

ΤΟΜΟΣ
VOLUME

XXVIII

ΤΕΥΧΟΣ
NUMBER

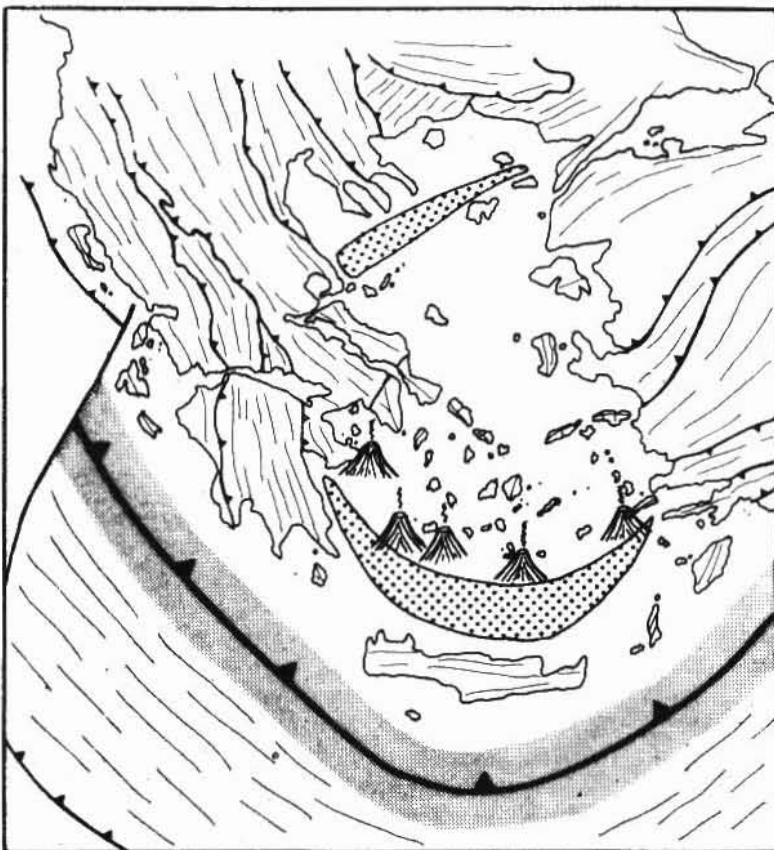


2

ΔΕΛΤΙΟ

ΤΗΣ

ΕΛΛΗΝΙΚΗΣ ΓΕΩΛΟΓΙΚΗΣ ΕΤΑΙΡΙΑΣ
BULLETIN OF THE GEOLOGICAL SOCIETY OF GREECE



6ο ΣΥΝΕΔΡΙΟ

6th CONGRESS

ΤΗΣ

ΕΛΛΗΝΙΚΗΣ ΓΕΩΛΟΓΙΚΗΣ ΕΤΑΙΡΙΑΣ

με έμφαση στην

GEOLOGICAL SOCIETY OF GREECE

with emphasis on the

ΓΕΩΛΟΓΙΑ του ΑΙΓΑΙΟΥ

GEOLOGY OF THE AEGEAN

Αθήνα, 25-27 Μαΐου 1992,

May 25-27, 1992 — Athens,

ΑΘΗΝΑ
ATHENS

1993

ΟΡΓΑΝΩΤΙΚΗ ΕΠΙΤΡΟΠΗ

ΠΡΟΕΔΡΟΣ: Δ. ΠΑΠΑΝΙΚΟΛΑΟΥ, Αναπλ. Καθηγητής, Παν/μιο Αθηνών.
ΑΝΤΙΠΡΟΕΔΡΟΣ: Ε. ΔΑΒΗ, Ομοτ. Καθηγήτρια, Γεωργικό Παν/μιο Αθηνών.
ΓΕΝ. ΓΡΑΜΜΑΤΕΑΣ: Ν. ΣΚΑΡΠΕΛΗΣ, Επικ. Καθηγητής, Παν/μιο Αθηνών.
ΤΑΜΙΑΣ: Α. ΚΑΤΕΡΙΝΟΠΟΥΛΟΣ, Λέκτορας, Παν/μιο Αθηνών.
ΜΕΛΗ: Γ. ΧΡΟΝΗΣ, Δρ. Γεωλόγος, Εθνικό Κέντρο Θαλασσίων Ερευνών.
Φ. ΚΟΥΡΟΥΜΠΑΛΗ, Γεωλόγος, Υδρογραφική Υπηρεσία Στρατού.
Ε. ΛΟΓΟΣ, Drs., Γεωλόγος, Παν/μιο Αθηνών.
Κ. ΠΑΠΑΒΑΣΙΛΕΙΟΥ, Λέκτορας, Παν/μιο Αθηνών.
Δ. ΣΥΣΚΑΚΗΣ, Drs., Γεωλόγος, Παν/μιο Αθηνών.
Π. ΤΣΟΜΠΟΣ, Δρ., Γεωλόγος, Ι.Γ.Μ.Ε.
Ν. ΖΟΥΡΟΣ, Drs., Γεωλόγος, Παν/μιο Θεσσαλονίκης.

THE ORGANIZING COMMITTEE

PRESIDENT: D. PAPANIKOLAOU, Assoc. Professor, Univ. of Athens.
VICE-PRESIDENT: E. DAVI, Professor Emer., Agricultural Univ. of Athens.
