

Maria A Nikolinakou

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Appointments

2017- Research Scientist, Bureau of Economic Geology, The University of Texas at Austin
2010-2017 Research Associate, Bureau of Economic Geology, The University of Texas at Austin
2009-2010 Postdoctoral Associate, Bureau of Economic Geology, The University of Texas at Austin
2008-2009 Postdoctoral Fellow, Shell International Exploration and Production
1999-2008 Research and Teaching Assistant, Massachusetts Institute of Technology

Education

2001-2008 Massachusetts Institute of Technology: Science Doctorate in Geotechnical Engineering, Department of Civil and Environmental Engineering. GPA: 5.0/5.0.
1999-2001 Massachusetts Institute of Technology: Master of Science in Geotechnical Engineering, Department of Civil and Environmental Engineering. GPA: 5.0/5.0.
1994-1999 National Technical University of Athens, Greece: Diploma, Department of Civil Engineering. Best GPA (9.38/10) among the 215 students of the class of 1999.
1996-1997 University of Strathclyde, Glasgow, UK: Completion of 5th semester of studies as exchange student (ERASMUS Interuniversity Cooperation Program)
1997 Bauhaus-Universitat, Weimar, Germany: Product Modeling in Civil Engineering. ERASMUS Program (July/97)
1996 University of Cambridge, Cambridge, UK: Summer School in Medieval Studies: Gothic structures and architecture; gothic revival; medieval literature.

Honors

1. Invited keynote: AAPG Europe - Evaporite processes and systems: Integrating perspectives conference (October 2021)
2. Best Technical Paper, 52nd U.S. Rock Mechanics/Geomechanics Symposium (June 2019)
3. Invited Early Career Keynote speaker, American Rock Mechanics Geomechanics Symposium (June 2017)
4. Invited Junior Keynote speaker, International Society of Rock Mechanics 2015 Congress (May 2015)
5. 2015 Tinker Family BEG Publication Award (April 2015)
6. Invited speaker, SEG Advanced Modeling (SEAM) Pressure Prediction project (January 2015)
7. Invited speaker, SPE/AAPG/SEG Pore Pressure Workshop, San Antonio, Texas (March 2014)
8. Invited speaker, Houston Geomechanics (February 2014)
9. Invited Keynote Speaker, 3rd International Geoquus Workshop, Potsdam, Germany (August 2012)
10. Member of the first class of the American Rock Mechanics Association Future Leaders (June 2012)
11. Best Technical paper, 3rd Int. Conference on Problematic Soils, Adelaide, Australia (April 2010)

12. MIT Fellowships:

George & Marie Vergottis MIT Fellowship (2005/06, 2006/07), Edmund K. Turner CEE Research Fellowship (2002), MIT Presidential Fellowship (1999)

13. ERASMUS Fellowships (1997 and 1996)

14. Awards of the National Technical University of Athens:

Best student in Civil Engineering, graduating class of 1999

Kritikos Prize: Best Performance in Mathematics, during the first year of studies.

Papakuriakopoulos Prize: Best Performance in Mathematics

Thomaidis Prize: Best student in the Department of Civil Engineering, NTUA

15. Foundation of Hellenic Government Fellowships (I.K.Y.):

Best of the class student in Civil Engineering Academic Years 94/95, 95/96, 96/97, 97/98, 98/99

16. Technical Chamber of Greece:

Best student in the Department of Civil Engineering, NTUA: Academic Year 95/96

Best 1% of all Students in Greek Technical Universities: Academic Years 94/95, 96/97, 97/98, 98/99

Research Experience

1. Bureau of Economic Geology, UT Austin; 2009-present

Computational study of soils and soft rocks under large strains and high confining stresses. Evolutionary (forward in time), finite element poro-mechanical modeling of pore pressure, stress and deformation in systems that evolve with time and are characterized by high stress levels.

Soil behavior under high confining stresses. Numerical implementation of constitutive laws.

Numerical tools: ABAQUS®, ELFEN®

2. Shell International Exploration and Production; 2008-2009

Geomechanical modeling of sand reservoirs during pressure depletion; use of 3D finite element tools (ABAQUS) with user defined material models; adaptation of ABAQUS® to depleted drilling numerical modeling workflows.

Supervisor: Dr. M. Myers

3. MIT Department of Civil and Environmental Engineering

a. Doctoral thesis (2003-2008): Formulation of a constitutive model to predict the compression behavior of a tropical soil, the Old Alluvium of Puerto Rico. Model links the macroscopic behavior with the physicochemical characteristics of the soil and introduces Cation Exchange Capacity as a state variable to map microstructural changes. Supervisor: Prof. A.J. Whittle.

b. Modeling of the behavior of deep excavations in Berlin Sand. Project in collaboration with Technical University of Berlin, Germany. Supervisor: Prof. A.J. Whittle (2001-2003)

c. Implementation of the MIT constitutive soil models in PLAXIS finite element code of soil and rock analyses. Supervisor: Prof. A.J. Whittle (2002-2003)

4. MIT Department of Civil and Environmental Engineering

Automatic generation of soil profiles using MIT-developed program NOMAD. Further statistical analysis of borehole data using MIT-developed NOMAD-KRIBS. Use of the program for mapping ground water pollutant plumes. Investigation of the limitations of the application due to the non-stationary nature of hydrogeological data. Supervisor: H.H. Einstein (1999-2001).

