

# Christopher E. Doughty

Northern Arizona University - [Associate Professor](#)

[Contact](#) - [Website](#) - [Google Citations](#)

## Education and Training

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<b>2010-2013</b>	Junior Research Fellow, Oxford University
<b>2008-2010</b>	Postdoctoral Fellow at the Carnegie Institution, Stanford University
<b>Ph.D. 2008</b>	University of California at Irvine - Earth System Science
<b>M.S. 2005</b>	University of California at Irvine- Earth System Science
<b>B.A. 2001</b>	University of California at Berkeley- Honors Environmental Science

## Professional Appointments

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<b>2021-current</b>	<b>Associate Professor</b> , SICCS, Northern Arizona University
<b>2016-2021</b>	<b>Assistant Professor</b> , SICCS, Northern Arizona University
<b>2014-2016</b>	<b>Research Lecturer</b> (equivalent to Assistant Professor in the US system), School of Geography and the Environment, Oxford University

## Research Support as lead PI (~\$2,000,000 total)

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**Grant 1 - Funder** – John Fell Fund - \$68,000- Investigating a novel mechanism of extracting tree sugars from trees - **Doughty -lead - PI**

**Grant 2 - Funder** – John Fell Fund - \$8,000 – Understanding the role of forest elephants in sodium transport in Gabon - **Doughty -lead-PI**

**Grant 3 - Funder** - Google \$32,000 Creating and verifying global maps of tropical forest productivity – **Doughty -lead PI**

**Grant 4 - Funder** - NASA \$255,000 Habitable Worlds– Testing methods to detect 3D vegetation structure on exoplanets – **Doughty - lead PI**

**Grant 5 - Funder** – Private Family Foundation \$15,000 – Fund for calculating the ecosystem services of animals – **Doughty - lead PI**

**Grant 6 - Funder** - NASA \$691,000 NASA Biodiversity– Adding space-based vegetation structure measurements to a global ecosystem model to simulate tropical forest animal communities and their role in ecosystem function – **Doughty - lead PI**

**Grant 7 - Funder** – NASA \$350,731 NASA Ecotress– Merging ECOSTRESS with field data in the highest uncertainty water use efficiency regions in the world – **Doughty - lead PI**

**Grant 8 - Funder** – NASA \$ 580,649 NASA GEDI– Using GEDI to improve biomass estimates and understand recent biomass change in the tallest, highest biomass forests in the world. – **Doughty - lead PI**

## Research Support as Co-I or collaborator (~\$10,271,000 total)

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**Grant 1 - Funder** – NERC - \$866,100.00 - The multi-year impacts of the 2015/2016 El Niño on the carbon cycle of tropical forests **Doughty -CoI**

**Grant 2 - Funder** – Carlsberg - \$2,044,097 - Megafauna ecosystem ecology from the deep prehistory to a human-dominated future (MegaPast2Future) **Doughty -CoI**

**Grant 3 - Funder** - The Royal Society - \$1,278,117.00 - Unearthing The Role of Animals in African Soil Ecology **Doughty -Collaborator**

**Grant 4 - Funder** – NSF - \$859,239 – Consequences of phenotypic plasticity for gene-to-ecosystem linkages: Multi-stress experiments across the climatic range of a foundation species – **Doughty – Collaborator**

**Grant 5 - Funder** - NSF \$ 2,999,000 – New, innovative PhD program in ecoinformatics (T3 — Team-based, Terrestrial, Training) – **Doughty - Collaborator**

**Grant 6 - Funder** - Keck \$ 325,000 – Increasing Participation in Undergraduate Informatics Education and Research – **Doughty – Collaborator**

**Grant 7 - Funder** - USDA \$ 200,000 – Determining The Capacity For The Water Stored In Wood To Help Trees Withstand Drought – **Doughty – Collaborator**

**Grant 8 - Funder** - NSF \$ 1,700,000 – Collaborative Proposal MRA: Strategies for surviving climate change and invasive species: Integrating multi-scale remote sensing and experimental common gardens – **Doughty – Co-I**

### **Invited talks and lectures – 2016 to present**

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#### **International**

2016 – Climate Change - Association of Tropical Biology (Merida, Mexico) – 1 invited talk

2017 – Biodiversity loss - Aarhus, Denmark – 1 invited talk (all expenses paid).

