

JUAN I. SOTO
CURRICULUM VITAE

Title: Research Scientist (with a leave of absence as a Professor of Geodynamics, Granada University)

Date of Birth: 02/02/64

Primary Affiliation: Bureau of Economic Geology, The University of Texas at Austin

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EDUCATION

- 1991 | Ph.D. Geological Sciences, Division in Geodynamics, Granada University
- 1988 | M.S. Earth Sciences, Granada, Salamanca and Oviedo universities
- 1986 | B.S. with diploma (tesina) 1986, Granada University

PROFESSIONAL EXPERIENCE

- 2020– Present | Researcher, Bureau of Economic Geology, University of Texas at Austin
- 2008 – 2019 | Professor of Geodynamics, Departamento de Geodinámica, Granada University
- 2017 | Visiting Scholar, Bureau of Economic Geology, University of Texas at Austin
- 1995 - 2008 | University Lecturer, Granada University
- 1989 - 1995 | Adjunct Professor, Granada University

FELLOWSHIPS

- 2017 | "Salvador de Madariaga" Fellow of the Ministry of Education, Culture and Sports (Spain) at the Bureau of Economic Geology, University of Texas at Austin (USA)
- 1999 | Senior Fellow of the Ministry of Education (Spain) at the Department of Earth Sciences, University College of London (UK)
- 1990 | Research Scholarship of the Ministry of Education (Spain) at the Department of Earth Sciences, Rice University (USA)
- 1989 | Research Fellow of the Ministry of Education (Spain) at the Department of Earth Sciences, Oxford University (UK)
- 1988 | Erasmus Fellow (European Union) at the School of Geology, Aristotle University of Thessaloniki (Greece)

UNIVERSITY SERVICE

- 2012 - 2015 | Director of the Research Department "Dynamics of the Lithosphere" at the Andalusian Earth Sciences Institute (High Research Council of Spain-Granada University)
- 2012 - 2015 | Member of the Executive Board of the Andalusian Earth Sciences Institute (High Research Council of Spain-Granada University)
- 2009 - Present | Main Researcher of the group "Dynamics of Orogens and Basins", Andalusian Regional Government
- 2006 - 2013 | Vice-Director of the Andalusian Earth Sciences Institute (High Research Council of Spain-Granada University)

(full listing on request)

PROFESSIONAL ACTIVITIES

- 2020 | Invited Speaker, REPSOL (Houston), Shell (Houston), WesternGECO (Houston)
- 2019 | Invited Speaker, TOTAL (Paris), REPSOL (Madrid), University of Fribourg (Switzerland)
- 2018 | Invited Speaker, REPSOL (Houston)
- 2017 | Invited Speaker, EXXONMOBIL (Houston), Bureau of Economic Geology (Austin), TOTAL (Houston), REPSOL (Houston)
- 2017 | Associated Researcher of the Applied Geodynamics Laboratory, Bureau of Economic Geology, Austin (4 months)

- 2017 - Present | Instructor of a course for REPSOL: "SEISMIC INTERPRETATION OF SHALE AND SALT-TECTONIC PROCESSES" (5 days)
- 2016 - Present | Course for REPSOL: "EXTENSIONAL TECTONICS, FIELD EXAMPLES IN THE BETICS AND COMPLEMENTARY SEISMIC INTERPRETATIONS" (1 week)
- 2014 | Consultant for PEMEX in onshore domains of the Gulf of Mexico, seismic interpretation and basin analysis evaluating tectonic structures involving salt and shale (6 weeks)
- 2014 | Instructor of a short course for REPSOL SERVICES (Houston): "WORKSHOP ON: INTERPRETING SHALE-TECTONICS PROCESSES AND COMPARISON TO ANALOGOUS SALT STRUCTURES" (1 day; December)
- 2014 | Instructor of two short courses for PEMEX AND CGG (Villahermosa, MX): "TALLER DE INTERPRETACIÓN SÍSMICA SOBRE ESTRUCTURAS LIGADAS A "SHALE TECTONICS" (2 days; October) Y "TALLER DE INTERPRETACIÓN SÍSMICA SOBRE ESTRUCTURAS EXTENSIONALES" (2 days; October).
- 2014 - Present | Instructor for NExT (Schlumberger), Structural Geology and Tectonics course (no. GL-TC2-NXT18130)
- 2013 | Consultant for PEMEX in offshore (deep-waters) Gulf of Mexico, seismic interpretation and basin analysis evaluating tectonic structures involving salt and shale (8 weeks)
- 2013 - Present | Member, National Committee of the Spanish Association of the Oil Exploration and Production Companies (ACIEP)
- 2012 - 2013 | Researcher of the NSF Project "Understanding continental collision in the Betic Cordillera, Spain", leaded by D. Anastasio (Lehigh University)
- 2012 - 2013 | Research agreement with REPSOL (Houston) to conduct studies and seismic interpretations on shale tectonic processes in different exploratory regions (confidential title)
- 2012 | Invited Speaker, PEMEX (Poza Rica), REPSOL (Houston), CONOCOPHILLIPS (Houston)
- 2011 | Invited Speaker, REPSOL, Madrid
- 2010 - 2012 | Main Researcher of the Academia-Industry project funded by the Spanish Government and REPSOL ("Evaluating shale tectonics for oil exploration: an study of the Alboran and Azerbaijan regions")
- 2008 | Invited Lecturer, Department of Earth Science and Engineering, Imperial College, London

