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I. PROFESSIONAL APPOINTMENTS

Current
Tenured (Civil Servant) Staff Research Scientist. Centro de Astrobiología. Since 2017.
Visiting Scientist. Cornell University, Department of Astronomy. Since 2015.
Non-Resident Affiliate Scientist, NASA Jet Propulsion Laboratory (JPL-LP040). Since 2012.

Previous
- 2014-2017: Senior Research Scientist (Principal Investigator). Centro de Astrobiología.
- 2012-2014: Research Associate. Cornell University, Department of Astronomy.
- 2009-2012: Research Scientist. NASA Ames Research Center, Space Science and Astrobiology Division, and Carl Sagan Center for the Study of Life in the Universe, SETI Institute.

II. EDUCATION

- 2006-2009: Postdoctoral Fellow. NASA Ames Research Center, Space Science and Astrobiology Division, Advisor: Christopher McKay.
- 2006: PhD. Molecular Biology and Astrobiology. Universidad Autónoma de Madrid, Advisor: R. Amils.
- 2004: "Planetary Biology Internship". NASA-Ames Research Center, Space Science and Astrobiology Division, Advisor: C. McKay. 1 July-31 August.
- 2002: M. S. Genetics. Universidad Complutense de Madrid.
- 2000: B. S. Biology. Universidad Complutense de Madrid.

III. AWARDS AND HONORS

- 2017 *Nature Geoscience* invited "News and Views": Fairén, A. G. Icy Mars lakes warmed by methane. Nat. Geos., 10, 717-718, doi: 10.1038/ngeo3037.
- 2015 *NASA Group Achievement Award:* MSL Prime Mission Science and Operations Team.
- 2015-present *Visiting Scientist* at Cornell University.
- 2013 *NASA Group Achievement Award:* MSL SAM Instrument Development and Science Team.
- 2013 *NASA Group Achievement Award:* MSL APXS Instrument Development and Science Team.
- 2013 *Astronomy* magazine, "Astronomy raising star". Astronomy, 41(7), 45. July 2013.
- 2012 European Research Council *Starting Grant* Award (European Research Council).
- 2012 *Nature* section "Careers", interview. Nature, 489, 328.
- 2012 *Harold C. Urey Prize*. Awarded by the Division for Planetary Sciences of the American Astronomical Society.
- 2010 *Nature Geoscience* invited "News and Views": Fairén, A. G. Refilling the oceans of early Mars. Nat. Geos., 3, 452-453.
- 2010 *Icarus* most downloaded article, October-December 2010: Fairén, A. G. A cold and wet Mars, Icarus, 208, 165-175, published July 2010.
- 2006 *NASA Postdoctoral Program*, ranked #1 for the slot.
- 2004 *Planetary Biology Internship*, awarded by NASA.

IV. MISSION INVOLVEMENT

- *Mars Exploration Rover, Opportunity*. Athena Science Team Member (2012-2014).
- *Mars Science Laboratory, Curiosity*. Science Team Collaborator on SAM (2012-2014), APXS (2012-2014), and REMS (since 2014).
- *InSight*. Science Team Collaborator on TWINS.
- *ExoMars 2020***.** Member of the Landing Site Selection Working Group (since 2013).
- *Mars2020.* Co-Investigator on MEDA.
- *IceBreaker*. Member of the Planning Team, Co-Investigator on SOLID (since 2010).