2017 - Climate Change - Oxford University, UK - 1 invited talk

2018 - Biodiversity loss - Lund University, Sweden - 1 invited talk (all expenses paid).

2018 - Climate Change - Oxford University, UK - 1 invited talk (all expenses paid).

2018 - Biodiversity loss - Cambridge University, UK - 1 invited talk

#### **National**

2016 – Biodiversity loss - Moore conference on metabolic scaling (Maine)- 1 invited talk (all expenses paid).

2016, 2018, 2019 - Climate Change - AGU (San Francisco) – invited talks, talks, poster

2016 - Climate Change - University of Arizona departmental seminar - 1 invited talk (all expenses paid).

2017 - Climate Change - Google Earth Engine meeting at Google headquarters – 2 invited talks (all expenses paid).

2017 - Climate Change - Ecological Society of America (Portland) – 2 invited talks

2017 - Climate Change - NASA JPL - 1 invited talk (all expenses paid).

2018 – Climate Change - Rivers Edge West at Phoenix Botanical Gardens- invited talk

2019 - Biodiversity loss - NASA Biodiversity in Washington DC - 1 invited poster (all expenses paid).

2020 - Climate Change - NASA ECOSTRESS in Pasadena - 1 invited talk (all expenses paid).

#### **Local**

2016 – Climate Change - NAU Biology Department Seminar - invited talk

2016 - Astrobiology -NAU Astronomy Department Seminar - invited talk

2017 - Biodiversity loss - Science on Tap - invited talk

2017 - Climate Change - NAU SES Department - invited talk

2018 - Climate Change - NAU Forestry Department - invited talk

2018 – NAU Climate change meeting- invited talk

2018, 2019 – Astrobiology - Lowell Observatory annual NASPA meeting - invited talk

## **Academic awards and honors**

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NAU representative for the Blavatnik award for research excellence  
[Research highlighted by Oxford Universities Annual Review \(only four researchers chosen annually from the entire university\) 2014](#)  
[Paper rated as “exceptional” by the faculty of 1000](#)  
[Paper listed as a highlight of 2010 by Environmental Research Letters](#)  
Oriell College Junior Fellowship in Tropical Forest Ecology 2010-2012  
Carnegie Institution Postdoctoral Fellowship 2008-2010  
NASA’s Earth System Science Graduate Fellowship, 2006-2008  
Best student poster at NASA’s LBA-ECO conference in Manaus, Brazil 2005

## **Scientific Leadership**

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Subject Editor of special issue of *PNAS* – Megafauna and Ecosystem Function  
Subject Editor of special issue of *Ecography* – Megafauna and Ecosystem Function  
Associate Editor in Tropical Forests (specialty section of *Frontiers in Forests and Global Change*)

## **Press attention of work as lead or senior author**

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1. News relating to: The megabiota are disproportionately important for biosphere functioning. Nature Communications. Altimetric score = 184  
MSN news - [Big species at greatest climate risk](#)
2. News relating to: Carbon stocks in central African forests enhanced by elephant disturbance. Nature Geoscience. Altimetric score = 489  
New York Times - [The Thick Gray Line: Forest Elephants Defend Against Climate Change](#)
3. News relating to: Tropical forest leaves may darken in response to climate change - *Nature Eco/Evo*-Altimetric score= 56  
Phys.org [Climate change will likely cause darker tropical forests, researchers say](#)
4. News relating to: Herbivores increase the global availability of nutrients over millions of years Nature Eco/Evo - Altimetric score= 111  
DailyMail: [Dinosaur dung 'fertilized the planet' and helped larger animals move around the globe](#)
5. News relating to: Global nutrient transport in a world of giants PNAS Altimetric score = 801  
CBC: [The Nutrient Cycle Is 'Pooped'](#)
6. News relating to: Impact of the 2010 drought on Amazonian carbon dynamics and fluxes. Nature Altimetric score = 114  
The Independent - [Trees suffering from drought are less effective as carbon sinks](#)  
Climate central - [Drought weakens the Amazon's ability to capture carbon](#)
7. News relating to: Montane forest root growth and soil organic layer depth may have stabilized Cenozoic global change Altimetric score = 101  
Planet Earth Online [Mountain trees could help stabilize climate over millions of years.](#)  
The Daily Mail online [Tree roots act as 'Earth's thermostat': Mountain forest growth has stabilized the Earth's climate for millions of years](#)
8. News relating to: The legacy of the Pleistocene megafauna extinctions on nutrient availability in Amazonia. Altimetric score = 167

