

# Curriculum Vitae

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## Yamila Miguel

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*My development as a scientist includes research, teaching, mentoring and outreach. In research, understanding the information hidden in atmospheric observable features in hot rocky and giant exoplanets is one of my main interests. These planets are targets for current and future space and ground base observations. Characterising their atmospheric structure, composition and spectral features, putting them - and our own Solar System - into context to link them with the planetary interior and its formation history is the aim of my work.*

*Teaching, mentoring and outreach are very rewarding activities for me and also a fundamental part of my growth as a scientist. Teaching is a way to guide students towards the development of curiosity and critical thinking. Promoting science through mentoring minorities allows me to contribute to both the scientific community and the society, and outreach gives me the chance to increase awareness of astrophysics, stimulate interest in science and inspire future scientists.*

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**Research Interests:** Exoplanet atmospheres: chemistry and radiative transfer, Planetary interiors, Planetary systems formation.

## Current Position

**CNES Postdoctoral Fellow, Observatoire de la Côte d'Azur (OCA) - France**

## Education

2011 PhD Astronomy Universidad Nacional de La Plata (UNLP) - Argentina

2007 BA Astronomy UNLP - Argentina

## Employment, Research Experience & Awards

Research

10 years

Teaching

6 years

Outreach

11 years

**Publications** - 10 first-author publications in peer-reviewed international journals, plus 10 as co-author. Total citations: 209 (as May 2017).

## Employment, research experience and awards (continue)

2016 - 2018	<b>CNES postdoctoral Fellowship</b> - OCA - France
2015 - 2016	<b>Henri Poincare Postdoctoral Fellowship</b> - OCA - France
Fall 2013	<b>Guest-Lecturer</b> "Astrophysics & Astrobiology II" - Universität Heidelberg - Germany
2011 - 2014	<b>MPIA Postdoctoral Fellowship</b> - Germany
2010 - 2011	<b>CONICET<sup>1</sup> type II Graduate Fellowship</b> - Argentina
2007 - 2009	<b>CONICET type I Graduate Fellowship</b> - Argentina
2005 - 2011	<b>Educator, Science Coach</b> - Mundo Nuevo <sup>2</sup>
2008 - 2010	<b>Lecturer</b> "Knowing the Universe" - UNLP - Argentina
2007 - 2011	<b>Teaching Assistant</b> "Spherical Astronomy" - UNLP - Argentina
2008 - 2009	<b>Teaching Assistant</b> "Calculus I" - UNLP - Argentina
2005 - 2007	<b>Teaching Assistant</b> "Modern Physics" - UNLP - Argentina
2005 - 2007	<b>Teaching Assistant</b> "Calculus I" - UNLP - Argentina
2007	<b>Joaquin V. Gonzalez Award, to the best GPA</b> - UNLP - Argentina
2001 - 2007	<b>Museum Guide</b> - Museum of Astronomy and Geophysics - UNLP

## Research - Publication List

### Refereed papers in primary journals

#### First-author publications

**Miguel, Y.** Guillot, T. and Fayon, L. *Jupiter internal structure: the effect of different equations of state*, 2016, A&A, 596, A114. ([Link](#))

**Miguel, Y.** & Ida, S., *A semi-analytical model for exploring Galilean satellites formation from a massive disk*, 2016, Icarus, Volume 266, 1 ([Link](#)).

**Miguel, Y.**, Kaltenecker L., Linsky, Jeffrey L. & Rugheimer, S., *The effect of Lyman  $\alpha$  radiation on mini-Neptune atmospheres around M stars: application to GJ 436b*, 2015, MNRAS, 446, 345 ([Link](#)).

**Miguel, Y.** & Kaltenecker L., *Exploring atmospheres of hot mini-Neptunes and extrasolar giant planets orbiting different stars with application to HD 97658b, WASP-12b, CoRoT-2b, XO-1b and HD 189733b*, 2014, ApJ, 780, 166 ([Link](#)).

**Miguel, Y.**, Kaltenecker L., Fegley, B. Jr. & Schaefer L., *Composition of hot super-Earth atmospheres: exploring Kepler candidates*, 2012, ApJ Letters, 742, L19 ([Link](#)).

