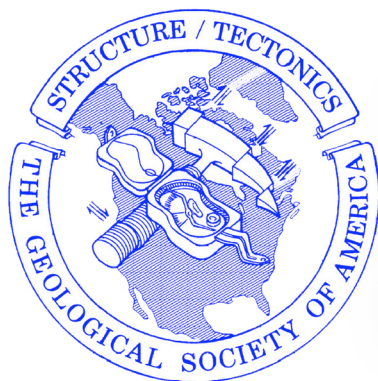
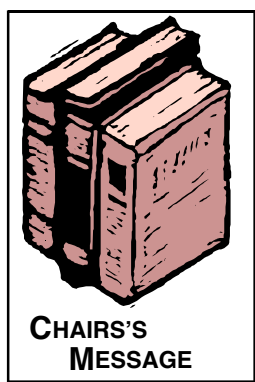




STRUCTURAL GEOLOGY AND TECTONICS DIVISION Newsletter

Volume 26. Number 1

June 2006



Chair's Message –

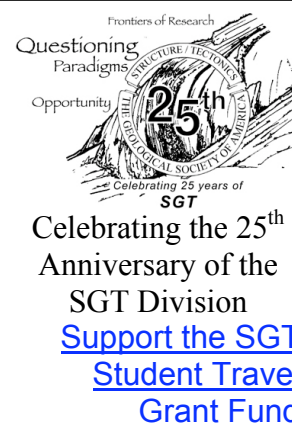
Greetings from sunny and very dry New Mexico. This message is very, very tardy, and I can offer no apologies (other than teaching a brand new, at least for me, course this past spring, numerous Department/University issues, manuscripts, NSF proposals, teaching our field geology course, etc.) and that would not do much good, anyway. Your summer is already underway, and I hope that it is a most enjoyable and productive one. If you are heading to the Rockies this summer be prepared for record dry and hot conditions and the possibility of being closed out of several National

Forests because of fire concerns. If you are heading to, in particular, New Mexico, please be frugal till you cross the border into the Land of Enchantment, and then spend everything you can ---- tourism is a very, very important industry for us!

A huge (and also tardy) thanks to Dave Lageson for his stellar service as Division Chair last year. I was impressed by the dedication, organization and excitement associated with Dave's efforts on behalf of the division. We owe him a great deal of thanks for his three years of dedicated service on the SG&T Board.

Last year was truly a banner year for the SG&T Division, with the very well-attended celebration of its **25th Anniversary** at the GSA Annual Meeting in Salt Lake City, which included the very well-attended **Pardee Symposium**, *Research opportunities, new frontiers, and the questioning of paradigms in structural geology and tectonics: Celebrating the 25th Anniversary of the SGT Division*. The anniversary celebration included t-shirts, coffee mugs, and water bottles with the SG&T Division logo, and thanks to Tim Wawrzyniec for his work getting all these goodies (remainders of which are still available!) Proceeds from the sale of these items have gone to Division Student Research Awards (thanks to Peter Vrolijk, our very dedicated division treasurer. With all the activities of 2005, it's hard to imagine an encore, but we'll do our best.

The SG&T Division was well-represented in the recent GSA special meeting **Backbone of the Americas: Patagonia to Alaska** organized by Suzanne Mahlburg Kay (Cornell University) and Victor Ramos (Universidad de Buenos



Quick Links.....

Awards

[Division Awards](#)

[Division Officers](#)

[Funding News](#)

[Review Process](#)

[International](#)

[Collaboration](#)

[Graduate Opps](#)

[Earthscope](#)

[Meetings, Field](#)

[Trips](#)

[Newsletter Archive](#)

[Resource Bin](#)

[Volunteer](#)

Need to get there fast, click on the



button and to the web you will go!

Aires) and held in Mendoza, Argentina in early April. The meeting consisted of oral and poster sessions and several field trips and, from what I heard it was highly successful. Your SGT Division helped sponsor the meeting with several travel scholarships for students

Several of you are probably planning on attending the GSA Field Forum on the "Tectonic significance of vertical boundaries in the Cordillera," which will involve investigation of the western Idaho shear zone. It will held in late July to early August, and has been organized by Scott Giorgis, Basil Tikoff, and Bill McClelland. We hope it goes well and provides the opportunity for stimulating discussion!

The upcoming **2006 GSA Annual Meeting in Philadelphia includes several topical sessions of interest** to division members. The June, 2006, *GSA Today* includes all necessary information on the Annual Meeting. The online submission site on the GSA home page is up and the deadline for submission of abstracts has already passed. I hope it worked as well for you as it did for me. If you are attending the Annual Meeting, please plan on participating in the SGT Division Business meeting, which begins at 5:45 PM on Tuesday, October 24. This is always a lively and informative event, where we honor the Career Contribution awardee, the Best Paper awardee(s), and the Graduate Student Research awardees. I look forward to seeing you at Philadelphia.

Certainly a major highlight for this year, at least so far, has been the GeoFrame workshop, held in early February in St. Louis, Mo. Aspects of the workshop, overall goals of the GeoFrame initiative, and conclusions from the meeting were recently published in *Eos* (6 June, 2006 issue) and, as a participant of the workshop, I encourage all of you to read the report. Basil Tikoff, Ben Van der Pluijm, Jim Hibbard, Randy Keller, David Mogk, Jane Selverstone, and Doug Walker, members of the GeoFrame steering committee are to be congratulated for organizing this exceptionally stimulating, collaborative, and most fruitful community-driven event in early February.

