

# PAULTAPPONNIER

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## **Personal**

Nationality :French  
Marital Status:Married

## **Education**

1970 :Ingénieur Civil des Mines de Paris (M.S.) Major: Geology – Geophysics Ecole Nationale Supérieure des Mines de Paris  
1978 :PhD, ("Intracontinental Tectonics in Alpine Europe and Asia", with honours) Université des Sciences et Techniques du Languedoc, Montpellier

## **Professional Experience**

2009 to Present: Full Professor and Head of Tectonics and Earthquake Research, Earth Observatory of Singapore (an institute of Nanyang Technological University)

1991 to 2009: Director of the Tectonics Department & Full Professor with tenure (Physicien, classe exceptionnelle), Institut de Physique du Globe, Paris

1984 -1996, 2001-2004: Director of Unité Mixte de Recherche 7578, "Tectonique, Mécanique de la Lithosphère" (one of the Research Laboratory of the Centre National de la Recherche Scientifique)

1984 to 1999: Distinguished visiting scientist, JPL

2000: Invited professor, Caltech, USA

2008 to 2009: Invited professor, Schlumberger/Saudi Aramco, KSA

1986 to 1990: Full Professor (Physicien Titulaire, 2nd then 1st class), Institut de Physique du Globe de Paris, tenured.

1980 to 1985: Associate Professor (Physicien Adjoint), Institut de Physique du Globe de Paris, with tenure.

1978 to 1980: Assistant Professor, Institut de Physique du Globe de Paris.

1976 to 1978: Research Fellow, Centre National de la Recherche Scientifique, Montpellier.

1975 to 1976: Master Assistant, Laboratoire de Géologie Structurale, Université des Sciences et Techniques du Languedoc, Montpellier.

1973-1975: Visiting Research Fellow, Massachusetts Institute of Technology (Department of Earth and Planetary Sciences).

1971-1973: Assistant, Université des Sciences et Techniques du Languedoc, Laboratoire de Géologie Structurale, Montpellier.

1970-1971: Assistant, École Nationale Supérieure des Ponts & Chaussées (Géologie appliquée, Génie civil).

## **National and International Awards**

- Silver Medal of Centre National de la Recherche Scientifique, France, 1984
- "Alfred Wegener" Medal of European Union of Geosciences, 1985
- Grand Prix Scientifique de la ville de Paris, 1990
- Knight of National Order of Legion of Honour, France, 1991
- Best Paper award, Geological Society of America, 1994
- Fellow of American Geophysical Union, 1994
- Honorary Fellow of Geological Society of America, 1996
- Friendship Medal, China, 1998
- Francis Birch Lecturer, American Geophysical Union, 1999
- Lyell Medal, Geological Society, London, 2001
- Foreign associate Member of the National Academy of Science (USA), 2005
- Member of the French Academy of Sciences, 2005 (Corresponding member since 1994)
- Honorary Fellow of the Geological Society of London, 2008
- Einstein Professor, Chinese Academy of Sciences, 2011
- Honorary Member of the Nepal Geological Society 2012
- Axford Medal, Asia Oceania Geosciences Society 2018

## **Professional Affiliations**

- Société Géologique de France
- Académie des Sciences
- American Geophysical Union
- Geological Society of America
- Geological Society of London
- European Union of Geosciences

## **Editorial Boards**

Associate Editor of:

- Tectonophysics 1981 to 1989
- Geology 1982 to 1985
- European Editor of Tectonics 1982 to 1988.
- Editor of Earth & Planetary Science Letters 1992 to 1996

## **Courses Taught**

Université des Sciences et Techniques du Languedoc, Montpellier (1971-73, 1975-78):

- ◆ Field and Laboratory Methods in Structural Geology
- ◆ Elementary Mathematics for Geology
- ◆ Tectonophysics
- ◆ Rock Mechanics

Universités de Paris VI, VII, and Institut de Physique du Globe de Paris (1979– present):

- Plate tectonics and structural geology
- Physics of brittle and ductile deformations
- Continental seismicity and tectonics, mechanics of the Lithosphere.
- Remote sensing, analysis of morphology and climate change, and of active faulting and crustal structure

## **Principal Fields of Expertise**

- Continental Dynamics and Tectonics, with particular emphasis on collision zones, plateaux and mountain belts, particularly in Asian-Mediterranean regions.
- Active faulting and seismotectonics, earthquake hazard assessment.
- Quantitative Geomorphology, state-of-the-art determination of current rates of active deformation processes.
- Rock mechanics and rock deformation physics.

