Dario Grana
Professor and Department Head
Wyoming Excellence Chair
Department of Geology and Geophysics, College of Engineering and Physical Sciences
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ACADEMIC POSITION

- Department Head, Department of Geology and Geophysics, University of Wyoming, July 2023 – present.
- Professor, Department of Geology and Geophysics, School of Energy Resources, University of Wyoming, July 2022 – present.
- Wyoming Excellence Chair, Department of Geology and Geophysics, School of Energy Resources, University of Wyoming, April 2021 – present.
- Associate Professor, Department of Geology and Geophysics, School of Energy Resources, University of Wyoming, July 2018 – June 2022.
- Assistant Professor, Department of Geology and Geophysics, School of Energy Resources, University of Wyoming, September 2013 – June 2018.

EDUCATION

- PhD in Geophysics, Stanford University, CA, August 2013
  Dissertation: *Bayesian inversion methods for seismic reservoir characterization and time lapse-studies*. Advisor: Prof. Gary Mavko. Committee members: Prof. Tapan Mukerji, Dr. Jack Dvorkin, Prof. Hamdi Tchelepi, Prof. Louis Durlofsky.
- MS in Geophysics, Stanford University, CA, June 2012
  Dissertation: *Sequential Simulations of Mixed Discrete-Continuous Properties: Sequential Gaussian Mixture Simulation*. Advisor: Prof. Gary Mavko. Committee members: Prof. Tapan Mukerji, Dr. Jack Dvorkin
- MS in Applied Mathematics, University of Milano-Bicocca Italy, December 2006
  Dissertation: *Geometrical modeling of fault surfaces and drainage areas in sedimentary basins*. Advisor: Prof. Alessandro Russo.
- MS in Mathematics, University of Pavia, Italy, September 2005
  Dissertation: *Dynamics of fluids in porous media: mathematical modelling and analytical aspects*. Advisor: Ugo Gianazza.
- BS in Mathematics, University of Pavia, Italy, September 2003
  Dissertation: *Theorem of compactness by compensation*. Advisor: Prof. Ugo Gianazza.

RESEARCH EXPERIENCE

Research topics:

- Bayesian inverse methods;
- geophysical inverse problems;
- stochastic data assimilation;
- geostatistics and spatio-temporal modeling;
- rock physics models;
- carbon dioxide sequestration;
- near-surface geophysics;
- critical zone studies.

TEACHING EXPERIENCE

Academic courses:

- *Instructor*, Spring semester 2021 - 2023 University of Wyoming
  Course: *Quantitative methods for geosciences* (GEOL 2120)
- *Instructor*, Fall semester 2020 - 2023 University of Wyoming
  Course: *Diversity and Inclusion in Geoscience* (GEOL 4140-5140)
- *Instructor*, Fall semester 2018 - 2023 University of Wyoming
  Course: *Mathematical methods for geosciences* (GEOL 4250-5250)
- *Instructor*, Spring semester 2016 - 2023 University of Wyoming
  Course: *Exploration geophysics* (ERS 4010)
- *Instructor*, Fall semester 2015, University of Wyoming
  Course: *Geostatistics* (GEOL 5446)
- *Instructor*, Spring semester 2015 - 2016, University of Wyoming
  Course: *Well log interpretation* (PETE 4320)
- *Instructor*, Fall semester 2014 - 2015, University of Wyoming
  Course: *Calculus I* (MATH 2200)
- *Instructor*, Fall semester 2013 - 2018 University of Wyoming
  Course: *Rock physics and reservoir modeling* (GEOL 5210)

Short courses:

- *Instructor*, 2014 - 2023, EAGE
  Short Course: *Uncertainty quantification and management* (1-day short course)
- *Instructor*, 2017 and 2019, SBGF
  Short Course: *Geostatistical reservoir modeling and uncertainty quantification* (1-day short course)
- *Instructor*, 2014, Hess
  Short Course: *Seismic reservoir characterization* (1-day short course)
- *Instructor*, 2012, Eni Corporate University
  Short Course: *Rock physics and seismic reservoir characterization* (5-day short course for industry; Co-instructor: Dr. Jack Dvorkin)

PUBLICATIONS

Books:

1. **D. Grana**, T. Mukerji, and P. Doyen, 2021, Seismic reservoir modeling: Theory, Examples, and Algorithms, *Wiley*.
2. J. Dvorkin, M. Gutierrez, and **D. Grana**, 2014, Seismic reflections of rock properties, *Cambridge University Press*.

Book chapters:

1. M. Liu, **D. Grana**, and P. Nivlet, 2021, Recurrent neural network for seismic reservoir characterizations, In: *Data Analytics in Energy Resources Exploration*, in press.
2. **D. Grana**, K. Mosegaard, and H. Omre, 2021, Bayesian inversion in geosciences, In: *Encyclopedia of Mathematical Geoscience*, in press.
3. **D. Grana**, and L. Azevedo, 2020, Subsurface geostatistical modeling, In: *Encyclopedia of Geology*, in press.
4. **D. Grana**, 2016, Rock physics modeling in conventional reservoirs, In: New Frontiers in Oil and Gas Exploration, *Springer*, 137-163.

Peer-review journals:

1. S. Anyosa, J. Eidsvik, and **D. Grana**, 2024, Evaluating geophysical monitoring strategies for a CO2 storage project, *Computers & Geosciences*, 105561.
2. B. Flinchum, **D. Grana**, B. Carr, N. Ravichandran, B. Eppinger, and W.S. Holbrook, 2024, Low Vp/Vs ratios as an indicator for fractures in the critical zone, *Geophysical Research Letters*, 51(2), e2023GL105946.
3. R. Feng, K. Mosegaard, **D. Grana**, and T. Mukerji, 2024, Estimation of Reservoir Fracture Properties from Seismic Data Using Markov Chain Monte Carlo Methods, *Mathematical Geosciences*, 1-24.
4. P. Li[+], M. Liu, M. Alfarraj, P. Tahmasebi, and **D. Grana**, 2024, Probabilistic physics informed neural network P-PINN for seismic petrophysical inversion, *Geophysics*, 89(2), M17-M32.
5. N. Ahmed[+], W. Weibull, and **D. Grana**, 2024, Constrained non-linear AVO inversion for dynamic reservoir changes estimation from time-lapse seismic data, *Geophysics*, 89(1), R1-R15.
6. A. Li[+], **D. Grana**, A. Parsekian, and B. Carr, 2023, Uncertainty quantification in tomographic inversion of near-surface seismic refraction data, *Mathematical Geosciences*, 56, 76-101.
7. R. Feng, K. Mosegaard, **D. Grana**, T. Mukerji, and T. Hansen, 2023, Stochastic facies inversion with prior sampling by conditional generative adversarial networks based on training image, *Mathematical Geosciences*, 1-26.
8. T. Alyousuf, Y. Li, R. Krahenbuhl, and **D. Grana**, 2023, Three-axis borehole gravity monitoring for CO2 storage using machine learning coupled to fluid flow simulator, *Geophysical Prospecting*, 1-24.
9. M. Liu[+], J. Narciso, **D. Grana**, E. Van De Vijver, and L. Azevedo, 2023, Frequency-domain electromagnetic induction for the prediction of electrical conductivity and

magnetic susceptibility using geostatistical inversion and randomized tensor decomposition, *Geophysics*, 88(6), E159-E171

