



Focusing of Pliocene and Younger Deformation in the Cook Inlet basin, Alaska Caused by Mantle Dynamics Related to Subduction and Collision of the Yakutat Microplate

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Note: AGS meetings will be at the BP Energy Center for 2010-2011.

Please check the website (www.alaskageology.org) and issues of the AGS newsletter for updates.

*This newsletter promotes the October luncheon talk of the Alaska Geological Society,
to be held Thursday, October 21st, at the BP Energy Center.*

The Cook Inlet basin is a forearc basin above the southern Alaska subduction zone, and has been for roughly 200 million years. We present a new compilation of faults and folds in the Cook Inlet basin, which shows that young deformation is focused in the northern part of the basin. Data sources are previously published maps, well locations, published and proprietary seismic reflection and aeromagnetic data. Some structures are remarkably well displayed on frequency-filtered aeromagnetic maps, which are a useful tool for constraining the length of some structures. Most anticlines in the basin have at least shows of oil or gas, and some are considered to be seismically active. The new map better displays the pattern of faulting and folding. Shortening in Pliocene to recent time is greatest in upper Cook Inlet, where structures are oriented slightly counterclockwise of the major basin bounding faults. Also, the north end of these structures bend to the northeast, which gives a pattern consistent with right-transpressional deformation.

Subduction and collision of the buoyant Yakutat microplate likely caused deformation to be preferentially focused in upper Cook Inlet due to both crustal shortening and mantle dynamics. The upper Cook Inlet region has the highest degree of shortening

AGS Luncheon

Date & Time: October 21st, 11:30 am – 1:00 pm

Program: Pliocene Deformation in Cook Inlet

Speaker: Peter Haeussler, USGS

Place: BP Energy Center

Reservations: Please make your reservation before noon Tuesday Oct. 21st, 2010.

Cost: Seminar only, no meal: Free

Reserve a box lunch: \$15

Reserve a hot lunch: \$20

Lunch with no reservation:
On an "as-available" basis only

E-mail reservations: vp@alaskageology.org
Or phone (907) 269-8673
(Ken Helmold, AGS VP)

For more information: visit the AGS website:

www.alaskageology.org

and the deepest part of the Neogene basin. This forearc region has a long wavelength magnetic high, a large isostatic gravity low, high conductivity in the lower mantle, and low p-wave velocity (V_p) and high p-wave to shear-wave velocity ratio (V_p/V_s). These data indicate fluids in the mantle wedge caused serpentinization of mafic rocks, which may, at least in part, contribute to the long-wavelength magnetic anomaly. This area lies adjacent to the subducting and buoyant Yakutat microplate slab. We suggest the buoyant Yakutat slab acts as a squeegee to focus

mantle wedge fluid flow at the margins of the buoyant slab. Such lateral flow is consistent with observed mantle shear-wave splitting directions recent numerical modeling. The additional fluid in the adjacent hydrated mantle wedge then reduces its viscosity and allows greater corner flow. The result is focused subsidence, deformation, and gravity anomalies in the Cook Inlet forearc region.

About the Speaker:

Peter Haeussler is a research geologist for the USGS in Anchorage Alaska. He completed his undergraduate degree in geology in 1984 from Michigan State University and his Ph.D. from UC Santa Cruz in 1991. He's worked for the USGS in Alaska for the last 19 years on subjects as diverse as the tectonics of lode gold deposits in the Chugach-Kenai Mountains, the structural geology of neoproterozoic rocks in southeastern Alaska, earthquake-induced submarine landslides, and the geology of the Cook Inlet region. He is currently the USGS project chief of the Alaska Earthquake Hazards Project and the Western Alaska Range Project. This is his 5th talk for the AGS.

