UNIVERSITY of
HOUSTON

EARTH AND ATMOSPHERIC SCIENCES

32nd Annual

STUDENT RESEARCH CONFERENCE & INDUSTRY OPEN HOUSE

STUDENT LED SINCE 1988

Friday, April 26, 2019
9 am – 5 pm

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Getting Around

Parking

Stadium Garage Visitor's Entrance
3874 Holmam St, Houston, TX 77004
Vouchers will be provided

Main Event

Science & Research Building 1
3507 Cullen Blvd, Houston, TX 77204
Talks, posters, and more!

Group Photo

Science & Research Building 1
3507 Cullen Blvd, Houston, TX 77204
Front steps facing Cullen Boulevard

Schedule of Events

8:30a	**REGISTRATION OPENS** *1st floor lobby*
9:00a – 10:30a	**ORAL PRESENTATIONS** *Rooms 223 & 634*
10:30a – 10:45a	**COFFEE BREAK** *2nd floor lobby*
10:45a – 12:15p	**ORAL PRESENTATIONS** *Rooms 223 & 634*
12:15p – 1:00p	**LUNCH BREAK** *2nd floor lobby*
1:00p – 3:15p	**POSTERS & INDUSTRIAL OPEN HOUSE** *1st, 2nd, and 3rd floor corridors*
4:00p – 5:00p	**AWARDS CEREMONY** *Room 116*
5:00p	**GROUP PHOTO** *Cullen Boulevard entrance*
5:30p	**FACULTY-ALUMNI-STUDENT HAPPY HOUR** **McGonigel's Mucky Duck** *2425 Norfolk St* *Houston*, TX 77098

Oral Presentations | Session I

Room 223

Time	Speaker	Title
9:00	McKensie *Kilgore*	**Metasomatism and Water Contents of Mantle Lithosphere of the Central Slave Craton (Lac de Gras)**
9:15	Makayla *Jacobs*	**Testing Early Onset of Laramide Deformation Via Analysis of the Frontier Formation, Central Wyoming**
9:30	Claudia *Bernier*	**Clustering Surface Ozone Diurnal Cycles to Understand the Impact of Circulation Patterns in Houston, TX**
9:45	Yipeng *Li*	**Is the Pamir Salient an Inherited Feature from the Late Paleozoic?**
10:00	Yuan *Tian*	**Rapid Falling of a Moon to its Parent Planet Due to Tidal-Seismic Resonance**
10:15	John *Boyle*	**Tectonic Evolution of the Aegean Domain, Eastern Mediterranean, Since the Early Mesozoic Based on 3D Slab Mapping, Unfolding, & Characterization from Seismic Tomography**

There will be a complimentary coffee break in the 2nd floor lobby before the next presentation at 10:45 a.m.

Oral Presentations | Session I

Room 223

Time	Speaker	Title
10:45	Weiyao *Yan*	**Petrogenetic Modeling of Plagiogranites from the Bay of Islands Ophiolite, Newfoundland, Canada**
11:00	Ebrahim *Eslami*	**A Hybrid AI Hurricane Forecasting System: Deep Learning Ensemble Approach and Kalman Filter**
11:15	Suresh *Dande*	**Mechanical Properties of Propped and Unpropped Eagle Ford Shale and 3D Printed Rock Models under Triaxial Stress**
11:30	Jeffrey *Hensley*	**Quantitative Sediment Provenance Mixing and Unmixing Highlights the Absence of Eastern Cordilleran Derived Sediment in the Paleogene Northern Altiplano Basin**
11:45	Tyson *Smith*	**The Interplay of Tectonic Isolation and Transcontinental Drainage in the Ancestral Rocky Mountains**
12:00	Manuel *Paez-Reyes*	**Why Was There No Mass Extinction during the Cenomanian-Turonian Oceanic Anoxic Event 2?**

Come enjoy lunch with us, complimentary of BP.

Oral Presentations | Session II

Room 634

Time	Speaker	Title
9:00	Delaney *Robinson*	Sediment Signature of West Antarctic Ice Sheet Dynamics in the Amundsen Sea
9:15	Marcus *Zinecker*	Understanding Two-Phase Gulf of Mexico Opening through Depositional History, Subsidence Analysis, & Structural Reconstructions in the Southeast Gulf of Mexico
9:30	Yannic *Lops*	Reconstruction of Missing Remote Sensing Data Using an Advanced Deep Learning Algorithm
9:45	Atlanta *Sen*	Assimilation of Mantle by Basaltic Melt at Hess Deep
10:00	Hongru *Hu*	Precursor Anisotropy Variations before Large Earthquakes in California
10:15	Carolina *Ramon-Duenas*	Looking at Sediment Transport and Deposition in the San Luis Pass Flood Tidal Delta

There will be a complimentary coffee break in the 2nd floor lobby before the next presentation at 10:45 a.m.

Oral Presentations | Session II

Room 634

Time	Speaker	Title
10:45	Lucien *Nana Yobo*	Cr Isotope Response to OAE2 Recorded in the Eagle Ford Formation, Western Interior Seaway
11:00	Xin *Zhou*	Beach and Dune Morphology Changes Induced by Hurricane Harvey from Repeat Lidar Surveys in Freeport, TX
11:15	Olabosipo *Osibanjo*	Implication of Planetary Boundary Layer Variation and Meteorology on Air Quality in Mexico during the Dry Season
11:30	Amanda *Lopez*	Tracing Industrial Pollution in Galveston Bay, Texas: Lead Isotopes and Heavy Metal Concentrations
11:45	Rachel *Clark*	Investigating the Glacial Dynamics of the Amundsen Sea, West Antarctica: Paleorecords of Stability and Instability
12:00	Jack *Kenning*	Tectonic, Structural, & Stratigraphic Controls on Hydrocarbon Prospectivity in the Mexican Ridges Deep-Water Fold-Belt, Western Gulf of Mexico

Come enjoy lunch with us, complimentary of BP.

