

# Jeoloji Panorama

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"Jeoloji Panorama"da dünya jeoloji periyodiklerinden özellikle ülkemizin jeolojisini ilgilendiren yada ilginç olabilecek, seçilmiş makalelerin bibliyografyası "Dünya Periyodiklerinden Makaleler" başlığı altında "Jeoloji Mühendisliği" okurlarına sunulacaktır.

Türkiye jeolojisi üzerine yazılmış seçilmiş makalelere ait "Özler / Abstracts" bölümü özgün şekilleri de kapsar biçimde "Jeoloji Panorama" da yer alacaktır.

Yapılacak yada yapılmış olan sempozyum, seminer, konferans vb. ye ait duyuru ve haberler de "Sempozyum, Seminer, Konferans" başlığı altında okurlara sunulacaktır.

Diğer yandan jeoloji mühendislerinin mesleki gelişimlerine katkı sağlayacağı düşüncesiyle güncelliğini de ön planda tutarak "Yeni Yayınlar" ın tanıtımına da "Jeoloji Panorama" da yer verilecektir.

Her zaman olduğu gibi "Jeoloji Takvimi", çeşitli dünya ülkelerinde yapılacak olan jeoloji etkinliklerinin bir ay-nası olarak okurlara yansıtılacaktır.

Çizilen çerçeve içinde "Jeoloji Panorama" yerbilimcilerin çeşitli jeoloji disiplinlerine ait üretimlerinin sergilendiği bir platform olarak nitelendirilebilir.

"Jeoloji Mühendisliği" okurları da, "Jeoloji Panorama"ya yukarıdaki konulara ilişkin hazırlayacakları haber ve tanıtım yazıları ile katkı da bulunabilirler.

## Dünya Periyodiklerinden Makaleler

"Geological Magazine" 1995, cilt, 132, no. 1 - 5

5 sayı içinde özellikle ülkemizin jeolojisini ilgilendiren yada ilginç olan makaleler:

132/1, Ocak 1995:

Fortey, R.A., Harper, D.A.T., Ingham, J.K., Owen, A.W. and Rushton, A.W.A., 1995, *A revision of Ordovician series and stages from the historical type area*: Geological Magazine, 132, 1, 15 - 30.

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Oliver, G.J.H., Johnson, M.R.W. and Fallick, A.E., 1995, *Age of metamorphism in the Lesser Himalaya and*

*the Main Central Thrust zone, Caarhwal India: results of illite crystallinity, <sup>40</sup>Ar-<sup>39</sup>Ar fusion and K-Ar studies*: Geological Magazine, 132, 2, 139 - 149.

132/3, Mayıs, 1995:

Bozkurt, E., Winchester, J.A. and Park, R.G., 1995, *Geochemistry and tectonic significance of augen gneisses from the Southern Menderes Massif (West Turkey)*: Geological Magazine, 132, 3, 287 - 301.

Griand, B., Bouchardon, J.L., Ouali, H., Piboule, M., and Capter, P., 1995, *Geochemistry of bimodal amphibolitic - felsic gneiss complexes from eastern Massif central, France*: Geological Magazine, 132, 3, 321 - 337.

132/4, Temmuz, 1995:

Hamdi, B., Rozanov, A.Yu and Zhurawlev, A.Yu., 1995, *Latest Middle Cambrian metazoan reef from northern Iran*: Geological Magazine, 132, 4, 367 - 373.

Segev, A., Halicz, L., Steinitz, G. and Cang, B., 1995, *Post - depositional processes on a buried Cambrian sequence in southern Israil, north Arabian Massif: evidence from new K-Ar dating of Mn-nodules*: Geological Magazine, 132, 4, 375 - 385.

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241/no. 1-2:

Pedcock, D.C.P. and Sanderson, D.J., *Pull - aparts, shear fractures and pressure solution*, 1 - 14.

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Berberian, M., *Master 'blind' thrusts faults hidden under the Zagros folds: active basement tectonics and surface morphotectonics*; 193 - 224.

243/ no. 3-4:

Genç, Ş.C. and Yılmaz, Y., *Evolution of the Triassic continental margin northwest Anatolia*, 193 - 207.

Yılmaz, Y., Genç, Ş.C., Yiğitbaş, E., Bozcu, M., and Yılmaz, K., *Geological evolution of the late Mesozoic continental margin of Northwestern Anatolia*, 155 - 171.

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Special Issue: *Heat flow and thermal regimes of continental lithosphere*.

Cermak, V. and Bodri, L., *Three -dimensional deep temperature modelling along the European geotraverse*, 1- 12.

Cermak, V., *A geothermal model of the Central segment of the European Geotraverse*, 51 - 56.

Hella Vedova, B., Lucuzcau, F., Pasquale, V., Pellin, G. and Verdoya, M., *Heat flow in the tectonic provinces crossed by the southern segment of the European Geotraverse*, 57 - 74.

Hurtig, E., *Temperature and heat - flow density along European transcontinental profiles*, 75 - 84.

Vasseur, G., Brigaud, F. and Demongodin, L., *Thermal conductivity estimation in sedimentary basins*, 167 - 174.

İlkışık, O.M., *Regional heat flow in western Anatolian using silica temperature estimates from thermal springs*, 175 - 184.

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Wong, H.K., Ludmann, T., Uluğ, A. and Görür, N., *The sea of Marmara: a plate boundary sea in an escape tectonic regime*, 231 - 250.

Tatar, O., Piper, J.D.A., Park, R.G. and Gürsoy, H., *Palaeomagnetic study of block rotations in the Niksar overlap region of the North Anatolian Fault Zone, central Turkey*, 251 - 266.

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Kahle, H.G., Müller, M.V., Geiger, A., Danuser, G., Mueller, S., Veis, G., Bilins, H. and Pradissis, D., *The strain field in northwestern Greece and the Ionian Islands: results inferred from GPS measurements*, 41 - 52.

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Akıncı, A., Ibanez, J.M., del Pezzo, E. and Morales, J., *Geometrical spreading and attenuation of Lg waves: a comparison between western Anatolia (Turkey) and southern Spain*, 47 - 60.

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Okay, A.İ., Şengör, A.M.C. and Görür, N., *Kinematic history of the opening of the Black Sea and its effect on the surrounding regions*, 267 - 270.

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Christopher, A., McRoberts, Cathryn R. Newton, *Selective extinction among end - Triassic European bivalves*, 102 - 104.

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John B. Ritter, Jerry R. Miller, Yehouda Enzel, Stephen G. Wells, *Reconciling the roles of tectonism and climate in Quaternary alluvial fan evolution*, 245 - 248.

C.J. Macleod, B.J. Murton, *On the sense of slip of the southern Troodos transform fault zone, Cyprus*, 257 - 260.

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Bruce P. Luyendyk, *Hypothesis for Cretaceous rifting of east Gondwana caused by subducted slab capture*, 373 - 376.

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S.A., Schumm, David K. Rea, *Sediment yield from disturbed earth systems*, 391 - 394.

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Ralf Hetzel, Cees W. Passchion, Uwe Rings Özcan O. Dora, *Bivergent extension in orogenic belts: The Menderes massif (southwestern Turkey)*, 455 - 458.

Scambelluri, M., Müntener, O., Hermann, J., Piccardo, G.B., Trommsdorff, V., *Subduction of water into the mantle: History of an Alpine peridotite*, 459 - 462.

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Reiners, P.W., Nelson, B.K., Ghiorsso, M.S., *Assimilation of felsic crust by basaltic magma: Thermal limity and extents of crustal contamination of mantle - derived magmas*, 563 - 566.

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McClay, K., Dooley, T., *Analogue models of pull - apart basins*, 711 - 714.

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Storti, F., McClay, K., *Influence of syntectonic sedimentation on thrust wedges in analogue models*, 999 - 1002.

Gonzales-Gonorrino, G., Eyles, N., *Inverse relation between ice extent and the late Paleozoic glacial record of Gondwana*, 1015 - 1018.

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Storey, B.C., *The role of mantle plumes in continental breakup: case histories from Gondwana Land*, 301 - 308.

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Schumacher, R., Schminche, H.U., *Models for the origin of accretionary lapilli*, 626 - 639.

## Özler / Abstracts

Anna Farinacci, 1993, *Argolide (Grecia) e Bey Daglari (Turchia): un pretesto per l'utilizzazione delle facies nella compressione della tettonica sinsedimentaria: Pa-leopelagos, 3, 47 - 58, Roma.*

*Argolid (Greece) and Bey Daglari (Turkey): a testing of facies in the understanding of synsedimentary tectonics.*

This paper deals with the link between sedimentary facies and subsidence in the Cretaceous limestones of the western and eastern ends of the Aegean Arc (Akros in Argolid and Bey Daglari in the Western Taurus). By means of a model of extensional tectonics, it has been possible to recognize the reason why the buildup of carbonate platforms was so active in these areas, since they were the products of sedimentation which subsided gradually in an unstable area. On the other hand, in the stable plateaux, active carbonate sedimentation was inhibited by negative subsidence resulting from compressional tectonics in a strike - slip system. Consequently, there, the space necessary for deposition was not created by the weight of the sediments and sedimentary gaps were very frequent. On the non subsident plateaux, with little platform benthos and with no carbonate buildup, only pelagic organisms were able to fix the carbonate portion of the sediment; here there is an increased clay: carbonate ratio, since the amount of carbonate being deposited was low. Because of the differentiation of a subsiding platform and of a stable plateau, which were in lateral contact, or which alternated vertically, a deep - seated tectonics is believed to be responsible for the differing responses of subsidence to the sediment load. Moreover along strike - slip faults and margins of half - grabens, materials from carbonate platforms could have been transported to the stable plateaux, subsiding a little by drag from the subsiding area where the carbonate platform was being built. Because of the biological progradation of the carbonate shelf towards the fore - reef and outer rim, that is along active marginal faults, unconsolidated shelf margin sediments collapsed due to tectonic pulses, and were thus moved to the transitional margin between the subsiding areas and the stable plateaux, which were subsiding only a little through drag and whose marginal areas appeared to be more unstable than the internal ones. The trend of the tectonics can change a subsiding area to a stable one; after the Cenomanian active buildup, subsidence stopped at the beginning of the Turonian, and the carbonate platform of the Aegean Arc was subject to subaerial exposure. After karstification of the surface, sedimentation began again in the "scaglia" facies with globotruncanids during the

Turonian or later, into the Coniacian and Santonian (thus the drawing was gradual and lasted between 2 and 6 million years, the sedimentary sequences having, moreover, many gaps and limited thickness). The succeeding Late Campanian - Maastrichtian succession, (that is after about 15 million years from the cessation of the carbonate buildup) happened almost contemporaneously everywhere in the Aegean Arc in the "scaglia" facies with globotruncanids. This situation is common to Akros and Bey Daglari: except in the Susuz Dag succession (the south - western part of the Bey Daglari), where, after sedimentation of the limestones in "scaglia" facies, the shelf buildup begun again in the Maastrichtian, with transitional facies along the main fault.

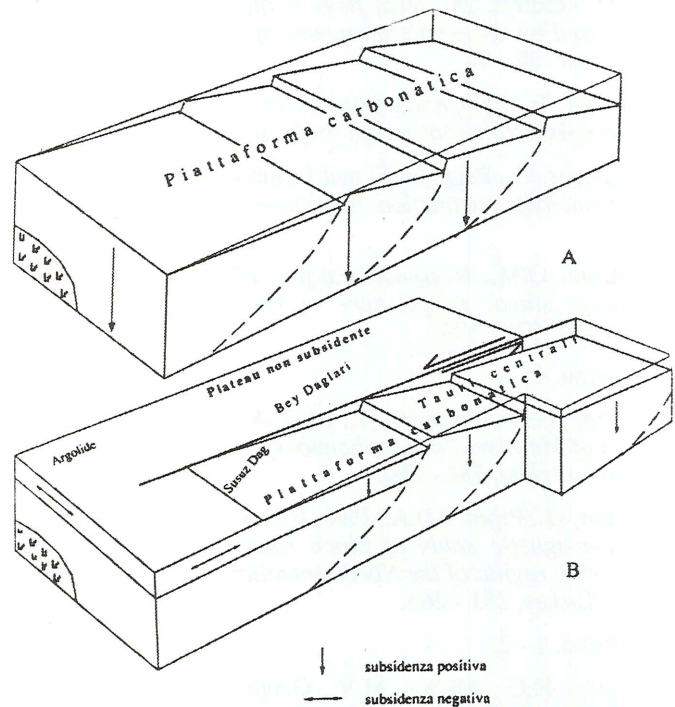


Fig. 3. A) Situazione tettonica con subsidenza positiva graduale durante il buildup carbonatico del Cenomaniano, estesa a tutte le unita geo-grafiche dell'Arco Egeo. B) Situazione tettonica durante la transgressione tardo campaniano - maastrichtiano con le unita geografiche ubicate secondo le facies e la subsidenza differenziata (vedi il testo).