V. RESEARCH GRANT HISTORY

- *GeoPlaNet*. Role: Collaborator. PI: O. Bourgeois. Institution: European Comission. 2017-2019.
- *Detection of biomolecules in planetary exploration*. Role: Co-I. PI: V. Parro. Institution: MINECO, Projects ESP2014-58494-R and ESP2015-69540-R, Spain. Jan 2015-Dec 2018.
- *Science and technology of space instruments for characterizing the Martian environment within multiple NASA missions: REMS, TWINS and MEDA*. Role: Co-I. PI: J.A.R. Manfredi. Institution: MINECO, Project 665154274-54274-45-514, Spain. 2014-2018, pending future extensions.
- *Cold and wet early Mars: Proposing and testing a new theory to understand the early Mars environments*. Role: PI. Institution: European Research Council, 2012 Starting Grant, no 307496. 2014-2018.
- *Geochemistry of anoxic oxidation processes on early Earth and Mars: the catalyzing effect of mineral surfaces*. Role: Co-I. PI: Luis Gago Duport. Institution: MICINN-FEDER, Project CGL2011-30079, Spain. 2011-2013.
- *Geochemical and astrobiological studies on Martian aqueous solutions at subzero temperatures*. Role: PI. Institution: NASA. Grant number: NNX10AB76A. December 2009-June 2012.
- *Oxidation processes and the preservation of organic biosignatures in a permafrost dominated environment – a martian analogue in the canadian arctic*. Role: Co-I. PI: Gordon Osinski. Institution: Canadian Space Agency (CSA). April 2008 – March 2009.
- *Stability against freezing of hyperloaded solutions on Mars*. Role: PI. Institution: NASA. NASA Postdoctoral Program. December 2006 – December 2009.
- *Charaterization of an extreme acidic hábitat: génesis, biodiversity and biotechnological applications.* Role: Co-I. PI: R. Amils. Institution: CSIC, Spain. REFA: BOS 2002-02148. November-December 2005.

VI. TUTORING

- Laura García Descalzo, Postdoc Advisor, CAB (ongoing).
- Armando Azúa-Bustos, Postdoc Advisor, CAB (ongoing).
- Carolina Gil Lozano, Postdoc Advisor, CAB (ongoing) & President of the Ph.D. examination committee, U. Vigo, Spain (2015).
- Esther R. Uceda, Postdoc Advisor. CAB-UAM (ongoing) & NASA Postdoctoral Program (NASA Ames, California, USA, 2011-2013).
- Elisabeth Losa-Adams, PhD. Co-Advisor, CAB-Departamento de Geociencias Marinas, Universidad de Vigo, Spain (ongoing).
- Carlos Arturo Granada Torres, PhD Co-Advisor, CAB-Universidad de Alcalá, Spain (ongoing).
- Cristina Robas García, M.S. Advisor. CAB (ongoing).
- Andrea Sánchez Saldías, Thesis reviewer and Ph.D. examination committee member. Departamento de Astronomía, Universidad de la República, Uruguay (2014).
- Vivek Raj, M.S. Thesis Co-Advisor. Master of Science in Exploration Geophysics. Department of Geology and Geophysics, Indian Institute of Technology, Kharagpur, India (2011).

VII. PROFESSIONAL ACTIVITIES/COMMUNITY SERVICE

a) Editor

- Review Editor for the journal *Frontiers in Astronomy and Space Sciences*, since August 2016 (http://journal.frontiersin.org/journal/astronomy-and-space-sciences#).
- Editorial Board Member for *Nature Scientific Reports*, since February 2016. (http://www.nature.com/srep/about/editorial-board#astrophysics).
- Co-Editor for the special issue "Terrestrial Analogs and Planetary Exploration", for the journal *Life*. 2014. (http://www.mdpi.com/journal/life/special_issues/terrestrial-analogs).
- Editor for the book: *Mars: Evolution, Geology and Exploration* (2013). Nova Science Publishers, Inc., 400 Oser Avenue, Suite 1600, Hauppauge, NY 11788. ISBN: 978-1-62618-102-1. 310 pp. (https://www.novapublishers.com/catalog/product_info.php?products_id=39767).
- Associate Editor for *Mars, The International Journal of Mars Science and Exploration* (USA), since June 2005. (http://www.marsjournal.org/editors/fairen.shtml).

b) Meeting organization

- *4th Early Mars Conference*, Co-Convener, Flagstaff (Arizona), 2-6 October 2017. (https://www.hou.usra.edu/meetings/earlymars2017/organizers/).
- *Astrobiology Science Conference*, Co-Convener for the session: "Biosignature detection on Mars - where, what, when, why and how?", Mesa, AZ, 24-28 April 2017. (http://www.hou.usra.edu/meetings/abscicon2017/).
- *AGU Fall Meeting*, Sessions Convener "The early Mars environment: Warm and wet, cold and wet, or cold and icy?". San Francisco, 13 December 2016. (Oral: https://agu.confex.com/agu/fm16/meetingapp.cgi/Session/14996, Posters: https://agu.confex.com/agu/fm16/meetingapp.cgi/Session/13359).
- *Europa M5 Initiative Meeting*, Member of the Local Organizing Committee. CAB, Madrid, Feb 29-Mar 1, 2016. (http://auditore.cab.inta-csic.es/europa-m5initiative/).

