Curriculum Vitae

Prof. Prof. h. c. Dr. Sci. Anatoly Z. Shvidenko,
Russian, born September 20, 1937 in Ukraine

Currently: Emeritus Guest Research Scholar, Biodiversity and Natural Resources Program (BNR), AFE Research Group, International Institute for Applied Systems Analysis, Schlossplatz 1, A-2361 Laxenburg Austria,
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Education:

- Ukrainian Agricultural Academy (currently National University of Life and Environmental Sciences, Forest Faculty), 1954 -1959, Kiev, Ukraine, engineer, forestry and forest management
- Kiev State University (Faculty of Mathematics), 1968 -1972, Kiev, Ukraine, mathematician, applied mathematics
- Postgraduate study in 1965-1968, Ukrainian Agricultural Academy, Kiev, Ukraine, forest inventory and monitoring, modeling of ecological processes

Areas of research & experience:

- Ecology of forest ecosystems of Eurasia, global change, assessment of the interactions of forest ecosystems with global biogeochemical cycles
- Vulnerability/ resilience of forests
- Adaptation and mitigation in the forest sector under global change
- Application of remote sensing in forest science and forest management
- Forest Inventory and monitoring, forest resources assessment
- Modeling of structure, growth, productivity and vulnerability of temperate and boreal forests
- Integrated modeling and information systems in forest management
- Theory and practice of adaptive sustainable forest management

Professional Employment History:

Current	Emeritus Guest Research Scholar, Biodiversity and Natural Resources Program (BNR), IIASA
2019-2022	Emeritus Research Scholar, Biodiversity and Natural Resources Program (BNR), IIASA
2011-2019	Senior Research Scholar, Ecosystem Services and Management, IIASA
2011-2009	Acting Program Leader, Ecosystem Services and Management (previously Forestry) Program, International Institute for Applied Systems Analysis, Laxenburg, Austria
2008-1992	Senior Research Scholar, Forestry Program, International Institute for Applied Systems Analysis, Laxenburg, Austria
current-2002	Principal Investigator, Institute of Forests, Siberian Branch of the Russian Academy of Sciences, Krasnoyarsk, Russia
2002-1992	Principal Investigator, All-Russia Research & Information Center for Forest Resources, Moscow, Russia

1992-1988	Director, All-Russia (before 1991- All-Union) Research & Information Center for Forest Resources, Moscow, Russia
1988-1981	Head of Department, Forest Inventory, Monitoring & Planning Department, Leader, Problem Laboratory on Advanced Forest Research, Ukrainian Agricultural University, Kiev, Ukraine
1981-1968	Deputy Head, Forest Inventory, Monitoring & Planning Department, Professor, Associate Professor, Assistant Professor, Forest Inventory & Monitoring Department, Ukrainian Agricultural University, Kiev, Ukraine
1968-1965	Postgraduate Student, Ukrainian National Agricultural University, Forest Inventory & Monitoring Department, Kiev, Ukraine
1965-1963	Main Forest Manager, Dolinsk State Forest Enterprise, Sakhalin region, Russia
1963-1961	Research Scholar, Sakhalin Forest Experimental Station, Sakhalin region, Russia
1961-1959	Forest Inventory Field Engineer, Far Eastern Forest Inventory & Planning Enterprise, Khabarovsk, Russia
1959-1954	Student, Ukrainian National Agrarian University, Forest Faculty

Participation in international scientific institutions (selected)

- Member of the Scientific Council of the World Commission on Forestry and Sustainable Development (1994-2000)
- Vice President of the International Boreal Forest Research Association from 1998 to 2006
- Member of the Terrestrial Carbon Panel of FAO, WMO in 1999-2004
- Coordinated Lead Author of the 3rd Millennium Ecosystem Assessment (Chapter 21 – Forests and Woodlands), 2002-2005
- Lead Author of the 2nd, 3rd and 4th IPCC Assessment
- Member of the Global Carbon Research Group - currently)
- Group Leader of the RECCAP (Global Carbon Project) - currently
- Member of the Group of Specialists on Boreal Forests FAO – UNECE – currently
- Member of IBFRA Steering Group - currently

Most important scientific conferences

- Member of Steering Committees and speaker at 18 (of 19) Conferences of the International Boreal Forest Research Association in 1992-2018
- Organizer of Sessions and Speaker at World Forestry Congresses and IUFRO Forestry Congresses (the last –Buenos-Aires, Argentina-2009; Seoul, Korea-2010; Salt-Lake City, USA-2014); Durban, South Africa-2015; Freiburg, Germany-2017; Curitiba, Brazil-2019; Seoul, Republic of Korea-2022).

