The Geochemical News

Biannual Newsletter of the Geochemical Society

Number 68 September 1985

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Meetings and Symposia

GEOCHEMICAL SOCIETY 1985 ANNUAL MEETING in conjunction with the Annual Meeting of the Geological Society of America, Orlando, Florida, 27 through 31 October. Hotel reservation deadline October 4 (reservation form on p. 8); preregistration deadline September 27 (registration form on p. 9). For further information see GSA News and Information for August 1985, or apply to GSA Meetings Department, P.O. Box 9140, Boulder CO 80301, Tel. 303-447-2020.

Sunday, Oct. 27

GS ORGANIC GEOCHEMISTRY DIVISION SYMPOSIUM:
GEOCHEMICAL FOSSILS: PRECAMBRIAN TO RECENT
2 Jasmine, Convention Center, 1:00 p.m.

John Zumbeleg and Robert Gagosian, presiding

1 Philip A. Meyers*: GEOCHEMICAL CONTENTS OF LAKE SEDIMENTS: AN HISTORICAL RECORD OF LACUSTRINE AND WATERSHED BIOTA OVER QUATERNARY TIMES [79444].......................... 1:00 P

2 John W. Farrington*, Robert E. Gagosian, Alan C. Davis, John K. Volkmann: COMPARISON OF TERRIGENOUS AND MARINE LIPID BIOMARKER "PRESERVATION" IN RECENT SEDIMENTS [79446]....... 1:30 P

3 M.H. Engel*, S.A. Macko: THE ORGANIC GEOCHEMISTRY OF AMINO ACIDS: PRECAMBRIAN TO RECENT [79452].......................... 2:00 P

4 J. William Louda*, Earl W. Baker: TETRA-PYRROLE PIGMENTS IN THE GELOGIC RECORD [79453].......................... 2:30 P

5 Jurgen H. Rullkötter*: BIOLOGICAL MARKER COMPOSITION OF CRUDE OILS IN RELATION TO THE GEOTHERMAL HISTORY OF THEIR SOURCE ROCKS [79449].......................... 3:00 P

6 R.P. Philp*: THE BIOMARKERS PRESENT IN ASPHALTENES [77989].......................... 3:30 P

7 Susan E. Palmer*: ORGANIC GEOCHEMISTRY OF MID-CENTURION ORDOVICIAN OILS [79457].......................... 4:00 P

8 Bartholomew Nagy*: CONSTRAINTS ON THE EVOLUTION AND NATURE OF COMPLEX PRECAMBRIAN ORGANIC SUBSTANCES [79442].......................... 4:30 P


*Abstract No. - refer to GSA Abstracts with Programs
Holly J. Stain*, Paul D. Fullagar: ORIGIN OF COLORADO MINERAL BELT LAMARIDE-TERTIARY MAGMATISM: LEAD AND STRONTIUM ISOTOPE EVIDENCE [78020]......................................................... Booth 4


Richard J. Walker*, Larry J. Moore: RESONANCE IONIZATION MASS SPECTROMETRY (RIMS) FOR THE MEASUREMENT OF MULTI-ELEMENT CONCENTRATIONS AND Rb-Os ISOTOPES IN CRUSTAL ROCKS [78584]......................................................... Booth 6

Gene Simons*, Louis J. Caruso: URANIUM-LEAD ASH PHERES IN GRANITES [76567]......................................................... Booth 7

Louis J. Caruso*, Gene Simons: URANIUM-LEAD MICROCRACKS IN GRANITES [75568]......................................................... Booth 8

Yuch-King Shih*, Impol J. Rui, Gunnar Kullerud: STABLE ISOTOPES STUDIES OF STRATATUNDR ORES AND WALL ROCK ALTERATIONS AT KILLINGDAL MINE, CENTRAL NORWEGIAN CALEDONIDES [78147]......................................................... Booth 9

Robert A. Zielinski*, Charles A. Bush, John N. Rossholt: URANIUM SERIES DIS-EQUILIBRIUM IN A HOLOCENE URANIUM DEPOSIT IN NORTHEASTERN WASHINGTON [77215]......................................................... Booth 10


Enrique Barrera*, Samuel S. Savin: CARBONATE DIAGENESIS AND THE UTILITY OF O18/O16 RATIOS OF PALAEOFRENH FORMATIONS IN PALAEOCLIMATIC STUDIES [56004]......................................................... Booth 12

Linda M. Bonnell*, Thomas F. Anderson: SULFUR ISOTOPIC ANALYSES OF DISSEMINATED PYRITE IN CRETACEOUS BLACK AND GREEN MUDSTONES [69568]......................................................... Booth 13

K.J. Miskell-Gerhardt*, R.B. Dunbar: TRACE ELEMENT CRITERIA FOR SELECTING UNALTERED IDIOPLAGIOMIC FOR PALEOTEMPERATURE STUDIES [72447]......................................................... Booth 14

