Valérie DAUX

Married, two children
Nov. 13 - 1965
French
Laboratoire des Sciences du Climat et de l'Environnement,
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- **Ph.D.,** 1992, Strasbourg University, Fr. Geochemistry. *Fate of Sr, U and Th during basaltic glasses alteration.*
- **Post-doctoral fellow**, 1992-1994, Geophysical Laboratory of the Military application Department of the Atomic Energy Agency, Fr.
- **Post-doctoral fellow**, 1994-1995, University of Southampton, GB
- **Associate professor**, 1995-2016,
- **Accreditation to direct research**, 2009, Paris 6 University, Fr.
- **Professor,** since 2016, in Geology- Geochemistry-Paleoclimatology. By statute: Time for research, supervision and research management: 50%, Time for teaching and educational responsibilities: 50% (including 192h/year of courses)
- **Previous positions:**

Research assistant	1994-1995
PhD student	1989-1992

- **Present position**: Professor at Université de Versailles Saint-Quentin, France,
  Based at the Laboratoire des Sciences du Climat et de l'Environnement
  (Laboratory of Climate and Environment Sciences)
- **Academic Honours and grants**

- Academic palms, in 2016
- ISOMEX-PALEOMEX-MISTRAL 2009-2014: Co-PIs V. Daux, D. Genty) « Space and time rainfall isotopic composition reconstruction around the Mediterranean Sea using speleothems, tree rings and lakes sediments - Instrumental calibration and comparison with isotopic model simulations».
- PATISO – LEFE 2012-2014. PI: V. Daux « Tree-ring parameters of patagoninan trees and Southern Annular Mode ».
- IVAPA-LEFE 2016-2018. PI: V. Daux. « Isotopes in vapour, rain and trees in Patagonia »
- THEMES, BNP-PARIBAS Climate Initiative program, 2018-2020 "THE Mystery of the Expanding tropicS". PI: V. Daux

- **Research field**

Reconstruction of the climate variability of the millennium on continents from the carbon and oxygen isotopic ratios measured in the cellulose of living and fossil trees, and in biogenic phosphates and carbonates and from historical archives.

- **Mentoring:**

PhD Completed:

Nathalie Etien (co-supervisor: V. Masson-Delmotte), 2008: Rec*onstruction of the climate of Northern France during the last millennium using tree-ring cellulose*

Aurélien Bernard (co-supervisor : C. Lécuyer), 2009: *Intra-annual climatic variations deduced from the oxygen isotope composition of teeth enamel*

Chunming Shi (co-supervisors : V. Masson-Delmotte and Q.-B. Zhang), 2011: *Reconstruction of climate evolution in Tibet from $\delta^{18}O$ and $\delta^{13}C$ in tree-ring cellulose.*

Inga Labuhn (co-supervisor: D. Genty): *Reconstruction of precipitation $\delta^{18}O$ and temperature variations over the last centuries from $\delta^{18}O$ in tree-ring and spéléothèmes.*

Aliénor Lavergne (co-supervisor: R. Villalba): *Past climate variability in southern South America linked to Antarctic Oscillation: reconstruction by tree-ring isotopes.*

Postdoc advisor:

Nathalie Etien, 2009: *Comparison of the dendroisotopic signature of various species in the Fontainebleau forest*.

Marlène Lavrieux, 2012: Paleotemperature estimates from $\delta^{18}O$ of chironomides head capsules: application to Annecy (France) and Igaliku (Greenland).

Timothé Bolliet, 2015-2016: Reconstruction of droughts (location, duration) in France over the last centuries using tree-ring width: database construction.

- **Fieldwork experience**

In France (forest and buildings) almost each year since 2002; Morocco, 2009; Slovenia, 2012; La Réunion Island, 2012; Argentina, 2013, 2018.

