Curriculum Vitae

Farhad Sobouti

Associate Professor of Geophysics

Department of Earth Sciences
Institute for Advanced Studies in Basic Sciences (IASBS)
PO Box: 45195-1159
Zanjan, Iran
Tel: +98-24-3315-3814
Email: farhads at iasbs.ac.ir

Birth: October 8, 1965, Shiraz, Iran

Education

B.Sc., Shiraz University, Iran, 1989
M.Sc., McGill University, Montreal, Canada, 1994
Ph.D., McGill University, Montreal, Canada, 2000

Courses taught

Fluid mechanics, Tectonophysics, Geodynamics, Theory of elastic wave propagation, Gravity and geomagnetism, Geo-electrics and EM methods, Seismic exploration methods, Time series analysis and digital filters, Introductory Geology, Numerical Methods, Mathematics for Geophysicists All of the courses I have taught have been at the graduate level.

I have supervised about 26 MSc and 8 PhD theses in the last 15 years. Most of them have been related to various topics in seismology, and some related to the application of gravity and geomagnetic data in geological problems at local, as well as regional scales. I also have supervised these on numerical modeling of mantle and lithospheric deformation fields.

Professional memberships

Member of the National Geophysical Society of Iran
Member of the American Geophysical Union

Administrative positions

Chair, Department of Earth Sciences, IASBS (2008 – 2016)
Head, Computer Center, IASBS (2003 – 2005)
I have been involved and responsible for the establishment of the M.Sc. and Ph.D. programs in Geophysics at IASBS.

Research interest

My main field of research in recent years has been focused on seismic studies of crustal and upper mantle structure in the Iranian plateau. In collaboration with my colleagues at IASBS we have set up and operated five temporary seismic networks in western and southeastern Iran consisting of medium and broadband seismometers. These networks cover the Talesh and western Alborz Mountains, the western Zagros collision zone and the Makran subduction zone in the southeast. We have employed receiver functions, surface wave measurements and tomography techniques to obtain seismic images from the crust and mantle in Iran. We have used core-refracted and crustal shear phases to calculate shear wave splitting parameters to study crustal and subcrustal seismic anisotropy in western and southeast Iran.

I am also interested in numerical modeling of the deformation of the lithospheric and mantle. My interest in this field is focused on the role of rheology in shaping the structure of mantle flow and deformation in the collisional and subduction zones.

Publications

Ranjbar, M., F. Sobouti, and F. Yaminifard, (2025). Upper Crustal Anisotropy in the Southeastern Termination of the Zagros Mountains and Qeshm Island, *Geophysical Journal International*, accepted for publication.

Mokhtarzadeh, R., F. Sobouti, and K. Priestley, (2025). Imaging the seismic structure of the western Makran Subduction Zone, *Geophysical Journal International,* doi.10.1093/gji/ggaf196.

Mehrdar, A., K. Motaghi, A. Ghods, F. Sobouti, K. Priestley, S. Pachhai, E. Shabanian, Z. Zarunizadeh, R. Zeynaddini-Meymand, and I. El-Hussain, (2025). Crustal and uppermost mantle structure of the Iranian Makran subduction zone from ambient noise and earthquake surface wave tomography, *Geophysical Journal International*, 240, 70 85, doi.org/10.1093/gji/ggae419.

Gomar, F., J. Ruh, M. Najafi, and F. Sobouti, (2024). Importance of basement faulting and salt decoupling for the structural evolution of the Fars Arc (Zagros fold-and-thrust belt): a numerical modeling approach, *Solid Earth,* **15**, 1479-1507, doi.org/10.5194/se-15-1479-2024.

Akbarzadeh Aghdam, M., A. Ghods, A., F. Sobouti, K. Motaghi, K. Priestley, and M. Enayat, (2024). Seismicity around the boundary between eastern and western Makran, *Journal of Asian Earth Sciences*, 259, 105926, doi.org/10.1016/j.jseaes.2023.105926.

