

Prof. Riccardo Valentini

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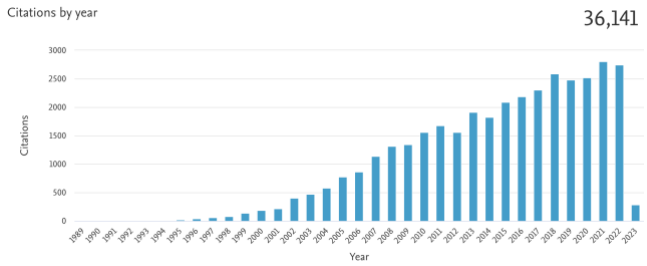
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Riccardo Valentini was born on 11 December 1959, in Tuscania, Italy. He was educated at the Liceo Scientifico "P. Ruffini" (High school in Science) in the town of Viterbo and after he moved to the University of Rome "La Sapienza" were he got the degree in Physics with the full score of 110 points over 110, discussing a thesis on biophysics "Ice formation in plant tissues and cold damages in trees", where he carried out new measurements of ice formation at sub-zero temperatures in Eucalyptus trees and developed a model of cell dehydration for explaining the resistance to cold damage in plants.In 1987 he became researcher at the University of Tuscia, Faculty of Agriculture continuing to work on plant – climate interactions, with more emphasis on water relations and photosynthesis. During these years he published several papers mostly on plant ecophysiology. Main findings were a new model for deriving electron transport in photosynthesis by a combination of gas exchanges and fluorescence measurements. During these years he started to investigate new techniques to measure ecosystem gaseous exchanges, particularly carbon dioxide and water vapour. In the 1990's few instrumentation, mostly prototypes, were available for measuring carbon dioxide fluxes with micrometeorological instrumentation. In these years he spent one year at Stanford University working on a new prototype for measuring ecosystem fluxes by eddy covariance technique, using a commercial gas analyzer, used for leaf photosynthesis measurements in cuvettes. The new instrument made possible to measure ecosystem fluxes of carbon dioxide, water vapor and energy continuously (24 hours) on multi year time scale, integrating spatial scale of few kilometers. During these years Riccardo Valentini led a European project which placed 15 flux towers in several European forests. As result of this project the first paper combining all the observation on carbon budget of the European forests has been published in Nature. The paper awarded the most cited paper in ecology in 2003 and today score more than 900 citations. Later on, together with Dennis Baldocchi of University of Berkley, coordinated a global network of flux towers placed in several ecosystem of the world (FLUXNET). Today FLUXNET count more than 600 flux towers placed in North America, South America, Europe, Australia, China, Japan, Africa in different biomes including forests, crops, grasslands, savannahs, wetlands etc. Currently he is working on application of IoT, Big Data and AI algorithms to monitor ecosystems functions. He invented the TreeTalker device to monitor tree phiysiology parameters (water transport, diameter growth, leaf spectral components and tree stability) which is today used in more than 1000 trees transmitting data to cloud servers .

Riccardo Valentini participated to the IPCC assessment of Land Use Change and Forestry as co-leading author. He also was involved in negotiations for the Kyoto Protocol.
He was member of the scientific committee of the Global Carbon Project, member of the Advisory board of the Max Plank Institute of Biogeochemistry in Jena, chairman of the Global Terrestrial

Observation System. He obtained an ERC (European Research Council) Senior Advanced Grant concerning the role of African tropical forests in the global greenhouse gas balance. He coordinated the IPCC (Intergovernmental Panel on Climate Change) chapter Europe of the 5th report on Climate Impacts and Adaptation and was Lead Author of the IPCC special report on Climate Change and Land Use. He has been recently appointed fellow of the European Academy of Sciences.

Prof. Valentini published 247 papers in peer reviewed international journals, of which **9** in highly cited journals (such as Nature (4), Science (4) and Nature Geoscience (1)). Prof. Valentini's papers has been cited 33127 times since 1996. The most cited paper of Prof. Valentini since 1996 got **2648** citations. Prof. Valentini *h- index* is **75** (since 1996), according to Scopus, excluding self citations.



Total Articles in Publication List: **261**

Sum of the Times Cited (since 1996): **36142**

h-index: **75**

In the last 10 years he supervised **21 PhD** students. He led in the last 10 years an overall team of more than **20 post-docs** in Italy and he is currently running a scientific team of **13** people both as PhD students and post-docs.