- **Publications since 2004** *= student author

1. Chuine I., Yiou P., Viovy N., Seguin B., **Daux V.** et Le Roy Ladurie E. (2004) Grape harvest dates and temperature variations in France since 1370, *Nature*, 289-290, doi :10.1038/nature 432289a.
2. **Daux V**., Lécuyer C., Adam F., Martineau F., Vimeux F. (2005) Oxygen isotope composition of human teeth and the record of climate changes in France (Lorraine) during the last 1700 years. *Clim. Change*, 70, 445-464.
3. Danis P.-A., Masson-Delmotte V., Stievenard M., Guillemin M.-T., **Daux V.**, Naveau Ph., Von Grafenstein U. (2006) Reconstruction of past precipitation $\delta^{18}O$ using tree-ring cellulose $\delta^{18}O$ and $\delta^{13}C$: a calibration study near Lac d'Annecy, France, *Earth Planet Sci. Lett.*, 243, 3-4, 439-448.
4. Lécuyer C., Fourel F., Martineau F. Amiot R., Bernard A., **Daux V.,** Escarguel G., Morrison, J. (2007) High-precision determination of 18O/16O ratios of silver phosphate by EA-pyrolysis-IRMS continuous flow technique. *J. Mass. Spectrom.* 42(1), 36-41.
5. *Etien N., **Daux V.,** Masson-Delmotte V., Stievenard M., Bernard V. et al. (2008) A bi-proxy reconstruction of Fontainebleau (France) growing season temperature from A.D. 1596 to 2000. *Clim. Past*, 4, 91-106.
6. Le Roy Ladurie E., **Daux V**. (2008) The climate in Burgundy and elsewhere, from the fourteenth to the twentieth century. *Interdisc. Sci. Rev.*, 33(1), 10-24.
7. *Etien N., **Daux V**., Guillemin M.T., Masson-Delmotte V., Stievenard M. et al.(2008) Summer maximum temperature in northern France over the past century: instrumental data versus multiple proxies (tree-ring isotopes, grape harvest dates and forest fires). *Clim. Change*, 94, 429-456.
8. **Daux V.**, Lécuyer C., Héran Marie-Anne, Amiot R., Simon L. et al. (2008) Oxygen isotope fractionation between human phosphate and water revisited. *J. Human Evol.* 55(6), 1138-1147.
9. *Bernard A., **Daux V.**, Lécuyer C., Brugal J.-P., Fourel F. (2009) Reconstruction of the paleo - seasonality from the oxygen isotopic composition of the tooth enamel of *Bison priscus* : the Pleistocene Coudoulous I site (France). *Earth Planet Sci. Lett.* 283, 133-143.