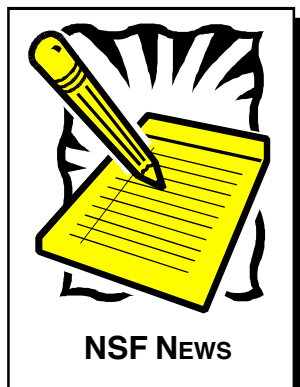
Lastly, if you are interested in serving the SG&T Division in some capacity, now is the time to get serious about placing your name on the radar screen. In particular, we are soliciting **volunteers and nominations** for candidates for 2nd Vice Chair, as well as new members on division committees (as listed in this newsletter). Contact me (jgeiss@unm.edu) or any of the [division board members](#) (or committee chairs) if you are interested the deadline is August 1, 2006. To echo all previous division chairs, active participation in your SG&T Division, which currently has the largest number of members of all GSA Divisions, is vital to the year-to-year activities, scholarships and awards that we provide, and to the long-term vitality and camaraderie that this organization brings to our professional lives. Therefore, please seriously consider getting involved.

Calling all Division members –

Volunteers/nominations are needed for SG&T 2nd Vice-Chair and Secretary/Treasurer, and our very important division committees (Career Contribution Award Committee; Best Paper Award Committee; Short Course Committee).

Deadline – Aug 31. Contact John Geissman: jgeiss@unm.edu

Navigation hint - [Click here to return to the TOC>>>](#)



NSF Tectonics Program Update—Spring 2006

Contributed by: Stephen S. Harlan and David Fountain

The following summarizes some of the topics presented during the Structure and Tectonics Business Meeting during the Annual Meeting of the Geological Society of America in Salt Lake City, Utah on October 18, 2005.

Tectonics Program Mission

The Tectonics Program supports a broad range of field, laboratory, computational, and theoretical investigations aimed at understanding the evolution and deformation of continental lithosphere through time. Proposals to elucidate the processes that act on the lithosphere at various time-scales and length-scales, either at depth or the surface, are encouraged. Because understanding such large-scale phenomena commonly requires a variety of expertise and methods, the program supports integrated research involving the disciplines of structural geology, petrology, geochronology, sedimentology, stratigraphy, geomorphology, rock mechanics, paleomagnetism, geodesy, and other geophysical techniques.

Please note that the Tectonics Program Solicitation (NSF 06-544) has recently been updated and can be found at the following URL: http://www.nsf.gov/publications/pub_summ.jsp?ods_key=nsf06544.

Fiscal Year 2005 Budget and Proposal Actions

During the 2005 fiscal year, representing the September 2004 and March 2005 panel meetings, the Program received 245 individual research proposals representing a total of 159 projects. The combined budget request for the proposals was \$48.41 million and the operating budget was \$9.278 million, or about 20% of the requests. The Program provided full or partial support for 50 research proposals (36 projects), with a success rate of about 21%. Although this number seems low, it is only slightly lower than the average success rate for the Foundation (about 24%) and significantly higher than success rates for other core programs within the Earth Sciences Directorate. Budget numbers for FY 2006 are approximately flat with respect to the FY 2005 budget. The good news is that the President's budget submitted to Congress calls for a significant increase for NSF's budget in FY 2007.



Tectonics Proposal Review Process

One of the most common questions that Program Officers get asked involves details of the review process. We provide details of this process below.

Once a proposal is submitted to the Program for either the June 1 or December 1 deadlines, it is examined in order to determine whether or not is appropriate for the program. In some cases, proposals are judged to be more appropriate for one of the other core programs such as Petrology and Geochemistry or Geophysics (or vice versa) and may be transferred. Similarly, proposals from other program may be transferred to the Tectonics Program. In some cases, proposals are shared and co-reviewed with other programs. Once proposals are logged into the appropriate programs, they are checked for compliance with the Grant Proposal Guide. Non-compliant proposals may be returned without review.

Proposals are divided between the two Tectonics POs who are responsible for finding appropriate reviewers for the proposals. Typically, each proposal is sent to 6-10 mail or ("ad hoc") reviewers. Reviewers are chosen based on their expertise in specific disciplines, geographic areas, or broad perspective on the field. Because of the large numbers of proposals submitted to the Program, about 700 to 750 requests are solicited for each competition and 60-70% are returned. If you are asked to review a proposal and cannot do it, please let us know as soon as possible so that we can find another reviewer.

Suggestions for reviewers are welcome. However, please note that we may or may not be able to use your suggestion because they are already being used on other proposals, typically don't review, have conflicts of interest, or serve on the panel. Please remember that graduate advisors, collaborators, co-editors, friends, and family members are in conflict of interest and are not appropriate suggestions.

The Tectonics Program convenes a panel to further evaluate the overall merits of proposals in the competition. Although this is a familiar process to the EAR community, it is worth noting that only a relatively small proportion of the Foundation (~20%) uses both mail and panel reviews. It is our perception, based on discussions with individual PIs and advisory committees, that most members of the EAR community favor the

combined mail and panel review system, considering it to be the “gold standard” of proposal evaluation. The Tectonics Panel consists of seven panelists who are chosen for their individual experience and breadth. The diversity of the Panel expertise is based on past and anticipated proposal subject areas. Panelists serve a two-year (4 panel meetings) term, meaning that a new panelist is rotating onto the panel each meeting, while one rotates off. We also invite an early career (pre-tenure) panelist to participate in each panel meeting on a one-time basis in order to provide insight into the NSF review process.

Each proposal is assigned to at least four panelists (discussion leader, scribe and two readers) based on their expertise. As with the ad hoc reviews, proposals are not assigned to panelists with a conflict of interest; those panelists do not participate in the discussion or voting. NSF considers panel membership to be confidential.

A few weeks prior to the panel meeting, the Panel is given access to the ad hoc reviews. For any proposal, the Panel may accept the evaluation of the mail reviewers based on the content of the mail reviews and refrain from further discussing or rating it. This may be done in cases where a proposal is highly rated, or more commonly, for proposals that are not competitive based on the mail review assessments. Typically, the panel discusses about 70 to 80% of the proposals in each competition focusing primarily proposals that are in the “gray area.” At the panel meeting, each proposal is discussed, rated, and given a recommendation (Fund, Fund If Possible, Do Not Fund). A panel summary reflecting the consensus of the participating members is written before the panel disbands.