5. MIT Department of Architecture

Study of the structural behavior and effectiveness of early gothic flying buttresses using limit analysis. Approach includes parametric investigations and evaluation of actual structures. Supervisor: Prof. J.A. Ochsendorf (2004-2006)

6. NTUA Department of Civil Engineering

Tunneling in urban areas. Mechanisms of settlements, case studies of various metropolitan tunneling projects and predictions for Athens metro (line 2) using finite element code Phase². Supervisor: Prof. P. Marinos (1998-1999)

Research Supervising Experience

1. Co-supervisor of Postdoc Baiyuan Gao (December 2018 to December 2019)
2. Co-supervisor of Postdoc Mahdi Heidari Moghadam (September 2013 to March 2016)
3. Co-supervisor of PhD student Landon Lockhart, UT Austin (2019-present): Pore pressure in unconventional.
4. Co-supervisor of MSc student Landon Lockhart, UT Austin (2016-2018): Mean and shear stress contribution to pore pressure.
5. PhD Committee member and mentor of Baiyuan Gao, UT Austin (2014-present): Fold and Thrust Belt systems.
6. PhD Committee member of Andrea Nolting, UT Austin (2014-2017): Stability of carbonate-shelf systems
7. PhD Committee member of Derek Sawyer (2009-2010): Failure Mechanics, Transport Behavior, and Morphology of Submarine Landslides.
8. Research advisor to Jean-Joseph d'Hooghvorst, University of Barcelona (PhD student; 2016-present): Integrated geomechanical and basin modeling for pore pressure prediction

Academic Collaborations

1. Ohio State University (Geology Department)
2. Technical University of Berlin, Germany (Civil Engineering)
3. National University of Singapore (SMART Center)
4. MIT Department of Architecture
5. Columbia University (Art History)

Professional Experience

Shell International Exploration and Production, Houston, TX: Consulting (2010 to 2012, 2013 to present)

Professional Development

MIT Professional Education short course: "Leadership Skills for Engineering and Science Faculty" (July 2014)
MIT Professional Education short course: "Engineering Leadership for Early Career Professionals" (June 2015)

Professional Service

1. Board Member and Treasurer, American Rock Mechanics Association (2015-2021; Treasurer: 2017-2021)
2. Technical Committee: Rock Mechanics in the Built Environment
3. Editorial Board: Rock Mechanics and Rock Engineering (2016-present)

4. Journals:

Serving as a reviewer for Journal of Geotechnical and Geoenvironmental Engineering (ASCE), International Journal for Numerical and Analytical Methods in Geomechanics, Journal of Rock Mechanics and Rock Engineering, International Journal of Rock Mechanics and Mining Sciences, Journal of Marine and Petroleum Geology, Journal of Geophysical research, Journal of Structural Geology, Basin Research, Interpretation.

5. Conferences:

Chair: 55th US Rock Mechanics & Geomechanics Symposium (ARMA), June 20-25, 2021.

Member of the Organizing Committee for ARMA 2013, 2018, 2019, 2021

Chair and/or Session organizer for ARMA 2012-2013; 2015-2017, 2019-2022

Served as a reviewer for ARMA 2010-2017, 2019-2022; GeoCongress 2012, 2014, GeoShanghai2018 Chair; ISRM 2019, ISRM 2023.

6. Funding agencies:

ACS Petroleum Research Fund

7. Committees:

Graduate Studies Committee; Jackson School of Geosciences

Graduate Admissions and Support Committee; Jackson School of Geosciences

Diversity and Inclusion Committee; Jackson School of Geosciences (2019-2021)

Teaching Experience

1. Geo191: “Earth Surface and Hydrologic Processes Seminar” – Fall 2009; **UT Austin**

Teaching assistant in:

2. Soil Behavior (Graduate course) – Spring 2008; **MIT**

3. Civil Engineering Design: Design and preparation of class material – Spring 2007; MIT

4. Mechanics of Structures and Soils (Undergraduate course) – Fall 2006, Fall 2007; MIT

5. Geotechnical Engineering Design (Undergraduate course) – Spring 2003, Spring 2005; MIT

6. Theoretical Soil Mechanics (Graduate course) – Spring 2002; MIT

7. Advance Soil Mechanics (Graduate course) –Fall 2001; MIT

8. Introduction to Civil Engineering Design (Undergraduate course) – Spring 2001; MIT

9. MIT I-campus project: Redesign of Physical Geology Tutor interactive website for students of geology courses (Prof. Einstein).

10. Improvement of NOMAD-KRIBS profiling/geostatistical program for geotechnical students (Prof. Einstein, 2000-01).

11. Preparation of teaching material for structural mechanics students; **Technical University of Brno**, Civil Engineering, Prof. B. Teplý. Work completed as part of IAESTE (International Association for the Exchange of Students for Technical Experience) program. (Summer 1997)

Laboratory experience

1. Centrifuge testing of footings and retaining walls

2. High pressure oedometer tests.

Skills

1. Languages:

Greek, English (Certificate of Proficiency in English, Cambridge), Spanish (Spanish I-IV, MIT), French (DELF, 1er Degré), German (Zeugnis Zentrale Mittelstufenprüfung), Portuguese, Italian.

2. Programming Languages:

Fortran, C++, Visual Basic

3. Numerical Tools:

Plaxis© (2D, 3D Tunneling, and implementation of user models); Abaqus© (2D, 3D, user-defined constitutive models); ELFEN; TACC supercomputing facility

Professional Societies

Life Member, American Rock Mechanics Association

Associate Member, American Society of Civil Engineers

Member, Geotechnical Engineering, Texas Section

Member, American Geophysical Union

Member, Technical Chamber of Greece

Volunteering for Science, Technology and Engineering

President of the MIT Club of Austin and San Antonio (October 2014-2017).

Educational Councilor for Central Texas.

Patents

Flemings, P.B., Nikolinakou, M.A, Heidari, M., 2016, Pore-Pressure Prediction Based on Seismic Velocities Coupled with Geomechanical Modeling, Patent Number 11,022,709, received June 1, 2021.

Publications

Note:

* = graduate student advisee

** = post-doctoral advisee or collaborator

Journal papers

Nikolinakou, M.A., Whittle, A.J., Germaine, J.T. & Zhang, G. (2022) “Consolidation properties and structural alteration of Old Alluvium,” *Acta Geotechnica* 17, pages 1569–1584 (2022), <https://doi.org/10.1007/s11440-021-01330-6>.

