
PARACOU – ANNUAL SCIENTIFIC REPORT 2018

This report lists all scientific publications and communications from studies conducted at Paracou experimental research station and/or using data from the long-term tree monitoring for 2018.

Scientific publications

1. Aghababae, H. *et al.* (2018) Phase Calibration Based on Phase Derivative Constrained Optimization in Multibaseline SAR Tomography. *IEEE Trans. Geosci. Remote Sens.* PP, 1–13
2. Aguilos, M. *et al.* (2018) Interannual and Seasonal Variations in Ecosystem Transpiration and Water Use Efficiency in a Tropical Rainforest. *Forests* 10, 14
3. Aguilos, M. *et al.* (2018) What drives long-term variations in carbon flux and balance in a tropical rainforest in French Guiana? *Agric. For. Meteorol.* 253–254, 114–123
4. Anouhe, J.B.S. *et al.* (2018) The role of extractives in the natural durability of the heartwood of *Dicorynia guianensis* Amsh: new insights in antioxydant and antifungal properties. *Ann. For. Sci.* 75, 15
5. Bai, Y. *et al.* (2018) An Empirical Study on the Impact of Changing Weather Conditions on Repeat-Pass SAR Tomography. *IEEE J. Sel. Top. Appl. Earth Obs. Remote Sens.* DOI: 10.1109/JSTARS.2018.2818796
6. Bossu, J. *et al.* (2018) Interlocked grain and density patterns in *Bagassa guianensis*: changes with ontogeny and mechanical consequences for trees. *Trees* DOI: 10.1007/s00468-018-1740-x
7. Bruelheide, H. *et al.* (2018) Global trait–environment relationships of plant communities. *Nat. Ecol. Evol.* DOI: 10.1038/s41559-018-0699-8
8. Ciminera, M. *et al.* (2018) Genetic Variation and Differentiation of *Hylesia metabus* (Lepidoptera: Saturniidae): Moths of Public Health Importance in French Guiana and in Venezuela. *J. Med. Entomol.* DOI: 10.1093/jme/tjy167
9. Clair, B. *et al.* (2018) Mechanical contribution of secondary phloem to postural control in trees: the bark side of the force. *New Phytol.* DOI: 10.1111/nph.15375
10. Courtois, E.A. *et al.* (2018) Spatial Variation of Soil CO₂, CH₄ and N₂O Fluxes Across Topographical Positions in Tropical Forests of the Guiana Shield. *Ecosystems* DOI: 10.1007/s10021-018-0232-6
11. De Deurwaerder, H. *et al.* (2018) Liana and tree below-ground water competition—evidence for water resource partitioning during the dry season. *Tree Physiol.* DOI: 10.1093/treephys/tpy002
12. Dejean, A. *et al.* (2018) Ant–plant relationships in the canopy of an Amazonian rainforest: the presence of an ant mosaic. *Biol. J. Linn. Soc.* DOI: 10.1093/biolinnean/bly125
13. Dejean, A. *et al.* (2018) Aquatic life in Neotropical rainforest canopies: Techniques using artificial phytotelmata to study the invertebrate communities inhabiting therein. *C. R. Biol.* 341, 20–27
14. Dlouhá, J. *et al.* (2018) Biophysical dependences among functional wood traits. *Funct. Ecol.* DOI: 10.1111/1365-2435.13209

