

# Anatolii Tsyplenkov

Soils & Landscapes Team | Manaaki Whenua – Landcare Research

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## Professional Appointments

**Manaaki Whenua – Landcare Research Ltd. — Scientist-Geomorphologist**

MAY 2023–present

Soils & Landscapes Team, Erosion and Sediment Processes Group

- Developed a data-driven shallow landslide connectivity and susceptibility model for regional predictions at 1 m spatial resolution, based on a 40,000 landslide inventory;
- The first prototype was completed in 3 months and was presented at the Geoscience Society of New Zealand Annual Conference 2023;
- Following the conference, secured and delivered project reports for the Gisborne and Hawke's Bay regional councils aimed at landslide mitigation practices using the developed framework; spatial layers developed during those projects are currently used by the councils for land use management;
- Estimated impact of forest removal on water quality and sediment delivery in New Zealand steep land plantation forests, showing the consequences of Nature-based Solutions widely applied in the country;
- Optimised a tree influence model on slope stability with Rust in the backend and R in the frontend (~25x speed increase compared to the Python version previously used in the company);
- Developed a [centerline](#) R-package for extraction of linear features from polygon geometries with GEOS in the backend [↗](#).

**“Proceedings of the Russian Geographical Society” — Managing Editor (PTE)**

MAR 2022–MAY 2023

- Handled communication between the editorial board, authors, reviewers, and publishers;
- Managed the submission and review process for manuscripts, including tracking submissions, assigning reviewers, and ensuring timely and fair peer review;
- Coordinated the publication schedule and ensured that issues were published on time;
- Initiated and oversaw the application process for inclusion in the Scopus database.

**Institute of Geography Russian Academy of Science — Postdoctoral Research Fellow**

DEC 2019–MAY 2023

Laboratory of Geomorphology

- Associate Investigator in the RSF grant No. 19-17-00181 "Quantitative assessment of the slope sediment flux and its changes in the Holocene for the Caucasus mountain rivers";
- Conducted sediment source fingerprinting analysis in small mountain basins in the Northern Caucasus;
- Modelled suspended sediment yield on a regional scale (Caucasus Region);
- Estimated the effect of deforestation on sediment yield and water quality in the Caucasus Region;
- Studied short-term and long-term water discharge and suspended sediment dynamics in mountain rivers using in-situ hydrological measurements and DoD analysis.

**Lomonosov Moscow State University — Senior Research Fellow**

FEB 2016–MAY 2023

Faculty of Geography, Laboratory of Soil Erosion and Fluvial Processes

- Provided a hydro-ecological assessment of open-cast mining impact on water quality (Kamchatka, Russia);
- Explored the potential impact of pesticide dumps on the chemical compositions of water and sediments discharging into the Avachinsky Gulf of the Pacific Ocean following the mass death of marine life off the coast of its far eastern Kamchatka region in 2020. Demonstrated that it was unlikely a man-made disaster;
- Showed the reduction of post-fallout radionuclides in the sediment budget of the reservoir in a Chernobyl-affected area in Central Russia 30 years after the catastrophe;
- Applied SWAT and HBV models for sediment and water discharge simulations of a small urban river in Moscow and Lipetsk Cities, and flash flood predictions on rivers of the Black Sea Coast;
- Flood zone mapping and monitoring in Lipetsk, Voronezh, Ulyanovsk, Sverdlovsk, and Kamchatka regions;
- Developed a framework for assessing channel bank erosion rates (and volumes) for Arctic rivers;
- Organised two international conferences and two schools for young researchers;
- Developed an R package for exploring intra-event suspended sediment dynamics ([loadflux](#) [↗](#)) and soil erosion modelling ([rusleR](#) [↗](#)).

**State Institute of Oceanography — Research Engineer**

AUG 2015–AUG 2017

Information Support Department

- Statistical analysis of main hydrological parameters (AEP, max and min discharges, etc.) of Moscow region rivers; flood zone mapping for the Moscow city.