Nikolinakou, M.A. & Whittle, A.J. (2021) Constitutive model of structural alteration and swelling behavior for Old Alluvium. *Engineering Geology*, vol 293, <https://doi.org/10.1016/j.enggeo.2021.106307>.

Hooghvorst*, JJ, Nikolinakou, MA, Harrold, TWD, Fernandez, O, Flemings, PB, Marcuello, A. (2021) Geologically constrained evolutionary geomechanical modelling of diapir and basin evolution: A case study from the Tarfaya basin, West African coast. *Basin Res.* 2021; 33: 2049– 2068. <https://doi.org/10.1111/bre.12547>

Heidari, M., Nikolinakou, M.A., Hudec, M.R., Flemings, P.B, (2021) Impacts of vertical salt welding on pore pressure, stresses, and deformation near the weld, *Marine and Petroleum Geology*, Volume 133, 2021, 105259, ISSN 0264-8172, <https://doi.org/10.1016/j.marpetgeo.2021.105259>.

Heidari, M., Nikolinakou, M. A., and Flemings, P. B., 2020, Modified Cam-Clay Model for large stress ranges and its predictions for geological and drilling processes: *Journal of Geophysical Research Solid Earth*, v. 125, no. e2020JB019500, 21 p., <http://doi.org/10.1029/2020JB019500>.

Hoogvorst, J.J.*, Harrold, T. W. D., Nikolinakou, M. A., Fernandez, O., and Marcuello, A., 2020, Comparison of stresses in 3D v. 2D geomechanical modelling of salt structures in the Tarfaya Basin, West African coast: *Petroleum Geoscience*, v. 26, no. 1, p. 36–49, <http://doi.org/10.1144/petgeo2018-095>.

Portnov, A.**, Cook, A. E., Heidari, M., Sawyer, D. E., Santra, M., and Nikolinakou, M., 2020, Salt-driven evolution of a gas hydrate reservoir in Green Canyon, Gulf of Mexico: *AAPG Bulletin*, v. 104, no. 9, p. 1903–1919, <http://doi.org/10.1306/10151818125>.

Goteti R., Nikolinakou M.A., Heidari M. (2020): Mechanics of salt systems: state of the field in numerical methods, Part II; *Petroleum Geoscience* 26 (1), 1-2, <https://doi.org/10.1144/petgeo2020-002>

Nikolinakou M.A., Heidari M., Hudec M.R., Flemings P.B., 2019: Stress and deformation in plastic mudrocks overturning in front of advancing salt sheets; implications for system kinematics and drilling; *Rock Mechanics and Rock Engineering*, <https://dx.doi.org/10.1007/s00603-019-01852-2>.

Nikolinakou M.A., Goteti R., Heidari M. (2019): Mechanics of salt systems: state of the field in numerical methods; *Petroleum Geoscience* 25 (3), 249-250

Heidari M., Nikolinakou, M.A., Hudec M.R., Flemings P.B (2019): Influence of a reservoir bed on diapirism and drilling hazards near a salt diapir: a geomechanical approach; *Petroleum Geoscience*, <https://doi.org/10.1144/petgeo2018-113>

Nikolinakou M.A., Flemings P.B., Heidari M., Hudec M.R., 2018. Stress and pore pressure in mudrocks bounding salt systems, *Rock Mechanics Rock Engineering*, p1-12, <dx.doi.org/10.1007/s00603-018-1540-z>

Nikolinakou M.A., Heidari M., Flemings P.B., Hudec M.R., 2018. Geomechanical modeling of pore pressure in evolving salt systems, *Marine and Petroleum Geology*, 93, p272-286, <http://dx.doi.org/10.1016/j.marpetgeo.2018.03.013>.

Heidari, M., Nikolinakou, M.A., Flemings P.B., 2018. Coupling geomechanical modeling with seismic pressure prediction, *Geophysics*, 83(5), B253-B267, <https://doi.org/10.1190/geo2017-0359.1>

Gao, B.*, Flemings, P., Nikolinakou, M., Saffer, D., Heidari, M., 2018. Mechanics of Fold-and-Thrust Belts Based on Geomechanical Modeling, *Journal of Geophysical Research: Solid Earth*, 123, 4454–4474. <https://doi.org/10.1029/2018JB015434>.

Coleman, A. J.*, Jackson, C. A., Duffy, O. B., & Nikolinakou, M. A. 2018. How, where and when do radial faults grow near salt diapirs?, *Geology*, 46 (7): 655-658, <https://doi.org/10.1130/G40338.1>

Nolting, A.*, Zahm, C.K., Kerans, C., and Nikolinakou, M.A., 2018. Effect of carbonate platform morphology on syndepositional deformation: Insights from numerical modeling, *Journal of Structural Geology*, Vol. 115, p.91-102, <https://doi.org/10.1016/j.jsg.2018.07.003>.

Nikolinakou, M. A., M. Heidari, M. R. Hudec, and P. B. Flemings, 2017, Initiation and growth of salt diapirs in tectonically stable settings: upbuilding and megaflaps, *American Association of Petroleum Geologists Bulletin*, 101 (6): 887-905, DOI:10.1306/09021615245.

Luo, G., Hudec, M. R., Flemings, P. B., and Nikolinakou, M. A., 2017, Deformation, stress, and pore pressure in an evolving suprasalt basin: *Journal of Geophysical Research: Solid Earth*, v. 122, no. 7, p. 5663–5690, <http://doi.org/10.1002/2016JB013779>.

Nikolinakou, M.A., Flemings, P.B., Hudec, M.R., 2016, Modeling of shales in salt-hydrocarbon systems, *Rock Mechanics Rock Engineering*, v. 49, pp699–705 DOI 10.1007/s00603-015-0863-2.

Heidari, M.**, M. A. Nikolinakou, M. R. Hudec, and P. B. Flemings, 2016, Geomechanical analysis of a welding salt layer and its effects on adjacent sediments: *Tectonophysics*, v. 683, p. 172-181, doi <http://dx.doi.org/10.1016/j.tecto.2016.06.027>.

