Heather Bedle

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Education

PhD Earth and Planetary Sciences – Northwestern University Evanston, IL 2008
Dissertation: Studies on the S-velocity structure of the North American upper mantle
M.S. Geological Sciences - Northwestern University Evanston, IL 2005
B.S. Physics – Wake Forest University – Winston-Salem, NC 1999

Research Interests:

- Seismic attributes for reservoir detection, characterization and geomorphology
- Surface wave and teleseismic joint inversion tomography
- Gas hydrates identification with seismic data

Professional Experience

Assistant Professor – University of Oklahoma 2018 - Current

- Fall 2018: GPHY 5513 3D Seismic Interpretation

Instructional Assistant Professor – University of Houston 2016-2018

- Fall 2016, 2017: GEOL 6390 3D Seismic Exploration I
- Fall 2016: GEOL 6397 Reservoir Characterization with Seismic Data
- Spring 2017, 2018: GEOL 6397 Advanced 3D Seismic Workflows
- Spring 2017,2018: GEOL 4397 Interpretation of Geophysical Data
- Fall 2017: GEOL 6397 Subsurface Mapping and Development Geology
- AAPG IBA Team co-advisor 2018

Senior Geophysicist – Chevron Energy Technology Company 2013-2016
Earth Science Division – Reservoir Properties from Seismic – Exploration

- Provide geophysical technical support to Chevron's global business units including:
  - Reservoir property prediction and evaluation
  - Global rock property database analysis for exploration prospects
  - Seismic processing analysis and interpretation
  - Seismic calibration, inversion and attribute analysis
  - DHI risking, including AVO modeling, fluid substitution, well log QC
- Instructor for in-house "Tying wells to seismic data" courses for EPOS and Petrel
- Coordinator for all of Chevron's Exploration amplitude plays risking and review.
- Lead investigator on a research initiative to improve source rock identification from seismic data

Earth Scientist – Chevron, Gulf of Mexico Business Unit 2008-2013
Petronius Field Asset Development (2011-2013)

- Worked as both a lead geologist and geophysicist while on this asset.
  - Daily activities included synthesizing geologic and engineering data (logs, seismic, production) to identify drilling opportunities and by-passed oil
  - Engaged with Reservoir Engineers to create earth models of the reservoirs for simulation, as well as investigate secondary EOR strategies
  - Met weekly with Drilling and Completions Engineers to discuss well plans and mitigations, as well as attended daily rig calls during drilling and the 4D acquisition
  - Communicated with partners for efficient well and seismic planning.
- Project Manager and lead geologist on two development sidetracks wells.
- Project Manager for 4D Seismic acquisition
  - Matured the 4D survey from concept through delivery of the final data
  - Communicated and coordinated effectively with multiple contractors and partners.
- Occasionally performed small geophysical projects for other GOM Deepwater Fields

Bay Marchand Field Asset Development (2008-2011)

- Lead geologist focusing on maturing gas, oil, and waterflood prospects. Experience with new drills and sidetracks. Drilled 11 wells, developed over 20 prospects. Experience with horizontal and dump floods.
- Daily activities included finding and developing prospects from concept through drilling by analyzing well production, seismic, and log data.
- Assisted Reservoir Engineers with reserve bookings, and Drilling and Completion Engineers with well planning.

Geology Intern – **Chevron –** Gulf of Mexico Business Unit, Asset Development Summer 2007

- Geophysicist on the Bay Marchand Asset Team, assisting in the geophysical analysis of several proposed target locations on the South Flank of Bay Marchand field
    - Utilized several seismic surveys, seismic attributes, well log data, production data, along with new statistical software to aid in risking of prospects

Visiting Scientist – **Lawrence Livermore National Lab** Summer 2006

- Worked on waveform tomography of the upper mantle beneath Southern Europe, Northern Africa, and the Middle East in order to create a 3D seismic model to aid in nuclear test monitoring

Research and Teaching Assistant – Northwestern University 2003 – 2008

Research Assistant – S-wave tomography of the North American Mantle
Teaching Assistant for 100-level *Intro to Geology*, and *Planetary Science*, and 300-level *Physics of the Earth*

Systems Engineer - Northrup Grumman Corporation 2001-2003

- Modeled and simulated antenna function and characteristics to optimize radar detection performance for the Falcon Edge Electronic Warfare Suite
- Performed field and laboratory qualification tests for DIRCM (Directional infrared countermeasures) technology components

Raytheon Electronics Systems 1999-2001

Systems Engineer (2000-2001)

- Researched atmospheric physics data to improve radar missile discrimination for the Patriot Missile Defense system. Simulated missile trajectories and responses using Fortran and Matlab
- Analyzed results from field test installations ofd the ASR-11 Digital Airport Surveillance Radars, concentrating primarily on the weather tracking and discrimination component.