I have been invited to give lectures or to participate in seminars and courses in various Universities and Institutes in France and abroad:

- Universities of Orsay, Montpellier, Rennes, Nantes, Grenoble, Toulouse, Strasbourg, Académie des Sciences, Ecole Normale Supérieure, Collège de France, Ecole Polytechnique, Ecole des Mines de Paris, Ecole des Ponts et Chaussées, etc
- Massachusetts Institute of Technology (MIT), Caltech, Harvard, Lamont D.G.O. of Columbia University, Cornell, S.U.N.Y. Albany, U.C. Los Angeles, U.C. Davis, U.C. Santa Barbara, U.C. Berkeley, U. C. Santa Cruz, Lawrence Livermore Laboratory, Texas A and M University, University of Michigan, Princeton University, University of Cambridge, University of Oxford, University of Leeds, University of Newcastle Upon Tyne, Universität Karlsruhe, Universität Mainz, GFZ Potsdam, ETH Zürich, Université de Neuchâtel, Université de Lausanne, University of Uppsala, University of Utrecht, Università della Calabria (Cosenza), Università di Camerino, Università di Catania, Università di Trieste, Institute of Geology of Academia Sinica (Beijing), Ministry of Geology (Beijing), State Seismological Bureau (Kunming), Geological Institute (Xian), Geological Institute, (Chengdu), University of Hong Kong, Institut de Géologie et Géophysique (Hanoi, Vietnam), Peshawar Center of Excellency (Pakistan), Geological Society of Thailand (Bangkok).

I have headed several research cruises on oceanographic ships and numerous field projects in many countries of the Mediterranean, central, eastern and Himalayan Asia (including thirty-five trips to Tibet), and north and east Africa, concerning subjects ranging from Plate Tectonics to rock deformation, seismotectonics to structural geology, remote sensing to morphotectonics and climate change, Tertiary metamorphism to Paleomagnetism.