A.İ., Okay, A.M.C., Şengör, N., Görür, 1994, *Kinematic history of the opening of the Black Sea and its effect on the surrounding regions: Geology, v. 22, p. 267 - 270, March 1994.*

The Black Sea consists of two oceanic basins separated by the mid - Black Sea ridge. The east - west - oriented west Black Sea basin opened as a back - arc rift in the Cretaceous by tearing a Hercynian continental sliver, the Istanbul Zone, from the present - day Odessa shelf. The Istanbul zone, which was initially contiguous with the Moesian platform in the west, moved south during

the Late Cretaceous - Paleocene with respect to the Odessa shelf along two transform faults: the dextral west Black Sea and the sinistral west Crimean faults. It collided in the early Eocene with a Cimmeride zone in the south, there by ending the extension in the western Black Sea and deactivating both the west Black Sea and the west Crimean faults as strike - slip faults. The east Black Sea basin opened as a result of the counterclockwise rotation of an east Black Sea block around a rotation pole located north of the Crimea. This block was bounded by the west Crimean fault, the southern margin of the eastern Black Sea, and the southern frontal thrusts of the Greater Caucasus. The rotation of the east Black Sea, and the southern frontal thrusts of the Greater Caucasus. The rotation of the east Black Sea block was contemporaneous with the rifting of the west Black Sea basin but lasted until the Miocene, resulting in continuous compression along the Greater Caucasus.

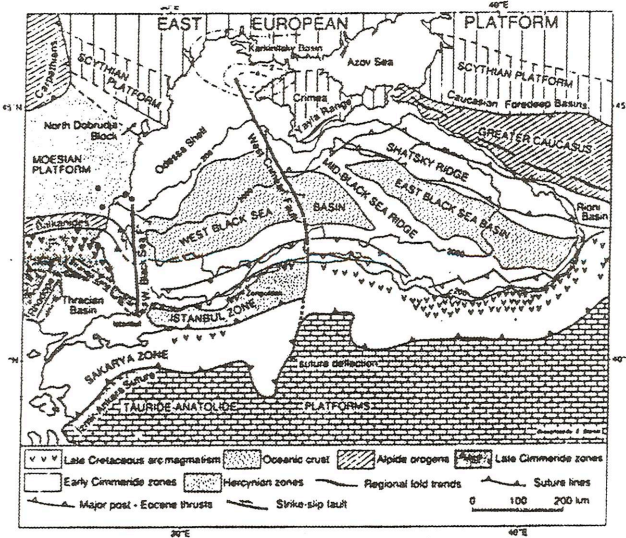


Fig. 1. Tectonic map of Black Sea region (Şengör and Yılmaz, 1981; Tugolesov et al., 1985; Finetti et al., 1988; Okay, 1989). Bars across west Black Sea and west Crimean faults indicate locations of seismic sections in Daehev et al. (1988) and Finetti et al. (1988), respectively, which delineate these faults. Circles in southern part of Moesian platform indicate location of boreholes used for stratigraphy of Moesian platform (cf. Fig. 2). Contours north of Crimea give Upper Cretaceous - Lower Miocene sediments thicknesses in karhins sky basin (Vinogradou, 1966, 1968). Depth contours in metres.

Ş.C., Genç, Y., Yılmaz, 1995, *Evolution of the Triassic continental margin, northwest Anatolia; Tectonophysics*, 243, 193 - 207

The northwest Anatolian basement consists of two distinctly different metamorphic assemblages which were juxtaposed prior to the deposition of Liassic cover sediments. These include the lower and the upper associations. The lower association is mainly represented by Tri-

assic metavolcanic and associated metasedimentary units, together with a slice of ophiolite. The upper association rests on the lower association with a low - angle thrust fault and is composed of Paleozoic or older schists, gneisses and phyllites. A transgressive succession begin above the basement with Permo - Carboniferous neritic limestones. These platform type carbonates were disrupted by rifting during the early Triassic. At the initial phase of rifting, coarse clastics and associated rift type lavas were formed. The rift then evolved into an ocean basin, which closed at the end of the Triassic. The continental margin of the Triassic basin underwent regional metamorphism, initially high T/low P, it was followed later by a high P/low T metamorphic phase. During the metamorphism, the continental margin units were multiply deformed by north - directed compressive stress. Later on, unmetamorphosed Triassic successions of the continental margin were thrust northward onto the metamorphosed part of the same continental margin. Thus the Triassic assemblages of northwest Anatolia collectively display the dynamics and various structural affects of the deformation recorded in the continental margin and adjacent oceanic unit.

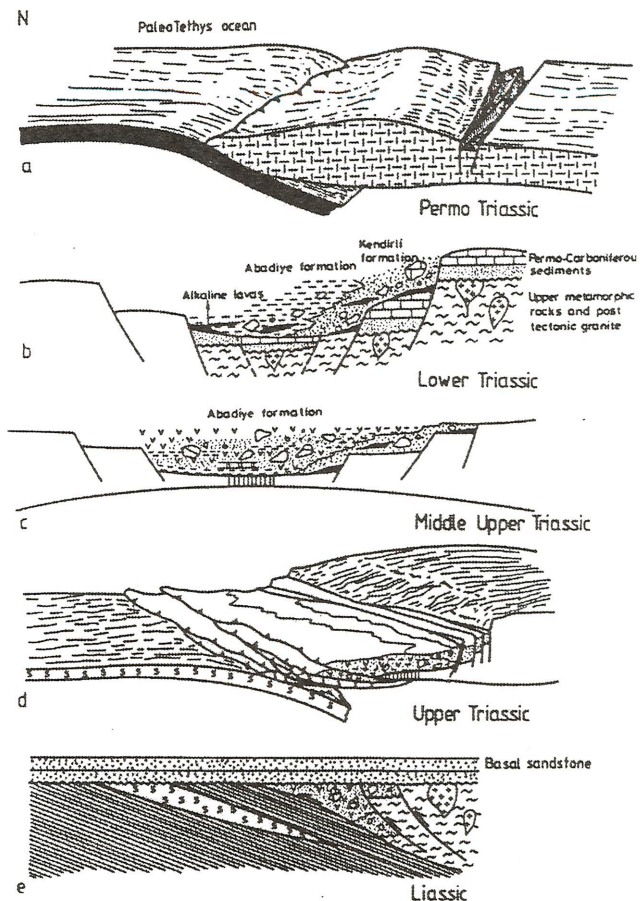


Fig. 11. Diagram showing consecutive stages of development of the Triassic basin in northwest Anatolia.

Y., Yılmaz, Ş.C., Genç, E., Yiğitbaş, M., Bozcu, K., Yılmaz, 1995, *Geological evolution of the late Mesozoic continental margin of Northwestern Anatolia: Tectonophysics*, 243, 155 - 171.

The Armutlu peninsula is a composite tectonic entity made up of sections of the Sakarya continent, the Rhodope - Pontide fragment and an ophiolite. These are assembled following a continental collision between Gondwanaland and Laurasia during the Late Cretaceous. The northern margin of the Sakarya continent underwent progressively increasing deformation prior to and during the advancing collision, due to continued convergence between the two continents. Initially, the leading edge of the continent subsided under the load of an approaching ophiolitic slab. Following this, a north - directed thrusting and folding occurred during the Turonian. Progressive elimination and eventual closure of the ocean preceded the thrusting of northerly situated, collision - induced, nappe packages over the leading edge of the Sakarya continent. The nappe - laden edge of the continental margin then collapsed and steadily subsided under the heavy load of the ophiolitic slab and the northern continental fragment. Consequently, the nappe packages and the ophiolite were collectively metamorphosed during the Coniacian - Santonian interval. During the subsidence the main body of the Sakarya continent partially detached from its collapsed edge along a fault zone and thus suffered an independent but less severe deformation, which lasted until the uplift of the collapsed edge in the Campanian. From the late Campanian onward, throughout later orogenic stages, the metamorphic and non - metamorphic units amalgamated into a single tectonic entity, forming a basement for younger cover rocks (Fig. 9).

Aral, I., Okay, Helfried, Mostler, 1994, *Carboniferous and Permian Radiolarite Blocks from the Karakaya Complex in Northwest Turkey; Tr. J. of Earth Sciences* 3, 23 - 28, TÜBİTAK.

The Karakaya Complex is a strongly deformed, partially metamorphosed, heterogeneous assemblage of Permian - Triassic clastic, volcanoclastic, and basic volcanic rocks with wide outcrops in the Sakarya Zone of the Pontides. Here, we report for the first time, Upper Paleozoic pelagic sediments found as exotic blocks in the Karakaya Complex in the Biga Peninsula of northwestern Turkey. One such block occurs in the sandstones of the Hodul Unit of the Karakaya Complex northeast of Balya. It is a two - meter large block made up of intercalated, thinly bedded, red limestone and radiolarian chert. A sample from the limestone has yielded Bashkirian (Middle Carboniferous) conodonts. Blocks of radiolarian chert also occur in the siliceous shales of the Çal Unit of the Karakaya Complex southeast of Çan. A

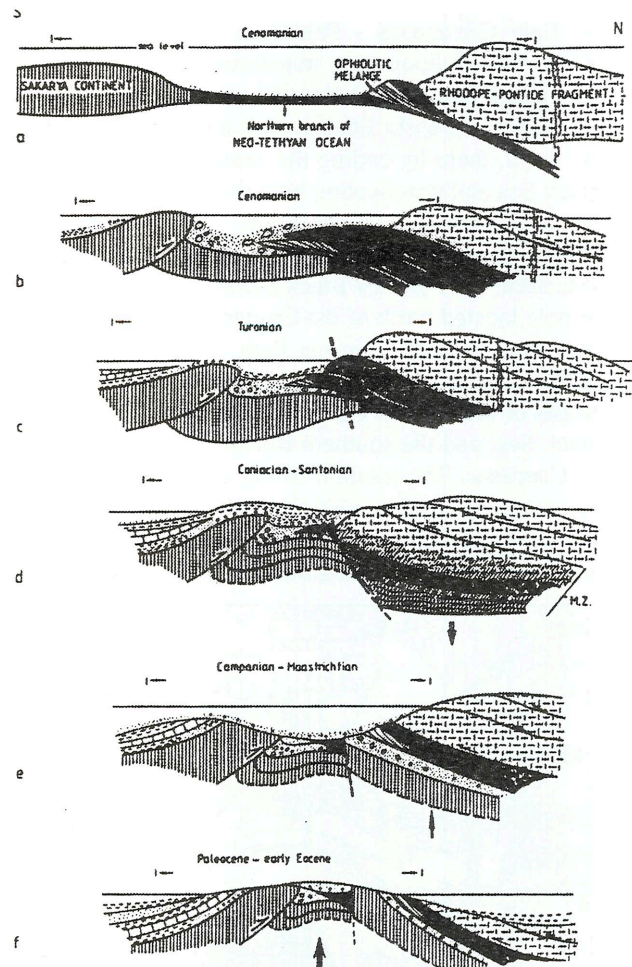


Fig. 9. Plate tectonic model displaying subsequent stages of the evolution and foreland deformation of the region during the Late Cretaceous and early Tertiary. The horizontal arrows indicate the limits of the region corresponding to the study area. (a) The north - facing continental margin formed during the Mesozoic and persisted until the Late Cretaceous. The northern continent, which at present corresponds to the western Pontides (the Rhodope - Pontide fragment), comprised the southern part of Laurasia. The southern continent (the Sakarya continent) represented a fragment of Gondwanaland. The ocean that separated the two continents is known as the northern branch of the Neo-Tethyan ocean. The ocean floor began to be consumed, possibly by northward subduction under the Rhodope-Pontide fragment. (b) An ophiolitic slab detached from its root and began to move southwards toward the Sakarya continent, possibly during the Cenomanian. In front of the ophiolitic slab a foredeep and an accompanying thrust-induced forebulge formed on the edge of the Sakarya continent. The forebulge reached above sea level and was deeply eroded. Materials derived from the elevated region were then transported into adjacent structural lows as debris flows and blocks. This may have coincided with the initial phase of continental collision, as a result of elimination of the ocean floor which left behind a remnant sea. After the Cenomanian no more abyssal phalen sediments were formed. Intense simultaneous tectonic activity is recorded on both continents as thrusting and tight folding. (c) Progressive stacking of the nappes transported southwards created a heavy burden on the edge of the foreland of the Sakarya continent. As a result of the increasing load, the edge of the continent is assumed to have collapsed and subsided. The broken line indicates a hypothetical fault along which the loaded edge of the continent began to subside.

(d) The collapsed edge of the Sakarya continent, the overlying slab of the ophiolite and the Rhodope - Pontide fragment were collectively buried and metamorphosed. M.Z. = the metamorphosed zone; thick arrow = subsidence. (e) The metamorphosed nappe stack rose rapidly before the late Campanian. Broken line = a hypothetical fault zone which facilitated the uplift of the collapsed and metamorphosed units; arrow = the uplift. Following the uplift, the southern, central and the northern zones were collectively covered for the first time under a common sea where a wide range of coeval sedimentary rocks were deposited. From the north to the south, transitions from fluvial to shallow marine environments passing into a deeper marine flysch basin are recorded in the Upper Campanian - Maastrichtian successions (see Fi. 8) (f) As a result of continued convergence the flysch basin was gradually elevated and finally rose above the sea. However, in the interior of both continents the sea realms remained until the end of the early Eocene. The arrow indicates thickening, shortening and consequent uplift of the central sector due to north - south compression.

sample from the radiolarian chert has yielded Sakmariyan to Artinskian (Lower Permian) radiolaria. The discovery of Upper Paleozoic pelagic sediments in the Karakaya Complex indicates that the Karakaya Complex does not represent Triassic rift deposits as generally believed, but probably represents active margin units of Permo - Triassic age and includes possible oceanic accretionary material as old as Carboniferous.