Heidari, M.**, M. A. Nikolinakou, P. B. Flemings, and M. R. Hudec, 2016, A simplified stress analysis of rising salt domes: *Basin Research*, doi 10.1111/bre.12181.

Luo, G., P. B. Flemings, M. R. Hudec, and M. A. Nikolinakou, 2015, The role of pore fluid overpressure in the substrates of advancing salt sheets, ice glaciers, and critical-state wedges, *J. Geophys. Res. Solid Earth*, 120, 87–105, doi: 10.1002/2014JB011326.

Nikolinakou, M.A., Hudec, M.R., Flemings, P.B. (2014): “Comparison of evolutionary and static modeling of stresses around a salt diapir”, *Journal of Marine and Petroleum Geology*, v. 57, pp537-545, doi: <http://dx.doi.org/10.1016/j.marpetgeo.2013.11.021>.

Nikolinakou, M.A., Flemings, P.B., Hudec, M.R. (2014): “Modeling stress evolution around a rising salt diapir”, *Journal of Marine and Petroleum Geology*, v. 51, pp230-238, doi: <http://dx.doi.org/10.1016/j.marpetgeo.2014.07.002>.

Sawyer, D., Flemings, P.B., Nikolinakou, M.A. (2014): “Continuous deep-seated slope failure recycles sediments and limits levee height in submarine channels”, *Geology*, v. 42, pp15-18, doi: doi:10.1130/G34870.1.

Nikolinakou, M.A., Luo, G., Hudec M.R., Flemings P.B. (2012): “Geomechanical Modeling of Stresses Adjacent to Salt Bodies: 2. Poro-Elasto-Plasticity and Coupled Overpressures”, *American Association of Petroleum Geologists Bulletin*, vol. 96, No1, pp65-85, doi: DOI:10.1306/04111110143.

Luo, G.**, Nikolinakou, M.A., Hudec M.R., Flemings P.B. (2012): “Geomechanical Modeling of Stresses Adjacent to Salt Bodies: 1. Uncoupled models”, *American Association of Petroleum Geologists Bulletin*, vol. 96, No1, pp43-64, doi: DOI:10.1306/04111110144.

Nikolinakou, M.A., Whittle, A.J., Savidis, S., Schran, U. (2011): “Prediction and interpretation of the performance of a deep excavation in Berlin Sand”, *Journal of Geotechnical and Geoenvironmental Engineering, ASCE*, vol 137, No11, pp1047-1061, doi: [http://dx.doi.org/10.1061/\(ASCE\)GT.1943-5606.0000518](http://dx.doi.org/10.1061/(ASCE)GT.1943-5606.0000518).

Nikolinakou, M.A., Tallon, A.J., Ochsendorf, J.A. (2005): “Structure and Form of Early Gothic Flying Buttresses”, *Revue Européenne de Génie Civil*, vol. 9, n° 9-10, pp1191-1217, doi: 10.1080/17747120.2005.9692807.

Conference papers

Heidari, M., MA Nikolinakou, PB Flemings, MR Hudec, (2021): Prediction of pore pressure and the full stress tensor from seismic velocity around a 3D salt dome in the Gulf of Mexico; *55th US Rock Mechanics/Geomechanics Symposium*

Nikolinakou, M.A., Heidari, M., Hudec, M.R., Flemings P.B. (2020): Stress and Pressure in Extensional Salt Systems; *54th US Rock Mechanics/Geomechanics Symposium*

Roberts, D.T., GJ Richards, J Kato, AT Bere, JJ Hooghvorst*, MA Nikolinakou, TW D Harrold (2020): Advanced Pore Pressure Prediction Methodologies Incorporating the Full Stress Tensor and Their Application to the Sandia Field, Tarfaya Basin; *54th US Rock Mechanics/Geomechanics Symposium*

Wiggs, D.M.*, PB Flemings, KT Spikes, MA Nikolinakou (2020): Mudrock velocity anisotropy based on history of the full strain tensor; *SEG Technical Program Expanded Abstracts 2020*.

Nikolinakou M.A., Heidari, M., Flemings P.B., Hudec M.R. (2019): Geomechanical modeling of mudrock stress-level dependency and application to a salt-sediment system; *ISRM 14th International Congress on Rock Mechanics*, Iguassu, Brazil, 13-18 September; Paper 14948.

Nikolinakou M.A., Heidari, M., Flemings P.B., Hudec M.R. (2019): Geomechanical Modeling of Sediment Stress-Level Dependency With Application to a Salt System; **53rd U.S. Rock Mechanics/Geomechanics Symposium**, New York, NY, June 23-26; Paper # 19-1579.

Heidari, M., Nikolinakou M.A., and Flemings, P. B., Hudec M.R. (2019): Impacts of Stress-Level Dependency of Mudrock Mechanical Behavior on the Pore Pressure and Structural Style of Critical Tapers; **53rd U.S. Rock Mechanics/Geomechanics Symposium**, New York, NY, June 23-26; Paper # 19-2166.

Hooghvorst JJ, Harrold TD, Nikolinakou MA, Fernández O, Marcuello A (2019): Insights From Sensitivity Analysis of Geomechanical Modelling of a Salt Structure Offshore West Africa; **53rd U.S. Rock Mechanics/Geomechanics Symposium**, New York, NY, June 23-26; Paper # 19-1591.

Nikolinakou M.A., Heidari, M., Hudec M.R., Flemings P.B. (2018): “Geomechanical modeling of stress and deformation associated with salt-sheet advance”, **52nd U.S. Rock Mechanics/Geomechanics Symposium**, Seattle, WA, June 17-20; Paper # 18-637.

Heidari, M., Nikolinakou M.A., and Flemings, P. B. (2018): “Enhancing Modified Cam Clay Model for high stress levels”, **52nd U.S. Rock Mechanics/Geomechanics Symposium**, Seattle, WA, June 17-20.

