## ADDRESS:

Purdue University
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## PROFESSIONAL PREPARATION:

**Ph.D.** Geophysics, December 2004
Thesis Title: Mechanics of Strain Partitioning at Convergent Margins
Stony Brook University, Stony Brook, New York.
**M.S.**, Geophysics, May 1997.
Stony Brook University, Stony Brook, NY
Thesis Title: The Effect of Terrane Migration Along Oblique Margins: Examples in The Sulaiman Fold-And-Thrust Belt, Pakistan.
**B.S.**, Geology, May 1994.
State University of New York at Stony Brook, Stony Brook, NY

## APPOINTMENTS:

Assistant Professor: Purdue University, August 2008 – To Present.
Visiting Assistant Professor: Purdue University, August 2005 – July 2008.
Postdoctoral Fellow: Carnegie Institution of Washington, Department of Terrestrial Magnetism, January 2005 – July 2005.
Postdoctoral Associate: State University of New York at Stony Brook, August 2004 – December 2004.
Research Assistant: State University of New York at Stony Brook, May 1995 – May 1997 and June 1999 – August 2004.
Teaching Assistant: State University of New York at Stony Brook, August 1994 – May 1995 and August 1998 – May 1999.

## STATEMENT OF RESEARCH

I investigate how the mechanical properties of mountain belts affect their fundamental attributes, including size, shape, and the rate, style and distribution of strain, using numerical and scale analog modeling. My work focuses on understanding the roles of such factors as bulk rheology of the crust, the influence of basement structures, and the role that margin geometry has on the localization of deformation. Much of my current research focuses on understanding how and when extension will be localized, in normal and oblique contractional settings, as patterns of faulting, and separately the evolution of out-of-sequence faulting in response to factors such as erosion and mechanical strength variations at depth (i.e., along the décollement) in fold-belts. Analog modeling is conducted using a variety of apparatuses in conjunction with automated, quantitative analysis employing sophisticated remote sensing tools and techniques. The innovative analysis techniques that I have developed and use in my lab allow me to determine the strains occurring in analog models due to variations in obliquity, rheology, and boundary conditions in relation to the development of topography and the structures that accommodate deformation. When these techniques are integrated with out new 3D numerical modeling methods it gives me a powerful set of tools to address problems in active tectonics.

## FUNDED PROPOSALS

NSF #0738920, Extensional Deformation in Convergent Systems, $211,874, PI: S. Haq

## TEACHING EXPERIENCE

**EAS 352** *(Structural Geology - majors),* Fall 2009

**EAS 111** *(Physical Geology – non-majors)* - Fall 2005, 2006, 2007, Spring 2006, 2008, 2010

**EAS 191R** *(Introduction to Physical Geology - majors),* Spring 2007

**EAS 591** *(Graduate Seminar – Oblique Convergent Tectonics),* Spring 2007

**EAS 591** (*Graduate Seminar - GAT Seminar*), Spring 2009

**EAS 497** (*Undergraduate Independent Research*), Tim Shackelford, Spring 2007; Nick Farny, Spring 2008 and Spring 2009, Fall 2009, Spring 2010; *Russell Martin,* Fall 2008 and Spring 2009, Fall 2009, Spring 2010. *Zach Umperovitch* Fall 2009, Spring 2010

## TEACHING STATEMENT

While at Purdue I have most often taught Physical Geology (EAS 111), a large enrollment non-majors course. During this period the class has undergone a comprehensive reorganization that has involved considerable effort and time on my part coordinating lectures and labs. This effort has also focused on making the labs inquiry driven allowing the students to directly apply material they have learned in lecture. While teaching this course I have gained considerable experience, I have improved my lecturing technique and my course management skills each semester. During this time I have also gained an appreciation for an inquiry based teaching style, which I believe is essential for undergraduate learning, especially in large enrollment courses. I have applied these lessons in the other courses I have taught. I believe that involving undergraduates in research, when possible, is an important part of their learning and have mentored three students thus far in my lab.

## INVITED TALKS

**Rice University Department of Earth Science Colloquium**

**Haq, S. S. B.**, 2007; The Influence of Rheology on Deformation Partitioning and the Localization of Shear at Convergent Margins, February 2007.

