

IGCP Project 469: Variscan Terrestrial Biotas and Palaeoenvironments

NEWSLETTER NO. 5



We have just received from IUGS their 2005 annual assessment of our project. The report was extremely encouraging and praised us for the progress that has been made. They commented that much of the activity is tending to be by individuals or by national teams working within their own country, but my feeling is that things are now changing. As will be seen by the reports on the Bucharest and Kraków meetings, international collaboration is increasing as contact between specialists in different countries improves. Two aspects of the project were particularly noted. One was our 'matrix' of specialists and national groups, which allows us to see where the appropriate skills lie and where gaps in skills need to be filled. This was praised as being a model that should be followed by other IGCP projects. The current status of the matrix is summarised at the end of this newsletter.

Interestingly, IUGS also commented specifically on the European Coalfield Geopark Network that was mooted at the Bucharest meeting. Although IGCP projects are heavily biased towards research activity, they are also encouraged to introduce a social or educational dimension. Usually, this is through workshops where project members can provide instruction to local students in their particular field of expertise. This was successfully done during the Bucharest meeting (see below), but in most other cases it was unnecessary; our meetings tend to be held in locations that are already 'centres of excellence' in Late Palaeozoic terrestrial studies – there are already specialists available there. IGCP 469 has instead explored geoconservation as a means of providing this social or educational dimension. A Geopark aims to combine conservation of geological sites with sustainable development, for instance through geotourism, and educational activities. Most of the areas being studied in IGCP 469 are coalfields which have suffered significant economic problems due to mine closures, which are exactly the type of area where geoparks could play some role in economic regeneration. More of this later.

The favourable review by IUGS means that the project can continue to flourish. We have again been awarded a small grant by UNESCO to help support attendance at the meetings by delegates from eastern and central Europe, especially Poland, Romania and Bulgaria. Delegates from western countries are still expected to obtain financial help from their national IGCP committees. Certainly in the UK, the Geological Society of London, who acts as our national committee, has been very supportive. I understand that other countries have not been so forthcoming – a point which I have made to IUGS and about which they have expressed some concern. If any of you have had any negative experience with your national IGCP committee, please let me know and I will see if anything can be done.

Bucharest Meeting, October 2005



As with nearly everyone else at the meeting, this was my first visit to this beautiful country. Sadly, we had relatively little chance to savour the delights of Bucharest, as for most of our time there we were 'hidden away' in the University lecture theatre. However, the subsequent excursion did allow us to see the wonderful landscape of the southern Carpathians and the Danube valley, and the efforts being made to conserve both the geology and wildlife there.

Fourteen IGCP 469 members attended the meeting, including two new faces: Jason Hilton and Marius Paszkowski. The formal sessions as usual concentrated on reports of

activity from across the study area, and highlighted the continued strength of activity in central and eastern Europe, especially the Czech Republic. A range of papers were presented reporting revised taxonomic inventories, and attempts to integrate biostratigraphical and sedimentological evidence.

- C. J. Cleal**, 'Late Westphalian changes in palaeogeography in the Central Pennines Basin, UK'
J. Hilton & C. J. Cleal, 'Fossil floras of the Late Carboniferous and Early Permian of North China: implications on extinction patterns and phytogeographic realms'
S. Opluštil, 'The Upper Westphalian and lower Stephanian strata and their fossil record in the Late Palaeozoic basins of the Czech Republic'
B. A. Thomas, 'A new look at *Lepidostrobophyllum alatum* Boulter from Radstock, UK'
Y. G. Tenchov, 'The Carboniferous of Svoge Coalfield (Bulgaria)'
Abbink, O., Rijdsdijk, K. & van Waveren, I., 'Preliminary palynostratigraphic results of the re-investigation of the De Lutte-06 well (The Netherlands)'
J. Drábková, 'Carboniferous megaspores and their hypothetical parent plants from the Nýřany Member (Westphalian D-Cantabrian) of the Plzeň Basin (Czech Republic)'
J. Pšenička, 'Ferns from the Pilsen Basin, Czech Republic (Bolsovian – Stephanian)'
Z. Šimůnek, 'The Asturian-Cantabrian floral assemblages with *Cordaites* from the Plzeň Basin (Czech Republic)'
E. Jarzembowski, 'The earliest insect from Romania'
M. Popa, 'The Late Carboniferous of Greenland'
B. G. Evans, 'South Wales Coalfield Geopark; scheme summary, progress report and proposal to establish a European Coalfield Geopark Network'

Student workshops had been offered at previous IGCP 469 meetings but this was the first time that one had actually taken place. It proved highly successful, with some 40 students from the University attending the three sessions (Coal Forest palaeoecology by me, plant fossil preservation by Barry Thomas, and palaeoentomology by Ed Jarzembowski).



