Danilo Dragoni

Atmospheric Science Program, Department of Geography,
Indiana University, Bloomington IN, 47405 U.S.A.
Tel: (812) 855 5557 ddragoni@indiana.edu Fax: (812) 855 1661

Education

Ph.D. Cornell University, Ithaca NY, U.S.A. – 2000-2003. Conferred May 2003
Plant Biology (Plant Physiology)
Thesis: *Measuring and Modeling Water Fluxes in Apple Orchard and Vineyard in Cool and Humid Climates*
Advisor: Professor A.N. Lakso

Laurea (B.Sc.) Universita' Statale di Milano, Milan, Italy. Conferred February 1996
Biology, (Ecology).
Thesis: *ESAT-BCP: the Object Oriented Programming Version of the Virtual Consumer for Energy Flux Analysis of Ecosystems*
Advisor: Dr. G. Pacchetti

Employment

2005-current Assistant Scientist (Atmospheric Science Program), Geography Department, Indiana University, Bloomington, Indiana, U.S.A.

2003-2004 Post Doctoral fellow (Atmospheric Science Program), Geography Department, Indiana University, Bloomington, Indiana
Advisors: Drs. H.P. Schmid and Sue Grimmond

2000-2003 Graduate Research Assistant, New York State Agricultural Experiment Station, Cornell University, Geneva, New York, U.S.A

1996-2000 Scientific Advisor and responsible for scientific software development, Servizi Territorio s.c.r.l., Cinisello Balsamo, Italy

Research Interests

- Biosphere-Atmosphere interaction.
- Energy and mass (water and carbon dioxide) exchange in natural systems
  Topics of particular interest: measuring and modeling spatial and temporal dynamic of the plant-environment interaction in response of short- and long-term variability in environmental conditions.

Research Grants

Principal investigator

2009 *Investigating temporal dynamic of autotrophic and heterotrophic components of soil respiration using reversible-girdling technique*
Source: IU Center for Research in Environmental Sciences (CRES)
Total: $30,465

2009 *Decomposing spatio-temporal dynamics of carbon and water fluxes for improved understanding of ecosystem functions in a changing climate.*
Source: IU Center for Research in Environmental Sciences (CRES)
Total: $14,205

2007-2009 *COLLABORATIVE PROJECT - Disturbance, succession and forest carbon dynamics: an ecosystem-scale experiment at the UMBS Ameriflux site. (PI from FY 2008)*
Source: US-Department Of Energy - National Institute for Climate Change Research.
Total: $141,200

2007-2010 *Ecosystem-Atmosphere Exchange of Carbon, Water and Energy over a mixed deciduous forest in the Midwest (PI from FY 2008)*
Source: US-Department Of Energy - Office of Science/Terrestrial Carbon Program
Total: $630,500

Co-principal investigator

2010-2012 *Improved Per-Pixel Estimates of Ecosystem Carbon Fluxes across Eastern US Forests*
Source: NASA
Principal Investigator: F. Rahman (Indiana University)
Total: $ 527,021

2008-2010 *Estimation of Annual Carbon Sequestration Rates in Forests in the State of Indiana and Registration of Greenhouse Gas Emission Reductions*
Source: Indiana Department of Natural Resources
Principal Investigator: JC Randolph (Indiana University)
Total: $125,000

2005-2006 *Characterizing hydrologic response in urbanizing watersheds in Indiana: Determination of changes in runoff coefficients*
Source: Indiana Water Resources Research Center /United States Geological Survey, US Department of Interior.
Principal Investigator: SCB Grimmond (Indiana University)
Total: $29,501

Awards, Honors and Distinctions

2002 American Society For Enology and Viticulture –*Eastern Section* - Scholarship 2002-2003

Publications

In preparation/submitted

D. Dragoni, H.P. Schmid, S. Grimmond, J.C. Randolph, C. Wayson, and H. Potter. Evidence for increased NEP of a mid-latitude deciduous forest caused by longer vegetative seasons. *In preparation, to be submitted to Global Change Biology*

A.F. Rahman, **D. Dragoni**, E.E. Vermote, V.D. Cordova, D.A. Sims., B. El-Masri. Use of MODIS-based PRI for tracking fluctuations in light use efficiency of a deciduous forest during summer-drought. *In preparation*

Wayson, C.A., **D. Dragoni**, J.C. Randolph, C.S.B. Grimmond, J.L. Ehman, H.P Schmid. Top-down and bottom-up: integrated carbon flux analysis in a mid-latitude deciduous forest. *In preparation*

Ricciuto, D.M, A.W. King, **D. Dragoni**, W.M. Post. Parameter and prediction uncertainty in an optimized terrestrial carbon cycle model: Effects of constraining variables and data record length. *In preparation*

Published or accepted (Per-reviewed)

D. Hollinger, S. Ollinger, A.D. Richardson, T. Meyers, B. Dail, M. Martin, N.Scott, T.J. Arkebauer, D. Baldocchi,K. Clark, P. Curtis, K. Davis, A. Desai, **D. Dragoni**, M. Goulden, L. Gu,G. Katul, S. Pallardy, K. Tha Paw U, H.P. Schmid, P. Stoy, Paul, A. Suyker, S. Verma. Albedo estimates for land surface models and support for a new paradigm based on foliage nitrogen concentration. *Global Change Biology- accepted*.