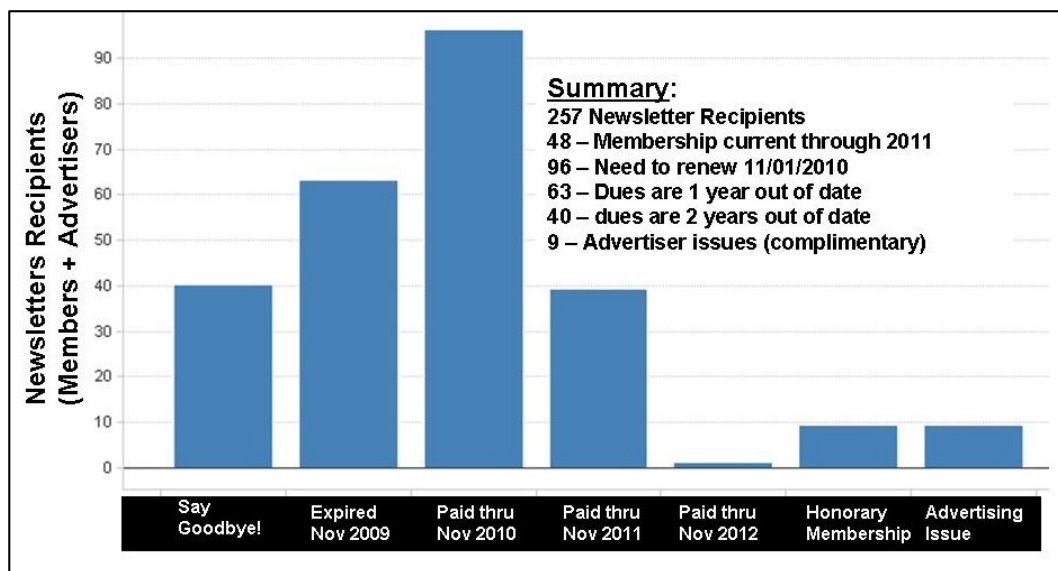
From the President's Desk ...

The days are getting short, there's a chill in the air, and the mountains have a dusting of snow. Fall is the time to make sure that home and cabin are ready for the long winter ahead and, if you were fortunate enough to be involved in a summer field program, to begin analyzing and synthesizing all of those samples and data that you collected. It's also the time for membership renewal at AGS, so please don't forget to pay your dues and stay current as a member. Our membership year runs November 1 through October 31, so unless you have paid for multiple years you need to get your renewal in this month. If you are in doubt, and you receive this newsletter in the regular mail, please check the mailing label for your expiration date. If you only receive this electronically, then please check with our membership chair, Greg Wilson (contact info on last page). You can renew at our luncheon meeting, by mail, or by going to www.alaskageology.org and clicking on the "Join Today" link. We have a link to PayPal if you prefer to use a credit or debit card, or you can download the membership form and mail it in with a check. The form is only necessary if you wish to update your personal information. Dues are still only \$15 for regular and associate members, and \$5 for students, but the AGS board may increase these rates for next year -- at least it's up for discussion. We try to stay on a "breakeven" basis, and we may not still be achieving this with our increased mailing and other expenses.

Greg has provided the displayed graph, which summarizes the current membership status. As with most organizations we provide a "grace period" during which we keep sending the newsletter even if dues have not been paid. However, for the 40 people whose dues are two years out of date we will soon be dropping you from the mailing list. So if you are one of those, and you still want to stay current, please renew right away. Benefits include this

newsletter, plus the opportunity to be part of an active geoscience organization that sponsors professional meetings, publications, and field trips, supports our communities through Science Fair and Earth Science Week activities, and supports students through scholarships. Please continue to be part of this important society and encourage your friends and colleagues to do the same!

- Tom



**Alaska Miners Association
2010 Annual Convention & Trade Show**

November 1 – November 7, 2010
Sheraton Anchorage Hotel
Anchorage, Alaska

MINING & FISHERIES



Technical Sessions
(registration required)

Wednesday Morning, November 3

Geoscience Investigations

Updates by agency and academic scientists on Alaska work programs in progress or completed during the past year.

Wednesday Afternoon, November 3

Exploration Project Highlights

An overview of various early stage exploration projects from around the State of Alaska. The session will include project talks on Southeast, Southcentral, Interior, Southwest, Western and Northern Alaska.

Thursday Morning, November 4

AMA Session: Issues Affecting Alaska Miners

This session will update miners on current industry issues.

Thursday Afternoon, November 4

Alaska Exploration Projects

Highlights of 2010 exploration activities in Alaska and updates on specific properties.

Friday Morning, November 5

Mining and Fisheries

Overviews of fisheries issues, concerns and responsibilities as they relate to exploration and mining operations in Alaska.

Friday Afternoon, November 5

Development and Mine Operations

Current mine development projects will be discussed as well

ROCK & MINERAL SHOW

Rock and mineral displays. Trade, buy and sell.