SECRETARY GENERAL: N. SKARPELIS, Assis. Professor, Univ. of Athens.
TREASURER: A. KATERINOPoulos, Lecturer, Univ. of Athens.
MEMBERS: G. CHRONIS, Dr., Geologist, National Centre for Marine Research.
F. KOUROUMPALI, Geologist, Hellenic Navy Hydrographic Service.
E. LOGOS, Drs., Geologist, Univ. of Athens.
K. PAPABASILIOU, Lecturer, Univ. of Athens.
D. SYSKAKIS, Drs., Geologist, Univ. of Athens.
P. TSOMPOS, Dr., Geologist, Inst. of Geology and Mineral Expl.
N. ZOUROS, Drs., Geologist, Univ. of Thessaloniki.

ΔΙΟΙΚΗΤΙΚΟ ΣΥΜΒΟΥΛΙΟ ΤΗΣ ΕΛΛΗΝΙΚΗΣ ΓΕΩΛΟΓΙΚΗΣ ΕΤΑΙΡΙΑΣ

(που εκλέχτηκε στη Γενική Συνέλευση των μελών της Εταιρίας την 5/3/1992)

ΠΡΟΕΔΡΟΣ:	Δ. ΜΟΥΝΤΡΑΚΗΣ, Καθηγητής, Παν/μιο Θεσσαλονίκης.
ΑΝΤΙΠΡΟΕΔΡΟΣ:	Δ. ΠΑΠΑΝΙΚΟΛΑΟΥ, Αναπλ. Καθηγητής, Παν/μιο Αθηνών.
ΓΕΝ. ΓΡΑΜΜΑΤΕΑΣ:	Ν. ΣΚΑΡΠΕΛΗΣ, Επικ. Καθηγητής, Παν/μιο Αθηνών.
ΕΙΔ. ΓΡΑΜΜΑΤΕΑΣ:	Ε. ΛΟΓΟΣ, Υπ. Διδ., Παν/μιο Αθηνών
ΤΑΜΙΑΣ:	ΕΥΘ. ΛΕΚΚΑΣ, Λέκτορας, Παν/μιο Αθηνών.
ΕΦΟΡΟΣ:	Θ.ΡΟΝΤΟΓΙΑΝΝΗ, Δρ. Γεωλόγος, Ι.Γ.Μ.Ε.
ΜΕΛΗ:	ΣΠ. ΛΕΚΚΑΣ, Επικ. Καθηγητής, Παν/μιο Αθηνών. Γ. ΜΙΓΚΙΡΟΣ, Επικ. Καθηγητής, Γεωργικό Παν/μιο Αθηνών. Ε.ΜΩΡΑΙΤΗ, Γεωλόγος, Ι.Γ.Μ.Ε. Κ. ΠΑΠΑΒΑΣΙΛΕΙΟΥ, Λέκτορας, Παν/μιο Αθηνών.

