

SAN DIEGO ASSOCIATION OF GEOLOGISTS

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SDAG MEETING ANNOUNCEMENT

WEDNESDAY, JULY 21st, 2010

“GEOLOGY AND WILDLIFE OF ANTARCTICA AND THE SOUTHERN OCEAN”

Presented by

Monte Marshall, Ph.D., Professor Emeritus of
Geology and Geophysics, SDSU

Where: Catalina Room (southern end of MVCC) **SEE MAP**
Marina Village Conference Center
1936 Quivira Way, San Diego, CA 92109

When: 5:30 pm – Social Hour
6:30 pm – Dinner
7:15 pm – Program

Directions: FROM INTERSTATE 5: Take the SEA WORLD DRIVE exit. From SEA WORLD DRIVE, take WEST MISSION BAY DRIVE on your right. When you see the large green sign that says QUIVIRA ROAD, get in the farthest left of the two left turn lanes. Turn left, go one very short block and turn left again. Drive about one half mile and MARINA VILLAGE will be on your right.

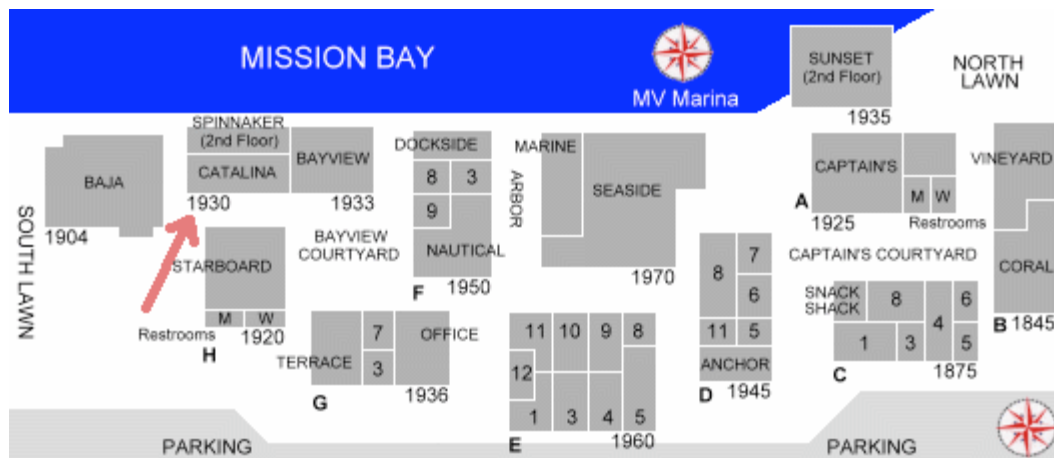
FROM INTERSTATE 8: Take the WEST MISSION BAY DRIVE exit to the right. You will be on INGRAHAM STREET for a short distance from which you will take the next exit marked WEST MISSION BAY DRIVE on your right. When you see the large green sign that says QUIVIRA ROAD, get in the farthest left of the two left turn lanes. Turn left, go one very short block and turn left again. Drive about one half mile and MARINA VILLAGE will be on your right.

Dinner: Hawaiian Buffet. Beverage station. Dessert. Cash bar.

Cost: \$30 per person, \$5 discount for members, STUDENTS: \$20. Add \$5 if you did not make a reservation

Reservations: Make your reservation **online** at www.sandiegogeologists.org **no later than noon, Monday, July 19th**.

**RESERVATIONS CANNOT BE ACCEPTED AFTER MONDAY AT 12 NOON.
IF YOU DO NOT MAKE A RESERVATION, WE CANNOT GUARANTEE YOU A MEAL.**



2010 SDAG MEETING SCHEDULE - Mark your Calendars!

Meetings are usually on the 3rd Wednesday of the month but may change to accommodate speaker and meeting place schedules. Check here for updates!