- BBC News: [Big animal extinction severed nutrient arteries](#)  
 New Scientist: [Ecosystems still feel the pain of ancient extinctions](#)  
 Scientific American: [Megafauna Extinction Affects Ecosystems 12,000 Years Later](#)
9. News relating to: Biophysical feedbacks between the Pleistocene megafauna extinction and climate: The first human-induced global warming?  
 Science: [Did Mammoth Extinction Warm Earth?](#)  
 The Economist: [A mammoth effect](#)
10. News relating to: Detecting Tree-like Multicellular Life on Extrasolar Planets  
 Astrobiology Magazine: [Seeing the Planets for the Trees.](#)
11. News relating to: Can crop albedo be increased through the modification of leaf trichomes and could this cool regional climate?  
 New Scientist: [Super-hairy plants could battle global warming.](#)

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**Peer-reviewed Publications (or in review with a DOI)– H-index = 38, i10-index = 63**

**2021**

**CE Doughty**, AW Cheesman, T Ruitta, E Thomson, A Shenkin, .. (2021). Predicting tropical tree mortality with leaf spectroscopy. *Biotropica*. <https://doi.org/10.1111/btp.12901> EcoEvoRxiv

**CE Doughty**, A Abraham, T Prys-Jones, T. Kolb. (2021) Forest thinning in ponderosa pines increases carbon use efficiency and energy flow from primary producers to primary consumers. *JGR Biogeosciences* doi: 10.1029/2020JG005947 EcoEvoRxiv

A Nottingham, A Cheesman, T Ruitta, **CE Doughty**, WH Huasco, ...(2021) Large contribution of recent photosynthate to soil respiration in Dipterocarpaceae-dominated tropical forest revealed by girdling EcoEvoRxiv

Abraham, A.J., TO Prys-Jones, A De Cuyper, C Ridenour, GP Hempson, ... **CE Doughty** (2021) Improved estimation of gut passage time considerably affects trait-based dispersal models *Functional Ecology*. <https://doi.org/10.1111/1365-2435.13726>

Abraham, A. J., Webster, A. B., Jordaan, J., Prys-Jones, T. O., Ganswindt, A., De Jager, P., & **Doughty, C. E.** (2021). Hyaenas play unique ecosystem role by recycling key nutrients in bones. *African Journal of Ecology*, 00, 1– 6. <https://doi.org/10.1111/aje.12907>

Abraham, AJ, Webster, AB, Prys-Jones, TO, et al. Large predators can mitigate nutrient losses associated with off-site removal of animals from a wildlife reserve. *J Appl Ecol*. 2021; 58: 1360– 1369. <https://doi.org/10.1111/1365-2664.13878>

Yang, H, Ciais, P, Wang, Y, et al. Variations of carbon allocation and turnover time across tropical forests. *Global Ecol Biogeogr*. 2021; 30: 1271– 1285.

Huaraca Huasco, W, Ruitta, T, Girardin, CAJ, et al. Fine root dynamics across pantropical rainforest ecosystems. *Glob Change Biol*. 2021; 27: 3657– 3680. <https://doi.org/10.1111/gcb.15677>

**2020**

**CE Doughty**, AW Cheesman, T Ruitta, E Thomson, A Shenkin, ... Predicting tropical tree mortality with leaf spectroscopy. EcoEvoRxiv

**CE Doughty**, TO Prys-Jones, S Faurby, AJ Abraham, C Hepp, V Leshyk, ...Megafauna decline have reduced pathogen dispersal which may have increased emergent infectious diseases. *Ecography* <https://doi.org/10.1111/ecog.05209>

