

Curriculum Vitae

Serge Lallemand

present status : Emeritus Research Director since 2026
born on : January 29, 1959 in Lyon (France)
presently at : Geosciences Montpellier, CC.60, place Bataillon, Université de Montpellier, 34095 Montpellier, France
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Scientific Interests

Topics : Subduction zones geodynamics, lithosphere-asthenosphere interaction, collision zones, subduction mega-earthquakes, seafloor morphology, oceanic highs subduction, active margins tectonics, seismogenic interface behavior, arc & back-arc tectonics, material transfer in subduction zones

Skills : Marine geology, geophysics & paleoseismology, (seismo)tectonics, geodynamics, seismic imagery interpretation, collaboration with analog and numerical modellers

Investigation areas : Japan, Taiwan, Philippines, Philippine Sea, New Hebrides, New Zealand, Lesser Antilles, Bay of Biscay

Education & Employment

1993-present CNRS researcher at the University of Montpellier
1992 HDR (qualification to supervise research) from Paris 6 University, specialty : Marine Geology
1988-1992 CNRS researcher at Pierre & Marie Curie University (Paris 6)
1987 PhD from Orléans University, specialty : Marine Geology
1985-1987 Ecole Normale Supérieure, Paris
1983-1985 Ocean Research Institute, Tokyo University
1983 Engineer from Ecole Supérieure de l'Energie et des Matériaux (now Polytech'Orléans), specialty : Mining Geology
Graduated at Orléans University, specialty : Marine Geology
1980-1983 Orléans University and CNEXO (now IFREMER) at Brest
1977-1980 Preparatory classes for Agronomic engineering schools in Lyon

Service (management)

2015-2020 Deputy director, GAIA Doctoral School, Montpellier University
2016-2020 Co-director, IRP D3E (France-Taiwan International Research Program) : From Deep Earth to Extreme Events
2011-2014 Co-director, LIA ADEPT (France-Taiwan International Laboratory) : Active Deformation and Environment

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| 2011-2014 | Deputy director, SIBAGHE Doctoral School, Montpellier 2 University |
| 2007-2010 | Director, Geosciences Montpellier Laboratory (CNRS/Montpellier 2 University) |
| 2003-2006 | Director, Lithosphere Dynamics Laboratory (CNRS/Montpellier 2 University) |
| 1999-2002 | Director, Tectonics Team at Geophysics, Tectonics & Sedimentology Laboratory (CNRS/Montpellier 2 University) |
| 1995-2005 | Director, DEA (now Master 2) Lithosphere Structure & Evolution at Montpellier 2 University |
| 1987-1989 | Deputy Director, DEA (now Master 2) Continents & Oceans Geodynamics at ENS-Paris 6 University |

Service (expertise)

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| 2020-2023 | Tectonics & Structural Geology Division's Stefan Mueller & Marie Tharp EGU medals committee |
| 2020 | International Galileo Galilei Prize for Geosciences committee, Italy |
| 2012-2020 | Member of Solid Earth INSU-CNRS committee |
| 2011-2020 | President of Doctoral School competition for PhD candidates in Geo- & Hydrosciences, Montpellier University |
| 2014-2018 | Member of Scientific Council of Côte d'Azur Observatory, Nice |
| 2014-2016 | Member of Scientific Council of IPGP Observatory, Paris |
| 2013-2016 | Member of International Scientific Council, IUEM Observatory, Brest |
| 2010-2025 | Member or president of Selecting committees for teaching candidates at Clermont-Ferrand, Brest, Pau, Pointe-à-Pitre, Nice, Montpellier, Paris |
| 2012-2013 | Member of Scientific, technical & industrial guidance regional committee, Languedoc-Roussillon |
| 2011-2013 | Member of TERINOV Regional cluster Steering committee, Languedoc-Roussillon |
| 2008-2012 | President of IRD Specialized Commission Physics & Chemistry of Planetary Environment |
| 2010-2012 | Member or president of Evaluation committees for Research laboratories and observatories in Brest, Nice & Paris |
| 2007-2010 | Member of Arago scientific, technical & industrial guidance Regional committee, Languedoc-Roussillon |
| 2007-2010 | Member of Scientific Council of OREME Observatory, Montpellier 2 University |
| 2007-2010 | Member of EVAP Department Council, Montpellier 2 University |
| 2005-2008 | Member of Scientific Council of Midi-Pyrénées Observatory, Toulouse |
| 1997-2000 | Member of IRD Specialized Commission in Geosciences and Hydrosciences, Paris |
| 1994- | Member or president of 54 PhD & 13 HDR juries |