2nd Floor at the Sheraton Hotel

Yukon, Susitna and Kuskokwim Rooms

Open to the public

Friday, November 5, 5pm – 9pm

Saturday, November 6, 10am – 5pm

Sunday, November 7, 11am – 4pm

The Alaska Geological Society

LUNCHEON SCHEDULE 2009 - 2010

Updates on the web at:

<http://www.alaskageology.org>

September 2010	Thurs., Sept. 16 th , David Scholl, USGS, Earthquake and Tsunami Hazards of the Aleutians
October 2010	Thursday, Oct. 21 st , Peter Haeussler, USGS Neo-tectonics of Cook Inlet
November 2010	Thursday, Nov. 18 th , Joann Welton, EXXON, Evaluating siliciclastic reservoir quality
December 2010	Thursday, Dec. 9 th – Alison Till, USGS, Reconstruction of Arctic Alaska
January 2011	Thursday, Jan. 20 th – Chris Waythomas, USGS AVO, Eruption of Kasatochi
February 2011	Thursday, Feb. 17 th , James Coleman, USGS, Tight-Gas Sandstone Reservoirs (AAPG Distinguished Lecturer)
March 2011	Thursday, March 17 th – Lisa Wirth, UAF Alaska Satellite Facility
April 2011	Thursday, April 21 st , Erik Hulm, BP Alaska, Heavy Oil of Alaska
May 2011	Thursday, May 19 th – Robert Swenson, DGGs, Energy development in Alaska

If you would like to volunteer a talk or would like to suggest a speaker, please contact Ken Helmold at 269-8673

Register online at:

www.alaskaminers.org

TRADE SHOW

Attend the Trade Show during the convention.
Several mineral industry suppliers participating.

Open to the public

Wednesday, November 3, 8am – 6:30 pm

Thursday, November 4, 8am – 5pm

Friday, November 5, 8am – 2pm

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**Conference Dates:
May 9th – 11th, 2011**

Technical Session Topics Include:

Oral Sessions

- Geology and Hydrocarbon Potential of the North Slope, Offshore Beaufort and Chukchi Seas
- Cook Inlet Oil and Gas Fields
- Recent advances in Exploration and Development on the North Slope
- Reservoir Quality: Analysis and Prediction
- Integrated Reservoir Description: Case Studies and Best Practices
- Environmental Geology and Geohazards: Applications for Resource Development
- Reservoir Modeling: Techniques, Workflows and Case Studies
- Paleozoic and Proterozoic Geology of Alaska
- Technology: Advances and Applications
- Alternative Energy: Progressing the Future
- Petroleum Systems in Alaska and the Western Cordillera
- Advances in Seismic Data Acquisition and Processing
- Case Histories and Reservoir Characterization: Application of Seismic and other Geophysical Data

Poster Sessions

- Technology: Advances and Applications
- Integrated Reservoir Description and Modeling
- Geology, Tectonics and Resource Potential of North Alaska
- Oil and Gas Fields of Alaska: Case Studies

Arctic to the Cordillera: Unlocking the Potential

The 2011 Pacific Section of the American Association of Petroleum Geologists (PS-AAPG) meeting will be held in Anchorage, Alaska – the gateway to the 'Last Frontier'. The Pacific Section of SEPM and the Pacific Coast Section of SEG will also be participating in the conference and will co-sponsor several of the technical sessions. The Western Region of the Society of Petroleum Engineers will be co-hosting the conference and helping to provide a cross-discipline forum that offers attendees a wide variety of technical presentation, poster sessions, short courses and field trips.

The themes for the conference will include exploration and development case studies, technology applications and recent advances, alternative energy, environmental geology and geohazards in resource development, and petroleum systems in Alaska, the circum-Arctic, and the western US.

For this to be a successful meeting we need you, your ideas, and your participation. We look forward to a series of stimulating and insightful sessions that will continue to address and lead to solutions for many of the technological, environmental, and political challenges the industry is faced with today.

You are invited to get involved and help shape this conference by submitting an abstract for an oral or poster presentation in the technical program. So, please review your recent work and put together an abstract for a contribution to the technical program. Abstract submissions can be made at the following website between **October 1, 2010 and February 11, 2011**.