c) Reviewer for

- Working Groups:
  Member of the *ExoMars Landing Site Selection Working Group* (LSSWG, since 2013).
  OSPA liason and judge (AGU 2016).
- Funding programs:
  - Panelist: *Moon Mars Analog Mission Activities*, NASA (2013). *Solar Systems Workings*, NASA (2014). *H2020-COMPET-Space*, European Commission Research Executive Agency (2015). *Mars Data Analysis Program*, NASA (2016). *Earth and Space Science Fellowship*, NASA (2016). *Concepts for Ocean worlds Life Detection Technology*, NASA (2016). *Maturation of Instruments for Solar System Exploration*, NASA (2017). H2020-*COMPET-Space*, European Commission Research Executive Agency (2017). *Solar Systems Workings*, NASA (2017). *Mars Data Analysis Program*, NASA (2018).
  - External reviewer: *NOW*, Netherlands Research Council (2005). *Mars Fundamental Research Program,* NASA (2009). *Planetary Geology and Geophysics Program,* NASA (2010). *FCT*, Portuguese Foundation for Science and Technology (2012). *NCN,* National Science Center of Poland (2013, 2016). *Solar System Workings*, NASA (2014). *NSO*, Netherlands Space Office (2014). *NASA Earth and Space Sciences Fellowship*, NASA (2015, 2016). *Habitable Worlds*, NASA (2015). *NASA Postdoctoral Program*, NASA (2015, 2016). *NGS*, National Geographic Society (2016). *Mars Data Analysis Program*, NASA (2016). *Exoplanets Research Program*, NASA (2017). *Research Grants Council*, Hong Kong (2017). *Solar Systems Workings*, NASA (2017). *Mars Data Analysis Program*, NASA (MDAP, 2018).
- Journals:
  Nature Geoscience, *Nature Scientific Reports*, *Icarus*, *Journal of Geophysical Research-Planets*, *Geophysical Research Letters*, *Meteoritics & Planetary Science*, *Planetary & Space Science*, *Geochimica et Cosmochimica Acta*, *Astrobiology*, *Geology*, *Sedimentary Geology*, *The Journal of Geology*, *Palaios*, *Acta Astronautica*, *Hydrogeology Journal*, *Quaternary International*, *Reviews in Environmental Science and Bio/technology*, *Beilstein Journal of Nanotechnology*, *Enseñanza de las Ciencias de la Tierra.*

- Editorials:
  OneWorld Publications, book review (2009). *Springer*, "Habitability on other planets and satellites", chapter review (2012). *Elsevier*, "Encyclopedia of the Solar System", chapter review (2013). *Springer*, "Encyclopedia of planetary landforms", chapter review (2013). *SETI Institute*, "Life in the Universe", chapter 8 "Mars" review (2015). *Elsevier*, "Chaotic terrains on Mars: Exploring the hidden hydrosphere", book proposal review (2017). *Cambridge University Press*, "Analog field research for Solar System exploration", book proposal review (2017).

d) Professional affiliations

- Division for Planetary Sciences of the American Astronomical Society.
- American Geophysical Union.
- IAG Planetary Geomorphology committee, branch of the "International Association of Geomorphologists" (http://www.psi.edu/pgwg/).
- Habitability of Exoplanets Research Group, Washington State University (http://www.sees.wsu.edu/ABcenter/habitability_exoplanets.html).
- Planetary Habitability Laboratory, University of Puerto Rico (https://sites.google.com/a/upr.edu/planetary-habitability-laboratory-upra/home).
- Mars Society (http://www.marssociety.org/).
- SPMN (Spanish Meteoritic Network) (www.spmn.uji.es).

e) IAU-approved feature names on Mars

Named a 42 kilometer diameter crater in Syrtis Major, Mars (71.8E, 17.0N): *Toro* crater. International Astronomical Union approval on November 24, 2008, for the paper Fairén et al., PNAS 2010.

VIII. FIELD-WORK EXPERIENCE

Axel Heiberg Island (Canadian High Arctic), Atacama Desert (Chile), Pavilion Lake (BC, Canada), Río Tinto (Spain), El Jaroso hydrothermal system (Spain), Mojave Desert (California), Mono Lake (California).
*PADI Open Water Diver, certified in 2005.