R.J. Bodnar*, C.W. Burnham, J.G. Blencoe: PVT PROPERTIES OF H2O-NaCl MIXTURES AT HIGH TEMPERATURES AND PRESSURES [79240]......................................................... Booth 15

Kevin G. Knuss*, W.J. Beiringer, D.W. Pfeffer, A.J. Piwinski: HYDROTHERMAL INTERACTION OF SOLID VAPORS OF TOPOHAPSpring Tuff WITH GROUND WATER AND DISTILLED WATER AT 90 DEGREES C USING DIXON-TYPE, GOLD-BAG ROCKING AUTOCLES [64141]......................................................... Booth 16

James R. Burnell*, Jonathan Myers, David G. Coles: EXPERIMENTAL STUDY OF THE INTERACTIONS OF NUCLEAR WASTE WITH POTENTIAL WASTE PACKAGE COMPONENTS FROM HANFORD SITE, WA [76787]......................................................... Booth 17

L.L. Chyi*, A.N. Garg: THE FRACTIONATION OF Zr AND Hf IN SURFACE PROCESSES [77710]......................................................... Booth 18

Brian G. Katz*, Owen P. Birchler, Margaret M. Kennedy: GEOCHEMICAL MASS-BALANCE RELATIONSHIPS FOR SELECTED CONSTITUENTS IN PRECIPITATION AND STREAM WATER, CATOCTIN MOUNTAINS, MARYLAND [79859]......................................................... Booth 19

Bruce W. Nelson*, I.S.A. Nather Khan: TRACE METAL SOURCES IN TWO MALAYSIAN ESTUARIES [72464]......................................................... Booth 20

P.E. Dressel*, A.W. Rose, C.M. Geenens: GEOCHEMISTRY OF ORIGIN OF RAIN FROM WESTERN PENNSYLVANIA [76891]......................................................... Booth 21

POSTER SESSION: GENERAL GEOCHEMISTRY AND HYDROGEOLOGY
North Hall, Convention Center, 8:00 a.m. - 11:30 a.m.
Authors will be present from 9:00 a.m. - 11:00 a.m.


Carl O. Moses*, D. Kirk Nordstrom, Janet S. Herman, Aaron L. Mills: INITIATION OF AQUEOUS PYRITE OXIDATION BY DISSOLVED OXYGEN AND BY FERRIC IRON [69943]. ........................................... Booth 23

S.F. Bianchetti*, R.L. Reeder: VARIABLE DISSOLUTION RATES OF DEFORMED AND UNDEFORMED CALCITE [77666]. ........................................... Booth 24


D.H. Rezabek*, D.T. Long: A TECHNIQUE FOR CHARACTERIZING TRACE METAL BEHAVIORS IN AQUEOUS SYSTEMS [77354]. ........................................... Booth 26

Elizabeth A. Zbinden*, Heinrich D. Hallam: AN ARCHEAN PALEOSOL BELOW THE DOMINION REEF GROUP, SOUTH AFRICA [59349]. ........................................... Booth 27

G. Muszyn, P. Westbrook, J. Wehmler*: IMMUNOLOGY OF MACROMOLECULES FROM QUATERNARY MERCENARIA SAMPLES FROM THE ATLANTIC COASTAL PLAIN [65993]. ........................................... Booth 28

A.B. Hull*, A. Lerman: PARTITIONING IN THE GLOBAL CYCLES OF INORGANIC ELEMENTS [77654]. ........................................... Booth 29

S.A. Mack*, W.R. Wellman, K. Pulhan: ORGANIC GEOCHEMISTRY OF BASSIN ISLAND FJRUDS [79451]. ........................................... Booth 30

Nancy C. Lee, Jeffrey L. Bad*: EXTRATERRASSIAL AMINO ACIDS AT THE CRETACIOUS-TERTIARY BOUNDARY [73031]. ........................................... Booth 31

David J. Des Marais*, Etta Peterson, Emil Kwon: ORGANIC 13C VARIATION SLIGHTLY WITH SALINITY IN MICROBIAL MATS AT GUERRERO HECO, BAJA CA, MEXICO: IMPLICATIONS FOR STROMATOLITE 13C VALUES [73928]. ........................................... Booth 32

Steven C. Korner*, John R. Carpenter: APPLICATION OF A LINEAR UNMIXING ALGORITHM TO SELECTED LIPIDS OF RECENT SALT MARSH SEDIMENTS [77616]. ........................................... Booth 33

J.V. Bonilla*, M.H. Engel: THE EFFECT OF CRUDE OIL INJECTION ON THE REDISTRIBUTION OF HYDROCARBON: POSSIBLE IMPLICATIONS FOR PETROLEUM EXPLORATION [59629]. ........................................... Booth 34


K.W. Howard*, P.H. Jones, M.J. Thompson: CONTAMINANT TRANSPORT STUDIES OF A 14C-LABELLED POLYMER USING AN AQUIFER SIMULATION TANK [76151]. ........................................... Booth 47