<http://www.>

For additional information please contact:

David Hite, PS-AAPG, General Co-Chair: hiteconsult@acsalaska.net

Sandy Phillips, PS-AAPG, Oral Session Chair: sandra.phillips@bp.com

Steve Wright, PS-AAPG, Poster Session Chair: sswr@chevron.com



Pacific Section
American Association of
Petroleum Geologists



Society for
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Exploration
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Alaska
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Meeting Information

The **American Geological Institute** provides a comprehensive list of national and international geoscience meetings at: <http://calendar.agiweb.org>

Local Meetings:

American Water Resources Association—Alaska Section

<http://www.awra.org/state/alaska/index.html>

Alaska Geological Society

<http://www.alaskageology.org>

Lunch meetings are held monthly September through May in Anchorage. For more information, contact Jim Clough, 451-5030.

Alaska Miners Association

<http://www.alaskaminers.org/>

The Anchorage branch of the AMA holds weekly meetings at 7 AM every Friday at the Denny's on Northern Lights and Denali. They hold regular luncheon meetings in association with SME. For more information, contact the AMA office at 563-9229.

American Institute of Professional Geologists

<http://www.aipg.org>

AIPG holds regular quarterly evening Section meetings in Anchorage and Fairbanks. For more information contact Mark Lockwood, President, at Shannon & Wilson, Inc., in Fairbanks, 907-458-3142.

Chugach Gem & Mineral Society

<http://www.chugachgms.org>

CG&MS holds all meetings at the First United Methodist Church on 9th Avenue. Contact their hotline at 566-3403 for information on regular monthly business meetings, monthly potlucks, and guidebook sales, including the new Alaska Rockhound Guidebook.

Geophysical Society of Alaska

<http://gsa.seg.org/>

Luncheon meetings are held monthly September through May at the ConocoPhillips Tower. For more information, contact Phil Rorison, 265-6321

Society of Petroleum Engineers

<http://alaska.spe.org/>

For more information, contact Jack Hartz at 375-8239.

UAS Environmental Science Program

<http://www.uas.alaska.edu/envs>

National Association of Geology Teachers (NAGT)

<http://www.nagt>

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The Alaska Geological Society, Inc.
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On the web at: <http://www.alaskageology.org>

The Alaska Geological Society is an organization which seeks to promote interest in and understanding of Geology and the related Earth Sciences, and to provide a common organization for those individuals interested in geology and the related Earth Sciences.

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MEMBERSHIP INFORMATION

AGS annual memberships expire November 1. The annual membership fee is \$15/year. You may download a membership application from the AGS website and return it at a luncheon meeting, or mail it to the address above.

Contact membership coordinator Greg Wilson with changes or updates (e-mail: gregory.c.wilson@conocophillips.com; phone: 907-263-4690)

All AGS publications are now available for on-line purchase on our website. Check to see the complete catalogue.
<http://www.alaskageology.org/publications>

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Annual membership expires on Nov. 1st. Please renew if you have not already done so, or risk an interruption in your AGS emails and Newsletters.



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- > Subsurface mapping tools
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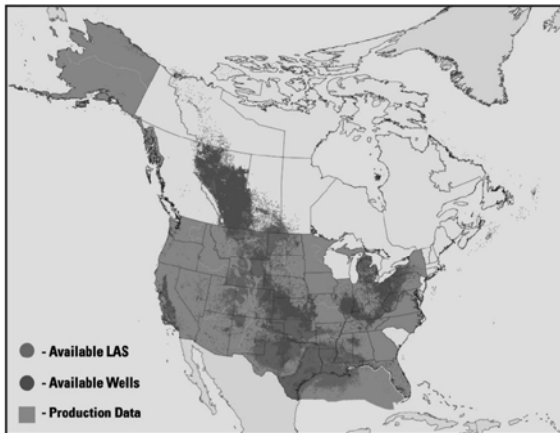
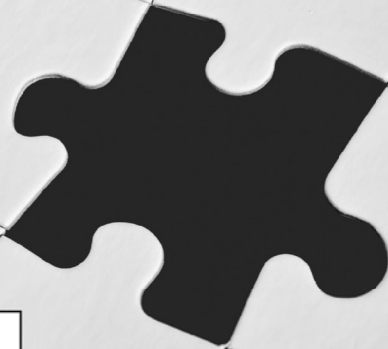
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