

September 2008

CURRICULUM VITAE

Christophe SOTIN

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RESUME

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Married, 3 children

date of birth : 12/23/1958,
place of birth : Nantes, France

Present Position : Senior Research Scientist at JPL.

Professional record

Research Scientist at JPL since September 2008
Senior Research Scientist in December 2008
Professor at University of Nantes since 1993 – Professor ‘classe exceptionnelle’ since 2005.
Distinguished visiting scientist at JPL since January 2005
Visiting professor at Brown University (RI, U.S.A.) in 2001
Professor at Institut Universitaire de France from 1996 to 2001
Professor at Paris XI University (Orsay) from 1988 to 1993
Research assistant at Brown University from 1986 to 1988
Assistant professor at University of Nantes from 1985 to 1986
Research assistant at Institut de Physique du Globe de Paris from 1983 to 1985

Education

11/86 : Docteur d'Etat ès Sciences at Paris VII University
09/83 : Ph.D. in Geophysics at Institut de Physique du Globe de Paris
06/81 : D.E.A. (Master degree in Science) in Geophysics at Nancy University
06/81 : Master Degree in Geological Engineering from Ecole Nationale Supérieure de Géologie (ENSG)

Honors

Medal ‘Runcorn-Florensky’ of the European Union of Geosciences (2008)
Chevalier dans l’ordre des Palmes Académiques (Janvier 2007)
Member of IAA (International Academy of Astronautics) since 2003
Member of ‘Bureau des Longitudes’ since January 2001
Member of ‘Institut Universitaire de France’ from 1996 to 2001

Participation at different committees and other duties

At NASA

Member of the Science Definition Team of the TSSM (Titan and Saturn System Mission), 2008
Member of the Mars Architecture Tiger Team, 2008
Member of a NASA panel for the selection of missions using ASRG, 2008.
Member of the Science Advisory Group for the definition of the 2016 Mars mission, 2007.
Member of a NASA panel for the selection of instruments on a mission, 2001.
External reviewer for different NASA programs since 2000.

At the French Space Agency (CNES)

Member of the Science Advisory Committee since November 2000
Chairman of CNES Solar System Working Group between 1997 and 2000.

At the French National Research Council

Member of the National Program ‘Origine des planètes et de la vie’ since 2007.
Director of ‘Laboratoire de Planétologie et Géodynamique de Nantes’ between January 2004 and December 2007.
Member of the Astrophysics Science Committee between September 2004 and September 2007.
Member of GdR Exobiology since 2002.
Member of the Science Advisory group for ‘Programme National de Planétologie’ between 1998 and 2006.
Director of the national program ‘Study of the Earth’s Interior’ from 2000 to 2002.

Member of several evaluation committees for laboratories in Earth Science and Astrophysics.

Miscellaneous

Member of the Advisory committee of Institut d'Astrophysique Spatial

Editors of special issues of Planetary and Space Science related to workshops on Mars in 2000, 2004 and 2005.

Organizer of several exhibits about planetary exploration for the public

Members of several hiring committees in different universities

Reviewer for journals such as Nature, Science, Icarus, JGR, GRL, PSS,

.....

Convener of special sessions in meetings and organization of meetings and workshop

Co-organizer of the first 'Super-Earths' workshop, Nantes, June 2008

Organizer of the Titan's surface workshop, ESTEC, February 2007.

Convener of session 'Titan' at the 1st Europlanet Science Conference, September 2006.

Organizer of the Cassini-Huygens PSG meeting in Nantes in June 2006.

Organizer of the session entitled 'Planetary Science' at the SF2A meeting, Strasbourg, 27 June to 1 July 2005.

Organizer of the workshop 'Planet Mars', les Houches, 23 May to 1 June 2005.

Organizer of the workshop entitled 'A comparative study of the outer planets before the exploration of Saturn by Cassini-Huygens', ISSI (International Space Science Institute), Berne, 12-16 January 2004.

Organizer of the European workshop 'Planet Mars', les Houches, 30 April - 9 May 2003.

Co-convener of session 'Early Earth', EGS, April 2003.

Organizer of the workshop on Planetary Science in France, Nantes, 10-12 September 2002.

Convener of the meeting "Mars exploration and other sample return missions", Paris, February 2-7 1999.

