservati "in situ", in conditii foarte favorabile de fosilizare (mediu anaerobic, lipsa curentilor sau prezenta numai a unora foarte slabi, material sedimentar foarte fin etc.). A putut fi recunoscuta moartea in masa a ichtiofaunei datorata unor conditii catastrofice (schimbarea, in anumite conditii de temperatura si presiune, a adancimii la care se gasea H_2S, sau proliferarea fitoplanctonului, in timpul depunerii calcarelor de Tylawa, fenomen ce a putut conduce la "sufocarea" ichtiofaunei.

Din punctul de vedere al semnificatiilor ambientale, pe baza compararii paleoichtiofaunei cu ichtiofauna actuala sau pe baza studiilor morfo-functionale ale speciilor fosile, s-a incercat reconstituirea paleotemperaturii (climat subtropical), a paleosalinitatii (bazin marin, cu salinitate normala), ca si a paleobatimetriei bazinului de sedimentare.

Pentru stabilirea adancimii bazinului (tinand cont ca teleosteenii sunt in principal organisme nectonice, caracterizate printr-o mare mobilitate) ne-am bazat in principal fie pe prezenta, rara, a pestilor ce prezinta un mod de viata bentonic (*Scophthalmus*, *Ammodytes*), fie, in cazul pestilor cu mod de viata pelegic, pe speciile genurilor autohtone, dominante (*Serranus*, *Glossanodon*, *Palaeogadus*, *Clupea*, *Hemiramphus*, *Syngnathus*) ce se gasesc in amestestec cu cele intamplatoare, prezente in asociatie ca urmare a migrarilor (*Lepidopus*, *Holosteus*, *Scomber*, *Palaeorhynchus*). In concluzie se poate considera ca bazinul a avut o adancime mica, fauna fiind in general una neritica, caracteristica zonelor litorale si sublitorale.

Asocierea altor resturi fosile (crabi, plante terestre, insecte) sustin existenta unui uscat in apropierea bazinului marin. Pentru localitatea Fieni, studiile noastre au pus in evidenta o posibila variatie in timp a adancimii bazinului, variatie pusa pe seama celei a nivelului eustatic global.

THE PALAEOZOIC BRACHIOPODS OF ROMANIA

Magdalena IORDAN
Geological Institute of Romania, 1 Caransebes St., 78344 Bucharest, Romania

The paper describes and reviews the Palaeozoic brachiopods from Carpathians and their foreland (Moldavian, Scythian and Moesian Platforms), including the North Dobrogea orogenic belt.

In the South Carpathians the presence of the Lower Silurian and Lower Carboniferous is attested by brachiopods. The brachiopod assemblage consisting of **orthids, strophomenids, pentamerids** and **spiriferids** attests the Middle and upper Llandoverian age of the Valea Izvorului Formation. The cosmopolitan faunas suggest that this area correlates with England, Norway (the Oslo region) and Sweden (the Gotland region). The lower Carboniferous brachiopods including giant **productids** and **spiriferids** attest a Tournaisian age for the Valea Idegului Formation of the same Danubian domain.

The upper calcareous complex of the Moldavian Platform yielded a Silurian shelly fauna

facies consisting mainly of brachiopods. The Wenlockian assemblage is characterized by the appearance of Plectambonitaceatids with the predominance of **leptaenids**, lack of **protochonetids** and nearly complete dissappearence of **orthids**. The Ludlow-Pridoli±Gedinnian asesemblage is characterized by the appearance and predominance of **protochonetids**, appearance of **spiriferids** with predominance of **delthyrids** and by the presence of **orthids**. The paleontological assemblage proves the similarity with Podolian and Baltic faunas, as the Moldavian Platform represents the south-western margin of the East European Craton.

The Romanian part of the Moesian Platform is part of the Protomoesian microcontinent. In the detrital deposits of the Cambrian and Ordovician, only inarticulate brachiopods (**lingulellids** and **acrotretids**) were identified together with middle Cambrian trilobites, Ordovician graptolites and with palynomorphs. A graptolite shale facies was described in the Silurian, as well as a shelly fauna facies. Only the mixed type of the graptolite shale facies (Pridolian strata) yielded tiny brachiopods (**orbiculoids, strophomenids, spiriferids**) and attests a Rhenish and Bohemian type of faunas. The shelly fauna facies, described only in the south-western part of the Platform, yieled a neritic shallow water paleontological assemblage characteristic for Wenlockian, Ludlowian and Pridolian. In the Devonian time, a rich faunal and floral assemblage was living in the basal argillitic facies (Gedinnian-Emsian) and in the middle gritty one (Eifelian), as much as in the upper carbonate-evaporite facies (Givetian-Famennian). The age indicator brachiopods (Lower Devonian), as well as the brachiopod zones (Middle and Upper Devonian), together with the entire palaeontological association attest a similarity with the Rhenish, Moravian, Barrandian and Turkish Devonian faunas.

The Carboniferous brachiopods attest the presence of the Visean (giant **productids, strophomenids, spiriferids**) and the Namurian-Westphalian (small **productids**) and enable correlations with the Dinant and Namur from the Western Europe as well as with the East European Platform and Poland.

In the North Dobrogea orogenic belt, Lower Devonian brachiopods were identified only in the western part, in the Macin zone. They are associated with crinoids, tentaculites and subordinately with trilobites, corals, bryozoans, ostracods and suggest a very shallow-water deposition in a benthic, open shelf environment. The macrofaunal assemblage correlates with the Ardennes and Rhenish massif (Siegenian), as well as with Poland and Turkey.

CONSIDERATII PRIVIND FAUNELE DE CONGERII DIN DEPOZITELE PANNONIENE SI PONTIENE DIN BAZINUL PANNONIC

Rodica MACALET
Geological Institute of Romania, 1 Caransebes St., 78344, Bucharest, Romania

Alaturi de celelalte elemente faunistice, genul *Congeria,* cu aparitii mai mult sau mai putin constante in depozitele Pannonianului si Pontianului din Bazinul Pannonic, poate fi utilizat atat in orizontarea depozitelor cantonatoare, cat si pentru stabilirea conditiilor mediului de sedimentare.

In Bazinul Pannonic, Pannonianul este subdivizat in doua subetaje: Slavonianul (= Pannonian inferior = zonele A,B,C si D) si Serbianul (= Pannonian superior = zona E).

Cele mai vechi depozite pannoniene care apar la zi (zona B dupa zonarea lui Papp), in care au fost identificate congerii, se intalnesc intr-un singur loc (Soimi, Bazinul Beius). In toata aria investigata cea mai larga raspandire o au depozitele Pannonianului superior.

Pontianul, din aceasta arie, poate fi divizat in doua subetaje: Novorossianul (= Pontian inferior= Odessian) si Portaferrianul (= Pontian superior).