Scientific titles, membership and awards (selected):

- Academician (Active Member) of the UN Informatization Academy since 1994
- Academician of the Ukrainian Forestry Academy since 2007
- Academician of the International Eurasian Academy of Sciences since 2015
- Recognized among the network of scientists who shared in the 2007 Nobel Peace Prize awarded to the IPCC

- Awarded UN Diploma for scientific and technological achievements in environment protection (Zayed International Prize for the Environment)
- Awarded Gold Medal of the International Academy of Informatization as a Laureate of the International Competition “Elite of Informatiologists of the World” (2012)
- Member of Editorial Boards of *Eurasian Journal of Forest Research*) and 2 Russian academic journals (*Forest Science*, Moscow, and *Siberian Journal of Forest Science*, Krasnoyarsk)
- Member of the Systems Analysis Committee of the Russian Academy of Sciences (2011-2018)

Recognition

According Research.com portal – 19th rank among Austrian top scientists in Ecology and Evolution. H-index 41, citation 14694 (May 2022).

Publications and review activities:

Author and co-author of over 500 articles, working papers, book chapters and other publications (including publications in *Ambio, Science, Nature, Global Change Biology, Climate Change, Tellus, Journal of Geophysical Research, Geophysical Research Letters, Journal of Vegetation Science, Remote Sensing of Environment, Water, Air and Soil Pollution, Lesovedenie (Forest Science, Moscow), Pochvovedenie (Soil Science, Moscow), Siberian Journal of Forest Science (Krasnoyark, Russia), Proceedings of the Russian Academy of Sciences (Doklady Earth Sciences), Biomass and Bioenergy, Unasylva, World Resources Review, Environmental Science &Policy, Siberian Ecological Journal, Russian Journal of Ecology, Canadian Journal of Remote Sensing*, *Ecological Modelling*, *Forest* etc.) and 20 books and brochures.

Reviewer (2-5 reviews per year) for *Nature, Global Change Biology*, *Forest Ecology and Management, Lesovedenie* and others.

Selected publications for 2015-2022

2022

Högberg P. (process leader), Ceder L.A., Astrup R., Binkley D., Bright R., Dalsgaard L., Egnell G., Filipchuk A., Genet H., Ilintsev A., Kurz W.A., Laganière J., Lemprière T., Lundblad M., Lundmark T., Mäkipää R., Malysheva N., Mohr C.W., Nordin A., Petersson H., Repo A., Schepaschenko D., ***Shvidenko A.,*** Soegaard G., Kraxner F. Sustainable boreal forest management– challenges and opportunities for climate change mitigation/ IBFRA Insight Process. Swedish Forest Agency, Report 2021/11, 60 pp.
ISBN 978-91-986297-3-6
Available at www.skogsstyrelsen.se/om-oss/publikationer/

Ciais Ph., Bastos A., Chevallier F., Lauerwald R., Poulter B., Canadell J.G., Hugelius G., Robert B. Jackson R.B., Jain A., Jones M., Kondo M., Luijkx I., Patra P., Peters W., Pongratz L., Petrescu A.M.R., Shilong P.Sh., Qiu C., Von Randow C., Regnier P., Saunois M., Scholes R., ***Shvidenko*** A,, Tian H., Yang H. , Wang X., and Zheng B. 2022. Definitions and methods to estimate regional land carbon fluxes for the second phase of the Regional Carbon Cycle Assessment and Processes Project (RECCAP-2). Geosci. Model Dev., 15, 1289–1316, 2022 https://doi.org/10.5194/gmd-15-1289-2022.

