



## Valérie Masson-Delmotte

Birth date: 29/10/1971

Nationality: French

Personal status: married, two children

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### Experience for IPCC :

- WG1 : LA of AR4, CLA of AR5 (chapter 5, TS and SPM)
- Rigor for assessment of knowledge from observations, paleoclimate records, process studies and simulations on different space and time scales
- Long term involvement in sharing climate science with stakeholders, children and the general public
- Multi-disciplinary research projects and committees with scientists from life, health, and social sciences on topics related to water, impacts, perception, adaptation and mitigation strategies

### Scientific profile :

- **Document past climate variability** using natural archives (ice cores, tree rings) and stable isotope tools : recent variability (last centuries), abrupt events, glacial-interglacial cycles. Target areas : Greenland, Antarctica, Tibet, Europe.
- **Understand mechanisms** of changes in climate, water cycle and sea level.
- **Assess the ability of climate models** to simulate past changes and therefore their credibility.
- **Synthesize knowledge** for SCAR and IPCC
- **Share knowledge** from climate sciences with children and the general public: books, exhibitions, conferences, education and training.

## Education and Research Experience

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2014-: Set-up of LSCE scientific council (research strategy)

2010-2013: Head of the Climate Dynamics and Archives group at LSCE (Staff: 54)

2007-present: Senior Scientist (Directeur de Recherches) at CEA

2004: Habilitation à Diriger des Recherches, Paris 6 University

1998-2008: Head of the ice core and continental paleoclimate research team (Staff: 25).

1996-present, Tenured researcher at CEA-climate research division (LSCE).

1996: PhD in Physics of Fluids (Ecole Centrale Paris/LSCE) on past climate modelling

1993: Engineer degree and Master in Fluid physics with high honors (Ecole Centrale Paris)

## Invited lectures at the following meetings

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ESF euroconference *Comparison between ice and marine records*, San Feliu de Giuxols, Spain (2003); EC conference *Paleoclimate, reducing the uncertainties*, Utrecht, The Netherlands (2004); AGU Chapman conference *Tropical Extratropical climate teleconnections*, Honolulu, Hawaii (2005), PAGES open science conference, *Past global changes and relevance for the future*, Beijing, China (2006), EGU *GIFT session for teachers* (2006), *ATCM/SCAR Antarctic treaty consultative meeting*, Edinburgh, UK (2006); *Mars polar science meeting*, Davos, Switzerland (2006), *AGU fall meeting*, ice core session (2006), *AGU fall meeting*, millennial variability session, San Francisco, USA (2006), Seminars invited at Cambridge University (UK), and Bern University (CH) (2007); *IODP workshop*, Bremen, Germany (2007); French Senate, French Museum of Natural History, *Launch of the International Polar Year* (2007), *GAC-MAC conference*, tree ring isotope session, Québec, Canada (2008), *Leverhulme Climate Symposium*, Cambridge and London (2008), *ESF Quaternary climate from pole to pole*, Venice, 2008; ESF; *ESF Quaternary Science Conference*, Obergurgl, 2009; *IPCC from AR4 to AR5*, Hawaii, 2009; *PAGES/Past Interglacials*, Lesbos, 2010; French Senate, *Outlook on Eparse Islands*, 2010; *COP15 European Commission Side Event on ice sheets and sea level*, Copenhagen, 2010; *Arctic Council Polar Science Day*, Copenhagen, 2010; *University of Toronto*, Canada, 2011; *PAST4FUTURE FP7 project*, Copenhagen, 2011; *CIFAR meeting*, Vancouver, 2011; *Université Laval*, Québec, 2011; *Third Pole Environment*, Reykjavik, 2011; *STUDIUM conference*, Orléans, 2011; *ITCP workshop*, Chennai, India; *UPO Brest*, France, 2012; *CLIVAR-PAGES workshop*, Hawaii, USA, 2012; *Science and policy summer school*, Science Po, Paris, 2012; *NCCR Swiss summer school*, Locarno, 2012; *Climate forum*, Portland, USA, 2012; *IPICS*, Giens, France, 2012; *Total university*, Paris, France, 2012; *Center for strategic analyses*, Paris, France, 2013; *Climate controversies*, Meudon, France, 2013; *SFIS*, Paris, France, 2013; *Lorraine University*, Nancy, France, 2013; *Collège de France*, Paris, France, 2013; *Arctic outlook*, Paris, France, 2013; *IACS/IAMAS plenary talk*, Davos, CH, 2013; *Isotope workshop*, Bern, CH, 2013; *Anthropocene workshop*, Paris, 2013; *AGU*, San Francisco, 2013; *Royal Geographical Society*, London, 2014; *Horizon of statistics*, Paris, 2014; *University of Liege*, Belgium, 2014; *Ferrare*, Italy, 2014; *Stockholm*, 2014; *Royal Society meeting on climate sensitivity*, 2014; *AGU*, 2014.