N., Görür, A.İ., Okay, O., Tüysüz, E., Yiğitbaş, R., Akkök, 1995, *İstanbul - Zonguldak Paleozoyik istifinin paleocoğrafik ve tektonik konumu: Zonguldak Havzası Araştırma Kuyuları - I: Kozlu - K20/G*. M.N. Yalçın ve G. Gürdal (Der.) TÜBİTAK, MAM, Özel Yayını, 27 - 43, 1995.

Batı Pontidlerde, İstanbul ve Zonguldak arasındaki Karbonifer kayaları, İstanbul Zonu olarak bilinen Hersiniyen kıta parçası üzerinde yer alır. Batıda, İstanbul ve dolayında, Karbonifer istifinin tabanında Üst Devoniyen yaşlı çörtlü ve nodüler kireçtaşları bulunur. Bunlar üste doğru Vizeen yaşlı, fosfat yumrulu, şeyl arakatmanlı, radyolaryalı çörtlere geçer. Derin denizel nitelikli bu kesimin üzerine de grovak, silttaşı ve şeyl arakatlanmasından oluşan kalın bir türbidit istifi gelir. İstif Triyas yaşlı kırmızı kaba kırıntılılar tarafından açılal diskordansla örtülür. Zonguldak dolayında ise Karbonifer istifi, Üst Devoniyen resifal kireçtaşlarının üzerinde yer alan şeyl arakatmanlı Vizeen kireçtaşları ile başlar. Vizeen kireçtaşları üzerine yaygın kömür yatakları içeren kırıntılı Namuriyen - Vestfaliyen istifi gelir. İstanbul - Zonguldak arasındaki alanda Karbonifer kayaları, Ordovisiyen - Karbonifer döneminde gelişmiş kalın bir pasif kıta kenarı istifi içinde yer alır. Bu birlik, kendisine komşu olan diğer tektonik birliklerde yer alan Paleozoyik yaşlı istiflerden belirgin farklılıklar sunar. Buna karşılık Moesya platformu ile yakın benzerlikleri vardır. Karadeniz ve çevreleyen alanlardan elde edilen jeolojik, jeofizik ve jeomorfolojik veriler, İstanbul Zonu'nun Karbonifer döneminde Odesa şelfi boyunca Moesya Platformu ve Kırım arasında yeraldığını gös-

termektedir. İstanbul Zonu, bugünkü konumunu Albiyen - erken Eosen döneminde Batı Karadeniz havzasının gelişimi esnasında iki ana transform fayla kazanmıştır (Okay vd., 1994).

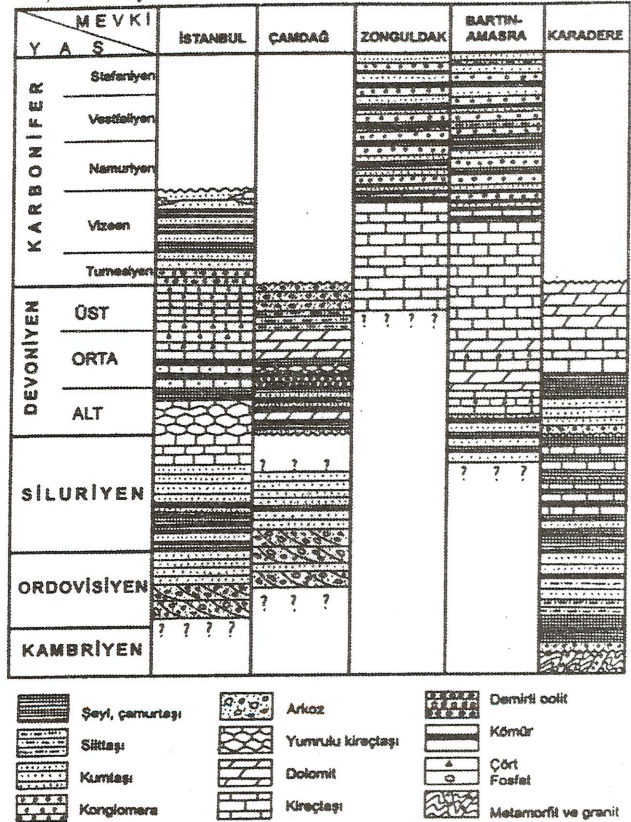
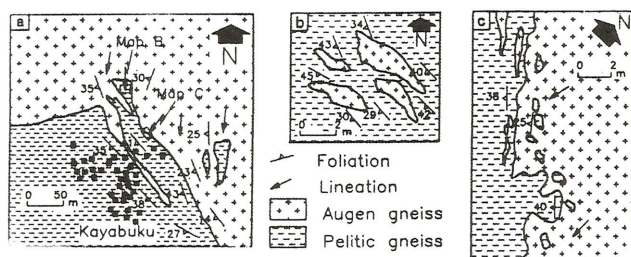


Fig. 3. Kuzey Anadolu'daki Paleozoyik istiflerine ait stratigrafi kesitleri.

E. Bozkurt, J.A. Winchester and R.G. Park, 1995, *Geochemistry and tectonic significance of augen gneisses from the Southern Menderes Massif (West Turkey)*; *Geological Magazine*, 132, 3, 287 - 301.

The protoliths of mylonitized augen gneisses exposed in the southern sector of the Menderes Massif (West Turkey) are calc-alkaline, peraluminous, S-type, late- to post-tectonic tourmaline- and garnet-bearing, two-mica leucogranites. They cut and post-date the fabrics of the 'main Menderes metamorphism' which took place between the early Eocene and early Oligocene and intrude metamorphic basement rocks comprising the so-called 'Palaeozoic schist envelope' of the massif. They are themselves cut by an extensive network of tourmaline-rich dykes. Chemical, mineralogical, isotopic and field relations suggest that the granitic protolith crystallized from a boron-rich, water-saturated melt, derived from partial melting of metagreywacke in the lower crust during peak Barrovian-type metamorphism. The protolith was probably emplaced during late-orogenic extensional collapse of the thickened crust in west Turkey during late Oligocene time.

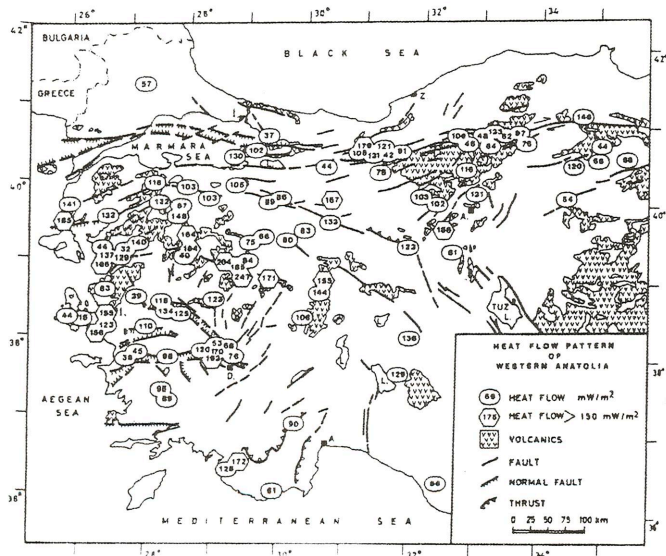


**Fig. 10.** (a) Large-scale detailed geological map at Kayabükü village showing the cross-cutting relationships between the augen gneisses and the fine-grained pelitic gneisses. Note the sill-like intrusion of granitic rocks into the host rocks. Locations of Figure 3b ve c are indicated; (b) detailed sketch map illustrating small scale undeformed granitic veins within the pelitic gneisses; (c) detailed view of the boundary between the augen gneisses and the fine-grained pelitic gneisses. Both the granitic veins and the enclaves of schist are concentrated around the boundary (from Bozkurt, Park & Winchester, 1993).

**O.M. İlkışık, 1995, Regional heat flow in western Anatolian using silica temperature estimates from thermal springs; *Tectonophysics*, 244, 1-3, 175 - 184.**

Regional trends of variation of heat flow in western Anatolia have been outlined using the silica temperature estimator on thermal springs. Silica heat-flow values from 187 springs have been calculated. The data are corrected for local long-term mean annual surface temperature. A mean value of heat flow for the western part of Anatolia of  $107 \pm 45 \text{ mWm}^{-2}$  has been obtained, which is about 60% above the world average.

The silica heat-flow data are compared with available conventional heat-flow values for this region. A general agreement is observed, and new patterns are recognized. A close association exists between areas of high silica heat-flow values (above  $100 \text{ mWm}^{-2}$ ), and areas of Tertiary and younger volcanism. High heat flow is also ob-



**Fig. 2.** Heat flow in western Anatolia from silica geotemperatures.

served in Palaeozoic units of the Menderes Massif which is under tensional stress. The highest heat-flow estimate of  $247 \text{ mWm}^{-2}$  is obtained near Gediz ( $38^{\circ}57' \text{ N}$ ,  $29^{\circ}13.2' \text{ E}$ ). This area is part of a seismically active region and is located near a Middle Eocene subduction zone which is an area of later collision tectonics.

The new heat-flow data from western Anatolia improve our knowledge of the thermal conditions within the crust. This information is important for the analysis of various geophysical and geological phenomena including seismicity.

**O. Tatar, J.D.A. Piper, R.G. Park and H. Gürsoy, 1995, Palaeomagnetic study of block rotations in the Niksar overlap region of the North Anatolian Fault Zone. *Central Turkey; Tectonophysics*, 244, 4, 251 - 266.**

This palaeomagnetic study investigates crustal deformation within, and adjacent to, the Niksar overlap area of the North Anatolian Fault Zone (NAFZ) in central-east Turkey. The studied rock formations comprise: (1) red limestones of Late Cretaceous age (3 sites); (2) mafic lavas of Eocene age on the north side (13 sites) and south side (9 sites) of the NAFZ; and (3) volcanic rocks of Pliocene - Quaternary age from the Niksar pull-apart basin within the NAFZ (8 sites). Comparisons with reference palaeofield directions computed from apparent polar wander paths of the Eurasian and Afro - Arabian plates identify two scales of regional and local tectonic rotation:

(1) A pre-tilting remanence in the Eocene volcanic rocks south of the NAFZ ( $D/I = 144.1 / -47.5^{\circ}$ ,  $\alpha_{95} = 7.6^{\circ}$ ) is interpreted to reflect counterclockwise rotation by  $30-40^{\circ}$  from the reference palaeofields. Contemporaneous volcanic rocks from the north side of the NAFZ have the same reverse polarity recorded in pre-tilting magnetisations. The remanence is also rotated counterclockwise ( $D/I = 152.4 / -42.5^{\circ}$ ,  $\alpha_{95} = 11.3^{\circ}$ ), but by about  $8^{\circ}$  less than the volcanics on the south side of the NAFZ. Hence similar amounts of rotation are observed on both sides of the NAFZ and are interpreted to reflect motions during the pre-Middle Miocene collisional history in this sector of the Pontides. No distributed clockwise rotations anticipated from subsequent dextral motion along the NAFZ intracontinental transform are observed. The slightly larger anticlockwise rotation found on the south side of the NAFZ probably records relative rotation of en-echelon wedges by continental escape during post-Middle Miocene strike slip along the transform.

(2) Within the narrow zone of intense deformation along the NAFZ, Cretaceous limestones appear to be rotated clockwise by dextral strike - slip motion whilst Plio - Quaternary lavas within a fault-bounded block in the overlap region associated with the Niksar pull - apart basin, have magnetisations consistently directed  $240 - 270^{\circ} \text{ E}$ . Magnetic inclinations are not diagnostic of polarity but both polarity solutions identify rapid clockwise rotation at rates in excess of  $50^{\circ}/\text{m.y.}$  A normal polarity solution is favoured and implies that a block (ca. 5 km across) has undergone a strike - slip displacement of

around 12 km within the NAFZ during the last polarity chron. Cretaceous - Eocene palaeolatitudes are closer to those predicted from Eurasia than Afro - Arabia, but a study of older rocks is required to resolve affinities of this sector of the Anatolian block.

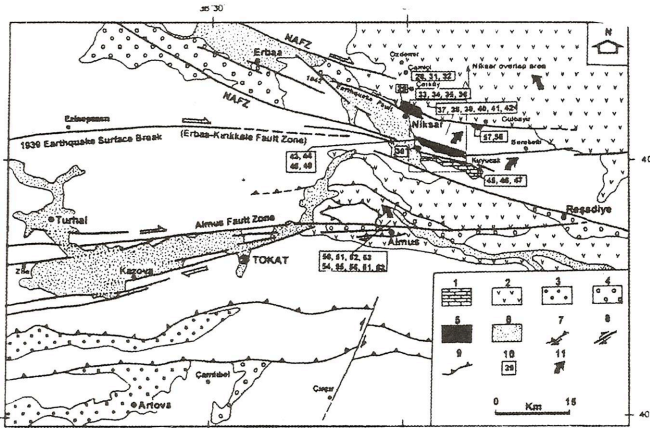


Fig. 2. Simplified geological map of the study area, showing sampling localities. The regional location is shown in Fig. 1. The inset legend: 1 = Upper Cretaceous red limestones; 2 = Eocene volcano - sedimentary units; 3 = Miocene - Pliocene deposits; 4 = Plio - Quaternary deposits; 5 = Plio - Quaternary volcanics; 6 = Quaternary deposits; 7 = transpressional fault with reverse component; 8 = strike - slip fault; 9 = thrust; 10 = sampling locations and numbers of site; 11 = sense of rotation.