Cha S., Jo H.-W., Kim M., Song C., Lee H., Park E., Lim J., Schepaschenko D., **Shvidenko A.**, Lee W.-K. 2022. Application of deep learning algorithm for estimating stand volume in South Korea. Journal of Applied Remote Sensing, 024503-1, Vol. 16(2). https://caps.luminad.com:8443/JARS-210436_online.pdf

Choi Y., Lim C.-H., Krasovskiy A., Platov A., Kim Y., Chung H.I., Kim M., Lee W.-K., **Shvidenko A.**, Kraxner K., Schepaschenko D., Biging G.-S., Chon J., Seong Woo Jeon S. W. Biological Conservation 267 (2022) 109474. https://doi.org/10.1016/j.biocon.2022.109474

Liang J., Gamarra J.G.P., Picard N., Zhou M., Pijanovski B., Jakobs D.F., … , Schepaschenko D., … , ***Shvidenko A.***, … , Hui C. 2022. Co-limitation towards lower latitudes shapes global forest diversity gradients. Nature Ecology & Evolution. https://doi.org/10.1038/s41559-022-01831-x

2021

Ciais, P., Yao, Y., Gasser, T., Baccini, A., Wang, Y., Lauerwald, R., Peng, S., Bastos, A., et al. (2021). *Empirical estimates of regional carbon budgets imply reduced global soil heterotrophic respiration. National Science Review* nwaa145. 10.1093/nsr/nwaa145.

Mukhortova, L., Shchepashchenko, D., Moltchanova, E., ***Shvidenko, A.***, Khabarov, N., & See, L. (2021). *Respiration of Russian soils: climatic drivers and response to climate change. Science of the Total Environment* 785 e147314. 10.1016/j.scitotenv.2021.147314.

Onuchin, A., Burenina, T., ***Shvidenko, A.,*** Prysov, D., & Musokhranova, A. (2021). *Zonal aspects of the influence of forest cover change on runoff in northern river basins of Central Siberia. Forest Ecosystems* 8 (1) e45. 10.1186/s40663-021-00316-w.

Shchepashchenko, D., Moltchanova, E., Fedorov, S., Karminov, V., Ontikov, P., Santoro, M., See, L., Kositsyn, V., Shvidenko A. et al. (2021). *Russian forest sequesters substantially more carbon than previously reported. Scientific Reports* 11 (1) e12825. 10.1038/s41598-021-92152-9.

Sheil, D., Nabuurs, G.-J., & ***Shvidenko, A.*** (2021). *Hopes for Russia's new forest code. Science* 372 (6541) 472-473. 10.1126/science.abi9095.

2020

Bilous A, Holiaka D, Matsala M, Kashparov V, Schepaschenko D , Lakyda P, Shvidenko A, Myroniuk V, et al. (2020). ^{90}Sr Content in the Stemwood of Forests Within Ukrainian Polissya. *Forests* 11 (3): e270. DOI:10.3390/f11030270.

Ciais, P., Bastos, A., Chevallier, F., Lauerwald, R., Poulter, B., Canadell, P., Hugelius, G., Jackson, R.B., et al. (2020). *Definitions and methods to estimate regional land carbon fluxes for the second phase of the REgional Carbon Cycle Assessment and Processes Project (RECCAP-2). Geoscientific Model Development* 10.5194/gmd-2020-259. (In Press)

Kim M, Ham B-Y, Kraxner F, Shvidenko A, Schepaschenko D , Krasovskii A , Park T, & Lee W-K (2020). Species- and elevation-dependent productivity changes in East Asian temperate forests. *Environmental Research Letters* 15 (3): e034012. DOI:10.1088/1748-9326/ab71a2.

Gustafson, E.J., Miranda, B.R., Shvidenko, A., & Sturtevant, B.R. (2020). *Simulating Growth and Competition on Wet and Waterlogged Soils in a Forest Landscape Model. Frontiers in Ecology and Evolution* 8 10.3389/fevo.2020.598775.

Reyer, C., Lindner, M., Zamolodchikov, D., Shvidenko, A., Gutsch, M., & Bartalev, S. (2020). *Climate change and Russian Forests: impacts, vulnerability and adaptation needs.* In: *Russian forests and climate change.* Eds. Leskinen, P., Lindner, M., Verkerk, P.J., Nabuurs, G., Brusselen, J.V., Kulikova, E., Hassegawa, M. & Lerink, B., pp. 53-72 European Forest Institute. ISBN 978-952-5980-99-8 10.36333/wsctu11.