(full listing on request)

COURSES TAUGHT (Granada University)

- 2019 - 2020 (Fall) | Structural Geology II, Geology Degree
- 2019 - 2020 | Introductory Geology, Geology Degree
- 2018 - 2019 (Spring) | Plate Tectonics, Geology Degree
- 2018 - 2019 | Introduction to 2D Seismic Interpretation, Master Degree in Energy Resources (30 hours)
- 2018 - 2019 | 3D Seismic interpretation and models, Master Degree in Energy Resources (20 hours)
- 2018 (Spring) | Advanced Field Mapping in Structural Geology, Geology Degree

(full listing on request)

PUBLICATIONS

- 2020 | M.R. Hudec, T.P. Dooley, F.J. Peel and J.I. Soto, Controls on the evolution of passive-margin salt basins: Structure and evolution of the Salina del Bravo region, northeastern Mexico, *GSA Bulletin*, 132, 997–1012; doi: 10.1130/B35283.1
- 2018 | Duffy, O.B., T.P. Dooley, M.R. Hudec, M.P.A. Jackson, N. Fernandez, C.A.-L. Jackson and J.I. Soto, Structural evolution of salt-influenced fold-and-thrust belts: A synthesis and new insights from basins containing isolated salt diapirs, *Journal of Structural Geology*, 114, 206–221, doi: 10.1016/j.jsg.2018.06.024
- 2018 | Klimowitz, J., S. Escalante, E. Hernández and J.I. Soto, Mesozoic and Alpine tectonics in the Western margin of the Valencia Trough, *Revista de la Sociedad Geológica de España*, 31/2, 83-100
- 2017 | Fernández-Ibáñez, F. and J.I. Soto, Pore Pressure and Stress Regime in a Thick Extensional Basin with Active Shale Diapirism (Western Mediterranean), *AAPG Bulletin*, 101/2, 233-264, doi: 10.1306/07131615228