**Indiana University – Purdue University Department of Earth Sciences**

**Haq, S. S. B.**, 2010; Partitioning of Deformation in Critical Coulomb Wedges, April 2010.

## PUBLICATIONS

**Haq, S. S. B.,** and Davis, D. M., 2010, Simple Sliver Mechanics at Oblique Convergent Margins, submitted to Tectonics, August 2009, accepted with minor revisions March 2010.

**Haq, S.S.B.,** and Davis, D.M., 2009, Interpreting finite strain: Analysis of deformation in analog models, Journal of Structural Geology, V31, Issue 7, p. 654-661

**Haq, S. S. B.,** and Davis, D. M., 2008, Extension During Active Collision in Thin-skinned Wedges: Insights from Laboratory Experiments, Geology, v. 36, p. 475-478.

**Haq, S. S. B.,** and Davis, D. M., 1997, Oblique Convergence and the Lobate Mountain Belts of Western Pakistan, Geology, v. 25, No. 1, p. 23-26.

## PUBLICATIONS SUBMITTED AND PREPARATION

**Haq, S. S. B.,** and Davis, D. M., 2009, The Mechanics of Strain Partitioning in Frictional Oblique Wedges Using Quantified Analogue Models, In prep. to be submitted to Tectonics. May 2010

**Haq, S. S. B.,** and Flesch, L. M. – Extensional Deformation in Actively Contracting Orogens, in prep, to be submitted to tectonics, August 2010

Davis, D. M and **Haq, S. S. B**, 2010 – Critical Taper in Oblique Frictional Wedges, in Prep, to be submitted in Geology May 2010

## RECENT ABSTRACTS

**Haq, S. S. B.,** and Flesch, L. M., 2009, The Influence of Margin Geometry on Extensional Deformation in Orogens, *Eos Trans. AGU*, Fall Meet. Suppl., Abstract #T33A-1869.

**Haq, S. S. B,** 2009, Analysis of Strain Partitioning in Analog Oblique Convergent Wedges, Geological Society of America *Abstracts with Programs*, Vol. 41, No. 7, p. 291.

**Haq, S. S. B.,** and Flesch, L. M., 2008, Investigating the Role of Extensional Deformation at Convergent Margins Using a Combined Analog and Numerical Approach, *Eos Trans. AGU*, Fall Meet. Suppl., Abstract T23B-2012.

Flesch L. M., Dimitrova, L.L., Haines, A. J., Holt, W. E., Haines, M.**, Haq, S. S. B.,** Dynamical Modeling for Generally Shaped, Layered Lithospheric Geometries Using Continuous Field Variables, , *Eos Trans.*, Fall Meet. Abstract DI31A-1785.

**Haq, S. S. B.,** and Davis, D. M., 2008, Extension During Active Collision in Thin-skinned Wedges: Insights from Laboratory Experiments, Geological Society of America *Abstracts with Programs*, Vol. 40, No. 1, p. 76.

**Haq, S. S. B.,** and Davis, D. M., 2007, Rigid Basement and the Evolution of the Pakistani Convergent Margin, *Eos Trans. AGU, 88*(52), Fall Meet. Suppl., Abstract T23D-1644.

**Haq, S. S. B.**, and Davis, D. M., 2006; High Resolution Analysis of Evolving Horizontal Deformation Fields in Model Wedges: *EOS* (Transactions, American Geophysical Union), Fall AGU 2006.

Davis, D. M., and **Haq, S. S. B.**, 2006; Analog Models of Contractional Wedges: Opportunities and Limitations in Testing Theory: *EOS* (Transactions, American Geophysical Union), Fall AGU 2006.

**Haq, S. S. B.**, 2006; Rheologic Dependence of Strain Partitioning During Oblique Convergence: *MyRes Meeting Verbani Italy*, July 2006.

**Haq, S. S. B.**, and Davis, D. M., 2005 Modeling the Rheological Dependence of Strain Partitioning in Oblique Wedges During Active Collision and "Post-Tectonic" Relaxation: *EOS* (Transactions, American Geophysical Union), Fall AGU 2005.

**Haq, S. S. B.**, and Davis, D. M., 2004,Understanding the Mechanics of Strain Partitioning in Frictional Oblique Wedges Using Quantified Analogue Models, Spring AGU 2004