ASPECTE PRIVIND ECOLOGIA SI PALEOECOLOGIA CARDIIDELOR

Bogdan MARINESCU, Rodica MACALET
Geological Institute of Romania, 1 Caransebes St., 78344, Bucharest, Romania

Acest grup de organisme foarte numeros a populat, de-a lungul timpului, din Triasic pâna în Actual, uneori simultan, toate tipurile de bazine acvatice: dulcicole, salmastre, marine.

Variabilitatea morfologica cea mai scazuta, pentru intervale sincrone, o întâlnim în bazinele marine. Aici factorii de mediu au stabilitatea cea mai mare, iar variatiile acestora se manifesta relativ lent, inducând, tot atât de lent, schimbari în morfologia organismelor. Populatiile foarte specializate sunt de obicei putin numeroase, cu caractere morfologice bine definite, cu o prolificitate redusa dar, de asemenea, si cu un grad de adaptabilitate extrem de redus.

In mod cert însa nu numai salinitatea este factorul decisiv în variatiile de volum ale corpului. In general factorii externi actioneaza concertat si ar fi riscant sa consideram un anume raspuns al organismelor drept consecinta a unui singur factor determinant.

In mediul dulcicol si salmastru factorii externi nu mai prezinta aceeasi unitate si stabilitate ca în cel marin iar aceste conditii extrem de variabile, atât areal, cât si temporal, induc, drept consecinta, raspunsuri la fel de variate din partea organismelor.

Izolarea naturala, geografica a bazinelor dulcicole si salmastre, cu suprafete variabile si, de multe ori, cu existenta redusa temporal, au facut ca aceleasi specii de cardiide, suferind influente externe diferite de la bazin la bazin, sa aiba raspunsuri fiziologice diferite, manifestate initial prin aparitia unor varietati locale care apoi, în timp, prin continua izolare, sa genereze noi specii.

Un rol major în continua schimbare morfologica a cardiidelor l-a avut si importantul potential genetic de variabilitate al grupului, precum si marea lui prolificitate.

FORMATIUNEA DE MURGUCEVA (TITHONIC SUPERIOR-HAUTERIVIAN INFERIOR) SI FORMATIUNEA DE SVINITA (HAUTERIVIAN SUPERIOR-APTIAN INFERIOR) LA NW DE FALIA SVINITA

Emil AVRAM
Geological Institute of Romania, 1 Caransebes St., 78344, Bucharest, Romania

Cele doua formatiuni in discutie apar la zi, la partea superioara a intervalului Jurasic-Cretacic din zona Sirinia a Dacidelor Marginale, in arealul satului Svinita, unde au facut obiectul mai multor lucrari de biostratigrafie a amonitilor si la nord-vest de acesta – la Zeliste (monoclinal cu cadere spre Dunare), la Ravniste (in doua puncte: Ravniste si Drenetina, ca petece scapate de la eroziune) si in bazinul inferior al vaii Sirinia (unde constituie o placa puternic cutata, dezvoltata intre malul Dunarii si localitatea Bigar). In ultimele trei areale mentionate (la nord de Falia Svinita) se dezvolta in special depozite ale Formatiunii de Murguceva, Formatiunea de Svinita aparand doar cu totul local, in versantul drept al vaii Sirinia aproape de varsarea acesteia in Dunare.

In cele trei areale situate la NW de Svinita, imaginea cartografica a formatiunilor in discutie a

fost mult imbunatatita fata de cele anterioare (Raileanu, 1953, 1954) in special in bazinul vaii Sirinia, unde ele sunt puternic cutate, iar substratul lor apare punctual, in butoniere, pe vaile adanci; a fost, de asemenea evidentiat, in dealul Sacalovacea, un compartiment ridicat intre doua falii transversale, orientate NW-SE.

In aceleasi areale, varsta formatiunilor se situeaza in limitele deja stabilite in arealul satului Svinita (vezi titlu), cu argumente paleontologice noi aduse din cca 20 puncte fosilifere nou identificate; studiul microbiofacial a aratat existenta in intreaga regiune a unei intreruperi a sedimentarii, intre calcarele nodulare tithonic inferioare (cu *Saccocoma*) din substrat si Formatiunea de Murguceva (apartinand, chiar din baza, zonei cu *Calpionella alpina* si numai local: la S de Bigar; la Munteana etc., pastrand si o mica parte a zonei Crassicollaria).

FAUNA DE MOLUSTE ATIPICA (LACUSTRA SI TERESTRA) DIN VOLHINIANUL ZONEI FALTICENI-BOGATA-SACUTA (JUDETUL SUCEAVA), PLATFORMA MOLDOVENEASCA

Paul TIBULEAC
University "Al. I. Cuza" – Iasi, Romania

In cadrul Sarmatianului, definit de o fauna salmastra specifica, a fost mentionata si prezenta unor taxoni de moluste lacustre si terestre. Fauna apare in strate subtiri, centimetrice-decimetrice, in contrast cu stiva sedimentara de zeci si sute de metri caracterizata de speciile salmastre, iar arealul de dezvoltare este redus. Pana in prezent, astfel de semnalari sunt mai putine in Volhinian (Petho, 1887 -fide Pauca, 1954; Gaal, 1911- fide Gheorghiu, 1954; Vascautanu, 1935; Jekelius, 1944; Moliavko-fide Ionesi, 1968; Feru et al.; 1979 etc.), fiind mai binecunoscute incepand din Basarabian (David, 1922; Jeanrenaud, 1963, 1971; Sagatovici, 1968; Marinescu, 1967; Ionesi, Ionesi, 1972, 1995, 1997 etc.). In zona Falticeni-Bogata-Sacuta prima atestare a unei faune lacustre este datorata lui Martinuc (1949), ulterior fiind semnalata si de Ionesi (1968) si Ionesi et al. (1993), iar taxoni terestri au fost mentionati de Polonic et Polonic (1967). Lucrarea aduce noi informatii prin care se argumenteaza prezenta sub stratul "B" de carbune a unui mediu lacustru atestat de o flora si fauna specifica, extins in toata zona mentionata. Asociatia de moluste este reprezentata prin Anodonta cobalcescui, A. soldanestiensis, Anodonta sp., Lythoglyphus rumanus, Emmericia candida, Anisus sp., Planorbis sp., Bithynia sp., Theodoxus sp., Gyraulus sp. Fauna de moluste terestra a fost identficata in puncte diferite fiind reprezentata prin Limax sp., Helix sp., Chilostoma sp., Cepaea sp., Pomatias sp. Prezenta acestor faune este explicabila prin evolutia paleogeografica si tectonica particulara a acestui sector al Platformei Moldovenesti, ce a condus la formarea unor strate de carbuni.