August 25	Rob Hawk: The Mt. Soledad, La Jolla Landslide Repairs
September 15	Candace Kohl: TBA
October	TBA

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SPEAKER BIO

Prof. Monte Marshall



I was born in Mercy Hospital, San Diego, shortly after it was established by Padre Junipero Serra. After being converted from astronomy to geology by Baylor Brooks, I received my PhD from Stanford under Allan Cox. My thesis was discovering what rocks on the seafloor were causing the oceanic linear magnetic anomalies--which had just proved the existence of continental drift and seafloor spreading. After several years with the USGS in Menlo Park, I loaded all my belongings (mostly books) in a 5-foot U-Haul trailer and headed back down to San Diego to teach and do research at SDSU. My main courses were Structural and Petroleum Geology, Introductory Geophysics, and Paleomagnetism

and Plate Tectonics. After almost 30 years of teaching, with my mind and memory going, I taught Rocks for Jocks in my last semesters! My research centered around making detailed gravity surveys of metropolitan San Diego faults, and using paleomagnetism to study crustal rotations in southern and Baja California.

As many of the older members of SDAG will testify, this is about my 10th talk to our group—and my second one on Antarctica. But having just spent a month in Antarctic waters, this one should be much more informative and maybe even more entertaining than the last one! :>)

SPEAKER ABSTRACT

"GEOLOGY AND WILDLIFE OF ANTARCTICA AND THE SOUTHERN OCEAN"

Antarctica is, in many ways, the most exotic of the six or seven continents. It has the highest average elevation, the fastest winds, the lowest temperatures, and is the most remote of all continents. Discovered only 200 years ago, it has no permanent residents, not even a single tree, and is populated by only the most primitive of plants and only a few species of large animals, including the very hardy scientists. Because it is centered almost exactly on the South Pole, it is so cold that ninety eight percent of its surface is covered by ice—7 million cubic miles of it, with an average thickness of 6,500 feet. This is 90% of all the ice in the world, and 60% of the world's fresh water. This, despite the fact that it is the driest continent in the world, with an annual average precipitation of only 6 inches of liquid water equivalent.

The coastal outline of Antarctica looks like a ray. The part in the eastern hemisphere, called East Antarctica, is a semi-circle with its coast lying on the Antarctic Circle and is the size of the United States. East Antarctica is a fairly flat, pre-Cambrian shield, close to sea level, overlain in places by flat-lying sedimentary rocks as old as Cambrian. The summit of the Antarctic ice cap is located near the center of East Antarctica, about 600 miles east of the south pole, and has an elevation of 13,000 feet—only 3000 feet lower than the highest rocks on the continent! The tail of the ray lies entirely in the western hemisphere, is called West Antarctica, and extends from the Ross Sea, south of New Zealand, to the tip of the Antarctic Peninsula—just 600 miles south of Tierra del Fuego, South America. Although also buried under thousands of feet of ice, radio echo ranging shows that the bedrock has much more relief and West Antarctica appears to be an archipelago of crustal blocks separated by basins that are up to 8,000' below sea level. These two halves of the continent are separated by the 2000 miles long Trans-Antarctic Mountains (TAM), one of the longest mountain ranges on earth. Much of the TAM is buried by ice and in places only the top few hundred meters stick up above the ice. The highest mountain in the range is 14,800 feet above sea level.

The oldest rocks in Antarctica are Archean, about 4 Ga, and are located on the coast of East Antarctica, south of Africa. Like all continents, Antarctica grew by the addition of new crust in various orogenies. By 1 Ga, all the crust of East Antarctica and some of West Antarctica had

formed. These orogenies occurred because the continent was moving and colliding with other continents, forming clusters of continents called supercontinents that lasted for some time and then rifted apart. East Antarctic, at least, along with Australia, South America, Africa, and India formed the well-known supercontinent of Gondwana that lasted from about 500 Ma to 200Ma. Between 300 and 200 Ma Gondwana joined a group of the northern continents of North America and Eurasia (called Laurasia) to form the single supercontinent of Pangea. All the major land masses of the earth formed in a giant circle around an ocean called Tethys. Apparently Pangea is only the last of the single supercontinents. All the continents are currently thought to have been together at 1 Ga, in a supercontinent called Rodinia that lasted from about 1.3 Ga to about 800 Ma. Of great interest to us on the west coast of North America, is that either Australia or East Antarctica lay to the west of us, that the ocean was thousands of miles west of Arizona, and that our current Pacific coast formed when either of those continents rifted away from North America at about 800 Ma! Paleomagnetic data show that our current West Coast actually ran E-W instead of N-S and was near the equator at that time! The magnetic data show that East Antarctica remained in tropical latitudes until the Silurian, at 450Ma, when it began drifting in a highly non-linear way to more southerly latitudes. It reached the South Pole in mid-Cretaceous at 100 Ma and has remained there since. All the Gondwana continents, except South America, started rifting away from Antarctica during the Cretaceous.