Although reviewers and the Panel make recommendations regarding the overall merits of a proposal, it is ultimately the responsibility of the POs to decide which proposals will be recommended for award or declination. Program Officers work together to make final recommendations giving careful consideration to intellectual merit, broader impacts, ad hoc review and panel recommendations, portfolio balance, diversity issues (geographic, demographic, disciplinary), etc. Unfortunately, because of the large number of high quality research proposals submitted to the Program and current budgetary constraints, only a handful of proposals can be supported in each competition.

Once a final recommendation has been made, the POs try to notify PIs as quickly as possible. Declination decisions are usually transmitted by an automatically generated e-mail from the EAR Division Director (DD) once the Director has concurred with the PO recommendation. In some cases the PO may choose to contact the PI directly, especially in award recommendations where some negotiation is required. Feedback consisting of context statement, PO comments, reviews, and the panel summary is made available to the PI via FastLane upon DD Concur of decline or award decisions. The context statement gives information regarding the number of proposals received in the current competition, expected success rates, etc. The PO comments provide feedback from the Program Officer regarding decisions made regarding recommendations for award/declination. Any questions regarding the proposal review/recommendation process should be directed to the cognizant PO.



Notes for Proposals With a Substantial International Component

The NSF Office of International Science and Engineering (formerly International Programs) will sometimes contribute to awards with an international component. The Tectonics Program Pos commonly informs OISE POs of proposals with an international component and invites them to sit in on panel discussions for proposals in which they express an interest. OISE considers partial funding for collaborations that:

- 1) represent a true intellectual collaboration with overseas partners, rather than research activities without a foreign partner.
- 2) support new international collaborations as opposed to mature, well-established ones.
- 3) Are well-justified, i.e., they utilize the expertise and specialized skills, facilities, and/or resources of the foreign collaborator.
- 4) Provide U.S. students/junior researchers with international research experiences.

Proposals with an international component should include documentation of logistical arrangements (access, permits, provision for data sharing, import of instrumentation, sample export, etc.). The proposals should also contain CVs of the international partners, documentation of the foreign collaborators role in the project, and a letter of collaboration from the foreign partner's home institution indicating that he/she is able to participate in the project, their role, and what resources their side will provide. Such documents should be placed in the Supplementary Documents section of the proposal. In some cases, it may also be necessary for the PIs to provide documentation that they and students are allowed to travel in the country of interest, especially for countries with U.S. Department of State travel advisories and warnings. Contact with POs who represent specific countries or regions in OISE can be an invaluable resource regarding logistics and potential problems in dealing with individual countries.



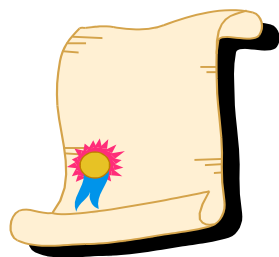
Graduate Student Opportunities

The NSF Graduate Research Summer Institute may be of interest to graduate students who are working in Australia, China, Japan, Korea or Taiwan. This program supports researchers in a variety of disciplines, including the earth sciences. Eligibility is limited to U.S. citizens who are enrolled in U.S. institutions. The fellowship program provides opportunity for students to spend eight weeks conducting research and experiencing life in a foreign country at a participating host institution. The fellowship provides for a \$3,000 stipend and roundtrip airfare, and the host institution provides for living expenses while abroad. Funds are also provided to participate in an orientation meeting in Washington, D.C. prior to the international travel. Applications for the program are prepared by the student and submitted directly by the student using FastLane. Application deadlines are Dec. 13, 2006. More information regarding the program can be found at www.nsf.gov/eapsi.



EarthScope Update

Please note that EarthScope Program has a revised program solicitation (06-562) that can be viewed at <http://www.nsf.gov/pubs/2006/nsf06562/nsf06562>. The next deadline is July 16, 2006. If you think that your proposal might be appropriate for co-review by one of the core programs (such as Tectonics, Geophysics, Petrology and Geochemistry, etc.) and EarthScope, you should submit your proposal to the June deadline for the appropriate core program.



GEOLOGICAL SOCIETY OF AMERICA STRUCTURAL GEOLOGY AND TECTONICS 2005 CAREER CONTRIBUTION AWARD

Jan Tullis
(Citation by Jane Selverstone)

It is truly a pleasure to cite Professor Jan Tullis of Brown University for the Structural Geology and Tectonics Division's Career Contribution Award. One experiment at a time, Jan's work over the last 35 years has quantified relationships between stress, strain rate, pressure, temperature, chemical environment, deformation mechanisms, flow laws, and deformation microstructures in common crustal materials. Water weakening in quartz; the brittle-ductile transition; development of mylonites; development of lattice-preferred orientations; documentation of dislocation creep and diffusion creep regimes; causes of ductile strain

localization; chemical influences on deformation mechanisms; the list goes on and on. Taken together, this body of work is astonishing in its significance – much of what we know today about crustal rheology and fabric development is built on a foundation of Jan's experiments.

In my mind, there are two aspects of Jan's work that set her apart from the crowd. First is that all of her experimental studies are motivated by – and aimed at explaining – field observations on natural samples. It is not idle curiosity that leads Jan into the lab, but rather an effort to answer fundamental questions about processes active at depth in the earth. Second, although Jan professes to know no chemistry – deferring to Dick Yund for chemical expertise – her experiments are carefully designed to elucidate the influence of chemical parameters on the mechanical properties of rocks. Each of Jan's papers has made sense out of chaos by asking key questions, carrying out cleverly designed experiments, and then tying the results together in such a way that new doorways are opened in our science. Jan's publications have been cited more than 2000 times, testament to their importance across a wide swath of the earth sciences.