The post-meeting excursion proved particularly valuable, as it allowed us to see the problems that are encountered when trying to study the Late Carboniferous in this area. They represent small intramontane basins that suffer from a combination of tectonic disruption, poor exposure, and almost non-existent historical mining records.

Nevertheless, the Romanian geologists, principally Mihai Popa of Bucharest, are doing their best to maximise the data that we will have available from this area, which is potentially critical for unravelling the story of Late Variscan changes in terrestrial environments in eastern Europe.

The first day of excursion centred on a visit to the tip of the coal mine at Secu in the Reșița Basin. The

mine itself has been closed for some time, but the tip still yields extremely well-preserved plant macrofossils, for which it has been proposed as a protected site. It is thought that the mine worked two separate coals, but the lack of historical mining records makes it impossible to be sure if the two seams were stratigraphically close, or are of markedly different age. If the coals are of similar age, and the assemblage can be interpreted together, an early Stephanian age is indicated.

In addition to the Secu tip, we also visited on the first day a number of late Pennsylvanian or Early Permian sites that demonstrated the later phases of Variscan deformation in the area. We also visited the Jurassic coal mine at Anina, another proposed protected site for its plants fossils, which presented geoconservation issues similar to those that may well be encountered in any European Coalfields Geopark Network.

The second main day of excursion centred on a visit to the Baia Noua Coal Mine in the Sirinia Basin. This



is probably the only Carboniferous deep mine still active in southeastern Europe. It was impossible to go underground here because of safety reasons, but we could access the spoil tip which yielded plant macrofossils. The macroflora is difficult to find here and the visit clearly demonstrated the difficulties of working on this material. It was also explained that severe tectonic disruption to the seam makes it all but impossible to work on the sedimentology, even if the rocks could be accessed *in situ* underground.

During the second day, we also visited a number of sites demonstrating the late Variscan evolution of this part of the Carpathians, and culminated with a spectacular view across the ‘Great Cauldrons’ of the Danube Valley at Dubova.

We were all extremely grateful to Mihai for organising this wonderful meeting, and giving us the opportunity to visit Romania.

Kraków Meeting, May 2006



We are just over half-way through IGCP 469 and are in many ways at the cusp of the project’s development. Until now we have been experimenting with different types of data to determine which provide the best proxies of environmental changes in the Variscan belt. The Kraków Meeting of the project saw a change in emphasis – thinking more about the final report, and about the best means of data collation and analysis. During the meeting, it was agreed that data-collation for the main subject-areas should be specialist coordinators, who will bring the data together from the different study-areas (for details, see later in this Newsletter).

The formal part of the meeting included the usual eclectic mix of presentations covering palaeobotany, palynology, palaeozoology, sedimentology and coal-petrography. Eleven oral presentations were given.

- J. Bek**, ‘Palynology of the Pilsen Basin, Pennsylvanian (Bolsovian – Stephanian B) of the Czech Republic’
- J. Pšenička**, ‘Proposed new classification of pectopterids – preliminary report’
- Y. G. Tenchov & T.Kh. Dimitrova**, ‘A disappearing of zygopterid fern *Corynepteris* in upper Westphalian sediments in the Dobrudzha Basin, Bulgaria’
- Z. Šimůnek & Y. G. Tenchov**, ‘Cuticular analysis of *Cordaites* Unger from the Westphalian of the Dobrudzha Basin (Bulgaria)’

- C. J. Cleal**, 'Plant biostratigraphy and biodiversity changes in the Westphalian – Stephanian of the southern Pennines Basin, UK'
- E. Jarzembowski**, 'Carboniferous insects of the Pennines Basin'
- M. I. Waksmundska & B. Ptak**, 'Depositional environments and petrological characteristics of the Namurian and Westphalian coals in the Lublin Basin, SE Poland'
- T. Kh Dimitrova & C. J. Cleal**, 'Palynological evidence for late Westphalian – early Stephanian vegetation change in the Dobrudzha Coalfield, NE Bulgaria'
- D. Gmur, M. Oliwkiewicz-Mikłasińska, M. Doktor & A. Kędzior**, 'Record of the boundary of Łaziska and Libiąż Beds in profile of Cracow Sandstone Series, Upper Carboniferous, Upper Silesia Coal Basin (USCB), Poland'
- J. M. Hilton & C. J. Cleal**, 'Biogeography of coal swamp plant communities in Europe, North America, and China: implications on the range of biotic realms and provincial boundaries'
- M. Paszkowski**, 'Geotectonic position and connectivity of the Eurasian coal-bearing Carboniferous basin network in the light of provenance studies'

In addition, three posters were displayed and given oral summaries during the Poster Session.