Zamolodchikov, D., Shvidenko, A., Bartalev, S., Kulikova, E., Held, A., Valentini, R., & Lindner, M. (2020). *Russian forests and climate change.* In: *Russian forests and climate change.* Eds. Leskinen, P., Lindner, M., Verkerk, P.J., Nabuurs, G., Brusselen, J.V., Kulikova, E., Hassegawa, M. & Lerink, B., pp. 17-44 European Forest Institute. ISBN 978-952-5980-99-8 10.36333/wsctu11.

2019

COACCH (2019). *The Economic Cost of Climate Change in Europe: Synthesis Report on COACCH Interim Results. Policy brief by the COACCH project.* COACCH: CO-designing the Assessment of Climate CHange costs.

Kim M, Kraxner F, Son Y, Jeon SW, Shvidenko A, Schepaschenko D , Ham B-Y, Lim C-H, et al. (2019). Quantifying Impacts of National-Scale Afforestation on Carbon Budgets in South Korea from 1961 to 2014. *Forests* 10 (7): e579. DOI:10.3390/f10070579.

Lakyda P, Shvidenko A, Bilous A, Myroniuk V, Matsala M, Zibtsev S, Schepaschenko D , Holiaka D, et al. (2019). Impact of Disturbances on the Carbon Cycle of Forest Ecosystems in Ukrainian Polissya. *Forests* 10 (4): e337. DOI:10.3390/f10040337.

Schepaschenko D , Chave J, Phillips OL, Lewis SL, Davies SJ, Réjou-Méchain M, Sist P, Scipal K, et al. (2019). The Forest Observation System, building a global reference dataset for remote sensing of forest biomass. *Scientific Data* 6 (1): e198. DOI:10.1038/s41597-019-0196-1.

Song C, Pietsch S, Kim M, Cha S, Park E, Shvidenko A, Schepaschenko D , Kraxner F, et al. (2019). Assessing Forest Ecosystems across the Vertical Edge of the Mid-Latitude Ecotone Using the BioGeoChemistry Management Model (BGC-MAN). *Forests* 10 (6): e523. DOI:10.3390/f10060523.

Steidinger B S, Crowther T W, Liang J, Van Nuland M E, Werner G D A, Reich P B, Nabuurs G, de-Miguel S, et al. (2019). Climatic controls of decomposition drive the global biogeography of forest-tree symbioses. *Nature* 569 (7756): 404-408. DOI:10.1038/s41586-019-1128-0.

2018

Kolchugina TP, Vinson TS, Gaston GG, Rozhkov VA, & Shvidenko A (2018). Carbon pools, fluxes, and sequestration potential in soils of the former Soviet Union. In: Soil Management and Greenhouse Effect. Eds. Kimble, J.M., Levine, E.R. & Stewart, B.A., pp. 25-40 CRC Press. ISBN 978-135141585-910.1201/9780203739310.

Kraxner F., Leduc S., Fuss S., Schepaschenko D., Shvidenko A. 2018. Sustainable forest-based bioenergy in Eurasia. Sibirsky Lesnoj Zhurnal (Siberian Journal of Forest Science), No 1, 16-25.

Lakyda P., Bilous A., Shvidenko A., Myroniuk V., Matsala M. Vasylyshyn R., Holiaka D., Lakyda I. 2018. Ecosystem Services of Ukrainian Forests: A Case-study for the Polissya Region. National University of Life and Environmental Sciences of Ukraine and International Institute for Applied Systems Analysis. Kyiv, 188 pp. ISBN 978-617-7630-62-2.

Lesiv M., Shvidenko A., Schepaschenko D., See L., Fritz S. 2018. A spatial assessment of the forest carbon budget for Ukraine. Mitig Adapt Strateg Glob Change
https://doi.org/10.1007/s11027-018-9795-y (published on-line 16.03.2018).