## Research expeditions

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Greenland field work at NorthGRIP (1997) and NEEM (2008). Several sampling operations for tree and historical building timber wood sampling for French tree ring isotopic projects (2002-2009).

## Organization of international conferences

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IUGG meeting, session *Climate of the last millennium*, Sapporo, Japan, 2005; IAMAS meeting session *Water stable isotopes*, Beijing, China, 2006; IUGG meeting session *Glacial interglacial climate change, observations and modelling*; Perugia, Italy, 2007; AGU fall meeting, Union session *Climate Sensitivity From Modeling, Current Observations, and Paleoclimate Data*, San Francisco, 2007; ESF conference *Quaternary Climate, from Pole to Pole*, Venice, 2008; MOCA 2009 meeting, Joint session (IAMAS-IACS), *Ice cores in paleoclimate*, Montréal, Canada, 2009; IPY final conference, chair of theme 2, Oslo, June 2010; French-Chinese meeting on stable isotopes in precipitation in the Tibetan Plateau, Gif, 2011; session at WCRP meeting, Denver, 2010; CLIVAR-PAGES workshop, Hawaii, 2012; IPICS, Giens, 2012; Isotope workshop, Gif, 2013; sessions at EGU (2012-2015) and AGU (2013), IACS/IUGG (2015). Scientific committee of UNESCO meeting, “our common future under climate change” (2015).

## Expertise

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- Associate editor of *Annals of Glaciology* (2001), *Climate of the Past* (since 2007), *ERL* (since 2014), *PAGES Newsletter* (issue on climate forcings, 2006), guest editor for *Quaternary Science Reviews* (EPICA special issue, 2009). Reviewer of papers (~10 per year) for *Nature*, *Nature Geosciences*, *Science*, *GRL*, *JGR*, *J. Climate*, *J. Glaciology*, *Climate Dynamics*, *Climate of the past*, *Quat. Sci. Rev.*, *G3*, *EPSL*... and projects (NSF, ESF, France, Canada, The Netherlands, Australia, Switzerland, Austria, Germany).
- Member of CNRS national committee 2000-2004 (evaluation of laboratories and scientists, competitive selection of scientists). Scientific committee of the French Polar Institute (2002-2009). Scientific council for Ocean and Atmosphere Sciences of the French National Institute of Earth Sciences (2007-2010) and general science council of this institute (2010-2014) and of French Austral and Antarctic Lands (since 2009). Scientific committees of the National Research Agency, Direction of a national Antarctic research group (2003-2006). Member of the scientific advisory panels of Universciences, CDC Climat, ONF, AXA foundation. CA of ADEME. Member of working group on climate and health for Haut Conseil de Santé Publique (National Health Committee). Member of the French Strategic Research Council (CSR) since 2014.
- Lead author of IPCC AR4 (paleoclimate chapter), Coordinating Lead Author of IPCC AR5 (paleoclimate chapter) and contributing author of the SCAR report on Antarctic climate change and the Environment.
- Member of the steering committee of ice core projects (NorthGRIP, NEEM), of ICCL commission of IUGG, of IACS bureau, of CLIVAR-PAGES Intersection Panel, of IPICS (International Partnership in Ice Core Sciences), of CLIVAR SSC (2011-2013).
- Member of panels for PhD defenses (10 in France, 2 in The Netherlands, 3 in Switzerland, 1 in Russia, 1 in Australia). Supervisor or co-supervisor of 17 PhD students since 1999 (G. Delaygue, G. Raffalli-Delerce, F. Vimeux, N. Caillon, P.A. Danis, A. Landais, G. Dreyfus, N. Etien, Ch. Shi, E. Capron, K. Pol, M. Guillevic, J.L. Bonne, L. Bazin, H. You, A. Kozachek, M.