Advanced Ph.D. Posters

Presenter	Title
Nawaz *Bugti*	Structural Evolution of Port Isabel Passive Margin Foldbelt, Northwest Gulf of Mexico: Results from Kinematics Restorations
Yi-Wei *Chen*	Dynamic Topography of a Gravity-Constrained Crustal Model across the Caribbean Region
Sharon *Cornelius*	Depth to the Top of the Overpressure in the Deepwater Gulf of Mexico: Garden Banks, Green Canyon, Keathley Canyon, & Walker Ridge
Shelby *Johnston*	What Drives Erosion in the Himalayas?
Jia *Jung*	The Impact of the Direct Effect of Aerosols on Meteorology and Air Quality Using Aerosol Optical Depth Assimilation during the KORUS-AQ Period
Jiaxuan *Li*	Machine Learning Identification of Discrete Fractures from Double Beam Images
Xinyan *Li*	Salt Imaging by Joint Inversion of Seismic Full Waveform and Gravity Gradiometry Data

Advanced Ph.D. Posters

Presenter	Title
Rongrong *Lin*	Hydraulic Fracture Size Detection Using Resonance
Yi-An *Lin*	Testing Proto-South China Sea Plate Reconstructions by Data Assimilation into Terra Global Mantle Convection
Lei *Sun*	Tectonic Geomorphology Reveals Areas of Active Transpression on the Island of Hispanjola (Haiti and the Dominican Republic)
Shuhang *Tang*	Earthquake Stress Drop for a Circular Crack in an Anisotropic Medium
Zhongmin *Tao*	Radially Anisotropic Shear Wave Velocity Structure beneath Eastern North America from Surface Wave Tomography
Sriharsha *Thorium*	Implications of Updated Magnetic Anomalies for the Tectonic Evolution of Walvis Ridge
Lin *Xiong*	Evaluation of a Rapid TLS Surveying Method for Coastal Erosion Monitoring: a Case Study at Freeport, TX

Masters & Early PhD Posters

Presenter	Title
Ekenemolise *Adigwe*	Ground Based Hyperspectral Remote Sensing and Geochemical Analysis of the Woodford Shale, Arkoma Basin, OK
Malik *Alam*	Investigating Modern Sediment Depositional Changes in Galveston Bay Using CHIRP
David *Mora Calderon*	Porosity Prediction Using Multi-Attribute Analysis
Elizabeth *Davis*	Effects of Contemporaneous Orogenesis on Sedimentation in the Late Cretaceous Western Interior Basin, Northern Utah and Southwestern Wyoming
Travis *Griggs*	Atmospheric Mercury Emissions Collected in Houston during the ITC Chemical Fire Event
Yuesu *Jin*	Pressure Surge Effect in Fluid-Filled Fracture
Jae Deok *Kim*	Integrating Multi-Physics Geoscience Data into a Common Earth Model through Cross-Gradient Joint Inversion
Yuan Ping *Lee*	Petrogenesis of Gabbro from Ultraslow-Spreading Gakkel Ridge

Masters & Early PhD Posters

Presenter	Title
David *Li*	Beam Imaging of Fractures around a Wellbore Using Sonic Logging Data
Geneva *Nguyen*	Neogene Surface Uplift of Bolivian Central Andes: Insights from Stable Isotopes of Hydrated Volcanic Glass
Felicia *Nurindrawati*	Predicting Total Magnetization Directions Using Convolutional Neural Networks
Kamil *Qureshi*	Diagenetic Studies of the Mid-Triassic Tredian Formation in the Salt and Trans Indus Surghar ranges, northwest himalayas, pakistan: implication for reservoir characterization
Sean *Romito*	Determining Basement Terrane Boundaries in the Modern Caribbean Plate and Their Impact on Regional Hydrocarbon Systems
Bavand *Sadeghi*	Source Apportionment of Fine Particulate Matter near Houston Using an Integrated Factor Analysis
Alqamah *Sayeed*	A Deep-Learning Model to Improve WRF Forecasts: A Case Study of Temperature, Relative Humidity, & Wind Speed across South Korea

Masters & Early PhD Posters

Presenter	Title
Leiser *Silva*	Application of Re-Os Geochronology to Hydrocarbon Generation in Offshore California Basins
Madeline *Statkewicz*	The Changing Physical Characteristics of Major Precipitating Systems in Coastal Texas
Andrew *Stearns*	Hurricane Harvey Sedimentation Patterns in Buffalo Bayou, TX
Stephanie *Suarez*	Assessing the Heterogeneity of the Tissint Shergottite Strewnfield using Rb-Sr, Sm-Nd and Lu-Hf Isotope Systematics
Joanna *Walker*	Analysis of Fracture Clusters on Seismic Reflectors
Xiaolong *Wei*	Joint Inversion of Multiple Geophysical Datasets Based on a New Structural Similarity Measure
Hualing *Zhang*	Integration of Gravity Modeling, Sedimentary Facies & Subsidence Analysis to Understand the Tectonic Stages of Paleozoic to Recent Permian Basin, West TX

Undergraduate Posters

Presenter	Title
Perry *Akrie*	Assessment of Industrial Sources for Heavy Metals in Galveston Bay Onshore Sediments Using Lead Isotopes
Nikola *Bjelica*	Paleographic Controls on the Thickness and Organic Content of Cretaceous OAE2 Black Shale Horizons Documented in Wells from the Guayana-Suriname Basin and Demerara Rise
Logan *French*	New U-Pb Geochronology on Andesite Porphyry Dikes, Red Lodge Montana: a Record of Cretaceous Flat Slab Subduction
Paige *Given*	Systematic Analysis of the Seismic Waveforms of Deep-Focus Earthquakes in Tonga for Slab Anisotropy
Jeffrey *Lee*	Image Classification of Vegetation from Lidar Data Using a Neural Network Approach
Devin *McQuaig*	Petrographical and Geochemical Investigation of Basaltic Eucrites: Focus on Potassium Feldspar-Bearing Eucrites
Bryan *Moore*	Detailed Mapping of Central Atlantic Fracture Zones and Continent-Ocean Boundaries Using Satellite-Derived Marine Gravity Data