**CE Doughty**, A Abraham, J Roman. The sixth R: Revitalizing the natural phosphorus pump. *EcoEvoRxiv*

**CE Doughty**, A Abraham, J Windsor, M Mommert, M Gowenlock, ...Distinguishing multicellular life on exoplanets by testing Earth as an exoplanet  
arXiv preprint arXiv:2002.10368

BJ Enquist, AJ Abraham, MJB Harfoot, Y Malhi, **CE Doughty**. The megabiota are disproportionately important for biosphere functioning *Nature communications* 11 (1), 1-11

**CE Doughty**, A Abraham, T Prys-Jones, T. Kolb Carbon fluxes and herbivory in ponderosa pines stands across a forest thinning chronosequence *EcoEvoRxiv*

## 2019

F Berzaghi, M Longo, P Ciais, S Blake, , ... **CE Doughty** Carbon stocks in central African forests enhanced by elephant disturbance *Nature Geoscience* 12 (9), 725-729

PG Taylor, CC Cleveland, F Soper, WR Wieder, SZ Dobrowski, **CE Doughty** ...Greater stem growth, woody allocation, and aboveground biomass in Paleotropical forests than in Neotropical forests *Ecology* 100 (3), e02589

S Fauset, M Gloor, N Fyllas, OL Phillips, GP Asner, T Baker, L Bentley, **CE Doughty**..Individual-based modelling of Amazon forests suggests that climate controls productivity while traits control demography *Frontiers in Earth Science* 7, 8332019

## 2018

OJ Schmitz, CC Wilmers, SJ Leroux, **CE Doughty**, TB Atwood, M Galetti, ...Animals and the zoogeochemistry of the carbon cycle. *Science* 362 (6419), eaar3213

SW Rifai, CAJ Girardin, E Berenguer, J del Aguila-Pasquel, CAL Dahlsjö, **CE Doughty** ..ENSO Drives interannual variation of forest woody growth across the tropics. *Philosophical Transactions of the Royal Society B: Biological Sciences* 373 ...

ER Thomson, Y Malhi, H Bartholomeus, I Oliveras, A Gvozdevaite, ...**CE Doughty**, Mapping the Leaf Economic Spectrum across West African Tropical Forests Using UAV-Acquired Hyperspectral Imagery *Remote Sensing* 10 (10), 1532

DB Metcalfe, W Rocha, JK Balch, PM Brando, **CE Doughty**, Y Malhi., Impacts of fire on sources of soil CO<sub>2</sub> efflux in a dry Amazon rain forest *Global change biology* 24 (8), 3629-3641

**Doughty, C.E.**, P.E Santos-Andrade, Shenkin A., Goldsmith, G.R., Bentley, L.P. Blonder, B., Diaz, S., Salinas, N., Enquist B.J., Martin, R.E. Asner, G.P., Malhi, Y. Tropical forest leaves may darken in response to climate change. *Nature Ecology and Evolution* (2018) PDF

**Doughty, C.E.**, Goldsmith, G. R., Raab, N., C. A. J. Girardin, et al., What controls variation in carbon use efficiency among tropical forests? 2018 *Biotropica* PDF

F Berzaghi, H Verbeeck, MR Nielsen, **CE Doughty**, F Bretagnolle, ...Assessing the role of megafauna in tropical forest ecosystems and biogeochemical cycles-the potential of vegetation models. 2018 *Ecography*

McDowell, N. et al. Drivers and mechanisms of tree mortality in moist tropical forests. 2018 *New Phytologist*

BM Stevens, J Propster, GWT Wilson, A Abraham, C Ridenour, **CE Doughty**, ...Mycorrhizal symbioses influence the trophic structure of the Serengeti  
2018 *Journal of Ecology* 106 (2), 536-546

## 2017

Enquist, B.J. et al. Assessing trait-based scaling theory in tropical forests spanning a broad temperature gradient. 2017 *Global Ecology and Biogeography*

**Doughty, C.E.**, Herbivores increase the global availability of nutrients over millions of years. 2017 *Nature Eco/Evo* PDF

PRESS - Nature Magazine, EOS, The Daily Mail, Anthropocene Magazine, NAZ today

**Doughty, C.E.**, D.B. Metcalfe, C. A. J. Girardin, et al., Can leaf spectroscopy predict leaf and forest traits along a Peruvian tropical forest elevation gradient? 2017 *JGR Biogeosciences* PDF