Nikolinakou M.A., Heidari, M., Flemings P.B., Hudec M.R. (2017): “Coupling flow and deformation in evolving salt basins”, **6th Biot Conference on Poromechanics**, Paris, France, July 9-14.

Nikolinakou M.A., Heidari, M., Flemings P.B., Hudec M.R. (2017): “Pore-pressure prediction beneath salt sheets”, **51st U.S. Rock Mechanics/Geomechanics Symposium**, San Francisco, CA, June 25-28; Paper # 345.

Heidari, M., Nikolinakou M.A., Hudec, M. R., and Flemings, P. B. (2017): “Geomechanical effects of a highly permeable sand layer in a salt basin”, **51st U.S. Rock Mechanics/Geomechanics Symposium**, San Francisco, CA, June 25-28; Paper # 881.

Nikolinakou M.A., Heidari, M., Flemings P.B. (2016): “Pore-pressure prediction based on seismic velocities coupled with geomechanical modeling”, **50th U.S. Rock Mechanics/Geomechanics Symposium**, Houston, TX, June 26-29; Paper # 043.

Heidari, M., Nikolinakou M.A., Hudec, M. R., and Flemings, P. B. (2016): “Geomechanical impacts of a welding salt layer on adjacent sediments”, **50th U.S. Rock Mechanics/Geomechanics Symposium**, Houston, TX, June 26-29; Paper # 035.

Gao, B., Flemings P.B., Nikolinakou, M.A (2016): “Stress and Porosity in Fold-and-Thrust Belt Systems,” **50th U.S. Rock Mechanics/Geomechanics Symposium**, Houston, TX, June 26-29; Paper # 545.

Nikolinakou, M. A., Heidari, M., Hudec, M. R., and Flemings, P. B. (2015): “Stress changes associated with the evolution of a salt diapir into a salt sheet”, **49th U.S. Rock Mechanics/Geomechanics Symposium**, San Francisco, CA, June 28-July1; Paper # 108.

Heidari, M., Nikolinakou, M. A., Hudec, M. R., and Flemings, P. B. (2015): “A Simplified Analysis of Stresses in Rising Salt Domes and Adjacent Sediments”, **49th U.S. Rock Mechanics/Geomechanics Symposium**, San Francisco, CA, June 28-July1; Paper # 159.

Nikolinakou, M.A., Flemings P.B., Hudec M.R. (2015): “Modeling of Shales in Salt-Hydrocarbon systems” (Junior Keynote), **2015 International Society of Rock Mechanics Congress**, Montreal, Canada, May 10-13 2015.

Nikolinakou, M.A., Hudec M.R., Flemings P.B. (2014): “Comparison of evolutionary and static modeling of stresses around a salt dome: The importance of modeling the past”, **48th U.S. Rock Mechanics/Geomechanics Symposium**, Minneapolis, June 1-4; Paper # 7027.

Nikolinakou, M.A., Merrell, M.P., Luo, G., Hudec M.R., Flemings P.B. (2013): “Geomechanical modeling of the Mad Dog salt, Gulf of Mexico”, **47th U.S. Rock Mechanics/Geomechanics Symposium**, San Francisco, June 23–26; Paper # 234.

Nikolinakou, M.A., Flemings, P.B. (2013): “Pore Pressure and Stress around Dipping Structures”, *5th Biot Conference on Poromechanics*, Vienna (July 2013).

Nikolinakou, M.A., Flemings, P.B. (2012): “Stress changes at the crest of dipping structures”, *46th U.S. Rock Mechanics/Geomechanics Symposium*, Chicago, June 24–27; Paper # 254.

Nikolinakou, M.A., Chan, A.W. (2012): “Soil model for rock properties prediction in exploration settings”, *46th U.S. Rock Mechanics/Geomechanics Symposium*, Chicago, June 24–27; Paper # 143.

Luo, G., Nikolinakou, M.A., Hudec M.R., Flemings P.B. (2012): “Near-salt stress and wellbore stability: A finite-element study and its application”, *46th U.S. Rock Mechanics/Geomechanics Symposium*, Chicago, June 24–27; Paper # 309.

Nikolinakou, M.A., Luo, G., Hudec M.R., Flemings P.B. (2011): “Geomechanical modeling of stresses and pore pressures in mudstones adjacent to salt bodies”, Proceedings, *45th U.S. Rock Mechanics/Geomechanics Symposium*, San Francisco, June 26–29; Paper # 271.

Nikolinakou, M.A., Whittle, A.J. (2010): “A Constitutive Model for the Compression Behavior of the Old Alluvium in Puerto Rico”, Proceedings, *3rd Int. Conf. on Problematic Soils*, Adelaide, April 2010, pp233-240.

Nikolinakou, M.A., Tallon, A.J. (2006): “New Research in Early Gothic Flying Buttresses”, *Proc., 2nd International Congress on Construction History*, Cambridge University, U.K., vol III, pp2347-2361.

Nikolinakou, M.A., Whittle, A.J. & Savidis, S. (2004): “Selection of MIT-S1 parameters for Berlin sand,” *Proc. Geotechnical Innovations*, Eds. R.B.J. Brinkgreve, H, Schad, H.F. Schweiger, & E. Willand, Verlag Glückauf, pp599-608.

Pestana, J.M., Nikolinakou, M.A., Whittle, A.J. (2005): “Selection of material parameters for sands using the MIT-S1 model”, *Proceedings of Geofrontiers 2005*, ASCE, Austin, TX.

Zhang G., Whittle A. J., Germaine J. T. and Nikolinakou M. A.: Chapter 25: “Characterization and Engineering Properties of The Old Alluvium in Puerto Rico”, in *Characterization and Engineering Properties of Natural Soils*, vol.4, pp2557-2590.

