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Lunar and Planetary Laboratory
University of Arizona
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EDUCATION

- 2015 – Now **Sagan Fellow** at the Lunar and Planetary Laboratory, University of Arizona, Tucson, Az.
- 2014 – 2015 **Sagan Fellow** at the University of California Santa-Cruz.
- 2010 – 2014 **PhD** in planetary science at the “Observatoire de la Côte d'Azur”.
Graduate advisor : Tristan Guillot (OCA)
Thesis : [Thermal structure and atmospheric dynamics of irradiated exoplanets.](#)
- 2009 – 2010 *Sabbatical year, including 4 months tourism bike travel in South America, and volunteer work as a building worker and landscape gardener in France*
- 2009 **Master Astronomy & Astrophysics** at the Observatoire de Paris/IAP
Undergrad advisor : Alain Lecavelier des Etangs (IAP)
Thesis : [Influence of stellar spots on the transit of an exoplanet.](#)
- 2008 **Master in physics** at the “Ecole Normale Supérieure” in Paris
Undergrad advisor : Douglas Lin (KIAA - Beijing university)
Thesis : [Atmospheric dynamics of an Ocean Planet.](#)
- 2007 **Bachelor of physics** at the “Ecole Normale Supérieure” *awarded with honours*

AWARDS & DISTINCTIONS

- 2014 Sagan Fellowship (\$310K)
- 2011 Fullbright Fellowship (6 month visiting at UCSC, \$10K)

Selected to attend the International Summer Institute for Modeling in Astrophysics – Beijing University (6 weeks funded stay in Beijing)
- 2010 PhD fellowship from the Ecole Normale Supérieure ULM

MENTORING & TEACHING EXPERIENCES

- 2016 Co-advising grad student Maria Steinruck on disequilibrium chemistry in hot Jupiters atmospheres
- 2015 Co-advising grad student Diana Powell (UCSC) on cloud formation in hot Jupiters atmospheres
- 2011 & 2013 Instructor for B.S students :
- maths for physicist : tutorial and oral examinations (47h/year)
 - computer programming : lecture, tutorial, project supervision (57h/year)
- 2010 Guest lecturer for the class of physics for non-physicist at the Ecole Normale Supérieure

SERVICE

Implication in the Ariel mission, under selection process by the ESA

Implication in the EChO mission, redaction of a technical note for the yellow book

Reviewer for the scientific journals *Astronomy and Astrophysics* and *The Astrophysical Journal*

CONFERENCES TALKS

Invited talks

2016 *Clouds, Microphysics, and Dynamics*. **Exoclimes IV**, Squamish, Canada ([Program](#), [Talk](#))