- 2017 | Soto, J.I., J.F. Flinch, and G. Tari, Permo-Triassic Basins and Tectonics in Europe, North Africa and the Atlantic Margins: A Synthesis, in: *Permo-Triassic Salt Provinces of Europe, North Africa and the Atlantic Margins: Tectonics and Hydrocarbon Potential* (Eds. J.I. Soto, J. Flinch and G. Tari), Elsevier, 3-41, doi: 10.1016/B978-0-12-809417-4.00038-0
- 2017 | Flinch, J. and J.I. Soto, Allochthonous Triassic and Salt Tectonic Processes in the Betic-Rif Orogenic Arc, in: *Permo-Triassic Salt Provinces of Europe, North Africa and the Atlantic Margins: Tectonics and Hydrocarbon Potential* (Eds. J.I. Soto, J. Flinch and G. Tari), Elsevier, 417-446, doi: 10.1016/B978-0-12-809417-4.00020-3
- 2017 | Bega, Z. and J.I. Soto, The Ionian fold-and-thrust belt in central and southern Albania: a petroleum province with Triassic evaporites, in: *Permo-Triassic Salt Provinces of Europe, North Africa and the Atlantic Margins: Tectonics and Hydrocarbon Potential* (Eds. J.I. Soto, J. Flinch and G. Tari), Elsevier, 517-539, doi: 10.1016/B978-0-12-809417-4.00025-2
- 2017 | Tari, G., J. Flinch and J.I. Soto, Petroleum systems and play types associated with Permo-Triassic salt in Europe, North Africa and the Atlantic Region, in: *Permo-Triassic Salt Provinces of Europe, North Africa and the Atlantic Margins: Tectonics and Hydrocarbon Potential* (Eds. J.I. Soto, J. Flinch and G. Tari), Elsevier, 129-156, doi: 10.1016/B978-0-12-809417-4.00007-0
- 2016 | Sánchez-Borrego, I.R., J.I. Soto, M.M. Rueda, and I. Santos-Betancor, Nonparametric estimation to reconstruct the deformation history of an active fold in the Caspian Basin, *Mathematical Geosciences*, 48, 985-1011, doi: 10.1007/s11004-016-9650-1
- 2015 | Santos-Betancor, I. and J.I. Soto, 3D Geometry of a shale-cored anticline in the Western South Caspian Basin, *Marine and Petroleum Geology*, 67, 829-851, doi: 10.1016/j.marpetgeo.2015.06.012
- 2015 | Carmona, E., J. Almendros, G. Alguacil, J.I. Soto, F. Luzón, J. Ibáñez, Identification of T-Waves in the Alboran Sea, *Pure and Applied Geophysics*, 172, 3179-3188, doi: 10.1007/s00024-014-1018-1
- 2014 | Soto, J.I., I. Santos-Betancor, F. Fernández-Ibáñez, and A.R. Talukder, Procesos Tectónicos en Cuencas con Formaciones Arcillosas: Estructuras, condiciones e implicaciones para la exploración petrolera, *Memorias del Congreso Mexicano del Petróleo* (Eds. U. Hernández Romano y M. Aranda), p. 91-101.
- 2013 | Martínez-García, P., M.C. Comas, J.I. Soto, L. Lonergan and A.B. Watts, Strike-slip tectonics and basin inversion in the Western Mediterranean: the Post-Messinian evolution of the Alboran Sea, *Basin Research*, 25, 1-27, doi: 10.1111/bre.12005
- 2013 | Soto, J.I., F. Fernández-Ibáñez and A.R. Talukder, Recent shale tectonics and basin evolution of the NW Alboran Sea, *The Leading Edge*, 31, 768-775.
- 2013 | Santos-Betancor, I., J.I. Soto, L. Lonergan, I.R. Sánchez Borrego and C.E. Macellari, 3D Geometry of an active shale-cored anticline in the Western South Caspian Basin, *Lectures Notes in Earth System Sciences, Mathematics of Planet Earth* (eds. Pardo-Igúzquiza et al.), p. 771-774.
- 2013 | Santos-Betancor, I., L. Lonergan, J.I. Soto and C.E. Macellari, Gravity-instability processes and mass-transport complexes during folding: the case of a shale-cored anticline in the Western South Caspian Basin, *Lectures Notes in Earth System Sciences, Mathematics of Planet Earth* (eds. Pardo-Igúzquiza et al.), p. 775-778.
- 2011 | Martínez-García, P., J.I. Soto, J.I. and M.C. Comas, Recent Structures in the Alboran Ridge and Yusuf fault zones based on swath bathymetry and sub-bottom profiling: evidence of active tectonics. *Geo-Marine Letters*, 31, 19-36.
- 2010 | Soto, J.I., F. Fernández-Ibáñez, A.R. Talukder and P. Martínez-García, Miocene shale tectonics in the northern Alboran Sea, Western Mediterranean), in: *Shale Tectonics* (Ed. L. Wood). *AAPG Memoir*, 93, 119-144.
- 2010 | Fernández-Ibáñez, F., V. Pérez-Peña, A. Azor, J.I. Soto and J.M. Azañón, Normal faulting driven by denudational isostatic rebound, *Geology*, 38, 643-646, doi: 10.1130/G31059.1
- 2008 | Soto, J.I., F. Fernández-Ibáñez, M. Fernández and A. García-Casco, Thermal structure of the crust in the Gibraltar Arc: influence on active tectonics in the Western Mediterranean.