IX. PUBLICATIONS

a) Refereed journal articles

In review

i. **Fairén, A. G.** The Mars Anthropocene. *EOS*, in review.

ii. Dohm, J. M., **A. G. Fairén**, V. R. Baker, M. G. Spagnuolo, C. E. Viviano-Beck, S. Karunatillake, O. Álvarez, S. J. Robbins, D. Schulze-Makuch, R. C. Anderson, W. C. Mahaney, J.-P. Williams, T. M. Hare, G. Komatsu, W. Fink, J. Yan, H. Miyamoto, S. Maruyama. Evidence for an Early Mars Mobile Lithosphere. *Nature Scientific Reports*, submitted.

iii. Anderson, R., J. Dohm, T. Hare, S. Robbins, J.-P. Williams, H. Miyamoto, R. Hemmi, T. Niihara, G. Komatsu, **A. G. Fairén**, B. Hynek , J. Schroeder , S. Maruyama. Geologic history of the Memnonia-Sirenum region, Mars. *Journal of Geophysical Research*, in review.

2018

91. **Fairén, A. G.**, V. Parro, D. Schulze-Makuch, L. Whyte (2018). Is searching for Martian life a priority for the Mars community? *Astrobiology*, in press.

90. Bishop, J. L., **Fairén, A. G.,** J. R. Michalski, L. Gago-Duport, L. L. Baker, M. A. Velbel, C. Gross, E. B. Rampe (2018). Surface clay formation during short-term warmer and wetter conditions on a largely cold ancient Mars. *Nature Astronomy*, in press.

2017

89. **Fairén, A. G.** (2017). Icy Mars lakes warmed by methane. *Nature Geoscience*, vol. 10, 717–718, doi: 10.1038/ngeo3037.

88. Fairén, A. G., C. Gil-Lozano, E. R. Uceda, E. Losa-Adams, A. Davila, L. Gago-Duport (2017). Mineral paragenesis on Mars: The roles of reactive surface area and diffusion. *Journal of Geophysical Research*, 122, 1855–1879, DOI:10.1002/2016JE005229.

87. Fairén, A. G., V. Parro, D. Schulze-Makuch, L. Whyte (2017). Searching for life on Mars before it is too late. *Astrobiology*, 17(10): 962-970, DOI: 10.1089/ast.2017.1703.

86. Hurowitz, J. A., J. P. Grotzinger, W. W. Fischer, S. M. McLennan, R. E. Milliken, N. Stein, A. R. Vasavada, D. F. Blake, E. Dehouck, J. L Eigenbrode, **A. G. Fairén**, J. Frydenvang, R. Gellert, J. A. Grant, S. Gupta, K. E. Herkenhoff, D. W. Ming, E. B. Rampe, M. E. Schmidt, K. Siebach, K. Stack-Morgan, D. Y. Sumner, and R. C. Wiens (2017). Redox stratification of an ancient lake in Gale Crater, Mars. *Science*, 356, eaah6849.

85. Bristow, T. F., R. M. Haberle, D. F. Blake, D. Des Marais, J. L. Eigenbrode, **A. G. Fairén**, J. P. Grotzinger, K. M. Stack, M. Mischna, E. B. Rampe, K. L. Siebach, B. Sutter, D. T. Vaniman, A. Vasavada (2017). Low Hesperian PCO_2 constrained from in situ mineralogical analysis at Gale crater, Mars. *Proc. Natl. Acad. Sci. USA*, 114, 2166-2170, doi: 10.1073/pnas.1616649114.

84. Gil-Lozano, C., A. F. Davila, E. Losa-Adams, **A. G Fairén** and L. Gago-Duport (2017). Transient phase kinetics of hydrogen peroxide formed during oxidative dissolution of pyrite. *Nature Scientific Reports*, 7, 43703, doi: 10.1038/srep43703.

83. Rubin, D. M., **A. G. Fairén**, J. Martínez-Frías, J. Frydenvang, O. Gasnault, G. Gelfenbaum, W. Goetz, J. P. Grotzinger, S. LeMoulic, N. Mangold, H. Newsom, D. Z. Oehler, W. Rapin, R. C. Wiens (2017). Fluidized sediment pipes in Gale crater, Mars, and possible analogs in the Middle Jurassic of Utah. *Geology*, 45, 7-10.