10. Q. Guo, C. Luo, and **D. Grana**, 2023, Bayesian linearized rock-physics AVO inversion for petrophysical and pore-geometry parameters in carbonate reservoirs, *Geophysics*, 88(5), MR273-MR287.
11. **D. Grana**, L. de Figueiredo, and K. Mosegaard, 2023, Markov chain Monte Carlo for seismic facies classification, *Geophysics*, 88(3), M131-M143.
12. M. Liu, Divakar Vashisth, **D. Grana**, and T. Mukerji, 2023, Joint inversion of geophysical data for geologic carbon sequestration monitoring: a differentiable physics-informed deep learning model, *Journal of Geophysical Research: Solid Earth*, 128(3), e2022JB025372.
13. Q. Hu[+], K. Innanen, and **D. Grana**, 2023, Feasibility of seismic time-lapse monitoring of CO2 with rock physics parameterized full waveform inversion, *Geophysical International Journal*, 233(1), 402-419.
14. R. Miele[+], L. Azevedo, **D. Grana**, L. Varella, and B. Barreto, 2022, Iterative geostatistical seismic inversion with rock physics constraints for permeability prediction, *Geophysics*, 88(2), M105-M117.
15. N. Ahmed, W. Weibull, and **D. Grana**, 2022, Frequency-dependent AVO inversion applied to physically based models for seismic attenuation, *Geophysical International Journal*, 233(1), 234-252.
16. R. Callahan, C. Riebe, L. Sklar, S. Pasquet, Ken. Ferrier, J. Hahm, N. Taylor, **D. Grana**, B. Flinchum, J. Hayes, and S. Holbrook, 2022, Forest vulnerability to drought controlled by bedrock composition, *Nature Geoscience*, 15, 714–719.
17. **D. Grana**, B. Russell, and T. Mukerji, 2022, Petrophysical inversion based on f-s-r AVO linearization and canonical correlation analysis, *Geophysics*, 87 (6), 87: M247-M258.
18. **D. Grana**, L. Azevedo, L. de Figueiredo, P. Connolly, and T. Mukerji, 2022, Probabilistic inversion of seismic data for reservoir characterization: A review, *Geophysics*, 87 (5), M199-M216.
19. N. Ahmed, W. Weibull, and **D. Grana**, 2022, Constrained non-linear AVO Inversion based on the adjoint-state optimization, *Computers & Geosciences*, 168, 105214.
20. **D. Grana**, A. Parsekian, B. Flinchum, N. Smeltz, R. Callahan, A. Li, J. Hayes, B. Carr, K. Singha, C. Riebe, S. Holbrook, 2022, Geostatistical rock physics inversion for predicting the spatial distribution of porosity and saturation in the critical zone, *Mathematical Geosciences*, 1-31.
21. **D. Grana**, 2022, Bayesian rock physics inversion with Kumaraswamy prior models, *Geophysics*, 87 (3), M87-M97.
22. R. Feng, K. Mosegaard, **D. Grana**, and T. Mukerji, 2022, Application of Bayesian generative adversarial networks to geological facies modeling, Mathematical Geosciences, 54 (518).
23. M. Liu+, **D. Grana**, and T. Mukerji, 2022, Randomized tensor decomposition for large-scale data assimilation problems for carbon dioxide sequestration, Mathematical Geosciences, 1-25.
24. **D. Grana**, L. de Figueiredo, and K. Mosegaard, 2022, Markov chain Monte Carlo for petrophysical inversion, *Geophysics*, 87 (1), M13-M24.

25. M. Liu[+], **D. Grana**, and L. de Figueiredo, 2022, Uncertainty quantification in stochastic inversion with model and data dimension reduction using variational autoencoder, *Geophysics*, 87 (2), M43-M58.
26. K. Li[+], X. Ying, Z. Zong, and **D. Grana**, 2022, Estimation of porosity, fluid bulk modulus, and stiff-pore volume fraction using a multi-trace Bayesian AVO petrophysics inversion in multi-porosity reservoirs, *Geophysics*, 87 (1), M25-M41.
27. **D. Grana**, 2021, Multivariate probabilistic rock physics model using Kumaraswamy distributions, *Geophysics*, 86 (5), 86(5), MR261-MR270.
28. **D. Grana**, and L. de Figueiredo, 2021, SeReMpy: Seismic reservoir modeling python library, *Geophysics*, 86 (6), F61-F69.
29. F. Turco, L. Azevedo, **D. Grana**, A. Gorman, G. Crutchley, 2021, Characterization of gas hydrate systems of the Hikurangi margin (New Zealand) thought geostatistical seismic and petrophysical, *Geophysics*, 86 (6), R825-R838.
30. M. Conjard[+], and **D. Grana**, 2021, Ensemble-based seismic and production data assimilation using selection Kalman model, *Mathematical Geosciences*, 53 (7), 1445-1468.
31. M. Sengupta, H. Zhang, Y. Zhao, M. Jervis, and **D. Grana**, 2021, Direct depth domain Bayesian AVO inversion, *Geophysics*, 86 (5), M167-M176.
32. H. Wang, V. Alvarado, D. Bagdonas, F. McLaughlin, J. Kaszuba, **D. Grana**, E. Campbell, and K. Ng, 2021, Effect of CO2-brine-rock reactions on pore architecture and permeability in dolostone: Implications for CO2 storage and EOR: *International Journal of Greenhouse Gas Control*, 107, 103283.
33. R. Feng, N. Balling, and **D. Grana**, 2021, Imputation of missing well log data by random forest and uncertainty analysis, *Computers & Geosciences*, 152, 104763.
34. M. Loe[+], **D. Grana**, and H. Tjelmeland, 2021, Geophysics-based fluid-facies predictions using ensemble updating of binary state, *Mathematical Geosciences*, 53 (3), 325-347.
35. **D. Grana**, M. Liu[+], and M. Ayani[+], 2021, Prediction of CO_2 saturation spatial distribution using geostatistical inversion of time-lapse geophysical data, *IEEE Transactions on Geoscience and Remote Sensing*, 59 (5), 3846-3856.
36. L. de Figueiredo, T. Schmitz, R. Lunelli, M. Roisenberg, D. Freitas, and **D. Grana**, 2021, Direct Multivariate Simulation - A stepwise conditional transformation for multivariate geostatistical simulation, *Computers & Geosciences*, 147, 104659.
37. A.D. Parsekian, **D. Grana**, F. Neves, M. S. Pleasants, N Y. Smeltz, and T. Kelleners, 2021, Hydro-geophysical comparison of hillslope critical zone architecture for different geologic substrates, *Geophysics*, 86 (3), WB29-WB49.
38. R. Feng, **D. Grana**, N. Balling, and T.M. Hansen, 2021, Bayesian convolutional neural networks for seismic facies classification, *IEEE Transactions on Geoscience and Remote Sensing*, 59 (10), 8933-8940.
39. R. Feng, **D. Grana**, and N. Balling, 2020, Variational inference in Bayesian neural network for well log prediction, *Geophysics*, 86 (3), M91-M99.
40. R. Feng, **D. Grana**, and N. Balling, 2020, Uncertainty quantification in fault detection using convolutional neural networks, *Geophysics*, 86 (3), M41-M48.
41. E. Talarico, W. Leao, and **D. Grana**, 2020, Comparison of recursive neural network and Markov chain models in facies inversion, *Mathematical Geosciences*, 53 (3), 395-413.