Geochemistry, Geophysics, Geosystems, 9, doi: 10.1029/2008GC002061

- 2008 | Fernández-Ibáñez, F. and J.I. Soto, Rheology and crustal seismicity in the Gibraltar Arc (Western Mediterranean). *Tectonics*, 27, doi: 10.1029/2007TC002192
- 2008 | Chalouan, A., A. Michard, K. El Kadiri, F. Negro, D. Frizon de Lamotte, J.I. Soto and O. Saddiqi, The Rift Belt, in: *The Rif belt. Continental Evolution: The Geology of Morocco. Structure, Stratigraphy, and Tectonics of the Africa-Atlantic-Mediterranean Triple Junction* (Eds. A. Michard, O. Saddiqi, A. Chalouan and D. Frizon de Lamotte), Springer, 116, 203-302.
- 2007 | Fernández-Ibáñez, F., J.I. Soto, M.D. Zoback and J. Morales, Present-day stress field in the Gibraltar Arc (Western Mediterranean), *Journal of Geophysical Research (Solid Earth)*, 112, B08404, doi: 10.1029/2006JB004683

(full listing on request)

ADVISEE DEGREES, Ph.D. Thesis

- 2016 | Santos-Betancor, I., Mud diapirs and folds in the South Caspian Basin: geometry and syn-sedimentary evolution of structures with petroleum interest, *Ph.D. Thesis*, Granada University (now at High-Research Council of Spain, Barcelona)
- 2012 | Martínez-García, P., Recent tectonic evolution of the Alboran Ridge and Yusuf regions, *Ph.D. Thesis*, Granada University (now at Heriot-Watt University, Edinburgh)
- 2007 | Fernández-Ibáñez, F., Sismicidad, reología y estructura térmica de la corteza en el Arco de Gibraltar, *Ph.D. Thesis*, Granada University (now at ExxonMobil, Houston)
- 2003 | Talukder, A.R., La provincia diapírica de lodo en la Cuenca Oeste del Mar de Alborán: estructuras, génesis y evolución, *Ph.D. Thesis*, Granada University (now at Commonwealth Scientific and Industrial Research Organization; CSIRO, Perth)

ADVISEE DEGREES, Master Thesis

- 2020 | Titos, J.A., Validation of a regional cross-section in the Ionian Zone (Epirus, NW Greece), *M.Sc. Thesis*, Granada University (co-supervised with P. Hernández, REPSOL)
- 2019 | Hidalgo, A., Extensión sobre la sal messiniense de la Cuenca Levantina (offshore Israel): Geometría tridimensional de las fallas y ligazón con el flujo salino, *M.Sc. Thesis*, Granada University
- 2017 | Lo Guasto, A., Procesos de plegamiento en el Mar Caspio Sur: reconstruyendo deformaciones sin-sedimentarias en un pliegue activo, *M.Sc. Thesis*, Granada University
- 2017 | Casanova, S., Internal deformations and flow within a thick Messinian sequence in the Levant Basin (offshore Israel), *M.Sc. Thesis*, Granada University (co-supervised with G. Zamora, REPSOL and M. Reshef)
- 2016 | Carrión Torrente, A., Internal structure of a thick salt layer in the Levant Basin: a preliminary study in a 3D seismic cube, *M.Sc. Thesis*, Granada University and Repsol (co-supervised with J. Flinch, REPSOL and M. Reshef)
- 2016 | Sánchez Roldán, J.L., Shale tectonic processes in thick sedimentary basins: Combining seismic interpretation and geophysical modeling, *M.Sc. Thesis*, Granada University and Repsol (co-supervised with Dr. Gascone, REPSOL)
- 2016 | Nunes Rubim, I., Deformaciones Neógenas y Diapirismo en la porción oriental del Golfo de Cádiz, *M.Sc. Thesis*, Granada University
- 2015 | Muñoz López, J.D., Seismic Characterization of the Salt Contacts, *M.Sc. Thesis*, Granada University and Repsol (co-supervised with J. Flinch, REPSOL)
- 2015 | González de Aguilar Etchemendi, J.P., Salt Minibasins: Origin, Evolution, and Seismic Interpretation, *M.Sc. Thesis*, Granada University and Repsol (co-supervised with J. Flinch, REPSOL)
- 2014 | Díaz, R., Seismotectonics of the Gibraltar Arc: Seismic tomographic models and geodynamic implications, *M.Sc. Thesis*, Utrecht University (co-supervised with Prof. W. Spakman)
- 2012 | Pérez Torres, M., 3D Structural analysis of syn-sedimentary faults in the western margin of the South Caspian (Azerbaijan), *M.Sc. Thesis*, Granada University
- 2012 | García Martos, M.T., Pore pressure reconstruction in the Araz-Deniz well (South Caspian Sea), *M.Sc. Thesis*, Granada University