10. *Shi C., Masson-Delmotte V., **Daux V.**, Li Z., Zhang Q.-B. (2010) An unstable tree-growth response to climate in two hundred-year chronologies, North Eastern Qinghai-Tibetan Plateau. *Dendrochronologia*, 28 (4), 225-237.
11. Garcia de Cortazar-Atauri I., **Daux V.**, Garnier E., Yiou P.,Viovy N. et al. (2010) An Assessment of error sources when using grape harvest date for past climate reconstruction. *Holocene*, 20, 599-608.
12. Garnier E., **Daux V.**, Yiou P., Garcia de Cortazar I. (2011) Grape harvest dates in Besançon (France) between 1525 and 1847: Social outcome or climatic evidence? *Clim. Change*, 104, 783-801.
13. Guiot J., Corona C., Escarsel members including **Daux V**. (2010) Growing season in Europe and climate forcings for the last 1400 years. *PLos ONE* 5 (4), e9972.
14. *Shi C. , Masson-Delmotte V., Risi C., Eglin T., Stievenard M., Pierre M., Wang X., Gao J., Bréon F.-M, Zhang Q. –B., **Daux V.** (2011) Sampling strategy and climatic implications of tree-ring stable isotopes in Southeast Tibetan plateau. *Earth Planet. Sci. Lett.*, 301 (1-2), 307-316.
15. Tourre, Y., Rousseau, D., Jarlan, L., Le Roy Ladurie, E. et **Daux V.** (2011), Western European climate, and Pinot noir grape harvest dates in Burgundy, France, since the 17th century, *Clim. Res.*, *46*, 243-253
16. **Daux V**., Edouard J.L., Masson-Delmotte V., Stievenard M., Hoffmann G. et al. (2011) Can climate variations be inferred from tree-ring parameters and stable isotopes from *Larix decidua*? Juvenile effects, budmoth outbreaks, and divergence problem. *Earth Planet. Sci. Lett*., 309, 221-233.
17. *Shi C., **Daux V**., Risi C., Hou S.-G., Stievenard M., et al. (2011) Reconstruction of southeast Tibetan Plateau summer cloud cover over the past two centuries using tree ring $\delta^{18}O$, *Clim. Past*, 8, 205-213. I.F.: 4.23
18. Yiou P., García de Cortázar-Atauri I., Chuine I., **Daux V.**, et al. (2012) Continental atmospheric circulation over Europe during the Little Ice Age inferred from Grape Harvest Dates, *Clim. Past*, 8 (2), 577-588.
19. Lécuyer C., **Daux V.**, Moissette P., Cornée J.-J., Guillévéré F. et al. (2012) Stable carbon and oxygen isotope compositions of invertebrate carbonate shells and the reconstruction of paleotemperatures and paleosalinities - A case study of the early Pleistocene of Rhodes, Greece. *Palaeogeogr., Palaeoclim., Palaeoecol.*, 350-352, 39-48.
20. **Daux V.**, Garcia de Cortazar I., Yiou P., Chuine I., Garnier E. et al. (2011): An open-database of grape harvest dates for climate research: data description and quality assessment, *Clim Past*, 8, 1403-1418.
21. Lécuyer C., Hutzler A., Amiot R., **Daux V.**, Grosheny D., et al. (2013) Carbon and oxygen isotope fractionation between aragonite and calcite of shells from modern molluscs. *Chem. Geol*. 332-333, 92-101.
22. Casado M., Ortega P., Masson-Delmotte V., Risi C., Swingedouw D., **Daux V.** et al. (2013) Impact of precipitation intermittency on NAO-temperature signals in proxy records. *Clim. Past*., 9, 871-886.
23. *Labuhn I., **Daux V**., Pierre M., Stievenard M., Girardclos O. et al. (2013) Tree age, site and climate controls on tree ring cellulose $\delta^{18}O$: A case study on oak trees from south-western France. *Dendrochronologia*, 32 (1), 78-89.
24. Boucher E., Guiot J., Hatté C., **Daux V.** et al. (2014) An inverse modelling approach for tree-ring-based paleoclimatic reconstructions under changing atmospheric CO_2 concentrations. *Biogeosciences* 11, 3245-3258.
25. Frank, D. C. et al. (2015) (50 auhors including V. **Daux**) Water-use efficiency and transpiration across European forests during the Anthropocene, *Nat. Clim. Chang.*, (MAY), doi:10.1038/nclimate2614.