As was seen earlier, the polar position of Antarctica greatly affects its climate. But, its climate is also affected by the great oceanic currents that circle the continent, especially the clockwise current called the Antarctic Circumpolar Current. Only at 30 Ma was a 600 mile gateway/gap, called the Drake Passage, created between the tip of South America and the Antarctic Peninsula, allowing large currents to totally circle the continent. These currents, plus the complicated mixture of relatively warm, salty water coming down from the north and colder, fresh water from the melting of glacial ice and freezing of sea water to form the sea ice that surrounds the continent much of the year, all set in motion oceanic and atmospheric currents that affect not only the climate of Antarctica, but the whole world! Interestingly, the global greenhouse of the Cretaceous and early Tertiary began to transition into the current global icehouse and the first Antarctic ice sheet formed at about 30 Ma.

This gateway formed as the Andean subduction zone which formerly had extended down the west coast of South America to the Antarctic Peninsula was severed at the present tip of South America by the westward motion of South America as it separated from Africa. An almost 600 mile segment of the subduction zone was left 1000 miles east of Cape Horn to form the Scotia Arc and Sandwich Islands, and fragments of the Andean crust were left strung out along the transform fault. One of these Andean fragments now forms the largest, biologically richest, most historic, and most lofty and scenic island in the Southern Ocean, South Georgia.

PRESIDENTS CORNER, JULY 2010

As of this writing, we have once again been jolted and awakened from our extended holiday weekend reveries. At 1653 hrs today (July 7), a significant shaker occurred in the Borrego Springs area.

Specifically (from the USGS website), "A M5.4 earthquake occurred in southern California at 4:53 pm (Pacific Time) about 30 miles south of Palm Springs, 25 miles southwest of Indio, and 13 miles north-northwest of Borrego Springs. The earthquake occurred near the Coyote Creek segment of the San Jacinto fault, which is one of the strands of the San Jacinto fault. The earthquake exhibited sideways horizontal motion to the northwest, consistent with slip on the San Jacinto fault. It was followed by more than 60 aftershocks of M1.3 and greater during the first hour. Seismologists expect continued aftershock activity."

"This M5.4 earthquake follows the 4th of April 2010, Easter Sunday, Mw7.2 earthquake, located about 125 miles to the south, well south of the US Mexico international border. A M4.9 earthquake occurred in the same area on June 12th at 8:08 pm (Pacific Time). Thus this section of the San Jacinto fault remains active. "

I have no doubt that the Coyote Creek fault will soon be hosting a swarm of curious and energized geologists, within the next few days. A timely event, to be sure, given that for this fall's field trip, we will be exploring the "Geology of the Northern Anza Borrego Desert State Park Area"! Very kind of the planet to help us advertise the field trip, don't you think?

Bryan

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Note the new nomenclature for 2010: Sponsors, Corporate Sponsors, and Patrons provide a significant portion of SDGS's and SDAG's operating and scholarship budgets. By making your payments to SDGS (a 501(c)3 public benefit nonprofit educational corporation) you may be able to claim a tax deduction. In addition to monthly recognition for your contribution, you are entitled to additional benefits as listed on the Sponsorship Form included in this newsletter.



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ANNOUNCEMENTS

Call for Papers for the Upcoming 2010 SDAG/SCGS Joint Field Guide:
“Geology of the Northern Anza Borrego Desert State Park Area”
 To be published in association with this years’ SDAG/SCGS Joint field trip:
“The Lows and Highs of Anza Borrego Desert State Park”
October 15 through 17, 2010

Co-Organizers:

Chuck Houser, SDAG Vice President
 SCS Engineers
CHouser@scsengineers.com (858) 571-5500 x244

Monte Murbach, SCGS President
 Murbach Geotech
mmurbach@aol.com (619) 222-2044

SCOPE: Papers addressing topics related to geology, structural geology, faulting, folding, meta-structures, biology, hydrogeology, paleontology, environmental issues, geography, Native American culture, and history of the Santa Rosa Mountains, Clark and Borrego Valleys, Borrego Badlands, Coyote Mountain, and San Ysidro Mountains.