GEOLOGICAL SOCIETY OF GREECE BOARD OF DIRECTORS

(elected at the General Assembly of the members of the Society on March 5,
1992.)

PRESIDENT:	DEM. MOUNTRAKIS, Professor, Univ. of Thessaloniki.
VICE-PRESIDENT:	D. PAPANIKOLAOU, Assoc. Professor, Univ. of Athens.
SECR. GENERAL:	N. SKARPELIS, Assis. Professor, Univ. of Athens.
SECRETARY:	E. LOGOS, Drs., Geologist, Univ. of Athens.
TREASURER:	E. LEKKAS, Lecturer, Univ. of Athens.
CURATOR:	TH. RONTOGIANNI, Dr. Geologist, I.G.M.E.
MEMBERS:	SP. LEKKAS, Assis. Professor, Univ. of Athens. G. MIGIROS, Assis. Professor, Agricultural Univ. of Athens. E. MORAITI, Geologist, I.G.M.E. K. PAPAVASILIOU, Lecturer, Univ. of Athens.

REVIEW OF THE PAPERS

Coordinators:

D. PAPANIKOLAOU, Associate Professor, University of Athens.
E. DAVI, Professor Emeritus, Agricultural University of Athens.
N. SKARPELIS, Assistant Professor, University of Athens.

All papers published in these volumes of the Proceedings of the 6th Congress of the Geological Society of Greece were reviewed before presentation by two or three referees of the following list:

- ALEXOPOULOS, A., Dr., Dept. of Geology, Univ. of Athens.
ARIKAS, K., Dr., Mineral Inst. of Geology, Univ. Hamburg, Germany.
ARVANITIDIS, N., Dr., I.G.M.E., Thessaloniki Branch, Greece.
AUGUSTIDIS, S., Prof. Emer., Theophrastus Publ., Greece.
BAUD, A., Dr., Musee Geolog, Lausanne, Suisse.
BALTATZIS, E., Prof., Dept. of Geology, Univ. of Athens, Greece.
BEBBIEN, J., Prof., Dept. de Geol., Univ. Paris Sud, France.
BENDA, L., Prof., Nieders. Lab. fur Bodenf., Hannover, Germany.
BERGOUGNAN, H., Dr., Lab. des Sc. de la Terre, Univ. de Reims, France.
BLAKE, M. C., Dr., U.S.Geol. Survey, Menlo Park, U.S.A.
BONNEAU, M., Dr. Dept. de Geotect., Univ. Paris VI, France.
CELET, P., Prof., Un. Sc. & Techn. de Lille, France.
CHEN, G., Dr., Inst. fur Miner.-Krystall., Univ. Wurzburg, Germany.
CHIOTIS, E., Dr., I.G.M.E., Athens, Greece.
CHRISTARAS, V., Assis. Prof., Dept. of Geology, Univ. of Thessaloniki, Greece.
CHRISTOFIDIS, G., Dept. of Geology, Univ. of Thessaloniki, Greece.
CHRONIS, G., Dr., National Centre Marine Research, Athens, Greece.
DABITZIAS, S., Dr., I.G.M.E., Thessaloniki Branch, Greece.
DAVI, E., Prof. Emer., Agricultural Univ. of Athens, Greece.
DELIBASSIS, N., Assoc. Prof., Dept. of Geology, Univ. of Athens, Greece.
DIETRICH, V., Dr., Inst. fur Miner. & Petrogr., Zurich, Suisse.
DIMITRIADIS, S., Assis. Prof., Dept. of Geology, Univ. of Thessaloniki, Greece.
DIMITROPOULOS, K., Dr., Publ. Petrol. Corp., Athens, Greece.
DIMOPOULOS, G., Prof., Dept. of Geol., Univ. of Thessaloniki, Greece.
DIXON, J.E., Dr., Grant Institute of Geology, Univ. of Edinburgh, U.K.
DOUNAS, A., Dr., Hydrogeologist, Athens, Greece.
DOUTSOS, T., Assoc. Prof., Dept. of Geology, Univ. of Patras, Greece.
DRAKOPOULOS, I., Prof., Dept. of Geology, Univ. of Athens, Greece.
DURR, ST., Inst. Geol., Univ. Mainz, Mainz, Germany.
ECONOMOU-ELIOPOULOU, M., Assoc. Prof., Dpt. of Geology, Univ. of Athens.
ELEFTHERIADIS, G., Prof., Dept. of Geology, Univ. of Thessaloniki, Greece.
FERENTINOS, G., Assoc. Prof., Dept. of Geology, Univ. of Patras.
FERRIERE, J., Prof., Univ. Sciences et Techniques de Lille I, France.
FILIPPIDIS, A., Assoc. Prof., Dept. of Geology, Univ. of Thessaloniki, Greece.
FINETI, I., Prof., Inst. of Geodesy & Geophysics, Univ. of Trieste, Italy.
FOSCOLOS, A., Prof., Technical Univ. of Crete, Chania, Greece.
FRANZ, L., Dr., Inst. fur Miner.-Krystall., Univ. Wurzburg, Germany.
FYTIKAS, M., Assoc. Prof., Dept. of Geology, Univ. of Thessaloniki, Greece.
FYTROLAKIS, N., Prof., Technical Univ. of Athens, Greece.
GARFUNKEL, Z., Prof., Dept. of Earth Sciences, Hebrew Univ. Jerusalem, Israel.
GARTZOS, E., Assis. Prof., Agricultural Univ. of Athens, Greece.
GEORGIADOU-DIKAIΟULIA, E., Prof., Dept. of Geology, Univ. of Athens, Greece.