## Sempozyum, Seminer, Konferans

### KARADENİZ TEKNİK ÜNİVERSİTESİ MÜHENDİSLİK - MİMARLIK FAKÜLTESİ JEOLOJİ MÜHENDİSLİĞİ BÖLÜMÜ'NÜN 30. YIL SEMPOZYUMU

Karadeniz Teknik Üniversitesi, Mühendislik - Mimarlık Fakültesi, Jeoloji Mühendisliği Bölümünün (1965 - 1995) 30. yıl sempozyumu 16 - 20 Ekim 1995 tarihleri arasında Trabzon'da üniversite kampüsünde Jeoloji Mühendisliği Bölümü tarafından gerçekleştirildi.

Sempozyumda Mineraloji - Petrografi, Maden Yatakları - Jeokimya, Yapısal Jeoloji - Tektonik, Mühendislik Jeolojisi, Paleontoloji, Hidrojeoloji, Sedimentoloji, Stratigrafi, Petrol Jeolojisi, Kömür Jeolojisi olmak 10 bölüm altında toplam 114 bildiri sunulmuştur. Sunulan bu bildirilere ait makaleler, düzenleme komitesi tarafından sempozyum bildiri kitabında yayımlanacaktır. Sempozyum bildiri özleri kitabında yeralan bildirilerin başlıkları ve yazarları aşağıda verilmiştir.

JEOLOJİ MÜHENDİSLİĞİ, Sayı 48

KARADENİZ TEKNİK ÜNİVERSİTESİ  
MÜHENDİSLİK-MİMARLIK FAKÜLTESİ



JEOLOJİ MÜH. BÖLÜMÜ  
(1965-1995)

30. YIL  
SEMPOZYUMU

BİLDİRİ ÖZLERİ

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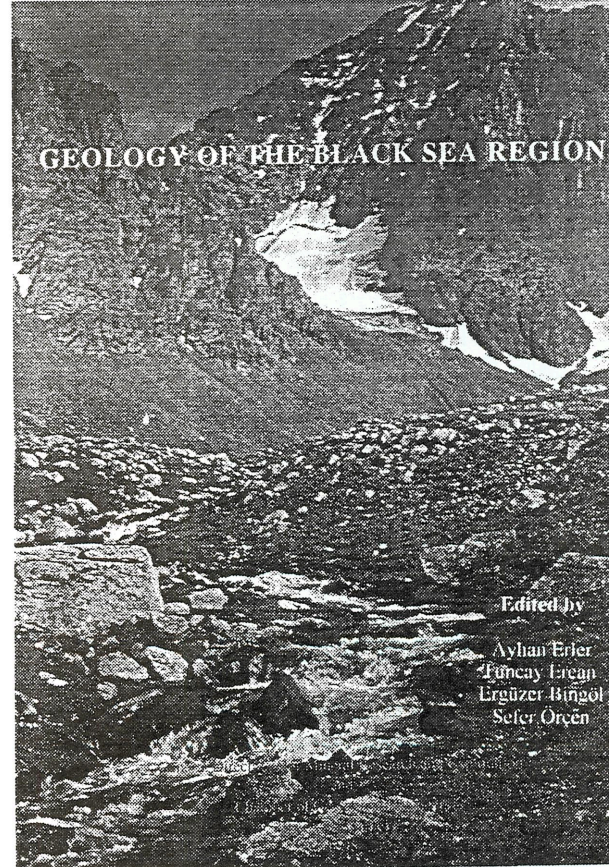
## Yeni Yayınlar

GEOLOGY OF THE BLACK SEA REGION  
(Karadeniz Bölgesinin Jeolojisi)

Editörler: A. Erler (ODTÜ), T. Ercan (MTA), E. Bingöl (Ç.Ü.) ve S. Örçen (MTA)

7 - 11 Eylül 1992 tarihinde Ankara'da gerçekleştirilen uluslararası sempozyumun temasını oluşturan "Karadeniz Bölgesinin Jeolojisi" kapsamında sunulmuş olan 100 kadar bildirinin 44'ünü kapsayan makalelerin yer aldığı bu kitap, Karadeniz'i çevreleyen ülkelerin yeraltı kaynakların araştırılması konusunda gelecekte yapılacak incelemeler için bir kaynak kitap olabilecek niteliktedir.

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"Geology of the Black Sea Region" kitabında yer alan makaleler ve yazarlar aşağıda verilmiştir.

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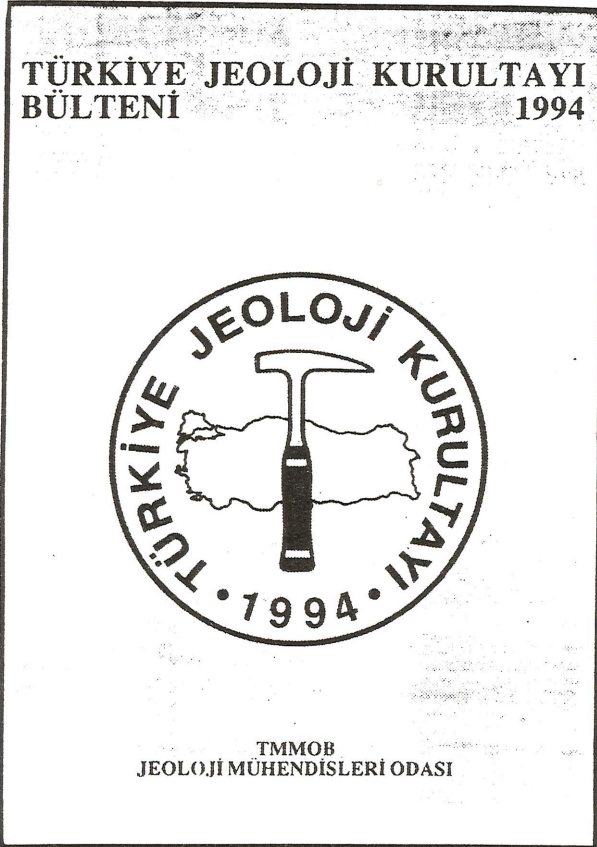
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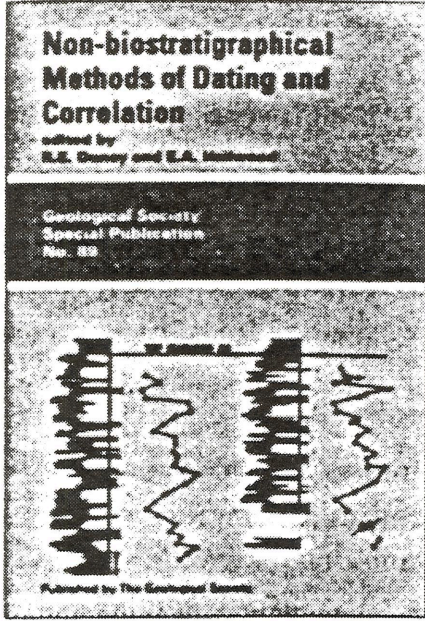


47. Türkiye Jeoloji Kurultayı'nda sunulmuş olan bildiri-lerden, Kurultayı Teknik Kurul tarafından incelenmiş ve kabul edilen 12 konu başlığında toplam 53 makale yer almaktadır. İngilizce öz ve şekil, çizelge, levha altı yazıları içermektedir. Bültende yer alan makaleler ve yazarlar aşağıda verilmiştir.

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**NON - BIOSTRATIGRAPHICAL  
METHODS OF DATING AND  
CORRELATION  
(YAŞLANDIRMA VE KORELASYONUN  
BİYOSTRATİGRAFİK OLMAYAN  
METODLARI)**

Editörler: R.E. Dunay (Mobil North Sea Ltd, İngiltere)  
ve E.A. Hailwood (Core Magnetics, İngiltere).



Kitapta denizel olmayan oluşumların egemen olduğu periyodlar için stratigrafide önemli sorunların ortaya konulduğu, sekans stratigrafi korelasyonu ve yaşlandırma için kullanılan biyostatigrafik olmayan yöntemler anlatılmaktadır.

Bu yöntemler, genel olarak minerolojik, kimyasal, izotopik, luminesans ve dönemsellik analizleri kapsamında gruplandırılarak, çeşitli disiplin ve tekniklerle geniş bir silsile içinde verilmiştir.

Kitap, özellikle hidrokarbon araştıran ve üreten jeologlar için, özgün korelasyon problemlerinin çözümünde oldukça yararlı olacaktır.

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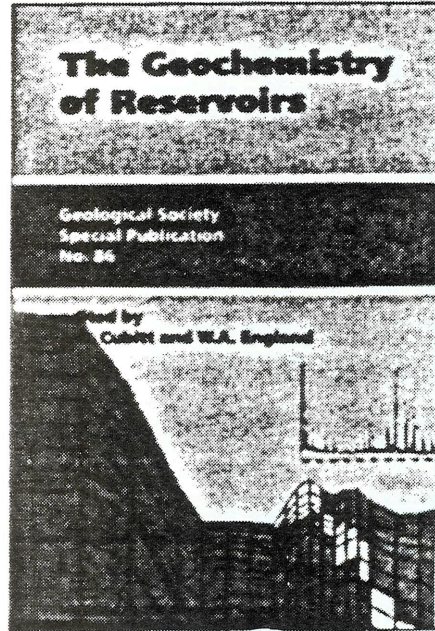
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Non-biostratigraphical methods of dating and correlation: an introduction • Correlation of sandstones using heavy minerals: an example from the Stratford Formation of the Snorre Field, northern North Sea • Subdivision and correlation of monotonous sandstone sequences using high resolution heavy mineral analysis, a case study: the Triassic of the Central Graben • Clay mineral stratigraphy in Palaeozoic & Mesozoic red bed facies, onshore and offshore UK • The application of fission track analysis to the dating of barren sequences: examples from red beds in Scotland and Thailand • The use of chemical element analysis in the study of biostratigraphically barren sequences: an example from the Triassic of the central North Sea (UKCS) • High-resolution chemostratigraphy of Quaternary distal turbidites: a case study of new methods for the analysis and correlation of barren sequences • SHRIMP zircon age control of Gondwanan sequences in Late Carboniferous and Early Permian Australia • Direct Pb/Pb dating of Silurian macrofossils from Gotland, Sweden • The application of Samarium-Neodymium (Sm-Nd) Provenance Ages to correlation of biostratigraphically barren strata: a case study of the Stratford Formation in the Gullfaks Oil Field, Norwegian North Sea • Luminescence dating of Quaternary sediments • Wireline log-cyclicity analysis as a tool for dating and correlating barren strata: an example from the Upper Rotteleggend of The Netherlands

Geological Society Special Publication: No: 89, 266 sayfa, 150 şekil, ISBN 1-897799-30-6 Mayıs 1995 Ediri: 60 sterlin / 100 dolar.

**THE GEOCHEMISTRY OF RESERVOIRS  
(REZERVUARLARIN JEOKİMYASI)**

Editörler: J.M. Cubitt (Geochem Group, İngiltere) ve W.A. England (BP - Statoil Alliance - Norveç, İngiltere).



Rezervuarların jeokimyası, rezervuarın içindeki su ve minerallerin, petrolerin kökenini ve yayılımını ortaya koymak konusunda yardımcı olmayı amaçlamıştır.

Rezervuar jeokimyası, petrol aramalarında pratik uygulamalarda oldukça önemlidir. Ayrıca daha da önemlisi özel bir kuyu yada horizonun farklı bölgelerle arasında

ilişkilerinin ortaya konulmasında oldukça önemli katkılar sağlamaktadır.

The Geochemistry of Reservoirs", problemlerin incelendiği ve de sonuçlarının irdelendiği makaleler, uygulanan tekniklerin tartışmaları ve genel değerlendirmeleri bölümlerinden oluşmaktadır.

Dili İngilizce olan kitabın başlıca yazarları ve içindekiler:

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#### Contents

Geochemistry of reservoirs: an introduction • Reservoir geochemistry: methods, applications and opportunities • Geochemical constraints from formation water analyses from the North Sea and Gulf Coast Basins on quartz, feldspar and illite precipitation in reservoir rocks • Geochemical criteria for reservoir characterization • Compositional heterogeneities in oilfield formation waters: identifying them, using them • Characterization of high molecular weight hydrocarbons (>C<sub>30</sub>) in oils and reservoir rocks • Overview of the geochemistry of some tar mats from the North Sea and USA: implications for tar-mat origin • Fractionation of pyrolytic nitrogen compounds in petroleum during migration: derivation of migration-related geochemical parameters • Diagenesis of the Flotiegendes Sandstones in the V-Fields, southern North Sea: a fluid inclusion study • The filling and emptying of the Ulla Offield: fluid inclusion constraints • Migration of hydrocarbons in the Tampen Spur area, Norwegian North Sea: a reservoir geochemical evaluation • Modelling density-driven mixing rates in petroleum reservoirs on geological timescales, with application to detection of barriers in the Forties Field (UKCS) • Petroleum geochemistry of the Haltenbanken, Norwegian Continental Shelf • The reservoir geochemistry of the Ekofisk Field, Norwegian North Sea • The reservoir geochemistry and petroleum charging histories of Paleogene-reservoired fields in the Outer Witch Ground Graben • Sour gas and water chemistry of the Bridport Sands reservoir, Wyth Farm, UK

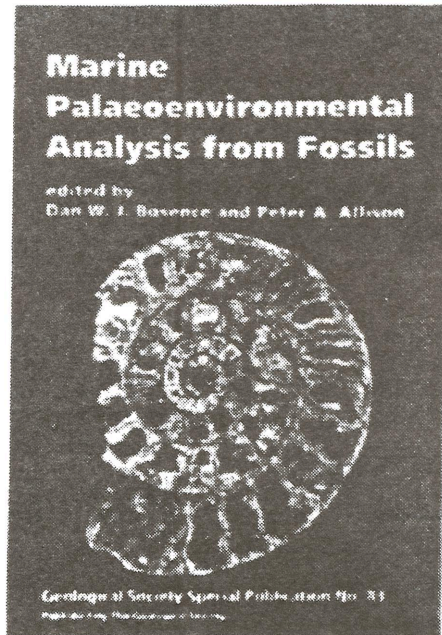
Geological Society Special Publication: No: 86, 328 sayfa, 216 şekil, ISBN 1 - 897799 - 26 - 8 Mayıs 1995. Ederi: 65 sterlin / 108 dolar.