## Education

<b>Lomonosov Moscow State University</b> Faculty of Geography, Department of Hydrology	<b>Ph.D. in Geographic Sciences</b> Dissertation: “ <i>Formation of suspended sediment flux in the basins of small mountain rivers: general patterns and regional features</i> ” Supervisors: D.Sc. Valentin Golosov, D.Sc. Sergey Chalov	2019
<b>Lomonosov Moscow State University</b> Faculty of Geography	<b>Instructor-Researcher in Geosciences</b> Postgraduate training	2018
<b>Lomonosov Moscow State University</b> Faculty of Geography, Department of Hydrology	<b>Specialist in Hydrology</b> Master of Science equivalent	2015

## Visiting Appointments

<b>University of Liège</b> Faculty of Sciences, Department of Geography Host: Prof. Dr. Matthias Vanmaercke	Erasmus+ Mobility Grant for Research	JAN-APR 2018
<b>Palermo University</b> Dipartimento di Scienze della Terra e del Mare Hosts: Prof. Dr. Christian Conoscenti	People Marie Curie Actions International Research Staff Exchange Scheme Call: FP7-PEOPLE-2012-IRSES	OCT 2016
<b>Tübingen University</b> Faculty of Sciences, Department of Geoscience Host: Prof. Dr. Michael Maerker	People Marie Curie Actions International Research Staff Exchange Scheme Call: FP7-PEOPLE-2012-IRSES	SEP-OCT 2015

## Awards & Distinctions

<b>Early Career Committee Representative 2022-2025</b> Continental Erosion Commission of the International Association of Hydrological Sciences (IAHS-ICCE)	2022
<b>Outstanding Young Researchers and Graduate Students Award</b> Lomonosov Moscow State University	2021
<b>Lomonosov Moscow State University International Ambassadors Award</b> Lomonosov Moscow State University	2021

## Teaching

<b>Spatial Modelling of the Environment</b>	Higher School of Economics Faculty of Geography and Geoinformation Technology	Spring 2024, Spring 2023
<b>GIS in Hydrology</b>	Lomonosov Moscow State University Faculty of Geography, Department of Hydrology	Spring 2022, Spring 2019
<b>Fundamentals of Hydrology</b>	Lomonosov Moscow State University Faculty of Geography, Department of Hydrology	Fall 2017, Fall 2016

## Advising experience

<b>“Quantifying human impacts on catchment sediment yield at a continental scale”</b> Co-supervisor of the MSc thesis	<b>Drs Andrei Kedich</b> KU Leuven, Faculty of Science	2022-2023
<b>“Fluvial processes at Central and Eastern Chukotka (Russia)”</b> Co-supervisor of the BSc thesis	<b>Anna Antonyuk</b> Lomonosov Moscow State University, Faculty of Geography, Department of Hydrology	2020-2021

## Methodological and Language Training

<b>General English</b> SkyEng	Advanced (C1) rating	Tested in 2021
<b>Fundamentals of Statistics</b> Parts I-III	Bioinformatics Institute	2018
<b>Advanced data analysis in R</b>	Bioinformatics Institute	2018

## Grants and Fellowships

<b>Erasmus+ Staff Mobility for Training</b> European Commission	Kazimierz Wielki University, Poland €2,500	2020
<b>Erasmus+ Mobility Grant for Research</b> European Commission	University of Liège, Belgium €6,000	2018

## Invited Talks

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**Data-driven insights on shallow landslide connectivity and sediment delivery to streams** 2024

International Geomorphology Week 2024 (Oceania division) organised by IAG [↗](#)

**Soil erosion modelling in R** 2022

Online Young Scientist School MEGAPOLIS 2022 organised by IASH-ICCE

## Service

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**Managing Editor** “*Geomorphica*” — a Diamond Open-Access Scientific Journal [↗](#)

APR 2023 — Present

**Referee** *Journal of Soil and Sediments* (4); *Geography, Environment, Sustainability* (4); *International Journal of Sediment Research* (2); *Theoretical and Applied Climatology* (2); *Water Resources* (2); *Earth Surface Dynamics* (1); *Ecohydrology & Hydrobiology* (1).