Invited Presentations

1. *AAPG Europe - Evaporite processes and systems: Integrating perspectives conference* (October 2021) – “How do transient geomechanical models illuminate pressure and stress in mudrocks bounding salt structures?” (Invited Keynote)
2. *Third EAGE Workshop on Pore Pressure Prediction* (December 2020): “Geomechanical pore pressure and stress in large geologic systems” (invited keynote)
3. *San Antonio Geophysical Society*, San Antonio, TX (April 2018): “Evolution of stress and pressure in mudrocks bounding salt systems”.
4. 2017 51st ARMA Rock Mechanics Geomechanics Symposium, San Francisco, CA (June 2017): “Stress and Pressure in Mudrocks Bounding Salt Systems” (invited early career keynote).
5. Operators’ Pore-Pressure Forum, Houston, TX (May 12, 2017): “Pore pressure in evolving salt systems”.
6. Society of Underwater Technology, Houston, TX (March 2, 2017): “Stress, deformation, and pressure prediction near salt”.
7. *2016 AGU Fall meeting*, San Francisco, CA (December 2016): “Coupling flow and deformation in evolving salt basins”.
8. *2015 International Society of Rock Mechanics Congress*, Montreal, Canada (May, 2015): “Modeling of Shales in Salt-Hydrocarbon systems” (Junior Keynote).

9. *SEAM Pore pressure prediction project*, Houston (January 2015): “Geomechanical modeling of stresses adjacent to salt bodies”.
10. *SPE/AAPG/SEG Pore Pressure Workshop* (March 2014): “Impact of salt diapir evolution on stress and pressure”.
11. *Houston Geomechanics series* (February 2014): “Modeling stress evolution around a rising salt dome”.
12. *3rd International Geoqus Workshop*, Potsdam, Germany (August 21-23, 2012): Geomechanical modeling of stresses and pore pressures in mudstones adjacent to salt bodies.

Invited Academic/Departmental Presentations

1. *Civil and Environmental Engineering, Northwestern University* (March 2022): “What can passive failure and critical state soil mechanics tell us about earthquakes?”
2. *Colorado School of Mines, ARMA student chapter* (April 2021): “Stress and pore pressure in mudrocks bounding salt systems”
3. *Department of Civil, Environmental & Ocean Engineering, Stevens Institute of Technology* (October 2020): “Stress and pore pressure in mudrocks bounding salt systems”
4. *Geology and Geoenvironmental Geosciences, Northern Illinois University, DeKalb, IL* (April, 2019): “Stress, deformation and pressure in evolving salt basins”
5. *Department of Civil and Environmental Engineering, George Washington University, Washington, D.C.* (September 2018): “Stress and pressure in mudrocks bounding salt systems”
6. *Harold Vance Department of Petroleum Engineering, Texas A&M University, College Station, TX* (September 2017): “Stress, deformation, and pressure prediction in evolving salt basins”.
7. *School of Earth Sciences, Ohio State University, Columbus, OH* (August 2017): “Stress, deformation, and pressure prediction in evolving salt basins”.
8. *Geosystems Department, Georgia Institute of Technology, Atlanta, GA* (April 2015): “Geomechanical modeling near salt systems”. Harold Vance Department of Petroleum Engineering
9. *Earth and Planetary Sciences Department, MIT, Cambridge, MA* (May 2014): “Geomechanical Modeling around a rising Salt Diapir”
10. *Department of Civil and Environmental Engineering, Rensselaer Polytechnic Institute* (April 2013): Geomechanical Modeling in Energy Exploration.
11. *Bureau of Economic Geology, UT Austin* (August 10, 2012): Two big infrastructure projects in Austin.
12. *Department of Civil, Architectural and Environmental Engineering, The University of Texas at Austin* (March 2012): Geomechanical Modeling in Energy Exploration.
13. *Cardiff University, Cardiff, U.K.* (March 2012): How does salt affect stresses and pore pressures? From simple geometries to salt-sheet advance.
14. *UT Institute for Geophysics, Austin* (September 2011): Modeling advancing salt sheets – with analogies to ice sheets – over poroelastic sediments.
15. *University of Illinois at Urbana-Champaign, CEE* (Nov. 2009): Geology, Geotechnical Engineering and the Energy Industry
16. *Jackson School of Geosciences, UT Austin* (May, 2009): Selection and calibration of geomechanical models for reservoir sands.

Invited Industry Presentations

1. *Chevron Geomechanics seminar* (May 2022): Role of creep on mudrock strength and overpressure generation

2. *BP Lunch and Learn* (May 2022)
3. *Shell SIEP Geomechanics Seminar* (March 2021): “Pore pressure and stress prediction in complex settings”
4. *BP PFFG & Geomechanics Q1 meeting* (April 2021).
5. *Repsol, Madrid, Spain* (July 2017): Various talks on pressure and stress in salt systems and pore pressure prediction near salt and in complex geologic systems.
6. *PEMEX, Villahermosa, Mexico* (May 2017): Various talks on pressure and stress in salt systems and pore pressure prediction near salt and in complex geologic systems.
7. *Anadarko, Houston* (May 2017): Talks on a) stress and deformation in frontal rolling salt sheets and their overturned beds; b) salt flow during continental separation.
8. *PGS, Houston* (March 2017): Stress fields in and around salt; Pore-pressure prediction based on seismic velocities coupled with geomechanical modeling.
9. *BP, Houston* (March 2015): (a) “Stress, strain, and potential failure in upturned flaps around salt domes”, (b) “Geomechanical modeling of diaper-to-salt-sheet transition with concurrent sedimentation” and (c) “Pore-pressure prediction based on seismic velocities coupled with geomechanical modeling”.
10. *Statoil, Austin* (February 2015): Upturned flaps near salt domes; Salt dome to salt sheet transitions; and Salt welds.
11. *Anadarko, Houston* (January 2015): Seminar on evolutionary salt modeling.
12. *Hess* (February 2014): “Modeling stress evolution around a rising salt dome”.
13. *Cobalt International Energy, Lunch & Learn* (January 2014): “Modeling Stress Evolution Around a Rising Salt Dome”.
14. *Anadarko Petroleum Corporation, Lunch & Learn* (May 2013): “Modeling Stress Evolution Around a Rising Salt Dome”.
15. *Schlumberger, Lunch & Learn* (May 2013): “Modeling Stress Evolution Around a Rising Salt Dome”.
16. *Far-East Schlumberger, Webinar* (May 2013): “Modeling Stress Evolution Around a Rising Salt Dome”.
17. *ExxonMobil Upstream Research Company* (October 2010): Geomechanical modeling of stresses and pore pressures adjacent to salt bodies: poro-elasto-plasticity and coupled overpressures.
18. *Schlumberger, Doll Research, Boston* (June, 2009): Geomechanical models for reservoir sands.
19. Semi-annual research review meeting, *Shell Int. Exploration and Production* (June, 2009): Modeling of reservoir depletion: Constitutive model selection, test data discussion, input calibration, 2D - 3D models.
20. Semi-annual research review meeting, *Shell Int. Exploration and Production* (June, 2009): Introducing/adapting ABAQUS© to numerical modeling workflow.
21. Depleted drilling meeting, *Shell Int. Exploration and Production* (May, 2009): Modeling of reservoir depletion: a) Introduction to the behavior of sands; sand constitutive models; b) observed shale behavior; appropriate modeling decisions.
22. Semi-annual research review meeting, *Shell Int. Exploration and Production* (Oct. 2008): Selection of input parameters for studied reservoir sand; Discussion of observed shale behavior.
23. Lunch and Learn presentation, *Shell Int. Exploration and Production geophysics group* (Oct. 2008): Principles of MIT-S1 soil model and methodology for parameter calibration.