Organizer of the workshop "The Jovian system after Galileo, the saturnian system before Cassini-Huygens", Nantes (France), May 11-15 1998.

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Role in space missions

Interdisciplinary Scientist (IDS) on ESA VenusExpress mission since June 2006.

Co-I of MERMAG on the ESA Bepi-Colombo mission since 2006.

Co-I of OMEGA on the ESA MarsExpress mission (2000 -)

Team-member of VIMS on the NASA Cassini mission (1993 -)

Co-I of ISM on the Soviet mission PHOBOS (1988-1989).

Work and duties related to space exploration

I came to Nantes in 1993 in order to set up a laboratory in planetary geophysics because the most recent data in planetary science and the experiments onboard upcoming missions to Mars and other planets require more and more interaction between Earth Science and Planetary Science. I am involved in implementing the observations of and processing the data of mapping spectrometers VIMS/Cassini and OMEGA/Mars Express. I have worked on a number of projects including airplanes for Mars, Mars geophysical networks, Bepi-Colombo (Mercury), Corot (extra-solar planets) and future missions to Europa. I am a Co-Investigator on Cassini, Mars-Express and Bepi-Colombo. In June 2006, I got appointed as one of the 5 IdSs (Interdisciplinary scientist) on the ESA Mission Venus-Express.

During the last 10 years, I have studied the internal dynamics of the Earth and other Earth-like planets including Mars and the large icy satellites of the outer planets. The models are used to predict the thermal history of the planets and to compare with observations such as chemical composition of the surface, magnetic field, gravity field and seismic activity. The comparison between observations and models allows for a better understanding of the physical processes which drive the evolution of each planet. One major goal is to understand the uniqueness of planet Earth. My future work will deal with the interaction between internal dynamics and evolution and composition of planetary atmospheres.

I have served in a number of committees including the advisory committee of the French space agency (chairman of the solar system working group from 1997 to 2001), the CNRS program 'Interieur de la Terre' (director between 2000 and 2003), and NASA panels. I have organized several workshops and conferences including the Euroconference entitled "The Jovian system after Galileo, the Saturnian system before Cassini-Huygens", held in Nantes (France) in May 1998 and was the chairman of the meeting entitled "Mars exploration and other sample return missions" held in Paris in February 1999. I also organized several exhibits on solar exploration for the public. I was Co-I on the ISM experiment onboard the Phobos mission in 1989 and I am Team Member of the VIMS experiment onboard the Cassini spacecraft.

I have authored or co-authored more than 100 papers (50 papers since 2005) in refereed journals including two recent papers in Nature on the possible release of methane by cryovolcanism on Titan. Several papers describe the internal structure (presence of deep oceans) of icy satellites, and the internal dynamics of the Earth, terrestrial planets, icy satellites and large asteroids (Ceres).

Work related to exoplanets

Publications

- Léger A., Selsis F., **Sotin C.**, Guillot T., Despoix D., Mawet D., Ollivier M., Labèque F.A., Valette C., Brachet, Chazelas B., Lammer H., (2004), A new family of planets ? « Ocean planets », *Icarus*, 169, 499-503.
- Sotin C.**, Grasset O and Mocquet A; (2007); Mass-radius curve for extrasolar Earth-like planets and ocean planets; *Icarus*, 191, 337-351.
- Selsis F, Chazelas B, Borde P, Ollivier M., Brachet F., Decaudin M., Bouchy F., Ehrenreich D., Griessmeier, J. -M., Lammer H., **Sotin C.**, Grasset O., Moutou C., Barge P., Deleuil M., Mawet D., Despoix D., Kasting J. F., Leger A. (2007); Could we identify hot ocean-planets with CoRoT, Kepler and Doppler velocimetry?; *Icarus*, 191, 453-468.