I first met Jan at a short course in 1979, where she made an indelible impression on me as the only “big name” scientist to ask what I, a lowly MS student, was working on. She seemed genuinely interested in my work and was full of gentle suggestions about new directions to pursue and questions to ask. More than 20 years later, I was fortunate to spend a sabbatical with Jan and experienced first-hand her legendary energy and enthusiasm for her work. Most impressive, though, were her scientific generosity and open-mindedness. In the course of my sabbatical, we realized that some “well-established” interpretations of quartz deformation behavior were flawed because one of the key quartz standards contained carbonic fluid inclusions that significantly affected its strength. I can imagine many scientists wanting to sweep such results under the rug in order to preserve a long legacy of prior work. Not so with Jan. She immediately became excited about new ways to interpret old experiments, and about new experiments that could be run. I have never known so prominent a scientist with so little ego invested in her work. Jan seems to be motivated entirely by learning what's right, and not by advancing her own reputation. We could all learn some lessons from her.

In addition to influencing the field through her own work, Jan has played an invaluable role as a mentor to many young scientists from the U.S. and abroad, and as a dedicated advisor to legions of Brown University undergraduates. Her former students all comment on the importance that her “mothering” had on their scientific development. Her ability to ask important questions, along with her passion for her work, scientific rigor, and deep concern for others guarantee that her legacy will be a lasting one. I can think of no more fitting person to be the first woman to receive this prestigious award.

Response by Jan Tullis

Thank you Jane for your warm and generous words. I am honored and deeply humbled by this amazing award, and it has occasioned much reflection. Overall I feel so very fortunate: lucky to have discovered geology at Carleton after almost flunking freshman math, physics and chemistry; lucky that Terry urged me to go to grad school and supported me through many crises of self-confidence; lucky to have done research in Griggs' and Christie's lab with an amazing group of fellow grad students and post-docs; and ever so lucky to have become part of the Geology Department at Brown University.

I got into experimental work at UCLA accidentally, after it became clear that I was quite incompetent at field work. I think the experimental approach better suited my nature (as an impatient person and a control freak): there is the illusion that one can pose a question, do an experiment and get ‘the answer’. Of course, it is not quite so simple; most often you discover the question was not well-posed, or the starting material or experimental conditions were inappropriate. However, it is an addictive pursuit, and I am still just as excited to see the thin section from my latest experiment as I was almost 40 years ago.

My initial research was on crystallographic preferred orientations in quartzites, and I shudder to remember the tens of thousands of U-stage measurements I made, but my research broadened over the years at Brown thanks to a series of amazing students and collaborators. My long collaboration with Dick Yund was key: his expertise in kinetics, feldspar mineralogy and TEM allowed us to document the processes responsible for

optical scale microstructures and for different mechanical behaviors, and to elucidate the effects of chemical environment and phase changes on deformation.

Also of enormous importance over the years have been my education by and collaborations with so many of you in SG&T who are field-based geologists. Griggs was a physicist who never went in the field to look at real rocks. When I got to Brown Bill Chapple was a wonderful role model: a theoretical structural geologist who went into the field at every opportunity. I remember an early trip with him to Pennsylvania, where I collected samples of folded Tuscarora sandstone and made thin sections, expecting to find microstructures like those I had produced experimentally - but they were totally different! That experience began to open my eyes to the variety and complexity of deformation mechanisms in the crust.

Another important experience came when Art Snoke called me in the late 70's to ask if I would like to help organize a Penrose Conference on mylonites. I learned so much from the participants, and still remember the spirited discussions on the outcrop about brittle vs ductile; pure shear vs simple shear. That conference stimulated me to undertake many new experiments on polyphase aggregates.

Today I feel that we have made enormous progress in bridging the gap of some 8 orders of magnitude of strain rate between the lab and nature. But whenever I start feeling a bit complacent about this progress, I have only to look at a few more thin sections of natural rocks to be humbled again. For example at a recent short course Jane showed me a thin section of a quartzite deformed at over 500C that was brittle! Borrowing the phrasing of this morning's symposium, we have turned that challenge into an opportunity and are currently collaborating to seek some explanations.

As John Bartley commented this morning, the big increase in interdisciplinary collaborations in recent years is very smart science, but it also makes for increased fun and friendships. I have benefitted enormously from recent and on-going collaborations with Holger Stunitz and Renee Heilbronner of Basel University. They have brought new expertise and perspectives, new questions as well as new approaches. And Renee has brought me back to preferred orientations in quartzites, but this time with greater applications to the real world (and much greater esthetics!)

Probably the most important component of my research has come from my grad students. I have had relatively few PhD students - after all the world does not need too many rock squeezers! - but all of them have been exceptional: Glen Shelton, Andy Kronenberg, Lisa Dell'Angelo, Greg Hirth, Gayle Gleason, Alice Post, and Caleb Holyoke (who is here). All of them went well beyond my own knowledge and expertise, and I learned just as much from them as they did from me.

I also want to mention the joy of teaching and learning from undergraduates. At Brown we are fortunate to have no distribution requirements; students in my introductory course are there because they want to be, and I delight in having music as well as physics majors. We are also fortunate to have a strong tradition of very talented geology majors, and I am so happy that a number of them are here this evening.

In a related vein I would like to celebrate the increased attention in our community to improvements in teaching. I have always appreciated the opportunity at GSA meetings to talk to colleagues about teaching as well as research, but that is rather inefficient. I would like to thank people who have played major roles in providing teaching resources to our entire community, including Mike Mayhew at NSF; the Cutting Edge group of Cathy, Dave, Barb and Heather; and all the amazing techno-savvy people who are making incredible visualizations of geological phenomena and processes on all scales available to all of us - as illustrated for example in this morning's symposium.