82. Martínez, G. M., C. Newman, A. De Vicente-Retortillo, E. Fischer, N. Renno, M. Richardson, **A. G. Fairén**, M. Genzer, S. D. Guzewich, R. M. Haberle, A. M. Harri, O. Kemppinen, M. Lemmon, M. D. Smith, M. Torre-Juárez and A. Vasavada (2017). The modern near-surface Martian climate: A review of in-situ meteorological data from Viking to Curiosity. *Space Science Reviews*, 212, 295–338, doi:10.1007/s11214-017-0360-x.

81. Wiens, R. C., D. M. Rubin, W. Goetz, **A. G. Fairén**, S. P. Schwenzer, J. R. Johnson, R. Milliken, B. Clark, N. Mangold, K. M. Stack, D. Oehler, S. Rowland, M. Chan, D. Vaniman, S. Maurice, O. Gasnault, W. Rapin, S. Schroeder, S. Clegg, O. Forni, D. Blaney, A. Cousin, V. Payré, C. Fabre, M. Nachon, S. Le Mouelic, V. Sautter, S. Johnstone, A. Vasavada, J. Crisp, J. P. Grotzinger (2017). Centimeter to decimeter hollow concretions and voids in Gale Crater sediments, Mars. *Icarus*, 289, 144-156.

80. Rampe, E., D. W. Ming, D. F. Blake, T. F. Bristow, S. J. Chipera, J. P. Grotzinger, R. V. Morris, S. M. Morrison, D. T. Vaniman, A. S. Yen, C. N. Achilles, P. I. Craig, D. J. Des Marais, R. T. Downs, J. D. Farmer, K. V. Fendrich, R. Gellert, J. M. Morookian, T. S. Peretyazhko, P. Sarrazin, A. H. Treiman, J. A. Berger, J. L. Eigenbrode, **A. G. Fairén**, O. Forni, S. Gupta, J. A. Hurowitz, L. C. Kah, N. L. Lanza, M. E. Schmidt, K. Siebach, B. Sutter, L. M. Thompson (2017). Mineralogy of an ancient lacustrine mudstone succession from the Murray formation, Gale crater, Mars. *Earth and Planetary Science Letters*, 471, 172-185.

79. Williams, J.-P., J. M. Dohm, R. J. Soare, J. Flahaut, R. M. C. Lopes, A. V. Pathare, **A. G. Fairén**, D. Schulze-Makuch, and D. L. Buczkowski (2017). Long-lived volcanism within Argyre Basin, Mars. *Icarus*, 293, 8-26.

78. Vago, J. L., F. Westall, A. Coates, R. Jaumann, O. Korablev, V. Ciarletti, I. Mitrofanov, J.-L. Josset, M. C. De Sanctis, J.-P. Bibring, F. Rull, F. Goesmann, H. Steininger, W. Goetz, W. Brinckerhoff, C. Szopa, F. Raulin, H. G. M. Edwards, L. G. Whyte, **A. G. Fairén**, J.-P. Bibring, J. Bridges, E. Hauber, G. G. Ori, S. Werner, D. Loizeau, R. O. Kuzmin, R. M. E. Williams, J. Flahaut, F. Forget, D. Rodionov, O. Korablev, H. Svedhem, E. Sefton-Nash, G. Kminek, L. Lorenzoni, L. Joudrier, V. Mikhailov, A. Zashchirinskiy, S. Alexashkin, F. Calantropio, A. Merlo, P. Poulakis, O. Witasse, O. Bayle, S. Bayón, U. Meierhenrich, J. Carter, J. M. García-Ruiz, P. Baglioni, A. Haldemann, A. J. Ball, A. Debus, R. Lindner, F. Haessig, D. Monteiro, R. Trautner, C. Voland, P. Rebeyre, D. Goulty, F. Didot, S. Durrant, E. Zekri, D. Koschny, A. Toni, G. Visentin, M. Zwick, M. van Winnendael, M. Azkarate, C. Carreau, and the ExoMars Project Team. (2017). Habitability on early Mars and the search for biosignatures with the ExoMars rover. *Astrobiology*, 17(6-7): 471-510.

2016

77. Fairén, A. G., J. M. Dohm, J. A. P. Rodríguez, E. R. Uceda, J. Kargel, R. Soare, H. J. Cleaves, D. Oehler, D. Schulze-Makuch, E. Essefi, M. E. Banks, G. Komatsu, W. Fink, S. Robbins, J. Yan, H. Miyamoto, S. Maruyama, and V. R. Baker (2016). The Argyre region as a prime target for in situ astrobiological exploration of Mars. *Astrobiology*, 16(2), 143-158.