26. *Lavergne A., **Daux** V., Villalba R. Barichivich, J. (2015) Temporal changes in climatic forcings of tree growth at upper treeline forests along a precipitation gradient in Northern Patagonia. *Dendrochronologia*, 36,49-59.
27. Shi C., Masson-Delmotte V., **Daux V.**, Zongshan L., Carré M., Moore J.C. (2015) Unprecedented recent warming rate and temperature variability over the East Tibetan Plateau inferred from Alpine treeline dendrochronology. *Clim. Dyn.* 45, 1367-1380.
28. Bolliet T., Brockmann P., Masson-Delmotte V., Bassinot F., **Daux V.** et al. (2016) An interactive tool for navigation within a database of water and carbon stable isotope records from natural archives. *Clim. Past. 12,* 1693-1719.
29. Labuhn I., **Daux V**., Girardclos O., Stievenard M., Pierre M., Masson-Delmotte V. (2016) French summer drought since 1326 AD: a reconstruction based on tree-ring cellulose $\delta^{18}O$. *Clim. Past 12*, 1101-1117.
30. *Lavergne A., **Daux V**., Villalba R., Pierre M., Stievenard M. (2016) Are the oxygen isotopic compositions of Fitzroya cupressoides and Nothofagus pumilio cellulose promising proxies for climate reconstructions in northern Patagonia? *J. Geophys. Res. – Biogeosciences* 121(3), 767-776.
31. *****Lavergne A., **Daux V.,**Villalba R., Pierre M., Stievenard M., Srur A. (2016) Improvement of isotope-based climate reconstructions in Patagonia through a better understanding of climate influences on isotopic fractionation in tree rings. *Earth Planet. Sci. Lett.* 459, 372-380.
32. Lazzerini N., Lécuyer C., Amiot R., Angst D. Buffetaut E., Fourel F., **Daux V.**, Betancourt J.F., Flandrois J.P., Sanchez Marco A., Lomoschitz A. (2016) Oxygen isotope fractionation between bird eggshell calcite and body water: application to fossil eggs from Lanzarote (Canary Islands). *Sci. Nature* 103, 81-90.
33. Suppersberger Hamre S., **Daux V.** (2016) Stable oxygen isotope evidence for mobility in medieval and post-medieval Trondheim, Norway. *J. Archaeological Sci. Reports* 8, 416-425.
34. Guillet S., Corona C. Stoffel M., Khodri M. Lavigne F., Ortega P., Eckert N., Dkengne Sielenou P., **Daux V**. et al. (2017) Climate response to the Samalas volcanic eruption in 1257 revealed by proxy records. *Nature Geosciences* 10, 123-128. Cit:1
35. Royer A., **Daux V**., Fourel F., Lécuyer C. (2017) Carbon, nitrogen and oxygen isotope fractionation during food cooking : implications for the interpretation of the fossil human record. American J. Phys. Anthropol. 163(4), 759-771.
36. Suppersberger Hamre S., Ersland G.A., **Daux V.,** Parson W., Wilkinson C. (2017)Three individuals, three stories, three burials from medieval Trondheim, Norway. PloS one 12(7), e0180277.
37. Lavergne A., Gennaretti F., Risi C., **Daux V.**, Boucher E., Savard M., Naulier M., Villalba R., Begin C., Guiot J. (2017)Modelling tree-ring cellulose $\delta^{18}O$ variations of two temperature-sensitive tree species from North and South America. *Clim. Past* 13(11), 1515-126. Doi: 10.5194/cp-13-1515-2017
38. Lécuyer C., Atrops F., Amiot R., Angst D., **Daux V.,** Fourel F., et al. (2018) Tsunami sedimentary of Crete records climate during the Minoan warming period (≈3,350 years BP). Holocene. DOI: 10.1177/0959683617752840
39. Shi C., Daux V., Li Z., Wu X., Fan T., et al. (2018) The response of relative humidity to centennial-scale warming over the southeastern Tibetan Plateau inferred from tree-ring width chronologies. Clim. Dyn. DOI:10.1007/s00382-018-4107-5
40. Lavergne A., **Daux V.**, Pierre M., Stievenard M., Srur A. M., Villalba R. (2018) Past summer temperatures inferred from dendrochronological records of Fitzroya cupressoides in northern Patagonia. *J. Geophys. Res. Biogeosciences, 123,1,*. DOI : 10.1002/2017JG003989

41. **Daux V**., Michelot A., Lavergne A., Bréda N., Damesin C. (2018) Comparison of the performance of $\delta^{13}C$ and $\delta^{18}O$ in oak, beech and pine in the record of past climate variations. J. Geophys. Res. Biogeosciences 123,4, DOI:10.1002/2017JG004203

- **Recent presentations**

1. Etien N., Masson-Delmotte V., **Daux V**., et al. (2006) Maximum growing season temperature in Western Europe: Regional tree-ring cellulose isotopic composition variability in Northern France and climate change: calibrations and reconstructions for the 1600s. 7thICD, Juin 2006, Pékin, vol. res. 50-51.