I do want to mention another transformative experience for me, which is also related to a big change in our community over the years, and that started with another phone call, in the early 70's, from Terry Schwarzer of Exxon, asking if I would join the just-formed Women Geoscientists Committee. I was dubious, but fortunately said yes - and thus for the first time in my life had the opportunity to interact with other professional women, including Weecha Crawford. The experience made me aware of things I didn't know I had been missing. Our committee didn't just chat: we worked hard, in a very personal and grassroots way, to encourage young women interested in geology and to try to make a more welcoming environment for them. I could tell you lots of stories about the bad old days - when I was one of 2 women PhD students out of 78; when there were no other women in the smoke-filled meeting rooms at AGU; when the 'jokes' were far from funny. However, it is much better to focus on the present. Recently at Brown and probably many other places, more than half the

undergrad and grad students in geology are women, and it pleases me greatly that even my male colleagues tell me how much they enjoy the shift from a more competitive to a more collaborative atmosphere, from just loud talking to actual listening.

The climate has definitely warmed, but it is important to continue to work for positive change, so that women (and men) will not feel they have to choose between career or family, and so that other under-represented groups are truly welcomed into our science. One lesson that comes when an impatient person like myself looks back is that each of us does play a role; the choices we make every day do influence the world around us.

Let me close with my heartfelt thanks to the SG&T community - working together over all these years to try to interpret the grand experiments that the Earth has done has been tremendously exciting and satisfying, and the future is bound to be even better!



GSA SGT Division Best Paper Award 2005

C. Beaumont, R. A. Jamieson, M. H. Nguyen & B. Lee, 2001, Himalayan tectonics explained by extrusion of a low-viscosity crustal channel coupled to focused surface denudation, *Nature*, 414, 738-742.

and

K.V. Hodges, J. M. Hurtado and K. X. Whipple, 2001, Southward extrusion of Tibetan crust and its effect on Himalayan tectonics, *Tectonics*, 20, 799-809.

(by Tracey Rushmer, Chair, Best Paper Committee)

Chris Beaumont with co-authors R. A. Jamieson, M. H. Nguyen, and B. Lee and Kip Hodges with co-authors J. M. Hurtado and K. X. Whipple are this year's co-awardees for the Structural Geology and Tectonics Division's Best Paper Award. These papers, published in the same month of 2001, address the nature of large-scale deformation patterns in the continental crust in mountain belts. Both papers use the Himalaya as a "natural laboratory" with great success. The Structural Geology and Tectonics Division formally acknowledges the important influence of these two papers as they have brought growing national and international interest in the dynamics and kinematics of deformation in continental collision zones. This topic is currently at the forefront of research efforts in our community because of these exciting papers. The authors use well-developed innovative modeling and integration of surface geological studies with structural and metamorphic analyses to tackle the problem of continental crustal rheology during orogenesis. A Geological Society of London meeting, "Channel flow, ductile extension and exhumation of lower-mid crust in continental collision zones" in December 2004 focused solely on this topic. Also, much discussion at recent meetings has centered around whether the middle or lower crust acts as a ductile, partially molten channel flowing out from beneath areas of over-thickened crust like the Tibetan Plateau. As an example of how stimulating these papers are, the community is now looking at much broader implications such as how the channel flow model applies to other mountain belts and how microstructural fabric data reflect this crustal extrusion.

As a Community, we thank Chris and co-authors and Kip and co-authors for writing papers that bring formally disparate topics together in one approach to better understand zones of continental collision. Importantly, the assumptions, limits, and uncertainties in their approaches are presented with commendable clarity and integrity. For these contributions to our science, we enthusiastically co-award them the Geological

Society of America Structural Geology and Tectonics Division's Best Paper Award for 2005 to these two groups of authors.

TOC

Response not Available from GSA at the time of printin

RESOURCE BIN

Structural Geology E-learning Modules

A set of e-learning modules for structural geology have recently been published on the web, free of use within the educational system. The modules contain numerous animations (produced by Tord E.S. Johansen) that help students understand things like Mohr's circles, fault growth, strain and many other concepts found in most structure texts. These modules have been prepared as a complementary resource to a Norwegian textbook on structural geology ("Strukturgeologi") by Haakon Fossen and Roy Gabrielsen and for a forthcoming English text that currently is in preparation by Haakon. The resources can be found at www.geo.uib.no/struct/.

OSXGeoCalc for Vector & Tensor Operations

Nestor Cardozo (Center for Integrated Petroleum Research, Bergen, Norway) has implemented a computer program for operating on vectors (lines and normal to planes) and tensors (strain and stresses). The program also plots lines and planes in a lower hemisphere stereonet, and tensor transformations in a Mohr diagram. It is an integrated and fun tool to learn vectors and tensors, the stereonet and the Mohr diagram. It is also a powerful tool to perform individual and multiple vector and tensor operations.

OSXGeoCalc is a structural geology calculator. The program operates on planes and lines (vectors), stresses and strains (tensors). Planes and lines operations can be visualized in a stereonet. Stresses and Strain operations (tensor transformations) can be visualized in a Mohr diagram. Multiple entries can be processed and plotted using text files. OSXGeoCalc is a wonderful tool to teach students vectors and tensors, which are fundamental concepts in Structural Geology.

OSXGeoCalc is free for academic purposes. The program runs on Mac OSX 10.3.9 and above. To download follow the link below:

[Download OSXGeoCalc](#)

In this site, a program for backstripping (OSXBackStrip) and flexural modeling (OSXFlex2D) are also available.