Moys). Supervisor of several postdoctoral fellows (S. Prokopencho, R-BUCE chair; P. Ortega; H. Pang, T. Bolliet, H.C. Steen-Larsen).

## Prizes

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- 2015 Martha Muse prize for contribution to Antarctic science
- 2014 Highly cited researcher, Thomson Reuters
- 2014 French-Austrian Prize Amédée
- 2013 Prix Irène Joliot Curie, Femme Scientifique de l'année 2013 (French Ministry of Research / Academy of Sciences)
- 2012 Member of Academia Europaea
- 2012 Prix Félix de l'Innovation, Ecole Centrale Paris
- 2011 Excellence in scientific research, Université Versailles St Quentin en Yvelines (with my research group)
- 2008 Descartes Prize from the European Commission for collaborative research (European Project for Ice Coring in Antarctica)
- 2004 Prix Louis D. of the Institute of France (with J.C. Duplessy and 12 scientists from LSCE)
- 2002 Grand Prix Etienne Roth du CEA from the French Academy of Sciences (with F. Vimeux)

## Funding ID

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- Coordinator of national projects : DTT/DYTEC (1997-1998, 20 k€), PNEDC (1999-2000, 40 k€), IPEV NorthGRIP (2000-2004, 150 k€), ECLIPSE 2001-2004 (90 k€), GDR Antarctique (2004-2005, 30 k€), ECLIPSE CAC1000 (2004-2006, 60 k€), ANR PICC (2005-2008, 800 k€), ANR NEEM (2008-2011, 1 M€), ANR CEPS GREENLAND (2011-2015, 800 k€) GIS PLuies-Tibet (2008-2010, 116 k€), ANR GREENLAND (2011-2015, 1.2 M€), ANR AHC-AC2 (2015-2019, 0.75 M€). Co-PI of European projects from FP4 to FP6 (EPICA-MIS, ISONET, CRYOSTAT) (LSCE total budget ~ 500 k€). Co-PI of a FP7 project (PAST4FUTURE, LSCE budget 500 k€). PI of BNP foundation project (2014-2016, 650 k€) and one French-Swedish project (2015-2017).
- 1998-2008: head of the ice core and continental group at LSCE (25 persons), annual budget ~300 k€ without salaries of tenured staff (total budget ~1 M€ per year).
- 2010-2013: head of the Climate Dynamics and Archive group at LSCE ( 54 persons). Annual budget ~600 k€ without salaries of tenured staff.

## Teaching

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1994-95      Applied mathematics, Université Paris Dauphine (96 hours);

2004              Glaciology module at ENS Ulm (6 hours + exam)

Since 2010      Master of Arctic studies (UVSQ) (10 hours on past, present, future Arctic climate change) for students in humanities and environmental sciences.

Since 1997      About 20 hours per year: 3h conferences at master levels (Earth Sciences, ParisVI, VII and XI ; Ecophysiology, Paris XI ; Fluid Mechanics, Paris Vi) ; Ecole Centrale Paris) and for PhD students

(Earth Sciences). About 10 hours per year: training sessions for primary and secondary school teachers. About 20 outreach conferences per year.

## Outreach

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- Strong involvement in education on climate change from pre-school to the training of high school teachers including school programs on environment and sustainable development. Publication of 3 children books on climate change (French, translated in Spanish, Italian, Korean and Chinese) and several books and book chapters for the general public (most in French, some in English).
- Design of poster exhibitions on climate change ([climatdemain.ipsl.jussieu.fr](http://climatdemain.ipsl.jussieu.fr)) and Greenland climate change (<http://www.insu.cnrs.fr/a3145,glaces-groenland-temoins-acteurs-changement-climatique.html>). Member of the scientific committees of French sustainable development foundations and advisor for exhibits on climate change (Universciences). Many interviews in the media.
- Scientific advisor of a “Cit  des Sciences” (French science museum) exhibit on climate change (Sept 2015-March 2016).