Invited talks and communications

- Sotin C.**, Methane in Exoplanets: Lessons from Mars and Titan, workshop on “Exchange processes in icy moons”, International Space Science Institute, Bern, Switzerland, November 2008.
- Sotin C.**, Extrapolating solid Earth models to terrestrial exoplanets; JPL, April 2008.
- Sotin C.**, Titan’s geology: comparison with icy satellites and earth-like planets; Caltech, April 2008.
- Sotin C.**, Extrapolating solid Earth models to terrestrial exoplanets; University of Arizona, April 2008.
- Sotin C.**, 2004, Ocean in the solar system and beyond, Darmstadt, Germany, 2 Novembre 2004.
- Sotin C.**, 2004, Water in the solar system and beyond, Jet Propulsion Laboratory and Caltech, Pasadena, 4 Mai 2004.
- Sotin C.**, 2004, Water in the solar system and beyond, Geotop conference at McGill university and université du québec à Montréal (UQAM), Montréal, 2 Avril 2004

Chapter on the internal structure of terrestrial exoplanets

The science committee of the first book on Exoplanets in the series of the University of Arizona books asked me to write the chapter on the interior structure of Exoplanets

Member of the Science Advisory Committee of the first ‘Super-Earths’ workshop in Nantes, 16-18 June, 2008

About 100 people attended this first workshop on Super-Earths. During the three days, there has been a lot of discussion among the participants. This workshop was interdisciplinary with the participation of astronomers, astrophysicists, planetary scientists and geologists.

Teaching experience

2008 – I have completed the writing of a book in Planetary Science for undergraduate students.

Sotin C., O.Grasset and G. Tobie, Planétologie, Dunod, 350 pp, in press.

The table below gives the list of classes I taught when I was professor in Nantes (only years from 1998 are reported). The usual teaching load is 200 hours per year. But my teaching load was reduced due to my duties for the French research council (CNRS) and the University of Nantes (1998-2001 and 2004-2007), and for my role in the Cassini mission (2004-2007)

	Number of hours					
	98/99*	99/00*	00/01*	01/02	02/03	03/04
Introduction to geosciences for undergraduates		6		54	66	60
Astrophysics for undergraduates	54	57	36	42	45	45
Field work in geophysics				16		
Geodynamics for graduate students	40	34	39	82	79	81

	Number of hours				
	02/03	03/04	04/05	05/06	06/07
Introduction to geosciences for undergraduates	66	60	60	60	40
Mathematics for geologists - undergraduates					34
Astrophysics for undergraduates	45	45			17
Geodynamics for graduate students	79	81			20

I had the responsibility of the following classes:

- Introduction to geosciences for undergraduates : 450 students in 2004/2005, 500 in 2005/2006, 600 en 2006/2007.
- Astrophysics for undergraduates: about 100 students
- Energy : 70 students / I worked out the syllabus of this class but a colleague taught it because I could not do it
- Geodynamics for graduate students, 10 students.

Advisor for the following Ph.D. thesis

Encadrement de thèses :

1. Bruno Allard, 1988, Application de l'analyse d'images à la détermination de la composition modale sur lames minces, Université de Montpellier, Ingénieur France Télécom.
2. Philippe Blondel, 1992, Analyse d'images radar : application à la tectonique de Vénus, Ingénieur océanographe à l'université de Southampton.
3. Laure Dupeyrat, MDC Université de Paris XI.
4. Olivier Grasset, Professeur à l'université de Nantes.
5. Pierre Vacher, MDC université de Nantes.
6. Frédéric Deschamps, , chercheur à l'université d'Utrecht puis chercheur à l'ETH Zurich depuis Septembre 2005.
7. Stéphane Labrosse, MDC à l'Institut de Physique du Globe de Paris puis professeur à Lyon depuis le 01/09/06.
8. Gaël Choblet, 01/10/95 au 10/01/99, Dynamique interne des planètes : apport de la modélisation 3D, CR2 CNRS depuis Octobre 2002.
9. Julie Castillo, 01/10/98 au 05/12/2001, Contribution à l'étude de la structure interne des planètes telluriques, chercheur à JPL (Pasadena, CA, U.S.A.)