## MARINE PALAEOENVIRONMENTAL ANALYSIS FROM FOSSILS (FOSİLLERLE DENİZEL PALEOORTAMSAL ANALİZLER)

Editörler: D.W.J. Borence (Royal Holloway, University of London, İngiltere) ve P.A. Allison (PRIS, University of Reading, İngiltere)

Makaleler, gelişmiş jeokimyasal izotopik analizlerle daha güncel, taksonomik uygulamasıyla paleontolojik, paleoekolojik ve jeokimyasal yöntemlerin belirleyici çizgisinde çok disiplinli olarak hazırlanmıştır.

Kitabın yaklaşımı, tekniklerin üzerine yoğunlaşmış ve taksonomik olmaktan çok, daha analitiktir.



Kitap, aynı zamanda sedimantologlar, stratigraflar ve paleontologlara son derece gerekli eski iklimler, sekans stratigrafisi, fasiyes modelleri ve çökeltme ortamlarının paleoortamsal yorumlamalarında önemli olabilecek fosiller ve onların izleri ile elde edilmiş verilere odaklanmıştır. Dili İngilizce olan kitabın başlıca yazarları ve içindekiler:

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A review of marine palaeoenvironmental analysis from fossils • Palaeoecological models, non-uniformitarianism and tracking the changing ecology of the past • An introduction to the techniques, limitations and landmarks of carbonate oxygen isotope palaeothermometry • Organic carbon as a palaeoenvironmental indicator in the marine realm • Modern and fossil mangroves and mangals: their climatic and biogeographic variability • Palaeo-oxygenation: effects and recognition • Fossil indicators of nutrient levels. I: Eutrophication and climate change; II: Evolution and extinction in relation to oligotrophy • Organisms and the substrate: response and effect • Quantitative approaches to palaeoecology and palaeobathymetry of corals and coralline algae in Cenozoic reefs • Palaeoenvironmental interpretation using bryozoans: a review • Microfossil indicators of ocean water masses, circulation and climate

Geological Society Special Publication No: 83, İngilizce 272, sayfa, 175 şekil, ISBN 1-897799-21-7, Şubat 1995.

Ederi: E/60/US\$ 100



# Jeoloji Takvimi

(Geochronique  
no. 58, 1996)

## 1996

16-18 mai 1996

Chamonix, France  
Festival des Sciences de la Terre et de ses hommes sur le thème : voyages dans le temps.  
— Jean-Marie Milhomme, Festival des Sciences, Hôtel de Ville, BP 89, 74402 Chamonix Cedex, France. Tél. 33/50 53 38 24. Fax. 33/50 53 99 81.

\* 18-24 mai 1996

Corinthe, Grèce  
Large Earthquakes in the Geological record.  
— Josip Hendekovic, European Science Foundation, 1, quai Lezay - Mamésia, 67080 Strasbourg Cedex, France. Tél. 33/88 76 71 35. Fax 33/88 36 69 87. E-mail : eu-roscoc@esf.org. ; wwwserver.at : http : //www.esf.org.

19-22 mai 1996

San Diego, Californie, USA  
Global exploration and geotechnology. AAPG, annual meeting.  
— AAPG Convention Dept., Box 979, Tulsa, OK 7, 4101, USA. Tél. 1/918 560 26 79. Fax 1/918 560 26 84.

20-22 mai 1996

Rome, Italie  
IInd Symposium PROGEO (International symposium on the conservation of our geological heritage : geotope conservation).  
— Secretary of the symposium, Zarlenga Francesco, ENEA/CRE-CASACCIA, S.P. 105, Via Anquilarese, 301, 00060 Rome Italie. Tél. 06/30 48 47 92. Fax 06/30 48 30 55 - 06/30 48 39 47. E-mail : zarlenga@casaccia.enea.it.

21-22 mai 1996

Lyon, France  
Journées Claude Babin : actualités paléontologiques.  
— P.R. Racheboeuf, URA 11, Sciences de la Terre, Univ. Claude Bernard, Lyon I, 27-43 Bd. du 11 nov. 1918, 69622 Villeurbanne Cedex, France. Tél. 33/72 44 84 15. Fax 33/72 44 84 36.

\* 21-24 mai 1996

Saint-Petersbourg, Russie  
International exhibition and symposium : mineral resources of CIS countries (Commonwealth of Independent States).  
— MIRR '96 ; Organizing Committee, P.O. Box 215, "Minerals", 199004, St. Petersburg, Russie. Tél. 7/81 23 55 79 52. Fax 7/81 22 13 59 26. E-mail : vgs@sovamsu.sovusa.com ; ou root@restec.spb.su.

22-24 mai 1996

Como, Italie  
1st International Conference : The impact of industry on groundwater resources.  
— Secret. 1° Convegno internazionale. Villa Erba, 22012 Cernobbio, Como, Italie. Fax 31/340 540.

27-29 mai 1996

Winnipeg, Manitoba, Canada  
Geological association of Canada & Mineralogical association of Canada annual Meeting.  
— G.S. Clark, Dept geological Sciences, Univ. of Manitoba, Winnipeg, Manitoba R3T 2N2, Canada. Tél. 1/204 474 8857. Fax 1/204 261 7581.

\* 27 mai - 2 juin 1996

Bremen, Allemagne  
PEAT, 10th International Congress. In n° 58.  
— J.D. Becker - Platen, Deutsche Gesellschaft für Moor und Torfkunde, PO Box 510 153, D - 30631, Hanovre, Allemagne. Tél. 49/51 16 43 24 95. Fax 49/51 16 43 23 04.

juin 1996

Pologne et Roumanie  
Association des Géologues du Sud-Ouest (AGSO), excursion dans les Carpathes nord orientales, de Cracovie à Cluj, en Pologne et Roumanie. In n° 56.  
— M. Hervouet, 57, av. de Beaumont, 64000 Pau, France. Tél. 33/59 27 54 48.

3 juin 1996

Paris, France  
Société géologique de France, assemblée générale et conférence.  
— SGF, 77, rue Claude-Bernard, 75005 Paris, France. Tél. 33/1 43 31 77 35. Fax 33/1 45 35 79 10.

3-7 juin 1996

Amsterdam, Pays-Bas  
European Association of Geoscientists & Engineers (EAGE 58th Conference).  
— EAGE E.H. Bornkamp, PO Box 298, NL 3700 AG, Zeist, Pays-Bas. Tél. 31 30 69 62 655. Fax 31 30 69 62 640.

\* 3-7 juin 1996

Québec, Canada  
VIII<sup>e</sup> Congrès de l'Association québécoise pour l'étude du Quaternaire.  
— Marie-Françoise André, Département de Géographie, Université de Limoges, 39E rue Camille Guerin, 87038 Limoges Cedex, France. Fax 55 43 56 03.

9-12 juin 1996

Washington, USA  
North American Paleontological Vith Convention.  
— NACP-VI, c/o Dept Paleobiology, Mail Stop 121, National Museum of Natural History, Washington DC 20560, USA. Tél. 1/202 377 1814. Fax 1/202 786 2832.

9-12 juin 1996

Washington, DC, USA  
Biotic recoveries from Mass Extinctions, IGCP Project 335.  
— Douglas H. Erwin, Dept. Paleobiology, NHB - 121, Smithsonian Institution, Washington DC, USA 20560. Tél. 1/202 357 2053. Fax 1/202 786 28 32. E-mail : mnhpb028@si.edu.

9-13 juin 1996

Budapest, Hongrie  
3rd International Conference on Mineralogy and Museum Tradition and Progress. In n°57.

— M & M 3 secretariat, c/o Hungarian geological Society, Budapest, Pf : 433, H-1372, Hongrie. Fax 36/1 266 7952. E-mail : mm3org@tudens.elte.hu.

\* 10-12 juin 1996

Nantes, France  
GEORAMAN'96 : Spectrométrie Raman appliquée aux Sciences de la Terre.  
— David C. Smith, Lab. de Minéralogie, Muséum National d'Histoire Naturelle, 61 rue Buffon, 75005 Paris, France. Tél. 33/1 40 79 35 27. Fax 33/1 40 79 35 24.

10-12 juin 1996

Bahrein  
Petrotech'96 : Middle East Refining and Petrochemicals Conference & Exhibition.  
— Stephen Key, Arabian exhibition management WLL, PO Box 20 200, Manama, Bahrein. Tél. 973/55 00 33. Fax 973/55 32 88.

10-12 juin 1996

San Diego, Californie, USA  
3rd International symposium on environmental geotechnology.  
— E. Nothofer, Fritz Engineering Laboratory, Lehigh University, Bethlehem, PA18015, USA. Tél. 1/610 758 3520. Fax 1/610 758 4522. E-mail : esne@lehigh.edu.

12 juin 1996

Paris, France  
Histoire et épistémologie de la Géologie - Réunion commune SGF - COFRHIGEO. In n° 56.  
— Jean Gaudant, secrétaire du COFRHIGEO, 17, rue du Dr Magnan, 75013 Paris, France ou Eric Buffetaut, Société géologique de France, 77, rue Claude Bernard, 75005 Paris, France. Tél. 33/1 43 31 77 35. Fax 33/1 45 35 79 10.

\* 12-19 juin 1996

Bucarest, Roumanie  
IGR'96, 90th Anniversary of the Geological Institute of Romania. (pre and post excursions)  
— Antoneta Seghedi, Institutul Geologic al Romaniei, str. Caransebes 1, 78344 Bucuresti 32, Roumanie. Tél. 40/16 65 75 30. Fax 40/13 12 84 44. E-mail : seghedi@igr.ro.

17-21 juin 1996

Trondheim, Norvège  
7th Int. symposium on landslides.  
— Kaare Senneset, Dept. Geotechnical Engineering, Norwegian Institute of Technology, N-7034 Trondheim, Norway. Tél. 47/73 59 46 02. Fax 47/73 59 46 09. E-mail : kaare.senneset@geotek.unit.no.

19-21 juin 1996

Montréal, Québec, Canada  
2nd North American Rock Mechanics Symposium (NARMS'96). Tools and Techniques in Rock Mechanics.  
— Norma Procyshyn, Dept of Mining & Metallurgical Engineering, Mc Gill University, 20 University Street, Box 102, Montréal QC Canada H3A 2A5. Tél. 514/398 43 83. Fax 514/398 83 79. E-mail : norma@min-met.mcgill.lan.ca.

22-29 juin 1996

Houston, Texas, USA  
9th International Palynological Congress.  
— Vaughn M. Bryant, Dept anthropology, Texas A. & M. Univ. College station, TX 77843, USA. Tél. 1/409 845 52 42. Fax 1/409 845 4070. E-mail : giwrenn@vrbryant@tamu.edu.isuvm.sncc.isu.edu.

24-27 juin 1996

San Francisco, Ca, USA  
Second International Airborne Remote Sensing Conference and Exhibition.  
— ERIM/Airbone Conference, PO Box 134001, Ann Arbor, MI 48113 - 4001,

USA. Tél. 1/313 994 1200. Fax 1/313 994 51 23. E-mail : wallman@erim.org.

\* 21 juin 1996

Paris, France  
Journée thématique de l'AGP (Association des géologues du Permien) : le Permien.  
— AGP J.P. Deroin, BRGM DR/GIG, BP 6009, 45060 Orléans Cedex 2, France. Tél. 38 64 38 34. Fax 38 64 33 61.

\* 27-28 juin 1996

Edinburgh, Ecosse  
Mineralisation in the Caledonides.  
— The Conference Office, The Institution of Mining and Metallurgy, 44 Portland Place, Londres W1N 4BR, G.-B. Tél. 44/17 15 80 38 02. Fax 44/17 14 36 53 88.

\* 29 juin - 2 juillet 1996

Budapest, Hongrie  
4th workshop European Paleontological Association (EPA) : Environmental changes and Hominoid evolution.  
— L. Grauvogel-Stamm, Institut de Géologie, 1, rue Blessig, 67084 Strasbourg Cedex, France. Tél. 33/88 55 85 70. Fax 33/88 36 72 35.

7-13 juil. 1996

Madison, Wc, USA  
2nd International symposium on extant and fossil Charophytes.  
— Charophyte symposium, Lab. Paléobotanique, CP 062, Université Sciences, Pl. E. Bataillon, 34095, Montpellier Cedex 5, France. Fax 33/67 04 20 32. E-mail : paleobot@crt.univ.-montp2.fr.

8-11 juil. 1996

Rennes, France  
Colloque interdisciplinaire d'hydrologie et de gestion des eaux, Bretagne'96.  
— Alain Jigorel, INSA de Rennes, Département de Génie civil, Lab. de minéralogie et géotechnique 20, avenue des Buttes de Coësmes, 35043 Rennes Cedex, France. Tél. 33/99 28 65 30. Fax 33/99 63 67 05. E-mail : alain.jigorel@insa-rennes.fr.