Contributed talks

- 2016 - *Transitions in the cloud composition of hot Jupiters*. **AAS meeting**, Kissimee, Florida
- *Transitions in the cloud composition of hot Jupiters*. **Exoplanets I**, Davos, Switzerland
- *Determining the cloud composition of hot Jupiters with CHEOPS*. **Cheops science workshop**, Geneva, Switzerland
- *Transitions in the cloud composition of hot Jupiters*. **American Astronomical Society, DPS meeting #47**, Pasadena
- 2015 - *Cloudy and cloudless hot Jupiters*. **From super-earths to brown dwarfs: who's who?**, Paris ([Program](#), [Abstract](#), [Talk](#))
- *From Cloudy to cloudless hot Jupiters*. **Sagan symposium**, Pasadena
- 2014 - *Characterizing cloudy atmospheres with space photometry at optical wavelengths*. **The space photometry revolution**, Toulouse ([Program](#), [Abstract](#), [Talk](#))
- *Non-grey thermal effects in irradiated planets atmospheres*. **DPS Tucson** ([Program](#), [Abstract](#))
- 2013 - *Non-grey analytical models for exoplanets atmospheres*. **EPSC**, London ([Program](#), [Abstract](#))
- *The study of exo-climates with EchO*. **EChO open science workshop**, ESA-ESTEC, the Netherlands ([Program](#), [Abstract](#), [Presentation](#))
- *Studying the diversity of exoplanets atmospheres in the Plato era*. **Meeting of the French Astronomy and Astrophysics Society** Montpellier (Abstract)
- *Mechanisms affecting the composition of Hot Jupiters*. **Hot planets and cool stars meeting**, Garching, Germany. Proceedings in EPJ Web of Conferences 47, 12001 ([ADS](#), [EPJ](#))
- 2012 - *Non-grey effects in the atmosphere of exoplanets : a new semi-analytical model*. **Characterizing and modelling extrasolar planetary atmospheres**, Heidelberg, Germany ([Program](#))
- *Planetary probes into giant planets : what will we learn ?* **International Planetary Probe Workshop IX**, Toulouse ([Program](#), [Abstract](#))
- *3D Mixing In Hot-jupiter Atmospheres: Application To Tio Clouds On Hd209458b*. **American Astronomical Society, DPS meeting #44**, Reno ([ADS](#))
- *Influence of atmospheric dynamics on the temperature inversion of hot-Jupiters*. **Exoclimes II**, Aspen ([Program](#))
- 2011 - *Temperature inversion and the evolution of exoplanets*. **EPSC-DPS Joint Meeting**, Nantes, France ([ADS](#))
- *A coherent model of the interior and atmosphere of giant planets*. **2nd CoRoT Symposium**, Marseille

INVITED SEMINARS

- 2016 - **Space Telescope Science Institute.** *Transitions in the cloud composition of hot Jupiters* (invited by Nikole Lewis)
- **Steward Observatory, UofA.** *Transitions in the cloud composition of hot Jupiters* (invited by Daniel Apai)
- 2015 - **Caltech.** *From cloudy to cloudless hot Jupiters* (invited by Daniell Piskorz)
- **University of California Santa-Cruz** – GAFD seminar *From cloudy to cloudless hot Jupiters* (invited by Pascale Garaud)
- **Observatoire de la Côte d'Azur.** *From cloudy to cloudless hot Jupiters* (invited by Tristan Guillot)
- 2014 - **Observatoire midi-pyrénées, IRAP.** *3D mixing in the radiative atmosphere of irradiated exoplanets* (invited by Clement Baruteau)
- **Observatoire de la Côte d'Azur.** *Molecular (non)-detection in exoplanet's atmospheres : what to believe ?*
- 2012 - **Massachusetts institute of technology** *3D mixing in Hot Jupiter atmospheres: Application to TiO clouds in HD 209458* (invited by Sara Seager)
- **Lunar and Planetary Laboratory** – Exoplanets seminar. *3D mixing in Hot Jupiter atmospheres: Application to TiO clouds in HD 209458* (invited by Adam Showman)
- **ENS Lyon** *3D mixing in Hot Jupiter atmospheres: Application to TiO clouds in HD 209458* (invited by Jacques Masson)
- **Laboratoire d'Astrophysique de Bordeaux.** *3D mixing in Hot Jupiter atmospheres: Application to TiO clouds in HD 209458* (invited by Frank Selsis)
- **NASA AMES.** *3D mixing in hot-Jupiter atmosphere : application to TiO clouds in HD209733b* (invited by Tom Green)

OUTREACH

Press coverage:

- 2016 - Press article in the news section of the “New Scientist”: [*Here's what colourful clouds on alien gas giants would look like.*](#)
- Press article in Astronomy magazine (to be published)
- NASA/JPL press release (to be published)
- 2013 - Article in the French INSU newsletter : [*Météo des exoplanètes: brumes de verre et pluies de titane.*](#)
- Interview for the French newspaper “Le Figaro” : [*Une planète extrasolaire couverte de nuages.*](#)
- Interview for the “New Scientist” [*A scorched world with snow black and smoky.*](#)
- Cover page of the volume 558 of A&A (October 2013)

Public talks:

- 2014 Public talk for the evening sessions of the Planetarium Gallilé - Montpellier : *Sur les épaules des géantes, à la découverte de Jupiter, Saturne, Uranus et Neptune*, 2013.