42. O. Forberg[+], and **D.Grana**, 2020, Bayesian inversion of time-lapse seismic AVO data for multimodal reservoir properties, *IEEE Transactions on Geoscience and Remote Sensing*, 59 (11), 9104-9119.
43. G. Ghon[+], **D. Grana**, E.C. Rankey, G.T. Baechle, F. Bleibinhaus, X. Lang, L. de Figueiredo, and M.C Poppelreiter, 2020, Bayesian facies inversion on a partially dolomitized isolated carbonate platform. A case study from Central Luconia province, Malaysia. *Geophysics*, 86 (2), 1MA-W19.
44. D.R. Rosa[+], J.M. Santos, R.M. Souza, **D. Grana,** D.J. Schiozer, A. Davolio, and Y. Wang, 2020. Comparing different approaches of time-lapse seismic inversion. *Journal of Geophysics and Engineering*, 17 (6), 929-939.
45. R. Callahan[+], C. Riebe, S. Pasquet, K. Ferrier, **D. Grana**, L. Sklar, N. Taylor, B. Flinchum, J. Hayes, B. Carr, P. Hartsough. A. Green, and S. Holbrook, 2020, Subsurface weathering revealed in hillslope-integrated porosity distributions, *Geophysical Research Letters*, 47 (15).
46. M. Ayani[+], and **D. Grana,** 2020, Statistical rock physics inversion of elastic and electrical properties for CO2 sequestration studies, *Geophysical Journal International*, 223 (1), 707-724.
47. M. Ayani[+], M. Liu[+], and **D. Grana,** 2020, Stochastic inversion method of time-lapse controlled source electromagnetic data for CO2 plume monitoring, *International Journal of Greenhouse Gas Control*, 100, 103098.
48. L. Azevedo, **D. Grana**, and L. de Figueiredo[+], 2020, Stochastic Perturbation Optimization for discrete-continuous inverse problems, *Geophysics*, 85 (5), M73-M83.
49. R. Feng, T. Hansen, **D. Grana**, and N. Balling, 2020, An unsupervised deep-learning method for porosity estimation based on post-stack seismic data, *Geophysics*, 85 (6), M97–M105.
50. M. Liu[+], and **D. Grana**, 2020, Petrophysical characterization of deep saline aquifers for CO2 storage using ensemble smoother and deep convolutional autoencoder, *Advances in Water Resources*, 142, 103634.
51. **D. Grana**, 2020, Bayesian petroelastic inversion with multiple prior models, *Geophysics*, 85 (5), 57–M71.
52. E. Talarico, L. de Figueiredo, and **D. Grana**, 2020, Uncertainty quantification for seismic facies classification, *Geophysics*, 85 (4), M43–M56.
53. N. Claes, G.B. Paige, **D. Grana**, and A.D. Parsekian, 2020, Parameterization of a hydrologic model with geophysical data to simulate observed subsurface return flow paths: *Vadose Zone Journal*, 19 (1).
54. R. Feng, N. Balling, and **D. Grana**, 2020, Lithofacies classification of a geothermal reservoir in Denmark and its facies-dependent porosity estimation from seismic inversion, *Geothermics*, 87, 101854.
55. H. Yu, K. Ng, E. Campbell, V. Alvarado, **D. Grana**, and J. Kaszuba, 2020, A generalized power-law criterion for rocks based on Mohr failure theory, *International Journal of Rock Mechanics and Mining Sciences*, 128, 104274.
56. V. H. Le, A. M. Diaz-Viera, D. Vázquez-Ramírez, R. del Valle-García, A. Erdely, and **D. Grana**, 2020, Bernstein copula-based spatial cosimulation for petrophysical property prediction conditioned to elastic attributes, *Journal of Petroleum Science and Engineering*, 193, 107382.

57. L. de Figueiredo, **D. Grana**, and M. Le Ravalec, 2019, Revisited formulation of FFT-moving average, *Mathematical Geosciences*, 52, 801–816.
58. **D. Grana**, L. Azevedo, and M. Liu[+], 2019, A comparison of deep machine learning and Monte Carlo methods for facies classification from seismic data, *Geophysics*, 85 (4), WA41-WA52.
59. R. Lorenzen, T. Bhakta, **D. Grana**, X. Luo, R. Valestrand, and G. Nevdal, 2019, Simultaneous assimilation of production and seismic data: application to the Norne field, *Computational Geosciences*, 24, 907–920.
60. M. Liu[+], and **D. Grana**, 2019, Time-lapse seismic history matching with iterative ensemble smoother and deep convolutional autoencoder, *Geophysics*, 85 (1), M15-M31.
61. **D. Grana**, L. de Figueiredo, and L. Azevedo, 2019, Uncertainty quantification in Bayesian inverse problems with model and data dimension reduction, *Geophysics*, 84 (6), M15-M24.
62. M. Liu[+], and **D. Grana**, 2019, Accelerating geostatistical seismic inversion using TensorFlow: A heterogeneous distributed deep learning framework, *Computers & Geosciences*, 124, 37-35.
63. X. Lang[+], and **D. Grana**, 2019, Rock physics modeling and inversion for saturation and pressure changes in time-lapse studies, *Geophysical Prospecting*, 67 (7), 1912-1928.
64. L. de Figueiredo[+], **D. Grana**, M. Roisenberg, and B. Rodrigues, 2019, Multimodal McMC method for non-linear petrophysical seismic inversion, *Geophysics*, 84 (5), M1-M13.
65. H. Pan, H. Li, **D. Grana**, Y. Zhang, T. Liu, and C. Cheng, 2019, Quantitative characterization of gas hydrate bearing sediment using elastic-electrical rock physics models, *Marine and Petroleum Geology*, 105, 173-183.
66. H. Yu, K. Ng, **D. Grana**, J. Kaszuba V. Alvarado and E. Campbell, 2019, Experimental investigation of the effect of compliant pores on reservoir rocks under hydrostatic and triaxial compression stress states, *Canadian Geotechnical Journal*, 56 (7), 983-991.
67. L. de Figueiredo[+], **D. Grana**, M. Roisenberg, and B. Rodrigues, 2019, Gaussian Mixture McMC method for linear seismic inversion, *Geophysics*, 49 (4), 493-515.
68. L. Azevedo, **D. Grana**, and C. Amaro, 2019, Geostatistical rock physics AVA inversion, *Geophysical Journal International*, 216 (3), 1728–1739.
69. B. Flinchum[+], S. Holbrook, **D. Grana**, A. Parsekian, B. Carr, J. Hayes, and J. Jiao, 2018, Estimating the water holding capacity of the critical zone using near-surface geophysics, *Hydrological Processes*, 32 (22), 3308-3326.
70. H. Wang[+], V. Alvarado, J. McLaughlin, D. Bagdonas, J. Kaszuba, E. Campbell, and **D. Grana**, 2018, Low-field nuclear magnetic resonance characterization of carbonate and sandstone reservoirs from Rock Spring Uplift of Wyoming, *Journal of Geophysical Research: Solid Earth*, 123.
71. L. de Figueiredo[+], **D. Grana**, F. Bordignon, M. Santos, M. Roisenberg, and B. Rodrigues, 2018, Joint Bayesian inversion based on rock-physics prior modeling for the estimation of spatially correlated reservoir properties, *Geophysics*, 83 (5), M49-M61.