10. Olivier Mousis, 01/10/98 au 01/12/2001, Rôle des hydrates dans la formation de Titan et des satellites de glace réguliers, ATER en Physique à l'université de Besançon, Postdoc à l'université de Berne, MdC Besançon depuis Septembre 2004, HDR en 2006.
11. Véronique Dubois, 01/10/98 au 09/09/02, Relations masse-rayon-composition pour des planètes extrasolaires de type terrestre. Emploi dans l'animation culturelle à Nantes.
12. Gabriel Tobie, 01/10/2000 au 27/10/2003, Chauffage de marée et géodynamique des satellites des planètes géantes. Post-doc University of Arizona at Tucson (bourse Lavoisier 2003/2004), puis au LPGNantes (bourse CNES) 2004/2006. CR CNRS au LPGNantes depuis Novembre 2006.
13. Judith Pargamin, 01/10/2000 au 08/07/04, Etude thermodynamique et expérimentale des clathrates et des mélanges H₂O-NH₃-CH₄ : applications planétologiques. Réorientation en journalisme scientifique (DESS en 2004/2005), reçue au concours de conservateur du patrimoine en option patrimoine scientifique et naturel en Novembre 2006.
14. Jean-Philippe Combe, 01/10/2001 au 24/10/05: télédétection IR des surfaces planétaires. ATER à l'Université de Nantes puis postdoc au Planetary Science Institute (PSI) à Winthrop (WA, USA). depuis le 01/02/06.
15. Yoann Quesnel, 01/10/2003 au 20/11/06: Analyse des données géophysiques de Mars, postdoc à Potsdam (Allemagne) depuis le 01/12/2006. Maître de conférences au CEREGE (Aix-Marseille) depuis 1 Octobre 2008.
16. François Couturier, 01/10/2003 au 26/04/2007*: Convection 3D sphérique et champ de gravité, ATER à Paris7 du 01/10/2006 au 30/04/2007 puis à partir du 01/05/2007 poste CDI d'animateur en astronomie (employé par l'association 'A Ciel Ouvert', Moulin du roi, av Pierre De Coubertin 32500 FLEURANCE). *Date de soutenance reportée en Avril 2007 du fait de problèmes de réunion du jury de thèse.
17. Laetitia LeDeit, 01/10/2005 : Géologie de Mars d'après les données Mars-Express
18. Lucille LeCorre, 01/12/2006 : Géologie de Titan et des autres satellites de Saturne

Outreach activities since 1998

Conferences and seminars for public (see list in the list of publications)

Publications in journals that describe scientific discoveries to the public (The New Scientist, Science et Vie, La Recherche, ...)

Participations at radio and TV interviews

Participation at the realization of exhibits for the public

Mars : Exploration d'une planète, 2005/2007, Muséum d'Histoire Naturelle de Nantes jusqu'au 21 Août 2006, puis à Tours à partir du 18 Septembre 2006.

Foire Internationale de Nantes, Avril 2005

Les météorites, 2001, Muséum d'histoire naturelle de Nantes.

Chroniques terrestres, 2000-2004, exposition itinérante de la MCLA, stand géologie planétaire.

Les mondes inventés, 2000, Château des Ducs de Bretagne, Nantes

Exploration du système solaire, 1999, Libreville, Gabon.

Exploration du système solaire, 1998, Cité des congrès, Nantes.

Talks in elementary schools, high-schools, children hospitals,

Activities during the first year at JPL (September 2007 – August 2008)

Team-member of the Cassini/VIMS

Since I arrived at JPL, I have been responsible for the VIMS observations on Titan. These observations have concerned mainly the present extended mission (2008-2010). It gives me some training on how to deal with the day-to-day operations. With one flyby per month (and sometimes every 16 days), the number of operations is quite large and the sequencing is a heavy load.

My work also includes data processing and interpretation of the VIMS images. Last results include the determination of methane and ethane in lacus Ontario on Titan (Nature, July 2008). Several studies are ongoing on geological features that are seen at Titan's surface.

Development of a laboratory experiment on the interaction between hydrocarbons and water ice under Titan conditions

I have set up a chamber where Titan conditions can be met ($T=94$ K, N₂ Pressure). The objective is to study the interaction between hydrocarbons and H₂O ice. We have been able to obtain drops of methane and ethane dropping in the ice and forming an hydrocarbon pools. The data (videos, temperature, pressure) are being analyzed and implications for the composition of Titan surface will be discussed in a paper we are preparing.

The chamber is being modified to allow Raman observations to be performed

Other experiments include the cycling loading of H₂O and CH₄ ices in order to constrain models of tidal dissipation in the icy crust of the icy moons.