**Organizing Committee Secretary** • *School for Young Scientists «Modelling of water erosion, its hydrological and geochemical impacts»* — DEC 2022 [↗](#)

• *School for Young Scientists «Multi-Scales and -Processes Integrated Modelling, Observations and Assessment for Environmental Applications»* — NOV 2021 [↗](#)

• *International Conference on the Status and Future of the World’s Large Rivers* — AUG 2021 [↗](#)

• *School for Young Scientists «Pollutant and sediment mobility in river systems: monitoring studies to identify human impacts»* — NOV 2020

• *The Second International Young Scientists Forum on Soil and Water Conservation and ICCE symposium 2018 «Climate Change Impacts on Sediment Dynamics: Measurement, Modeling and Management»* — AUG 2018

## Hard Skills

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**Languages** English (C1), Serbian (A2), Russian (Native)

### Advanced

Technologies and software I use on a daily basis

• **R:** geospatial stack, statistical analysis and ML, graph analysis, parallel processing, data visualisation, data management (i.e., [data.table](#), [collapse](#)), software and website development, shiny (see app examples [here](#) or [here](#));

• **Python:** geospatial analysis, ML stack, time series analysis;

• **GIS:** QGIS, Whitebox Tools, GDAL, SAGA, GRASS, ArcGIS Pro+ArcMap;

• **Data management:** DuckDB, Arrow;

• **Other:** shell, git, Markdown, LaTeX, Quarto, Typst, Inkscape, Blender, Zotero, Agisoft Metashape.

### Intermediate

Coding languages and software I use often, but not daily

• **Rust:** geospatial stack, signal analysis, parallel processing, software development;

• **JavaScript:** Google Earth Engine, Mapshaper, Leaflet, Mapbox;

• **Web:** HTML, CSS, HUGO, Nginx;

• **Project Management:** Jira, Trello, Netsuite;

• **Other:** SQL (PostgreSQL+PostGIS), Docker, Arduino, Matlab, GEOS and CGAL (C++ libraries).

### Fieldwork

Hard skills I mastered during numerous expeditions

• **Land:** UaV SfM, DGPS, TST, Lidar, soil sampling;

• **Water:** sonar, ADCP, current meters, automatic turbidity and pressure sensors (installation, tech support and further analysis), water and sediment sampling;

• **Lab:** Water filtering, particle size analysis (automatic + manual), semiconductor gamma-spectrometer.

## Other Information

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- Co-author and maintainer of the open Russian-English hydrological dictionary [hydrowiki.org](#) [↗](#) and Shiny [translator app](#) [↗](#)
- Registered Forestry Advisor of New Zealand Forest Service (No. FA – 2096)
- **Hobbies and interests:** mountain hiking & tramping, table tennis, long-distance running (best 1:40 for 21.1 km; 4:08 for 42.2 km), yoga & pilates, woodworking and furniture refurbishment, detective & mystery novels reading.

## Publications

See a complete list of publications on [Google Scholar](#) . A list of publications in Russian is available upon request or accessible through [istina.msu.ru](http://istina.msu.ru) 