Curriculum vitae

Family name: **VALENTINI**
First name: **RICCARDO**
Researcher unique identifier(s): **Scopus Author ID: 35410947600/ ORCID: 0000-0002-6756-5634**
Publications (Scopus)= **261**
H-index (Scopus)= **75**
Citations (Scopus)= **21541**
Date of birth: **11.12.1959**
Nationality: **Italian**

EDUCATION
1985 Laurea in Physics (curriculum Biophysics), University of Rome "La Sapienza", Italy
CURRENT POSITIONS
2000-present Full Professor, University of Tuscia
2018-24th February 2022 Professor at RUDN University in Moscow, Russian Federation
PREVIOUS POSITIONS
1987 – 2000 Researcher, University of Tuscia,
1995 - 1996 Professor of Forest Biometry and Inventories at University of Sassari
1996 - 1997 Professor of Meteorology and Climatology at University of Tuscia

2002 - Visiting Professor University of Berkeley, California USA
2002 - 2008 Director of Department of Forest Sciences and Environment, University of Tuscia, Italy

FELLOWSHIPS AND AWARDS

1983 - Award from the Pure and Applied Society for Biophysics
1990 - Fellowship at University of Utah, Dep. of Ecology, USA
1991 - Fellowship at the Carnegie Institution of Washington – Dep. of Plant Biology, USA
1993 - Fellowship at the Joint Research Center (EC), Ispra, Italy
2004 - Norbert Gerbier-Mumm International Award, USA
2006 - Zayed Intern. Prize for the Environment, USA
2006 - Laurea Honoris Causa, University of Gembloux, Belgium
2007 - Nobel Price for Peace as member of the IPCC board, Switzerland
2014 - Thomson Reuters Award (1% of the world most cited scientist).
2015 - "Ernst Heckel" Prize, Federation of European Ecological Societies
2015 – Laurea Honoris Causa Russian State Agricultural University – Timiryazev Academy, Moscow, Russian Federation
2016 – 2017 Thompson Reuters highly cited scientist in 2016 and 2017
2017 - Laurea Honoris Causa Financial University, Moscow, Russian Federation
2018 – Medal of the Italian Academy of Science "of the XL" for Physics and Natural Sciences, Italy
2018 – Honorary professorship Vladimir University, Vladimir, Russian Federation
2018 – Highly Cited Scientist 2018 from Clarivate Analytics
2018 – Laurea Honoris Causae "Georgian Technical University", Tblisi, Georgia

SUPERVISION OF GRADUATE STUDENTS AND POSTDOCTORAL FELLOWS

1987 – present. He supervised more than 30 **PhD** students, more than **20 post-docs** in Italy and about **30 post-docs** abroad.

TEACHING ACTIVITIES (if applicable)

see positions section

INSTITUTIONAL RESPONSIBILITIES

1999 -2015 Member of the Italian Governmental delegation for UNFCCC negotiations
2002 Chairman of the Italian IGBP committee for Global Change
2003 Chairman of the Committee of Science and Technology of UNCCD
2009 Chairman of Global Terrestrial Observation System Programme (FAO)
2002 - 2008 Director of the Department of Forest Sciences and Environment
2007 - 2013 Division Director of CMCC Foundation
2013 - present Strategic Advisor of CMCC
2013 – 2018 member of the Lazio Region council
2016- 2018 Advisor to the Rector of the Far East Federal University in Vladivostok, Russia

REVIEWING ACTIVITIES

Editorial boards : Global Change Biology, Tree Physiology, Earth System Dynamics
Guest Editor: Forests, Discover Internet of Things (Nature Springer)
Referee: several journals, including Nature and Science, Ecology, Nature, Science, Tree Physiology, Global Change Biology, Journal of Geophysical Research, Acta Oecologica, NASA, NERC, DOE, EPA Ireland, Max Plank Foundation.