- 2013 Public talk for the “French week of Astronomy”. *Exoplanètes, des milliers de nouveaux mondes à explorer*.
Public talk for two different amateur astronomer associations, 2012.
- 2012 Outreach in primary schools in Santa-Cruz and Watsonville, CA. including solar observations.
Public observations of the transit of Venus for the University of California, Santa-Cruz with more than a thousand participants, 2012.

REFEREED PUBLICATIONS

13 publications, including 5 as 1st author. 400 citations total, 100 as first author

- 2016 - *Transitions in the cloud composition of hot Jupiters*
V. Parmentier, J. J. Fortney, A. P. Showman, C. Morley, M. S. Marley, ApJ, 828, 22P.
- *The Impact of Non-Uniform Thermal Structure on the Interpretation of Exoplanet Emission Spectra*.
K. Feng, M. Line, J. Fortney, K. Stevenson, J. Bean, L. Kreidberg, **V. Parmentier**, accepted, ApJ.
- *The Influence of Nonuniform Cloud Cover on Transit Transmission Spectra*
M. Line & **V. Parmentier**, ApJ, 820, 78L.
- 2015 - *A non-grey analytical model for irradiated atmospheres. II. Analytical vs. numerical solutions*
V. Parmentier, T. Guillot, J. J. Fortney, and M. S. Marley, A&A, 574, A35.
- *Unveiling the atmospheres of giant exoplanets with an EChO-class mission*.
V. Parmentier, A. P. Showman, and J. de Wit, Experimental Astronomy.
- *A non-grey analytical model for irradiated atmospheres. I. Derivation*
V. Parmentier and T. Guillot, A&A, 562, A133.
- *Planetary Population Synthesis Coupled with Atmospheric Escape : A Statistical View of Evaporation*
S. Jin, C. Mordasini, **V. Parmentier**, R. van Boekel, T. Henning, and J. Ji, ApJ, 795, 65.
- *Pseudo 2d chemical model of hot-jupiter atmospheres : application to hd 209458b and hd 189733b*
M. Agúndez, **V. Parmentier**, O. Venot, F. Hersant, and F. Selsis, A&A, 564, A73.
- 2013 - *Bulk Composition of GJ 1214b and Other Sub-Neptune Exoplanets*
D. Valencia, T. Guillot, **V. Parmentier**, and R. S. Freedman, ApJ, 775, 10.
- *3D mixing in hot Jupiters atmospheres. I. Application to the day/night cold trap in HD 209458b*
V. Parmentier, A. P. Showman, and Y. Lian, A&A, 558, A91.
- *Inference of Inhomogeneous Clouds in an Exoplanet Atmosphere*
B.-O. Demory, J. de Wit, N. Lewis, J. Fortney, A. Zsom, S. Seager, H. Knutson, K. Heng, N. Madhusudhan, M. Gillon, T. Barclay, J.-M. Desert, **V. Parmentier**, and N. B. Cowan, ApJ, 776, L25.
- 2011 - *Transit spectrophotometry of the exoplanet HD 189733b. II. New Spitzer observations at 3.6 μ m*
J.-M. Désert, D. Sing, A. Vidal-Madjar, G. Hébrard, D. Ehrenreich, A. Lecavelier Des Etangs, **V. Parmentier**, R. Ferlet, and G. W. Henry, A&A, 526, A12.

- *Transit spectrophotometry of the exoplanet HD 189733b. I. Searching for water but finding haze with HST NICMOS*

D. K. Sing, J.-M. Désert, A. Lecavelier Des Etangs, G. E. Ballester, A. Vidal-Madjar, **V. Parmentier**, G. Hebrard, and G. W. Henry, *A&A*, 505, pp 891-899.