

2010 Amazon-PIRE field course Bibliography, by DAY and TOPIC

VOLUME 1: PRIMARY and SUPPLEMENTAL REFERENCES

Papers and references are divided into four categories: “Primary” and “Supplemental” Readings (corresponding to the readings listed on the syllabus, and contained in this volume 1), “methods” references (contained in volume 2), and “Additional Background” readings for each topic (in the electronic archive).

The references in the bibliography below are organized in chronological order of assignment, by day. The papers following this bibliography are compiled alphabetically, by first author.

DAY 0 (Sat, Jun. 26) – INTRODUCTION & OVERVIEW

Presentation: *Overview of course: themes and topics (Scott Saleska)*

Malhi, Y. J.T. Roberts, R.A. Betts, T.J. Killeen, W. Li, C.A. Nobre. 2008. Climate Change, Deforestation, and the Fate of the Amazon. *Science*, 319: 169-172.

DAY 1 (Sun, Jun. 27)

Field session: *Forest inventory measurements in Ducke forest* (methods reference in volume 2)

Phillips O. and T. Baker, RAINFOR: Field Manual for plot establishment and remeasurement (Nov. 2002 version)

Presentation: *Ecology and vegetation dynamics in the Ducke Mosaic (Flavia Costa)*

Primary and Supplemental Readings

Tuomisto, H.; Ruokolainen, K.; Kalliola, R.; Linna, A.; Danjoy, W.; Rodriguez, Z..1995. Dissecting Amazonian Biodiversity. *Science*. 269: 63-66.

Castillho, C, W. Magnusson, et al. 2006. Variation in aboveground tree live biomass in a central Amazonian Forest: Effects of soil and topography, *Forest Ecol. Management*.

Steege, T.H.; Pitman, A.C.N.; Phillips, L.O.; Chave, J.; Sabatier, D.; Duque, A.; Molino, F.J.; Prévost, F.M.; Spichiger, R.; Castellanos, H.; Hildebrand, P.; Vásquez, R. 2006. Continental-scale patterns of canopy tree composition and function across Amazonia. *Nature*. 443: 444-447.

DAY 2 (Mon, Jul. 20)

Field session: *Methods References for field exercises on “Sampling and analyses methods for soil properties, water content, and trace gas fluxes.” (Joost, Plinio, Cosme)*

Primary Methods References (note: in volume 2)

Jackson et al., Chapter 13: “Measuring water availability and uptake in ecosystem studies,” in Sala et al., *Methods in Ecosystem Sciences*. To page 207 only.

Skopp, J.M. (2002) Physical properties of primary particles. *Soil Physics Companion*. Chapter 1.

Baker et al. (2003) GRACEnet-Chamber based trace gas flux measurements protocol.

Presentation: *Nutrient dynamics in the Central Amazon Mosaic (Flavio Luizão)*

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Luizao, R.C.C., F.J. Luizao, R.Q. Paiva, T.F. Monteiro, L.S. Sousa, B. Kruijt (2004). Variation of carbon and nitrogen cycling processes along a topographic gradient in a central Amazonian forest. 2004. *Global Change Biology* 10, 592-600.

Presentation: Soils, Soil water, and nutrient dynamics (Joost van Haren)

Primary and Supplemental Readings

Vitousek, P.M. and R.L. Sanford, Nutrient Cycling in Moist Tropical Forest, *Ann. Rev. Ecol. Syst.* 17: 137-67.

Laurance, W.F., P.M. Fearnside, S.G. Laurance, P. Delamonica, T.E. Lovejoy, J. Judy M. Rankin-de Merona, J.Q. Chambers, Claude Gascon. 1999. Relationship between soils and Amazon forest biomass: a landscape-scale study. *Forest Ecology and Management* 118: 127-138.

Livingston, G.P., P.M. Vitousek, P.A. Matson. 1988. Nitrous oxide flux and nitrogen transformations across a landscape gradient in Amazonia, *J. Geophys. Res.* 93, D2, pp. 1,593-1,599.

