

# David BARATOUX

Senior Researcher at the Institute of Research for Sustainable Development



## Personal data

Age : 40  
Nationality : French

## Contact

## Languages

English fluency  
Czech good knowledge  
French mother tongue

## Research areas

Geophysics & Mineral resources  
Planetary Sciences

## Research achievements at a glance

My research interest is the evolution and differentiation of planetary crusts, with a particular focus on volcanic, impact and surface processes. The objective of this research is to understand the distribution of chemical elements within the crust at all scales, including extreme concentrations of metals (ie, ore deposits of economic interests). An important motivation of my research activities is to develop partnerships with scientists in developing countries and focus on research areas corresponding to the most pressing issues in these countries. In this context, I am being recently involved into new research activities about responsible mining involving collaborations between geo- and social scientists. I am currently based in Dakar, Senegal, at the University Cheikh Anta Diop, where I am collaborating with African scientists on several projects for development, including WAXI (West African Exploration Initiative, <http://www.tectonique.net/waxi3/>), the AMEDEE network (Mining Activities, Environment, Economic and Ethical Development, <http://www.amedee-network.science>), and the AFIPS (Africa Initiative for Planetary and Space Science, <https://afri>).

I have authored or co-authored 100 peer-reviewed publications, including several letters in Nature (7618 citations, h-index : 42 source web of science). I have supervised 17 students (6 of them having obtained a Ph.D. in academic research). I have given 6 invited talks at international conference and 10 invited seminars in Europe, U.S.A., Japan and Africa. I have also co-authored two books for the general public, and I regularly write articles or give conferences for the public.

## Professional Experience

2021 – : Guess scientist at the University Félix Houphouët-Boigny, Abidja, Côte d'Ivoire.  
2017 – : Senior Scientists at the Nat. Institute of Res. for Sustainable Development.  
2014 – 2017 : Guest scientist at the Institute of Research for Sustainable Development, and Institut Fondamental d'Afrique Noire, Cheikh Anta Diop, Dakar, Sénégal.  
2002 – 2013 : Assistant Professor, University of Toulouse.  
2006 – 2007 : Guest scientist at CNRS.  
2001 – 2002 : Postdoctoral fellow (CNES, french national space agency) at the Institut Physique du Globe de Paris.  
1999 – 2001 : Ph.D. student, University of Lyon, Ecole Normale Supérieure de Lyon, and University Joseph Fourier, Grenoble, France.

## Education

2011 - Habilitation à Diriger des Recherches (HDR), University of Toulouse, France.  
2001 - Ph.D. Planetary Sciences/Geophysics, University Joseph Fourier, Grenoble, France.  
1996 – Master of Fundamental Physics, Orsay, University Paris XI, France.  
1994 – Bachelor of Fundamental Physics, Orsay, University Paris XI, France.

## Editorial Responsibilities

2013 – 2019 – Editor, Journal of Geophysical Research (Planets).  
2016 : Guest Editor, Meteoritics and Planetary Science.  
2011 - 2013 – Editor Assistant, Journal of Geophysical Research (Planets).  
2013 – 2014 – Member of the Editorial Board of GeoRes J.

## Awards

2010 – 2017 : French Award for Scientific Excellence

## 5 Selected publications (peer-reviewed)

**Baratoux, D.**, Toplis, M.J., Monnereau, M., Gasnault, O. (2011), Thermal history of Mars inferred from orbital geochemistry of volcanic provinces, *Nature*, 472, 7343, pp. 338-341. doi:10.1038/nature09903.

**Baratoux, D.**, et al. (2011) Volcanic sands in Iceland: diverse origins of aeolian sand deposits revealed at Dyngjúsandur and Lambhraun, *Earth Surface Processes and Landforms*. 36, 13, 1789-1808. doi:10.1002/esp.2201.

**Baratoux, D.**, H. Samuel, C. Michaut, M. J. Toplis, M. Monnereau, <sup>[1]</sup>M. Wieczorek, R. Garcia, and <sup>[2]</sup>K. Kurita (2014), Petrological constraints on the density of the Martian crust, *J. Geophys. <sup>[3]</sup>Res. Planets*, 119, 1707-1727, doi:10.1002/2014JE004642.

Bouley, S., **Baratoux, D.**, Matsuyama, I., Forget, F., Séjourné, A; Turbet, M., Costard, F. Late (2016) Tharsis Formation and new perspectives for Early Mars, *Nature*, doi:10.1038/nature17171.

Mangold, N., **Baratoux, D.**, Witasse, O., Encrenaz, T., Sotin, C. Mars: a small terrestrial planet. *The Astronomy and Astrophysics Review*, in press.

## Research grants (2015 – present)

Co-PI, T2GEM (Geochemical and Geophysical Technologies for Exploration Mining, 2015 – 2017, 135 k€.

PI of the module « Physio-chemical characterization of the regolith », West Africa Exploration Initiative, 2014 – 2018, 60 000 US\$.

PI, Multi-scale organization of K and Th and in the crust, 2016 – 2017, 16 000 €.

PI, Radiometric signature of impact craters, 2015 – 2019, 10k€.

Co-PI, Ni-Cu-PGE ore deposits on Mars, collaboration with University of Western Australia 2014 – 2017, INSU contribution : 10 000 €.

Member of the french-Japan « Sakura » project (ministry of foreign affair) about impact cratering on the Moon, 2017 – 2018, 10 k€/year.

Member of the french-South African « Protea » project (ministry of foreign affair), Spatial distribution of Uranium in planet's crust – from the atom to the continent, 2017 – 2018, 10 k€/year

## International influence

2014 – 2018 : Guest scientist at the Institut Fondamental d'Afrique Noire Cheikh Anta Diop, University Cheikh Anta Diop, Dakar, Senegal.

2014 : 2 months at the University of Boston.

2012 : 2 months at the University of Western Australia, Centre for Exploration Targeting  
Several visits (8 months in total) at the University of Kobe, Department of Earth and Planetary Sciences (Japan) and University of Tokyo, Earthquake Research Institute (Japan) between 2016 and 2010.

2002 (4 months) : Post-doctoral visit at the Lunar and Planetary Laboratory, Tucson, Arizona.

## Public outreach (selected publications)

Baratoux, D. (2013) Martian volcanism (in french), *Géochroniques*.

Bouley et al. (16 co-authors, including **Baratoux, D.**) Accidents planétaires, Belin, Pour la Science, 150 pages.

Williams, P.K., Jessell, M.W, **Baratoux, D.**, Ouédraogo, F., Bolster, S. 2015. Development of sustainable social licences in West Africa – a work in progress. [The AusIMM bulletin – December 2015](#).

**Baratoux, D.**, Chennaoui-Aoudjehane, H. (2016) What a Moroccan crater reveals about a rare double whammy from the skies. [The conversation, Africa](#).

Baratoux, L., Jessell, M., Bamba, O., **Baratoux, D.** Siebenaller, L, Dioh, E., Itard, Y. Politiques publiques en géosciences en Afrique de l'Ouest. Politiques publiques, Sociétés et Mondialisation en Afrique Sub-Saharienne, Editeurs : Emmanuel Grégoire, Jean-François Kobiané, Marie-France Lange. In press, Karthala.