### **Latest Publications (full list of publications available upon request)**

186. P.H.Leloup, N.O. Arnaud, G. Mahéo, J.L. Paquette, S. Guillot, F. Valli, H. Li, Z. Xu, R. Lacassin, and P. Tapponnier, Successive deformation episodes along the Lungmu Co zone, west-central Tibet, *Gondwana Research* 21(2012)37-52, doi:10.1016/j.gr.2011.07.026.
187. Haibing Li, J. Vander Woerd, Z. Sun, J. Si, P. Tapponnier, J. Pan, D. Liu, and M.L. Chevalier, Co-seismic and cumulative offsets of the recent earthquakes along the Karakax left-lateral strike-slip fault in western Tibet, *Gondwana Research* 21(2012)64–87 doi:10.1016/j.gr.2011.07.025.
188. N. Feuillet, F. Beauducel, E. Jacques, P. Tapponnier, B. Delouis, S. Bazin, M. Vallee, and G.C.P. King, The Mw=6.3, November 21, 2004, Les Saintes earthquake (Guadeloupe): Tectonic setting, slip model and static stress changes, *Journal of Geophysical Research*, Vol 116, B10301, 25PP., 2011 doi:10.1029/2011JB008310.
189. N. Feuillet, F. Beauducel, and P. Tapponnier, Tectonic context of moderate to large historical earthquakes in the Lesser Antilles, and mechanical coupling with volcanoes, *Journal of Geophysical Research*. Vol. 116, B10308, 26PP., 2011 doi:10.1029/2011JB008443.
190. A.-S. Mériaux, J. Vander Woerd, P. Tapponnier, F. J. Ryerson, R. C. Finkel, C. Lasserre, and X. Xu, The Pingdings segment of the Altyn Tagh Fault (91°E): Holocene slip-rate determination from cosmogenic radionuclide dating of offset fluvial terraces, *Journal of Geophysical Research*, Vol. 117, B09406, doi:10.1029/2012B009289, 2012.
191. Sapkota S.N., Bollinger L., Klinger Y., Tapponnier P., Gaudemer Y. and D. Tiwari. Primary surface ruptures of the great Himalayan earthquakes in 1934 and 1255. *Nature Geoscience*, 6, 71–76 (2013). doi:10.1038/ngeo1669.
192. Van der Woerd J., Dorbath C., Ousadou F., Dorbath L., Delouis B., Jacques E., Tapponnier P., Hahou Y., Menzhi M., Frogneux M., and Haessler H. (2014). The Al Hoceima Mw 6.4 earthquake of 24 February 2004 and its aftershocks sequence. *Journal Of Geodynamics*. 77, 89-109.
193. L. Bollinger, S.N. Sapkota, P. Tapponnier, Y. Klinger, M. Rizza, J. Vander Woerd, D.R. Tiwari, R. Pandey, A. Bitriand S. Besde Berc. Estimating the return times of great Himalayan earthquakes in eastern Nepal: Evidence from the Patu and Bardibas strands of the Main Frontal Thrust. *Journal of Geophysical Research: Solid Earth*, doi:10.1002/2014JB010970 (accepted 3 Aug 2014).
194. Hill, E. M., H. Yue, S. Barbot, T. Lay, P. Tapponnier, I. Hermawan, J. Hubbard, P. Banerjee, L. Feng, D. Natawidjaja, and K. Sieh; The 2012 Mw 8.6 Wharton Basin sequence: A cascade of great earthquakes generated by near-orthogonal, young, oceanic-mantle faults; *J. Geophys. Res.*, doi: 10.1029/2014JB011703, 2015.
195. Hubbard, J., Barbot S., Hill E. M., & Tapponnier P. (2015). Coseismic slip on shallow décollement megathrusts: implications for seismic and tsunami hazard. *Earth-Science Reviews*. 141 (February), 45-55.
196. Li, L., A. D. Switzer, Y. Wang, R. Weiss, Q. Qiu, C.-H. Chan, and P. Tapponnier (2015), What caused the mysterious eighteenth century tsunami that struck the southwest Taiwan coast? *Geophys. Res. Lett.*, 42, 8498–8506, doi:10.1002/2015GL065567.
197. Weil-Accardo, J., N. Feuillet, E. Jacques, P. Deschamps, F. Beauducel, G. Cabioch, P. Tapponnier, J. M. Saurel, and J. Galetzka (2016), Coral microatolls of Martinique (French West Indies) record 230 years of relative sea-level changes due to climate and megathrust tectonics, *Journal of Geophysical Research: Solid Earth*.
198. Chevalier, M.-L., J. Van der Woerd, P. Tapponnier, H. Li, F. J. Ryerson, and R. C. Finkel (2016), Late Quaternary slip-rate along the central Bangong-Chaxikang segment of the Karakorum fault, western Tibet, *Geol. Soc. Am. Bull.*, 128(1-2), 284-314.
199. Daout, S., R. Jolivet, C. Lasserre, M.-P. Doin, S. Barbot, P. Tapponnier, G. Peltzer, A. Socquet, and J. Sun (2016), Along-strike variations of the partitioning of convergence across the Haiyuan fault system detected by InSAR, *Geophysical Journal International*, 205(1), 536-547.
200. Hubbard, J., R. Almeida, A. Foster, S. N. Sapkota, P. Bürgi, and P. Tapponnier (2016), Structural segmentation controlled the 2015 Mw 7.8 Gorkha earthquake rupture in Nepal, *Geology*, G38077. 38071.
201. Qiu, Q., Hill, E.M., Barbot, S., Hubbard, J., Feng, W., Lindsey, E.O., Feng, L., Dai, K., Samsonov, S.V. and Tapponnier, P., 2016. The mechanism of partial rupture of a locked megathrust: The role of fault morphology. *Geology*, pp. G38178-1.
202. Bollinger, L., Tapponnier, P., Sapkota, S.N. and Klinger, Y., 2016. Slip deficit in central Nepal: omen for a repeat of the 1344 AD earthquake? *Earth, Planets and Space*, 68(1), p.1.
203. Singh, S.C., Hananto, N., Qin, Y., Leclerc, F., Avianto, P., Tapponnier, P.E., Carton, H., Wei, S., Nugroho, A. B., Gemilang, W.A., Sieh, K., Barbot, S., 2017, The discovery of a conjugate system of faults in the Wharton Basin intraplate deformation zone, *Science Advances*, 3, 1-8, e1601689