Additional Readings (in electronic archive)

Davidson, E.A., C.J. R. de Carvalho, A.M. Figueira, F.Y. Ishida, J.P.H. B. Ometto, G.B. Nardoto, R.T. Sabá, S.N. Hayashi, E.C. Leal, I.C.G. Vieira, L.A. Martinelli. 2007. Recuperation of nitrogen cycling in Amazonian forests following agricultural abandonment. *Nature*. 447: 995-999.

Chadwick et al. (1999). Changing sources of nutrients during four million years of ecosystem development, *Nature*, 397: 491-497

DAY 3 (Tuesday, June 29)

Methods references for field session on Ecophysiology (in volume 2)

Pearcy et al., Plant Physiological Ecology: Field Methods & Instrumentation ("The Pink Book").
Pearcy, et al., Ch. 8: Measurement of transpiration and leaf conductance
Koide et al., Ch. 9: Plant water status, hydraulic resistance and capacitance
Field et al., Ch. 11: Photosynthesis: principles and field techniques

Lectures on plant physiological ecology (Ricardo Marengo and Kolby Jardine)

Primary and Supplemental Readings

Hetherington, A.M., Woodward, F. Ian. (2003) The role of stomata in sensing and driving environmental change. *Nature*, 424: 901-908.

Long, S.P., Bernacci, C.J. (2003) Gas exchange measurements, what can they tell us about the underlying limitations to photosynthesis? Procedures and sources of error. *Journal of Environmental Botany*, 54 (392): 2393-2401.

Pacifico, F., Harrison, S.P., Jones, C.D., Sitch, S. (2009) Isoprene emissions and climate. *Atmospheric Environment*, 43: 6121-6135.

Additional Readings for Background and Further Inquiry (in electronic archive)

Chazdon RL, Pearcy RW (1991) The importance of sunflecks for forest understory plants. *BioSciences* 41:760-766.

Krause GH, Weis E (1991) Chlorophyll fluorescence and photosynthesis: the basics. *Annual Review of Plant Physiology and Plant Molecular Biology* 42:313-349.

* Lloyd J, Farquhar GD (2008) The effect of rising temperatures and [CO₂] on the physiology of tropical forest trees. *Phil. Trans. R. Soc. B* 363:1811-1817.

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DAY 4 (Wednesday, June 30)

Presentation: *Natural forest disturbance and forest dynamics* (Bruce Nelson)

Nelson, B.W. 2006. Detection of natural and anthropogenic-indigenous disturbance of tropical forest using optical orbital images. Proceedings, VII Seminário em Atualização em Sensoriamento Remoto e Sistemas de Informações Geográficas Aplicados à Engenharia Florestal, 529-536.

Laurance, S.G. et al. 2009. Long-term variation in Amazon forest dynamics. *Journal of Vegetation Science* 20: 323–333.

Presentation: *Applying a general approach to leaf production using small footprint LIDAR* (S. Stark)

Primary Reading

De Pury and Farquhar. Simple scaling of photosynthesis from leaves to canopies without the errors of big-leaf models. *Plant Cell and Environment* (1997) vol. 20 (5) pp. 537-557.

Methods references for field session on optical methods (in volume 2)

Huete (2009) class notes: Fundamentals of Reflectance measurements & Field spectroscopy

Foley et al., (2006). Foliar spectral properties following leaf clipping and implications for handling techniques, *Remote Sens. Environ.* 103: 265–275.

Parker, G.G., Harding, D.J. and Berger, M. 2004. A portable LIDAR system for rapid determination of forest canopy structure. *Journal of Applied Ecology* 41:755-767.

Additional Readings for Scaling Lecture (in electronic archive)

Clark, M.L., D.B. Clark, D.A. Roberts. 2004. Small-footprint LIDAR estimation of sub-canopy elevation and tree height in a tropical rain forest landscape. *Remote Sensing of Environment* 91 68–89.