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<sup>1</sup> National Council of Scientific and Technical Research. Ministry of Science, Technology and Productive Innovation - Argentina

<sup>2</sup> Outreach program dedicated to science and technology. UNESCO, UNLP, and Ministry of Culture and Education of Buenos Aires Joint initiative.

### First-author publications (continue)

**Miguel, Y.**, Guilera, O. & Brunini, A., *The diversity of planetary systems architectures: contrasting theory with observations*, 2011, MNRAS, 417, 314 ([Link](#)).

**Miguel, Y.**, Guilera, O. & Brunini, A., *The role of the initial surface density profiles of the disc on giant planet formation: comparing with observations*, 2011, MNRAS, 412, 2113 ([Link](#)).

**Miguel, Y.** & Brunini, A., *Planet formation: statistics of spin rates and obliquities of extrasolar planets*, 2010, MNRAS, 403, 1935 ([Link](#)).

**Miguel, Y.** & Brunini, A., *Core instability models of giant planet accretion II: forming planetary systems*, 2009, MNRAS, 392, 324 ([Link](#)).

**Miguel, Y.** & Brunini, A., *Core instability models of giant planet accretion and the planetary desert*, 2008, MNRAS, 387, 463 ([Link](#)).

### (N>1)-author publications

Espinoza, N., Fortney, J., **Miguel, Y.**, Thorngren, D., Murray-Clay, R., *Metal enrichment leads to low atmospheric C/O ratios in transiting exoplanets*, ApJ Letters in press (arXiv:1611.08616) ([Link](#)).

S. J. Bolton, A. Adriani, V. Adumitroaie, J. Anderson, S. Atreya, J. Bloxham, S. Brown, J. E.P. Connerney, E. DeJong, W. Folkner, D. Gautier, S. Gulkis, T. Guillot, C. Hansen, W.B. Hubbard, L. Iess, A. Ingersoll, M. Janssen, J. Jorgensen, Y. Kaspi, S. M. Levin, C. Li, J. Lunine, **Y. Miguel**, G. Orton, T. Owen, M. Ravine, E. Smith, P. Steffes, E. Stone, D. Stevenson, R. Thorne, J. Waite, *Jupiter's interior and deep atmosphere: the first close polar pass with the Juno spacecraft*, Science in press.

Y. Kaspi, T. Guillot, E. Galanti, **Y. Miguel**, R. Helled, W. B. Hubbard, B. Militzer, S. M. Wahl, S. Levin, J. E. Connerney and S. J. Bolton, *The effect of differential rotation on Jupiter's low-degree even gravity moments*, GRL in press.

S. M. Wahl, W. B. Hubbard, B. Militzer, T. Guillot, **Y. Miguel**, Y. Kaspi, R. Helled, D. Reese, N. Movshovitz, E. Galanti, S. Levin, J.E. Connerney, S.J. Bolton, *Comparing Jupiter interior structure models to Juno gravity measurements and the role of a dilute core*, GRL in press.

Youngblood, A., France, K., Loyd, P. R. O, Brown, A., Mason, J. P., Schneider, Ch. P., Tilley, M., Berta-Thompson, Z., Buccino, A., Froning, C., Hawley, S. L., Linsky, J., Mauas, P. J. D., Redfield, S., Kowalski, A., **Miguel, Y.**, Newton, E.R., Roberge, A., Rugheimer, S., Segura, A., Vieytes, M., *The MUSCLES Treasury Survey IV: Scaling Relations for Ultraviolet, Ca II K, and Energetic Particle Fluxes from M dwarfs*, ApJ in press.

France, K., Loyd, P., Youngblood, A., Brown, A., Schneider A., Hawley, S., Froning, C., Linsky, J. L., Roberge, A., Buccino, A., Davenport, J. R., Fontenla, J. M., Kaltenegger, L., Kowalski, A. F., Mauas, P.J., **Miguel, Y.**, Redfield, S., Rugheimer, S., Tian, F., Vieytes, M. C., Walkowicz, L. M., Weisenburger, K. L., *The MUSCLES treasury survey I. Motivation and Overview*, 2016, ApJ, 820, 89 ([Link](#))