- K. Jasper, G. Flajs, C. Hartkopf-Fröder & R. Littke**, 'Comparison of organic petrographic and organic geochemical characteristics of upper Duckmantian coal seams in the Ruhr Basin (Germany): preliminary results'
- J. Prokop & A. Nel**, 'New Carboniferous insects from the limnic and paralic basins in the Czech Republic (Insecta: Paoliida, Palaeodictyoptera, Archaeorthoptera)'
- T. Kh. Dimitrova**, 'New palynological data from the upper Westphalian – early Stephanian of the Sydney Coalfield, Cape Breton, Canada'

The text of some of these papers will be given in a special volume to be published in Poland.



The excursion on the last day of the meeting, led by Mariusz Paszkowski and Artur Kędzior, provided some interesting insights into the geology of the Upper Silesia Coal Basin. There are major geoconservation problems in this area – exposures are few and constantly under threat especially from landfill, and formal legal provisions for site conservation seem to be limited in Poland. It seemed as though many of the sites that we visited probably will no longer be there in a couple of years. I found the sites exposing the upper parts of the succession were of particular interest, as they provided interesting comparisons with the contemporaneous successions in Britain – both areas see in middle Bolsovian times an influx of coarse terrigenous deposits, followed probably in late Asturian or early Cantabrian times a change to red-bed deposition.

More Photos From Krakow



IGCP 469 Krakow



Chronostratigraphical nomenclature

Period	Sub-Period	Regional Sub-Period	Global Stage	Regional substages		Flora				
				Western Europe	North America	Macro	Micro			
Permian			Asselian	Lebach			DS			
Carboniferous	Pennsylvanian	Silesian	Gzhelian	Stephanian	Kuzel	Bursumian	C - Pp1	VC	300	
			Kasimovian		Stephanian	Virgillian	Pp 10	NBM		
					Stephanian	Missourian	Pp 9	ST		
					Barruelian		Pp 8			
			Moscovian	Westphalian	Cantabrian	Asturian	Desmoinesian	Pp 7	OT	
					D			Pp 6		
				Bashkirian	Namurian	C	Bolsovian	Atokan	Pp 4	SL
									B	Duckmantian
						A	Langsettian		Pp 2	RASS
							Yeodonian			FR
	Serpukhovian	Namurian	Marsdenian	Arnsbergian	Morrowan	Pp 1	KV			
			Kinderscoutian			Chesterian	Mp 5	SO		
			Alportian					Mp 4	TK	
			Chokierian			Pendleian	Mp 3		NC	
			Brigantian					Chesterian	VF	
									Asabian	NM
			Visean			Dinantian	Holkerian	Meramecian	Osagean	Mp 2
	Arundian	TS								
		Chadian		PU						
	Tournaisian	Courceyan	Ivorian	Kinderhookian	Mp 1		?			
			Hastarian			PC				
						BP				
						HD				
						VI				
Devonian				Famennian	Chatauquan			360		

Those of you who are involved with the IUGS Subcommittee on Carboniferous Stratigraphy (SCCS) will be aware that yet more changes to the chronostratigraphy have been made in recent years. Since this has a direct bearing on our project, following discussions at both the Bucharest and Kraków meetings it was agreed that we should come to an agreement as to exactly what nomenclature we should be using.

Since IGCP 469 is focused on Europe and the Canadian Maritimes, it seems sensible that we use the European regional scheme (often referred to as the 'Heerlen Scheme'), as the stage boundaries are defined here and there are therefore relatively few problems of correlation. This should be in the most recently-modified form, in which Westphalian and Stephanian are now stages, and Duckmantian, Bolsovian and Cantabrian are substages. There is a difficulty with the nomenclature of the 'old' Westphalian D Substage. Bob Wagner has proposed that this should be formally renamed the Asturian Substage, but unfortunately no formal vote was taken on this at the last (Utrecht) Carboniferous Congress. Nevertheless, in a subsequent issue of the *Newsletter on Carboniferous Stratigraphy*, a chart was given with the 'recommended' nomenclature and the stratigraphically highest substage of the Westphalian Stage is called 'Asturian'. If for no other reason that it involves fewer letters than 'Westphalian D', I suggest we accept this recommendation to use the term 'Asturian Substage'.