MEMBERSHIPS OF SCIENTIFIC SOCIETIES

2001 - Fellow of the Italian Academy of Forest Science, Italy
2019 – Fellow of the National Academy of Agriculture, Italy
2019 – Felllow of the Georgofili Academy, Italy
2020 – Fellow of the European Academy of Sciences
2021 - President of the Italian Society for Climate Sciences

SELECTED 10 PUBLICATIONS

Valentini, R., Matteucci, G., Dolman, A.J., Schulze, E.-D., Rebmann, C., Moors, E.J., Granier, A., Gross, P., Jensen, N.O., Pilegaard, K., Lindroth, A., Grelle, A., Bernhofer, C., Grünwald, T.,

Aubinet, M., Ceulemans, R., Kowalski, A.S., Vesala, T., Rannik, Ü., Berbigier, P., Loustau, D., Guomundsson, J., Thorgeirsson, H., Ibrom, A., Morgenstern, K., Clement, R., Moncrieff, J., Montagnani, L., Minerbi, S., Jarvis, P.G.
Respiration as the main determinant of carbon balance in European forests
(2000) Nature, 404 (6780), pp. 861-865.

Steffen, W., Noble, I., Canadell, J., Apps, M., Schulze, E.-D., Jarvis, P.G., Baldocchi, D., Ciais, P., Cramer, W., Ehleringer, J., Farquhar, G., Field, C.B., Ghazi, A., Gifford, R., Heimann, M., Houghton, R., Kabat, P., Körner, C., Lambin, E., Linder, S., Mooney, H.A., Murdiyarso, D., Post, W.M., Prentice, I.C., Raupach, M.R., Schimel, D.S., Shvidenko, A., Valentini, R.
The terrestrial carbon cycle: Implications for the Kyoto Protocol
(1998) Science, 280 (5368), pp. 1393-1394.

Schulze, E.-D., Mollicone, D., Achard, F., Matteucci, G., Federic, S., Eva, H.D., Valentini, R.
Making deforestation pay under the Kyoto protocol?
(2003) Science, 299 (5613), p. 1669.

Janssens, I.A., Freibauer, A., Ciais, P., Smith, P., Nabuurs, G.-J., Folberth, G., Schlamadinger, B., Hutjes, R.W.A., Ceulemans, R., Schulze, E.-D., Valentini, R., Dolman, A.J.
Europe's terrestrial biosphere absorbs 7 to 12% of European anthropogenic CO2 emissions
(2003) Science, 300 (5625), pp. 1538-1542.

Dolman, A.J., Schulze, E.-D., Valentini, R., Körner, C.
Analyzing carbon flux measurements [1] (multiple letters)
(2003) Science, 301 (5635), pp. 916-917.

Ciais, Ph., Reichstein, M., Viovy, N., Granier, A., Ogée, J., Allard, V., Aubinet, M., Buchmann, N., Bernhofer, Chr., Carrara, A., Chevallier, F., De Noblet, N., Friend, A.D., Friedlingstein, P., Grünwald, T., Heinesch, B., Keronen, P., Knohl, A., Krinner, G., Loustau, D., Manca, G., Matteucci, G., Miglietta, F., Ourcival, J.M., Papale, D., Pilegaard, K., Rambal, S., Seufert, G., Soussana, J.F., Sanz, M.J., Schulze, E.D., Vesala, T., Valentini, R.
Europe-wide reduction in primary productivity caused by the heat and drought in 2003
(2005) Nature, 437 (7058), pp. 529-533.

Magnani, F., Mencuccini, M., Borghetti, M., Berbigier, P., Berninger, F., Delzon, S., Grelle, A., Hari, P., Jarvis, P.G., Kolari, P., Kowalski, A.S., Lankreijer, H., Law, B.E., Lindroth, A., Loustau, D., Manca, G., Moncrieff, J.B., Rayment, M., Tedeschi, V., Valentini, R., Grace, J.
The human footprint in the carbon cycle of temperate and boreal forests
(2007) Nature, 447 (7146), pp. 848-850.

Ciais, P., Schelhaas, M.J., Zaehle, S., Piao, S.L., Cescatti, A., Liski, J., Luyssaert, S., Le-Maire, G., Schulze, E.-D., Bouriaud, O., Freibauer, A., Valentini, R., Nabuurs, G.J.
Carbon accumulation in European forests
(2008) Nature Geoscience, 1 (7), pp. 425-429.

Schulze, E.D., Luyssaert, S., Ciais, P., Freibauer, A., Janssens, I.A., Soussana, J.F., Smith, P., Grace, J., Levin, I., Thiruchittampalam, B., Heimann, M., Dolman, A.J., Valentini, R., Bousquet, P., Peylin, P., Peters, W., Rödenbeck, C., Etiope, G., Vuichard, N., Wattenbach, M., Nabuurs, G.J., Poussi, Z., Nieschulze, J., Gash, J.H.
Importance of methane and nitrous oxide for Europe's terrestrial greenhouse-gas balance
(2009) Nature Geoscience, 2 (12), pp. 842-850.