Tim J. Bahr, Robert G. Corbett*: FORMATION OF SODIUM BICARBONATE GROUND WATER AND THE EFFECT ON FLUORIDE SOLUBILITY [74564]. ........................................... Booth 48

Alan R. Dutton*, Charles W. Kreitler: RECHARGED OR MODIFIED-CONNECT WATER IN A CARBONATE BED WITHIN AN EVAPORITE AQUITARD, TEXAS PANHANDLE [59529]. ........................................... Booth 49


James R. Erickson*, Devin L. Gallaway, Kenzi Karaski: INTERPRETATIONS OF FALLING-HEAD INJECTION TEST DATA FOR CRACKED VOLCANIC TUFFS, YUCCA MOUNTAIN, NEVADA TEST SITE [73999]. ........................................... Booth 53

Jingbing Wu*: THE CHARACTERISTICS OF GROUND WATER RICH ANOMALIES IN CHINA'S VARIOUS GEOLOGIC BODIES [74252]. ........................................... Booth 54

Solomon Isiorho*, Gerald Matisoff, Peter L. McCall: GROUND WATER RECHARGE FROM LAKE CHAD [77025]. ........................................... Booth 55

Robert M. Hurdon*: USING SPECIFIC CAPACITY RATIOS TO ESTIMATE GROUNDWATER YIELD BY GEOLOGIC FORMATION [78796]. ........................................... Booth 56


D. Anderson Smith*: GROUND-WATER HYDRAULICS OF THE DEEP-BASIN BRINE AQUIFER, PALO DURO BASIN, TEXAS PANNHANDLE [56228]. ........................................... Booth 58


Brend F. Gamble*, Yoram Eckstein: AN ANALYSIS OF SOIL WATER RESIDENCE TIMES IN A MONOLITH LYSIMETER AT THE NORTH APPALACHIAN EXPERIMENTAL WATERSHED [59038]. ........................................... Booth 60

N. Gary Heming*: CONTROLS ON THE WATER CHEMISTRY OF SOME SPRINGS IN A VOLCANIC TERRAIN, YAYARI, MEXICO [78388]. ........................................... Booth 61

Shirley J. Dreiss*, Catherine L. Summa: CHEMICAL FLUCTUATIONS IN KARST SPRINGFLOW STORM RESPONSES, SOUTHEASTERN MISSOURI [50508]. ........................................... Booth 62

Steven J. Stokowski, Jr.*, Dennis A. Clark: LOCATING GROUNDWATER FLOW IN KARST BY ACOUSTIC EMISSION SURVEYS [70446]. ........................................... Booth 63

P.A. Stone, R.L. Know*, T.D. Mathews: AQUIFER RECHARGING IN SOUTH CAROLINA: RADIOCARBON IN ENVIRONMENTAL HYDROGEOLOGY [76647]. ........................................... Booth 64

GEOCHEMISTRY 1: CRUST/MANTLE GEOCHEMISTRY
South Hall C, Convention Center, 2:00 p.m.

Peter Deines and Charles Langmuir, presiding

1. G. Lang Farmer*: A Sm-Nd ISOTOPIC STUDY OF PRECAMBRIAN/CAMBRIAN SEDIMENTARY PROVENANCE IN THE GREAT BASIN AND IMPLICATIONS FOR THE TECTONIC EVOLUTION OF THE WESTERN U.S. [70871]. ........................................... 2:00 p.m.

2. P. Vriendt, J.C. Moore, J. Ornet*: FLUID FLOW IN ACCRETIONARY PRISMS [58506]. ........................................... 2:15 p.m.


4. S.K. Saxena*, Y. Fei: HIGH PRESSURE PHASE EQUILIBRIUM IN THE SYSTEM Fe-Mg-Si-O [76185]. ........................................... 2:45 p.m.
6 S.A. Morse*: MAIN GEOCHEMISTRY REVIEWED: ANORTHOSITE PARENT LIQUIDS AND CONTAMINATION PROBLEMS [78345].................. 3:20 P
7 J.H. Berry*: MAGMA EVOLUTION IN THE MAIN COMPLEX, LABRADOR, AND IMPLICATIONS FOR THE ORIGIN OF ANORTHOSITE [73190].................. 3:40 P
8 S.R. Taylor*: A LOWER CRUSTAL SOURCE FOR MASSIF ANORTHOSITES [73195].................. 4:00 P
9 R.A. Wiebe*: EVIDENCE FOR A LOWER CRUSTAL ORIGIN OF HIGH-Al ORTHOPYROXENE MEGACRYSTALS IN PROTEROZOIC ANORTHOSITES [73193].................. 4:20 P
10 Ronald F. Emile*: PROTEROZOIC MASSIF ANORTHOSITES AND RELATED ROCKS IN LABRADOR: THE ANORTHOSITE-SYENODIORITE CONNECTION [73200].................. 4:40 P
11 Larry A. Haskin*, Peter A. Salpas, Karl E. Seiffert: CHEMICAL TREND IN MASSIF ANORTHOSITES: COMPARISON WITH STILLWATER TREND [77166].................. 5:00 P
12 Daniel Demaiffe, Jean-Clair Duchesne, Jan Hertogen, Dominique Weis*: GENESIS OF MONZOYTITE ROCKS IN THE RUGALAND ANORTHOSITIC PROVINCE (S.W. NORWAY) [73198].................. 5:20 P