TIMELINE: Email a statement of interest & topic to the co-editors as soon as possible:

- Manuscripts due: August 15, 2010
- Revised manuscripts due: September 15, 2010
- Target publication date: October 1, 2010

THE OCTOBER/NOVEMBER 2011 SDAG FIELD TRIP

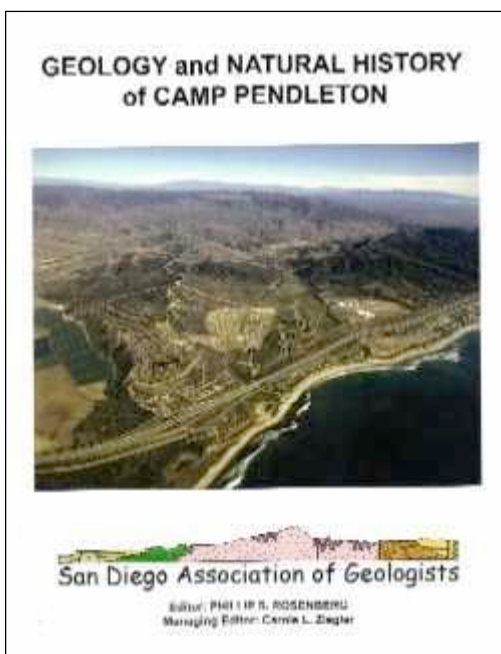
Speaking of field trips, the ball is now rolling to organize the field trip for 2011! The focus area will be eastern Imperial County, which encompasses exotic locales such as the Cargo Muchacho Mtns., Algodones Dunes, Chocolate Mtns., the Picacho Area, Peter Kane Mountain, the Little Mule

Mtns., the Palo Verde Mtns... In light of recent earthquake activity, the focus may shift (no pun intended) to include more western areas of geologic interest. Subject matter for the accompanying guidebook will include anything geological, hydrological, and historical; lots of mines in the area as well, a gunnery range or two... Perhaps some SDSU geology majors could conduct a few senior theses this year within the area, for inclusion in the guidebook! Please contact next year's SDAG vice president Todd Wirths at 858-337-0098 or todd@wirths.com for ideas, papers, people, places, etc.

New SDAG/Sunbelt Publication:

GEOLOGY AND NATURAL HISTORY OF CAMP PENDLETON, 2nd EDITION

GEOLOGY and NATURAL HISTORY of Marine Corps Base CAMP PENDLETON SAN DIEGO



COUNTY, CALIFORNIA: This guidebook includes the San Diego Association of Geologists' 1994 field trip through Camp Pendleton. Marine Corps Base Camp Pendleton covers an area of approximately 200 square miles, extending from the Pacific Ocean to the crest of the Santa Margarita Mountains and serves as a buffer zone between the populous metropolitan areas of Los Angeles and San Diego. The base contains some of the last virgin lands in coastal southern California, lands that are undoubtedly the last vestiges of what California must have been like during the days of the Spanish land grants. Due to its popularity, this guidebook warranted a second edition. The original 1994 road log of the field trip is included along with the papers printed in the original edition. However, material has been updated as new information has been learned about the area and the original Geologic Map of the San Onofre Mountains has been redrafted to meet today's mapping standards. This map is included as a fold out map at the end of

the guidebook. Learn about the endangered avian species of Camp Pendleton at the coast to threatened species at the interior. Other papers included in this guidebook tell the human history of Camp Pendleton along with its geologic environment. The fire history of organic fragments, water resources and pollution prevention are also explored. Go to <http://www.sunbeltbook.com/BookDetails.asp?id=250> and buy it.

Final Call for Presentations & Exhibitors (extended through August 13, 2010): [The 2011 North American Environmental Field Conference and Exposition](http://www.envirofieldconference.com/exhibit.htm), JANUARY 11 - 13, 2011, at the Hilton Resort Hotel on Mission Bay in San Diego, California. For details, go to <http://www.envirofieldconference.com/exhibit.htm>

Grand Canyon Raft Trip, June 24 - July 1, 2011

Want to join your geo-pals on an eight-day Colorado River raft trip through the geological wonderland of Grand Canyon National Park? If there is enough interest, Sue Tanges will again organize a chartered raft trip for rock hounds, their families and friends. She will accompany us on the trip. This is the last time Sue will organize a chartered Grand Canyon raft trip!