15. Esquivel-Muelbert, A. *et al.* (2018) Compositional response of Amazon forests to climate change. *Glob. Chang. Biol.* DOI: 10.1111/gcb.14413
16. Féret, J.-B. *et al.* (2018) Estimating leaf mass per area and equivalent water thickness based on leaf optical properties: Potential and limitations of physical modeling and machine learning. *Remote Sens. Environ.* DOI: 10.1016/J.RSE.2018.11.002
17. Floch, J.-M. *et al.* (2018) Spatial distribution of points. In *Handbook of Spatial Analysis* (Loonis, V. and de Bellefon, M.-P., eds), pp. 71–111
18. Fontaine, S. *et al.* (2018) Response to Editor to the comment by Schipper & Smith to our paper entitled “Continuous soil carbon storage of old permanent pastures in Amazonia.” *Glob. Chang. Biol.* 24, e732–e733
19. Fu, T. *et al.* (2018) Tandem MS imaging and in situ characterization of bioactive wood metabolites in Amazonian tree species *Sextonia rubra*. *Anal. Chem.* DOI: 10.1021/acs.analchem.8b01157
20. Hayek, M.N. *et al.* (2018) A novel correction for biases in forest eddy covariance carbon balance. *Agric. For. Meteorol.* 250–251, 90–101
21. Héroult, B. and Piloniot, C. (2018) Key drivers of ecosystem recovery after disturbance in a neotropical forest. *For. Ecosyst.* 5, 2
22. Hogan, J.A. *et al.* (2018) Understanding the recruitment response of juvenile Neotropical trees to logging intensity using functional traits. *Ecol. Appl.* DOI: 10.1002/eap.1776
23. Labriere, N. *et al.* (2018) In Situ Reference Datasets From the TropiSAR and AfriSAR Campaigns in Support of Upcoming Spaceborne Biomass Missions. *IEEE J. Sel. Top. Appl. Earth Obs. Remote Sens.* DOI: 10.1109/JSTARS.2018.2851606
24. Liao, Z. *et al.* (2018) The impacts of spatial baseline on forest canopy height model and digital terrain model retrieval using P-band PolInSAR data. *Remote Sens. Environ.* 210, 403–421
25. Longo, M. *et al.* (2018) Ecosystem heterogeneity and diversity mitigate Amazon forest resilience to frequent extreme droughts. *New Phytol.* DOI: 10.1111/nph.15185
26. Meyer, V. *et al.* (2018) Canopy Area of Large Trees Explains Aboveground Biomass Variations across Nine Neotropical Forest Landscapes. *Biogeosciences Discuss.* DOI: 10.5194/bg-2017-547
27. Morel, H. *et al.* (2018) Basic wood density variations of *Parkia velutina* Benoist, a long-lived heliophilic Neotropical rainforest tree. *Bois Forêts des Trop.* 335, 59–69
28. Paine, C.E.T. *et al.* (2018) Towards the general mechanistic prediction of community dynamics. *Funct. Ecol.* DOI: 10.1111/1365-2435.13096
29. Peng, X. *et al.* (2018) A Maximum Likelihood Based Nonparametric Iterative Adaptive Method of Synthetic Aperture Radar Tomography and Its Application for Estimating Underlying Topography and Forest Height. *Sensors (Basel)*. 18,
30. Picard, N. *et al.* (2018) Plot-level variability in biomass for tropical forest inventory designs. *For. Ecol. Manage.* 430, 10–20
31. Pillet, M. *et al.* (2018) Disentangling competitive vs. climatic drivers of tropical forest mortality. *J. Ecol.* 106, 1165–1179
32. Piloniot, C. *et al.* (2018) Assessing timber volume recovery after disturbance in tropical forests – A new modelling framework. *Ecol. Modell.* 384, 353–369
33. Santiago, L.S. *et al.* (2018) Coordination and trade-offs among hydraulic safety, efficiency and drought avoidance traits in Amazonian rainforest canopy tree species. *New Phytol.* DOI: 10.1111/NPH.15058
34. Soong, J.L. *et al.* (2018) Soil microbial CNP and respiration responses to organic matter and nutrient additions: Evidence from a tropical soil incubation. *Soil Biol. Biochem.* 122, 141–149

Scientific conferences (may not be exhaustive)