Undergraduate Posters

Presenter	Title
Mason *Moore*	Linking Nazca Subduction Rates and Magmatism along the Andes Since the Cretaceous
Amanda *Pascali*	A Search for Controls on the Distribution of Natural, Submarine Oil Seeps in the Minibasin Provinces
Connor *Purcell*	Detecting Change in Ice Presence with Correlations to Climatic Variations in Svalbard, Norway
Trevor *Russell*	Similarities in Asymmetrical, Oceanic Spreading: Iceland, South Atlantic, NE Gulf of Mexico, and Marianas Backarc Basin
Laura *Taylor*	Fluid Inclusions in Carbonates from the Grand Canyon: More Evidence for the Old Canyon Model

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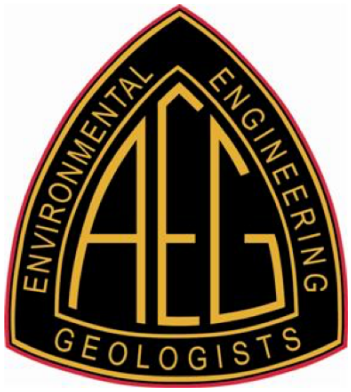

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Lab Tours

Atmospheric Chemistry Lab (ICAS)

SR1 Room 430

FUNCTION My lab is a component of the Institute for Climate and Atmospheric Science. I study atmospheric mercury in Houston, which has elevated levels and time periods of extremely high values. I have instrumentation atop Moody Tower on the UH campus and at the UH Coastal Center. This is a $1M laboratory, which we utilize to sample emissions sources and study photochemistry in Houston. I also have a program in Houston/Fort Worth examining fugitive emissions of CO_2 and CH_4 from gas and oil extraction, distribution and storage. We also have a unique ability to measure δ18 in CH_4 to distinguish contributions from different sources.

FACULTY HOST Dr. Robert Talbot
WEBSITE http://icas.uh.edu

The Air Quality Forecasting Group

SR1 Room 426F

FUNCTION We focus broadly on air quality modeling activities, focusing on how to improve model performance by aircraft/satellite data assimilation and inverse modeling to constrain model physics, evaluating the air quality impacts of upset events, adding new physics into existing air quality models and evaluating the impacts of wildfires. We also work on big data analytics, using machine-learning techniques to fill in missing air quality data, and analyzing historical air quality data using artificial intelligence to forecast air pollution. Recently, we have also created an energy policy sub-group, which focuses on the air quality and health benefits of electrification and cleaner vehicles, understanding the effects of wind patterns on turbine power output, and assessing the economics of alternate fuel vehicles in Texas.

FACULTY HOST Dr. Yunsoo Choi
WEBSITE http://spock.geosc.uh.edu

Caribbean Basins, Tectonics, and Hydrocarbons (CBTH)

SR1 Room 427

FUNCTION Founded in 2005, CBTH is an 8-company consortium and one of the largest industry consortia at UH with the goal of promoting leading edge academic research and facilitating oil exploration in the geographic and oil-rich region of the Gulf of Mexico, Caribbean, northern South America, and equatorial Atlantic margins in South America and Africa. Room 427 work area provides workstation, server, software, GIS databasing, and printing capabilities to 10 UH MS and PhD graduate research assistants, and 4 UH undergraduate research assistants supported as RAs by the project.

FACULTY HOST Dr. Paul Mann, *Project Director*
WEBSITE http://cbth.uh.edu/index.php/
AWARDS http://cbth.uh.edu/awards.php/
PUBLICATIONS http://cbth.uh.edu/contributions.php/

Lab Tours

Center for Petroleum Geochemistry (CPG)

SR1 Rooms 103 & 105

FUNCTION CPG lab has a variety of instruments including simple TOC analyzers; RockEval II-Plus and RockEval-6 source rock analyzers; oil and gas extraction and characterization capabilities; a highly advanced suite of molecular and stable-isotope geochemistry tools including natural-gas analyzers, GC/MS; GC/MS/MS; micropyrolysis/GC/MS; GC/IRMS; EA/IRMS analyzers, and diverse organic petrography capabilities. Visit our website for a comprehensive list of analytical capabilities. This suite of capabilities distinguishes us as the most well-equipped academic petroleum-geochemistry lab in the country.

FACULTY HOST Dr. Adry Bissada, Dr. Tom Malloy

WEBSITE http://cpg.uh.edu

Experimental Organic Geochemistry Lab (EOGL)

SR1 Room 307

FUNCTION Through laboratory experiments under controlled conditions, reactions involving organic compounds that occur in real geological environments can be observed in this laboratory. The ultimate goal of the projects carried out in the lab is to enhance our knowledge on reactions and evolution of organic compounds on Earth and other planetary bodies. This lab also provides a platform for graduate and undergraduate students to engage themselves in learning basic scientific methods and expand their interdisciplinary knowledge in organic geochemistry.

FACULTY HOST Dr. Qi Fu

WEBSITE http://easd.geosc.uh.edu/eogl

Geological Remote Sensing Lab (GeoRS)

SR1 Room 234

FUNCTION The Geospatial Analysis and Remote Sensing (GeoRS) group combines field hyperspectral and LiDAR imaging and GPR surveying with traditional geologic mapping for the precise 3D imaging of outcrops. Applications range from mapping the distribution of river channels, developing 3D fluid flow models, understanding rock alterations and sulphide mineralization, and reservoir analog studies. The GeoRS lab includes various hardware and software.