72. X. Lang[+], and **D. Grana**, 2018, Bayesian linearized petrophysical AVO inversion, *Geophysics*, 83 (3), M1-M14.
73. **D. Grana**, 2018, Joint facies and reservoir properties inversion, *Geophysics*, 83 (3), M15-M24.
74. M. Liu[+], and **D. Grana**, 2018, Stochastic nonlinear inversion of seismic data for the estimation of petroelastic properties using the ensemble smoother and data re-parameterization, *Geophysics*, 83 (3), M25-M39.
75. T. Fjeldstad[+], and **D. Grana**, 2018, Joint probabilistic petrophysics-seismic inversion based on Gaussian mixture and Markov chain prior models, *Geophysics*, 83 (1), R31-R42.
76. W. Wu[+], and **D. Grana**, 2017, Integrated petrophysics and rock physics modeling for well log interpretation of elastic, electric, and petrophysical properties, *Journal of Applied Geophysics*, 146, 54-66.
77. **D. Grana**, T. Fjeldstad[+], and H. Omre, 2017, Bayesian Gaussian mixture linear inversion for geophysical inverse problems, *Mathematical Geosciences*, 49 (4), 493–515.
78. **D. Grana**, S. Verma, J. Pafeng[+], X. Lang[+], H. Sharma[+], W. Wu[+], F. McLaughlin, E. Campbell, K. Ng, V. Alvarado, S. Mallick, and J. Kaszuba, 2017, A rock physics and seismic reservoir characterization study of the Rock Springs Uplift, a CO_2 sequestration site in Southwestern Wyoming, *International Journal of Greenhouse Gas Control*, 63, 296-309.
79. L. de Figueiredo[+], **D. Grana**, M. Santos, W. Figueiredo, M. Roisenberg, and G.S. Neto, 2017, Bayesian seismic inversion based on rock-physics prior modeling for the joint estimation of acoustic impedance, porosity and lithofacies, *Journal of Computational Physics*, 336, 128-142.
80. X. Lang[+], and **D. Grana**, 2017, Geostatistical inversion of prestack seismic data for the joint estimation of facies and impedances using stochastic sampling from Gaussian mixture posterior distributions, *Geophysics*, 82 (4), M55-M65.
81. M. Koneshloo, S. Aryana, **D. Grana**, and J. Pierre, 2017, A workflow for static reservoir modeling guided by seismic data in a fluvial system, *Mathematical Geosciences*, 49, 995–1020.
82. **D. Grana**, X. Lang[+], and W. Wu[+], 2017, Statistical facies classification from multiple seismic attributes: comparison between Bayesian classification and Expectation-Maximization method and application in petrophysical inversion, *Geophysical Prospecting*, 65 (2), 544-562.
83. **D. Grana**, 2016, Bayesian linearized rock-physics inversion, *Geophysics*, 81 (6), D625-D641.
84. **D. Grana**, 2016, Pressure–velocity relations in reservoir rocks: Modified MacBeth's equation, *Journal of Applied Geophysics*, 132, 234-241.
85. K. Schlanser[+], **D. Grana**, and E. Campbell-Stone, 2016, Lithofacies classification in the Marcellus Shale by applying a statistical clustering algorithm to petrophysical and elastic well logs inversion, *Interpretation*, 4 (2), SE31-SE49.
86. **D. Grana** and M. Bronston, 2015, Probabilistic formulation of AVO modeling and AVO-attribute-based facies classification using well logs, *Geophysics*, 80 (4), D343-D354.

87. D. V. Lindberg[+], and **D. Grana**, 2015, Petro-elastic log-facies classification using the Expectation–Maximization algorithm and hidden Markov models, *Mathematical Geosciences*, 47 (6), 719-752.
88. **D. Grana** and T. Mukerji, 2015, Bayesian inversion of time-lapse seismic data for the estimation of static reservoir properties and dynamic property changes, *Geophysical Prospecting*, 63 (3), 637- 655.
89. **D. Grana**, 2014, Probabilistic approach to rock physics modeling, *Geophysics*, 79 (4), D123-D143.
90. **D. Grana**, K. Schlanser[+], and E. Campbell-Stone, 2014, Petro-elastic and geomechanical classification of lithologic facies in the Marcellus shale, *Interpretation*, 3 (1), SA51-SA63.
91. **D. Grana**, E. Paparozzi, S. Mancini and C. Tarchiani, 2013, Seismic driven probabilistic classification of reservoir facies for static reservoir modelling: a case history in the Barents Sea, *Geophysical Prospecting*, 61 (3), 613-629.
92. **D. Grana**, T. Mukerji, J. Dvorkin, and G. Mavko, 2012, Stochastic inversion of facies from seismic data based on sequential simulations and probability perturbation method, *Geophysics*, 77 (4), M53-M72.
93. **D. Grana**, T. Mukerji, L. Dovera, and E. Della Rossa, 2012, Sequential Simulations of Mixed Discrete-Continuous Properties: Sequential Gaussian mixture Simulation, *Geostatistics Oslo 2012, Quantitative Geology and Geostatistics*, Volume 17, 239-250.
94. **D. Grana**, M. Pirrone, and T. Mukerji, 2012, Quantitative log interpretation and uncertainty propagation of petrophysical properties and facies classification from rock physics modeling and formation evaluation analysis, *Geophysics*, 77 (3), WA45–WA63.
95. **D. Grana**, J. Dvorkin, and P. Cibin, 2011, Factor analysis prediction of effective stress from measurable rock attributes and calibration data, *First Break*, 29 (7), 63-72.
96. **D. Grana**, and E. Della Rossa, 2010, Probabilistic petrophysical-properties estimation integrating statistical rock physics with seismic inversion, *Geophysics*, 75 (3), O21-O37.

(*) R. Feng, K. Mosegaard, T. Mukerji, and **D. Grana**, 2023, Markov chain Monte Carlo methods for estimating reservoir fracture properties from seismic data, *Mathematical Geosciences*, under review.

(*) **D. Grana**, M. Liu, and L. de Figueiredo, 2023, Geostatistical Petrophysical Inversion, *Geophysics*, under review.