Castaldi, S., Dembska, K., Antonelli, M., Petersson, T., Piccolo, M.G., Valentini, R.
The positive climate impact of the Mediterranean diet and current divergence of Mediterranean countries towards less climate sustainable food consumption patterns
(2022) Scientific Reports, 12 (1), art. no. 8847

TOTAL LIST OF PUBLICATIONS (251)

1. Chiriacò, M.V., Castaldi, S., Valentini, R. Determining organic versus conventional food emissions to foster the transition to sustainable food systems and diets: Insights from a systematic review (2022) Journal of Cleaner Production, 380, art. no. 134937, .
2. Castaldi, S., Dembska, K., Antonelli, M., Petersson, T., Piccolo, M.G., Valentini, R. The positive climate impact of the Mediterranean diet and current divergence of Mediterranean countries towards less climate sustainable food consumption patterns (2022) Scientific Reports, 12 (1), art. no. 8847, .
3. Schulze, E.D., Bouriaud, O., Irslinger, R., Valentini, R. The role of wood harvest from sustainably managed forests in the carbon cycle (2022) Annals of Forest Science, 79 (1), art. no. 17,
4. Vaglio Laurin, G., Mattioli, W., Innocenti, S., Lombardo, E., Valentini, R., Puletti, N. Potential of ALOS2 Polarimetric Imagery to Support Management of Poplar Plantations in Northern Italy (2022) Remote Sensing, 14 (20), art. no. 5202, .
5. Liang, J., Gamarra, J.G.P., Picard, N., Zhou, M., Pijanowski, B., Jacobs, D.F., Reich, P.B., Crowther, T.W., Nabuurs, G.-J., de-Miguel, S., Fang, J., Woodall, C.W., Svenning, J.-C., Jucker, T., Bastin, J.-F., Wiser, S.K., Slik, F., Hérault, B., Alberti, G., Keppel, G., Hengeveld, G.M., Ibisch, P.L., Silva, C.A., ter Steege, H., Peri, P.L., Coomes, D.A., Searle, E.B., von Gadow, K., Jaroszewicz, B., Abbasi, A.O., Abegg, M., Yao, Y.C.A., Aguirre-Gutiérrez, J., Zambrano, A.M.A., Altman, J., Alvarez-Dávila, E., Álvarez-González, J.G., Alves, L.F., Amani, B.H.K., Amani, C.A., Ammer, C., Ilondea, B.A., Antón-Fernández, C., Avitabile, V., Aymard, G.A., Azihou, A.F., Baard, J.A., Baker, T.R., Balazy, R., Bastian, M.L., Batumike, R., Bauters, M., Beeckman, H., Benu, N.M.H., Bitariho, R., Boeckx, P., Bogaert, J., Bongers, F., Bouriaud, O., Brancalion, P.H.S., Brandl, S., Brearley, F.Q., Briseno-Reyes, J., Broadbent, E.N., Bruelheide, H., Bulte, E., Catlin, A.C., Cazzolla Gatti, R., César, R.G., Chen, H.Y.H., Chisholm, C., Cienciala, E., Colletta, G.D., Corral-Rivas, J.J., Cuchietti, A., Cuni-Sanchez, A., Dar, J.A., Dayanandan, S., de Haulleville, T., Decuyper, M., Delabye, S., Derroire, G., DeVries, B., Diisi, J., Do, T.V., Dolezal, J., Dourdain, A., Durrheim, G.P., Obiang, N.L.E., Ewango, C.E.N., Eyre, T.J., Fayle, T.M., Feunang, L.F.N., Finér, L., Fischer, M., Fridman, J., Frizzera, L., de Gasper, A.L., Gianelle, D., Glick, H.B., Gonzalez-Elizondo, M.S., Gorenstein, L., Habonayo, R., Hardy, O.J., Harris, D.J., Hector, A., Hemp, A., Herold, M., Hillers, A., Hubau, W., Ibanez, T., Imai, N., Imani, G., Jagodzinski, A.M., Janecek, S., Johannsen, V.K., Joly, C.A., Jumbam, B., Kabelong, B.L.P.R., Kahsay, G.A., Karminov, V., Kartawinata, K., Kassi, J.N., Kearsley, E., Kennard, D.K., Kepfer-Rojas, S., Khan, M.L., Kigomo, J.N., Kim, H.S., Klauberg, C., Klomberg, Y., Korjus, H., Kothandaraman, S., Kraxner, F., Kumar, A., Kuswandi, R., Lang, M., Lawes, M.J., Leite, R.V., Lentner, G., Lewis, S.L., Libalah, M.B., Lisingo, J., López-Serrano, P.M., Lu, H., Lukina, N.V., Lykke, A.M., Maicher, V., Maitner, B.S., Marcon, E., Marshall, A.R., Martin, E.H., Martynenko, O., Mbayu, F.M., Mbuvi, M.T.E., Meave, J.A., Merow, C., Miscicki, S., Moreno, V.S., Morera, A., Mukul, S.A., Müller, J.C., Murdjoko, A., Nava-Miranda, M.G., Ndive, L.E., Neldner, V.J., Nevenic, R.V., Nforbelie, L.N., Ngoh, M.L., N'Guessan, A.E., Ngugi, M.R., Ngute, A.S.K., Njila, E.N.N., Nyako, M.C., Ochuodho, T.O., Oleksyn, J., Paquette, A., Parfenova, E.I., Park, M., Parren, M., Parthasarathy, N., Pfautsch, S., Phillips, O.L., Piedade, M.T.F., Piotto, D., Pollastrini, M., Poorter, L., Poulsen, J.R., Poulsen, A.D., Pretzsch, H., Rodeghiero, M., Rolim, S.G., Rovero, F., Rutishauser, E., Sagheb-Talebi, K., Saikia, P., Sainge, M.N., Salas-Eljatib, C., Salis, A., Schall, P., Schepaschenko, D., Scherer-Lorenzen, M., Schmid, B., Schöngart, J., Šebeň, V., Sellan, G., Selvi, F., Serra-Diaz, J.M., Sheil, D., Shvidenko, A.Z., Sist, P., Souza, A.F., Stereńczak, K.J., Sullivan, M.J.P., Sundarapandian, S., Svoboda, M., Swaine, M.D., Targhetta, N., Tchebakova, N., Trethowan, L.A., Tropek, R., Mukendi, J.T., Umunay, P.M., Usoltsev, V.A., Vaglio Laurin, G., Valentini, R., Valladares, F., van der Plas, F., Vega-Nieva, D.J., Verbeeck, H., Viana, H., Vibrans, A.C., Vieira, S.A., Vleminckx, J., Waite, C.E., Wang, H.-F., Wasingya, E.K., Wekesa, C., Westerlund, B., Wittmann, F., Wortel, V., Zawiła-Niedźwiecki, T., Zhang, C., Zhao, X., Zhu, J., Zhu, X., Zhu, Z.-X., Zo-Bi, I.C., Hui, C. Co-