Electrical Engineer *(*1999-2000)

- Characterized and tested RF components, and aided in design of hybrid UHF-RF components for the upgrading of multiple phased-array early warning radar systems.

Services and Committees

AAPG Grants in Aid committee 2017, 2018
SEG Geophysics Wiki 101 Editor 2017 - present
University of Houston SEG Wavelet student chapter Faculty Advisor 2017-2018
University of Houston AAPG Wildcatters student chapter Faculty Advisor 2017-2018

Funding

University of Houston New Faculty Grant 2017 ($6000) “Investigation of potential hydrates in the Taranaki Basin, New Zealand”

Student Research

Xinyan Li: UH PhD student started Fall 2017. Co-advisor with Dr. Jiajia Sun. Research topic: Tomographic modeling of the Caribbean slab and plate tectonic reconstruction.

Mariah Toulouse: UH Prof. MS Capstone project Spring 2018 “Identification and Classification of Salt Sutures in the Gulf of Mexico”

Jeff Tilton: UH Prof. MS Capstone project, Spring 2018 “Attribute Analysis and Morphologic study of an Incised Channel Complex in the Santos Basin”

William Vinson: UH MS Student Capstone, Spring 2018 “Seismic Attribute identification of gas hydrates in New Zealand”

Yang Mu: UH PhD student started Fall 2017. Research topic TBD regarding 4D seismic data.

Recent Synergistic Activities and Invited Talks

Invited Speaker	Northwestern University IDEAS Program	February 2017
Invited Speaker	University of Houston “Tectonics and Tomography”	March 2017
Invited Speaker	SEG Wavelets at University of Houston,	April 2017
Invited Speaker	GeoSociety at University of Houston,	November 2017

Publications

Chang, S., S. Van der Lee, M. Flanagan, **H. Bedle**, F. Marone, E. Matzel, M. Pasyanos, A. Rodgers, B. Romanowicz, C. Schmid, Joint inversion for three-dimensional S velocity mantle structure along the Tethyan margin, *J. Geophys. Res.*, v115, B8, 2010

Chang, S., S. van der Lee, E. Matzel, **H. Bedle**, Radial anisotropy along the Tethyan margin Geophysical Journal International, DOI: 10.1111/j.1365-246X.2010.04662.x, June 10 2010

Bedle, H., and S. van der Lee, *S* velocity variations beneath North America, *J. Geophys. Res.*, 114, B07308, doi:10.1029/2008JB005949 (2009)

Bedle. H., and S. van der Lee, Fossil flat-flab subduction beneath the Illinois basin, USA. *Tectonophysics*, v.424, 53-68, 2006.

Bedle, H., E. Matzel, and M. Flanagan. Partitioned Waveform Inversion Applied to Eurasia and Northern Africa. Lawrence Livermore National Laboratory (LLNL), Livermore, CA. Technical Report Number UCRL-TR-224057; DOE Contract Number: W-7405-ENG-48, 43p. 2006.

M Flanagan, E Matzel, S van der Lee, **H Bedle**, M Pasyanos, F Marone, B Romanowicz, C Schmid, A Rodgers. Joint inversion for three-dimensional velocity structure of the broader Africa-Eurasia collision region Journal Proceedings of the 28th Seismic Research Review: Ground-Based Nuclear Explosion Monitoring Technologies, vol 28, p397-406, 200

Extended Abstracts

Fit for purpose 4D seismic acquisition-Petronius 2012 experience and lessons learned. BD Kinabo, H Bedle, B Regel, H Hidalgo, G Chou, S Cooke SEG Technical Program Expanded Abstracts 2013, 216-220

Meeting Abstracts (most recent 5)

Regional P-wave Tomography in the Caribbean Region for Plate Reconstruction. X. Li, H. Bedle, J. Suppe. AGU Fall Meeting Abstracts, 2017

Best Practices for Using Azimuthal Geosteering Technology in the Gulf of Mexico
H.Wang, H. Bedle, A., Hymel, C.W. Wheeler, GCAGS and GCSSEPM 63rd Annual Convention, At New Orleans, LA, 2013

Three-Dimensional P-and S-velocity Structures and Radial Anisotropy in the Mantle along the Tethyan Margin. MP Flanagan, S Chang, S van der Lee, H Bedle, E Matzel, ME Pasyanos, AGU Fall Meeting Abstracts 1, 1508, 2009

Mantle Heterogeneity Beneath the Tectonically Stable US Interior. S van der Lee, H Bedle, MI Billen, X Lou, AW Frederiksen AGU Fall Meeting Abstracts 1, 02, 2009

New S-velocity Models for the North American Upper Mantle from 25+ Years of Waveforms from the IRIS DMC H Bedle, S van der Lee AGU Fall Meeting Abstracts 1, 0034, 2009