Service (editorial)

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| 2018-2020 | Theme Coordinator for Geosciences collection, ISTE Science Publishing Ltd |
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| 2002-2023 | Associate Editor, Tectonophysics, Elsevier |
| 2007-2015 | Associate Editor, Journal of Asian Earth Sciences, Elsevier |
| 2007-2009 | Associate editor, Tectonics, AGU |
| 2009 | Guest Editor, Springer special volume on Subduction Zone Geodynamics |
| 2001 | Guest Editor, Tectonophysics special volume on Active Subduction and Collision in SE Asia |
| 1997 | Guest Editor, Tectonophysics special volume on Active Collision in Taiwan |

Honors, Awards

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| 2019 | Stephan Mueller Medal from EGU |
| 2013 | Silver Medal from CNRS |
| 2004 | Great Prize of the French Academy of Sciences, France-Taiwan Scientific Foundation |
| 1998 | D'Aumale Prize from the French Academy of Sciences |
| 1994 | Award from the National Institute of Water and Atmospheric Research Ltd (New Zealand) |
| 1994 | Award in Physics and Systems Sciences from the LR Region |

Funded research projects as main PI or co-PI

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| 2018-2021 | Fauna and Geodynamics in Caribbean Sea, GAARAnti ANR Project, co-PI |
| 2017 | Geodynamic conditions for Aves Ridge and the Lesser ANTilles arc splitting, GARANTI Cruise, co-chief scientist onboard R/V L'Atalante |
| 2013-2015 | Marine Paleoseismology around Taiwan, INSU-Aléas Project PAST, PI |
| 2012-2013 | Submarine landslides, PRC/JRP NSC/CNRS Project with Taiwan (NCU), co-PI |
| 2012 | Oceanic Seafloor Roughness and Seismogenesis, INSU-SYSTER Project, PI |
| 2007-2010 | Active Tectonics and Seismic Hazard in Taiwan, ACTS ANR project, PI |
| 2007-2008 | SEISM-OBS, ORCHID Project with Taiwan (Academia Sinica), co-PI |
| 2008-2009 | Convergent Margins and Seismogenesis, CNRS-CNR Project with Italy (Roma 3), co-PI |
| 2004-2006 | Subduction Dynamics, INSU-DYETI Project, PI |
| 1996 | Active collision in Taiwan ACT Cruise, Chief scientist onboard R/V L'Atalante |
| 1992-1993 | Accretion vs Erosion along Active Margins, INSU-DBT Project, PI |
| 1992-1994 | Convergent Margins, PROCOPE Project with Germany (GEOMAR), co-PI |
| 1991 | Tectonics Modeling, ACCES Project with USSR (Academy of Sciences), co-PI |

Oceanographic cruises participation (21)

EAGER – R/V Marion Dufresne, 2018, GARANTI – R/V L'Atalante, 2017, ANTITHESIS 2 – R/V Pourquoi Pas ?, 2014, OR1 1013 – R/V Ocean Researcher 1, 2012, RATS 4 & RATS 3 – R/V Yu-Ying 2, 2009, RATS 2 – R/V Ocean Researcher 1, 2008, KR 03-04 – R/V Kairei, 2003, STEPS IV – R/V Yokosuka, 2000, ACT – R/V L'Atalante, 1996, TAICRUST – R/V M. Ewing, 1995, MODEC – R/V L'Atalante, 1994, GEODYNZ – R/V L'Atalante, 1993,

OR1 329 – R/V Ocean Researcher 1, 1992, OR1 291 – R/V Ocean Researcher 1, 1991, KAIKO-NANKAI – R/V Nadir, 1989, SUBPSO – R/V Nadir, 1989, KAIKO II – R/V Nadir, 1985, KAIKO I – R/V J. Charcot, 1984, ESTASE – R/V J. Charcot, 1984, NORESTLANTE – R/V J. Charcot, 1983.