Youngblood, A., France, K., Loyd, R.O., Linsky, J. L., Redfield, S., Schneider C., Wood, B., Brown, A., Froning, C., **Miguel, Y.**, Rugheimer, S., Walkowicz, L., *The MUSCLES Treasury Survey II: Intrinsic Lyman Alpha and Extreme Ultraviolet Spectra of K and M Dwarfs with Exoplanets*, 2016, ApJ in press ([Link](#))

## (N>1)-author publications (continue)

Domagal-Goldman, S.D., Wright, K.E., Adamala, K., Arina de la Rubia, L., Bond, J., Dartnell, L.R., Goldman, A.D., Lynch, K., Naud, M., Paulino-Lima, I.G., Singer, K., Walter-Antonio, M., Abrevaya, X.C., Anderson, R., Arney, G., Atri, D., Azúa-Bustos, A., Bowman, J.S., Brazelton, W. J., Brennecke, G. A., Carns, R., Chopra, A., Colangelo-Lillis, J., Crockett, C., J., DeMarines, J., Frank, E. A., Frantz, C., de la Fuente, E., Galante, D., Glass, J., Gleeson, D., Glein, G.R., Goldblatt, C., Horak, R., Horodyskyj, L., Kaçar, B., Kereszturi, A., Knowles, E., Mayeur, P., McGlynn, S., **Miguel, Y.**, Montgomery, M., Neish, C., Noack, L., Rugheimer, S., Stüeken, E. E., Tamez-Hidalgo, P., Imari Walker, S., Wong, T., *The Astrobiology Primer v2.0*, 2016, *Astrobiology*. Aug 2016, 16(8): 561-653. ([Link](#))

LM Barge, E Branscomb, JR Brucato, SSS Cardoso, JHE Cartwright, SO Danielache, D Galante, TP Kee, **Y. Miguel**, S Mojzsis, KJ Robinson, MJ Russell, E Simoncini, P Sobron, *Thermodynamics, Disequilibrium, Evolution: Far-From-Equilibrium Geological and Chemical Considerations for Origin-Of-Life Research*, 2016, *Origins of Life and Evolution of Biospheres*, 1,18 ([Link](#))

Kaltenegger L., **Miguel, Y.** & Rugheimer, S., *Rocky exoplanet characterization and atmospheres*, 2012, *International Journal of Astrobiology*, 11, 297 ([Link](#))

### [Link to all publications \(ADS\)](#)

### Submitted publications

Wang, D., **Miguel, Y.**, Lunine, J., *Transit Observations of PH<sub>3</sub> and H<sub>2</sub>S with JWST*, submitted to ApJ.

Mahapatra, G., Helling, Ch. and **Miguel, Y.**, *Cloud formation in evaporating planets: application to 55 Cnc e and CoRoT7b*, submitted to MNRAS.

### Contributions to symposia and compiled volumes (refereed only)

**Miguel, Y.** & Kaltenegger L., *Hot super-Earth atmospheres*, 2013, chapter 5 in the *Early Evolution of the Atmospheres of terrestrial Planets*, *Astrophysics and Space Science proceedings 35*, DOI 10.1007/978-1-4614-5191-4\_5, Springer Science+Business Media, New York, J. M. Trigo-Rodriguez et al. (eds.) ([Link](#)). Note: I wrote the chapter: Hot Super-Earth Atmospheres.

van Boekel, R., Benneke, B., Heng, K., Hu, R., Madhusudhan, N., Quanz, S., Beuermann, Y., Bouwman, J., Chen, G., Decin, L., de Kok, R., Glauser, A., Gudel, M., Hauschildt, P., Henning, T., Jeers, S., Jin, S., Kaltenegger, L., Kerschbaum, F., Krause, O., Lammer, H., Luntzer, A., Meyer, M., **Miguel, Y.**, Mordasini, C., Ottensamer, R., Rank-Lueftinger, T., Reiners, A., Reinhold, T., Schmid, H., Snellen, I., Stam, D., Sun, Z., Vandenbussche, B., *The Exoplanet Characterization Observatory (EChO): performance model EclipseSim and applications*, 2012, *Space Telescopes and Instrumentation 2012: optical, infrared, and millimeter wave*. Proceedings of the SPIE, 8442, article id. 84421F, 21 ([Link](#)) Note: My contribution was to provide the opacities (tables and figures).