(full listing on request)

SYNERGISTIC ACTIVITIES

- 2020-21 | Session Convener, Annual Symposium of The American Rock Mechanics Association 2021, Houston.
- 2020 | Member of the Technical Committee of the Third EAGE Eastern Mediterranean Workshop.
- 2019 | Member of the Technical Committee of the Second EAGE Eastern Mediterranean Workshop (Athens).
- 2017-18 | Committee Co-Chair of the AAPG Workshop ("Alpine Folded Belts and Extensional Basins"), Granada.
- 2018 | Member of the Conference Committee of the AAPG European Regional Conference: Global Analogues for the Atlantic Margin, Lisbon.
- 2018 | Member of the Technical Committee of the First EAGE Workshop on Geophysical and Geological Challenges in the Hydrocarbon Provinces of the Eastern Mediterranean, Valletta (Malta).
- 2015-17 | Editor of a book for Elsevier ("Permo-Triassic Salt Provinces of Europe, North Africa and the Atlantic Margins: Tectonics and Hydrocarbon Potential"), Eds. J.I. Soto, J. Flinch and G. Tari, 2017, ISBN: 9780128094174, 608 pp.
- 2015-16 | Editor of a Special Issue in Petroleum Geoscience, v. 22, no. 4 ("Exploring the Mediterranean - New Concepts Related to the Messinian Salt"), Eds. J.I. Soto and G. Tari.
- 2015-16 | Member of the International Advisory Committee of the AAPG European Regional Conference & Exhibition ("Petroleum Systems of Alpine-Mediterranean Fold Belts and Basins"), Bucharest.
- 2015 | Chairman of the workshop no. 13 "Exploring the Mediterranean - New Concepts Related to the Messinian Salt", 77th EAGE Conference & Exhibition, Madrid.
- 2014 -15 | Organizing Member for the Student Programme of the 77th EAGE Conference & Exhibition ("Fuel your Future"), Madrid.
- 2014 - 15 | Member of the Local Advisory Committee of the 77th EAGE Conference & Exhibition ("Earth Science for Energy and Environment"), Madrid.
- 2013 | Member of the Technical Committee of the AAPG European Regional Conference "Exploring the Mediterranean: New concepts in an ancient seaway", Barcelona.
- 2013 | Co-chair of the session "The Western Mediterranean and the Alboran Sea in focus", AAPG European Regional Conference, Barcelona.
- 2013 | Member of the International Scientific Committee of the 15th. Annual Conference of the International Association for Mathematical Geosciences (IAMG), Madrid.
- 2011 | Member of the Organizing Committee of the 2nd. International Conference of the Moroccan Association of Petroleum Geologists (MAPG) in association with the American Association of Petroleum Geologists (AAPG), Marrakech.
- 2011 | Session convener "Salt and Shale tectonics", 2nd. International Conference of the MAPG in association with AAPG, Marrakech.
- 2008 - Present | Faculty Advisor of the SEG Student Section (Society of Exploration Geophysicists) at the Granada University.
- 2007 - Present | Coordinator of the Student Lecture Tour (SLT) of EAGE (European Association of Geoscientists and Engineers) at the Granada University.
- 2007 | Guest Editor, Revista de la Sociedad Geológica de España, Special Issue: "Alpine evolution of the Western Mediterranean and nearby regions", v. 20, n. 3/4, 246 pp.
- 2002 - Present | Main Researcher for different software agreements with JOA® Oil & Gas BV; KINGDOM Seismic Micro-Technology, Inc., IGEOSS, Petrel (Schlumberger), GeoMechanics Int., BakerHughes.

(full listing on request)