PG Taylor, CC Cleveland, WR Wieder, BW Sullivan, **CE Doughty**, et al. Temperature and rainfall interact to control carbon cycling in tropical forests  
*Ecology Letters* 20 (6), 779-788

Y Malhi, CAJ Girardin, GR Goldsmith, **CE Doughty**, N Salinas, ...The variation of productivity and its allocation along a tropical elevation gradient: a whole carbon budget perspective. *New Phytologist* 214 (3), 1019-1032

Chavana-Bryant, C., Malhi, Y., Wu, J., Asner, G.P., Anastasiou, A., Enquist, B.J., Caravasi, C., **Doughty, C.E.**, Saleska, S.R., Martin, R.E., Gerard, F.F. (2017) Leaf aging of Amazonian canopy trees as revealed by spectral and physiochemical measurements. *New Phytologist*

## 2016

**Doughty, C.E.**, S. Faurby, A. Wolf, Y Malhi, J. Svenning. Changing NPP consumption patterns in the Holocene: from megafauna “liberated” NPP to “ecological bankruptcy” *Anthropocene Review*. 2016 PDF

**Doughty, C.E.**, Faurby, S. and Svenning, J. (2016) The impact of the megafauna extinctions on savanna woody cover in South America. *Ecography*. PDF

**Doughty, C.E.**, Roman, J., Faurby, S., Wolf, A., Haque, A., Bakker, E.S., Malhi, Y., Dunning, J.B. and Svenning, J.C. (2016) Global nutrient transport in a world of giants. *Proceeding of the National Academy of Sciences of the United States of America*.PDF

PRESS - The Guardian, Fox News, Washington Post, Huffington post, Scientific American

**Doughty, C.E.**, Wolf, A., Baraloto, C. and Malhi, Y. (2016) Interdependency of plants and animals in controlling the sodium balance of ecosystems and the impacts of global defaunation. *Ecography*. PDF

**Doughty, C.E.**, Wolf, A., Morueta-Holme, N., Jorgensen, P.M., Sandei, B., Violle, C., Boyle, B., Kraft, N.J.B., Peel, R.K., Enquist, B.J., Svenning, J., Blake, S. and Galetti, M. (2016) Megafauna extinction, tree species range reduction and carbon storage in Amazonian forests. *Ecography*. PDF

**Doughty, C.E.**, Wolf, A. (2016) Detecting 3D vegetation structure with the Galileo space probe: Can a distant probe detect vegetation structure on Earth? - *PloS one* PDF

Girardin, C.A.J., Malhi, Y., **Doughty, C.E.**, Metcalfe, D.B., Meir, P., del Aguila-Pasquel, J., Araujo-Murakami, A., da Costa, A.C.L., Silva-Espejo, J.E., Farfán Amézquita, F. and Rowland, L. (2016) Seasonal trends of Amazonian rainforest phenology, net primary productivity and carbon allocation. *Global Biogeochemical Cycles*.

Malhi, Y., **Doughty, C.E.**, Galetti, M., Smith, F.A., Svenning, J. and Terborgh, J.W. (2016) Megafauna and ecosystem function from the Pleistocene to the Anthropocene. *Proceeding of the National Academy of Sciences of the United States of America*.

Smith, F.A., **Doughty, C.E.** Malhi, Y. , Svenning J., and Terborgh J. (2016) Megafauna in the Earth system. *Volume 39, Issue 2, February 2016, Pages: 99–108*,

## 2015

Cleveland, C.C., Taylor, P., Chadwick, K.D., Dahlin, K.L., Doughty, C.E., Malhi, Y., Smith, W.K., Sullivan, B.W., Wieder, W.R. and Townsend, A.R. (2015) A comparison of plot-based, satellite and Earth system model estimates of tropical forest net primary production. *Global Biogeochemical Cycles*.