**Miguel, Y.**, Guilera, O.M., & Brunini, A., *Planetary systems formation and the diversity of extrasolar systems*, 2011, *IAU Symposium*, volume 276, 441 ([Link](#)).

Fernandez-Lajus, E., **Miguel, Y.**, Fortier, A., & Di Sisto, R. P., *Monitoring and analyzing exoplanetary transits from Argentina*, 2011, *IAU Symposium*, volume 276, 416 ([Link](#)) Note: My contribution was to go to observe transits twice during the campaign.

**Miguel, Y.**, & Brunini, A., *Testing models for the formation of habitable planets*, 2010, *Highlights of Astronomy*, 15, 706 Book Chapters ([Link](#)).

## Selected Invited Colloquia and Seminars (last 5 years)

2017	University of Oxford
2017	University of Bern - Centre for Habitability
2017	University of Zurich
2016	University of California Santa Cruz
2016	St. Andrews University
2016	Harvard University, Department of Earth and Planetary Sciences
2016	Harvard-Smithsonian Center for Astrophysics
2016	Universidad Nacional de La Plata
2015	Cornell University
2015	Osservatorio di Arcetri, Florence
2014	American Museum of National History
2013	Harvard Smithsonian Center for Astrophysics
2013	Tokyo Institute for Technology
2012	Tokyo Institute for Technology
2012	MPIA

## Invited Speaker at International Conferences (last 5 years)

2017	The atmospheres of disks and planets, Ringberg Castle, Bavaria, Germany
2016	5th Joint Workshop on High Pressure, Planetary and Plasma Physics (HP4)
2015	11th Recontres du Vietnam: Exoplanetary Science. Quy Nhon, Vietnam
2015	Workshop for the opening of the Carl Sagan Institute at Cornell University - US
2014	Geochemical requirements for the emergence of life: VII Thermodynamics, Disequilibrium and Evolution (TDE) Focus Group workshop
2014	Japanese-German Frontiers of Science Symposium - Bremen, Germany
2013	Joint Workshop on High Pressure, Planetary, and Plasma Physics DLR - Germany
2012	Annual Meeting of the Astronomische Gesellschaft - Hamburg, Germany
2012	NASA Working Group: Thermodynamics, Disequilibrium and Evolution" - Spain

## Teaching

2013

**Guest-Lecturer** at the Heidelberg University, 1 class at Kaltenecker's course "Astrophysics & Astrobiology II". Course for Master and graduate level.

2007 - 2011

**Teaching assistant** at the UNLP in "Spherical Astronomy". Mandatory course for undergraduate level.

2008 - 2010

**Lecturer** at the UNLP in "Knowing the Universe". Course for general public. Scope: Introductory course to Astrophysics for professionals with no previous studies in astronomy.

2008 - 2010

**Teaching assistant** at the UNLP in "Calculus I". Mandatory course for undergraduate level.

2005 - 2007

**Teaching assistant** at the UNLP in "Modern Physics". Mandatory course for undergraduate level.

2005 - 2007

**Teaching assistant** at the UNLP in "Calculus I". Mandatory course for undergraduate level.

## Mentored and supervised students

2014

MPIA PhD student Taisiya Kopytova. I co-advise her in a project involving the modeling of thermal structure, photochemistry and spectra of direct imaging exoplanets.

2010 - 2012

Jessica Giovanna Caceres Reategui, a master physics student of the National University of St Augustin of Arequipa, Peru. Mentor her in her master project topic: formation of giant planets.

## Outreach and Gender Equality Activities

2014 - 2015

**Role Model** in the "Science is a girl thing!", part of the "Women in Research and Innovation" campaign which aims to encourage girls to develop an interest in science and to encourage young women in scientific careers.

2005 - 2011

**Educator, Science Coach** in "Mundo Nuevo", a program of science and technology dedicated to outreach. It is part of the UNESCO initiative, the UNLP, and the direction of culture and education of Buenos Aires. My job consisted in giving lectures and perform lab experiments about different astronomical and physical phenomena at kindergartens, elementary and high schools, including seminars for teachers.

## Outreach and Gender Equality Activities - (continue)

2008 - 2010

**Coordinator and chair of weekly seminars.** Handled 100% of the organization of weekly seminars for general public given at the Department of Astronomy and Geophysical Sciences - UNLP. From searching scientific speakers for the seminar to organize and chair the event.