Wenping Yuan, Yiqi Luo, Andrew D. Richardson, Ram Oren, Sebastiaan Luyssaert, Ivan A. Janssens, Reinhart Ceulemans, Thomas Grünwald, Marc Aubinet, Christian Bernhofer, Dennis D. Baldocchi, Jiquan Chen, Allison L. Dunn, Jared Deforest, **D Dragoni**, Allen H. Goldstein, Eddy Moors, J. William Munger, Russell K. Monson, Andrew E. Suyker, Gregory Starr, Russell L. Scott, John Tenhunen, Shashi B. Verma, Timo Vesala, and Steven C. Wofsy, Latitudinal Patterns of Interannual Variability in Net Ecosystem Exchange. *Global Change Biology- accepted*

2009

Caylor, K.K. and **Dragoni, D.,** Decoupling structural and environmental determinants of sap velocity: Part I. Methodological development. Agric. For. Meteorol., 149(3-4): 559-569.

Dragoni, D., Caylor, K.K. and Schmid, H.P., Decoupling structural and environmental determinants of sap velocity Part II. Observational application. Agric. For. Meteorol., 149(3-4): 570-581.

Gough, C.M., Flower, C.E., Vogel, C.S., **Dragoni, D.** and Curtis, P.S., Whole-ecosystem labile carbon production in a north temperate deciduous forest. Agric. For. Meteorol., 149(9): 1531-1540.

Van Gorsel E, Delpierre N, Leuning R, Black A, Munger Jw, Wofsy S, Aubinet M, Feigenwinter C, Beringer J, Bonal D, Chen Bz, Chen Jq, Clement R, Davis Kj, Desai Ar, **Dragoni D**, Etzold S, Grunwald T, Gu Lh, Heinesch B, Hutyra Lr, Jans Wwp, Kutsch W, Law Be, Leclerc My, Mammarella I, Montagnani L, Noormets A, Rebmann C, Wharton S (2009) Estimating nocturnal ecosystem respiration from the vertical turbulent flux and change in storage of CO2. *Agricultural and Forest Meteorology,* **149**, 1919-1930.

Luyssaert, S., Reichstein, M., Schulze, E.D., Janssens, I.A., Law, B.E., Papale, **D., Dragoni**, D., Goulden, M.L., Granier, A., Kutsch, W.L., Linder, S., Matteucci, G., Moors, E., Munger, J.W., Pilegaard, K., Saunders, M. and Falge, E.M., Toward a consistency cross-check of eddy covariance flux-based and biometric estimates of ecosystem carbon balance. Global Biogeochemical Cycles, 23: 13.

Roman, M.O., Schaaf, C.B., Woodcock, C.E., Strahler, A.H., Yang, X.Y., Braswell, R.H., Curtis, P.S., Davis, K.J., **Dragoni, D.,** Goulden, M.L., Gu, L.H., Hollinger, D.Y., Kolb, T.E., Meyers, T.P., Munger, J.W., Privette, J.L., Richardson, A.D., Wilson, T.B. and Wofsy, S.C., The MODIS (Collection V005) BRDF/albedo product: Assessment of spatial representativeness over forested landscapes. Remote Sensing Of Environment, 113(11): 2476-2498.

Wang, L.X., Caylor, K.K. and **Dragoni, D.,** On the calibration of continuous, high-precision delta O-18 and delta H-2 measurements using an off-axis integrated cavity output spectrometer. Rapid Commun. Mass Spectrom., 23(4): 530-536.

2008
Stockli, R., Rutishauser, T., **Dragoni, D.**, O'Keefe, J., Thornton, P.E., Jolly, M., Lu, L. and Denning, A.S., Remote sensing data assimilation for a prognostic phenology model. Journal of Geophysical Research-Biogeosciences, 113(G4): 19.

2007
Dragoni, D., Schmid, H.P., Grimmond, C.S.B. and Loescher, H.W., Uncertainty of annual net ecosystem productivity estimated using eddy covariance flux measurements. Journal Of Geophysical Research-Atmospheres, 112(D17): 9.