Member of the Science Definition Team (SDT) for the Titan and Saturn System Mission (TSSM)

My role in this SDT includes:

- Attending the meeting with the engineers for asking about the feasibility of the montgolfière in Titan's atmosphere – fluid mechanics for the calculation of the buoyancy / proving information about Titan / definition of the science investigations to be performed on the balloon
- The responsibility of the traceability matrix for each in situ element (lake-lander and the montgolfiere)
- Being the scientist in charge of defining the requirements for the determination of the gravity field and the topography from the orbiter – other members of the SDT have helped on that issue
- Helping the coordination between JPL – ESA and CNES
- Writing the part of the proposal defining how the extension of the Cassini mission can set the stage for TSSM (landing sites, seasonal variations, long term variability, ...)

Writing of several book chapters

I have 5 chapters of books which are being written:

- Tides on Europa with Gabriel Tobie and John Wahr – paper is accepted
- Interior Structure of Titan, in preparation
- Geology of Titan (with R. Jaumann, R. Lopes, E. Turtle, E. Stofan, ...), submitted
- Internal dynamics of the medium size icy satellites (D. Matson is first author), in preparation
- Interior structure of Exoplanets for University of Arizona Press)

Other duties

- Member of Science Advisory Committee of the French Space Agency (CNES)
- Participation at one NASA panel
- Member of the Mars Architecture Tiger Team
- Concept study of a mission to Uranus

Advisor for undergraduate students

JPL has programs which allow undergraduate students to work at JPL. I have had two undergraduate students who have spent a few months at JPL (Brian Anderson and Frances Wulke).