2. **Daux V**., Yiou P., E. Le Roy Ladurie, O. Mestre, B. Seguin, I. Chuine., E. Garnier et N. Viovy (2007) Temperature and Grape Harvest Dates in France, International Colloquium « Global warming, which impacts on the vineyards », 28-30 Mars 2007, Perard & Fontaine (Eds) Dijon, France, 9p.
3. **Daux V**., Yiou P., E. Le Roy Ladurie, O. Mestre, B. Seguin, I. Chuine., E. Garnier et N. Viovy (2007) Temperature and Grape Harvest Dates in France, EGU General Assembly, April 2007. *Geophysical Res. Abst*., 9, 07578.
4. Bernard A., **Daux V.**, Lécuyer C. et al., (2008) Pleistocene seasonal temperature variations recorded in the $\delta^{18}O$ of Bison priscus teeth from Coudoulous I (Lot, France) , 5th International Congress of the Palaeontological Society of Japan, 5-6 Juillet 2008, Tohoku University, Sendai (Japon).
5. Garcia de Cortazar-Atauri, I.; Parker, A.; Van Leeuwen, C.; Tardaguila, J.; Boursiquot, J.M.; Demarée, G.; Chuine I., **Daux V.** , et al., (2008) Climate reconstruction of Europe during the last millenium. 8th Annual Meeting of the EMS / 7th ECAC, 1st Oct. 2008, Amsterdam, Netherland. EMS2008-A-00446.
6. Etien N. , **Daux V**., Stievenard M., Pierre M., Durost S., Bernard V., Masson-Delmotte V. (2009) A 550-year long bi-proxy reconstruction of western Europe growing season maximum temperature, EGU General Assembly, April 2009. Geophysical Res. Abst., 11, 13952.
7. **Daux V**., Etien N., Masson-Delmotte V. (2009) Reconstruction of growing season temperature in Northern France from 1484 to 2000: a bi-proxy approach based on the $\delta^{18}O$ of the cellulose of oak trees and Grape Harvest Dates**.** AIG-8, Aug. 30-Sept 04 2009, La Malbaie, Québec, Canada.
8. Shi C., **Daux V**., Masson-Delmotte V., Risi C., Gao J., Wang X. and Zhang Q.-B. (2011) Climatic interpretation of tree ring stable isotopes in the southeast Tibetan Plateau: links with regional cloud cover, EGU general Assembly, Avril 2011. Geophysical Res. Abst. 13, 3321.
9. **Daux V.,** Edouard, J.L., Masson-Delmotte V., Hoffmann G. and Mestre O. (2011), Can climate variations be inferred from tree-ring parameters and stable isotopes from Larix decidua: budmoth outbreaks, juvenile effects and divergence problem. EGU general Assembly, Avril 2011. Geophysical Res. Abst. 13, 3415.
10. Launois T., Peylin P., **Daux V**., Masson-Delmotte V., Eglin T., Bellassen V. and Risi C. (2011) Interannual variations in tree-rings' width and isotopic signatures (18O and 13C) combined to optimize ORCHIDEE land surface model. EGU general Assembly, Avril 2011. Geophysical Res. Abst. 13, 8042.
11. Labuhn I., **Daux V.**, Genty D., Pierre M., Stievenard M. and Regnier E.(2012) Reconstruction of drought periods un South-Western france based on the isotopic composition of tree rings and speleothem, Geophys. Res. Abst. 14, EGU 2012-11019.
12. Masson-Delmotte V., M. Casado, P. Ortega, C. Risi, D. Swingedouw**, Daux V. et al.** (2013) Impact of precipitation intermittency on NAO-temperature signals in proxy records", April 2013, Geophys. Res. Abst. 15, EGU2013-4081.
13. Labuhn I., Genty D., **Daux V.**, Bourges F. Hoffmann G. (2013) Linking the isotopic composition of monthly precipitation, cave drip water and tree ring cellulose – v15 years of monitoring and data-model comparison, Avril 2013. Geophys. Res. Abst. 15, EGU2013-4818.