FOSSIL WOOD FROM THE BADENIAN OF CHEIA, TURDA VALLEY

Eugenia IAMANDEI, Stanila IAMANDEI
Geological Institute of Romania, 1 Caransebes St., 78344, Bucharest, Romania

Two interesting wood remains found by two of the authors in some precise levels of the Badenian (the Globigerina marls and the Radiolarian shale), confirms the abundance of the ***Taxodiaceae*** (Conifers) in the constitution of there Badenian Transylvanian Mixed Forests.

The presence of the big wood remains in these sedimentary marin formations implied some

observations on the taphonomic processes that are discussed. One of the samples show an interesting type of preservation, since it was found into the radiolarian level, and it preserved only the molds of the tracheids, that macroscopically appear like a fluff.

SOME FOSSIL WOOD FROM THE SUBCARPATHIAN MIOCENE

Stanila IAMANDEI, Eugenia IAMANDEI
Geological Institute of Romania, 1 Caransebes St., 78344, Bucharest, Romania

Two coalified and slightly mineralized wood trunk remainder found by one of the authors in the Badenian Radiolarian shale in Prahova Valley at Campina and in the equivalent level at Slanic, are studied and taxonomically identified. Also the paleoecologic and taphonomic implications are discussed.

Other two fragments of silicified wood found in Sarmatian formations from Rm. Valcea region were studied and identified as belonging to Angiosperms (Dicotyledons). This region is known as full of vegetal remains, many leaves and fruits imprints were described from here, but wood remains also. Our new identifications are added to the list of already numerous vegetal taxa described from, and bring very interesting informations about the paleoclimatic regime corresponding to these times.

THE FOSSIL TREE JUST IN FRONT OF THE ROMANIAN GEOLOGICAL MUSEUM

Eugenia IAMANDEI, Stanila IAMANDEI, Bogdan MARINESCU
Geological Institute of Romania, 1 Caransebes St., 78344, Bucharest, Romania

In front of Romanian Geological Museum there is a big reminder of a trunk provenant from an unknown fossil tree. It became a symbol of the Geological Museum, and its significance is that the life on the Earth was beginning with the plants.

Now after the paleoxylotomical study we can precisely say what tree is. The taphonomic processes that led to its preservation and a prediction about its future as museological object are discussed. Also we present the adventure of this trunk until it became a symbol.

DISCOVERY OF *PLATYBELODON* BORISSIAK 1928 (PROBOSCIDEA, MAMMALIA), A REPRESENTATIVE GENUS IN THE TERRITORY OF THE REPUBLIC OF MOLDOVA

Alexandru LUNGU*, Theodor OBADA**
* The State University of Tiraspol
** The Institute of Zoology of the Academy of Sciences of the Republic of Moldova

In the central part of Codrii forest, at 80 meters absolute altitude, to the north-east of the locality Hirova, Ungheni county, in clay-sandy rocks, together with marine, freshwater and terrestrial mollusks, remnants of the following fossil vertebrates were collected: *Protestudo sp.*, *Schizogalerix cf. sarmaticum*, *Crusafontina excultus*, *Palaeolimnolecus sp.*, *Muscardinus hispanicus*, *Anomalomys cf. gailardi*, *Neocricetodon (Kowalskia) sp.*, *Hipparion sp.* (archaic form),

Aceratherium incisivum, *Lagomeryx flerovi*, *Platybelodon sp.* According to the mollusk and mammal fauna, the fossiliferous locality can be attributed to the Basarabian age, MN 9 biozone [by Mein, 1990], early Vallesian. According to palaeomagnetic dating, the absolute age was assessed as 11 mil. years. The remains of Platybelodon from Hirova represent a mandible with the last M_3 molars; but the anterior part of the mandible symphysis is absent. The length of the mandible symphysis fragment remnants is over 430 mm. In the middle of the symphysis, on the dorsal side, a groove is formed. The breadth of the edge of this groove in the beginning of mandible ramification is 80 mm. Further, the edge groows narrower is up to 40 mm, and then, widens again to more than 135 mm. The characteristics of the molars three (M_3) are as following:

The characteristics	**M_3 sin**	**M_3 dextr**
1. Number of lophids	6	5-6
2. Length	173	177
3. Maximum breadth	74	70
4. Maximum height	38 (V), 42 (VI)	26 (V), 37 (VI)
5. Enamel thickness	6,2 - 7,2	6,5 - 7,2

So far, the following species of platybelodons are known: *Platybelodon danovi* (China, the Northern Caucasus; MN 5 - MN 8 biozones), *P. jamadzhalgensis* (the Northern Caucasus, MN 7 biozone), *P. grangeri* (China, Kyrghizstan; MN 8 biozone), *P. d. filholi* (France; MN 7 - MN 8 biozones), *P. kisumuensis* (Kenya, Congo; MN 4 - MN 5 biozones), *P. beliajevae* (Mongolia, MN8-MN9 ? biozone) [Borissiak, 1973; Alexeeva, 1957, 1971; Belyaeva, Gabunia, 1960; Vaufrey, 1961; Belyaeva et al., 1962; Tobien, 1973a, b, 1976; Ficsher, 1996; Guan, 1996; Schoshani, 1996].

Thus, remnants of the *Platybelodon* genus remains from Hirova are unique and the latest in phylogenetic view so far. It is possible that they will be accepted as a new species level.

Platybelodon Borissiak, 1928 genus reprezentatives' biochronology

M.Y	**Faunistic units (Fahlbusch, 1975)**	**Mammal Neogene Faunal zones (Mein, 1990)**	**Europe**		**Asia**		**Africa**	
10,4	Vallesian	MN 9	Hirova	*Platybelodon sp.*	Oshi	*P. beliajevae*		
11,5	Astaracian	MN 8	La Grive Arapli	*P.danovi filholi P. cf. danovi*	Tung-Gur Sarâdjaz Zhongning Yurukali	*P. grangeri P. grangeri P. danovi P. cf. danovi*		
13		MN 7	Sansan Otradnoe Belomecetskaya Jaman Djalga	*P.d.filholi P.danovi P. danovi P. jamadzhal-gensis*				
14		MN 6			Guanghe	*P. danovi*		
15	Orleanian	MN 5			Tongxin	*P. danovi*	Maboco Island	*P. kisumuensis*
16,8		MN 4					Semliki	*P. kisumuensis*

SARMATIANUL DIN ARIA SIPOTELE – TUFANI (DOBROGEA DE SUD)

Emilia MUNTEANU, Mihai-Tudor MUNTEANU
Geological Institute of Romania, 1 Caransebes St., 78344, Bucharest, Romania

Toate subdiviziunile litostratigrafice cunoscute în Dobrogea de Sud au fost identificate în acest areal. O completa caracterizare biostratigrafica (moluste si foraminifere) a lor a fost realizata.