List of publications in peer-reviewed journals September 2008

- 103 – Jaumann, R., R.H. Brown, K. Stephan, J.W. Barnes, L.A. Soderblom, **C. Sotin**, S. Le Mouelic, R.N. Clark, J. Soderblom, B.J. Buratti, R. Wagner, T.B. McCord, S. Rodriguez, K.H. Baines, D.P. Cruikshank, P.D. Nicholson, C.A. Griffith, M. Langhans, R.D. Lorenz (2008) Fluvial erosion and post-erosional processes on Titan; *Icarus*, 197, 526-538.
- 102 – Combe J-P., S. Le Mouelic, **C. Sotin**, A. Gendrin, J.F. Mustard, L. Le Deit, P. Launeau, J-P. Bibring, B. Gondet, Y. Langevin, P. Pinet (2008) Analysis of OMEGA/Mars express data hyperspectral data using a Multiple-Endmember Linear Spectral Unmixing Model (MELSUM): Methodology and first results; *Planet. Space Sci.*, 56, 951-975.
- 101 - Le Deit L., S. Le Mouelic, O. Bourgeois, J-P. Combe, D. Mege, **C. Sotin**, A. Gendrin, E. Hauber, N. Mangold, J-P. Bibring (2008) Ferric oxides in East Candor Chasma, Valles Marineris (Mars) inferred from analysis of OMEGA/Mars Express data: Identification and geological interpretation; *J. Geophys. Res.*, 113, E07001.
- 100 - Brown, L. A. Soderblom, J. M. Stoderblom, R. N. Clark, R. Jaumann, J. W. Barnes, **C. Sotin**, B. Buratti, K. H. Baines and P. D. Nicholson (2008) The identification of liquid ethane in Titan's Ontario Lacus; *Nature*, .
- 99 – Tobie G., O. Cadek and **C. Sotin** (2008) Solid tidal friction above a liquid water reservoir as the origin of the south pole hotspot on Enceladus; *Icarus*, 196, 642–652.
- 98 – Barnes JW, Brown RH, Soderblom L, **Sotin C**, Le Mouelic S, Rodriguez S, Jaumann R, Beyer RA, Buratti BJ, Pitman K, Baines KH, Clark R, Nicholson P (2008) Spectroscopy, morphometry, and photoclinometry of Titan's dunefields from Cassini/VIMS; *Icarus*, 195, 400-414.
- 97 - Le Mouelic S, Paillou P, Janssen MA, Barnes JW, Rodriguez S, Sotin C, Brown RH, Baines KH, Buratti BJ, Clark RN, Crapeau M, Encrenaz PJ, Jaumann R, Geudtner D, Paganelli F, Soderblom L, Tobie G, Wall S (2008) Mapping and interpretation of Sinlap crater on Titan using Cassini VIMS and RADAR data; *J. Geophys. Res.*, 113, E04003.
- 96 - **Sotin C.** and G. Tobie (2008); Titan's hidden ocean; *Science*, 319, 1629-1630.
- 95 – Cruikshank D.P., E. Wegryn, C.M. Ore, R.H. Brown, J-P. Bibring, B.J. Buratti, R.N. Clark, T.B. McCord, P.D. Nicholson, Y.J. Pendleton, T.C. Owen, G. Filacchione, A. Coradini, P. Cerroni, F. Capaccioni, R. Jaumann, R.M. Nelson, K.H. Baines, **C. Sotin**, G. Bellucci, M. Combes, Y. Langevin, B. Sicardy, D.L. Matson, V. Formisano, P. Drossart, V. Mennella (2008) Hydrocarbons on Saturn's satellites Iapetus and Phoebe. *Icarus*, 193, 334-343.
- 94 - McCord T.B., P. Hayne, J-P. Combe, G.B. Hansen, J.W. Barnes, S. Rodriguez, S. Le Mouelic, K.H. Baines, B.J. Buratti, **C. Sotin**, P.D. Nicholson, R. Jaumann, R.M. Nelson (2008) Titan's surface: Search for spectral diversity and composition using the Cassini VIMS investigation, *Icarus*, 194, 212-242.
- 93 - Coradini A, F. Tosi, A.I. Gavrishin, F. Capaccioni, P. Cerroni, G. Filacchione, A. Adriani, R.H. Brown, G. Bellucci, V. Formisano, E. D'Aversa, J.I. Lunine, K. Baines, J-P. Bibring, B.J. Buratti, R.N. Clark, D.P. Cruikshank, M. Combes, P. Drossart, R. Jaumann, Y. Langevin, D.L. Matson, T.B. McCord, V. Mennella, R.M. Nelson, P.D. Nicholson, B. Sicardy, **C. Sotin**, M.M. Hedman, G.B. Hansen, C.A. Hibbitts, M. Showalter, C. Griffith, G. Strazzulla (2008) Identification of spectral units on Phoebe. *Icarus*, 193, 223-251.
- 92 – Jaumann R., K. Stephan, G.B. Hansen, R.N. Clark, B.J. Buratti, R.H. Brown, K.H. Baines, S.F. Newman, G. Bellucci, G. Filacchione, A. Coradini, D.P. Cruikshank, C.A. Griffith, C.A. Hibbitts, T.B. McCord, R.M. Nelson, P.D. Nicholson, **C. Sotin**, R. Wagner (2008); Distribution of icy particles across Enceladus' surface as derived from Cassini-VIMS measurements; *Icarus*, 193, 407-419.
- 91 - Selsis F, Chazelas B, Borde P, Ollivier M., Brachet F., Decaudin M., Bouchy F., Ehrenreich D., Griessmeier, J. -M., Lammer H., **Sotin C.**, Grasset O., Moutou C., Barge P., Deleuil M., Mawet D., Despois D., Kasting J. F., Leger A. (2007); Could we identify hot ocean-planets with CoRoT, Kepler and Doppler velocimetry?; *Icarus*, 191, 453-468.
- 90 - Soderblom LA, Kirk RL, Lunine JI, Anderson, J. A., Baines K. H., Barnes J. W., Barrett J. M., Brown R. H., Buratti B.J., Clark R. N., Cruikshank D. P., Elachi C., Janssen M. A., Jaumann R., Karkoschka E., Le Mouelic S., Lopes R. M., Lorenz R. D., McCord T.B., Nicholson P. D., Radebaugh J., Rizk B., **Sotin C.**, Stofan E.R., Sucharski T.L., Tomasko M. G., Wall S. D. (2007); Correlations between Cassini VIMS spectra and RADAR SAR images: Implications for Titan's surface composition and the character of the Huygens probe landing site; *Planet. Sp. Sci.*, 55, 2025-2036.
- 89 - Barnes JW, Radebaugh J, Brown RH, Wall S., Soderblom L., Lunine J., Burr D., **Sotin C** , Le Mouelic S, Rodriguez S, Buratti BJ, Clark R, Baines KH, Jaumann R, Nicholson PD, Kirk RL, Lopes R, Lorenz RD, Mitchell K, Wood CA (2007); Near-infrared spectral mapping of Titan's mountains and channels, *J. Geophys. Res.*, 112 (E11): Art. No. E11006.
- 88 - Bibring JP, Arvidson RE, Gendrin A, Gondet B, Langevin Y, Le Mouelic S, Mangold N, Morris RV, Mustard JF, Poulet F, Quantin C, Sotin C. (2007), Coupled ferric oxides and sulfates on the Martian surface, *Science*, 317, 1206-1210.
- 87 – Castillo J, Matson D, **Sotin C**, Johnson TV, Lunine JI, Thomas PC; (2007); Iapetus' Geophysics: Rotation Rate, Shape, and Equatorial Ridge; *Icarus*, 190, 179-202.
- 86 - **Sotin C**, Grasset O and Mocquet A; (2007); Mass-radius curve for extrasolar Earth-like planets and ocean planets; *Icarus*, 191, 337-351.