The trip is tentatively scheduled for June 24 through July 1, 2011. The raft company will be Grand Canyon Expeditions Company of Kanab, Utah (<http://www.gcex.com/>). They have excellent river guides and the trip costs include the following:

- Round-trip transportation from Las Vegas, Nevada, to/from the river
 - Sleeping bag, pad, ground cloth, and tent
 - Waterproof river bags for sleeping gear and clothing
 - Waterproof ammo box for camera and personal items
 - All meals while on river, prepared with fresh meats and produce
 - Utensils, cups, and plates
 - Generous supply of soft drinks, juice, and a river-full of water
- Bring your own alcoholic beverages if desired
 - Great fun and memorable experience (ask former river rats!!)

Two rafts are chartered and each will hold 14 passengers. We have space for 28 of us! Reservations will be on a first-come, first-serve basis. A waiting list for cancellations will be maintained. The price of the trip is not finalized but is likely about \$2,500. (There is a savings off the brochure price!)

To express your interest, email Sue at grcynsue@att.net. Deposits will be required by September. More info will follow, if there is enough interest to fill the rafts! See you in the river in 2011!!!

The **SDSU Geology Alumni Association** had its **quarterly trash pickup** day on June 12. A two-mile stretch of Sunrise Highway is maintained. Many thanks to the volunteers. For more info, contact Mike Hart, mwhart@aol.com, and "talk trash!"

During last month's meeting, longtime SDAG member **Woody Higdon** announced the online availability of new digital image editor/viewer software for free, called "**Stereo Photo Maker**." It can automatically batch-align hundreds of images and mount them to the 'window'. It also allows users with no knowledge of HTML to create WebPages. Go to <http://stereo.jp.org/eng/stphmkr/>.

Call for Papers: Peninsular Ranges Batholith Deadline for Manuscript Submission: **July 2010.**

A GSA volume on the Peninsular Ranges batholith, Baja and southern California, is currently in the early stages of preparation. The volume will address both the Jurassic and Cretaceous batholiths and related extrusives. Plans are for a series of overview papers; a number of trans-batholith transects; topical papers dealing with isotopic, chemical, structural, and geophysical aspects of the batholith; as well as structural effects recorded in prebatholithic rocks during the evolution of the batholith. Also to be included are studies of individual plutons, ranging from gabbro to pegmatites, that characterize various elements of the batholith. A section is planned for geologic problems, such as Tertiary fault history, that have been solved through the analysis of batholithic data. Go to <http://www.geosociety.org/pubs/batholithVolCall.htm> for details. If you would like to submit a paper, or if you know of someone who might be interested, please contact one of the editors: Doug Morton, douglasmorton@gmail.com; Scott Johnson, johnsons@maine.edu; Dave Kimbrough, dkimbrough@geology.sdsu.edu; Scott Paterson, paterson@usc.edu; Keegan Schmidt, klschmidt@lcsc.edu; Vicki Todd, vtodd2@comcast.net; or Paul Wetmore, pwetmore@cas.usf.edu.



New Volume:

"Atlas of Coastal Ecosystems in the Western Gulf of California"

Dr. Jorge Ledesma Vázquez, Associate Dean of the Facultad de Ciencias Marinas at the Universidad Autónoma de Baja California in Ensenada, has announced the publication of a new volume by The University of Arizona Press, titled "Atlas of Coastal Ecosystems in the Western Gulf of California: Tracking Limestone Deposits on the Margin of a Young Sea" (192 pp., 32 color photos, 24 maps, cloth binding, with CD-ROM).

"...this atlas captures the dynamics of natural cycles in the fertility of the Gulf of California that have been in near-continuous operation for more than five million years. The book is designed to answer key questions that link the health of coastal eco-systems with the region's evolutionary history: What was the richness of "fossil" ecosystems in the Gulf of California? How has it changed over time? Which ecosystems are most amenable to conservation?" For information and ordering, go to <http://www.uapress.arizona.edu/BOOKS/bid2141.htm>.

OTHER MEETINGS:

South Coast Geological Society: 12 July 2010 (Monday): "Geochemical and Preliminary Sedimentological Analysis of Phosphorites from Togo, West Africa." Dr. Hassan R. Boroon, CSULA-Geological Sciences Department. Double Tree Club Hotel, Santa Ana. For more info go to <http://www.southcoastgeo.org/index.html>.