(*) M. Liu, **D. Grana**, and T. Mukerji, 2023, Probabilistic subsurface characterization using Stein variational gradient descent with autoencoder neural network: An application to geologic carbon sequestration, *Journal of Geophysical Research, Solid Earth*, submitted.

(*) L. Queiroz, and **D. Grana**, 2024, Bayesian rock physics inversion for rock and fluid properties and pore aspect ratio in carbonate reservoirs, *Geophysics*, submitted.

(*) P. Li, and **D. Grana**, 2024, Bayesian neural network and Bayesian physics-informed neural network via variational inference for seismic petrophysical inversion, *Geophysics*, submitted.

(*) H. Gryvill, **D. Grana**, and H. Tjelmeland, 2024, Bayesian ensemble Kalman filter for Gaussian mixture models, *Mathematical Geosciences*, submitted.

(*) Y. Gao, M. Tan, and **D. Grana**, 2024, Attention mechanism assisted well log inversion for lithology identification, *Geophysical Prospecting*, submitted.

(*) R. Feng, **D. Grana**, and K. Mosegaard, 2024, Learning generative models for geostatistical facies simulation based on a training image, *Mathematical Geosciences*, submitted.

(*) manuscripts submitted, under review, or in revision

$^{+}$ indicates graduate students and postdocs

Professional journals:

1. **D. Grana**, and C. Daly, 2017, Petroleum geostatistics: *Mathematical Geosciences*, 49 (4), 439-440.
2. **D. Grana**, J. Kaszuba, V. Alvarado, S. Verma, M. Prasad, and M. Wheeler, 2017, Introduction to special section: Multidisciplinary studies for geologic and geophysical characterization of CO_2storage reservoirs: *Interpretation*, 5 (4), SSi-SSii
3. **D. Grana**, L. Stright, P. Connolly, M. Gutierrez, E. Gonzalez, J. M. Florez, A. Amato del Monte, and W. Trainor-Guitton, 2016, Introduction to special section: Seismic facies classification and modeling: *Interpretation*, 4 (3), SSi-SSii
4. H. Bui, T. Klopf, H. Zeng, R. Wiener, **D. Grana**, and R. Johnston, 2016, Introduction to special section: Unconventional exploration and production: *Interpretation*, 4 (2), SEi-SEii.
5. **D. Grana**, and J. Dvorkin, 2011, The link between seismic inversion, rock physics, and geostatistical simulations in seismic reservoir characterization studies, *The Leading Edge*, 30 (1), 54-61.

Refereed Proceedings/Transactions:

1. B. Flinchum, **D. Grana**, B. Carr, N. Ravichandran, B. Eppinger, and W.S. Holbrook, Exploring the critical zone with P-wave and S-wave velocities: Insights from Vp/Vs ratios, *AGU Fall Meeting 2023.*
2. E. Oladeji, A. Parsekian, and **D. Grana**, Machine learning facies discrimination from noisy geophysical data, *AGU Fall Meeting 2023.*
3. A. Li, A. Parsekian, **D. Grana**, and B. Carr, Uncertainty analysis of predicted model from tomographic inversion of near-surface seismic refraction and electrical data, *AGU Fall Meeting 2023.*
4. C. Kitamikado, C. Riebe, **D. Grana**, B. Carr, and W.S. Holbrook, Linking geochemistry and geophysics to quantify controls on subsurface weathering in heterogeneous bedrock, *AGU Fall Meeting 2023.*
5. B. Flinchum, S. Holbrook, **D. Grana**, B. Carr, and R. Callahan^{+}, Characterizing Deep CZ structure and saturation in the Piedmont using P-wave and S-wave seismic refraction, *AGU Fall Meeting 2022.*
6. E. Oladeji, A. Parsekian, and **D. Grana**, 2022, Challenges in machine learning based hydrogeophysical facies classification, *AGU Fall Meeting 2022.*

7. **D. Grana**, and A. Parsekian, 2022, Geostatistical inversion for rock physics properties in the critical zone, *GeoENV 2022.*
8. Q. Hu, K. Innanen, and **D. Grana**, 2022, Predicting the time-evolution of CO2 saturation through a combination of rock physics and full waveform inversion, *SEG Expanded Abstract,* 42.
9. S. Holbrook, S. Bemis, R. Callahan[+], B. Carr, B. Flinchum, **D. Grana**, C. Harman, J. Hayes, S. Moon, A. Neely, A. Noren, C. Riebe, H. Rajaram, D. Richter, and K Singha, 2021, Controls on critical zone thickness in the Appalachian Piedmont: lithology, vegetation, and state of stress, *AGU Fall Meeting 2021*.
10. R. Callahan[+], **D. Grana**, S. Holbrook, B. Flinchum, B. Carr, J. Hayes, K. Ferrier, L. Sklar, ane C. Riebe, 2021, Interpreting critical zone properties from near-surface geophysics and rock physics modeling: Progress, challenges, and prospects, *AGU Fall Meeting 2021*.
11. **D. Grana**, and M. Liu[+], 2021, Uncertainty quantification in geophysical inverse problems using McMC and Ensemble based methods. *SIAM Geoscience 2021*.
12. **D. Grana**, A. Parsekian, N.Y. Smeltz[+], and M. Ayani[+], 2021, Bayesian time-lapse inversion of geophysical data for water saturation changes during snowpack melting in mountain watersheds. *GeoENV 2020.*
13. A. Parsekian, **D. Grana**, F. Neves, M.S. Pleasants, M.S. Seyfried, B.G. Moravec, J. Chorover, A. Moraes, N.Y. Smeltz, J.H. Westenhoff, and T. Kelleners, 2020, Hillslope scale comparative hydrogeophysical classification of the near surface using electrical resistivity and seismic. *AGU Fall Meeting 2020.*
14. M. Liu[+], and **D. Grana**, 2020, Randomized tensor decomposition for large-scale data assimilation problems. *AGU Fall Meeting 2020*
15. L. Azevedo, and **D. Grana**, 2020, Stochastic inversion with joint optimization of discrete and continuous petrophysical properties, *EAGE Expanded Abstract.*
16. F. Turco, A. Gorman, G. Crutchley, L. Azevedo, **D. Grana**, and I. Pecher, 2020, Methane hydrate saturations at the Southern Hikurangi margin (New Zealand) estimated from seismic and rock physics inversion, *EGU General Assembly Conference*
17. N. Smeltz, M Ayani[+], A. Parsekian, D. Grana, and T. Kelleners, 2019, Joint rock physics inversion of time-lapse ERT and seismic refraction to map porosity and track changes in water saturation on a mountain hillslope, *AGU Fall Meeting 2019.*
18. L Azevedo, D Grana. Fjeldstad[+], **D. Grana**, H. Omre, 2019, Joint Bayesian spatial inversion of lithology/fluid classes, petrophysical properties and elastic attributes, *EAGE Petroleum Geostatistics.*
19. E. Talarico, W. Leao, and **D. Grana**, 2019, Comparison of recursive neural network and Markov chain models in facies inversion, *EAGE Petroleum Geostatistics*.
20. L. de Figueiredo, **D. Grana**, M. Roisenberg, and B. Rodrigues, Markov chain Monte Carlo for high-dimensional mixture distributions, *EAGE Petroleum Geostatistics*.
21. **D. Grana**, 2019, Joint Inversion of facies and reservoir properties, *EAGE Expanded Abstract.*