FACULTY HOST Dr. Shuhab Khan

WEBSITE http://www.uh.edu/~sdkhan/

Lab Tours

Geoscience Learning Center (GLC)

Fleming Room 136

FUNCTION The GLC provides a second approach for students to study of geosciences, outside of classroom-led instruction. The study of geosciences can cover a vast amount of material and the time spent in formal classes is limited. The GLC provides students opportunities for hands-on examination of minerals and rocks, interactive computer programs, and one-on-one or small-group tutorials. The GLC staff also conducts a number of on-campus field trips, guides students on tours of the Houston Museum of Natural Science, and coordinates field trips to Central Texas and Galveston.

FACULTY HOST Dr. Jinny Sisson, Dr. Daniel Hauptvogel

HoustonNet, GPS, and Lidar Lab: Research & Development

SR1 Room 128

FUNCTION The Houston GPS Network (HoustonNet) laboratory is a research driven, project focused working and teaching lab. The lab supports the logistical management and use of highly precise earth focused geospatial collection equipment, such as cutting-edge GPS and Lidar technologies. The lab also consists of workspace, industrial tools and equipment that are applied to the engineering and construction of site-specific equipment. Such equipment is necessary to install permanent and temporary GPS stations, shallow earth drilling systems, GPS derived groundwater measuring stations and other platforms that facilitate the data collection process. In order to better monitor land subsidence and fault movement, the lab has installed 66 continuously operating references stations (CORS) within the greater Houston area since 2012. This network is referred to as the HoustonNet and the data are publicly available using the data archive interface at www.unavco.org/data/data.html. The lab's Lidar focused studies involve the impact of coastal erosion in Freeport, TX, and the monitoring of the landslides located in CO, TX (the Slumgullion landslide), and in China.

FACULTY HOST Dr. Guoquan Wang
WEBSITE http://www.uh.edu/nsm/earth-atmospheric/people/faculty/guoquan-wang/

ICP Analytical Lab & Agilent Facility Center

SR1 Rooms 332 & 334

FUNCTION The Inductively Coupled Plasma (ICP) Research Laboratory and Agilent Facility Center specializes in characterizing the chemical and isotopic compositions of materials, including the ability to provide in-situ micron scale analyses of solid samples with the state-of-art CETAC LSX-213 Laser Ablation System. This Lab is capable to analyze all types of geological materials including rocks, minerals, natural fluids and organic materials including crude oil with high precision. We routinely analyze trace element with concentrations less than 0.1% g/g down to sub-ppb (ng/g) levels.

FACULTY HOST Dr. John F. Casey
WEBSITE http://icplab.geosc.uh.edu/

Lab Tours

MC-ICP-MS Geo-Cosmochemistry Lab

SR1 Room 317

FUNCTION Isotopic and trace element analysis of terrestrial and extraterrestrial rocks and minerals for radiometric dating and petrological evolution studies, including petroleum reservoir rock characterization.

FACULTY HOST Dr. Tom Lapen, Minako Righter
WEBSITE http://mynsm.uh.edu/groups/mcicpms/

PGE Geochemistry Lab

SR1 Room 317

FUNCTION Re–Os isotope and PGE analysis of shale and oil for absolute dating and source tracing.

FACULTY HOST Dr. Paul Mann, *Project Director*
WEBSITE http://cbth.uh.edu/index.php/

Sedimentology Lab

SR1 Room 303

FUNCTION Work in this lab is focused on characterizing unlithified sediments and dating of samples. Sediment size is measured through laser particle size analysis (LPSA). Particle shape is measured through automated processing of photomicrographs. Recent sedimentary deposits are dated using gamma-ray spectrometry, which has been set up for very small sample sizes.

FACULTY HOST Dr. Julia Smith Wellner

Rock Physics Lab (RPL)

SR1 Rooms 104-108, B-8

FUNCTION We conduct world class research on Seismic Rock Physics, include mainly: 1. Seismic properties of hydrocarbon fluids at in-situ conditions; 2. Seismic properties of rocks from conventional reservoirs (sands, sandstone, tight gas sands and carbonates); 3. All kinds of rocks and fluids from unconventional reservoirs: oil shale, shale gas, shale oil, coal, gas hydrate and heavy oil sands; 4. Rock parameters, seismic velocities, modulus, include LF measurement, rock mechanics; 5. Experimental and theoretical investigation on poro- elasticity (include digital rock modeling), velocity dispersion, and wave attenuation, elastic anisotropy, fractured reservoir, static and dynamic elasticity; 6. Seismic attributes as direct hydrocarbon indicator (DHI), reservoir delineation, 4-D seismic monitoring, manage unconventional reservoirs; 7. Training graduate students.

FACULTY HOST Dr. De-Hua Han
WEBSITE http://www.rpl.uh.edu/

Student Committee

Committee Co-Chair Lucien Nana Yobo obtained a B.S. in geology from Fresno State and an M.S. in geology from the University of Nebraska. He is currently a 4th year PhD candidate at the University of Houston. His research involves using multi-isotope proxy to understand the cause and expansion of anoxia during ocean anoxic event 2. When not studying, Lucien loves to read and engage in dialogue about governance and leadership in Africa.

Committee Co-Chair Joshua Flores completed a B.S. in Geology form Brigham Young University in 2013 and then worked with EGI at the University of Utah as a research assistant before beginning his Ph.D. in Geology at the University of Houston. His research focuses on plate triple junctions and their roles in boninite petrogenesis under the direction of John Casey.

Claudia Bernier received her B.S. in Meteorology and minor in Mathematics from the University of the Incarnate Word in 2016. She is a second year Ph.D. candidate in Atmospheric Science at the University of Houston. Her research focuses on the analysis of diurnal tropospheric ozone concentrations and the synoptic and mesoscale meteorological regimes that influence it.