2009

**Participant in the International Astronomy Year** initiated by the IAU and UNESCO. I participated actively and organized activities for the International Astronomical Year in Argentina. The special projects that I participated are *400 Years of the Telescope*, *100 hours with Astronomy*, *She is an astronomer* and *Astronomical coffee*.

2008

**Lecturer in Astronomy course.** Teaching in the Astronomy Course (8 x 1.5hr classes) for the staff at the Malargue Planetary, Mendoza - Argentina. The topics were: stellar and planetary system formation and evolution, general characteristics of our Solar System, characteristics of extrasolar planets and detection methods.

2001 - 2007

**Museum Guide** at the Museum of Astronomy and Geophysics of La Plata. Outreach activities for general public at the observatory and museum, three times a week, including guided tours and workshops for schools (all levels) and University students.

## Media

### Newspapers & Magazines

2017 Press article of our paper Miguel et al. 2016 on the popular science news website - [sci-news.com](http://sci-news.com). [Link](#)

2017 Interview for Cosmopolitan Magazine.

2017 Interview for "Clarín" Argentinian National newspaper.

2016 Interview for "Sputnik" an international science magazine. [Link](#)

2016 Interview for "Perfil" Argentinian national newspaper. [Link](#)

2016 Interview for "La Nación" Argentinian national newspaper. [Link](#)

2016 Interview for "Hoy" newspaper Argentinian newspaper about the Juno mission. [Link](#)

2016 Interview for "Punto Noticias" Argentinian newspaper. [Link](#)

2009 Interview for "Billiken" magazine "Astronomy as a career".

2009 Interview for the Newsletter: "Boletín de Noticias del Observatorio Astronómico de La Plata".

2008 Interview for "Parateens" magazine "Working with stars, planets and galaxies".

## Radio

- 2016 Interview for a radio program at "Radio La Colmena", Argentina. [Link](#)
- 2016 Interview for a radio program at "Radio 10", Argentina. [Link](#)
- 2016 Interview for a radio program at "Radio Nacional", Argentina, about the Juno mission.
- 2016 Interview for a radio program at "San Rafael" radio in Mendoza, Argentina.
- 2016 Interview for a radio program at "Universidad Nacional de Tierra del Fuego", in Argentina.

## Tv

- 2009 Participation in the Show "Zapping Zone" on Disney Channel Latinamerica.

## Selected Invited Public Colloquia

- 2016 JSOCA - journée scientifique in Cannes
- 2016 Planetarium - La Plata, Argentina
- 2013 Meeting of members of the Internationale Amateursternwarte - Frankfurt, Germany
- 2013 Albertus-Magnus-Schule Bischofliches Gymnasium - Germany
- 2009 1st Patagonia Meeting on Astronomy Education Esquel - Argentina
- 2009 Dardo Rocha, cultural center La Plata - Argentina
- 2009 37th Science and Technology National Festival San Bernardo - Argentina
- 2009 35th Buenos Aires International Book Festival Buenos Aires - Argentina
- 2009 School of Astronomy and Geophysical Sciences La Plata - Argentina
- 2009 School of Astronomy and Geophysical Sciences La Plata - Argentina

## University Services

- 2008 - 2011 Member of the committee for the change in the Astronomy baccalaureate degree program at the UNLP.
- 2009 - 2011 Academic Committee - Representing Graduate Students at the Department of Astronomical and Geophysical Sciences, UNLP.
- 2009 - 2011 Member of the Outreach Committee at the Astronomy and Geophysics department of the UNLP.

## Conference Organizer: Scientific Organizing Committee

- 2015 Planetary Systems: A Synergistic View - Quy Nhon - Vietnam
- 2014 Planetology beyond the Solar System - Ringberg
- 2013 Planet and Star Formation retreat - MPIA



## Conference Organizer: Local Organizer Committee

- 2015 Exoplanetary Atmospheres and Habitability - OCA - France
- 2012 Characterizing and Modeling Extrasolar Planetary Atmospheres - MPIA
- 2010 V Workshop of Planetary Science - UNLP

## Refereeing

Astronomy & Astrophysics

Astrophysical Journal

Monthly Notices of the Royal Astronomical Society

Origin of Life and Evolution of Biospheres