

Emilie Royer, Ph.D.

Jet Propulsion Laboratory/California Institute of Technology
4800 Oak Grove Drive, M/S 230-205, Pasadena, CA 91109
Phone : (818) 354-1544 / (626) 390-3391 — Emilie.M.Royer@jpl.nasa.gov

Education

- 2011, March Ph.D. in **Planetary Science**, University of Paris VI, France
- 2007 M.S. in Earth and **Planetary Science**, University of Paris VI, France
2nd/7 candidats, funded by a **meri-based scholarship**
- 2005 B.S. in Earth Sciences, University of Brest, France

Experience

- 2013, Oct. **Research Associate** at the *University of Colorado* in the Laboratory for Atmospheric and Space Physics (**LASP**), working with Dr. Larry Esposito to analyse the Cassini-UVIS data of the airglow of Titan and the atmosphere of Enceladus
- 2013, Sept.
2012, April **Postdoctoral scholar** at **Caltech** (*California Institute of Technology*)/**JPL** (*Jet Propulsion Laboratory*), **Modelling the composition and grain size of the icy satellites and rings of Saturn from the Cassini-UVIS and CIRS data**
Advisors : Dr Amanda Hendrix and Dr. Linda Spilker
- ★ Expertise in ultraviolet spectroscopy and phase curve analysis
 - ★ Modeling : Hapke and Buratti photometric models
 - ★ Study of exogenic processes altering the surfaces of icy bodies, interactions between the icy satellites of Saturn and their environment
- 2012, April
2008, Oct. **Teaching** Geosciences, as a **scientific mediator** in a Science museum (*Palais de la découverte*) in Paris, France, to scholar group from grammar-school to high-school pupils and to general audience, in French & English ; lectures on **plate tectonics, seismology, meteorology and greenhouse effect** and **Teaching maths** to high-school pupils
- 2011, March
2007, Oct. Ph.D. in **Planetary Science : Modeling of the ultraviolet nitric oxide nightglow in the upper atmosphere of Venus.**
Advisors : Dr. Jean-Loup Bertaux and Dr. Franck Montmessin
- ★ Data processing : improvement of CCD image processing, analysis of stellar occultation observations (retrieval of the atmospheric transmission)
 - ★ Expertise in ultraviolet spectroscopy, airglow/aeronomomic emissions and atmospheric dynamics
 - ★ Modeling : development of inversion algorithms (with regularization methods) and expertise in radiative transfer models
- 2007, March
to July Studying the **Titan's stratosphere** using the **Cassini-CIRS data**. Internship at the *Observatory of Meudon*, in **LESIA** laboratory, France. Advisor : Dr. Athena Coustenis
- ★ Use of radiative transfer model and expertise in infrared spectroscopy and use of spectroscopic data bases (GEISA 2003, HITRAN 2004)

- 2006, May to July Making map of **Titan's surface**, using **Cassini-VIMS and radar data**, Internship at the *Laboratory of Planetology of Nantes*, France. Advisor : Stephane Le Mouelic
- ★ Study of the surface's roughness, grain size and topography and research of liquid surfaces on Titan

Publications & Talks

Invited talks & Seminars

- "Photometric properties of the icy moons of Saturn", *Kleigel Lecture in Planetary Sciences, Caltech's Department of Planetary Sciences*, April 23, 2013
- "Photometric properties of the satellites Mimas, Tethys and Dione orbiting inside the E-ring of Saturn", *Postdoctoral seminar series, JPL*, April 18, 2013

Refereed journal articles

- Royer, E. and Hendrix, A.R., (2013), Comparison between the far-ultraviolet photometric characteristics of Mimas, Tethys and Dione from Cassini-UVIS observations, *in preparation*
- Royer E., Montmessin F. and Bertaux J.L. (2010), NO emission as observed by SPICAV during stellar occultation, *Planetary and Space Science*, vol. 58, pages 1314-1326, doi :10.1016/j.pss.2010.05.015
- Teanby, N.A., Irwin, P.G.J., de Kock, R., Nixon, C.A., Coustenis, A., Royer, E., Calcutt, S.B., Bowles, N.E., Fletcher, L., Howett, C. and Taylor, F.W. (2007), Global and temporal variations in hydrocarbons and nitriles in Titan's stratosphere for northern winter observed by Cassini/CIRS, *Icarus*, vol. 93, Issue 2, p. 595-611

Selected Published proceedings

- Royer, E. and Hendrix, A.R. (2013), Far-ultraviolet photometric characteristics of Tethys, Dione and Mimas, *44th LPSC (Lunar and Planetary Science Conference)*, abstract #2338
- Royer, E. and Hendrix, A.R., (2012), Far-ultraviolet photometric characteristics of the icy moons of Saturn, American Astronomical Society, *DPS meeting #44*, #104.05
- Royer, E.; Montmessin, F.; Bertaux, J.L. and Marcq, E., (2010), NO emission as observed by SPICAV in the stellar occultation mode, poster for the *International Venus Conference*, at Aussois, France, from 20 to 26 June 2010
- Royer, E.; Montmessin, F. and Bertaux, J.L., (2009), Observations of the Ultraviolet Nitric Oxide (NO) Nightglow with SPICAV on Board Venus Express During Stellar Occultations, American Astronomical Society, *DPS meeting #41*, #63.08
- Montmessin, F.; Bertaux, J.; Lefèvre, F.; Vandaele, A.; Korabiev, O.; Marcq, E.; Fedorova, A.; Royer, E.; Mahieux, A.; Belyaev, D. and Wilquet, V., (2009), Discovery of an Ozone Layer on Venus by SPICAV on Venus Express, American Astronomical Society, *DPS meeting #41*, #60.03
- Royer, E.; Montmessin, F. and Bertaux, J.L., (2008), Stellar Occultation of the Ultraviolet Nitric Oxide Nightglow with SPICAV on Board Venus Express, *American Geophysical Union (AGU), Fall Meeting 2008*, abstract #P33A-1427

Non-refereed articles

- Royer, E., (2011), Dans les voiles de Vénus, *Découverte/Discovery*, Revue du Palais de la découverte, vol.373 : March-April 2011, pages 20-27 : article, which deals with the atmosphere of Venus in a scientific review for the general public