- 85 - Cruikshank DP, Dalton JB, Ore CMD, Bauer J, Stephan K, Filacchione G, Hendrix AR, Hansen CJ, Coradini A, Cerroni P, Tosi F, Capaccioni F, Jaumann R, Buratti BJ, Clark RN, Brown RH, Nelson RM, McCord TB, Baines KH, Nicholson PD, **Sotin C**, Meyer AW, Bellucci G, Combes M, Bibring JP, Langevin Y, Sicardy B, Matson D. L., Formisano V, Drossart P, Mennella V. (2007), Surface composition of Hyperion, *Nature*, 448, 54-56.
- 84 - Encrenaz T, Sotin C, McCleese D., Head J.W. (2007) ; Special issue of planetary of space science planet Mars II: A new image of planet Mars – Preface; *Planet. Spa. Sci.*, 55, 255-257.
- 83 - **Sotin C**; (2007); Titan's lost seas found; *Nature* 445: 29-30.
- 82 – Quesnel, Y., Langlais B. and **Sotin C.**, (2007), Local inversion of magnetic anomalies: implication for Mars' crustal evolution, *Planet. Space Sci., Planetary and Space Science*, 55, 258-269.
- 81 - Barnes JW, Brown RH, Soderblom L, Buratti BJ, **Sotin C**, Rodriguez S, Le Mouélic S, Baines KH, Clark R and Nicholson P, (2007), Global-scale surface spectral variations on Titan seen from Cassini/VIMS, *ICARUS* 186 : 242-258.
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List of invited and solicited talks

- Sotin C.**, Convective motions within icy mantles, Exeter Exoplanet Workshop, Exeter, UK, September 2008.
- Sotin C.**, Methane in Exoplanets: Lessons from Mars and Titan, workshop on "Exchange processes in icy moons", International Space Science Institute, Bern, Switzerland, November 2008.
- Sotin C.**, G. Mitri, N. Rappaport, G. Schubert, D. Stevenson; Titan's internal structure after Cassini-Huygens ; 'Titan after Cassini-Huygens' workshop, Corpus Christi, TX, July 2008.
- Sotin C., G. Tobie and O. Cadek**, Solid tidal friction above a liquid water reservoir as the origin of the South Pole Hotspot on Enceladus, Cassini PSG meeting, Roma, Italy, June 2008
- Sotin C.**, Tobie G., Duval P.; Convection in icy satellites: models and constraints from laboratory experiments; Science of Solar System Ices (ScSSI) Workshop, Oxnard, May 2008.
- Sotin C.**, Extrapolating solid Earth models to terrestrial exoplanets; JPL, April 2008.
- Sotin C.**, Titan's geology: comparison with icy satellites and earth-like planets; Caltech, April 2008.
- Sotin C.**, Extrapolating solid Earth models to terrestrial exoplanets; University of Arizona, April 2008.
- Sotin, C.**; Comparing the evolution of the Earth, Mars and Titan (Runcorn-Florensky Medal Lecture) (solicited); European Geophysical Union, Vienna, 2008.
- Sotin, C.**; Le Corre, L.; LeMouelic, S.; Barnes, J.W.; Brown, R.H.; Jaumann, R.; Soderblom, J.; Baines, K.; Buratti, B.; Clark, R.; CASSINI/VIMS observations of cryo-volcanic features on Titan: implications for the methane cycle (solicited); European Geophysical Union, Vienna, 2008.
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