Monica Guerrero-Langston will graduate with her B.S. in geology in 2019 and is currently a geotechnical assistant at Hilcorp Energy. She is also the public relations officer for UH's SEG student chapter. Her geologic interests include understanding basin evolution via sedimentology and stratigraphy in relation to petroleum systems. She plans to pursue an M.S. and further her career in oil and gas.

Student Committee

McKensie Kilgore received her B.S. in Geology in 2012 from Washington State University. She worked in industry for a year as a logging geologist for Horizon Well Logging in the Mississippi Lime formation. She is a fifth-year Ph.D. candidate in Geology at the University of Houston. Her research focuses on the concentration and behavior of water in nominally anhydrous minerals in the lithospheric mantle beneath cratons and in subduction zone settings.

Yi-An Lin is a geology Ph.D. candidate at the University of Houston. Her research involves geodynamic modeling, comparing model prediction with seismic tomography and further testing plate models against regional geology. She works mainly in East Asia, the Aleutians, and the South China Sea. Yi-An received her bachelor's degree in geosciences from the National Taiwan University.

Lorena Ramirez is pursuing a degree in Geology with a minor in Geophysics. She is the newly elected Historian for the University's chapter of Geosociety and has also previously served as the Energy Coalition Officer for AAPG. Lorena's interest in geology started when she was younger when she fell in love with Indiana Jones. She plans to continue her education and pursue a master's degree in Geology and stay in Houston to help it become more sustainable.

Atlanta Sen received her M.S. in Geology in 2015 from Jadavpur University, India, and worked as a geologist at Schlumberger with a focus on integrating well logs with seismic data to create reservoir models. Her Ph.D. research focuses on understanding geochemical signatures of melt-rock interaction processes in the lower crust and mantle at oceanic ridges and back-arc oceanic core complexes.

Student Committee

Madeline Statkewicz earned her B.S. in Applied Mathematics and minor in Physics from the University of South Alabama in 2018. She is currently a first-year Ph.D. student in Atmospheric Science under the advisory of Dr. Robert Talbot. Her current research focuses on developing predictive tools for major precipitation events in the future. She is also interested in the health effects of particulate matter on humanity in the short- and long-term.

Andrew Stearns graduated from the University of Texas in 2018 with a B.S. in Geology and minor in Business. He is currently a first-year master's candidate in Geology at the University of Houston advised by Dr. Julia Wellner. His research is focused on devising a sediment budget for Galveston Bay and its tributaries during Hurricane Harvey in 2017.

Stephanie Suarez earned her BS in General Geosciences from the University of Texas at Austin in 2017. Her research interests include chronology of terrestrial and extraterrestrial materials. As an undergraduate she determined ages of early land biotas such as *Pneumodesmus newmani.* As a master's student she conducts isotopic and petrologic analyses on Martian meteorites to better understand the nature and timing of magmatism on Mars.

Faculty Advisor Dr. Regina Capuano is an Associate Professor of Geosciences at the University of Houston. She completed her PhD in Geology at the University of Arizona in 1988.

Industry Judges

Dr. Irene Arango has been a Senior Geochemist working with Chevron Co. since 2006, where she works as an internal consultant on exploration and development projects. In addition to providing technical support, Dr. Arango oversees internal geochemical schools, and conducts geochemistry research (most recently focused on geochemical applications for unconventional plays). She is one of AAPG's 2018-2019 Distinguished Lecturers, sharing her work on organic porosity and retention capacity in unconventional plays. Prior to her work at Chevron, she worked for Ecopetrol as a development geologist in the Llanos Basin (Colombia). She received a Ph.D. in Geology with emphasis in geochemistry from Indiana University (2006), a M.Sc. in Geology from ISU (2002), and a bachelor in geology from the National University of Colombia (1998).

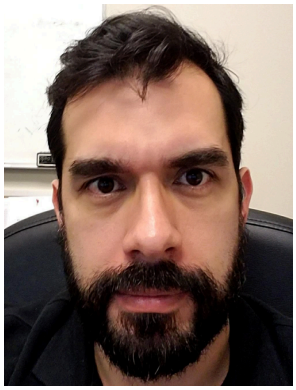
Dr. Tat Banga earned his M.S. in 2003 and Ph.D. in 2006 in Geology from the University of Houston. In 2001 and 2002, he worked for PGS. He joined Shell in 2007 and has been working on the Deepwater Gulf of Mexico basin ever since. He has been involved in a number of big discoveries such as Kaikias, Whale, and a few newer that are still in progress.

Dr. Elizabeth Beal graduated from the Colorado School of Mines in 1999 with a B.S. in geological engineering and has been in the seismic industry for 20 years. Before coming to Shell in 2008, she worked at various seismic companies like Veritas, Nutec, and TGS. While at Shell her technical work was primarily focused on ocean bottom seismic surveys and 4D time lapse imaging. She is currently a team lead at Shell leading the Brazil processing team and doing survey design. Elizabeth is also co-owner of Vantage Geophysical, a seismic acquisition company acquiring surveys for the oil and gas industry as well as shallow surface engineering projects.

Dr. Mauro Becker is Professor of Practice of the Center for Research Excellence, a program in Basin Modeling of the Berg-Hughes Center for Petroleum and Sedimentary Systems, at the Department of Geology and Geophysics of the Texas A&M University. His career was mainly with the Brazilian NOC Petrobras, onshore and offshore Brazilian basins and Gulf of Mexico. He graduated (UFRGS) and received his M.S. degree (UFOP) in Brazilian Federal Universities and completed his Ph.D. degree at University of Texas at Austin. His current research activities include basin modeling and petroleum systems in unconventional resources.