Sadeghi Bagherabadi, A., L. Margheriti, A. Aoudia, P. Baccheschi, F.P. Lucente, and F.Sobouti, (2023). Anisotropic gradients in Iran: Quasi-Love waves illuminate the deep structure and deformation style of the Zagros, Alborz, and Kopet Dagh, *Journal of Geodynamics* **157**, 101989, doi.org/10.1016/j.jog.2023.101989.

Irandoust, M. A., K. Priestley, and F. Sobouti, (2022). High-Resolution Lithospheric Structure of the Zagros Collision Zone and Iranian Plateau, *Journal of Geophysical Research: Solid Earth,* **127**, e2022JB025009, doi.org/10.1029/2022JB025009.

Irandoust, M., K. Priestley, and F. Sobouti, (2022). A Seismic investigation of the upper crustal structure of the Iranian plateau, *Iranian Journal of Geophysics*, Vol 15 No 4, 115 – 126, DOI: 10.30499/IJG.2021.296842.1347.

Wang, X., L. Chen, M. Talebian, A. Yinshuang, M. Jiang, H. Yao, Y. He, A. Ghods, F. Sobouti, B. Wan, Y. Chu, G. Hou, Q. Chen, S. Chung, W. Xiao, F. Wu, and R. Zhu, (2022). Shallow Crustal Response to Arabia-Eurasia Convergence in Northwestern Iran: Constraints From Multifrequency P-Wave Receiver Functions, *Journal of Geophysical Research: Solid Earth,* **127**, e2022JB024515, doi.org/10.1029/2022JB024515.

Priestley, K., F. Sobouti, R. Mokhtarzadeh, M. Ahmadzadeh, A. Ghods, K. Motaghi, and T. Ho, (2022). New Constraints for the On-Shore Makran Subduction Zone Crustal Structure, *Journal of Geophysical Research: Solid Earth,* **127**, e2021JB022942, doi.org/10.1029/2021JB022942.

Veisi, M., F. Sobouti, S. Chevrot, M. Abbassi, and S. Shabanian, (2021). Upper mantle structure under the Zagros collision zone; insights from 3D teleseismic P-wave tomography, *Tectonophysics,* **819**, Article 229106, doi.org/10.1016/j.tecto.2021.229106.

Arvin, S., Sobouti, F., Priestley, K., Ghods,A., Motaghi, K., Tilmann, F., and Eken, T., (2021). Seismic anisotropy and mantle deformation in NW Iran inferred from splitting measurements of SK(K)S and direct S phases, *Geophysical Journal International*, doi: 10.1093/gji/ggab181.

Sadeghi Bagherabadi, A., F. Sobouti, S. Pachhai, A., Aoudia, (2020). Estimation of geometrical spreading, quality factor and kappa in the Zagros region, *Soil Dynamics and Earthquake Engineering,* **133**, doi.org/10.1016/j.soildyn.2020.106110.

Maheri-Peyrov, M., A. Ghods, S. Donner, M. Akbarzadeh-Aghdam, F. Sobouti, K. Motaghi, M. Hassanzadeh, G. Mortezanejad, M. Talebian, and L. Chen, (2020). Upper crustal structure of NW Iran revealed by regional 3-D Pg velocity tomography, *Geophysical Journal International,* **22**, 1093–1108, doi.org/10.1093/gji/ggaa236

Rahmani, M., Motaghi, K., Ghods, A., Sobouti, F., Talebian, M., Ai, Y., and Chen, L., (2019). Deep velocity image of the north Zagros collision zone (Iran) from regional and teleseismic tomography, *Geophysical Journal International,* **219**, 1729–1740, doi:10.1093/gji/ggz393.