2006
Dragoni, D., Lakso, A.N., Piccioni, R.M. and Tarara, J.M., Transpiration of grapevines in the humid northeastern United States. Am. J. Enol. Vitic., 57(4): 460-467.

2005
Dragoni, D., Lakso, A.N. and Piccioni, R.M., Transpiration of apple trees in a humid climate using heat pulse sap flow gauges calibrated with whole-canopy gas exchange chambers. Agric. For. Meteorol., 130(1-2): 85-94.

Dragoni, D., *Lakso, A.N. and Piccioni, R.M.* Transpiration of an Apple Orchard in a Cool Humid Climate: Measurement and Modeling, *Acta Horticulturae*, 664: 175-180.

Conference or Symposium Proceedings, Preprints

Dragoni D., K.K. Caylor. Decoupling structural and environmental determinants of sap velocity. 7th Workshop on sap flow - ISHS. 2008, Seville (Spain)

Dragoni D., A.N. Lakso. An Apple-Specific ET Model. ISHS 9th International Symposium. On Integrating Canopy, Rootstock and Environmental Physiology in Orchard Systems. 2008, Geneva (NY)

Schmid H.P., **D. Dragoni D.**, C. Wayson C., R. Toriumi, C.S.B. Grimmond. A marked pulse in annual gross ecosystem productivity detected by E-C measurements in Indiana: is it real or due to a bug? Preprints, 27th Conference on Agricultural And Forest Meteorology. Am. Meteorol. Soc., San Diego. paper 5.9 (3pp).

Dragoni D. Urban Fluxnet Database: CO_2 Flux Measurements. IAUC Newsletter No. 9: 3

Invited Presentations

Dragoni D., H.P.Schmid, S. Grimmond, J.C. Randolph, C. Wayson, and J.W. Munger. Is the NEP of a deciduous forest responding to longer vegetative seasons? – 2009 AmeriFlux Meeting – Washington DC, September 22, 2009

Dragoni D., H.P.Schmid, S. Grimmond, J.C. Randolph, C. Wayson. In search of biotic and non-biotic drivers of NEP in a forest ecosystem or: Why is a decade of CO_2 exchange measurements not enough? - Garmisch-Partenkirchen, Germany – Institute of Meteorology and Climate Research, KIT, September 10, 2009

Dragoni D. Measuring Ecosystem-atmosphere exchange of carbon, water and energy over a mixed deciduous forest in the Midwest. Center for Research in Environmental Sciences (CRES) – Bloomington IN, November 19, 2008

Dragoni D. Forest-Atmosphere Exchange of CO2, H2O and energy over a mixed hardwood ecosystem in the Midwest of United States, INRA National Agricultural Research Institute – French Guyana, September 23, 2005

Dragoni D., A.N. Lakso, R.M. Piccioni. Measuring and Modeling Water Fluxes in Apple Orchards and Vineyards in the Humid Climate of the Northeastern US, Indiana University- Geography Department, March 05, 2004

Dragoni D., A.N. Lakso, R.M. Piccioni. Measuring and Modeling Water Fluxes in Apple Orchards and Vineyards in Cool and Humid Climates, New York State Agricultural Experiment Station, Cornell University, March 03, 2003

Conference Presentations

Dragoni D., H.P.Schmid, S. Grimmond, J.C. Randolph, C. Wayson. In search of biotic and non-biotic drivers of NEP in a forest ecosystem or: Why is a decade of CO_2 exchange measurements not enough? - 8th International Conference on CO_2 – 2009, Jena - Germany

Dragoni D., C.A. Wayson, J.C. Randolph, and H.P. Schmid. Integrated carbon flux analysis in a mid-latitude deciduous forest: the first 10 years. – EGU 2009, Vienna -Austria

Dragoni D., K.K. Caylor. Decoupling structural and environmental determinants of sap velocity. 7th International Workshop on Sap Flow – ISHS. Seville, Spain- 21-24 October 2008

Dragoni D., C.W. Wayson, J.C. Randolph, C.S.B Grimmond, J.L. Ehman, and H.P. Schmid. Biometric and eddy-covariance methods: integrated carbon flux analysis in a mid-latitude deciduous forest. 2008 AmeriFlux Meeting *(Poster)*

Dragoni D., A.N. Lakso. An Apple-Specific ET Model. ISHS 9th International Symposium On Integrating Canopy, Rootstock and Environmental Physiology in Orchard Systems. 2008, Geneva (NY) (*Poster*)
Dragoni D., H.P. Schmid, C.S.B. Grimmond, H.W. Loescher. Uncertainty on annual net ecosystem productivity estimated using eddy-covariance flux towers. . AGU 2006, San Francisco, CA *(poster)*

Dragoni D., H.P. Schmid, K.K. Keylor, Characterization of Transpiration in a Deciduous Forest of the US Midwest. AGU 2006, San Francisco, CA *(poster)*