Industry Judges

Lisa Buckner earned her BS in Geophysics in 1984 from Texas A&M University and her MS in Geophysics in 1991 from the University of Houston. She is currently seeking new opportunities in seismic data processing or seismic data loading and data management. Previously, she held roles as an Advisor, Seismic Data Loading & Processing Team Lead and Sr. Geophysicist during her 12+ years at Hess Corporation. Prior to Hess, she held seismic data processing positions at Shell, Chevron and Western Geophysical.



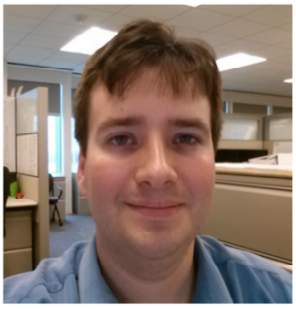
Dr. Humberto Carvajal-Ortiz got his B.Sc. in Geology in 2004 from Universidad Industrial de Santander in Colombia, a M.Sc. in Geology and Petroleum Geochemistry from Iowa State University in 2007, and his Ph.D in Geology and Geochemistry from Indiana University in 2012. He is currently a Staff Geochemist and is the Geochemistry Laboratory Manager at the CoreLab Advanced Technology Center in Houston, where he has been since 2012. Dr. Carvajal's research experience spans from Astrobiology (stable isotope and molecular biosignatures in planetary systems) to the evolution of the carbon cycle and petroleum systems. His current research focus is on stable isotope geochemistry of natural gas as source signature, applications of advanced programmed-pyrolysis methodologies, and geochemical screening and fingerprinting.

Fernando Castillo got his BSc in Geophysics Engineering in 2000 from Universidad Central de Venezuela, and his MSc. in Geology and Geophysics from University of Calgary in 2014. He became a P. Geo (Professional Geoscientist) from APEGA in 2014. He was hired by PDVSA E&P as a seismic interpreter in the Integrated Studies Department. Later he drifted into a service company Halliburton – Landmark in Mexico (2004) as a Managing Consultant Geophysicist over 4 years, then was transferred to Canada (2007). He joined Total E&P Canada (2011) as a geophysicist. In 2016, he co-founded Q-Spectrum Solutions, a geosciences and engineering consultant company. He has published 6 technical papers and posters on several conventions.

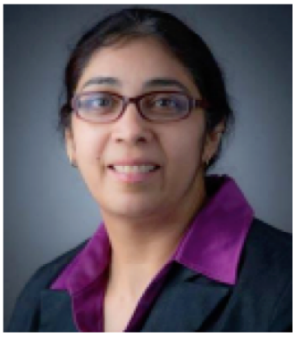
Dr. Veronica Castillo is a geologist with over 23 years' experience in seismic interpretation and prospect generation. She obtained her Ph.D. in Geological Sciences at the University of Texas at Austin in 2001, where she focused on the structural evolution of the Maracaibo Basin, Venezuela. Her early career as an exploration geologist was with PDVSA , and Eni in Venezuela. In 2010 she moved to Houston with Repsol Services to continue her career in the oil and gas exploration. Her expertise is in frontier basin evaluation and prospect generation by the integration of 2D and 3D seismic interpretation, petroleum system analysis, play fairway maps, resource estimations, and risk assessment. She has worked in a wide range of exploration, onshore, and offshore projects in Venezuela, Nicaragua, Barbados, Trinidad, Peru, Aruba, Colombia, and GOM Mexico. More recently was involved in the Quality Assurance team where she participated in the evaluation of the global exploration portfolio of Repsol in Colombia, Caribbean offshore, BrazilRussia, Bulgaria, Guyana, Indonesia, Ireland, Alaska, and GOM US and Mexico.

Industry Judges

Dr. Haibin Di received his Ph.D. in geology from West Virginia University in 2016 and is working as a Senior Data Scientist at Schlumberger with a focus on delivering innovative solutions for automated oil & gas data analysis via machine learning. He has published more than 50 papers in seismic data analysis and interpretation, and he serves as the Assistant Editor of the AAPG/SEG journal Interpretation as well as the technical reviewer for 10+ journals.



Luke Francis graduated from the University of Texas for his undergrad, worked for a couple of years as a hydrogeologist in water supply, and then went on to get his masters at the University of Houston. He has been with BP for 6 years working in both exploration and reservoir development with a specialty in Petroleum Systems.



Rosemarie Geetan is the manager of the Rock & Fluid Characterization Group within the Upstream Technology organization at BP, where she leads technology development and delivery of technical solutions for business impact. She earned a B.S. in Pure + Applied Physics from University of the West Indies, Trinidad and Tobago, and an M.S. in Geophysics from University of Houston, where Dr. R. Sheriff was her thesis advisor. She has been at BP since 1996. Rosemarie has been involved with the Department of Earth and Atmospheric Sciences since 2001 as the BP Geoscience Recruiting Discipline Lead and now holds the same position for Rice University. She holds professional membership to the Geophysical Society of Houston, Society of Exploration Geophysicists and American Association of Petroleum Geologists.

Gary Guthrie received his B.S. in Geology from the University of Montana and earned his M.Sc. from Montana State University. He spent over 35 years working in the industry as a geoscience consultant and retired from Marathon Oil. Guthrie developed deep experience in basin analysis, contractional structure, reservoir characterization and Gulf of Mexico during his tenure in the field.

Peter Lanzarone is a Geophysicist with BP working in the Western Hemisphere Exploration Team. His specialty is in seismic interpretation and quantitative analysis for new basin access, exploration and appraisal. He attended the University of Georgia for his graduate work, utilizing ground-penetrating radar to understand near surface stratigraphy at fossil sites in eastern Africa.

Industry Judges

Dr. Clayton Painter is a geologist at ConocoPhillips with specialties in basin analysis and basin modelling. He was born and raised in northern New Mexico where he unknowingly fell in love with geology amidst high Rocky Mountain peaks and desert southwest mesas. He was trained academically in Idaho, Wyoming and Arizona, receiving his Ph.D. from the University of Arizona in 2013.