Call for Papers –



Secular Variation through Earth History: Contributions are sought for a 20- to 25-chapter volume to be published as a Geological Society of America Special Paper. The manuscript deadline is Aug. 1, 2006 and the target date for publication is July 1, 2007. For more information please go to <http://alaska.usgs.gov/staff/geology/bradley/dbradley.html> and then go to Planned volume on secular variation. Contact editor Dwight Bradley at dbradley@usgs.gov to discuss potential contributions.

Division Members - Do you have a suggestion for a GSA Annual Meeting short-course?

Send your requests and ideas to the Short Course Committee Chair - Claudia Lewis (clewis@lanl.gov). She can help get you started on the short course proposal process! We are always looking for good courses, so contact Claudia anytime!



2006 GSA Annual Meeting - The Pursuit of Science

October 22-25, 2006
Philadelphia, PA

(July 11 - Abstracts due by 11:59PM, MST)

The following are the Topical Sessions and Field trips that are either sponsored or co-sponsored by the Division. Please note that colored text denotes an active link to the appropriate URL

Topical Sessions:

T12. Fractured Rock Characterization in Applied Geology

GSA Engineering Geology Division; GSA Structural Geology and Tectonics Division; American Rock

Mechanics Association (ARMA)

William C. Haneberg, Oral.

Engineering Geology; Structural Geology; Hydrogeology

T37. Fluids at Plate Boundaries: Agents of Mechanical and Chemical Processes

GSA Hydrogeology Division; GSA Structural Geology and Tectonics Division

Demian Saffer, Jim Evans, Glenn Spinelli, Oral and Posters.

Geophysics/Tectonophysics/Seismology; Structural Geology; Tectonics

T121. Impact Craters: Structures, Drilling, Ages, and Geophysics

GSA Planetary Geology Division; International Continental Scientific Drilling Program (ICDP); GSA Geophysics Division; GSA Structural Geology and Tectonics Division; GSA Sedimentary Geology Division

Christian Koeberl, Jared R. Morrow, Oral and Posters.

Planetary Geology; Structural Geology; Geophysics/Tectonophysics/Seismology

T129. Geologic Mapping: Innovations and Interoperability (Posters)

GSA Geology and Society Division; GSA Quaternary Geology and Geomorphology Division; GSA Hydrogeology Division; GSA Structural Geology and Tectonics Division

Richard C. Berg, David R. Soller, Peter T. Lyttle, Thomas Berg, Posters.

Quaternary Geology/Geomorphology; Hydrogeology; Geoscience

Information/Communication

T144. Deformation in Sedimentary Rocks: A Tribute to Richard H. Groshong, Jr.

GSA Structural Geology and Tectonics Division

David A. Ferrill, Oral.

Structural Geology; Tectonics

T145. Unraveling Tectonics: The Power Behind Balanced Cross Sections and Kinematic Reconstructions

GSA Structural Geology and Tectonics Division

Nadine McQuarrie, Delores Robinson, Oral and Posters.

Structural Geology; Tectonics; Geophysics/Tectonophysics/Seismology

T148. Intraplate Earthquakes: Advances in Understanding their Causes and the Hazard Posed by Them

GSA Structural Geology and Tectonics Division; GSA Geophysics Division; GSA Engineering Geology Division

Eugene Schweig, Pradeep Talwani, Oral and Posters.

Tectonics; Geophysics/Tectonophysics/Seismology; Neotectonics/Paleoseismology

T149. Modern to Precambrian Subduction Systems: Convergent Margin Behavior and Evolution Over Geologic Time

GSA International Division; GSA Structural Geology and Tectonics Division; GSA Geophysics Division; GSA Sedimentary Geology Division; Integrated Ocean Drilling Program, MARGINS

Yildirim Dilek, Mark Cloos, Oral.

Tectonics; Petrology, Metamorphic; Petrology, Igneous

Division Members – If you're doing great stuff, we want to hear about it!

When news happens, let us know! Send your updates and announcements to your friendly SG&T Newsletter co-editors; Tim Wawrzyniec (tfw@unm.edu) or Barb Sheffels (barbsheffels@comcast.net). If we can't print it, Kevin Smart (ksmart@swri.org) can put it on the web page!

T152. Spreading the Message: New Developments in the Presentation and Visualization of 3D and 4D Geological Data and Processes

GSA Structural Geology and Tectonics Division; GSA Geoscience Education Division

Steven J. Whitmeyer, Steve Reynolds, Ken McCaffrey, Jonathan Imber, Oral and Posters.

Tectonics; Structural Geology; Geoscience Education

Pre-meeting Field Trips:



Trip 1. Along-Strike Changes in the Architecture of a Fold-Thrust Belt: An Example from the Hudson Valley, New York [401]

Thurs.–Sun., 19–21 Oct.

Kurtis C. Burmeister, University of the Pacific, +1-217-369-2733, fax +1-213-740-8801, kburmeister@pacific.edu; Steve Marshak.

Max.: 30; min.: 12. Cost: US\$245 (2ON, vans).

Trip 6. Journey into Anthracite [406]

Sat., 21 Oct.

Aaron R. Frantz, CDM, +1-610-293-0450, frantzar@cdm.com; Ed Simpson; Dale Freudenberger.

Max.: 33; min.: 12. Cost: US\$69 (L, R, vans).

Trip 9. New Insights to an Old Fold-Thrust Belt [409]

Fri.–Sat., 20–21 Oct.

Steven Wojtal, Oberlin College, +1-440-775-8352, fax +1-440-775-8038, steven.wojtal@oberlin.edu; Patricia Campbell; Tom Anderson.

Max.: 30; min.: 15. Cost: US\$185 (2L, 2R, ON, vans).

Trip 12. Refining the Metamorphic and Tectonic History of the Southeastern Pennsylvania Piedmont: Recent Results from Monazite and Zircon Geochronology and Accessory-Phase Thermometry [412]

Fri.–Sat., 20–21 Oct.