limitation towards lower latitudes shapes global forest diversity gradients (2022) Nature Ecology and Evolution, 6 (10), pp. 1423-1437.

6. Laurin, G.V., Francini, S., Penna, D., Zuecco, G., Chirici, G., Berman, E., Coops, N.C., Castelli, G., Bresci, E., Preti, F., Valentini, R.
SnowWarp: An open science and open data tool for daily monitoring of snow dynamics (2022) Environmental Modelling and Software, 156, art. no. 105477, .

7. Cotrina Sánchez, A., Salazar, A., Oviedo, C., Bandopadhyay, S., Mondaca, P., Valentini, R., Rojas Briceño, N.B., Torres Guzmán, C., Oliva, M., Guzman, B.K., Meza Mori, G.
Integrated cloud computing and cost effective modelling to delineate the ecological corridors for Spectacled bears (Tremarctos ornatus) in the rural territories of the Peruvian Amazon (2022) Global Ecology and Conservation, 36, art. no. e02126,

8. Asgharinia, S., Leberecht, M., Marchesini, L.B., Friess, N., Gianelle, D., Nauss, T., Opgenoorth, L., Yates, J., Valentini, R. Towards Continuous Stem Water Content and Sap Flux Density Monitoring: IoT-Based Solution for Detecting Changes in Stem Water Dynamics (2022) Forests, 13 (7), art. no. 1040,

9. Kalinchuk, V., Yatsuk, A., Marchesini, L.B., Lopatnikov, E., Nesterova, O., Valentini, R., Aksentov, K. The first simultaneous and continuous underway measurements of atmospheric gaseous elemental mercury, carbon dioxide and methane in the marine boundary layer: Results of cruise study in the Sea of Japan in May 2018 (2022) Atmospheric Pollution Research, 13 (7), art. no. 101458, .