Dr. Anthony Riccardi has been at BP for a little over 10 years working as a Petroleum Systems analyst/Basin modeler on a variety of onshore and offshore basins. Prior to BP he was at Penn State University where he earned his Ph.D.

John Serbeck received his B.S. in Geology from Marietta College in 1979 and a M.S. in Geology from the University of Wyoming in 1981. After graduating from Wyoming, John joined Conoco working a variety of domestic and international exploration and development projects between 1981 and 2007. He left ConocoPhillips is 2007 and joined Hilcorp Energy Company in Houston Texas as a Sr. Geologist. John is currently Chief Geoscientist for Hilcorp Energy.

Kim Shih is the Geosteering Solution Product Manager at Halliburton. Since joining Halliburton in 2014, Kim has been working on various assignments in research and development, sales, services, and support. He is responsible for the design and implementation of new software features specific to geology/geosteering workflow. Kim managed Geosteering solution within the Technology Business Line, developed AutoGeosteering, as well as managed product life cycle. Kim also defined functional DecisionSpace, which are Geoscience specifications based on technology trends, industry, and competitive knowledge. Kim received his M.S. in Geology from University of Houston in 2013.

Ben Schupack is a Geoscientist at BP in Houston where he is responsible for evaluating new exploration opportunities in Mauritania and Senegal. Ben joined BP in 2010 after receiving his MSc from the University of Colorado at Boulder. Within BP, Ben has previously worked the Gulf of Mexico, offshore Brazil, South America New Ventures, as well as the Rocky Mountain Region.

Industry Judges

Dr. Eugene Szymanski is a Staff Basin Modeling Geologist in the Department of Earth Sciences at the Chevron Energy Technology Company in Houston, Texas. He is a research specialist who applies diverse geochronological techniques to chronostratigraphy, basin modeling, and source-to-sink analysis of modern and ancient depositional systems. During his nine-year career in the energy industry, he has held roles in conventional hydrocarbon exploration, strategic research, and technology development. Dr. Szymanski has a passion for detrital mineral (U-Th)/He thermochronology and U-Pb-Hf geochronology and he works synergistically with researchers from many analytical laboratories, academic groups, and consortia.

Paola Vera de Newton received her B.S. in Petroleum Engineering in 2001 from the Universidad del Zulia in Maracaibo, Venezuela, and her M.S. from Universidad Rafael Belloso Chacin in 2007. She is currently a Petrophysicist and Rock Physics consultant with over 12 years of global hands-on work. She has a vast knowledge of rock physics modeling and well log based seismic modeling, as well as carbonates, clastics, and unconventional reservoirs on and off shore.

Dr. Ganyuan Xia currently serves as the BP Subsurface Advisor in seismic processing. He has worked on various technical and leadership roles since joining BP in 1997. He received his Ph.D. in Geophysics from University of Texas at Austin.

Faculty Judges

Dr. Emily Beverly is an assistant professor in sedimentary geology at the University of Houston. Her research interests include soils and paleosols, sedimentology and stratigraphy, geoarchaeology and human evolution, reconstruction of past environments and climates, and clumped and triple oxygen isotopes.

Dr. John Casey is a Professor in the Geology Department at the University of Houston in the Earth and Atmospheric Sciences Department. He serves as the Director of the ICP lab, a University core facility. He has worked in the field of plate tectonics and trace element and isotopic geochemistry, focusing on mid-ocean ridges, ophiolites and various orogenic belts. He is the author of more than 100 peer- reviewed articles and a GSA Fellow.

Dr. Evgeni Chesnokov is a professor of theoretical and applied geophysics. He received his Ph.D. in 1974 in geophysics from Moscow State University. His research interests include investigations of the effective physical characteristics and wave propagation in a random porous fractured media.

Dr. Yunsoo Choi is an assisstant professor of atmospheric chemistry, atmospheric modeling, and remote sensing. He received a Ph.D. in Atmospheric Chemistry in 2007 from Georgia Institute of Technology. His research interests are atmospheric chemistry, air quality modeling, and satellite remote sensing.

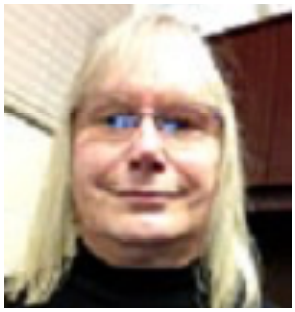
Dr. Peter Copeland is an associate professor of geology and thermochronology. his main research tool is the 40Ar/39Ar thermochronology and eochronology technique, which offers the ability to recover detailed thermal histories from igneous, metamorphic, and sedimentary rocks.

Faculty Judges

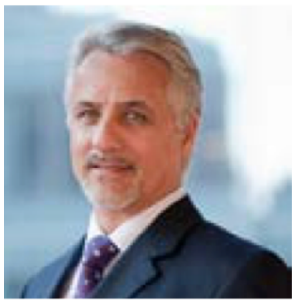
Dr. Daniel Hauptvogel is an instructional assistant professor and co- director of the Geoscience Learning Center (GLC) here at UH. During his Ph.D. at City University of New York, Dr. Hauptvogel studied Antarctic ice dynamics.

Dr. Xun Jiang is an Associate Professor of Atmospheric Science and the Atmospheric Science Graduate Advisor. She received a Ph.D. in Environmental Science & Engineering from the California Institute of Technology in 2006.

Dr. Shuhab Khan is a professor of remote sensing, GIS, and tectonics. He completed his M.S. at the University of Peshawar and his Ph.D. at U.T. Dallas. His research interests include neotectonics and earthquake hazards in the Western Himalayas, hydrocarbon-induced rock alterations, surface deformation in the Northern Gulf of Mexico, and 3D outcrop imaging using ground-based hyperspectral sensors.