### Journal articles

- Phillips, C., Betts, H., Smith, H.G., **Tsyplenkov, A.** 2024. *Exploring the post-harvest 'window of vulnerability' to landslides in New Zealand steep-land plantation forests*. *Ecological Engineering* 206: 107300. DOI: 10.1016/j.ecoleng.2024.107300
- Goncharov, A. V., Georgiadi, A. G., Milyukova, I. P., Semenova, A. A., **Tsyplenkov, A. S.**, Kireeva, M. B., Barabanova, E. A. 2023. *Hydrological Conditions of Phytophilic Fish Reproduction in the Lower Don River under the Influence of Climate Change and Flow Regulation*. *Hydrobiologia*. DOI: 10.1007/s10750-023-05432-y
- Kedich, A., Kharchenko, S., **Tsyplenkov, A.**, Golosov, V. 2023. *Lateral Moraine Failure in the Valley of the Djankuat Catchment (Central Caucasus) and Subsequent Morphodynamics*. *Geomorphology* 441: 108896. DOI: 10.1016/j.geomorph.2023.108896
- Kharchenko, S.V., Golosov, V.N., **Tsyplenkov, A.S.**, Fedin, A.V., Uspensky, M.I. 2023. *Rates of Modern Denudation of a Small Catchment in the Middle Mountain Belt of the Greater Caucasus (Case Study of the Gitche-Gizhgut Catchment)*. *Lomonosov Geography Journal* 78: 38–51. DOI: 10.55959/MSU0579-9414.5.78.3.4
- Chalov, S.R., Prokopeva, K.N., Shkolnyi, D.I., **Tsyplenkov, A.S.** 2023. *Assessment of the Impact of Open-Cast Mining on the Vyvenka River Basin (Kamchatka Krai)*. *The Bulletin Of Irkutsk State University. Earth Science Series* 45: 127–149. DOI: 10.26516/2073-3402.2023.45.127
- Terskii, P., **Tsyplenkov, A.**, Gurinov, A., Antoniuk, A., Shchukin, I., Sayanov, A. 2023. *Ecological Revitalization Master Plan of Lipetsk City Based on the HBV Hydrological Modelling of a Small Ungauged Lipovka River (Russia)*. *Smart and Sustainable Urban Ecosystems: Challenges and Solutions*. DOI: 10.1007/978-3-031-37216-2\_20
- Belyakova, P., Moreydo, V., **Tsyplenkov, A.**, Amerbaev, A., Grechishnikova, D., Kurochkina, L., Filippov, V., Makeev, M. 2022. *Forecasting Water Levels in Krasnodar Krai Rivers with the Use of Machine Learning*. *Water Resources* 49: 10–22. DOI: 10.1134/S0097807822010043
- Chalov, S. R., **Tsyplenkov, A. S.**, Shkolnyi, D. I., Prokopeva, K. N., Bahareva, E. I. 2022. *Overland Runoff and Its Impact on Hydrobiont Mortality in Avachinsky Gulf (Pacific Ocean, Kamchatka)*. *Proceedings of the Russian Geographical Society* 4: 1–14. DOI: 10.31857/S0869607122040048
- **Tsyplenkov, A.**, Chalov, S., Eder, M., Habersack, H. 2022. *Large Rivers Hydrology And Sediment Transport*. *GEOGRAPHY, ENVIRONMENT, SUSTAINABILITY* 15: 145–147. DOI: 10.24057/2071-9388-2022-020
- Golosov, V. N., Ivanov, M. M., **Tsyplenkov, A. S.**, Ivanov, M. A., Konoplev, A. V., Wakiyama, Yu, Konstantinov, E. A., Ivanova, N. N. 2021. *Erosion as a Factor of Transformation of Soil Radioactive Contamination in the Basin of the Shchekino Reservoir (Tula Region)*. *Eurasian Soil Science* 54: 291–303. DOI: 10.1134/S106422932102006X
- Golosov, V., **Tsyplenkov, A.** 2021. *Factors Controlling Contemporary Suspended Sediment Yield in the Caucasus Region*. *Water* 13: 3173. DOI: 10.3390/w13223173
- Ivanov, M. M., Konoplev, A. V., Walling, D. E., Konstantinov, E. A., Gurinov, A. L., Ivanova, N. N., Kuzmenkova, N. V., **Tsyplenkov, A. S.**, Ivanov, M. A., Golosov, V. N. 2021. *Using Reservoir Sediment Deposits to Determine the Longer-Term Fate of Chernobyl-Derived <sup>137</sup>Cs Fallout in the Fluvial System*. *Environmental Pollution* 274: 116588. DOI: 10.1016/j.envpol.2021.116588
- **Tsyplenkov, A.**, Vanmaercke, M., Collins, A. L., Kharchenko, S., Golosov, V. 2021. *Elucidating Suspended Sediment Dynamics in a Glacierized Catchment after an Exceptional Erosion Event: The Djankuat Catchment, Caucasus Mountains, Russia*. *CATENA* 203: 105285. DOI: 10.1016/j.catena.2021.105285
- **Tsyplenkov, A. S.**, Golosov, V. N., Belyakova, P. A. 2021. *How Did the Suspended Sediment Load Change in the North Caucasus during the Anthropocene?* *Hydrological Processes* 35: 1–20. DOI: 10.1002/hyp.14403
- **Tsyplenkov, A. S.**, Ivanova, N. N., Botavin, D. V., Kuznetsova, Y. S., Golosov, V. N. 2021. *Hydro-Meteorological Preconditions and Geomorphological Consequences of Extreme Flood in the Small River Basin in the Wet Subtropical Zone (the Tsanyk River Case Study, Sochi Region)*. *Vestnik of Saint Petersburg University. Earth Sciences* 66. DOI: 10.21638/spbu07.2021.109
- Chalov, S. R., **Tsyplenkov, A. S.** 2020. *Influence of Macroturbulence on the Dynamics of River Water Turbidity*. *Lomonosov Geography Journal* 3: 34–46.
- Kharchenko, S., **Tsyplenkov, A.**, Petrakov, D., Golosov, V. 2020. *Causes and Consequences of the Streambed Restructuring of the Koiavgan Creek (North Caucasus, Russia)*. *E3S Web of Conferences* 163: 02003. DOI: 10.1051/e3sconf/202016302003
- **Tsyplenkov, A.**, Vanmaercke, M., Golosov, V., Chalov, S. 2020. *Suspended Sediment Budget and Intra-Event Sediment Dynamics of a Small Glaciated Mountainous Catchment in the Northern Caucasus*. *Journal of Soils and Sediments* 20: 3266–3281. DOI: 10.1007/s11368-020-02633-z