AEG-Southern California Section: 14 July 2010 (Wednesday): "Political and Scientific Considerations in Review of the Alquist-Priolo Earthquake Fault Zoning Act of 1972." Robert E. Tepel, Member, California State Mining and Geology Board. Victorino's Restaurant, North Hollywood, 6-9 PM. For more info go to <http://www.aegsc.org/>.

Inland Geological Society: 4 August 2010 (Wednesday): TBA, Woody Higdon, Geo-Tech Imagery Int'l. LSA Associates, 1500 Iowa Ave., Riverside. For more info go to <http://www.inlandgeo.org/>.



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- Contact Terry Cochran at 619-258-4916, ext. 110 or to tcochran@sunbeltpub.com for more information.

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1. Solinst Model 101 Water Level Meter (used to measure depth of water in wells, boreholes and standpipes.)
2. Campbell Monoflex Pneumatic Integrated Vacuum Pressure Controller (designed to operate pumps and samplers to depths of 250 ft. with a maximum operating pressure of 125 PSI, with quick disconnect air fittings.)
3. Model 601 Standpipe Piezometer (designed to be placed within a drilled hole to provide a filtered inlet point.)

SEEKING JOB OPPORTUNITIES!

Todd Wirths, M.S., P.G. #7588: Environmental geologist seeking a senior project manager-level position. I have over twelve years experience conducting environmental subsurface investigations. Responsibilities included project and data management at leaking underground storage tank sites, conducting Phase II Environmental Site Assessments, large-scale remedial soil over-excavations, and risk assessments throughout San Diego County. Experience with over 50 projects associated with assessment and remediation of petroleum hydrocarbon-impacted retail fuel facilities in the San Diego Region and supervised the installation of nearly 500 wells and borings. Read more on my LinkedIn Profile: <http://www.linkedin.com/pub/todd-wirths/10/3b/939>. Better yet, ask for my resume- call 858-337-0098, or email todd@wirths.com.

Jared Warner: I am a graduate of San Diego State where I received both my B.S. and M.S. in geological sciences ('06 and '09). I have experience in multiple fields including production geology, fractured reservoirs, reservoir characterization, basic geologic model building, geophysics, paleontology, sedimentology, oceanography, and teaching. I've recently moved back down to San Diego after working for Occidental Petroleum and looking for

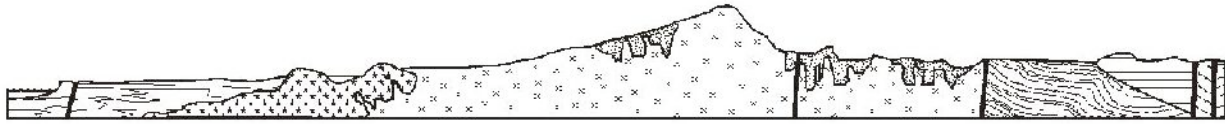
immediate employment opportunities. For information on my research, contact information, or a resume please feel free to contact me at jared.j.warner@gmail.com or call me at (661) 972-5332.

Greg Fisch: I have been an Electronic Engineer and Software developer for many years. I originally started out wanting to be a Geologist, but family and friends convinced me to get into electronics and computers instead. So now after 20+ years, it's time to make a career change, get back to my original goal and go back to school to obtain my degrees in Geology. I have been involved with a wide variety of projects including six-legged walking robots, remote telescope/ccd imager/observatory control systems, GPS tracking systems utilizing the Iridium satellite network, GIS mapping and programming, asteroid/comet orbital determination and advanced image processing. I would like to be able to apply my knowledge and skill set in the technology areas to research tasks in the Geoscience area (with a special interest in remote sensing) while I'm continuing my education. Please contact me at (858) 692-2909 (cell) or send email to: gfisch9862@aol.com and I will be happy to send you my current resume.

JOB OPENINGS!

Sorry, none announced!





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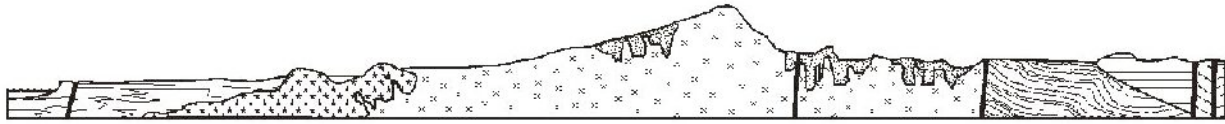
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PMB 157

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*Donations may also be made
at monthly meetings.
Thank you!*