Wednesday, Oct. 30
GEOCHEMISTRY II: WATER-ROCK GEOCHEMISTRY
6 Orchid, Convention Center, 8:00 a.m.
John Walther and Heinrich D. Holland, presiding
1 Randall T. Cogan*: SURET DIFFUSION PROCESSES IN AQUEOUS SODIUM CHLORIDE SOLUTION [74569].................. 8:00 A
2 Glenn A. Wilson*, Hans P. Eugster: METAL-CHLORIDE SPECIATION FROM SUPER-CRITICAL SOLUBILITY EXPERIMENTS [69568].................. 8:15 A
3 P. Ortoleva, C.H. Moore*, J. Chadam, E. Martino, J. Hettema: A NEW ALGORITHM FOR SIMULATING FLUID/ROCK INTERACTIONS [65213].................. 8:30 A
4 William M. Murphy*, Harold C. Helgeson: MINERAL DISSOLUTION RATE CONTROL BY SURFACE RECONSTITUTION [66590].................. 8:45 A
5 James J. Mazer*, John V. Walther: STEADY-STATE RATE CONSTANTS FOR DISSOLUTION OF BASALT AND SILICA GLASS AS A FUNCTION OF pH AT 69 DEGREES C [73902].................. 9:00 A
6 Judith M. Ballantyne*, Joseph N. Moore, Michael C. Adams: ARSENIC GEOCHEMISTRY IN GEOTHERMAL SYSTEMS [77103].................. 9:15 A
7 J.C. Varekamp*, P.R. Buseck: MERCURY FROM VOLCANIC AND GEOTHERMAL SOURCES [75793].................. 9:30 A
8 John V. Walther*: EXPERIMENTALLY REVERSED PORTLANDITE AND BRUCITE SOLUBILITIES IN PURE H2O FROM 300 TO 600 DEGREES C AND 1 TO 3 KBAR [73903].................. 9:45 A

Tuesday, Oct. 29
GEOCHEMICAL SOCIETY SYMPOSIUM: PROTEROZOIC MASSIVE-FORMED ANORTHOSITES AND RELATED ROCKS: THEIR ORIGINS AND IMPLICATIONS FOR THE EVOLUTION OF THE EARTH'S CRUST AND MANTEL South Hall A, Convention Center, 2:00 p.m.
E. Craig Simmons, presiding
1 E. Craig Simmons*, Gregory A. Snyder, Ruth I. Kalamarides, R.A. Wiebe: ORIGINS OF MASSIVE-FORMED ANORTHOSITES AND RELATED ROCKS: ISOTOPIC EVIDENCE FROM THE SOUTHERN MAIN ANORTHOSITE COMPLEX, LABRADOR [78344].................. 2:00 P
2 L.D. Ashwal*, J.L. Woodin: ISOTOPIC CONSTRAINTS ON ANORTHOSITE GENESIS AND IMPLICATIONS FOR CRUST-MANTELE EVOLUTION [73199].................. 2:20 P
9 S.E. Drummond*, D.A. Palmer: FORMATION CONSTANTS FOR AQUEOUS FERROUS ACETATE COMPLEXES FROM MAGNETITE SOLUBILITY MEASUREMENTS FROM 100 TO 250 DEGREES C AND 250 TO 1250 BARS [76(45)].......................... 10:00 A

10 Patricia Martin Dove*, J.D. Rimsztki, William D. Newcomb: WOLLASTONITE HYDROLYSIS IN A MIXED FLOW REACTOR [76(39)].......................... 10:15 A

11 Barbara P. Bishop*, Dennis K. Bird: CORRELATION OF HYDROTHERMAL SERICITE COMPOSITION WITH PERMEABILITY AND TEMPERATURE, COSO HOT SPRINGS GEOTHERMAL FIELD, INYO COUNTY, CA [60(67)].......................... 10:30 A

12 J.E. Gitlin*: ALTERATION AND FLUID FLOW AROUND A SULFIDE-CARBONATE-QUARTZ VEIN, LUCKY FRIDAY MINE, NORTHERN IDAHO [77(69)].......................... 10:45 A

13 Haraldur R. Karlsson*, Robert N. Clayson, Yoshiko K. Mayeda: ANALICE: A POTENTIAL GEOTHERMOMETER [90(64)].......................... 11:00 A

GEOCHEMICAL SOCIETY PRESIDENTIAL ADDRESS: Hubert L. Barnes: "HYDROTHERMAL CALCULATIONS AND MISCALCULATIONS".......................... 11:15 A

GEOCHEMICAL SOCIETY LUNCHEON AND AWARDS CEREMONY

Orange Room, Marriott Inn.......................... 12:00 noon

(Tickets $13 on sale at ticket sales counter in registration area Convention Center from Sunday until Tuesday noon.)