GOSEE, B., Dr., Dpt. de Geologie, Ecole Normale Supérieure, Paris, France.
GONCUOGLOU, C., Dr., Dept. of Geology, M.E.T.U., Ankara, Turkey.
HELVACI, D., Dr., Facul. of Engin., Dept. of Geology, D.E.U., Izmir, Turkey.
HENJES-KUNST, F., Dr., Bund. fur Geowis. Rohst. (BGR), Hannover, Germany.
INNOCENTI, F., Dr., Inst. di Miner. e Petr. dell' Univ., Piza, Italy.
JANKOVIC, S., Dr., Faculty of Mining and Geology, Belgrade, Yugoslavia.
JACKSON, J., Dr., Univ. of Cambridge, UK.
JACOBSHAGEN, V., Prof., Freie Univ. Berlin, Inst. Geologie, Berlin, Germany.
KALLERGIS, G., Prof., Dept. of Geology, Univ. of Patras, Greece.
KALOGEROPOULOS, St., Dr., RUSVAR-MOTOR OIL, Athens, Greece.
KALPAKIS, G., Dr., Dept. of Geology, Univ. of Athens, Greece.
KARAMATA, S., Prof., Facul. Min. Geol., Univ. of Belgrade, Yugoslavia.
KASSOLI-FOURNARAKI, A., Assoc. Prof., Dept. of Geol., Univ. of Thessaloniki.
KATAGAS, CH., Prof., Dept of Geology, Univ. of Patras, Greece.
KATSIKATSOS, G., Prof., Dept. of Geology, Univ. of Patras, Greece.
KAYA, O., DR., Facul. of Eng. & Arc., Dept. of Geol., D.E.U., Izmir, Turkey.
KILIAS, A., Assoc. Prof., Dept. of Geology, Univ. of Thessaloniki, Greece.
KISKYRAS, D., Dr., Honor President Geol. Soc. Greece, Athens, Greece.
KOLLMAN, H., Dr., Natur Historisches Museum, Wien, Austria.
KOSTANDINIDES, D., Dr., I.G.M.E., Athens, Greece.
KONTOPOULOS, N., Assoc. Prof., Dept. of Geology, Univ. of Patras, Greece.
KOPPEL, V., Prof., Inst. fur Petr.-Krystal, ETH, Zurich, Suisse.
KOSTAKIS, G., Prof., Technical Univ. of Crete, Chania, Greece.
KOTOPOULI, K., Assoc. Prof., Dept. of Geology, Univ. of Patras, Greece.
KOUFOS, G., Prof., Dept. of Geology, Univ. of Thessaloniki, Greece.
KOUKIS, G., Prof., Dept. of Geology, Univ. of Ptras, Greece.
KOUKOZAS, K., I.G.M.E., Athens, Greece.
KOUMANTAKIS, I., Prof., Technical Univ. of Athens, Greece.
KUKLA, C., Dr., Miner.-Krystal., Univ. Wurzburg, Germany.
KUSS, S., Prof., Buchholz, Germany.