22. X. Lang[+], and **D. Grana**, 2018, Bayesian pressure-saturation inversion of time-lapse seismic data, *SEG Expanded Abstract*, 38.
23. M. Liu[+], and **D. Grana**, 2018, Ensemble-based joint inversion of PP and PS seismic data using full Zoeppritz equations, *SEG Expanded Abstract*, 38.
24. M. Liu[+], and **D. Grana**, 2018, Ensemble-based seismic history matching with data reparameterization using convolutional autoencoder, *SEG Expanded Abstract,* 38.
25. L. de Figueiredo[+], F. Bordignon, **D. Grana**, M. Roisenberg, and B. Rodrigues, 2018, Impact of seismic-inversion parameters on reservoir pore volume and connectivity, *SEG Expanded Abstract*, 38.
26. R. Lorentzen, T. Bhakta, **D. Grana**, X. Luo, R. Valestrand, and G. Nævdal, 2018, History matching of real production and seismic data in the Norne Field, *European Conference on the Mathematics of Oil Recovery*.
27. **D. Grana**, 2017, Stochastic inversion of seismic data for reservoir characterization: a rapidly developing emerging technology, *SEG Expanded Abstract,* 37.
28. X. Lang[+], and **D. Grana**, 2017, Bayesian petrophysics inversion of seismic data based on linearized seismic and rock physics modeling, *SEG Expanded Abstract,* 37.
29. M. Liu[+], and **D. Grana**, 2017, Stochastic seismic and petrophysical inversion using an ensemble-based method and data re-parameterization, *SEG Expanded Abstract*, 37.
30. **D. Grana**, 2016, Estimation and re-parameterization of pressure and saturation changes from time-lapse seismic data, *AAPG/SEG International Conference Abstract.*
31. X. Lang[+], and **D. Grana**, 2017, Geostatistical inversion of prestack seismic data for the joint estimation of facies and impedances using stochastic sampling from Gaussian mixture posterior distributions, *SEG Expanded Abstract,* 36.
32. **D. Grana**, S. Verma and R. Podgorney, 2015, Rock physics modeling for the potential FORGE site on the Eastern Snake River Plain, Idaho, *Stanford Geothermal Workshop Expanded Abstract.*
33. **D. Grana**, T. Fjeldstad[+], and H. Omre, 2015, Bayesian Gaussian Mixture Linear Inversion in Geophysical Inverse Problems modeling, *EAGE Petroleum Geostatstics Expanded Abstract.*
34. X. Lang[+], and **D. Grana**, 2015, Bayesian rock physics inversion of acoustic and electrical properties for rock and fluid property estimation, *SEG Expanded Abstract*, 35.
35. W. Wu[+], **D. Grana**, E. Campbell-Stone and F. McLaughlin, 2015, Bayesian facies classification in a CO_2 sequestration study using statistical rock physics modeling of elastic and electrical properties, *SEG Expanded Abstract*, 35.
36. B. A. Flinchum[+], S.W. Holbrook, **D. Grana**, and A. Parsekian, 2015, Bayesian Gaussian Mixture Linear Inversion in Geophysical Inverse Problems modeling, *AGU Fall Meeting Abstract.*
37. K. Schlanser[+], **D. Grana**, and E. Campbell-Stone, 2014, Petro-elastic facies classification in the Marcellus Shale by applying expectation maximization to measured well logs, *SEG Expanded Abstract*, 34, 659-663.

38. J. Pafeng[+], **D. Grana**, and S. Mallick, 2014, Joint rock physics inversion of elastic and electric attributes for rock and fluid properties – A real data example logs, *SEG Expanded Abstract*, 34, 2616-2620.
39. B. A. Flinchum[+], S.W. Holbrook, **D. Grana**, J. T. St. Clair[+], and B. Carr, 2014, A combined near-surface geophysical approach to delineate hydrostratigraphic boundaries in a fractured aquifer in the Laramie Range, Wyoming, *AGU Fall Meeting Abstract.*
40. **D. Grana**, 2014, Uncertainty quantification in rock physics modeling, *EAGE Expanded Abstracts.*
41. **D. Grana,** and T. Mukerji T., 2013, Joint estimation of rock properties and dynamic property changes from time-lapse seismic data, *SEG Expanded Abstracts*, 33, 4986-4990.
42. **D. Grana,** and T. Mukerji T., 2012, Sequential Bayesian Gaussian mixture linear inversion of seismic data for elastic and reservoir properties estimation, *SEG Expanded Abstracts*, 32, 1-5.
43. **D. Grana**, T. Mukerji, J. Dvorkin, 2011, Single loop inversion of facies from seismic data using sequential simulations and probability perturbation method, *SEG Expanded Abstracts*, 30, 1769-1773.
44. **D. Grana**, A. Amato del Monte, and J. Dvorkin, 2010, A probabilistic approach to 3D joint estimation of reservoir properties based on Gaussian Mixture models, *SEG Expanded Abstracts*, 29, 2351-2355.
45. F. Roncarolo, and **D. Grana**, 2010, Improved reservoir characterization integrating seismic inversion, rock physics models, and petroelastic log facies classification: a real case application, *SPE Annual Technical Conference and Exhibition*, Florence, SPE-134919.
46. **D. Grana**, and D'Agosto C., 2010, Volcanic rock estimation and uncertainty evaluation from surface and crosswell seismic data, *EAGE Expanded Abstract*.
47. **D. Grana**, P. Cibin, and J. Dvorkin, 2010, Pore pressure prediction from seismic attributes based on factor analysis, *EAGE Expanded Abstract*.

PRESENTATIONS

Keynote talks:

1. 2021, Bayesian learning and rock physics relations: how to predict reservoir properties from geophysical data, *SEG Workshop on Advances in Seismic Characterization* (online).
2. 2021, Seismic reservoir modeling: how to integrate geophysical data, rock physics models, and statistical methods, *Second SEG Workshop on Seismic Interpretation* (online).
3. 2020, Reservoir models, geophysical data, and Bayesian methods: An integrated approach to subsurface characterization and monitoring, *First EAGE Conference on Seismic Inversion*, Porto, Portugal (online).
4. 2017, Rocks, fluids, and Bayes' rule: how to quantitatively characterize the subsurface, *International congress of the Brazilian Geophysical Society*, Rio de Janeiro, Brazil.

5. 2016, Bayesian inversion of seismic and electromagnetic data for rock and fluid property prediction in shallow aquifers, *GeoEnv Conference*, Lisbon, Portugal.