Conference Presentations

1. *Biot-Bazant Conference* (June 2021): “Viscous flow of salt sheets and its interaction with basin sediments”
2. *Geopressure 2021* (March 2021): “Mechanisms generating fluid overpressure at the trench of subduction zones”

3. *Geopressure 2021* (March 2021): “Coupling Seismic Pore Pressure Prediction with Geomechanical Modeling”
4. *ARMA 55th US Rock Mechanics/Geomechanics Symposium* (June 2021): “Prediction of pore pressure and the full stress tensor from seismic velocity around a 3D salt dome in the Gulf of Mexico”.
5. *AGU Fall Meeting* (Dec. 2020): “The impact of splay fault initiation and evolution on the stress state in subduction-accretion complexes”
6. *ISRM 14th International Congress on Rock Mechanics*, Iguassu, Brazil (Sept. 2019): “Geomechanical modeling of mudrock stress-level dependency and application to a salt-sediment system”.
7. *53rd U.S. Rock Mechanics/Geomechanics Symposium*, New York, NY (June 2019): “Geomechanical Modeling of Sediment Stress-Level Dependency With Application to a Salt System”.
8. *2019 AAPG Annual Convention and Exhibition* (May 2019): “Evolution of Pressure and Stress in Salt-Suture Mudrocks”.
9. *52nd US Rock Mechanics/Geomechanics Symposium*, Seattle, WA (June 2018): “Geomechanical modeling of stress and deformation associated with salt-sheet advance”.
10. *Engineering Mechanics Institute Conference*, Cambridge, MA (May 2018): “Coupling flow and deformation in evolving salt basins”.
11. *Advances in salt tectonics: observations, applications, and perspective: In honor of Martin P.A. Jackson Penrose Conference*, Israel (February 2018): “Stress, deformation and failure associated with salt-sheet emplacement”.
12. *51st US Rock Mechanics/Geomechanics Symposium*, San Francisco, CA (June 2017): “Pore-pressure prediction beneath salt sheets”.
13. *6th Biot Conference on Poromechanics*, Paris, France (July 2017): “Coupling flow and deformation in evolving salt basins”
14. *2017 AAPG Annual Convention and Exhibition* (March 2017): “Stress, deformation and failure associated with salt-sheet emplacement”
15. *2016 AGU Fall meeting*, San Francisco, CA (December 2016): “Stress, deformation and failure associated with salt-sheet emplacement”
16. *50th US Rock Mechanics/Geomechanics Symposium*, Houston, TX (June 2016): “Pore-pressure prediction based on seismic velocities coupled with geomechanical modeling”.
17. *49th US Rock Mechanics/Geomechanics Symposium*, San Francisco, CA (June 2015): “Stress changes associated with the evolution of a salt diapir into a salt sheet”.
18. *GeoMod Conference*, Potsdam Germany (September 2014): “Modeling stress evolution around a rising salt diapir”.
19. *48th US Rock Mechanics/Geomechanics Symposium*, Minneapolis (June 2014): “Comparison of evolutionary and static modeling of stresses around a salt dome: The importance of modeling the past”.
20. *5th Biot Conference on Poromechanics*, Vienna, Austria (July 2013): “Pore Pressure and Stress around Dipping Structures”
21. *47th US Rock Mechanics/Geomechanics Symposium*, San Francisco (June 2013): “Geomechanical modeling of the Mad Dog salt, Gulf of Mexico”
22. *46th US Rock Mechanics/Geomechanics Symposium*, Chicago (June 2012): Soil model for rock properties prediction in exploration settings.
23. *46th US Rock Mechanics/Geomechanics Symposium*, Chicago (June 2012): Stress changes at the crest of dipping structures.

24. *GeoPressure 2011*, Galveston (October 2011): Stresses and Pore pressures at the crest of dipping structures.
25. *45th US Rock Mechanics/Geomechanics Symposium*, San Francisco (June 2011): Geomechanical Modeling of Stresses and Pore Pressures in Mudstones Adjacent to Salt Bodies.
26. *American Association of Petroleum Geologists Convention*, Houston (April 2011): Geomechanical Modeling of Stresses Adjacent to Salt Bodies: Poro-Elasto-Plasticity and Coupled Overpressures.
27. *3rd International Conference on Problematic Soils*, Adelaide, Australia (April 2010): A Constitutive model for the Compression Behavior of Old Alluvium.
28. *International Congress on Construction History*, Cambridge University, U.K, 2006: Paper presentation on early gothic flying buttresses.
29. *Ecole d'Architecture Paris La Villette*, France, 2006: Research presentation (MIT-France Research Workshop on Historic structures).
30. Analysis of Historic Structures, graduate class, *Architecture, MIT*: Invited research presentation on flying buttresses.
31. Geotechnical group lab presentations, *Civil & Environmental engineering, MIT*: Research presentation on Berlin deep excavations and on Old Alluvium constitutive modeling.