## Books/Bookchapters

- Molnar, P., Chen, W.P., Fitch, T.J., Tapponnier, P., Warsi, W.E.K., and Wu, F.T. (1977). Structure and tectonics of the Himalaya: a brief summary of relevant geophysical observations. In: Jest, C. (ed.), *Himalaya: Sciences de la Terre*, (pp. 267-294). Paris: Centre Nationale de la Recherche Scientifique.
- Tahirkheli, R. A.K., Mattauer, M., Proust, F., and Tapponnier, P. (1977). Some new data on the India-Eurasia convergence in the Pakistani Himalayas. In: Jest, C. (ed.), *Himalaya: Sciences de la Terre*, (pp. 209-220). Paris: Centre Nationale de la Recherche Scientifique.
- Tahirkheli, R. A.K., Mattauer, M., Proust, F., and Tapponnier, P. (1979). The India-Eurasia suture zone in northern Pakistan: Synthesis and interpretation of recent data of plate scale. In: Abul Farah & K.A.S. Jong (Eds.), *Geodynamics of Pakistan* (pp. 125–130). Quetta: Geological Survey of Pakistan.
- Proust, F., Burg, J.P., Matte, P., Tapponnier, P., Li, T., et Chen, G. (1984). Succession des phases de plissement sur un transect du Tibet méridional, implications géodynamiques [Successive phases of folding a section of southern Tibet, geodynamic implications]. In: J.L. Mercier et Li Guangcen (Eds.), *Mission Franco-Chinoise au Tibet* (pp. 386-392). Paris: Centre Nationale de la Recherche Scientifique.
- Han, T.L., Li, T.D., Zhou, Q., Armijo, R., Mercier, J., et Tapponnier, P. (1984). Le système tectonique actif du Tibet méridional [The active tectonic system of South Tibet]. In: J.L. Mercier et Li Guangcen (Eds.), *Mission Franco-Chinoise au Tibet* (pp. 393-411). Paris: Centre Nationale de la Recherche Scientifique.
- Mercier, J., Tapponnier, P., Armijo, R., Han, T.L., et Zhou, Q. (1984). Failles normales actives au Tibet: preuves de terrain [Active normal faults in Tibet: evidence from field]. In: J.L. Mercier et Li Guangcen (Eds.), *Mission Franco-Chinoise au Tibet* (pp. 413-422). Paris: Centre Nationale de la Recherche Scientifique.
- Tapponnier, P., Peltzer, G., and Armijo, R. (1986). On the mechanics of the collision between India and Asia. In: M.P. Coward & A.C. Ries (Eds.), *Collision Tectonics* vol. 19 of Special Publication (pp. 115-157). Oxford: Geological Society of London.
- "Harrison, T.M., Leloup, P.H., Ryerson, F.J., Tapponnier, P., Lacassin, R., and Wenji, C. (1996). Diachronous initiation of transtension along the Ailao Shan-Red River Shear zone, Yunnan and Vietnam. In: An Yin & T. Mark Harrison (Eds.), *The tectonic evolution of Asia, world and regional geology series* (pp. 208-226). New York: Cambridge University Press."
- Hubp, J.L., Brahic, A., Tapponnier, P., Brown, R., and Girardon, J. (2003). *La historia más bella de la Tierra*. [The most beautiful story of the Earth]. Barcelona: Anagrama.
- Lemarchand, F., Tapponnier, P., Kaminski, E., and Mangold, N. (2005). Late tectonics of the plaques. *La Recherche*, 388, 89-92