Valea Sipotelu este singura din Dobrogea de Sud în care afloreaza depozitele reprezentând cele trei subdiviziuni cronostratigrafice ale Sarmatianului cunoscute atât în Dobrogea de Sud, cât si în nord-estul Bulgariei: Volhynianul superior (calcare si argile bentonitice cu: *Mactra eichwaldi* (Lask.), *Plicatiforma plicata* (Eichw.), *Pirenella disjuncta* (Sow.), *Elphidium macellum* (F. & M.), *Ammonia beccari* (Linné) etc.), Basarabianul (calcare si diatomite cu: *Mactra pallasi* (Baily), *Tapes ponderosus* (d'Orb.), *Inaequicostata suessi* (Barbot de Marny), *Elphidium fichtellianum* (d'Orb.), *Porosononion hyalinus* (Bogd.) etc.) si Chersonianul (calcare cu *Mactra caspia* (Eichw.), *M. supernaviculata* (Macarovici) etc.).

Calcarul cu *Obsoletiforma* (Basarabian terminal) si depozitele chersoniene au fost puse în evidenta pentru prima data în regiunea studiata, permitând astfel completarea schitelor paleogeografice cunoscute de la aceste nivele stratigrafice.

Pietrisurile basarabian-superioare de la Tufani încheie entitatea litostratigrafica ce se cunoaste sub denumirea de Argile si diatomite, care trec spre nord-est în nisipurile de la Credinta.

SCHITA EVOLUTIVA A SISTEMULUI PÂNZELOR DE BIHARIA ÎN CONTEXTUL EVOLUTIEI MUNTILOR APUSENI

Rodica STAN[1], Adrian PUSTE[2]
[1]Institutul Geologic al României, Bucuresti
[2]Universitatea "Babes-Bolyai", Facultatea de Biologie si Geologie, Cluj

Incercam sa prezentam un model structural de evolutie al sistemului pânzelor de Biharia începând din Cambrian si pâna în Cretacic superior, in contextul evolutiv al unitatilor tectonice care constituie Muntii Apuseni (Unitatea de Bihor, sistemul pânzelor de Codru, sistemul pânzelor de Biharia, iar în pozitie superioara – Transilvanidele).

Referitor la settingul de provenienta a tectonitelor amintite mai sus, unele îsi au originea în cratonul Preapulian (unitatea de Bihor, sistemul pânzelor de Codru si sistemul pânzelor de Biharia), iar altele în Tethysul Transilvan (Transilvanidele). Unitatea de Bihor si sistemul pânzelor de Codru provin din *marginea meliatica*, pasiva, a cratonului Preapulian, iar sistemul pânzelor de Biharia, reprezinta *marginea penninica*, activa, a cratonului Preapulian; Transilvanidele isi au originea in riftul penninic ca brat al Tethysului Transilvan.

PLANTE SI AMONITI IN JURASICUL SUPERIOR DE LA LACU ROSU CANTONATE IN DEPOZITELE DETRITICE ALE FORMATIUNII CU *ACANTHICUM*

Dan GRIGORE, Stanila IAMANDEI, Valentin PARASCHIV
Geological Institute of Romania, 1 Caransebes St., 78344, Bucharest, Romania

Este prezentata pentru prima data asociatia de flora si fauna fosila intalnita in Membrul superior al Formatiunii cu *Acanthicum*. Este prezentata litostratigrafia si biostratigrafia de detaliu a depozitelor detritice ce intra in componenta acestui membru, cu referiri asupra structurilor si texturilor intalnite. Analiza modului de acumulare si conservare al asociatiei macrofosile, cat si datele sumare de analiza micropaleontologica au condus la urmatoarele concluzii:

1. depozitele respective s-au acumulat in regim deltaic;
2. intreaga secventa este de tip regresiv (pe intervalul Kimmeridgian superior - Tithonic inferior);
3. interpretarea paleogeografica a sedimentogenezei depozitelor, cat si prezenta asociatiei identificate implica prezenta in apropiere a liniei de tarm (uscat) si a unui semnificativ aport detritic de tip fluviatil.

VALOAREA STIINTIFICA SI "ECONOMICA" A ZACAMANTULUI FOSILIFER DIN JURASICUL SUPERIOR DE LA LACUL ROSU (FORMATIUNEA CU *ACANTHICUM* – HAGHIMAS)

Dan GRIGORE
Geological Institute of Romania, 1 Caransebes St., 78344, Bucharest, Romania

Sunt prezentate principalele caracteristici de ordin paleontologic si stratigrafic ale "zacamantului" fosilifer cantonat in depozitele Formatiunii cu *Acanthicum*, amplasate in perimetrul vestic al muntelui Ghilcos (masivul Haghimas). Sunt evidentiati parametrii valorii stiintifice multiple, importanta pentru Paleontologie - Biologie, Stratigrafie - Tectonica si caracterul unic al acestui zacamant in context european. Acest zacamant este propus pentru rezervatie, perimetrul fiind conturat pe o harta. Totodata se fac recomandari pentru modul de valorificare economica - turistica a acestuia, fiind schitate unele propuneri de amenajare.

POLLUTION DEGREE OF THE WATER DOWNSTREAM FROM THE ROSIA POIENI ORE DEPOSIT (METALIFERI MTS.)

Viorica MILU[1], J.L. LEROY[2], C. PEIFFERT[2,3]
[1]Geological Institute of Romania, 1Caransebes Str., 78344-Bucharest, Romania
[2]UHP-Nancy 1, UMR G2R, BP 239, 54506 Vandoeuvre les Nancy cedex, France
[3]CREGU, BP 23, 54501 Vandoeuvre les Nancy cedex, France

This study presents our preliminary investigations on the stream waters in the area of the Rosia Poieni ore deposit (exploitation in open pit mine) from Metaliferi Mts. (Romania). This deposit is a porphyry copper one with a later low-grade polymetallic mineralization of epithermal acid-sulfate type (Milu, 2000). The mineralizations are represented by pyrite, chalcopyrite, magnetite, hematite,

molybdenite, bornite with subordinate tetrahedrite-tennantite, enargite (luzonite), digenite and minor pyrrhotite, sphalerite, galena, covellite and chalcocite. They are hosted by Neogene andesitic-microdioritc rocks affected by hypogene and supergene alteration processes.

The main objectives of our work are: a) to use the mineralogical and geochemical information regarding the ore deposit in the assessment of the environmental pollution related to Rosia Poieni ore deposit and b) to assess the distribution and extent of contamination through studying the chemistry of the stream waters.

We performed a number of waterstream samples down to the open pit mine and exploration galleries. The major elements of water samples were analyzed by ICP-AES and the trace elements by ICP-MS. The anions were analyzed by ion chromatography. The pH of each sample was measured *in situ*.

Chemical composition of sampled waters indicates that stream waters outside of the mining area influence are essentially unpolluted, whereas waters draining freely from the open pit and the Musca gallery are acidic (pH varies from 3.8 to 4.5) and transport toxic elements. These low pH resulted from acid rock drainage (ARD) and are due to the oxidation of sulfides with a consequent production of sulfuric acid.