Lesiv, M., Schepaschenko D., Moltchanova E., Bun R., Dürauer M., Prishchepov A., Schierhorn F., Estel S., Kuemmerle T., Alcántara C., Kussul N., Shchepashchenko M., Kutovaya O., Martynenko O., Karminov A., Shvidenko F., Havlik P., Kraxner F., See L., Fritz S. 2018. Spatial distribution of arable and abandoned land across former Soviet Union countries. Scientific Data 5:180056 doi: 10.1038/sdata.2018.56 (2018).

Schepaschenko D., Molchanova E., Shvidenko A., Blishchuk V., Dmitriev E., Martynenko O., See L., Kraxner F. 2018. Improved estimates of biomass expansion factors for Russian forests. Forests 9 (6): e312. DOI:10.3390/f9060312 (2018) 2

Shvidenko A., Buksha I., Krakovska S. 2018. Vulnerability of Ukraine's Forests to Climate Change. IIASA, Ukrainian Research Institute of Forestry and Amelioration, and Ukrainian Hydrometheorological Institute of Ukrainian Academy of Sciences. Nika-Center, 187 pp. (in Ukrainian with extended English summaries). ISBN 978-966-521-719-0.

2017

Groissman P., Shugart H., Kicklighter D., Henerbry G., Thebakova N., Maksytov S., …., Shvidenko A., Speranskaya N., Soja A., de Beurs K., Bulygina O., VcCarty J., Zhuang Q., Zolina O. 2017. Northern Eurasia Future Initiative (NEFI): facing the challenges and pathways of global change in the twenty-first century. Progress in Earth and Planetary Science, 4:41, doi: 10.1186/s40645-017-0154-5.

Kim M., Lee W.-K., Choi G.-M., Song C., Lim C.-H., Moon J., Piao D., Kraxner F., Shvidenko A., Forsell N. 2017. Modeling stand-level mortality based on maximum stem number and seasonal temperature. Forest Ecology and Management, 386, 37-50. DOI:10.1016/j.foreco.2016.12.001.

Krakovska S., Buksha I., Shvidenko A. 2017. Climate change scenarios for assessment of vulnerability of forests in Ukraine. Proceedings of the International Conference "Air and water components of the environment", 17-19 March 2017, Cluj-Napoka, Romania, pp. 387-394. Available at http://aerapa.conference.ubclu.ro/

Kraxner F, Schepaschenko D, Fuss S, Lunnan A, Kindermann G, Aoki K, Dürauer M, Shvidenko A, See L. (2017). Mapping certified forests for sustainable management - A global tool for information improvement through participatory and collaborative mapping. Forest Policy and Economics 83: 10-18. DOI:10.1016/j.forpol.2017.04.014.

Moon J., Lee W.K., Song C., Lee S.G., Heo S.B., Shvidenko A., Krxner F., Lamchin M., Lee E.J., Zhu Y., Kim D., Cui G. 2017. An introduction to the Mid-latitude ecotone. Siberian Journal of Forest Science (Sibirskij Lesnoi Zhurnal). No 6, 41-51, doi: 10/15572/SJFS20170603.

Onuchin AA, Shvidenko A, Schepaschenko D ORCID: https://orcid.org/0000-0002-7814-4990, & Kraxner F (2017). Transition to Sustainable Forest Management in Russia: theoretical and methodological backgrounds (In Russian). Siberian Journal of Forest Science 6: 3-25. DOI:10.15372/SJFS20170601.

Schepaschenko D.G., Shvidenko A.Z., Perger C., Dresel C., Fritz S., Lakida P.I., Mukhortova L.V., Usoltsev V.A., Bobkova K.S., Osipov A.F., Martynenko O.V., Karminov V.N., Ontikov P.V., Schepaschenko M.V., Kraxner F. Forest biomass observation: current state and prospective. *Sibirskij Lesnoj Zurnal (Sib. J. For. Sci.)*. 2017. N. 4: 3–11 (in Russian with English abstract). DOI: 10.15372/SJFS20170401
http://sibjforsci.com/articles/schepaschenko-d-g-shvidenko-a-z-perger-c-dresel-c-fritz-s-lakyda-p-i-mukhortova-l-v-usoltsev-v-a-bob/

Schepascheno D., Shvidenko A., Usoltsev V., Lakyda P., Luo Y., Vasylyshyn R., Lakyda I., Myklush Y., See L., McCallum I., Fritz S., Kraxner S., Obersteiner M. 2017. A dataset of forest biomass structure for Eurasia. Nature Sci. Data, 4:170070, 11 pp. doi:10.1038/sdata.2017.70

Schepaschenko D, Shvidenko A, Usoltsev VA, Lakyda P, Luo Y, Vasylyshyn R, Lakyda I, Myklush Y, et al. (2017). Biomass plot data base. DOI:10.1594/PANGAEA.871465.