76. Rodríguez, J. A. P., **A. G. Fairén**, K. Tanaka, R. Linares, M. Zarroca, T. Platz, G. Komatsu, V. Gulick, V. Baker, J. Yan, H. Miyamoto, N. Glines (2016). Tsunami waves extensively resurfaced the shorelines of a receding, early Martian ocean. *Nature Scientific Reports*, 6, 25106.

75. Farley, K.A., Martin, P., Archer, P.D., Atreya, S.K., Conrad, P.G., Eigenbrode, J.L., **Fairén, A.G.**, Franz, H.B., Freissinet, C., Glavin, D.P. and Mahaffy, P.R. (2016). Light and variable $^{37}Cl/^{35}Cl$ ratios in rocks from Gale Crater, Mars: Possible signature of perchlorate. *Earth and Planetary Science Letters*, 438, 14-24.

74. Berger, J., M. Schmidt, R. Gellert, J. Campbell, P. King, R. Flemming, D. Ming, B. Clark, I. Pradler, S. VanBommel, M. Minitti, **A. G. Fairén**, N. Boyd, L. Thompson, G. Perrett, B. Elliott, E. Desouza (2016). A global Mars dust composition refined by the Alpha Particle X-ray Spectrometer in Gale Crater. *Geophysical Research Letters*, 43, 67–75.

73. Rodríguez, J. A. P., R. L. Santiago, M. Z. Hernández, V. Gulick, C. Weitz, Y. Jianguo, **A. G. Fairén**, V. Baker, T. Platz, J. Kargel, H. Miyamoto, and N. Glines (2016). Groundwater flow induced collapse and flooding in Noctis Labyrinthus, Mars. *Planetary & Space Science*, 124, 1-14.

72. Oehler, D. Z., N. Mangold, B. Hallet, **A. G. Fairén**, L. Le Deit, A. J. Williams, R. S. Sletten, J. Martínez-Frías (2016). Origin and significance of decameter-scale polygons in the lower Peace Vallis fan of Gale crater, Mars. *Icarus*, 277, 56-72.

71. Thompson, L. M., M. E. Schmidt, J. G. Spray, J. A. Berger, **A. G. Fairén**, J. L. Campbell, G. M. Perrett, N. Boyd, R. Gellert, I. Pradler, S. J. VanBommel (2016). Potassium-rich sandstones on Mars, Gale crater: an APXS perspective. *Journal of Geophysical Research*, 121, doi:10.1002/2016JE005055.

70. Schwenzer, S. P. J. C. Bridges, R. C. Wiens, P. G. Conrad, S. P. Kelley, R. Leveille, N. Mangold, J. Martín-Torres, A. McAdam, H. Newsom, M. P. Zorzano, W. Rapin, J. Spray, A. H. Treiman, F. Westall, **A. G. Fairén**, P. Meslin (2016). Fluids during diagenesis and sulfate vein formation in sediments at Gale Crater, Mars. *Meteoritics & Planetary Science*, 51, 2175–2202.

2015

69. Fairén, A.G., Adams, E., Gil, C., Duport, L., Uceda, E.R., Rodríguez, J.A.P., Squyres, S.W., Davila, A. F., McKay, C.P. (2015). Tracking the weathering of basalts on Mars using lithium isotope fractionation models. *Geochemistry, Geophysics, Geosystems*, 16 (4) 1172–1197.

68. Stern, J. C., B. Sutter, C. Freissinet, R. Navarro-González, C. P. McKay, P. D. Archer, Jr., A. Buch, A. Brunner, P. J. Coll, J. L. Eigenbrode, **A. G. Fairén**, H. B. Franz, D. P. Glavin, S. Kashyap, A. C. McAdam, D. W. Ming, A. Steele, C. Szopa, F. J. Martín Torres, M. P. Zorzano, J. J. Wray, P. G. Conrad, P. R. Mahaffy, and the MSL Science Team (2015). Evidence for indigenous martian nitrogen in solid samples from the Curiosity rover investigations at Gale crater. *Proc. Natl. Acad. Sci. USA*, 112, 4245-4250.