**Doughty, C.E.**, Metcalfe, D.B., Girardin, C.A.J., Amézquita, F.F., Durand, L., Huaraca Huasco, W., Silva-Espejo, J.E., Araujo-Murakami, A., da Costa, M.C., da Costa, A.C.L., Rocha, W., Meir, P., Galbraith, D. and Malhi, Y. (2015) Source and sink carbon dynamics and carbon allocation in the Amazon basin. *Global Biogeochemical Cycles*. PDF

**Doughty, C.E.**, Metcalfe, D.B., Girardin, C.A.J., Farfan Amézquita, F., Galiano Cabrera, D., Huaraca Huasco, W., Silva-Espejo, J.E., Araujo-Murakami, A., da Costa, M.C., Rocha, W., Feldpausch, T.R., Mendoza, A.L.M., da Costa, A.C.L., Meir, P., Phillips, O.L. and Malhi, Y. (2015) Drought impact on forest carbon dynamics and fluxes in Amazonia. *Nature*, 519: 78-82. PDF

PRESS - MongaBay, The Independent, Climate Central

Lorimer, J., Sandom, C., Jepson, P., **Doughty, C.**, Barua, M. and Kirby, K. (2015) Rewilding: Science, practice and politics. *Annual Review of Environment and Resources*, 40.

Malhi, Y., **Doughty, C.E.**, Goldsmith, G.R., Girardin, C.A.J., Marthews, T.R., Aguila-Pasquel, J., Aragao, L.E.O.C., Araujo-Murakami, A., Brando, P., da Costa, A.C.L., Silva-Espejo, J.E., Amézquita, F.F., Galbraith, D.R., Quesada, C.A., Rocha, W., Salinas-Revilla, N., Silverio, D., Meir, P. and Phillips, O.L. (2015) The linkages between photosynthesis, productivity, growth and biomass in lowland Amazonian forests. *Global Change Biology*.

Rowland, L., da Costa, A.C.L., Galbraith, D.R., Oliveira, R.S., Binks, O.J., Oliveira, A.A.R., Pullen, A.M., **Doughty, C.E.**, Metcalfe, D.B., Vasconcelos, S.S., Ferreira, L.V., Malhi, Y., Grace, J., Mencuccini, M. and Meir, P. (2015) Death from drought in tropical forests is triggered by hydraulics not carbon starvation. *Nature*.

Rowland, L., Harper, A., Christoffersen, B.O., Galbraith, D.R., Imbuzeiro, H.M.A., Powell, T.L., **Doughty, C.**, Levine, N.M., Malhi, Y., Saleska, S.R., Moorcroft, P.R., Meir, P. and Williams, M. (2015) Modelling climate change responses in tropical forests: similar productivity estimates across five models, but different mechanisms and responses. *Geoscientific Model Development*, 8: 1097-1110.

## 2014

Araujo-Murakami, A., **Doughty, C.E.**, Metcalfe, D.B., Silva-Espejo, J.E., Arroyo, L., Heredia, J.P., Flores, M., Sibling, R., Mendizabal, L.M., Pardo-Toledo, E., Vega, M., Moreno, L., Rojas-Landivar, V.D., Halladay, K., Girardin, C.A.J., Killeene, T.J. and Malhi, Y. (2014) The productivity, allocation and cycling of carbon in forests at the dry margin of the Amazon forest in Bolivia. *Plant Ecology and Diversity*, 7(1-2): 55-69. Special Issue: Ecosystem Dynamics of Amazonian and Andean Forests.

da Costa, A.C.L., Metcalfe, D.B., Doughty, C.E., de Oliveira, A.A.R., Neto, G.F.C., da Costa, M.C., de Athaydes Silva Junior, J., Aragão, L.E.O.C., Almeida, S., Galbraith, D.R., Rowland, L.M., Meir, P. and Malhi, Y. (2014) Ecosystem respiration and net primary productivity after 8-10 years of experimental through-fall reduction in an eastern Amazon forest. *Plant Ecology and Diversity*, 7(1-2): 7-24. Special Issue: Ecosystem Dynamics of Amazonian and Andean Forests..

del Aguila-Pasquel, J., Doughty, C.E., Metcalfe, D.B., Silva-Espejo, J.E., Girardin, C.A.J., Chung Gutierrez, J.A., Navarro-Aguilar, G.E., Quesada, C.A., Hidalgo, C.G., Reyna Huaymacari, J.M., Halladay, K., del Castillo Torres, D., Phillips, O. and Malhi, Y. (2014) The seasonal cycle of productivity, metabolism and carbon dynamics in a wet aseasonal forest in north-west Amazonia (Iquitos, Peru). *Plant Ecology and Diversity*, 7(1-2): 71-83. Special Issue: Ecosystem Dynamics of Amazonian and Andean Forests..