## Books and book chapters

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- *For children* : Le climat, de nos anc tres   vos enfants, V. Masson-Delmotte, B. Dubrulle, Le Pommier, 2005 (translated in Korean, Chinese, Spanish)
- V. Masson-Delmotte, J. Jouzel, Stable isotopes in ice cores, Encyclopedia of Quaternary Sciences, Elsevier, 2006
- Lead author of the sixth chapter (Paleoclimate), Climate Change 2007 - The Physical Science Basis Working Group I Contribution to the Fourth Assessment Report of the IPCC Intergovernmental Panel on Climate Change, Cambridge University Press, 2007
- *For children* : Les exp ditions polaires, V. Masson-Delmotte, G. Jugie, Le Pommier, 2007 (translated in Spanish, Italian and Chinese)
- Atmosph re, atmosph re, avec D Hauglustaine et J. Jouzel, Le Pommier, 2008, 215 pp
- Lead author of the second chapter (Antarctic climate and environmental history), Antarctic climate and the environment, Scientific Committee on Antarctic Research, 2009
- *For children* : Atmosph re, quel effet de serre, avec M. Delmotte, Le Pommier, 2009 (translated in Spanish, Italian, Chinese)
- Climat, le Vrai et le faux, Le Pommier, 2011
- Climat, une plan te et des hommes, M. Petit, A. Chabreuil, Le Cherche Midi, 2011
- Cap sur les p les, 100 questions sur les r gions polaires, F. R my, Omnisciences, 2011
- La r volution des m tiers verts, 20 passionn s t moignent, collectif Adret, Autrement, 2011
- Des climats et des hommes, J.F. Berger, J.P. Jacob, F. Jacq, La D couverte, 2012
- 150 questions sur l'oc an et le climat, Le Pommier, 2012
- Pal oclimatologie, enqu te sur les climats anciens. Trouver et interpr ter les indices, JC Duplessy et G. Ramstein, EDP Sciences, 2012
- V. Masson-Delmotte, Ice with everything, Antarctica, Global science from a frozen continent, Cambridge University Press London, 2013

- Landais, A., Barkan,E., Vimeux,F., Masson–Delmotte,V., Luz,B., Combined analysis of water stable isotopes (H<sub>2</sub>16O,H<sub>2</sub>17O,H<sub>2</sub>18O,HD16O) in ice cores, in Physics of Ice Core Records 2, Sapporo University, 2013
- Continental Paleoclimatology, collective chapter co-edited with J. Guiot, in : Climate of the Past, observing, understanding, modelling, clues for forecasting (J.C. Duplessy, G. Ramstein, editors), EDP/CNRS editions, 2014 (in French)
- Co-author of chapters for : Climat à Découvert, Energie à découvert et le Développement durable à découvert (CNRS editions, Paris, 2011; 2012 and 2013).
- Co-coordinator of chapter 5 (information from climate archives) and contributor to chapters 1 (introduction) and 10 (detection-attribution) of IPCC AR5, WG1, 2014.
- Antarctica, global science from a frozen continent, D. Walton, Cambridge U. Press, 2013
- Understanding the Earth system, Global change science for application" edited by S. Cornell, I. Colin Prentice, J. I. House, C. J. Downy, Cambridge Press U., 2012
- Le climat, la Terre et les Hommes, EDP Sciences, J. Poitou, P. Braconnot, V. Masson-Delmotte, 2015, 250 pp
- Le Groenland, climat écologie société, CNRS éditions, in press (collectif, editors V. Masson-Delmotte, J.M. Huctin, E. Gauthier, D. Gremillet and D. Swingedouw)
- Parlons climat en 30 questions, La Documentation française, with C. Cassou, in press (Sept. 2015)

**Scientific articles in the peer-reviewed literature (altogether 187 papers indexed in ISI Web of Science, h-factor: 49, total citation index: 10 300, full list at <http://www.researcherid.com/rid/G-1995-2011>).**

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