Goldschmidt Medal and Strock Honorarium: James B. Thompson, Jr., Harvard University

Clarke Medal: Edward M. Stolper, California Inst. of Technology

Treibs Medal: Pierre Albrecht, Universit"et Louis-Pasteur, Strasbourg

Best Paper, Organic Geochemistry Division: T.C. Hoering: Thermal reactions of kerogen with added water, heavy water and pure organic substances

Thursday, Oct. 31

GEOCHEMISTRY III: LOW TEMPERATURE GEOCHEMISTRY South Hall C, Convention Center, 8:00 a.m.

Donald L. Gautier and John E. Grover, presiding

1 John E. Grover*: A MODEL FOR GIBBS FREE ENERGY IN THE SYSTEM CALCITE-DOLomite-MAGNESITE: THE INTERDEPENDENCE OF COMPOSITION AND ORDER, AND A CONSTRAINT ON THE SOLUBILITY OF Mg-CALCITE IN AQUEOUS MEDIA [79(34)].......................... 8:00 A


3 William G. Zemplotich: A MECHANISTIC APPROACH TO THE FORMATION OF SEDIMENTARY DOLomite [76(41)].......................... 8:30 A

4 Luis A. Gonzalez*, K.C. Lohmann: CONTROLS ON CARBONATE MINERALOGY AND SOLID-SOLUTION OF Mg IN CALCITE: EVIDENCE FROM SPELEAN SYSTEMS [76(12)].......................... 8:45 A

5 Elizabeth A. Burton*, Lynn M. Walter: RELATIVE GROWTH RATES AND COMPOSITIONS OF ARAGONITE AND Mg CALCITE CEMENTS IN SEAWATER: EFFECTS OF TEMPERATURE AND SULFATE [61(8)].......................... 9:00 A

6 Miriam Kastner*: PHYSICO-CHEMICAL CONTROLS ON THE RATE OF DEODOMITIZATION OF PROTOODOMITES AND DOLomite: AN EXPERIMENTAL STUDY [61(47)].......................... 9:15 A

7 Paul M. Stout*, Miriam Kastner: EXTENT OF CALCITE RECRYSTALLIZATION IN DEEP-SEA SEDIMENTS: Sr/Ca DISTRIBUTIONS AND OXYGEN ISOTOPES [79(82)].......................... 9:30 A

8 Anah M. Chowdhury*, Lui Heng Chan: SIGNIFICANCE OF STRONTIUM ISOTOPIC RATIOS IN DOLomite: UPPER SMACKOVER FORMATION, EAST TEXAS [64(8)].......................... 9:45 A

9 B.N. Popp*, K.H. Hackley, T.F. Anderson: DEVELOPMENT OF A e345 AGE CURVE FROM SULFATE IN BRACHIPOD SHELLS [69(54)].......................... 10:00 A

10 Donald L. Gautier*: SULFUR ISOTOPES IN CRETACEOUS SNAKES OF NORTH AMERICA [79(50)].......................... 10:15 A

11 Crayton J. Yapp*: OXYGEN ISOTOPE VARIATIONS IN GOETHITE (a-FeOOH) [61(58)].......................... 10:30 A


13 Donald E. Canfield*, Robert A. Berner: DIAGENESIS OF IRON IN MODERN MARINE SEDIMENTS [59(49)].......................... 11:00 A

14 Birger Schmitz*: METAL-RICH PYRITE SPHERoids IN THE CRETACEOUS-TERTIARY BOUNDARY TYPE SEDIMENT [75(38)].......................... 11:15 A

15 Alan J. Kaufman*, John M. Hayes, Cornelis Klein: CONVARIANCE OF DEL 13 C AND DEL 18 O IN A BANDED IRON-FORMATION AND ITS GENETIC IMPLICATIONS [74(69)].......................... 11:30 A

16 David R. Cole*: A PRELIMINARY EVALUATION OF OXYGEN ISOTOPIC EXCHANGE BETWEEN CHLORITE AND WATER [75(42)].......................... 11:45 A

GEOCHEMISTRY IV: GENERAL GEOCHEMISTRY

South Hall C, Convention Center, 1:00 p.m.