In order to evaluate which solids might be precipitating, the saturation indices for a number of solids were calculated using EQ3/6 computer program (Wolery and Daveler, 1992). The same program has been used to calculate the distribution of aqueous species.

This study shows that the stream water contain significant amounts of heavy metals that are potentially dangerous to the environment. Downstream from the porphyry copper mining site, the pH increases and the heavy metal decreases as stream water flows toward the confluence with Aries river. The concentrations of pollutants are diminished both by the influx of unpolluted tributary stream waters and removal of metal by absorption and precipitation processes. Therefore, Rosia Poieni is an active acid rock drainage-producing site with metal source in this ore deposit. The metal release is amplified by mining activities.

ANALIZA SISTEMELOR ACVIFERE DIN ROMÂNIA. INTERFLUVIUL DUNARE-JIU

Petru ENCIU[1], Florenta BERINDEI[2]
[1]Inst. Geogr. Acad. Rom., Str. E. Racovita nr. 12, 70307 Bucuresti
[2]Geological Institute of Romania, 1 Caransebes St., 78344, Bucharest, Romania

Abordarea analizei sistemelor acvifere din interfluviul Dunare - Jiu s-a realizat integrat, urmarindu-se atât aspecte de stratigrafie genetica, cât si aspecte hidrogeologice.

Într-o prima etapa s-a urmarit întelegerea evolutiei sistemelor depozitionale virtual purtatoare de apa potabila, derulate în ambiantele litoral-lacustra si continentala, în Pliocen si în Cuaternar. Prin executarea de numeroase sectiuni nord - sud si vest - est prin forajele geologice si hidrogeologice s-au delimitat, în areal si în sectiune, formatiunile geologice.

Astfel, în suita primilor 350 - 400 m grosime din stiva sedimentara depusa în ciclul Badenian superior - Holocen în vestul Platformei Moesice s-au separat trei formatiuni:

- în baza, formatiunea nisipoasa de Berbesti, de vârsta daciana,
- în continuare, formatiunea argilo-nisipoasa cu carbuni, de Jiu - Motru, de vârsta romanian inferioara - romanian medie,
- la partea superioara, formatiunea nisipo-pietrisoasa, de Dunare, de vârsta romanian

superioara - holocena.

- Ordonarea informatiilor de la testele hidrogeologice *in situ* (debit de testare, debit specific, grosimea rocilor poros-permeabile, transmisivitate etc.) pe criteriul unitatilor litostratigrafice a facilitat caracterizarea productivitatii stratelor, membrilor si formatiunilor. În portiunile centrala si sudica ale interfluviului Dunare - Jiu, în spatiile poroase ale rocilor pliocene neconsolidate si usor cutate (prin mularea paleoreliefului mai multor depresiuni si ridicari majore) cantoneaza doua tipuri de acvifere; unul extins si cu productivitate medie în formatiunea de Berbesti, altul cu dezvoltare moderata si resurse mai limitate, în formatiunea majoritar acvitarda de Jiu - Motru. Rocile aluvionare grosiere din formatiunea de Dunare, acumulate în intervalul Romanian superior - Holocen, se prezinta sub forma unor strate orizontale foarte extinse, cu productivitate ridicata si foarte ridicata. Face exceptie acviferul din membrul inferior, lipsit de resurse semnificative datorita pozitiei structurale ridicate si erodarii partiale pe terasele cursurilor afluente Drincea, Desnatui si Jiu.
- In final, în functie de pozitia acviferelor subterane, de grosimea si de permeabilitatea zonei de aeratie, s-a raionat vulnerabilitatea la poluare a celor trei acvifere constituite în intervalul Pliocen - Cuaternar.

CERCETARI GEOFIZICE IN ZONA CU ALUNECARI DE TEREN BUSTENARI (SE CAMPINA)

Paul CRISTEA, Dan SVORONOS, Bogdan STANCHEVICI, Adrian NICOLESCU
Geological Institute of Romania, 1 Caransebes St., 78344, Bucharest, Romania

Cercetarile geofizice, efectuate într-un perimetru cu alunecari de teren situat în partea de sud a localitatii Bustenari, pe versantul drept al vaii Mislisoara, au constat în principal din investigatii seismice si geoelectrice.

Observatiile seismice, realizate cu *metoda corelarii undelor refractate*, au permis reconstituirea sectiuniii geologice, cu precizari ale grosimii acumularilor deluviale si reliefului limitei din baza acestora, nivel la care se situeaza suprafata de alunecare principala a terenului, precum si corelari intre vitezele de propagare a undelor seismice si gradul de compactitate a formatiunilor aflate la mica adancime. Complementar, pentru caracterizarea fizico-mecanica *in situ* a complexelor de roci superficiale, prin înregistrari seismice azimutale, au fost determinate valori ale principalelor constante geoelastice - coeficient Poisson si moduli dinamici de elasticitate.

Investigatile geoelectrice s-au executat pe o retea de profile de detaliu, prin *metoda potentialului electric natural (PN), în varianta sa potentiala.* Rezultatele au fost sintetizate sub forma unei harti cu distributia valorilor de câmp electric natural, ceea ce a permis evidentierea unor sectoare cu potentiale de electrofiltratie crescuta si semnalarea directiilor de curgere a apelor, pe o suprafata mai extinsa.

Rezultatele cercetarii seismometrice si geoelectrice, la care s-au asociat date ale observatiei biogeofizice de detaliu, au condus la informatii autentice asupra reliefului suprafetei de alunecare, grosimii si gradului de compactitate ale depozitele locale, ca si la precizarea principalelor cai de circulatie a apelor de mica adâncime, evaluându-se astfel rolul factorului geologic în producerea fenomenelor de instabilitate a versantului din perimetrul investigat.

CONTINENTAL TECTONICS AND CRUSTAL STRUCTURE AS INFERRED FROM GRAVITY AND GEOIDAL ANOMALIES

Dumitru IOANE
Geological Institute of Romania, 1 Caransebes St., 78344, Bucharest, Romania

New gravity and gravimetric geoid maps of Europe have been lately produced as main results of major European projects, such as WEEGP (West-East Europe Gravity Project) and EGP (European Geoid Project). Such geophysical and geodetic products are based on homogeneous observation data sets of the gravity field and have been generated using actual theoretical developments and processing techniques. Regional-scale gravity maps or gravimetric geoid solutions, results of either compilation procedures or computations using denser gravity grids, have been lately published or released.

This valuable gravity information, presently available to geoscientists, may be used for investigating large scale mass distributions associated with continental tectonics and crustal significant features. The analysis and interpretation of the Bouguer & Free-Air gravity anomalies, as well as of the geoidal undulations contoured over large continental areas, provide information on deep geological structures and regional tectonics, due to deep or shallower distributions of density inhomogeneities.