1. Aguilos M, Stahl C, Burban B, Herault B, Courtois E, Wagner F, Takagi K, and Damien B. 2018. Does seasonal drought influence ecosystem transpiration and water use efficiency in a tropical rainforest? 33rd Conference on Agricultural and Forest Meteorology, 2018, Boise, Idaho, USA. Poster
2. Bossu J, S Corn, R Eckhart, J Beauchêne, B Clair (2018) GuyaValoFibres: developing new fibres-based composites from amazonian unvalorized ligno-cellulosic resource. Exploring lignocellulosic biomass: challenges and opportunity for bioeconomy" (ELB 2018). 26-29/06/2018. Reims, France.
3. Bossu J, R Lehnebach, S Corn, A Regazzi, J Beauchêne, B Clair (2018) Interlocked grain and density changes in *Bagassa guianensis*: a way to improve trunk biomechanics during ontogeny. 9th International Plant Biomechanics Conference, Montreal, Canada. 9-14/08/2018.
4. Christoffersen B, Grossiord C, Xu C, Asbjornsen H, Baraloto C, Berry ZC, Bonal D, Chambers J, Christianson D, Detto M, Faybishenko B, Fisher R, Fontes C, Fortunel C, Jardine K, Knox R, Koven CD, Kueppers LM, McDowell NG, Medina-Vega JA, Moore GW, Negron-Juarez R, Stahl C, Varadharajan C, Warren JM, Wolfe BT and Wright SJ, 2018. Tropical tree hydraulic responses to the 2015-2016 ENSO: a cross-site analysis and insights from a model ESA Annual meeting, New Orleans, USA. Oral
5. Clair B, B Ghislain, J Prunier, R Lehnebach, J Beauchêne, T Alméras (2018) The bark side of the force. 9th International Plant Biomechanics Conference, Montreal, Canada. 9-14/08/2018.
6. De Deurwaerder H, Boeckx P, Herve P, Stahl C, Bonal D, Stalmans L, Vercleyen O, Burban B, Verbeeck H. A stable isotopic view on liana and tree competition for soil water during dry and wet season. 2018 EGU, annual meeting. Vienna, Austria. Poster
7. Lehnebach R, T Alméras, B Clair (2018) Does mechanical state of bark change with ontogeny? A study on several tropical rain forest species. 9th International Plant Biomechanics Conference, Montreal, Canada. 9-14/08/2018.
8. Leroy C., Gril E., Coste S., Gérard B., Maillard P., Mercier H., Si-Ouali L., Stahl C. 2018. Effects of drought and water supply on the performance of epiphytic tank bromeliads. 6th International Conference on Comparative Biology of Monocotyledons – Monocots VI, also featuring the 2nd World Congress of Bromeliaceae Evolution – Bromevo II and the 7th International Symposium on Grass Systematics and Evolution. Natal, Brazil, October 7th-12th, 2018. Oral
9. Marcon, E. (2018) Mesure de la biodiversité et de la structuration spatiale de l'activité économique par l'entropie. Journées d'études sur les systèmes complexes naturels et artificiels : Méthodes, interdisciplinarité et complexité. Rochebrune, 15-19 janvier 2018. <https://ericmarcon.github.io/Rochebrune2018/Presentation.pdf>
10. Schmitt S., Heuertz M. , Hérault B., Tysklind N. Ecological genomics of niche exploitation and individual performance in tropical forest trees, 2018. Conférence européenne d'écologie tropicale. Poster

PhD (defended in 2018)

- Mirabel, A. (2018), Réponse et Résilience de la Biodiversité d'une Forêt Tropicale après Perturbation., Université de Guyane
- Piponiot, C. (2018), Quel futur pour les forêts de production en Amazonie ? Du bilan Carbone de l' exploitation forestière à la recherche de compromis entre services écosystémiques (bois d'œuvre, biodiversité et carbone), Université de Guyane

MsC theses

1. Bellifa, M. (2018), Réponses fonctionnelles des arbres aux contraintes hydriques saisonnières des habitats de forêts tropicales. , AgroParisTech
2. Cartry, D. (2018) , Variabilité interspécifique du microbiote de la canopée en forêt tropicale et rôle dans la tolérance à la sécheresse. , Université de Bordeaux
3. Ducouret, E. (2018) , Functional trait variability in the *Symphonia globulifera* species complex in French Guiana. , Université des Antilles
4. Manzi, O. (2018) , What are the capacity of hydraulic and photosynthesis recovery of tropical seedlings after drought stress. , Tropimundo Erasmus Mundus
5. Page, N. (2018) , Modeling the impacts of selective logging on tropical forests: A first attempt with TROLL, in French Guiana. , Université des Antilles
6. Saint-Germain, T. (2018) , Effets croisés de la fertilisation et de la sécheresse sur les flux de CO₂ et de CH₄ du sol en forêt tropicale. , Université de Saint-Etienne
7. Salmon, C. (2018) , Anatomie de la pousse feuillée d'arbres de canopée guyanais: vers une interprétation fonctionnelle de la relation feuille-tige. , Université Montpellier
8. Tchana Wandji, R. (2018) , Liens entre anatomie du bois et résistance à l'embolie : Le cas de quelques espèces de Guyane française. , Master EFT
9. Urrutia, M.A. (2018) Reading the signs : variation in growth and mortality rates in the tropical rainforests of French Guiana. , Erasmus Mundus Tropimundo
10. Vermale, C. (2018) , Cartographie de la biodiversité en forêts tropicales par imagerie hyperspectrale. , Institut National des Sciences Appliquées Toulouse

Activities conducted in Paracou in 2018

- 22 research projects (87 people including 16 internationals)
- Student projects/fieldtrip: 5 training programs (98 people including 18 internationals)
- 3 other visits (eg. professional training, media...) (29 people)