\* 8-12 juillet 1996

Bierville - Paris, France  
3<sup>e</sup> Congrès Européen des Ostracodologues : Ostracodologie événementielle. In n°58.  
— S. Crasquin, Université P. & M. Curie, Lab. de Micropaléontologie, Tour 15-25, 4E, case 104, 4 pl. Jussieu, 75252 Paris Cedex 05, France. Tél. 33/1 44 27 50 37. Fax 33/1 44 27 38 31. E-mail : crasquin@ccr.jussieu.fr.

\* 9-12 juillet 1996

Accra, Ghana  
WAM'96. The 2nd West African International Mining Exhibition & Conference.  
— Sereen Thomson, Exhibition Management Services (Pty) Ltd, PO Box 650302, Benmore 2010, Johannesburg, South Africa. Tél. 27/(0)11 783 7250/1/6/9. Fax 27/(0)11 783 7269.

\* 11-17 juillet 1996

France  
Excursion annuelle de l'AGP : les Alpes du nord (Briançonnais, Vanoise et Dauphiné).  
— AGP J.P. Deroin, BRGM DR/GIG, BP 6009, 45060 Orléans Cedex 2, France. Tél. 38 64 38 34. Fax 38 64 33 61.

15-17 juil. 1996

Granade, Espagne  
Cephalopode - Present and past - IV International symposium.  
— Federico Olóriz Sáez ou Francisco J. Rodríguez - Tovar, Dpt. Estratigrafía y Paleontología, Univ. Granada, Avd. Fuente Nueva s/n, 18002 Granada, Espagne. Fax 34-58-24 33 45. E-mail : fr-tovar@goliat.ugr.es.

15-19 juil. 1996

Exeter, G.-B.  
Erosion and sediment yield : global and regional perspectives, international symposium.

— D. Walling, Dept. Geography, University of Exeter, Rennes Drive, Exeter EX4 4RJ, G.-B. Tél. 44/13 92 26 33 45. Fax 44/13 92 26 33 42.

21-28 juil. 1996  
Ilkely, Yorkshire, G.B.  
Fourth International symposium on the Geochemistry of the Earth surface.  
— Secret. Department of Continuing Education, Leeds University, Leeds LS2 9JT, G.B. Tél. 44/11 32 333 241. Fax 44/11 32 333 240.

\* 29 juillet - 2 août 1996  
Goose Bay (Labrador), Canada  
Proterozoic evolution in the North-Atlantic realm.  
— C.F. Gower, Newfoundland Department of Natural Resources, P.O. Box 8700, St. John's, Newfoundland, A1B 456, Canada. Tél. 709/729 2118. Fax 709/729 3493. E-mail : cfg@zeppo.geosurv.gov.nf.ca.

4-9 août 1996  
Rochester, NY, USA  
The Sikurium system, 2nd International symposium. In n°58.  
— Markes Johnson, Department of geology, Williams College, Williamstown, MA 01267, USA. Tél. 413/597 23 29. Fax 413/597 41 16. E-mail : markes.e.johnson@williams.edu.

\* 4-9 août 1996  
Stockholm, Suède  
Sixth Stockholm Water Symposium.  
— Stockholm Water Symposium 1996, Stockholm Water Company, S - 10636, Stockholm, Suède. Fax 46/87 36 20 22.

4-14 août 1996  
Beijing, Chine  
30th International Geological Congress. In n° 51.  
— Preparatory Commission for the 30th IGC, Baiwanzhuang Road, 26 Fuchengmenwai, PO Box 823, Beijing 100 037, R.P. de Chine. Tél. 86/1 832 77 72. Fax 86/1 832 89 28. Téléc 22 2721 CAGS CN.

5-10 août 1996  
La Haye, Pays-Bas  
AIG Symposium : Land - Sea interactions and natural hazards.  
— Dietrich Borch, Geographisches Institut, Universität Heidelberg, Im Neuenheimer Feld 348, D 69120 Heidelberg 1, Allemagne. Fax 19 49 62 21 56 49 96.

\* 12-17 août 1996  
Rimouski, Québec, Canada  
Integrated management and sustainable development in coastal zones (International conference).  
— M. El-Sabh, GREC, Université du Québec, 310 allée des Ursulines, Rimouski, Québec, Canada. G5L 3A1. Tél. 418 724 1701. Fax 418 724 1842. E-mail : mohammedelsabh@uqar.quebec.ca.

18-24 août 1996  
Rio Claro, Brésil  
IVth Symposium on Cretaceous of Brazil. Sessions and field trip.  
— Dimas Dias-Brito, Dept. of Sedimentary Geology, Instituto de Geociências/UNESP, Rio Claro - SP, 13506-230, Brésil. Tél. 55/0 195 34 0327. Fax 55/0 195 242 445 or 340 327. E-mail : dimas@geo001.uesp.ansp.br.

\* 25 août - 1<sup>er</sup> sept. 1996  
Roumanie, Est Carpathes  
Joint CEV & CVS Workshop on Volcaniclastic sequences around andesitic stratovolcanoes.  
— Alex Szakacs and/or Ioan Seghedi, Institutul Geologic al Romaniei, Str. Caransebes 1, 78344 Bucuresti 32, Roumanie. Tél. 40/16 65 75 30. Fax 40/13 12 84 44. E-mail : szakacs@igr.ro. ou bien : seghedi@igr.ro.

2-4 sept 1996  
Nancy, France  
International Conference on Cathodoluminescence and Related Techniques in Geosciences and Geomaterials. In n° 56.

— M. Pagei, CREGU, BP 23, 54501 Vandœuvre-les-Nancy cedex, France. Tél. 33/83 44 19 00. Fax 33/83 44 00 29. E-mail : pagei@cregu-cnrs-nancy.fr.

\* 2-4 sept. 1996  
Nantes, France  
Colloque de Géophysique appliquée.  
— R. Lagabriele, Laboratoire Central des Ponts et Chaussées, 44390 Bouguenais, France.

\* 2-6 sept. 1996  
I<sup>er</sup> Santorin, Grèce  
Explosive volcanic eruptions.  
— J.S. Gilbert & H.M. Mader, Environmental Science Division, Lancaster University, Lancaster LA1 4YQ, UK. Tél. 01524 59 30 22. E-mail : J.S.Gilbert@lancaster.ac.uk.

3-6 sept. 1996  
Turin, Italie  
Eurock'96 : prediction and performance in rock mechanics and rock engineering. International symposium.  
— Organizing Committee Eurock'96, COAss. ne Geotecnica Italiana AGI via Bormida 2, 00198 Rome, Italie. Fax 39/6 8842265.

\* 3-6 sept. 1996  
Prague, Tchecoslovaquie  
Minerals, metals and the environment, II international conference.  
— Conference Officer, Institution of Mining and Metallurgy, 44 Portland Place, London W1N 4ER, G.B. Tél. 44 /171 580 38 02. Fax 44/171 436 53 88.

\* 3-7 sept. 1996  
Pittsburgh, Pennsylvania, USA  
13th annual international Pittsburgh coal conference.  
— Adrian Di Nardo, Pittsburgh Coal Conference Office, University of Pittsburgh, 1140 Benedum Hall, Pittsburgh, PA 15260. Tél. (412) 624 7440. Fax (412) 624 1480. E-mail : dinardo@engmg.civ.pitt.edu.

7-9 sept. 1996  
Tolède, Espagne  
GLOCOPH'96 : Global Continental Palaeohydrology, Second International Symposium. In n° 57.  
— Gerardo Benito, GLOCOPH'96, CSIC - Centro de Ciencias Medioambientales, Serrano 115 dpdo, 28005 Madrid, Espagne. Fax 34/15 64 08 00. E-mail : benito@cc.csic.es.

8-11 sept. 1996  
Caracas, Venezuela  
II AAPG/SVG. International Congress and exhibition : expanding our Business horizons.  
— AAPG Convention Dept., Box 978, Tulsa, OK 74101, USA. Tél. 1/918 580 26 79. Fax 1/918 580 26 84.

8-12 sept 1996  
Portsmouth, G.-B.  
Contaminated land and groundwater. Future directions. (32nd Annual Conference of the Engineering Group of the Geological Society, jointly with the Hydrogeological Group).  
— D.N. Lerner, Dept of Civil & Environmental Engineering, University of Bradford, Bradford BD7 1DP, G.-B. Tél. 01274 3854 70. Fax 01705 84 22 44.

\* 9-12 sept. 1996  
Poitiers, France  
L'eau souterraine en région agricole. Colloque international.  
— ESRA'96, Université de Poitiers, Lab. d'hydrogéologie, Bât. Sciences naturelles, 40, av. du Recteur Pineau, 86022 Poitiers Cedex, France. Tél. 33/49 45 36 81. Fax 33/49 45 40 17. E-mail : esra@hydrogeo.univ.poitiers.fr.  
Secondary adaptation to life in water ; an international multidisciplinary congress.  
— J.-M. Mazin et P. Vignaud, Biochronologie et Paléobiologie humaine, Université de Poitiers, 40 Av. du Recteur Pineau, 86022 Poitiers Cedex, France.

\* 9-15 sept. 1996  
Marseille, France  
4<sup>e</sup> Congrès international sur les Rudistes (avec excursions). In n° 58.  
— Jean-Pierre Masse, Centre de Sédimentologie-Paléontologie, Faculté des Sciences St-Charles, Case 67, 13331 Marseille Cedex 03. Tél. 33/91 10 63 95. Fax 33/91 64 99 64.

10-13 sept. 1996  
Parma, Italie  
Italian Paleontological Society, XIIIth Congress.  
— Paola Monegatti, Istituto di Geologia, Viale delle Scienze 78, 43100 Parma, Italie. Tél. 39/0521 90 53 67. Fax 39/90 53 05.

\* 12-14 sept. 1996  
Aix-la-Chapelle, Allemagne  
11<sup>e</sup> colloque annuel du Groupe de Sédimentologie d'Aix-la-Chapelle : environnements de dépôt anciens et récents entre la Mer du Nord et le lac de Constance.  
— A. Müller, RWTH, Aix-la-Chapelle, Allemagne. Tél. 49/02 41 80 57 26. Fax 49/02 41 88 88 151. E-mail : A.Mueller@RWTH-Aachen.DE.

\* 13-18 sept. 1996  
Giens, France  
Alluvial basins : quantitative estimation of sediment supply, accommodation and loss.  
— P.F. Friend (Cambridge) c/o. Valérie Allsach, European Science Foundation, 1 quai Lezay-Marnésia, 67080 Strasbourg Cedex, France. Tél. 33/ 88 76 71 35. Fax 33/88 36 69 87. E-mail : euresco@esf.org ; WWWserver : http://www.esf.org.

15-20 sept 1996  
Asilomar, California, USA  
Deep seismic profiling of the continents, 7th international symposium.  
— S. Klempere, Dept. of Geophysics, Mitchell Building, Stanford University, Stanford, CA 94305-2215, USA. Tél. (415) 723-8214. Fax (415) 725-7344. E-mail : klemp@pangea.stanford.edu.

\* 15-28 sept. 1996  
Madrid, Espagne  
Spanish landslides field trip.  
— ICFL Spain. Landslides 96 ; J. Chacon, Dpt. Civil Engineering, Faculty of Sciences, Univ. of Granada c/Severo Ochoa s/n 18071, Grenade, Espagne. Tél./Fax 34 58 243 367. E-mail : jchacon@ugr.es.

16-19 sept. 1996  
Winnipeg, Canada  
Deep, geological disposal of radioactive waste conference.  
— K. Nuttall, AECL Research, Pinawa, Manitoba, ROE 1LO, Canada. Tél. 1/204 753 2311. Fax 1/204 753 2455. E-mail : woronas@url.wl.aecl.ca.

16-24 sept. 1996  
Freiberg, Saxe, Allemagne  
5th International Cretaceous Symposium and IGCP 382 Annual Assembly.  
2nd Workshop on Inoceramids.  
— Silke Voigt, TU Bergakademie Freiberg, Institut für Geologie, Bernhard-von-Cotta-Str. 2, D-09596 Freiberg, Allemagne. Tél. 49 3731 393296. Fax 49 3731 393599. E-mail : voigt@coffee.geophysik.tu-freiberg.de.

17-19 sept. 1996  
St-Malo, France  
ISAG'96, Troisième symposium international sur la Géodynamique. In n° 55.  
— D. Gapais, ISAG'96, Géosciences Rennes, Université de Rennes 1. Campus de Beaulieu, 35042 Rennes Cedex, France. Fax 33/ 99 28 67 80. E-mail : isag96@seth.univ-rennes1.fr.

\* 18-20 sept 1996  
Paris, France  
24<sup>e</sup> Journées de l'Hydraulique de la Société hydrotechnique de France :

L'eau, l'Homme et la nature. Les sciences hydrotechniques au service du développement durable.  
— S.H.F. 199, rue de Grenelle, 75007 Paris, France. Tél. 33/1 47 05 13 37. Fax 33/1 45 56 97 46.

\* 18-20 sept. 1996  
Bordeaux, France  
Metatechnies'96 : 2<sup>e</sup> Symposium international environnement et nouvelles technologies : protection des sols, prévention et dépollution.  
— Metatechnies'96, BCS - DEVELNIR Conseil, Palais des Congrès, 33300 Bordeaux Lac, France. Tél. 33/56 11 88 88. Fax 33/56 43 17 76.