Invited talks:

1. 2023, Seismic reservoir modeling and subsurface characterization in MATLAB, MathWorks Energy Symposium, Houston, Texas.
2. 2022, Critical zone, rock physics, and stochastic inversion: where data science can help? *Rock Physics and Geofluid Detection,* Hohai University, China (online).
3. 2022, Bayesian learning methods for seismic reservoir modeling, *International Cloud Class on Frontier Energy Science & Technology,* Beijing, China (online).
4. 2022, Geophysical data, rock physics, and geostatistics: how to quantitatively image a sustainable subsurface, *Department of Geology, San Diego State University,* San Diego, California.
5. 2022, Geophysical data, rock physics, and geostatistics: how to quantitatively image a sustainable subsurface, *Department of Geophysics, Colorado School of Mines*, Golden, Colorado.
6. 2021, Mentoring programs for students and faculty: a key component of DEI action plans, *GSA Connects,* Portland, Oregon (online).
7. 2021, Seismic data, rock physics, and geostatistics: how to quantitatively image a sustainable subsurface, *Department of Earth and Planetary Sciences, University of California Santa Cruz,* Santa Cruz, California (online).
8. 2021, Characterization and monitoring of CO_2 storage using rock physics models, geophysical data, and inverse methods, *Rock physics workshop,* Dongying, China, (online).
9. 2021, Seismic reservoir modeling python library, *SPE virtual workshop: Open subsurface*, Richardson, Texas (online).
10. 2021, Uncertainty quantification in geophysical inverse problems using McMC and Ensemble based methods, *SIAM Geoscience,* Milan, Italy (online).
11. 2021, Geophysical monitoring of CO_2 sequestration in deep saline aquifers, *KAUST*, Saudi Arabia (online).
12. 2020, Geophysical monitoring of CO_2 sequestration in deep saline aquifers, *Department of Chemical Engineering, University of Southern California*, Los Angeles, California (online).
13. 2020, Geophysical monitoring of CO_2 sequestration in deep saline aquifers, *Workshop on ensemble-based 4D seismic history matching*, Bergen, Norway (online).
14. 2019, Predicting, sampling or optimizing the spatial distribution of petrophysical properties from seismic data, *International congress of the Brazilian Geophysical Society*, Rio de Janeiro, Brazil.
15. 2019, Predicting, sampling or optimizing the spatial distribution of petrophysical properties from seismic data, *Department of Geosciences, University of Lausanne*, Lausanne, Switzerland.
16. 2018, Bayesian inversion of seismic, electromagnetic, and production data for rock and fluid property prediction, *Gussow conference*, Lake Louise, Canada.

17. 2018, Bayesian inversion of seismic, electromagnetic, and production data for rock and fluid property prediction, *Department of Geophysics, Stanford University,* Stanford, California.
18. 2018, Statistical methods for geophysical inversion and data assimilation problems with applications to CO_2 sequestration and near surface geophysics, *Department of Civil and Environmental Engineering, Princeton University,* Princeton, New Jersey.
19. 2017, Rocks, fluids, and Bayes' rule: how to quantitatively characterize the subsurface, *Department of Petroleum and Geosystems Engineering, University of Texas,* Austin, Texas.
20. 2017, Rocks, fluids, and Bayes' rule: how to quantitatively characterize the subsurface, *Department of Geophysics, Colorado School of Mines,* Golden, Colorado.
21. 2016, Bayesian inversion methods for seismic reservoir characterization, *Department of Civil Engineering, Istituto Superior Tecnico,* Lisbon, Portugal.
22. 2016, Bayesian inversion methods for time-lapse seismic reservoir characterization and monitoring, *Improved Oil Recovery Conference,* Stavanger, Norway.
23. 2015, Seismic history matching combining ensemble Kalman filter and model order reduction techniques, *SIAM Conference on Mathematical and Computational issues in the Geosciences,* Stanford, CA.
24. 2015, Bayesian inversion methods for seismic reservoir characterization, *Department of Geosciences, INRS ETE,* Quebec City, Canada.
25. 2014, Geostatistics-based Decision-making in reservoir engineering, *EAGE Conference Integrated Reservoir Modeling,* Dubai, UAE.
26. 2014, Bayesian inversion methods for seismic reservoir characterization and time-lapse studies, *Department of Geophysics, University of Pisa,* Pisa, Italy.
27. 2013, Bayesian inversion methods for seismic reservoir characterization and time-lapse studies, *Eni Exploration and Production,* Milan, Italy.
28. 2013, Bayesian inversion methods for seismic reservoir characterization and time-lapse studies, *Department of Geology and Geophysics, University of Wyoming,* Laramie, Wyoming.
29. 2013, Bayesian inversion methods for seismic reservoir characterization and time-lapse studies, *Department of Geophysics, University of Stavanger,* Stavanger, Norway.
30. 2013, Bayesian inversion methods for seismic reservoir characterization and time-lapse studies, *Department of Petroleum Engineering, NTNU,* Trondheim, Norway.
31. 2013, Bayesian inversion methods for seismic reservoir characterization and time-lapse studies, *Department of Petroleum Engineering, University of Texas,* Austin, Texas
32. 2013, Bayesian inversion methods for seismic reservoir characterization and time-lapse studies, *Department of Geophysics, Ohio State University,* Columbus, Ohio.
33. 2013, Bayesian inversion methods for seismic reservoir characterization and time-lapse studies, *Department of Geophysics, New Mexico Tech,* Socorro, New Mexico.
34. 2012, Bayesian inversion methods for seismic reservoir characterization and time-lapse studies, *EAGE Conference Integrated Reservoir Modeling,* Dubai, UAE.

HONORS AND AWARDS

- Presidential Faculty Fellow, 2023.
- SEG Outstanding Educator Award, 2022.
- Wyoming Excellence Chair, 2021.
- Academic Affairs Faculty Fellow, 2020.
- Best Paper Award in Hydrological Processes (Flinchum et al.), 2019.
- IARP Rock Physics Influencer Award, 2018.
- EAGE A. van Weelden Award, 2017
- SEG J. Clarence Karcher Award, 2016.
- Best Paper Award in Mathematical Geosciences (Lindberg and Grana), 2015.
- Nielson Energy Fellow, 2016.
- Anadarko Fellowship for Excellence in Energy, 2015.
- Eni Award 2014 - New Frontiers of Hydrocarbon, Upstream Section (Mukerji T., Mavko G., Dvorkin J., and Grana D.) for "pioneering innovations in theoretical and practical rock physics for seismic reservoir characterization", 2014.
- SPE New Faculty Research Grant, 2014.
- Stanford Centennial Teaching Award (Geophysics), 2013.
- EAGE Gustavo Sclocchi Award, Best PhD thesis in Geophysics, 2013.