Scientific meetings (co-)organisation

- 2022 Vertical motion in Eastern Caribbeans Workshop (18 participants), Ferrières-les-Verreries, France
 - 2018 Caribbeans Workshop (40 participants), Montpellier University, France
 - 2016 From Deep Earth to Extreme Events France-Taiwan Workshop (30 participants), Montpellier University, France
 - 2013 EAGER Workshop on Extreme Events (50 participants), Chung-Li, Taiwan
 - 2010 European Seismological Commission International Conference (600 participants), Montpellier, France
 - 2007 Subduction Zone Geodynamics Conference (240 participants), Montpellier, France
 - 2006 Subduction Workshop (60 participants), SGF Paris, France
 - 1999 Subduction & Collision in East Asia SUBCO Conference (120 participants), Montpellier, France
 - 1990 Fluids in Subduction Zones Conference (100 participants), CNRS, Paris, France
- Co-chairman of various sessions at AGU Fall Meeting, EGU Assembly, Goldschmidt, RST ...

Teaching

- 1985-2026 : Lectures mainly on subduction zones geodynamics for graduate and undergraduate students, 30 hours/year in average
- 2009- : [Submap](#) open-access web-tool for mapping subduction zones, updated annually
- 2005 : Convergence lithosphérique, text-book edited by Vuibert
- 1999 : La subduction océanique, text-book edited by Gordon & Breach
- 1991-2024 : Tutoring of 26 Master's degree students

Post-docs supervision

- 2018 **Pierre Malié**, New Zealand Margin Diagenesis and Seismogenesis, IODP-France
- 2016-2017 **Fabio Corbi**, Asperity Synchronization and Earthquake Trigger, Marie-Curie fellowship

PhD supervision

- 2024- **Lorine Bonamy**, Subduction dynamics, deformation of the overlying plate, and the location of arc volcanism: from characterization based on global data to thermo-mechanical modeling, University of Montpellier scholarship
- 2017-2021 **Clément Garrocq**, Seismic imagery and back-arc dynamics in Lesser Antilles, ANR GAARAnti funding

- 2015-2018 **Elenora van Rijnsingen**, Seafloor roughness & mega-earthquakes seismogenesis, ITN CREEP funding
- 2014-2018* **Sarah Abecassis**, Subduction initiation at transform fault processes, CNRS funding (* not defended)
- 2011-2014 **Rémi Lehu**, Marine paleoseismology east of Taiwan, NCU Taiwan scholarship
- 2007-2011 **Thomas Theunissen**, Seismic imagery of Southern Ryukyus, University of Montpellier 2 scholarship
- 2002-2005 **Arnaud Heuret**, Relations among subduction zones parameters, University of Montpellier 2 scholarship
- 1997-2001 **Anne Deschamps**†, West Philippine Basin formation, University of Montpellier 2 scholarship
- 1996-2000 **Yvonne Font**, Southermost Ryukyu margin seismotectonics, NTU Taiwan scholarship
- 1994-1998 **Stéphane Dominguez**, Oceanic highs subduction and deformation, University of Montpellier 2 scholarship
- 1991-1994 **Philippe Schnürle**, Tectonic erosion and material transfer, Paris 6 University scholarship

Scientific production

1985-2026 : 142 peer reviewed papers, 2 text-books, 3 chapters in Encyclopedia
 Databases : [Research Gate](#), [Web of Science](#), [Google scholar](#), [Orchid](#)
 Web-tool : Open-access [Submap](#) database displaying 126 subduction parameters along 260 transects
 h-index \approx 50-60

Selected publications

Tectonic erosion & material transfer

- [von Huene R. and Lallemand S. \(1990\)](#). Tectonic erosion along convergent margins; Geol. Soc. Am. Bull. , 102, p. 704-720.
- [Lallemand S., Schnürle, P., Malavieille J. \(1994\)](#). Coulomb theory applied to accretionary and non-accretionary wedges – Possible causes for tectonic erosion and/or frontal accretion; J. Geophys. Res., 99, B6, 12033-12055.
- [Lallemand S., Peyret M., Arcay D., Heuret A. \(2024\)](#). Accretion versus erosion and sediment transfer balance near the subduction interface. C. R. Géoscience - Sciences de la Planète, 356, S2, 1-25.