10. Meshalkina, J., Yaroslavtsev, A., Vasenev, I., Valentini, R. Seasonal Dynamics of CO2 Fluxes in Two Central-Russian Agroecosystems with Contrasting Ecological and Agronomic Conditions (2022) Agronomy, 12 (7), art. no. 1606, .

11. Tomelleri, E., Marchesini, L.B., Yaroslavtsev, A., Asgharinia, S., Valentini, R. Toward a Unified TreeTalker Data Curation Process (2022) Forests, 13 (6), art. no. 855,

12. Buonocore, L., Yates, J., Valentini, R. A Proposal for a Forest Digital Twin Framework and Its Perspectives (2022) Forests, 13 (4), art. no. 498

13. Scanu, S., Piazzolla, D., Bonamano, S., Penna, M., Piermattei, V., Madonia, A., Frattarelli, F.M., Mellini, S., Dolce, T., Valentini, R., Coppini, G., Fersini, G., Marcelli, M.Economic Evaluation of Posidonia oceanica Ecosystem Services along the Italian Coast(2022) Sustainability (Switzerland), 14 (1), art. no. 489, .
14. Petersson, T., Secondi, L., Magnani, A., Antonelli, M., Dembska, K., Valentini, R., Varotto, A., Castaldi, S.A multilevel carbon and water footprint dataset of food commodities(2021) Scientific Data, 8 (1), art. no. 127, .
15. Schulze, E.D., Valentini, R., Bouriaud, O.The role of net ecosystem productivity and of inventories in climate change research: the need for “net ecosystem productivity with harvest”, NEPH(2021) Forest Ecosystems, 8 (1), art. no. 15, .
16. Chiriacò, M.V., Valentini, R.A land-based approach for climate change mitigation in the livestock sector(2021) Journal of Cleaner Production, 283, art. no. 124622, .
17. Ciais, P., Yao, Y., Gasser, T., Baccini, A., Wang, Y., Lauerwald, R., Peng, S., Bastos, A., Li, W., Raymond, P.A., Canadell, J.G., Peters, G.P., Andres, R.J., Chang, J., Yue, C., Dolman, A.J., Haverd, V., Hartmann, J., Laruelle, G., Konings, A.G., King, A.W., Liu, Y., Luyssaert, S., Maignan, F., Patra, P.K., Peregon, A., Regnier, P., Pongratz, J., Poulter, B., Shvidenko, A., Valentini, R., Wang, R., Broquet, G., Yin, Y., Zscheischler, J., Guenet, B., Goll, D.S., Ballantyne, A.-P., Yang, H., Qiu, C., Zhu, D.Empirical estimates of regional carbon budgets imply reduced global soil heterotrophic respiration(2021) National Science Review, 8 (2), art. no. nwaa145, .

18. Efrosinin, D., Kochetkova, I., Stepanova, N., Yarovslavtsev, A., Samouylov, K., Valentini, R.Trees classification based on fourier coefficients of the sapflow density flux(2021) Annales Mathematicae et Informaticae, 53, pp. 109-123.
19. Reitz, O., Yaroslavtsev, A., Meshalkina, J.L., Vasenev, I.I., Vasenev, V., Valentini, R., Leuchner, M.Carbon Dioxide Fluxes of an Urban Forest in Moscow(2021) Springer Geography, pp. 40-50.
20. Vasenev, V., Dovletyarova, E., Valentini, R., Cheng, Z., Calfapietra, C., Inostroza, L., Leuchner, M.Preface(2021) Springer Geography, pp. v-vi.
21. Bukin, S.S., Fadeeva, I.A., Yaroslavtsev, A.M., Konstantinov, P.I., Vasenev, V.I., Valentini, R.Assessment of the influence of various tree species and their parameters on the behaviour of wind flows in urban environments (on the example of the RUDN University campus, Moscow)(2020) IOP Conference Series: Earth and Environmental Science, 611 (1), art. no. 012018, .
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