J. Veizer and William D. Bischoff, presiding

1 J. Veizer*, P. Fritz, B. Jones: GEOCHEMISTRY OF BRACHIPODIS: OXYGEN AND CARBON ISOTOPIC RECORDS OF PALEOZOIC OCEANS [68(60)].......................... 1:00 P

2 L. Paul Kaunth*, Sarah Kealy, Sarah Larimer: ISOTOPIC COMPOSITION OF SILURIAN SEAWATER [7(127)].......................... 1:15 P

3 Boaz Lazar, Thomas J. Friedmann, Heinrich D. Holland*: THE COMPOSITION OF PERMIAN SEA-WATER [99(46)].......................... 1:30 P

4 Lisette Scott Kato*, Stein B. Jacobsen: THE CAUSES OF 075/065 VARIATIONS IN SEAWATER OF THE PAST 750 MILLION YEARS [99(41)].......................... 1:45 P

5 R. Lawrence Edwards*, James H. Chen, G.J. Wasshuber: PRECISE MEASUREMENTS OF 238U/ 235U AND U CONCENTRATIONS IN PROFILES OF PACIFIC AND ATLANTIC WATERS [99(68)].......................... 2:00 P
AIR TRANSPORTATION

The major carriers into Orlando are USAir, United, Delta, and Eastern. The new Orlando airport is one of the most convenient in the world.

GSA has designated the Cahn Travel Group of Boulder, Colorado, as the official airline reservation agent for the Orlando meeting.

Cahn Travel is a resource for those who want to work with a travel agent in determining the best possible airfare. Reduced rates at up to 50% off coach have been negotiated with several major carriers. These rates have restrictions such as 45-day and 30-day booking, so call early to take advantage of the savings. These rates will only be available to GSA participants through Cahn Travel.

All GSA participants booking through Cahn Travel will automatically become eligible for inclusion in a drawing for a Free Vacation Package for two: 4 days, 3 nights in either Cancun or Puerto Vallarta, including hotel (double occupancy), transfers, and airfare from Dallas. The first two hundred participants booking with Cahn Travel will receive double eligibility for the drawing—your name will be placed in the drawing pool twice.

Round trip travel: Sunday and Thursday:
- Boston: $198
- New York: $198
- Atlanta: $154
- Chicago: $279
- Denver: $279
- Dallas: $254
- Los Angeles: $344
- San Francisco: $225

Reservation Procedures

1. Book early. Understand the restrictions on fare, if any.
2. Call Cahn Travel at (800) 346-4747 (toll free) or (303) 443-2246, Monday - Friday, 7:00 a.m. to 5:30 p.m. MST.
3. Identify yourself as a GSA traveler.
4. The agent will quote you the discounted fare for your itinerary and confirm your reservation.
5. Payment options: Check payable to Cahn Travel Group; major credit card; invoice to your firm.
6. All payment must reach Cahn no later than seven days prior to departure. No reservations can be accepted after this deadline, which allows adequate mailing time.
7. Tickets will be sent to you via Certified Mail upon receipt of payment or credit card authorization.
8. We advise use of your home address for mailing, if this is more reliable than your business address. Tickets lost in the mail will be reissued only when new payment is made. In order to receive reimbursement, the passenger must file a lost-ticket application with the airline. This time-consuming process is the same for all airlines and agencies.
9. In the event of a decrease in your airfare after the ticket has been issued, call Cahn Travel and they will re-ticket you at the lower fare.

The Cahn Travel Group will provide a customer service desk at the Convention Center. Reservationists will be available to assist you with your travel needs and will be glad to help you make your visit to Orlando convenient and enjoyable.

GROUND TRANSPORTATION

A welcome hostess will be at the Main Information Desk at the Orlando airport. Information on transportation, hotels, restaurants, and entertainment will be available.

The 20-minute trip from the airport to the Convention Center area can be made by several types of ground transportation:

1. Airport Limousine

American Sight Seeing is offering a special rate to GSA registrants of $3.50 one-way or $7 round trip. This is bus transportation to and from the airport, offered at half the usual rate. Buses are dispatched from the American Sight Seeing desk in the baggage area. Say you're with GSA, and you'll be boarded at the discounted fare. You may book your return to the airport at the Convention Center.

2. Taxi

Please note: Taxis are regulated in Orlando. Only taxis servicing the airport are required to be metered. Do not use an unlicensed cab without establishing the rate first. Ask for yellow, City Cab, Checker cabs, which are metered and offer an unconditional guarantee.

The current cab rates (as of June 1985) are $1.80 for the first mile and $1.20 for each mile thereafter which should be a maximum of $18 per cab ride from the airport to any of the GSA-designated hotels and a maximum of $4 from other hotels to the Convention Center. To hold a cab, you will pay $12 per hour. Note that rates are subject to change and are applicable for yellow cabs, City Cab Company, and Checker Cab Company. Rates are per-cab charge (not per person). Share a cab and save 50% IMPORTANT: Be sure that the driver turns on the meter once you are settled in the car. Unless bugs are unreasonable, you should not be charged outside the metered rate. Drivers feel that a 12% -15% tip is an accepted average. If you experience problems with any of the above statements, call (305) 422-4455.