Subduction parameters

- [Lallemand S., Heuret A. and Boutelier D. \(2005\)](#). On the relationships between slab dip, back-arc stress, upper plate absolute motion and crustal nature in subduction zones; Geochem. Geophys. Geosyst., 6, 1.
- [Heuret A. and Lallemand S. \(2005\)](#). Plate motions, slab dynamics and back-arc deformation; Phys. Earth Planet. Int., 149, 31-51.

- [Lallemand S., Heuret A., Faccenna C., and Funicello, F. \(2008\)](#). Subduction dynamics revealed by trench migration ; *Tectonics*, 27, TC3014.
- [Cerpa N., Lallemand S., Heuret A. \(submitted\)](#). Unraveling the effect of convergence obliquity on overriding-plate deformation and strain partitioning in subduction zones. submitted on June 13, 2025 to *Tektonika*. preprint available on EarthArXiv

Oceanic high subduction

- [Dominguez, S., Lallemand, S., Malavieille, J., von Huene, R. \(1998\)](#). Upper plate deformation associated with seamount subduction; *Tectonophysics* , 293, 207-224.
- [Lallemand S., Peyret M., van Rijsingen E., Arcay D., and Heuret A. \(2018\)](#). Roughness characteristics of oceanic seafloor prior to subduction in relation to the seismogenic potential of subduction zones; *Geochemistry, Geophysics, Geosystems*, 19, 2121-2146.

Subduction megathrust earthquakes

- [van Rijsingen E., Lallemand S., Peyret M., Arcay D., Heuret A., Funicello F., Corbi F. \(2018\)](#). How subduction interface roughness influences the occurrence of large interplate earthquakes; *Geochemistry, Geophysics, Geosystems*, 19, 2342-2370.
- [Peyret M., Lallemand S., Arcay D., Brizzi S. - \(submitted on Feb.26\)](#). Global seismic energy release of large megathrust earthquakes since 1900: insights from the revised SubQuake catalog and seismic coupling along subduction zones. online on ESS Open Archive.

Subduction initiation

- [Arcay D., Lallemand S., Abecassis S., Garel F. \(2020\)](#). Can subduction initiation at a transform fault be spontaneous ? – *Solid Earth*, 11, 37-62.
- [Lallemand, S., Arcay D. \(2021\)](#). Subduction initiation from the earliest stages to self-sustained subduction: Insights from the analysis of 70 Cenozoic sites. *Earth-Science Reviews*.

Regional studies

- [Lallemand S. and Jolivet L. \(1986\)](#). Japan Sea: a pull-apart basin ?. *Earth Planet. Sci. Lett.*, 76, p. 375-389.
- [Lallemand S., Font Y., Bijwaard H. and Kao H. \(2001\)](#). New insights on 3-D plates interaction near Taiwan from tomography and tectonic implications; *Tectonophysics*, 335, 3-4, p. 229-253.
- [Lallemand S. \(2016\)](#). Philippine Sea Plate inception, evolution and consumption with special emphasis on the early stages of Izu-Bonin-Mariana subduction; *Progress in Earth and Planetary Science*, 3:15, 1-27.

Extreme events

- [Lallemand S., Lehu R., Rétif F., Hsu S.-K., Babonneau N., Ratzov G., Bassetti M.-A., Dezileau L., Hsieh M.-L. and Dominguez S. \(2016\)](#). A ~3000 years-old sequence of extreme events revealed by marine and shore deposits east of Taiwan; *Tectonophysics* 692, p. 325-341.

- [Lehu, R., Lallemand S., Ratzov, G., Babonneau, N., Hsu, S.-K., Lin, A. T., and Dezileau, L. \(2016\)](#). Reconstructing 2,700 years paleo-earthquakes history using deep-sea turbidites offshore eastern Taiwan; *Tectonophysics* 692, p. 309-324.
- [Babonneau N., Ratzov G., Guérin C., Richa M., Lallemand S., Condomines M., Bachelery P., Bosch D., Hsu S.-K., Su D., Shinjo R., Lin A., Bassetti M.-A., Revel M., Cattaneo A., and the EAGER scientific team \(2025\)](#). Sedimentary record of submarine gravity-flow events in the southern Ryukyu forearc during the last 200,000 years: archive of mega-earthquakes and tsunamis. *Sedimentology*.