Sadeghi Bagherabadi, A., L. Margheriti, A. Aoudia, F. Sobouti, (2018). Seismic Anisotropy and Its Geodynamic Implications in Iran, the Easternmost Part of the Tethyan Belt, *Tectonics*, org/10.1029/2018TC005209.

Sadeghi Bagherabadi, A., F. Sobouti, A. Ghods , K. Motaghi, M. Talebian, L. Chen, M. Jiang, Y. Ai, and Y. He, (2018). Upper Mantle anisotropy and deformation beneath the major thrust-and-fold belts of Zagros and Alborz and the Iranian plateau, *Geophysical Journal International*, **214**, 1913–1918, org/10.1093/gji/ggy233.

Motaghi K., A. Ghods, F. Sobouti, E. Shabanian, M. Mahmoudabadi, K. Priestley, (2018). Lithospheric seismic structure of the West Alborz – Talesh ranges, Iran, *Geophysical Journal International*, **215**, 1766–1780, org/10.1093/gji/ggy372 .

Camilla Penney, Farokh Tavakoli, Abdolreza Saadat, Hamid Reza Nankali, Morteza Sedighi, Fateme Khorrami, Farhad Sobouti, Zahid Rafi, Alex Copley, James Jackson and Keith Priestley, 2017. Megathrust and accretionary wedge properties and behavior in the Makran subduction zone, *Geophysical Journal International,* **209**, 1800-1830, doi: 10.1093/gji/ggx126.

Esmaeili, S., Rasouli S., Sobouti. F., 2016, Design and Construction of a Seismometer Based on the Moire Technique; Detailed Theoretical Analysis, Experimental Apparatus and Primary Results. *International Journal of Optics and Photonics*, *Accepted for publication*.

Bavali, K, Motaghi K, Sobouti F., Ghods A., Abbasi M., Priestley K., Mortezanejad G., and Rezaeian M., 2016. Lithospheric Structure beneath NW Iran Using Regional and Teleseismic Tomography. *Physics of Earth and Planetary Interiors.* **253**, 97–107.

Maheri, M., Ghods, A., Abassi, M., Bergman, E., and Sobouti, F., 2016. Ml shear wave velocity tomography for the Iranian plateau, *Geophysical Journal International*, **205** (1): 179-191. doi: 10.1093/gji/ggv504.

Ahmadzadeh M., Sobouti F., Rahimi H., 2015, Variations of Qc coda in the Zagros of Iran. *Journal of Seismology.* DOI: 10.1007/s10950-015-9520-1

Aziz Zanjani A., Ghods A., Sobouti F., Bergman E., Mortezanejad G., Priestley K., Madanipour S., Rezaeian M., 2013, Seismicity in the western coast of the South Caspian Basin and the Talesh Mountains, *Geophysical Journal International,* **195**, 799-814.

Esmaeili S., Rasouli S., Sobouti F., Esmaeili S., 2012, Moiré micro strain gauge (MMSG), *Optics Communications*, doi:10.1016/j.optcom.2011.12.006.

Asaadi N., Ribe N., Sobouti F., 2011, Inferring nonlinear mantle rheology from the shape of the Hawaiian swell, *Nature*, doi: 10.1038/nature09993.

Askari R., Ghods A., Sobouti F., 2009, Calibration of an M_L Scale in the Alborz region, northern Iran, *Bulletin of Seismological Society of America,* Vol **99**, No. 1, doi 10.1785/0120080122.

Nankali H., Vossoughi B., Sobouti F., Hesami K., 2009, Preliminary results for long-term strength in the Zagros mountains of Iran: insight from numerical modeling, *Earth Sciences Research Quarterly*, Geological Survey of Iran, **18**, 3-10.

Nankali H.R., Sobouti F., Vosoughi B., Hessami K., Talebian M., Walpersdorf A., and Tavakoli F., 2008, Mechanical Modeling of the GPS Velocity Field Along the Main Recent Fault and Kazerun Fault (Zagros, Iran), *Journal of Seismology and Earthquake Engineering*, **10**, No. 2, 69-80**.**

Ghods, A., and Sobouti F., 2005, Quality assessment of seismic recording: the Tehran Seismic Telemetry Network, *Journal of Asian Earth Sciences*, **25**, 687-694.