Long wavelength information on the gravity field which was derived from satellite observations have been included in global geopotential models, such as OSU91A and EGM96, or in EGG97, the latest European gravimetric geoid.

The relief of the geoid, an equipotential surface of the Earth's gravity field, usually reveals deeper mass anomalies than the gravity variations, the detrending procedure showing effects of major density contrasts located at different depths.

Processing techniques, which are usually applied in gravity data analysis (filtering, total horizontal gradient), have been employed to better exploit the geophysical significance of the EGG97 European gravimetric geoid. The newly derived maps display residual lows which generally correlate with important sedimentary basins (Lublin Trough, North German Basin, Danish Basin, North Sea Basin, Paris Basin) or elongated horizontal gradient anomalies, associated with both regional tectonic lineaments (TTZ, S-TZ, EFZ) and arcuate boundaries (RHZ).

The integrated study of gravity and geoidal anomalies over Europe offers new insights on the tectonics and crustal structure of this large area, based on significant vertical and lateral density discontinuities.

PARALELA INTRE ACTIVITATEA SOLARA, FLUCTUATIILE CAMPULUI MAGNETIC TERESTRU DIN ROMANIA SI ACTIVITATEA SEISMICA VRANCEANA

Dan GRIGORE[1], Mihai DIACONESCU[3], Mihaela POPA[3]
[1]Geological Institute of Romania, 1 Caransebes St., 78344, Bucharest, Romania
[2] University of Bucharest
[3] National Institute of Earth Physics

In lucrare sunt prezentate grafic, in paralel, evolutia activitatii solare in ultimii 250 de ani,

evolutia campului magnetic terestru inregistrate la noi in tara (din ultimii 60 de ani) si activitatea seismica din Vrancea din ultimii 300 de ani. Graficele cuprind (defalcat) variatiile mai multor parametri din activitatea solara, seismica si ai campului magnetic. Sunt prezentate si cateva detalii pentru ultima perioada de 60 de ani. Sunt discutate unele posibile corelatii intre activitatea solara si cea seismica vranceana.

STUDIU PRIVIND FENOMENUL SEISMIC, FACTORII DECLANSATORI DETERMINANTI SI EVOLUTIA FENOMENELOR NATURALE DINTR-O REGIUNE SEISMICA. STUDIU DE CAZ: SEISMELE DIN VRANCEA SI O POSIBILA METODA DE CALCUL A MOMENTELOR CRITICE.

Dan GRIGORE
Geological Institute of Romania, 1 Caransebes St., 78344, Bucharest, Romania

Este discutat din punct de vedere fizic fenomenul seismic, avand la baza o serie de grafice paralele ale evolutiei mai multor fenomene si parametrii fizici naturali cunoscuti ai Sistemului Solar. Sunt detaliate secvente de fenomene naturale si parametri fizici (la interfata sol atmosfera sau din magnetosfera) masurati, pre si post seismice. Sunt prezentate si discutate cateva modele pentru fenomenul seismic. Este prezentata migratia focarelor seismice pe glob din cateva perioade ce cuprind macroseisme din regiunea Vrancea (cu unele detalii pentru perioada recenta) si sunt discutate unele implicatii asupra structurii tectonice profunde din regiunea est-europeeana. Este analizata o posibila metoda de calcul a momentelor socurilor principale din regiunea Vrancea. In final sunt analizate posibilitatile de prognoza la aceasta data asupra fenomenului seismic si a altor fenomene naturale terestre si se fac unele recomandari pentru studiul in domeniul prognozelor.

SISTEMUL GEOTERMAL DIN PARTEA CENTRALA A PLATFORMEI MOESICE. ELEMENTE DE BAZA PENTRU UN MODEL CONCEPTUAL

Petre CRACIUN, Florenta BERINDEI
Geological Institute of Romania, 1 Caransebes St., 78344, Bucharest, Romania

In partea centrala a Platformei Moesice s-a evidentiat prin foraje prezenta apelor termale în cadrul formatiunii carbonatice de vârsta Malm - Neocomian (J3-K1).

In scopul elaborarii unui model conceptual al acestui acvifer geotermal au fost analizate structura colectorului geotermal, fluidele geotermale, regimul termic al zonei si conditiile hidrodinamice regionale.

In ansamblu, structura formatiunii carbonatice J3-K1, ca si a ciclului neogen suprapus, este cea a unui monoclin faliat, înclinat usor catre nord, în general cu câteva grade exceptând zona situata la nord de Bucuresti unde înclinarea este mai accentuata.

Informatii asupra porozitatii si permeabilitatii faciesului carbonatic au fost obtinute prin prelucrarea diagrafiilor geofizice înregistrate în sondele pentru hidrocarburi si prin analiza informatiilor oferite de sondele hidrogeologice. Datele studiate contureaza ipoteza unui acvifer neomogen din punctul de vedere al porozitatii efective.

Caracteristicile chimice ale acviferului geotermal J3-K1 variaza pe directiile est-vest si

nord-sud. Se observa o crestere a mineralizatiei catre vest si catre nord, adica spre aria de afundare a Platformei.

Regimul termic al zonei prezinta câteva arii cu anomalii de maxim ale temperaturilor si ale gradientilor geotermici medii, ceea ce ar indica prezenta unor temperaturi crescute la nivelul formatiunilor adânci. Se remarca astfel trei zone principale în cuprinsul carora valorile de gradienti medii depasesc 3.5 °C/100m: prima este situata pe marginea nordica a Platformei; a doua în partea mediana, între v. Teleorman si v. Vedea, iar ultima între v. Arges si v. Teleorman.

Caracteristicile regionale ale dinamicii acviferului geotermal J3-K1 au fost stabilite prin folosirea notiunii de sarcina hidrodinamica echivalenta, tinând cont de regimul termic, densitate, presiune si mineralizatie. Prin aplicarea conceptului de sarcina hidrodinamica echivalenta se poate construi harta potentiometrica a acviferului care indica o dinamica regionala cu drenaj de la sud catre nord.

Desi se constata o variabilitate a proprietatilor fizice si chimice ale facisului carbonatic Malm – Neocomian, se poate considera ca acviferul geotermal generat în respectiva formatiune carbonatica reprezinta o entitate hidrodinamica regionala.