Davis F. and Dar Roberts, Stand Structure in Terrestrial Ecosystems, Ch. 1 in Sala et al. *Methods in Ecosystem Science*.

Doughty, C. E., and M. L. Goulden (2008), Seasonal patterns of tropical forest leaf area index and CO₂ exchange, *J. Geophys. Res.*, 113, G00B06.

Harding, D.J., M.A. Lefsky, G.G. Parker, and J.B. Blair, 2001. Laser altimetry canopy height profiles: methods and validation for closed canopy, broadleaf forests, *Rem. Sensing. Env.* 76, 283-297.

Toomey, Michael; Dar Roberts, Bruce Nelson. 2009. The influence of epiphylls on remote sensing of humid forests. *Remote Sensing of Environment* 113: 787–1798.

DAY 5 / 6 (Thursday/Friday, July 1-2) – Biosphere-Atmosphere Exchange topics (at km 34 site)

Presentations: “*Biosphere-Atmosphere exchange*”, and “*Scaling to region, continent, and globe*” (Alessandro Araujo and Steven Wofsy)

Primary Readings

Araujo A.C. , A.J. Dolman, M.J. Waterloo, J.H.C. Gash, B. Kruijt, F.B. Zanchi, J.M.E. de Lange, R. Stoevelaar, A.O. Manzi, A.D. Nobre, R.N. Lootens, J. Backer. 2010. The spatial variability of CO₂ storage and the interpretation of eddy covariance fluxes in central Amazonia. *Ag. For. Met.* 150: 226–237.

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Gatti, L.V. J.B. Miller, M.T.S. D'Amelio, E. Gloor, A. Martinewski, L. S. Basso, S. Wofsy, P. Tans. 2010. Vertical profiles of CO₂ above eastern Amazonia suggest a net carbon flux to the atmosphere and balanced biosphere between 2000 and 2009, *Tellus*. (in review).

Supplemental Reading

Acevedo, O. C., R. da Silva, D. R. Fitzjarrald, O. L. L. Moraes, R. K. Sakai, and M. J. Czikowsky (2008), Nocturnal vertical CO₂ accumulation in two Amazonian ecosystems, *J. Geophys. Res.*, 113, G00B04.

Tota J, D.R. Fitzjarrald, R.M. Staebler, R.K. Sakai, O.M.M. Moraes, O.C. Acevedo, S.C. Wofsy, A.O. Manzi (2008). Amazon rain forest subcanopy flow and the carbon budget: Santarem LBA-ECO site. *J. Geophys. Res., Biogeosci.* 113: B00B02.

Additional Readings for Background and Further Inquiry (in electronic archive)

Pyle, E.H., G.W. Santoni, H.E.M. Nascimento, L.R. Hutyrá, P.B. de Carmago, S. Vieira, D.J. Curran, J. van Haren, S.R. Saleska, V.Y. Chow, P.B. Carmago, W.F. Laurance, and S.C. Wofsy. Dynamics of carbon, biomass, and structure in two Amazonian forests. 2008. *J. Geophys. Res., Biogeosci.*, 113: G00B08.

Saleska, S.R., S.D. Miller, D.M. Matross et al. 2003, Carbon in Amazon forests: unexpected seasonal fluxes and disturbance-induced losses, *Science*. 302: 1554-1557.

Sala O. et al, *Methods in Ecosystem Science*, Chapter 11: Canopy Fluxes, pg. 161 – 165.

DAY 5 / 6 (Thursday/Friday, July 1-2) – Secondary Succession (at BDFFP site)

Presentation: Successional Vegetation Dynamics (Rita Mesquita)

Robin Chazdon, 2008. Chance and Determinism in Tropical Forest Succession, Ch. 23 in Walter Carson, Stefan Schnitzer, eds. *Tropical Forest Community Ecology*, Wiley-Blackwell, U.K.