Dr. Jennifer Lytwyn is an Instructional Assistant Professor who teaches face-to-face and online courses in Physical Geology and Earth Systems. She received her Ph.D. from the University of Houston in 1993 with research interests in geochemistry, igneous petrology, and plate tectonics.



Dr. Don van Nieuwenhuise is the director of Petroleum Geoscience programs and an instructional professor of Petroleum Geology, Sequence Stratigraphy, Biostratigraphy, and Sedimentology. He received his M.S. in Geology from the University of Houston and his Ph.D. in Geology from the University of South Carolina.

Faculty Judges

Dr. Bernhard Rappenglueck is a professor of atmospheric chemistry at the University of Houston who received his Ph.D. in physics from the University of Munich in 1996. His research interests include the quantification of trace gas budgets, the investigation of disturbances of of the unpolluted atmosphere through complex anthropogenic source regions, and determination of the anthropogenic and biogenic contributions to the formation of secondary trace gases.

Dr. William Sager is a Professor of Geophysics at the University of Houston. He received his PhD in Marine Geophysics at the University of Hawaii in 1983. His research interest include Marine geophysics, High- resolution marine geophysics, and Plate tectonics, among others.

Dr. Joel Saylor is an Assistant Professor of Sedimentology, Stable Isotopes, Magnetostratigraphy, and Basin Analysis. He received his Ph.D. in Geology from the University of Arizona in 2008. Dr. Saylor and his research group study the sedimentary record in order to understand the roles of tectonics and climate in controlling basin subsidence and filling. They are also actively involved in public education and outreach.

Dr. Jinny Sisson is an assistant professor of geology, director of summer field geology, and co-director of the Geoscience Learning Center. She received her Ph.D. from Princeton University in 1981.

Dr. Jiajia Sun is an Assistant Professor of Geophysics at the University of Houston. He completed a PhD in Geophysics with a minor in Mathematical and Computer Sciences at the Colorado School of Mines, and a B.S. in Geophysics at the China University of Geosciences. His research interests include inversion of geophysical datasets, machine learning applied to geophysical problems, and sparse signal processing.

Faculty Judges

Dr. Alex Robinson got his BS in Geology in 1997 from Bates College, and his PhD from UCLA in 2005. He is currently an Associate Professor in the Department of Earth and Atmospheric Sciences at the University of Houston where he has been since 2006. Dr. Robinson's research is on the evolution of orogenic belts, focusing on the Mesozoic and Cenozoic evolution of the Pamir Mountains in the western Himalayan-Tibetan orogen.

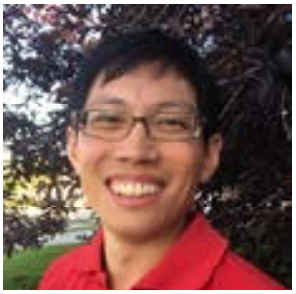
Dr. Robert Talbot is a professor of Atmospheric Chemistry, director of Institute for Climate and Atmospheric Science (ICAS) and is also an adjunct Professor of Atmospheric Chemistry in the School of Atmospheric Science at Nanjing University, Nanjing, China. His interests encompass regional-to-global scale atmospheric circulations, climate change, and associated transport of trace constituents. Dr. Talbot received his Ph.D. from the University of Wisconsin-Madison in 1981.

Dr. Guoquan Wang is an associate professor of geophysics, geodesy, and geosensing systems engineering. He received his Ph.D. in solid Earth geophysics from the Institute of Geology, China Earthquake Administration, Beijing, China in 2001.

Dr. Yuxuan Wang is an assistant professor of atmospheric chemistry. She received her Ph.D. from Harvard University in Earth and planetary sciences in 2005.

Dr. Julia Wellner is an assistant professor of stratigraphy, sedimentology, and glacial processes. She received her Ph.D. from Rice University in 2001. Her research interests are Plio-Pleistocene sequence stratigraphy from 3D seismic data, Holocene climate of antarctic Ice Sheet history since the Eocene.

Faculty Judges



Dr. Jonny Wu is an Assistant Professor in Structural Geology, Tectonics, and Mantle Structure. He received his Ph.D. in geology at the Royal Holloway University of London. His research interests are in structural Geology and tectonics, including Asia tectonics, global plate tectonic modeling, and 4D structural reconstructions using sandbox analog models. His most recent research includes plate tectonic reconstructions of the proto-South China Sea, the Andes, and NE Asia.

Dr. Yingcai Zheng is an assistant professor of seismic imaging at the university of Houston. He received his Ph.D. in seismology from the University of California Santa Cruz in 2007.

We would like to thank and acknowledge the College of Natural Science and Mathematics as well as BP for their generous contributions to the 2019 Student Research Conference. Thank you for your support!

WHO ARE WE?

The Department of Earth and Atmospheric Sciences at the University of Houston has a wide range of research programs central to the earth sciences.

- Sedimentology
- Carbonate petrology
- Sequence stratigraphy
- Micropaleontology
- Structural geology
- Tectonics
- Geodynamics
- Marine geology
- Inorganic geochemistry
- Isotope geochemistry
- Igneous petrology
- Thermochronology
- GIS
- Remote sensing
- Seismology
- Applied geophysics
- Applied rock physics
- Whole earth geophysics
- Potential fields
- Hydrology
- Atmospheric science
- Air quality
- Climatology
- Air pollution

The Department offers M.S., and Ph.D. degrees in Geology, Geophysics and Atmospheric Sciences, a B.S. in Geology, Geophysics and Environmental Sciences, and a B.A. in Earth Sciences. Fieldwork is a major component of all degree programs. The Department also offers Professional M.S. programs in Petroleum Geology and Petroleum Geophysics that are offered at convenient hours for professional geoscientists working in industry or aspiring for a professional position within the petroleum industry.

CONTACT US

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