Shvidenko A., Buksha I., Krakovska C., Lakyda P. 2017. Vulnerability of Ukrainian forests to climate change. Sustainability, 9, 1152; doi:10.3390/su9071152, 35 pp.

Shvidenko A., Schepaschenko D., Kraxner F., Onuchin A.A. 2017. Transition to sustainable forest management in Russia: scientific and methodological prerequisites. Siberian Journal of Forest Science, 6, p. 1-27.

2016

Abbott, B., Jones, J., Schuur, E.,Chapin III, F. S., Shvidenko, A., Sky, J., Spencer, R., Starr, G., Striegl, R., Teisserenc, R., Tranvik, L., Virtanen, T., Welker, J. 2016. Biomass offsets little or none of permafrost carbon release from soils, streams, and wildfire: an expert assessment. Environment Research Letters, 11 (3): e034014 (2016), doi:10/1088/1748-9326/11/3/034014

Barredo J.I., Bastrup-Birk A., Teller A., Onaindia M., de Manuel D.F., Madariaga J., Rodríguez-Loinaz D., Pinho P., Nunes N., Ramos A., Batista M., Mimo S., Cordovil C., Branquinho C., Grêt-Regamey A., Bebi P., Brunner S.H., Weibel B., Kopperoinen L., Itkonen P., Viinikka A., Chirici G., Bottalico F., Pesola L., Vizzarri M., Garfì V., Antonello L., Barbati A., Corona P., Cullotta S., Giannico V., Lafortezza R., Lombardi F., Marchetti M., Nocentini S., Riccioli F., Travaglini D., Sallustio L., Rosário I., von Essen M., Nicholas K.A., Máguas C., Rebelo R., Santos-Reis M., Santos-Martín F., Zorrilla-Miras P., Montes C., Benayas J., Martín-López B., Snäll T., Berglund H., Bengtsson J., Moen J., Busetto L., San-Miguel-Ayanz J., Thurner M., Beer C., Santoro M., Carvalhais N., Wutzler T., Schepaschenko D., Shvidenko A., Kompter E., Ahrens B., Levick S.R., Schmullius C.(2015): Mapping and assessment of forest ecosystems and their services – Applications and guidance for decision making in the framework of MAES. EUR 27751 EN; doi:10.2788/720519.

Lappalainen H.K., Kerminen V.-M., Petäjä T., Kurten T., Baklanov A., Shvidenko A. et al. 2016. Pan-Eurasian Experiment (PEEX): towards a holistic understanding of the feedbacks and interactions in the land-atmosphere-ocean-society continuum in the northern Eurasian region. Atmospheric Chemistry and Physics Discussions 16: 14421-14461. DOI:10.5194/acp-2016-186.

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Schaphoff S, Reyer CPO, Schepaschenko D, Gerten D, & Shvidenko A (2016). Tamm Review: Observed and projected climate change impacts on Russia's forests and its carbon balance. Forest Ecology and Management 361: 432-444. DOI:10.1016/j.foreco.2015.11.043.

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Korzukhin M.D., Zamolodchikov D.G., Insarov G.E., Kraev G.N., Minin A.A., Pchelkin A.V., Sirin A.A., Titkina S.N., Shvidenko A.Z., Shiyatov S.G., Shchepashchenko D.G. (2014) Terrestrial ecosystems. Chapter 4.4. In: *Second ROSHYDROMET Assessment Report on Climate Change and its Consequences in Russian Federation*. Moscow: Federal Service for Hydrometeorology and Environmental Monitoring (ROSHYDROMET). Pp. 459-507. [In Russian] Available at http://downloads.igce.ru/publications/OD_2_2014/v2014/htm/

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