Mesquita, R. C. G. ; Ganade, G. ; Ickes, K. ; Williamson, B. 2001. Alternative successional pathways in the Amazon basin. *Journal of Ecology* 89, p. 1-10.

DAY 9 (Monday, July 5) – Ecosystem Modeling

Primary Readings

Moorcroft, P.R., Hurtt, G.C., Pacala, S.W. (2001) A method for scaling vegetation dynamics: the ecosystem demography model (ED). *Ecological Monographs*, 71(4): 557-586.

Kohyama, Takashi (2006) The effect of patch demography on the community structure of forest trees, *Ecol Res*, 21: 346-355. (doi 10.1007/s11284-006-0168-8).

Secondary Readings

Appendix to Moorcroft, et al. (2001)

Medvigy, D., Wofsy, S.C., Munger, J.W., Hollinger, D.Y., Moorcroft, P.R. (2009) Mechanistic scaling of ecosystem function and dynamics in space and time: Ecosystem Demography model version 2. *Journal of Geophysical Research*, 114: 1-21. (G01002, doi:10.1029/2008JG000812)

Moorcroft, Paul R. (July 2006) How close are we to a predictive science of the biosphere? *Trends in Ecology and Evolution*, 21, 7: 400-407.

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- Castillho, C, W. Magnusson, et al. 2006. Variation in aboveground tree live biomass in a central Amazonian Forest: Effects of soil and topography, *Forest Ecol. Management*.
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- Gatti, L.V. J.B. Miller, M.T.S. D'Amelio, E. Gloor, A. Martinewski, L. S. Basso, S. Wofsy, P. Tans. 2010. Vertical profiles of CO₂ above eastern Amazonia suggest a net carbon flux to the atmosphere and balanced biosphere between 2000 and 2009, *Tellus*. (in review).
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- Laurance, S.G. et al. 2009. Long-term variation in Amazon forest dynamics. *Journal of Vegetation Science* 20: 323–333.
- Laurance, W.F., P.M. Fearnside, S.G. Laurance, P. Delamonica, T.E. Lovejoy, J. Judy M. Rankin-de Merona, J.Q. Chambers, Claude Gascon. 1999. Relationship between soils and Amazon forest biomass: a landscape-scale study. *Forest Ecology and Management* 118: 127-138.
- Long, S.P., Bernacci, C.J. (2003) Gas exchange measurements, what can they tell us about the underlying limitations to photosynthesis? Procedures and sources of error. *Journal of Environmental Botany*, 54 (392): 2393-2401.
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- Mesquita, R. C. G. ; Ganade, G. ; Ickes, K. ; Williamson, B. 2001. Alternative successional pathways in the Amazon basin. *Journal of Ecology* 89, p. 1-10.
- Moorcroft, P.R., Hurtt, G.C., Pacala, S.W. (2001) A method for scaling vegetation dynamics: the ecosystem demography model (ED). *Ecological Monographs*, 71(4): 557-586.
- Moorcroft, P.R., Hurtt, G.C., Pacala, S.W. (2001) APPENDIX.
- Nelson, B.W. 2006. Detection of natural and anthropogenic-indigenous disturbance of tropical forest using optical orbital images. Proceedings, VII Seminário em Atualização em Sensoriamento Remoto e Sistemas de Informações Geográficas Aplicados à Engenharia Florestal, 529-536.
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- Robin Chazdon, 2008. Chance and Determinism in Tropical Forest Succession, Ch. 23 in Walter Carson, Stefan Schnitzer, eds. *Tropical Forest Community Ecology*, Wiley-Blackwell, U.K.
- Steege, T.H.; Pitman, A.C.N.; Phillips, L.O.; Chave, J.; Sabatier, D.; Duque, A.; Molino, F.J.; Prévost, F.M.; Spichiger, R.; Castellanos, H.; Hildebrand, P.; Vásquez, R. 2006. Continental-scale patterns of canopy tree composition and function across Amazonia. *Nature*. 443: 444-447.
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