Leyla Seyfullah, a student of Jason Hilton at Birmingham, has prepared a chart showing the relationship between the currently used regional chronostratigraphies (including the 'Heerlen Scheme') and the SCCS global chronostratigraphy, as well floral biozones and chronology in the 'Gradstein' scheme. Leyla and Jason have kindly permitted us to reproduce this chart in this newsletter.

'*Eusphenopteris*' nomenclature

It has been recognised for many years that the widely-used plant morphogenus *Eusphenopteris* Simson-Scharold is illegitimate, being a later homonym of another genus erected many years earlier by R. Kidston. In 1983, Miente Boersma and Bob Gastaldo proposed that Simson-Scharold's use of the name should be formally conserved but, for reasons that were not clearly stated, the proposal was rejected by the Nomenclatural Committee. A further complication was that van Amerom, in his definitive monograph on these plants, showed that two distinct types of leaves could be included within the traditional concept of *Eusphenopteris*, most readily distinguished by the presence or absence of transverse striae across the rachises.

Recently, Alexander Doweld (2003, *Bot. Zhurn.* **88**, 102-107) has attempted to sort-out this mess by proposing new generic names for these two groups of species formerly assigned to *Eusphenopteris*. Whilst some specialists might balk at yet another nomenclatural change, Doweld's proposals are valid and difficult to dismiss if the regulations in the ICBN are to be strictly followed. Even if the proposal to subdivide '*Eusphenopteris*' was to be rejected, it is most unlikely that *Eusphenopteris* would be conserved and so at least one new name would be needed.

Since Doweld's paper appears to be not widely known, I thought that it would be worthwhile to record here the current correct nomenclature for the species that we are likely to need to deal with in IGCP 469.

<i>Lagenospermopteris</i> Doweld, 2003 (i.e. species with transverse markings on rachis)	<i>Nudospermopteris</i> Doweld, 2003 (i.e. species without transverse markings on rachis)
<i>L. obtusiloba</i> (Brgt) Doweld	<i>N. foliolata</i> (Stur) Doweld
<i>L. trifoliolata</i> (Artis) Doweld	<i>N. sauveurii</i> (Crépin) Doweld
<i>L. trigonophylla</i> (Behrend) Doweld	<i>N. grandis</i> (G. Keller) Doweld
<i>L. neuropteroides</i> (Boulay) Doweld	<i>N. scribanii</i> (van Amerom) Doweld
<i>L. schumannii</i> (Stur) Doweld	<i>N. striata</i> (Gothan) Doweld
<i>L. leonardii</i> (P. Corsin) Doweld	<i>N. nummularia</i> (Gutbier) Doweld

It should be emphasised that both names are validly published with full diagnoses and anyone wishing to go into this in any more detail is recommended to consult Doweld's paper.

Prague Meeting, September 2006

Plans are now well advanced for holding an IGCP 469 session during the European Conference on Palaeobotany and Palynology in Prague later this year. Further details can be found on the web (<http://www.conference.cz/eppc2006/>).

Birmingham Meeting, spring 2007

Jason Hilton has kindly volunteered to organise the first meeting for next year at the University of Birmingham. Exact dates have still to be arranged but is likely to be very late April or early May, so as to fit in with the University terms and thus the availability of facilities there. As soon as further details are available, we will circulate them around the group.

IGCP 469 Final Report

During the Kraków meeting, we started to consider the preparation of the Final Report of the project. There are nearly two years before the project comes to an end, but if we plan for the report now, we are more likely to achieve good results. The first key issue is the collation of the data and, after some discussion, it was agreed that this was best achieved by subject, rather than by geographical area. As a consequence, a number of people have volunteered to act as subject-coordinators.

Macrofloras (pteridosperms) – C. J. Cleal

Insects – E. Jarzembowski

Macrofloras (cordaites) – Z. Šimůnek

Arachnoids – P. Selden

Macrofloras (ferns) – J. Pšenička

Sedimentology – A. Kędzior & S. Opluštil

Macrofloras (lycophytes/sphenophytes) – B. A. Thomas

Palaeogeography – M. Paszkowski & S. Opluštil

Palynology – D. McLean

Between now and the Prague meeting, these coordinators have been asked to consider exactly how the data for their respective group/subject is best presented for the purposes of the project. We will then be in a position to ask the national working groups to prepare their data and to submit them to the coordinators.