14. **Daux V**. Michelot A., Damesin C., Labuhn I., Stievenard M. et Pierre M. (2013) Variability of tree ring isotopic signal : a case study in Fontainebleau forest, France. 10th Applied Isotope Geochemistry Conference; AIG10, September 2013, Budapest.
15. Lavrieux M., **Daux V.**, et al. (2013) Past climate changes revealed by fossil chironomid chitin $\delta^{18}O$: calibration with ostracod calcite $\delta^{18}O$ in Annecy Lake sediments (French Alps). 10th Applied Isotope Geochemistry Conference; AIG10, September 2013, Budapest.
16. Lavrieux M., **Daux V.** et al. (2013) Potential of fossil chironomid chitin $\delta^{18}O$ for paleoclimate reconstructions: calibration with ostracode calcite $\delta^{18}O$ in Annecy lake sediments (French alps). Organic Geochemistry trends for the 21st century, V.1-2, 26th IMOG, September 2013.
17. Damesin C., Michelot-Antalik A., Eglin T., Maunoury-Dange F., Bazot S., Berveiller D., Boura A., **Daux V.,** Delpierre N., Dufrêne E., François C., Fresneau C., Pierre M. (2014) Seasonal physiological interpretation of intra-ring $\delta^{13}C$ variation in temperate species: experimental and modelling approach. EU2014-13075
18. Lavergne A., Villalba R. and **Daux V.** (2014) Reconstruction of North Patagonia climate variations over the last millennium from tree-ring parameters (width, $\delta^{18}O$). EGU2014-258
19. Lavergne A., Villalba R.and **Daux** V. (2014) Adaptability of trees to climate change in north Patagonia. LOTRED-SA, Medellin, Colombia, 7-8 July 2014.
20. Lavergne A., **Daux V**. Villalba R., Pierre M., Stievenard M. Potential of the isotopic composition of tree cellulose for past climate reconstructions in Northern Patagonia, South America. Asia-dendro 9-12 Mars 2015, Katmandou.
21. Lavergne A., **Daux V.**, Villalba R., Barichivich J. Changing growth responses of Patagonian trees along an environmental gradient. Asia-dendro 9-12 Mars 2015, Katmandou.
22. **Daux V.,** Marah H., Stievenard M., Pierre M., Masson-Delmotte V., Ed Dabdouby M., The carbon isotopic composition of Atlas Cedar: a record of the increase of aridity in North-Western Morocco over the last 40 years. Asia-dendro 9-12 March 2015, Katmandou.
23. Guillet S. and 14 authors including **Daux V.** Reassessing the climatic impacts of the AD 1257 Samalas eruption in Europe and in the Northern Hemisphere using historical archives and tree-rings. EGU, Historical climatology session, March 2016.
24. Lavergne A., **Daux V.**, Villaba R., Pierre M., Stievenard M. and Srur A. : Are the isotopic composition of cellulose of *Fitzroya cupressoides* and *Nothofagus pumilio* promising proxies for paleoclimate reconstructions ? Ameridendro, March 28 – April 1 2016, Mendoza
25. Lavergne A., **Daux V.**, Villaba R. and Barichivich J.: Temporal changes in climatic limitation of Nothofagus pumilio growth at upper treeline forests in northern Patagonia - Ameridendro, March 28 – April 1 2016, Mendoza.
26. **Daux V**., Pierre M. et Stievenard M.: A 1000-year long climate record in northern Mediterranean area using tree-ring isotopes Ameridendro, March 28 – April 1 2016, Mendoza
27. Lavergne A., **Daux V.**, Villalba R., Srur A. (2016) Stable isotopes in tree-rings of Patagonian trees are promising proxies for reconstructing past temperature variations in the Southern Hemisphere. Tree Rings in Archaelogy, Climatology and Ecology (TRACE), Bialowieza, Poland, May 2016, DOI: 10.13140/RG.2.1.4744.5364

- **Recent Assignments in the Laboratory of Climate and Environment Sciences**

– Deputy chief of the department "Archives and Dynamics of the Climate"(45 permanent, 35 temporary members)
– Leader of the "Ice, Continent, Climate and Isotope" team (14 perm. + 10 temp.)
– Head of the dendro-group (3 perm. + 4 temp.)

- **Other scientific merits**

Faculty opponent for doctoral dissertation defences in France (7) and Canada (2)
Professional reviewer for: *Climate of the Past; Climatic Change; Climate dynamics; Trees; the Holocene; Palaeogeography, Palaeoclimatology, Palaeoecoloy; Journal of Analytical Atomic*

Spectrometry; Geophysical Research Letter, Chemical Geology

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