67. Rodriguez, J. A. P. J. S. Kargel, V. R. Baker, V. Gulick, D. C. Berman, **A. G. Fairén**, R. L. Santiago, M. Z. Hernández, Y. Jianguo, H. Miyamoto, N. Glines (2015). Martian outflow channels: How did their source aquifers form, and why did they drain so rapidly? *Nature Scientific Reports*, 5, 13404, DOI: 10.1038/srep13404.

66. Freissinet, C., D. P. Glavin, P. R. Mahaffy, K. E. Miller, J. L. Eigenbrode, R. E. Summons, A. E. Brunner, A. Buch, C. Szopa, P. D. Archer, H. B. Franz, S. K. Atreya, W. B. Brinckerhoff, M. Cabane, P. Coll, P. G. Conrad, J. P. Dworkin, **A. G. Fairén**, P. Francois, J. P. Grotzinger, S. Kashyap, L. A. Leshin, C. A. Malespin, M. G. Martin, A. C. McAdam, D. W. Ming, R. Navarro-Gonzalez, T. Owen, A. Pavlov, B. Prats, S. W. Squyres, A. Steele, J. C. Stern, D. Y. Sumner, B. Sutter and the MSL Science Team (2015). Organic molecules in the Sheepbed Mudstone, Gale Crater, Mars. *Journal of Geophysical Research*, 120, 495–514.

65. Rodriguez, J. A. P., G. J. Leonard, T. Platz, K. L. Tanaka. J. S. Kargel, **A. G. Fairén**, V. Gulick, V. R. Baker, N. Glines, H. Miyamoto, Y. Jianguo, and M. Oguma (2015). New insights into the Late Amazonian zonal shrinkage of the Martian south polar plateau. *Icarus*, 248, 407–411.

64. Dohm, J. M., T. M. Hare, S. J. Robbins, J.-P. Williams, R. J. Soare, M. R. El Maarry, S. J. Conway, D. L. Buczkowski, J. S. Kargel, M. E. Banks, **A. G. Fairén**, D. Schulze-Makuch, G. Komatsu, H. Miyamoto,

R. C. Anderson, A. F. Davila, W. C. Mahaney, W. Fink, H. J. Cleaves, J. Yan, B. Hynek (2015). Geological and hydrological histories of the Argyre province, Mars. *Icarus*, 253, 66-98.

63. Rodríguez, J. A. P., T. Platz, V. Gulick, V. Baker, **A. G. Fairén**, J. Kargel, Y. Jianguo, H. Miyamoto, N. Glines (2015). Did the Martian outflow channels mostly form during the Amazonian Period? *Icarus*, 257, 387–395.

2014

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a) Books

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b) Exhibitions

"Mars Landscapes", Madrid Planetarium, permanent since 2006, to be updated in 2018.
http://www.planetmad.es/actividades/expomarte.html

c) Editorial memberships

- "Astronomía" magazine, Spain (http://www.globalastronomia.com/colaboradores/): member of the Editorial Board since January 2003, and of the Scientific Advising Council since May 2013. The journal won the "Prismas" prize in 2016: http://mc2coruna.org/prismas/fallo-jurado-2016.html
- REDESPA (Spanish Planetology and Astrobiology Network: http://www.icog.es/redespa/) since September 2015.
- Web www.espacial.org, Argentina: editor and writer since August 2004.

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157. La biosfera ha fabricado siempre su propio protector solar (Nº 200. Febrero 2016).
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176. Biomarcadores (Nº 221. Noviembre 2017).
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179. El zoológico cósmico (Nº 224. Febrero 2018).
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f) Teaching (in Spain)

- *Course of Planetary Geology*. Agrupación Astronómica de Castelldefels, 6 May 1997.
- *Workshop: Analysis of Planetary Images*. Agrupación Astronómica de Cartagena, 7 October 1997.
- *Workshop: Analysis of Planetary Images*. Planetario de Pamplona, 25 October 1997.
- *Workshops: Planetology*. Director. Asociación Española para superdotados y con talento. Madrid, February-June 2001 and September 2001-June 2002.
- *Workshop: Genetics*. Asociación Española para superdotados y con talento. Madrid, September 2001-June 2002.
- Assistant Professor of Microbiology. 2º Curso de la Licenciatura en Biología. Universidad Autónoma de Madrid. Academic year 2003-2004.