Joe Pyle, Rensselaer Polytechnic Institute, +1-518-276-4899, fax +1-518-276-2012, pylej@rpi.edu; Hal Bosbyshell; Gale Blackmer.

Max.: 25; min.: 7. Cost: US\$245 (B, 2L, D, 2R, ON, vans).

Trip 13. Rivers, Glaciers, Landscape Evolution, and Active Tectonics of the Central Appalachians, Pennsylvania and Maryland [413]

Wed.–Sat., 18–21 Oct. *Cosponsored by GSA Quaternary Geology and Geomorphology Division.*

Frank Pazzaglia, Lehigh University, +1-610-758-3667, fax +1-610-838-2344, fjp3@lehigh.edu; Duane Braun; Noel Potter; Dru Germanoski; Milan Pavich; Paul Bierman; Dorothy Merritts; Allen Gellis.

Max.: 30; min.: 15. Cost: US\$375 (3B, 3L, 2D, 3ON, vans). Begins in Washington, D.C. Participants will be advised on arrival options.

Trip 14. Rodinian Collisional and Escape Tectonics in the Hudson Highlands, New York [414]

Thurs.–Sat. 19–21 Oct. *Cosponsored by Highlands Environment Research Institute.*

Alexander Gates, Rutgers State University, +1-973-353-5034, fax +1-973-353-1965, agates@andromeda.rutgers.edu; David Valentino; Mathew Gorrington.

Max.: 30; min.: 8. Cost: US\$245 (2L, 2D, R, 2ON, vans).

Trip 16. Stratigraphy of the Cambrian and Lower Ordovician Carbonates of the Kittatinny Supergroup, Northwestern New Jersey: Special Attention to the Nature and Timing of Silica Diagenesis and the Origin of Nodular Cherts [416]

Fri.–Sat., 20–21 Oct.

Philip C. LaPorta, City University of New York and LaPorta Associates, +1-845-986-7733, fax +1-845-988-9988, plaporta@laportageol.com; Margaret Brewer; Scott Minchak.
Max.: 12; min.: 6. Cost: US\$199 (2L, 2R, ON, vans).

Trip 17. Taconic Orogeny in the Susquehanna Shelf and Foreland [417]

Fri.–Sat., 20–21 Oct.

Don Wise, University of Massachusetts, +1-413-545-0482, fax +1-717-291-4186, dwise@geo.umass.edu; Bob Ganis.

Max.: 45; min.: 20. Cost: US\$199 (B, 2L, D, R, ON, bus).

Trip 18. Tectonic History of the Blue Ridge, North-Central Virginia [418]

Thurs.–Sat., 19–21 Oct.

Christopher (Chuck) Bailey, College of William and Mary, +1-757-221-2445, cmbail@wm.edu; Scott Southworth; Richard Tollo.

Max.: 32; min.: 12. Cost: US\$285 (2B, 3L, D, 3R, 2ON, vans).

Trip 19. The Great Centralia Mine Fire: A Natural Laboratory for the Study of Coal Fires [419]

Sat., 21 Oct.

Glenn Stracher, East Georgia College, +1-478-289-2073, fax +1-478-289-2050, stracher@ega.edu; Melissa Nolter; Daniel H. Vice; Janet L. Stracher.

Max.: 45; min.: 12. Cost: US\$95 (L, D, R, bus).

Concurrent with meeting Field Trips:



Trip 23. Geology of Delaware Water Gap, New Jersey–Pennsylvania [423]

Tues–Wed., 24–25 Oct.

Jack Epstein, U.S. Geological Survey, +1-703-648-6944, fax +1-703-648-6953, jepstein@usgs.gov; Tim Connors; Denise Cooke-Bauer; Rab Cika.

Max.: 40; min.: 15. Cost: US\$89 (L, bus).

Post-meeting Field Trips:



Trip 25. A Tour of the Peach Bottom Slate — Once the Best Building Slate in the World [425]

Thurs., 26 Oct.

Jeri Jones, Jones Geological Services, +1-717-225-3744, fax +1-717-840-7403, JLJ276@aol.com; Mary Ann Schlegel; Charles Scharnberger; Donald Robinson.

Trip 27. Central Appalachian Transect along the Potomac River Corridor [427]

Thurs.–Fri., 26–27 Oct.

Scott Southworth, U.S. Geological Survey, +1-703-648-6385, ssouthwo@usgs.gov; Robert Wintsch; Michael Kunk.



OTHER UPCOMING MEETINGS

'Unlocking 3D Earth Systems — Harnessing New Digital Technologies to Revolutionize Multi-Scale Geologic Models'

Venue: Durham, UK

Dates: 17–21 September 2006

Please find more information at:-

<http://www.geosociety.org/penrose/06-3Dsystems.htm>

Important Deadline - applications due April 28, 2006

Continental Tectonics and Mountain Building

12-20 May, 2007, Ullapool Scotland

Continental Tectonics and Mountain Building:
the centenary celebrations for the "Peach and Horne" NW Highlands Memoir published in 2007.

12-20 May 2007: Ullapool, NW Scotland.

A detailed first circular for this combined research conference and field meeting is now available at:

<http://www.see.leeds.ac.uk/peachandhorne/>

This site will be used for further updates over the coming months.

The conference is jointly supported by the Geological Society London (an Arthur Holmes field meeting) and by the Geological Society of America.

Due to logistic reasons, participation numbers are strictly limited and there is an elaborate application process with deadlines as laid out in the first circular.

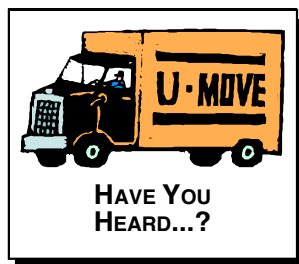
Convenors:

Rob Butler (Leeds), Bob Holdsworth (Durham), Maarten Krabbendam (British Geological Survey) and Rick Law (Virginia).