STUDIUL GEOLOGIC INGINERESC SI GEOELECTRIC AL ALUNECARII DE TEREN DIN PERIMETRUL LOCALITATII BREAZA, JUDETUL PRAHOVA

Raluca-Mihaela MAFTEI[1], Mihai COMAN[2], Emil RUSU[1], Emilian ENIU[1], Ovidiu AVRAM[1]
[1]Geological Institute of Romania, 1 Caransebes St., 78344, Bucharest, Romania
[2]S.C. - ISPIF SA., Bucharest, Romania

Alunecarile de teren reprezinta unul din cele mai raspândite si mai active fenomene geologice de eroziune, denudatie si modelare a reliefului. Termenul generic de alunecari de teren defineste diferite tipuri de procese de deplasare gravitationala a unor mase de roci în panta si formatiunile rezultate (C. Marunteanu, 1994). Abordarea problemei alunecarilor de teren se face din doua puncte de vedere:

-evidentierea si conturarea zonelor deja afectate si determinarea caracteristicilor acestora, în scopul estimarii evolutiei fenomenului în timp si spatiu, pentru stoparea lui sau pentru diminuarea consecintelor;

-identificarea zonelor în care exista posibilitatea producerii fenomenului respectiv si stabilirea riscului real de declansare si a posibilelor efecte.

Trebuie subliniat faptul ca, datorita desfasurarii în timp a fenomenelor de instabilitate a versantilor, cercetarea *in situ* a acestora implica, de asemenea, factorul timp. La modul general, se poate realiza o prospectare a fenomenelor înainte sau imediat dupa producerea lor, dar si o supraveghere de lunga durata dupa stabilizarea zonei. Din punct de vedere geologic, zona localitatii Breaza se caracterizeaza prin depozite ce au o dispunere pe directia SV-NE si înclinare spre SE, spre valea Prahovei. Vârsta formatiunilor ce constituie roca de baza este miocen inferioara, acestea fiind caracterizate prin prezenta gresiilor în bancuri, putin consistente, uneori aproape nisipuri, cenusii-roscate, în alternanta cu argile marnoase si nisipoase, cu intercalatii de tufuri, gipsuri si sisturi carbonate. Depozitele acoperitoare sunt reprezentate prin depozite cuaternare (Pleistocen inferior) alcatuite din aluviunile terasei superioare ale Prahovei (pietrisuri si nisipuri).

Alunecarea ce a afectat str. Miron Caproiu s-a produs pe linia pantei versantului, pe o directie SV-NE, având o forma relativ trapezoidala; se poate observa existenta a doua ramuri de

alunecare unite la baza si separate la partea superioara printr-un pinten de stabilitate.

Cercetarile geoelectrice s-au executat pe aria de extindere a zonei afectate de alunecarea de teren descrisa mai sus, reactivata partial si în ultima perioada, si au fost materializate prin 11 sondaje electrice verticale de rezistivitate dispuse pe un profil rectiliniu, longitudinal în raport cu directia de deplasare a terenului, profil care strabate portiunea superioara a ramurii nordice a alunecarii. În acest moment terenul este relativ stabilizat, prezentând pe alocuri zone de reactivare, dar nu excludem posibilitatea unei reactivari la scara mare, ca urmare a unor precipitatii abundente.

STUDIUL CRUSTEI SI MANTALEI SUPERIOARE IN SECTORUL SUDIC AL DEPRESIUNII TRANSILVANIEI PRIN METODA MAGNETOTELURICA

Laurentiu ASIMOPOLOS, Dumitru STANICA, Maria STANICA, Ana IVANOV, Horia NISTOR
Geological Institute of Romania, 1 Caransebes St., 78344, Bucharest, Romania

Scopul investigatiilor magnetotelurice efectuate de-a lungul profilului Presaca Ampoiului - Hoghiz l-a constituit, în principal, determinarea cantitativa a extinderii pe orizontala si în adâncime a principalelor unitati tectonice, precum si stabilirea raporturilor structurale dintre acestea. Principalele unitati geologice traversate de profil sunt Dacidele interne, Transilvanidele, Dacidele mediane si Dacidele externe.

Metoda magnetotelurica utilizeaza variatiile în timp ale câmpului electromagnetic natural care se propaga în interiorul Pamântului si induce un câmp electromagnetic secundar, masurat la suprafata cu echipamente speciale, în vederea investigarii structurii conductivitatii electrice a Pamântului. Ipoteza fundamentala, pe care se bazeaza atât masuratorile cât si prelucrarea ulterioara a datelor magnetotelurice, este cea conform careia perturbatiile câmpului electromagnetic natural se propaga sub forma de unde plane armonice.

Procesarea datelor magnetotelurice se desfasoara în mai multe etape, folosind programe specializate, prin care se realizeaza descompunerea spectrala a înregistrarilor prin aplicarea transformatei Fourier rapide, determinarea tensorului impedanta atât într-un sistem de coordonate nerotit, cât si într-unul rotit dupa directia principala a structurii, determinarea rezistivitatilor (r_{xy}, r_{yx}, r_{max}, r_{min}) si defazajelor dintre componentele electrice si magnetice corespunzatoare (valorile de faza - j_{xy}, j_{yx}, j_{max}, j_{min}) si construirea curbelor de variatie a acestora.

Interpretarea datelor magnetotelurice a constat în aplicarea a trei metode de inversie 1D - inversia Marquardt, inversia Niblett - Bostick si inversia Weidelt - si a unui program de modelare 2D bazat pe algoritmul elementului finit. Aceste prelucrari au avut ca scop obtinerea distributiei în termeni de adâncime a rezistivitatii electrice a zonei investigate.

Aplicarea modelarii bidimensionale necesita studiul dimensionalitatii structurii regionale si alegerea unei directii preferentiale pentru care sa fie efectuata modelarea 2D, scop în care a fost efectuata decompozitia tensorului impedanta.

Pentru obtinerea modelului bidimensional, structura adânca a fost parametrizata cu ajutorul unei grile de celule rectangulare, fiecare celula având o conductivitate uniforma. Pentru a mentine acuratetea datelor, spatiul dintre noduri a fost de o treime din adâncimea de patrundere. Odata fixate caracteristicile geometrice, a fos aplicat un program bazat pe metoda elementului finit.

Corelarea informatiilor furnizate de pseudosectiunile de rezistivitate si de faza, de inversiile 1D cu cele obtinute în urma modelarii 2D, conduce la validarea modelului geoelectric, iar principalele lui elemente sunt prezentate în continuare:

Spre est fata de cel mai important element tectonic - situat la meridianul localitatii Alba Iulia - evidentiat clar printr-un cordon de gradient puternic de catre toti parametrii electromagnetici si interpretat ca ar putea reprezenta sutura majora tethysiana, sondajele magnetotelurice au permis identificarea pe verticala a mai multor orizonturi cu proprietati electrice diferite.

Primul orizont, mai conductor, caracterizat prin valori de rezistivitate oscilând între 6-14 Wm, si grosimi care variaza între 1000 si 3800 m este interpretat ca ar reprezenta cuvertura sedimentara, preponderent paleogen-neogena, post-tectogenetica, a Bazinului Transilvaniei. Desi în cuprinsul sau este cunoscuta prezenta unor formatiuni având rezistivitati ridicate (gips, sare si tufuri-badeniene), grosimea lor nesemnificativa a facut ca acestea sa nu se regaseasca sub forma de limite clare de contrast rezistivimetric în inversia 1D a datelor magnetotelurice; efectul lor se manifesta doar în cresterea relativa a valorilor de rezistivitate.