ORLANDO HOTELS

MARRIOTT INN INTERNATIONAL—HEADQUARTERS
8001 International Drive, Orlando, FL 32819

- Single: $85
- Double: $87
- Suite: $120
- Children under 18 sharing room with parent—FREE

Parking—FREE
4 tennis courts, outdoor and indoor, 2 large outdoor swimming pools, 2 indoor pools, poolside bar, children's playground, game room, Concierge Desk

Check-in: 4:00 p.m. Check-out: 11:00 a.m. CC: AX, D

DAY'S INN INTERNATIONAL
7200 International Drive, Orlando, FL 32819

- Single: $47
- Double: $50
- Suite: $115
- Children under 16 sharing room with parent—FREE

Parking—FREE
Outdoor swimming pool, children's playground
Check-in: 4:00 p.m. Check-out: 12:00 noon CC: AX, V, MC, D

HOLIDAY INN INTERNATIONAL
6515 International Drive, Orlando, FL 32819

- Single: $47
- Double: $50
- Suite: $115
- Children under 16 sharing room with parent—FREE

Parking: FREE
Heated outdoor swimming pool, children's playground with video pool, volleyball and shuffleboard
Free in-room movies
Concierge Desk
Check-in: 4:00 p.m. Check-out: 11:00 a.m. CC: AX, V, MC

QUALITY INN INTERNATIONAL
9958 Hawaiian Court, Orlando, FL 32819

- Single: $33
- Double: $46 (8 suites overflowing pool available at $55)
- Children under 18 sharing room with parent—FREE

Parking—FREE
Outdoor swimming pool, hot tub, children’s playground, Continental breakfast, evening snacks, to other food service, Restaurants nearby, Concierge Desk
Check-in: 4:00 p.m. Check-out: 12:00 noon CC: AX, V, MC, D

QUALITY INN INTERNATIONAL
7900 International Drive, Orlando, FL 32819

- Single: $29
- Double: $55
- Children under 16 sharing room with parent—FREE

Parking—FREE
2 outdoor swimming pools, game room
Check-in: 2:00 p.m. Check-out: 11:00 a.m. CC: AX, D

RADISSON INN & AQUATIC CENTER
8444 International Drive, Orlando, FL 32819

- Single: $50
- Double: $55
- Children under 16 sharing room with parent—FREE

Parking—FREE
Outdoor recreational pool, tennis court, 514 mls jogging trail, playground and golf privileges at cost, also a center for world-class aquatic training and competition which includes indoor Olympic pool and swimming pool. Complete fitness center and health club at $7/day, and racquetball/handball courts $6/hour
Check-in: 3:00 p.m. Check-out: 12:00 noon CC: AX, V, MC
OFFICIAL HOUSING FORM

Please complete and return by October 4 to:

HOUSING BUREAU FOR GSA
ORLANDO/ORANGE COUNTY CONVENTION & VISITORS BUREAU
7600 DR. PHILLIPS BLVD., SUITE 6
ORLANDO, FL 32818

Please print or type:

Hotel/Motel Preference (give complete name of property)

1. 

2. 

3. Type of Accommodations
   (send one reservation form per room)

   __ Single (1 bed, 1 person) __ 1 Bedroom Suite
   __ Double (1 bed, 2 persons) __ 2 Bedroom Suite
   __ Dbl/Dbi (2 beds, 2 persons) __ Add rollaway to room
   __ Triple (2 beds, 3 persons) Rate Requested* ______
   __ Quad (2 beds, 4 persons) * Subject to 7% tax

   ARRIVAL DAY/DATE ________________ TIME ________________ a.m./p.m.

   DEPARTURE DAY/DATE ________________ TIME ________________ a.m./p.m.

NAMES OF OCCUPANTS

1. 

   2. 

   3. 

   4. 

If sending deposit with this form: Remit in U.S. funds to "GSA Housing Bureau" or charge:

   ____ Master Card ____ Visa ____ American Express

   Card Expires: __________/________

   Signature ________________________

MAIL CONFIRMATION TO (type or print with dark ink):

   Name __________________________________ Phone (______) ____________________

   University or Company ____________________________________________________

   Address ________________________________________________________________

     street __________ city __________ state __________ zip __________

1. First night's deposit is required. Credit cards and checks will be accepted. Deposit due with housing
   form OR to hotel after receiving confirmation.

2. Notify hotel directly for any changes in arrival/departure or type of accommodations.

3. Cancellation 48 hours in advance of arrival is required for refund. Request cancellation number at that time.
PREREGISTRATION must be RECEIVED by September 27. Unpaid purchase orders NOT accepted as valid registration. Full payment MUST accompany all preregistration requests. One form per registrant. Participants in all events, short courses excluded, must pay a preregistration fee. CANCELLATION requests must be received in writing by October 4. NO refunds after this date.