We look forward to seeing you in Ullapool next year!

For the Latest on Meetings and Field Trips go to
[Upcoming Meetings](#)

TOC



Greetings from New Mexico: ...and welcome to the “summer edition” of the Spring 2006 newsletter. This year we are working up a new format for the newsletter, a slow and time consuming process! The hope is to make a PDF friendly newsletter that directs you thru links from the table of contents directly to the content of interest. Some of these links will take you to the website, so be prepared for the jump. Our goal in making these changes is to create a more dynamic document that is more strongly integrated with the website, but still remains as a useful document to satisfy the luddite found in all of us. As always, if

you need a quick update or want to get your information out on the fly, contact [me](#), Barb (barbsheffels@comcast.net), or [Kevin](#) and we will get your information posted on the SGT website.

A number of academic appointments have been made in recent months at the University of Durham, UK, making the Reactivation Research Group, led by **Professor Bob Holdsworth**, one of the largest structural geology groups in Europe. These include **Mark Allen** (Readership) and **Jonny Imber** (Lectureship, funded by Statoil UK Ltd). A further 4 year fixed-term position is to be advertised following the award of a Royal Society Industrial Fellowship to **Ken McCaffrey** who will be working closely with the Structural Network in BP on basement reactivation related projects. Other initiatives beginning at Durham include the setting up of the Centre for Research into Earth Energy Systems (CeREES), led

by the newly appointed **Professor Richard Davies** (formerly of Cardiff University), and the launch of the Durham Centre of Terrestrial Laser Scanning (CeTLS). **Mark Brandon** (Yale) writes with news about the Tectonics group at Yale. **Jeremy Hourigan** (Stanford Ph.D., 2003; Yale post-doc 2003-2005; UC Santa Barbara post-doc, 2005) is starting as an assistant professor at UC Santa Cruz. **Matthias Bernet** (Yale Ph.D. 2002) will be starting as an assistant professor at Université Joseph-Fourier in Grenoble, France. **Nicole Gasparini** (MIT Ph.D., 2003; Yale Bateman Postdoctoral Fellow, 2003-2005) is working this year as a GSA Congressional Fellow. **Alison Anders** (U Washington, Ph.D., 2005) is the new Flint Postdoctoral Fellow at Yale. She started in October, 2005, and will be working for two years with Ron Smith and Mark Brandon on the influence of orographic precipitation on orogenic deformation.

Michael Quinn (1996 PhD with Jim Wright, Rice University) moved from ExxonMobil Exploration Co., Houston to Amerada Hess Exploration, Houston.

Shoufa Lin, an Associate Professor in Structural Geology and Tectonics at the University of Waterloo, Canada was awarded the W.W. Hutchison Medal and the William Harvey Gross Medal in 2004. The Hutchison Medal is awarded annually by the Geological Association of Canada to a young individual for recent exceptional advances in Canadian earth science research, and the Gross is bestowed annually by the Mineral Deposits Division of the Geological Association of Canada to a young geoscientist who has made a significant contribution to the field of economic geology in a Canadian context. As the 2004 Hutchison medalist, he is conducting a lecture tour in Canada. Congratulations Shoufa!

John Suppe is currently Visiting Professor of Tectonics at the Tectonic Observatory of California Institute of Technology (Jean-Philippe Avouac Director). In addition he has received an honorific Humboldt Research Award from the Alexander von Humboldt Foundation grants up to 100 Humboldt Research Awards annually to scientists and scholars from outside Germany with internationally recognized academic qualifications. The research award honours the academic achievements of the award winner's lifetime. Furthermore, award winners are invited to carry out research projects of their own choice in Germany in cooperation with colleagues for periods of between six months and one year. Suppe will be conducting research on the strength of mountain belts and large faults based at the Ludwig Maximilians University in Munich.

"Each year the American Association of Professional Geologists (AIPG) selects an individual to receive its most distinguished award, the Ben H. Parker Memorial Award, for one's long-time continued contribution to the profession of geology." AIPG President Robert G. Font notified Jim Skehan, SJ, Professor and Director Emeritus of Weston Observatory, Department of Geology and Geophysics, Boston College of his selection for 2005.



2005-2006 Structural Geology and Tectonics Division Contacts:

Chair: John W. Geissman, Dept of Earth & Planetary Sciences, 203 Northrop Hall, University of New Mexico, Albuquerque, New Mexico 87131-0001 USA; (505) 277-3433; jgeiss@unm.edu

First Vice-Chair: Bill Dunne, Department of Earth & Planetary Sciences, University of Tennessee, Knoxville, TN 37996-1410 USA; (865) 974-2366, wdunne@utk.edu

Second Vice-Chair: Eric Erslev, Department of Geosciences, Warner College of Natural Resources, Colorado State University, Ft. Collins, CO 80523-1482; erslev@cnr.colostate.edu

Secretary/Treasurer: Peter J. Vrolijk, ExxonMobil Upstream Research Co., PO Box 2189, Houston, TX 77252-2189 USA; (713) 431-4151; peter.vrolijk@exxonmobil.com

Past Chair: Dave R. Lageson, USGS-MSU Earthquake Science Laboratory, Dept of Earth Sciences, PO Box 173480, Montana State Univ, Bozeman, MT 59717-3480 USA; (406) 994-6913; lageson@montana.edu

Newsletter Editors: **Tim F. Wawrzyniec**, tfw@unm.edu, Department of Earth & Planetary Sciences, University of New Mexico, MSC03-2040, Albuquerque, NM 87131-0001 (505) 277-2740 **and Barbara M. Sheffels**, 9 East Road, Wayland, MA 01778-1903 USA; (508) 358-5461; barbsheffels@comcast.net