**Doughty, C.E.**, Malhi, Y., Araujo-Murakami, A., Metcalfe, D.B., Silva-Espejo, J.E., Arroyo, L., Heredia, J.P., Pardo-Toledo, E., Mendizabal, L.M., Rojas-Landivar, V.D., Martinez, M., Valencia, M., Rivero, R. and Vare, L. (2014) Allocation trade-offs dominate the response of tropical forest growth to seasonal and interannual drought. *Ecology*, 95(8): 2192-2201. PDF

**Doughty, C.E.**, Metcalfe, D.B., da Costa, M.C., de Oliveira, A.A.R., Neto, G.F.C., Silva, J.A., Aragão, L.E.O.C., Almeida, S.S., Quesada, C.A., Girardin, C.A.J., Halladay, K., da Costa, A.C.L. and Malhi, Y. (2014) The production, allocation and cycling of carbon in a forest on fertile terra preta soil in eastern Amazonia compared with a forest on adjacent infertile soil. *Plant Ecology and Diversity*, 7(1-2): 41-53. Special Issue: Ecosystem Dynamics of Amazonian and Andean Forests..PDF

**Doughty, C.E.**, Taylor, L.L., Girardin, C.A.J., Malhi, Y. and Beerling, D. (2014) Montane forest root growth and soil organic layer depth may have stabilized Cenozoic global change. *Geophysical Research Letters*, 41(3): 983-990. PDF

PRESS - Nature World News, Daily Mail

Gatti, L.V., Gloor, M., Miller, J.B. Doughty, C.E., Malhi, Y., Domingues, L.G., Basso, L.S., Martinewski, A., Correia, C.S.C., Borges, V.F., Freitas, S., Braz, R., Anderson, L.O., Rocha, H., Grace, J., Phillips, O.L. and Lloyd, J. (2014) Drought sensitivity of Amazonian carbon balance revealed by atmospheric measurements. *Nature*, 506: 76-80.

Girardin, C.A.J., Malhi, Y., Feeley, K.J., Rapp, J.M., Silman, M.R., Meir, P., Huaraca Huasco, W., Salinas, N., Mamani, M., Silva-Espejo, J.E., Garcia Cabrera, K., Farfan Rios, W., Metcalfe, D.B., Doughty, C.E. and Aragao, L.E.O.C. (2014) Seasonality of above-ground net primary productivity along an Andean, altitudinal transect in Peru. *Journal of Tropical Ecology*, 30(06): 503-519.

Girardin, C.A.J., Silva Espejo, J.E., Doughty, C.E., Huaraca Huasco, W., Metcalfe, D.B., Durand-Baca, L., Marthews, T.R., Aragao, L.E.O.C., Farfan-Rios, W., Garcia-Cabrera, K., Halladay, K., Fisher, J.B., Galiano-Cabrera, D.F., Huaraca-Quispe, L.P., Alzamora-Taype, I., Eguiluz-Mora, L., Salinas-Revilla, N., Silman, M.R., Meir, P. and Malhi, Y. (2014) Productivity and carbon allocation in a tropical montane cloud forest in the Peruvian Andes. *Plant Ecology and Diversity*, 7(1-2): 107-123. Special Issue: Ecosystem Dynamics of Amazonian and Andean Forests..

Gurdak, D.J., Aragão, L.E.O.C., Rozas-Dávila, A., Huasco, W.H., Cabrera, K.G., **Doughty, C.E.**, Farfan-Rios, W., Silva-Espejo, J.E., Metcalfe, D.B., Silman, M.R. and Malhi, Y. (2014) Assessing above-ground woody debris dynamics along a gradient of elevation in Amazonian cloud forests in Peru: balancing above-ground inputs and respiration outputs. *Plant Ecology and Diversity*, 7(1-2): 143-160. Special Issue: Ecosystem Dynamics of Amazonian and Andean Forests..

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