Type or print ** Copy for your records

<table>
<thead>
<tr>
<th>Name (Last)</th>
<th>(First)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Institution/Employer</td>
<td>Nickname for badge</td>
</tr>
<tr>
<td>Mailing Address</td>
<td></td>
</tr>
<tr>
<td>City</td>
<td>State</td>
</tr>
<tr>
<td>Country</td>
<td>Business phone</td>
</tr>
<tr>
<td>Guest/Spouse Name (Last)</td>
<td>(First)</td>
</tr>
<tr>
<td>City</td>
<td>State/Country</td>
</tr>
<tr>
<td>Member Affiliations: (1) GSA (2) CF (3) GIS (4) NAGT (5) MSA (6) SEG</td>
<td>Member #</td>
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**PREREGISTRATION FEES**

<table>
<thead>
<tr>
<th>Professional Member (per affiliation above)</th>
<th>One-Day (circle day S M T W T)</th>
<th>Professional Nonmember (per affiliation above)</th>
<th>One-Day (circle day S M T W T)</th>
<th>Student Member (per affiliation above)</th>
<th>One-Day (circle day S M T W T)</th>
<th>Student Nonmember (per affiliation above)</th>
<th>One-Day (circle day S M T W T)</th>
<th>Guest (fill in name above)</th>
<th>One-Day (circle day S M T W T)</th>
<th>Abstracts with Programs (on-site pickup)</th>
</tr>
</thead>
<tbody>
<tr>
<td>(1) $80</td>
<td>(2) $50</td>
<td>(3) $115</td>
<td>(4) $65</td>
<td>(5) $40</td>
<td>(6) $25</td>
<td>(7) $55</td>
<td>(8) $35</td>
<td>(9) $30</td>
<td>(10) $18</td>
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</table>

\[
\text{Fee} \quad \text{Qty} \quad \text{Amount}
\]

<table>
<thead>
<tr>
<th>Organic Geochemistry Dinner</th>
<th>Oct 27 (11)</th>
<th>$22</th>
<th>$</th>
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</thead>
<tbody>
<tr>
<td>GSA Awards</td>
<td>Oct 28 (20)</td>
<td>$13</td>
<td>$</td>
</tr>
<tr>
<td>Engineering Geology</td>
<td>Oct 29 (23)</td>
<td>$13</td>
<td>$</td>
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<tr>
<td>GIS</td>
<td>Oct 29 (24)</td>
<td>$13</td>
<td>$</td>
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<tr>
<td>History of Geology</td>
<td>Oct 29 (26)</td>
<td>$13</td>
<td>$</td>
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<tr>
<td>Hydrogeology</td>
<td>Oct 29 (27)</td>
<td>$13</td>
<td>$</td>
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<tr>
<td>MSA</td>
<td>Oct 29 (28)</td>
<td>$13</td>
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<tr>
<td>NAGT</td>
<td>Oct 29 (29)</td>
<td>$13</td>
<td>$</td>
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<tr>
<td>Paleo Society Breakfest</td>
<td>Oct 29 (30)</td>
<td>$10</td>
<td>$</td>
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<td>Women Geoscientists Breakfast</td>
<td>Oct 29 (31)</td>
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<tr>
<td>Coal Geology</td>
<td>Oct 30 (31)</td>
<td>$13</td>
<td>$</td>
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<tr>
<td>Geochemical Society</td>
<td>Oct 30 (32)</td>
<td>$13</td>
<td>$</td>
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<tr>
<td>Quaternary &amp; Geomorphology</td>
<td>Oct 30 (33)</td>
<td>$13</td>
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<tr>
<td>SEG</td>
<td>Oct 30 (34)</td>
<td>$13</td>
<td>$</td>
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</tbody>
</table>

**FIELD TRIPS**

1. Barrier Island/Marsh | Oct 24–27 (35) | $250 | $  |
3. Hydrogeol Central/FL | Oct 26–27 (37) | $65 | $  |
5. Geo S Georgia | Oct 27–29 (41) | $360 | $  |
7. #7 without airfare | Oct 24–27 (41) | $196 | $  |
8. Winter Park Sinkhole | Oct 29 (41) | $7 | $  |
9. Winter Park Sinkhole (repeat) | Oct 30 (42) | $7 | $  |
10. Land Pebble Phosphates | Nov 1–2 (44) | $100 | $  |
11. #11 without airfare | Oct 31–Nov 5 (45) | $560 | $  |
12. Apalachicola River | Nov 1 (47) | $25 | $  |

**SHORT COURSES**

Geology, Planetary Geology, Geocriming (repeat), Remote Sensing, UNIX, Balancing Cross Sections, Nov 1–2 (44) | $160 | $  |

\[
\text{Total Column B} = \text{Total Column A + B = Total Remittance}
\]

**REMIT IN U.S. FUNDS, PAYABLE TO 1985 GSA ANNUAL MEETING**

Card expires: ** ** / **

signature

FOR OFFICE USE ONLY

Deposit Date | Refund Date | Balance Due $ | A/R | Comment | A/F | Refund $ | A/F | Refund Ck # | A/F |

MAIL TO:

1985 GSA ANNUAL MEETING, P.O. BOX 9140, BOULDER, CO 80301.