Other abstracts

1. *AAPG Europe - Evaporite processes and systems: Integrating perspectives conference; October 18-20, 2021*: “How do transient geomechanical models illuminate pressure and stress in mudrocks bounding salt structures?”; MA Nikolinakou, M Heldari, MR Hudec, PB Flemings (invited keynote).
2. *Biot-Bažant Conference, June 1-3, 2021 Northwestern University, Evanston, IL*: “Viscous flow of salt sheets and its interaction with basin sediments”; MA Nikolinakou, M Heldari, MR Hudec, PB Flemings.
3. *Geopressure 2021*: “Mechanisms generating fluid overpressure at the trench of subduction zones”; MA Nikolinakou, B Gao, PB Flemings, DM Saffer.
4. *Geopressure 2021*: “Pressure Prediction in Unloaded (Unconventional) Basins. Case Study: Delaware Basin”; L Lockhart*, PB Flemings, MA Nikolinakou
5. *Geopressure 2021*: “Coupling Seismic Pore Pressure Prediction with Geomechanical Modeling “; M Heidari, MA Nikolinakou, PB Flemings
6. *2020 AGU Fall Meeting*: “The impact of splay fault initiation and evolution on the stress state in subduction-accretion complexes”; MA Nikolinakou, PB Flemings, DM Saffer (2020).
7. *Third EAGE Workshop on Pore Pressure Prediction 2020 (1), 1-5*: “Keynote: Geomechanical pore pressure and stress in large geologic systems”; MA Nikolinakou, PB Flemings, M Heldari, MR Hudec.
8. *Third EAGE Workshop on Pore Pressure Prediction 2020 (1), 1-5*: “Geologically constrained geomechanical evolutionary modelling of diapir and basin evolution: Tarfaya basin, West Africa”; JJ Van der Linden d’Hooghvorst*, M Nikolinakou, OF Bellón, T Harrold, PB Flemings, A Marcuello.
9. *Third EAGE Workshop on Pore Pressure Prediction 2020 (1), 1-5*: “Coupling a 3D geomechanical model with seismic velocity to predict pressure and the full stress tensor “; M Heidari, MA Nikolinakou, PB Flemings.
10. *Second EAGE Workshop on Pore Pressure Prediction*, Amsterdam, Netherlands: “2D vs 3D Geomechanical Modelling Comparison to Influence Pore Pressure and Fracture Gradient Analysis”; Hooghvorst JJ, Harrold TD, Nikolinakou MA, Fernández O, Hernandez P., Marcuello A.
11. *Second EAGE Workshop on Pore Pressure Prediction*, Amsterdam, Netherlands: “FES Pressure Prediction Workflow Coupling Velocities with Geomechanical Modeling”; M Nikolinakou, M Heidari, P Flemings, A Bere, J Kato.

12. *2019 AAPG Annual Convention and Exhibition*, San Antonio, TX: “Integration of Geomechanical Modeling and Seismic Data to Predict Pore Pressure and Stress in Complex Subsurface Settings”; Heidari, M., Nikolinakou, M.A., Flemings, P.B.
13. *2017 AAPG Annual Convention and Exhibition*, Houston, TX: “Pressure prediction in a complex setting based on field data and geomechanical modeling: Mad Dog Field, Gulf of Mexico”; Lockhart, L., Flemings, P.B., Nikolinakou, M.A., Heidari, M.
14. *2017 AAPG Annual Convention and Exhibition*, Houston, TX: “Forward Hydro-Mechanical Modeling of a Rising Salt Diapir Considering the Effect of Basin Sand Layers”; Heidari, M., Nikolinakou, M.A., Hudec, M.R., Flemings, P.B., Abstract ID 2598950
15. *2016 AGU Fall meeting*, San Francisco, CA: “A critical state model for mudrock behavior at high stress levels”; Heidari M., Nikolinakou M.A., Flemings P.B.
16. *2016 AGU Fall meeting*, San Francisco, CA: “Pressure prediction in non-uniaxial settings based on field data and geomechanical modeling: a well example”, Lockhart L.P., Flemings P.B., Nikolinakou M.A., Heidari M.
17. *2016 AGU Fall meeting*, San Francisco, CA: “Mechanics of fold-and-thrust belt systems based on geomechanical modeling”, Gao B., Flemings P.B., Saffer D.M., Nikolinakou M.A., Heidari M.
18. *2015 AGU Fall meeting*, San Francisco, CA: “Links and Feedbacks between Salt Diapirs, Hydrates, and Submarine Landslides: Example from Cape Fear, offshore North Carolina, U.S.A.”, Sawyer D., Akinci L., Nikolinakou M.A., Heidari M.
19. *2015 AGU Fall meeting*, San Francisco, CA: “Deformation, Stress, and Pore Fluid Pressure in an Evolving Supra-salt Basin: A Finite-element Modeling”, Luo G., Flemings P.B., Hudec M.R., Nikolinakou M.A.
20. *2014 AGU Fall meeting*, San Francisco, CA: “Stress evolution in sediments around a rising salt diapir”, Nikolinakou M.A., Flemings P.B., Hudec M.R.
21. *2012 AGU Fall meeting*, San Francisco, CA: “Salt-sheet advance over poro-elastic sediments: Topography, contact friction, overpressure”, Nikolinakou M.A., Luo G., Flemings P.B., Hudec M.R.
22. *2010 AGU Fall meeting*, San Francisco, CA: “Stresses and Overpressures near salt bodies predicted by coupled geomechanical analyses”, Nikolinakou M.A., Luo G., Flemings P.B., Hudec M.R.