Dragoni D., H.P. Schmid, C.S.B. Grimmond, H.W. Loescher. Uncertainty on annual net ecosystem productivity estimated using eddy-covariance flux towers. 2006 AmeriFlux Meeting *(poster)*

Dragoni D., H.P.Schmid, C.A. Wayson, R. Toriumi, C.S.B. Grimmond. A marked pulse in annual gross ecosystem productivity detected by E-C measurements in Indiana: is it real or due to a bug? 2006 AmeriFlux Meeting. *(poster*)

Wade C.M., **D. Dragoni**, H.P. Schmid. Water Vapor Storage Change in the Canopy-Air Space of a Tall Deciduous Forest. AGU 2005 Joint Assembly, New Orleans LA, May 23-27, 2005 *(poster)*

Howe J.A., **D. Dragoni**, H.P. Schmid. Response of Sap-Flow Measurements on Environmental Forcings. AGU 2005 Joint Assembly, New Orleans LA, May 23-27, 2005 *(poster)*

Grimmond C.S.B., **D. Dragoni**, D.E. Anderson, J. Beringer, A. Coutts, B. Crawford, D. Fowler, F. Hu, J. Hom, M. Kanda, T.S. King, W. Kuttler, V. Masson, H. Mayer, J. McFadden, F. Miglietta, R. Moriwaki, E. Nemitz, B. Offerle, T.R. Oke, D. Scherer, H. Soegaard, N. Tapper, C.J. Walsh, R. Vogt. Urban FluxNet: CO2 – Flux Measurements. FLUXNET 2004 Open Workshop, Firenze, Italy December13-15 2004 (*poster*)

Dragoni D., A.N. Lakso, R.M. Piccioni. Water Use of an Apple Orchard in a Cool Humid Climate: Measurement and Modeling. 4th International Symposium on Irrigation of Horticulture Crops, Davis, Ca – September 1-5, 2003

Dragoni D., A.N. Lakso, R.M. Piccioni. Water Use of an Apple Orchard in a Cool Humid Climate: Measurement and Modeling. XXVI International Horticultural Congress – Toronto (Canada) August 11-17, 2002 (*poster*)

Dragoni D., A.N. Lakso, S. Riha. Approaches to Modeling Water Fluxes through Soil-Plant-Atmosphere Continuum in an Apple Orchard. 3rd International Workshop of Functional-Structural Tree and Stand Models, Val-Morin, (Canada) September 27-30, 2001 (*poster*)

Teaching Experience

Instructor

G350/G550 Instrumentation and field methods in Atmospheric Sciences - Spring 2008

G109. Weather and Climate - Spring 2009

BART Essential Course (University Of Michigan Biological Station) Synoptic Meteorology, Boundary Layer Dynamics. – Summer 2009

Co-instructor

G325. Micrometeorology in Introductory Field Experience in Envionmental Science - Summer 2009

G350/G550 Instrumentation and field methods in Atmospheric Sciences - Fall 2005

Guest lecturer

G470/570: Introductive lectures on Matlab as data analysis/processing tool for scientists - 2005

E262 (School of Public and Environment Affairs) Introduction to eddy covariance theory and application 2005, 2007

Teaching Assistant

Technicians for the Management of the Environmental Monitoring Networks, organized by Servizi Territorio s.c.r.l. and sponsored by the European Social Fund - 1998

Student supervisor

Supervision of undergraduate and graduate students in the scientific activity and regular maintenance tasks of the AmeriFlux site at the Morgan-Monroe State Forest.

2004-05 Co-supervision of undergraduate student research projects:

Howe J.A.: Response of Sap-Flow Measurements on Environmental Forcings

Wade C.M.: Water Vapor Storage Change in the Canopy-Air Space of a Tall Deciduous Forest

Thesis Advisor

B. Deng, Indiana University (Ph.D.) (committee member)
Jared Desrocher, Indiana University (M.S) (committee member)
Bassil El-Masri, Indiana University (Ph. D.) (committee member)

Technical Skills

- Expert in programming languages and object oriented programming: C, C++, Fortran, Windows OS scripting, visual basic.
- Expert in Matlab and Matlab programming
- Good knowledge of GIS software (ArcGIS, MapInfo)
- Expert in managing, processing and analyzing large datasets.
- Advanced knowledge in the use and programming of dataloggers
- Expert in designing and developing data acquisition systems

Service

Journal Referee

Tree Physiology
Scientia Horticulturae
Journal of Geophysical Research
Global Change Biology
New Phytologist

External Research Proposals and Reports Reviewed

Natural Sciences & Engineering Research Council of Canada
US-Department Of Energy - National Institute for Climate Change Research.

Memberships

American Geophysical Union