Alt orizont este reprezentat de pânzele transilvane - formatiuni ofiolitice si sedimentare - cu rezistivitati care nu depasesc 1000 Wm si cu grosimi variabile. În delimitarea extinderii spre est a acestei unitati, s-au utilizat, pe lânga informatiile magnetotelurice, si date aeromagnetice.

Sub acest orizont, fara o delimitare neta, sunt situate Dacidele Mediane reprezentate, cel mai probabil, prin pânzele bucovinice si, eventual, segmentul vestic al pânzelor subbucovinice. Valorile de rezistivitate scazuta de la baza acestora pot fi explicate de aparitia peliculelor de grafit. În ceea ce priveste Dacidele Mediane acestea nu au putut fi clar separate de pânzele transilvane prin contraste de rezistivitate.

Sondajele magnetotelurice au evidentiat o limita de tranzitie situata la 23 km (MTS 14, 21, 22) si 27 km (MTS 8), atribuita zonei de trecere de la crusta casanta la crusta ductila.

La vest de sutura majora tethysiana se evidentiaza un orizont conductor caracterizat prin rezistivitati de 4-9 Wm si grosimi de 600 (MTS 1) si 1000 m (MTS 3), considerat ca poate fi cuvertura sedimentara barremian-aptiana (pânza de Cabesti) a pânzelor Metaliferilor simici. Sub aceasta se dezvolta complexul ofiolitic si sistemul pânzelor de Biharia si Arieseni, însumând o grosime de 6000 m (MTS 1).

Pseudosectiunile de faza evidentiaza foarte clar faptul ca unitatea de Bihor se prelungeste spre est, pâna în apropiere de Alba Iulia, sub sistemul pânzelor Biharia si Arieseni.

Sondajele magnetotelurice au evidentiat, de asemenea, zona de tranzitie de la crusta la manta, printr-un orizont de rezistivitate scazuta (1-15Wm), situata la o adâncime de 23-26 km.

SEVERAL CONSIDERATIONS ON THE PECENEAGA-CAMENA FAULT

Lucian BESUTIU
Geological Institute of Romania, Geophysics of Lithosphere Dept.
78344 Bucuresti 32, sector 1, 1 Caransebes St., Romania
e-mail: besutiu@igr.ro

The Peceneaga-Camena fault is one of the most important tectonic discordance on the Romanian territory. It separates two major geotectonic units: the epipaleozoic Moesian Platform, represented by Central Dobrogea, and the North Dobrogea alpine folded zone. Despite many years of research there are still several open questions on it: the extension in the areas covered by waters or younger deposits, its nature, age, dipping etc. The paper is mainly aimed to review main concepts related to it. Besides, based on the previously gathered geophysical information and new computer techniques, an attempt was made to reveal the track of the fault westward the Danube River,

beneath the sedimentary cover of the Carpathians foreland. Within the frame of the new suggested model Peceneaga-Camena fault exhibits strong strike-slip features and seems to play an active role in the Vrancea earthquakes mechanism, acting as a plate boundary.

INTEGRATION OF THE ROMANIAN GRAVITY STANDARD INTO THE GRAVITY SYSTEM OF CENTRAL EUROPE

Lucian BESUTIU, Adrian NICOLESCU, Vlad ROSCA
Geological Institute of Romania, 1 Caransebes St., 78344, Bucharest, Romania

The research project "Integration of the Romanian gravity reference networks into the gravity system of Central Europe" has been initialised by the Geological Institute of Romania to allow the participation of our country to the EU project UNIGRACE. The project was started in 1998 under the umbrella of Central European Initiative. UNIGRACE was aimed to integrate the gravity standards of the Central and Eastern Europe former socialist countries into the EC gravity system. Managed by the Bundesamt für Kartographie and Geodäsie-Frankfurt am Main, the project has been developed by several organizations from Central Europe states: Germany, Austria, Poland, Finland, Czech Republic, Slovakia, Hungary, Slovenia, Romania and Bulgaria. Two absolute gravity sites were designed for the Romania territory and first absolute measurements were done by a German team. Preliminary results have been presented last year (Besutiu et al., 1999). During 2000, a second absolute gravity campaign was conducted by a Finish-Romanian team. Research made within the frame of the project no. A9/2000 goes on the investigations started two years ago. Gravity vertical gradient determinations and gravity ties between the absolute gravity UNIGRACE stations and stations belonging to the national reference networks of Romania have been performed and processed. A brief analysis of the both **datum** and **calibrating scale** of the Romanian national gravity reference networks generally showed a good agreement with the European Community standard.

RECONSTRUCTION FROM BOREHOLE TEMPERATURE DATA OF CLIMATIC CHANGES FOR THE LAST MILLENNIUM IN THE SOUTH-EASTERN EUROPE

Serban VELICIU
Geological Institute of Romania, 1 Caransebes St., 78344 Bucharest, Romania
e-mail: sveliciu@igr.ro

Temperature-depth data from a suite of boreholes in the South-Eastern Europe (Romania's and Ukraine's territories) are used to infer ground surface temperature (GST) history. Temperature observations in boreholes are combined with meteorological data at 19 nearby weather stations to test that temperature in the earth's subsurface contain a record of recent climate change. The change in mean air temperature over the last 150 years successfully predicts detailed subsurface temperature profiles. The GST histories that can be extracted by inversion of perturbed temperature data from boreholes ranging in depth between 150 and 500 m cover the past 500 years. Five contour maps of GST currently and previously were constructed using the results from inversion of the temperature-depth logs. The maps show that the region outside the Carpathians Mts. and the

southern margin of the East European Platform (south of 48 N parallel, especially around the Western Black Sea region), with the GST in the vicinity of 10-12^{0}C during the 16-th century, was replaced by GST in the 9-11°C range for the 1700-1900 time interval, and followed by recent warming to 11-13°C since the turn of the 20-th century. Maps indicate a similar trend for the region at east of 24 E meridian but for an area comprised between 24 E and 26 E they show onset of anomalous cooling after 1900. This area roughly corresponds to the inner and outer depressions of the Carpathians Mts. chain. The trends in the reconstructed GST history are similar for all investigated sites situated east of 26 E, even though the amplitude variations differ upon location. This indicates a general cooling which may be tentatively interpreted as the effect of the "Little Ice Age" known in the Western and Central Europe but probably affecting the south-eastern Europe with a delay of approximately 100 years. So, the GST histories for this part of Europe are slightly different from those obtained in the Western and Central Europe respectively. These differences are consistent with the spatial variability of climatic trends.

INDEX DE AUTORI