LAGIOS, E., Assis. Prof., Dept. of Geology, Univ. of Athens, Greece.
LEKKAS, E., Dr., Dept. of Geology, Univ. of Athens, Greece.
LEKKAS, S., Assis. Prof., Dept. of Geology, Univ. of Athens, Greece.
LEONTARIS, S., Prof., Dept. of Geology, Univ. of Athens, Greece.
LUTTIG, G., Prof., Geol. Inst., Univ. Erlangen, Germany.
MAKROPOULOS, K., Assoc. Prof., Dept. of Geology, Univ. of Athens, Greece.
MAKSIMOVIC, Z., Prof., Facul. Min.-Geol., Univ. of Belgrade, Yugoslavia.
MARINOS, P., Prof., Technical Univ. of Athens, Greece.
MARIOLAKOS, I., Prof., Dept. of Geology, Univ. of Athens, Greece.
MARKOPOULOS, TH., Prof., Technical Univ. Crete, Chania, Greece.
MARKOPOULOU-DIAKANTONI, A., Assis. Prof., Dept. of Geol., Univ. of Athens
McKENZIE, D., Dr., Dept. of Geodesy, Univ. of Cambridge, UK.
MIGIROS, G., Assis. Prof., Agricultural Univ. of Athens, Greece
MITROPOULOS, P., Assis. Prof., Dept. of Geology, Univ. of Athens, Greece.
MOORES, E., Prof., Dept. of Geology, Univ. of California, Davis, USA.
MOUNTRAKIS, D., Prof., Dept. of Geology, Univ. of Thessaloniki, Greece.
MOUTSOULAS, M., Prof., Dept. of Geology, Univ. of Athens, Greece.
MPOSKOS, E., Prof., Technical Univ. of Athens, Greece.
NAGAO, T., Assis. Prof., Univ. of Nagasawa, Japan.
NAKOMAN, E., Prof., Univ. of Izmir, Izmir, Turkey.
OKAY, A., Dr., ITU Maden Facultesi, Istanbul, Turkey.
OKRUSCH, M., Prof., Inst. fur Min.-Krystal, Univ. Wurzburg, Gremany.
PANAGIOTOU, A., Dr., Geological Survey of Cyprus, Nicosia, Cyprus.
PANAGOS, A., Prof., Technical Univ. of Athens, Greece.
PAPADIMITRIOU, I., Prof., Technical Univ. of Athens, Greece.
PAPAGEORGAKIS, I., Prof., Technical Univ. of Athens, Greece.
Ψηφιακή Βιβλιοθήκη Θεόφραστος - Τμήμα Γεωλογίας. Α.Π.Θ.

ΟΡΥΚΤΟΛΟΓΙΑ - ΠΕΤΡΟΛΟΓΙΑ

ΓΕΩΧΗΜΕΙΑ - ΗΦΑΙΣΤΕΙΟΛΟΓΙΑ

ΒΙΟΜΗΧΑΝΙΚΑ ΟΡΥΚΤΑ - ΚΟΙΤΑΣΜΑΤΟΛΟΓΙΑ

ΕΝΕΡΓΕΙΑΚΕΣ ΠΗΓΕΣ - ΓΕΩΘΕΡΜΙΑ

MINERALOGY - PETROLOGY

GEOCHEMISTRY - VOLCANOLOGY

INDUSTRIAL MINERALS - ORE DEPOSITS GEOLOGY

ENERGY RESOURCES - GEOTHERMICS