ACADEMIC COMMITTES

- Leadership Committee, College of Engineering and Physical Sciences, University of Wyoming, 2023 – present.
- Reappointment, Tenure, and Promotion Committee (Chair), College of Engineering and Physical Sciences, University of Wyoming, 2022 – present.
- UW 2-13 Reorganization Committee, Academic Affairs, 2021.
- Covid-19 Task Force, Academic Affairs, 2021.
- Faculty search, School of Energy Resources, 2021.
- Diversity, Equity, and Inclusion Committee (Chair), Department of Geology and Geophysics University of Wyoming, 2020 - present.
- Assessment Coordinator, School of Energy Resources, University of Wyoming, 2020 – present.
- Scholarship Committee, College of Arts and Sciences, University of Wyoming, 2020 - present.
- Student Interaction Committee (Chair), University of Wyoming, 2020 - present.
- Advisory Committee, Department of Geology and Geophysics, University of Wyoming, 2018 - present.
- Graduate Admission Committee (Chair), Department of Geology and Geophysics, University of Wyoming, 2017 – 2018.
- Graduate Admission Committee, Department of Geology and Geophysics, University of Wyoming, 2014 – 2018.
- Faculty Search Committee, School of Energy Resources, University of Wyoming, 2016, 2017, and 2018.

- Curriculum Committee, School of Energy Resources, University of Wyoming, 2018 - present.

CONFERENCE COMMITTES

- EAGE Seismic inversion - Naples, Italy, October 2024.
- GeoEnv Conference - Chania, Greece, June 2024.
- EAGE Geostatistics - Porto, Portugal, September 2023.
- GeoEnv Conference - Parma, Italy, July 2022.
- International Congress of Geostatistics - Toronto, Canada, August 2021.
- EAGE Geostatistics - Florence, Italy, September 2019 (chair).
- SEG New advances in quantitative seismic reservoir characterization - Manama, Bahrain, March 2018.
- IAMG Meeting – Perth, Australia, September 2017.
- International Congress of Geostatistics - Valencia, Spain, September 2016.
- EAGE Geostatistics - Biarritz, France, September 2015.

DIVERSITY, EQUITY, AND INCLUSION

- Participant in the program "Leading with a Diversity, Equity and Inclusion mindset: A bootcamp for Department Chairs", 2022.
- Participant in the program "URGE: Unlearning Racism in Geosciences", 2021.
- Promoter of the mentoring program for students and faculty, University of Wyoming, 2021 - present.
- Promoter of the department climate survey, Department of Geology and Geophysics University of Wyoming, 2021.
- Promoter of the online teaching program for University of Ghana, 2021 - present.
- Instructor of the class "DIG: Diversity and Inclusion in Geoscience", University of Wyoming, 2020 - present.
- Chair of the DEI Committee, Department of Geology and Geophysics University of Wyoming, 2020 - present.

FUNDING

- 2023-2025 | Bayesian and geostatistical inversion (sole PI), ENI, $ 210,000.00.
- 2022-2024 | Assessment of water storage capacity in mountain watersheds using data science and geophysical data (PI, co-PI: Dr. Romain Brossier, Universite de Grenoble), FACE Foundation, Thomas Jefferson Fund, $ 20,000.00.
- 2020-2025 | Collaborative Research: Network Cluster: Bedrock controls on the deep critical zone, landscapes, and ecosystems (coPI, PI: Dr. Steve Holbrook, Virginia Tech), National Science Foundation (NSF), $ 1,633,540.00.

- 2020-2023 | MRI: Acquisition of a high pressure and temperature true triaxial testing equipment with a multiphase flow system (coPI, PI: Dr. Kam Ng), National Science Foundation (NSF), $ 794,593.00.
- 2021-2023 | Improved forecasting of water content spatial distribution and aquifer potential assessment using geostatistical and hydro-geophysical methods (PI), Water Research Program (WRP), $ 98,185.00.
- 2020-2025 | Bayesian Learning Consortium (sole PI), BP, $ 250,000.00.
- 2019-2020 | Probabilistic methods for uncertainty quantification in subsurface modeling of natural resources (coPI, PI: Dr. Hakima Bessaih), A&S Interdisciplinary Seed Grants, University of Wyoming, $ 25,000.00.
- 2018-2020 | New methods for seismic reservoir characterization (sole PI), School of Energy Resources, University of Wyoming, $ 250,000.00.
- 2015 | Uncertainty quantification in history matching of reservoir models using production and geophysical data (sole PI), Anadarko, $ 15,000.00.
- 2015 | Pore pressure prediction while drilling (coPI, PI: Dr. Jack Dvorkin, Stanford University), ENI (subcontract from Stanford University), $ 150,000.00.
- 2014-2017 | Seismic-dynamic sequential Bayesian updating of reservoir models using production and time-lapse seismic data (sole PI), Society of Petroleum Engineers (SPE), $ 100,000.00.
- 2014-2017 | Integrated characterization of CO2 storage reservoirs on the Rock Springs Uplift combining geomechanics, geochemistry, and flow modeling (coPI, PI: Dr. John Kaszuba), Department of Energy (DOE), $ 1,091,187.00.
- 2013-2015 | Implementation of strategic areas of concentration for the School of Energy Resources (sole PI), School of Energy Resources, University of Wyoming, $ 250,334.00.

PROFESSIONAL ACTIVITIES

- Advisory board, Centre for Geophysical Forecasting, NTNU, Norway, 2021 – present
- Advisory board, COSMOS, Sintef, Norway, 2021 – present
- Editor-in-chief of Computers & Geosciences, 2018 – present
- Editorial Board member of Mathematical Geosciences, 2018 – present
- Associate Editor of Geophysics, 2013 – 2019
- Associate Editor of Computers & Geosciences, 2017 – 2018
- Assistant Editor Special Issue of Mathematical Geosciences, 2016
- Faculty Advisor, 2014 - present: IAMG student chapter.
- Faculty Advisor, 2015 - 2018: AAPG student chapter.

PROFESSIONAL AFFILIATIONS

- Member of American Geophysical Union (AGU)
- Member of International Association of Mathematical Geology (IAMG)

- Member of Society for Industrial and Applied Mathematics (SIAM)
- Member of Society of Exploration Geophysicists (SEG)
- Member of European Association of Geoscientists and Engineers (EAGE)
- Member of Geological Society of America (GSA)

STUDENTS AND POSTDOCS

- Aditya Srivastava, PhD in Geophysics, 2024-present
- Asa Michalka, MS in Geophysics, 2024-present
- Jorlivan Correa, PhD in Geophysics, 2022-present
- Christina Kitamikado, MS in Geophysics, 2021-present
- Allie Wolverton, MS in Geophysics, 2021-present
- Matheus Faria, MS in Geophysics, 2021-2023
- Ang Li, PhD in Geophysics, 2020-present
- Peng Li, PhD in Geophysics, 2020-2024
- Mingliang Liu, PhD in Geophysics, 2016-2020
- Mohit Ayani, PhD in Geophysics, 2015-2020
- Xiaozheng Lang, PhD in Geophysics, 2014-2019
- Wenting Wu, MS in Petroleum Engineering, 2014-2017
- Haris Khan, MS in Petroleum Engineering, 2014-2016
- Kristen Schlanser, MS in Geophysics, 2013-2015
- Dr. Leandro de Figueiredo, Postdoc in Geophysics, 2018-2019
- Dr. Sumit Verma, Postdoc in Geophysics, 2015-2016
- Dr. Ankur Roy, Postdoc in Geophysics, 2015-2016
- Dr. Xu Liu, Postdoc in Geophysics, 2014-2015

Updated: March 2024