22-24 sept. 1996  
Sile, Turquie  
2nd Symposium on the Petroleum Geology & Hydrocarbon potential of the Black Sea area.  
— Sami Derman, TPAO, Turkey. Tél. 90/312 286 90 40. Fax 90/312 286 90 49. ou Liz Lador, Petroconsultants, PO Box 152, 12 58 Perly-Genève, Suisse. Tél. 41/22 721 17 45. Fax 41/22 721 17 47.

22-25 sept. 1996  
Sudbury, Ontario, Canada  
Association of Earth Science Editors, 30th Annual Meeting, International Conference.  
— Publication Services Section, 933 Ramsey Lake Road, Sudbury, Ontario, Canada P3E 6B5. Tél. 1/705 670 5755. Fax 1/705 670 5770.

22-27 sept. 1996  
Wollongong, Australie  
Fifth international geostatistics congress.  
— Ernest Baafi, GEOSTAT'96, Dept. of Civil and Mining Engineering, University of Wollongong, Wollongong, NSW 2522, Australie. Fax 61/42 21 32 38. E-mail : geostat96@uow.edu.au.

\* 22-27 sept. 1996  
Tashkent, Ouzbékistan  
Environmental hydrology and hydrogeology, 3rd USA/CIS joint conference.  
— Third USA/CIS Conference, AIH, 3416 University Av. S.E., Minneapolis, MN, USA.

23-27 sept. 1996  
Athènes, Grèce  
1st Congress of Balkan Geophysical Society.  
— Erasmus Horizon Ltd., 34 Vass. Georgiou B Street 116 35 Athènes, Grèce.

\* 23-29 sept. 1996  
Schwaz, Tyrol, Autriche  
Min Pet'96.  
— Min Pet'96, Institut für Mineralogie & Petrographie, Universität Innsbruck, Innrain 52. A-6020 Innsbruck, Autriche. Tél. 43/51 25 07 55 01. Fax 43/51 25 07 29 26.

24-26 sept. 1996  
Kusadasi, Turquie  
Vth International mineral processing symposium.  
— Mevlüt Kemal, Maden Mühendisliği Bölümü, Dokuz Eylül Üniversitesi, 35100 Bornova, Izmir, Turquie. Tél. 90/232 388 78 70. Fax 90/232 37 38 269.

\* 24-27 sept. 1996  
Golden, Colorado, USA  
International conference on calibration and reliability in groundwater modelling.  
— Conference Secretariat Model CARE'96 : International Ground Water Modelling Center, Colorado School of Mines, Golden, Colorado 80401 USA. Tél. +1-303-273-3103. Fax +1-303-384-2037. E-mail : igwmc@mines.edu.

24-27 sept. 1996  
Singapour  
OSEA'96 - Offshore South East Asia conference and exhibition.  
— Will Martin, Overseas exhibition services Ltd, 11 Manchester Square, London,

W1M 5AB, G.B. Tél. 44/171 486 19 51, Fax 44/171 413 82 12. E-mail : exhibit@montnet.com ; Internet : http://www.montnet.com ou Bob Goh, Singapore exhibition services Pte Ltd. 2 Handy road, # 15-09 Cathay building, Singapore 0922. Tél. 65/338 47 47. Fax 65/339 56 51. E-mail : seairfo@sirnet.com.sg.

25-29 sept. 1996  
Madras, Inde  
Charnokite and granulite facies rocks, International Symposium.  
— V. Ram Mohan, Dept. of Geology, University of Madras, A.C. College Campus, Madras, Inde PN 600025. Tél. 91/44 235 11 37. Fax 91/44 235 28 70.

\* 30 sept. - 3 oct. 1996  
Sendai, Japon  
Ground penetrating radar.  
— M. Sato, Dpt. of Resources Engineering, Tohoku University, Sendai 980-77, Japon.

7-11 oct. 1996  
Cagliari, Italie  
Fourth international symposium on environmental issues and waste management in energy and mineral production.  
— R. Ciccu, Dipartimento di Geologia e Tecnologia Ambientale (DIGITA), Università degli Studi di Cagliari, Piazza d'Armi, 09 123 Cagliari, Italie. Tél. +39 70 2000317/2000320/2000322. Fax 9/70 27 20 31.

8-11 oct. 1996  
Tallinn, Estonie  
Third Baltic Stratigraphical Conference.  
— Dimitri Kaijo, Institute of Geology, Estonian Academy of science, 7 Estonia Ave., EEO 100 Tallinn, Estonie. Tél. 7/37 22 45 46 53. Fax 7/37 26 31 20 74. E-mail : kaijo@pzgeol.gi.ee.

\* 8-11 oct. 1996  
St Petersburg, Russie  
International symposium : large and extra-large (unique) deposits of rare and precious metals (genetic aspects and development problems).  
— Y.B. Marin, St Petersburg State Mining Institute (Technical University) 21th Line, 2, V.O., St Petersburg, 199 026 Russie. Tél. (812) 21 88 247. Fax (812) 21 32 613 ; (812) 21 85 463. E-mail : marin@mineral.spb.su.

9-12 oct. 1996  
Kingston, Jamaïque  
Natural Hazards and Disasters.  
— B. Carby, Dept. of Geology, UWI, Mona, Kingston, Jamaïque. E-mail : bcarby@uwimona.edu.jm.

9-13 oct. 1996  
Ghania, Grèce  
Geological Society of America, Penrose Conference. Exhumation Processes : Normal Faulting, Ductile flow, and Erosion.  
— Lois J. Eims, Western Experience, Penrose Conference Coordinators for GSA, 4881 Evening Sun Lane, Colorado Springs, Co 80917, USA. Tél. 1/719 597 9201. Fax 1/719 591 4852. E-mail : louieims@e-world.com.

\* 10 oct. 1996  
Paris, France  
Télétection et géologie de l'ingénieur.  
— P. Potherat, LCPC, 60 bd. Lefebvre, 75732 Paris Cedex 15, France. Fax (1) 40 43 54 98.

\* 13-18 oct. 1996  
Buenos Aires, Argentine  
XIII Argentine geological congress and III hydrocarbon exploration congress.  
— Secretary, XIII CGA, Maifú 645, piso 3, 1006 Buenos Aires, Argentine. Tél. (541) 322 3652/3244, 325 8066, 393 5494. Fax (541) 325 8009.

\* 18-20 oct. 1996  
Cuba  
IGCP project 364, geological correlation of ophiolites and volcanic arcs in the circum - caribbean realm.  
— Liavatti, Diaz de Villahilla, Inst. Geología y Paleontología, Via Blanca y Carretera Central, Ciudad de la Habana, CP 11000 Cuba. Fax 537 335 345.  
— Grenville Draper, Dept. of Geology, Florida International University, Miami, FL 33199. Fax 305 348 3877. E-mail : draper@servax.fiu.edu.

\* 20-23 oct. 1996  
Houston, USA  
Compartmentalized reservoirs.  
— Debby Boonstra, AAPG Education Dept., Po Box 979, Tulsa, OK 74101-0979, USA.

\* 21-24 oct. 1996  
Chambéry, France  
Association Française des Travaux en Souterrain (AFTES) : Journées d'études internationales : "Ouvrages en souterrain : des techniques et des hommes".  
— Secrétaire AFTES/EDF, Bureau 4/71, 22-30, Av. de Wagram, 75008 Paris. Tél. 33/(1) 47 64 84 77. Fax 33/(1) 47 64 75 88.

\* 21-26 oct. 1996  
Nice, France  
121<sup>e</sup> congrès national des sociétés historiques et scientifiques.  
— CTHS, 121<sup>e</sup> congrès, 1 rue Descartes, 75005 Paris, France. Tél. 16/(1) 46 34 47 63.

\* 21-26 oct. 96  
Strasbourg, France  
Deposystems of phosphorites and related authigenic minerals. Processes, pathways and products. IGCP 325, Réunion finale.  
— L. et J. Lucas, Institut des Sciences de la Terre, 1 rue Blessig, 67084 Strasbourg Cedex. Fax (33) 88 36 72 35. E-mail : JLucas@illite.u-strasbg.fr.

24 oct. 1996  
Rennes, France  
Tectonisme, eustatisme et enregistrement sédimentaire.  
— F. Guillocheau, Geosciences Rennes, Inst. géologie, campus Beaulieu, av. du Général Leclerc 35042 Rennes Cedex, France. Tél. 33/99 28 61 23. Fax 33/99 28 67 80.

28-31 oct. 1996  
Denver, Co, USA  
GSA : annual meeting.  
— J. Kinney, GSA Headquarters, Box 9140, 3300 Penrose Place, Boulder Co, 80301, USA. Tél. 1/303 447 2020.

nov. 1996  
Nantes, France  
Réunion de Géophysique appliquée.  
— J.M. Quénerdel, UFG, 79, rue Claude Bernard, 75005 Paris, France. Tél. 33/1 47 07 91 95.

\* 4-5 nov. 1996  
Paris, France  
PICG. Participation française. Bilan. Perspectives.  
— J. Rey, Lab. de Stratigraphie séquentielle et micropaléontologie, Institut des Sciences de la Terre, Université Paul Sabatier, 39, allées Jules-Guesde, 31062 Toulouse Cedex, France. Tél. 33/61 53 02 35. Fax 33/62 26 71 40.

4-7 nov. 1996  
Lake Buena Vista, Florida, USA  
ECO-INFORMA'96 - Global Networks for Environmental Information : Bridging the Gap Between Knowledge and Application.  
— Robert Rogers, ERIM, Box 134001, Ann Arbor MI 48113 - 4001 USA. Tél. 1/313 994 1200. Fax 1/313 994 51 23. E-mail : rroeder@vaxc.erim.org.  
En Europe : Otto Hutzinger. Tél. 49/ 921 552 245 ou 155. Fax 49/ 921 546 26.

\* 5-6 nov. 1996  
Stavanger, Norvège  
The 6th Conference on Reservoir Management.  
— Norwegian Petroleum Society, PO Box 1897 Vikja, N 0124 Oslo, Norvège. Tél. 47/22 43 00 50. Fax 47/22 55 46 30.

\* 9-14 nov. 1996  
Blamey, Irlande  
Glacial-Interglacial sea-level changes in four dimensions : evidence of sea-level and linked environmental changes at the land-ocean interface.  
— R.J. Devoy (Cork), c/o. Valérie Alls-pach, European Science Foundation, 1 quai Lezay-Marnésia, 67080 Strasbourg Cedex, France. Tél. 33/88 76 71 35. Fax 33/88 36 69 87. E-mail : euresco@esf.org ; WWWserver : http : \\www.esf.org.

11-14 nov. 1996  
Le Caire, Egypte  
Geological surveys and sustainable development ; Geological Survey of Egypt Centennial. In n° 53. (dates modifiées)  
— M. EL Hinnawi, Geological Survey of Egypt, 3 Salah Salem Rd., Abbasiya, Le Caire, Egypte. Tél. 20/38 1825. Fax 20/(0)2 (02) 620 128.

15-16 nov. 1996  
Arras, France  
La Craie, objet géologique, réservoir, matériau et paysage.  
— N. Crampon, Société géologique du Nord, Univ. Sci. et Techn. de Lille, Sciences Terre, 59655 Villeneuve d'Ascq Cedex, France. Fax 33/20 43 49 95 ou Fax IUT Bethune 33/21 68 49 57.

\* 15-20 nov. 1996  
Hyderabad, Inde  
2nd International Seminar & Exhibition on Geophysics Beyond 2000.  
— Association of Exploration Geophysicists, CEG Building, Osmania University, Hyderabad 500 007, India. Tél. 91/40 701 90 01, 67 13 83. Fax 91/40 701 90 01. E-mail : aeg@amccs.uunet.in.

17-22 nov. 1996  
Kingston, Jamaïque  
Hydrology in the Humid Tropic environment, International symposium.  
— Secret. Humid Tropics environment 96, A. Ivan Johnson, 7474 Upham Court, Arvada, CO 80003 USA. Fax 1/303 425 56 10.

\* 20-21 nov. 1996  
Islamabad, Pakistan  
International seminar on paleomagnetic studies in Himalaya - Karakoram collision belt.  
— ITC - PARMAGS, Geoscience Laboratory, Geological Survey of Pakistan, PO. Box 1461, Shahzad Town, Islamabad, 44000 Pakistan. Tél. 92/51 24 04 23. Fax 92/51 24 02 23. E-mail : parmags@geolab@sdnpk.undp.org.

22 nov. 1996  
Paris, France  
La géologie des grands ouvrages du début du XIX<sup>e</sup> siècle : à la mémoire du Professeur P.-C. Lévêque.  
— P. Broquet, Faculté des Sciences, Lab. de Géologie Structurale et Appliqués, 1, pl. Leclerc 25000 Besançon, France. Tél. 33 81 66 57 13.

\* 2-3 déc. 1996  
Paris, France  
La limite Crétacé-Tertiaire : aspects biologiques et géologiques. In n° 58.  
— E. Buffetaut et N. Bardet, Lab. Paléontologie des Vertébrés, 4 pl. Jussieu, Case 106, 75252 Paris Cedex 05, France. Tél. 33/1 44 27 35 14. Fax 33/1 44 27 49 92.

\* 3-5 déc. 1996  
Londres, G.-B.  
PETEX'96, Petroleum Exploration Conference and Exhibition.