Sobouti F., Ghods, 2004, A., Numerical modeling of melt generation and migration in subduction zones, *Proceedings of the Canadian Geophysical Union - American Geophysical Union Joint Assembly*, Montreal, Canada.

Sobouti F., and Arkani-Hamed J., 2002, Thermo-mechanical modeling of subduction of continental lithosphere, *Physics of the Earth and Planetary Interiors*, **131**, 185-203.

Sobouti F., Ghods A., and Arkani-Hamed J., 2001, On the advection of sharp material interfaces in geodynamic problems: entrainment of the D layer, *Journal of Geodynamics*, **31**, 459-479.

Ghods A., Sobouti F., and Arkani-Hamed, 2000, An improved second moment method for solution of pure advection problems, *International Journal of Numerical Methods in Fluids*, **32**, 959-979.

Sobouti F., and Arkani-Hamed J., 1996, Numerical modeling of the deformation of the Iranian plateau, *Geophysical Journal International*, **126**, 805-818.

Conferences and Scientific Meetings

1992, American Geophysical Union Spring Meeting, Montreal, Canada
1995, American Geophysical Union Fall Meeting, San Francisco, USA
1998, American Geophysical Union Spring Meeting, Boston, USA
2000, GeoCanada 2000, Calgary, Canada
2001, Canadian Geophysical Union Spring meeting, Ottawa, Canada
2002, Annual Meeting of the Physical Society of Iran, Zanjan
2003, 11th Meeting of the National Geophysical Society of Iran, Tehran
2004, CGU-AGU Joint Assembly, Montreal, Canada
2005, International Conference on Seismology (The Bam Earthquake), Kerman
2006, 12th Meeting of the National Geophysical Society of Iran, Tehran
2007, 26th Assembly of the International Union of Geodesy and Geophysics, Perugia, Italy]
2007, 5th International Conference on Seismology and Earthquake Engineering (SEE5), Tehran
2008, European Geophysical Union Assembly, Vienna, Austria
2008, 13th Meeting of the National Geophysical Society of Iran, Tehran
2009, Conference on the Tectonics of Iran, Cambridge, UK
2010, American Geophysical Union Fall Meeting, San Francisco, USA
2010, Tectonic Crossroads, Geological Society of America, Antakra, Turkey
2010, 14th Meeting of the National Geophysical Society of Iran, Tehran
2010, Annual Meeting of the Physical Society of Iran, Hamedan
2011, 29th Meeting of Geosciences, Tehran

2011, 17th Iranian Conference on Optics and Photonics, Mahan
2012, 15th Meeting of the National Geophysical Society of Iran, Tehran
2014, 16th Meeting of the National Geophysical Society of Iran, Tehran
2014, International Workshop on New observations on the Deep Structure Beneath the Alps-Anatolia-Iran regions, Beijing, 28-30 May, 2014.
2015, 7th International Conference on Seismology and Earthquake Engineering (SEE7), Tehran
2016, 17Th Meeting of the National Geophysical Society of Iran, Tehran
2017, First TRIGGER conference, May 2017, Tehran, Iran
2018, Second TRIGGER Conference, November 2018, Tehran, Iran
2019, 3rd TRIGGER Conference, October 2019, Zanjan
2019, 8th International Conference on Seismology and Earthquake Engineering (SEE8), Tehran
2020, 19th Meeting of the National Geophysical Society of Iran, Tehran
2022, 20th Meeting of the National Geophysical Society of Iran, Tehran
2024, 9th International Conference on Seismology and Earthquake Engineering (SEE9), Tehran
2024, 21st Meeting of the National Geophysical Society of Iran, Tehran