— BDC Events, Business Design centre Ltd, 17118 Dover Street, London W1X 3 PB, G.-B. Tél. 44/171 495 58 00. Fax 44/171 495 78 08.

\* 6-11 déc. 1996  
Seefeld, Autriche  
Geochemistry of crustal fluids.  
— K.V. Ragnarsdottir (Bristol) c/o. J. Herdkevic, European Science Foundation, 1 quai Lezay-Marnésia, 67080 Strasbourg Cedex, France. Tél. 33/88 76 71 35. Fax 33/88 36 69 87. E-mail : euresco@esf.org ; WWWserver : http : //www.esf.org/euresco

11 et 12 déc. 1996  
Paris, France  
Sédimentologie de la matière organique.  
— F. Baudin, Lab. Stratigraphie, tour 15-16, 4 pl. Jussieu, 75252 Paris Cedex 05, France. Tél. 33/1 44 27 49 57. Fax 33/1 44 27 38 31.

\* 12 déc. 1996  
Paris, France  
Informatique et géologie.  
— J.-L. Durville, LCPC, 58 Bd. Lefebvre, 75732 Paris Cedex 15, France. Fax (1) 40 43 54 98.

## 1997

janvier 1997  
Dindigul, Inde  
Drought, groundwater pollution and management.  
— Managing director, Tamirnadu water supply and drainage board, TWAD House, Chepauk, Madras 600 005, Inde.

\* 19-24 janvier 1997  
Puerto Vallarta, Mexique  
IAVCEI, general assembly.  
— Organizing Committee, Instituto de Geofísica, UNAM Circuito exterior, Ciudad Universitaria, C.P. 04510, Mexique, D.-F. Fax 5/550 24 86.

\* 28-29 janvier 1997  
Oslo, Norvège  
New Trends in Geoscience Computing.  
— Norwegian Petroleum Society, PO Box 1897 Vikja, N 0124 Oslo, Norvège. Tél. 47/22 43 00 50. Fax 47/22 55 46 30.

\* 5-6 mars 1997  
Londres, G.-B.  
Transpressional and Transtensional Tectonics.  
— Bob Holdsworth, Dept. of Geological Sciences, University of Durham, Durham DH1 3LE, G.-B. Fax 44/ 01 191 374 2510. E-mail : R.E.Holdsworth@durham.ac.uk.

\* 8-13 mars 1997  
Yaoundé, Cameroun  
3<sup>e</sup> Colloque de stratigraphie et de paléogéographie de l'Atlantique sud, 13<sup>e</sup> Colloque africain de micropaléontologie et Conférence annuelle de l'IGCP n° 381.  
— Société nationale des hydrocarbures, Comité d'organisation des Colloques, BP 955, Yaoundé, Cameroun. Tél. (237) 20 32 53. Fax (237) 20 46 51/ 20 96 69.

\* 20-22 mars 1997  
Séville, Espagne  
Colloque hispano-français : milieux carbonatés continentaux.  
— J.-L. Guendon, CNRS, Centre Aixois de Géographie Physique, 29, Av. R.-Schuman, F 13621 Aix-en-Provence Cedex 1. Tél. 42 95 38 70. Fax 42 95 04 20.  
— F. Diaz Del Omo, Dept. Géographie Physique, Université de Séville, c/Maria de Padilla s/n, 41002 Séville, Espagne. Tél. 34/54 55 13 66. Fax 34/54 55 13 51.

\* 24-27 mars 1997

Braga, Portugal  
The 4th All Portuguese Language Countries Geochemical Congress and the 10th Portuguese Geochemical week.  
— Graciete Dias, Dpt. Ciências da Terra, Univ. Minho, Campus de Guusar, 4709 Braga Codex, Portugal. Tél. 351/53 60 43 05. Fax 351/53 60 43 04. E-mail : geoquimica@ci.uminho.pt ; URL: http://depa.ci.uminho.pt/ct/port/homepage.html.

\* 9-11 avril 1997

Mons, Belgique  
Géologie Régionale du Sud-Brabant aux collines de l'Artois.  
— P. Doramus et M. Hennebert, Service de Géologie Fondamentale et Appliquée, Faculté Polytechnique de Mons, rue de Houdain, 9 - 7000 Mons, Belgique. Tél. 32/(0) 65 37 46 08. Fax 32/(0) 65 37 46 10. E-mail : cab@fpm.s.fpm.ac.be.

\* 13 avril - 3 mai 1997

Rabat, Maroc  
5<sup>e</sup> Assemblée scientifique de l'AISH : Symposiums et atelier Karst hydrologie.  
— IAHS SAS-97 Organising Committee, Direction générale de l'hydrologie, Rabat-Chellah, Maroc. Tél. 212/77 76 90 08/77 87 42. Fax 212/77 76 90 08/77 87 42.

\* 14-17 avril 1997

Montpellier, France  
Congrès international : biochronologie mammalienne du Cénozoïque en Europe et domaines reliés.  
— J.-P. Aguilar ou S. Legendre, Lab. de Paléontologie - CC64, Univ. Montpellier II, 34095 Montpellier Cedex 5, France. Tél. 33/67 14 32 51/54. Fax 33/67 14 36 10. E-mail : biochrom@isem.univ.montp2.fr.

\* 23 avril - 3 mai 1997

Rabat, Maroc  
AISH'97 - 5<sup>e</sup> assemblée scientifique de l'Association International des Sciences Hydrologiques.  
— IAISH'97 Organizing Committee, Direction Général de l'Hydraulique, Casier Rabat-Chellah-Maroc. Tél. 212/(7) 77 90 08 /77 87 42. Fax 212/(7) 77 86 96.

19-21 mai 1997

Ottawa, Canada  
Ottawa'97, Réunion annuelle de l'Association géologique et de l'As-

sociation minéralogique du Canada.

— Commission géologique du Canada, pièce 757, 601 rue Booth, Ottawa, Canada Ontario K1A 0E8. Tél. 1/613 947 76 49. Fax 1/613 947 76 50. E-mail : ottawa97@emr.ca.

25-30 mai 1997

Jérusalem, Israël  
10th International Geochemical Exploration Symposium (AEG).  
— IGES Secretariat, PO Box 50006, Tel-Aviv, 61500 Israël. Fax 972/3 514 00 77.

26-30 mai 1997

Genève, Suisse  
European Assoc. of Geoscientists & Engineers (EAGE), 59th Conference.  
— EAGE, E.H. Bomkamp, PO Box 298, NL 3700 AG Zeist, Pay-Bas. Tél. 31/3069 62 655. Fax 31/3069 62 640.

23-27 juin 1997

Athènes, Grèce  
Symposium international sur la géologie de l'ingénieur et de l'environnement.  
— IAEG. "Athens 97", P.O. Box 19 140 GR. 117 10 Athènes, Grèce. Fax 30/1/924 25 70.

1<sup>er</sup> - 9 juillet 1997

Melbourne, Australie  
1997 Joint assemblies of the International Association of Meteorology and Atmospheric Sciences & International Association for Physical Sciences of the Ocean.  
— IAMAS - IAPSO secretariat, Convention Network, 224 Rouse street, Port Melbourne Victoria 3207 Australie. Tél. 61/3 96 46 41 22. Fax 61/3 96 46 77 37. E-mail : mscarlett@peg.apc.org.

10-12 juillet 1997

Vienne, Autriche  
European Palaeontological Association, 2<sup>e</sup> Congrès européen de Paléontologie : climats, past, present, future.  
— L. Grauvogel-Stamm, Institut de Géologie, 1, rue Blessig, 67084 Strasbourg Cedex, France. Tél. 33/88 35 85 70. Fax 33/88 36 72 35.

\* 10-17 août 1997

La Chaux-de-Fonds (Neuchâtel), Suisse  
12<sup>e</sup> Congrès international de spéléologie et 6<sup>e</sup> Colloque d'hydrologie en pays calcaire et en milieu fissuré.

— Sublime, Case postale 4093, CH-2304, La Chaux-de-Fonds, Suisse. E-mail : congress.uis97@chyn.unine.ch.  
6<sup>e</sup> Colloque d'hydrologie en pays calcaire et en milieu fissuré, avec excursions (15-17 août). In n° 58.  
— F. Zwahlen, Centre d'hydrogéologie, 11, rue Emile-Argand, Case postale 2, CH 2007, Neuchâtel, Suisse. Tél. 41/38 23 26 00. Fax 41/38 23 26 01. E-mail : congress.uis97@chyn.unine.ch. Internet : http://www.unine.ch/uis97/.

18-29 août 1997

Thessalonique, Grèce  
29th General Assembly of the International Association of seismology and physics of the Earth's interior.  
— 29th IASPEI general assembly geophysical laboratory, University, GR - 54006, Thessaloniki, Grèce. Tél. 30/31 998 526. Fax 30/31 998 528. E-mail : iaspei@olymp.ccf.auth.gr.

\* 28 août - 3 sept. 1997

Bologne, Italie  
AIG IVth International Conference on Geomorphology.  
— Paolo Forti, Planning Congressi, via Crociani 2, I - 40138 Bologne, Italie. Fax 19 39/51 35 45 22.

1-5 sept. 1997

Istanbul, Turquie  
Symposium International on Geology and environment. In n° 58.  
— GEOENV'97, International symposium geoscience, PK 464 Yenisehir, 06444 Ankara, Turquie. Tél. 90/312 434 36 01. Fax 90/312 434 23 88. E-mail : jdogan@jeo.hun.edu.tr.

\* 2-4 sept 1997

Londres, G.-B.  
Tunnelling 97 (Conference and exhibition).  
— The Conference Office, The Institution of Mining and Metallurgy, 44 Portland Place, Londres W1N 4B.R, G.-B. Tél. 44/17 15 60 38 02. Fax 44/17 14 36 53 88.

7-10 sept. 1997

Vienne, Autriche  
AAPG - International Conference and exhibition.  
— AAPG. Convention Dept., Box 979, Tulsa, OK 74101, USA. Tél. 1/918 560 26 79. Fax 1/918 560 26 84.

21-27 sept 1997

Nottingham, G.-B.  
Groundwater in the Urban Environment, XXVIII Congress of IAH.

— Stephen Foster, Conference Nottingham, 309 Hayden Road, Nottingham NG5 1AZ, G.-B. Tél. 44/11 59 85 65 45. Fax 44/11 59 85 66 15.

\* 26-29 oct. 1997

Londres, G.-B.  
Petroleum geology of NW Europe.  
— CASIL, 4 Cavendish Square, Londres, W1M 0BX, G.-B. Tél. 44/17 14 99 09 00. Fax 44/17 16 29 32 33.

## 1998

\* 8-12 juin 1998

Leipzig, Allemagne  
European Assoc. of Geoscientists & Engineers (EAGE), 60th Conference.  
— EAGE, E.H. Bomkamp, PO Box 298, NL 3700 AG Zeist, Pay-Bas. Tél. 31/3069 62 655. Fax 31/3069 62 640.

29 juin - 18 juil. 1998

Johannesbourg, Afrique du Sud  
8th international platinum symposium (IAGOD/CODMUR).  
— C.A. Lee, PO Box 68108, Bryanston, South Africa. Tél. 27/111 373 25 80. Fax 27/11 836 03 71.

9-15 août 1998

Toronto, Canada  
International Mineralogical Association; IMA'98.  
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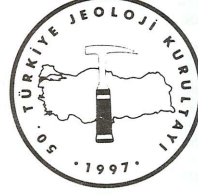
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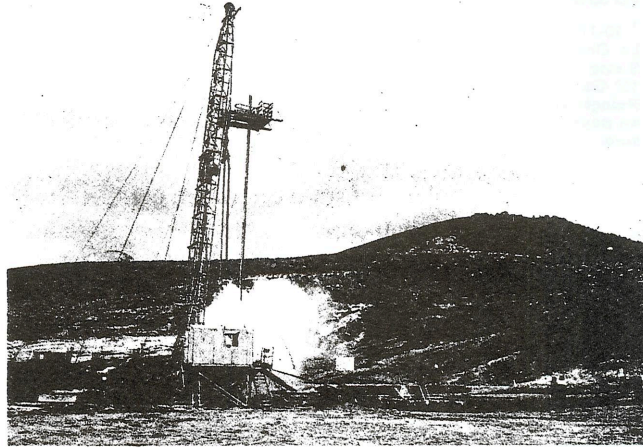
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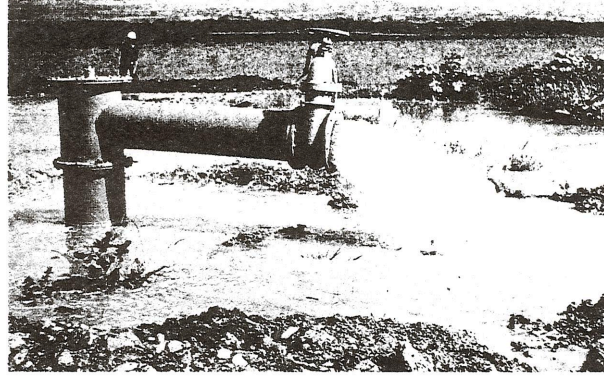
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**JEOLOJİ MÜHENDİSLİĞİ VE  
SONDAJ UYGULAMALARI  
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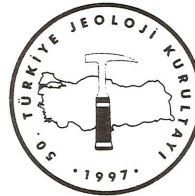
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2 - 4 NİSAN 1997

50. TÜRKİYE JEOLojİ KURULTAYI  
ETKİNLİKLERİ



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