- Kuznetsova, Y., Golosov, V., **Tsyplenkov, A.**, Ivanova, N. 2019. *Quantifying Channel Bank Erosion of a Small Mountain River in Russian Wet Subtropics Using Erosion Pins*. Proceedings of the International Association of Hydrological Sciences 381: 79–86. DOI: 10.5194/piahs-381-79-2019
- Rets, E. P., Popovnin, V. V., Toropov, P. A., Smirnov, A. M., Tokarev, I. V., Chizhova, J. N., Budantseva, N. A., Vasil'chuk, Y. K., Kireeva, M. B., Ekaykin, A. A., Veres, A. N., Aleynikov, A. A., Frolova, N. L., **Tsyplenkov, A. S.**, Poliukhov, A. A., Chalov, S. R., Aleshina, M. A., Kornilova, E. D. 2019. *Djankuat Glacier Station in the North Caucasus, Russia: A Database of Glaciological, Hydrological, and Meteorological Observations and Stable Isotope Sampling Results during 2007–2017*. Earth System Science Data 11: 1463–1481. DOI: 10.5194/essd-11-1463-2019
- **Tsyplenkov, A.**, Vanmaercke, M., Golosov, V.. 2019. *Contemporary Suspended Sediment Yield of Caucasus Mountains*. Proceedings of the International Association of Hydrological Sciences 381: 87–93. DOI: 10.5194/piahs-381-87-2019
- Chalov, S. R., **Tsyplenkov, A. S.**. 2017. *Sediment Discharge of Small Rivers in Areas of Active Volcanism (River Sukhaya Elizovskaya, Kamchatka)*. Geomorphology RAS: 104–116. DOI: 10.15356/0435-4281-2017-1-104-116
- Chalov, S. R., **Tsyplenkov, A. S.**, Pietron, J., Chalova, A. S., Shkolnyi, D. I., Jarsjo, J., Maerker, M. 2017. *Sediment Transport in Headwaters of a Volcanic Catchment-Kamchatka Peninsula Case Study*. Frontiers of Earth Science 11: 565–578. DOI: 10.1007/s11707-016-0632-x
- Chalov, S., Golosov, V., **Tsyplenkov, A.**, Theuring, P., Zakerinejad, R., Maerker, M., Samokhin, M. 2017. *A Toolbox for Sediment Budget Research in Small Catchments*. GEOGRAPHY, ENVIRONMENT, SUSTAINABILITY 10: 43–68. DOI: 10.24057/2071-9388-2017-10-4-43-68
- **Tsyplenkov, A. S.**, Golosov, V. N., Kuksina, L. V. 2017. *Assessment of Basin Component of Suspended Sediment Yield Generated Due to Rainfall Events at Small Rivers in Wet and Dry Subtropics*. Engineering survey: 54–65. DOI: 10.25296/1997-8650-2017-9-54-65

### Articles under review and revising

- **Tsyplenkov, A.**, Kharchenko, S., Uspensky, M., Scheper, S., Golosov, V. 2024. *Precise Sediment Flux Assessment of a Small Ungauged Low-Mountain Catchment in the North Caucasus*. Earth Surface Processes and Landforms (under review)
- **Tsyplenkov, A.**, Smith, H.G., Betts, H., Neverman, A. 2024. *Data-driven shallow landslide connectivity analysis to reduce sediment delivery to streams*. Earth Surface Processes and Landforms (finishing)

### Software packages

See a complete list of packages at my [GitHub](#) 

<b>centerline</b> Centerline finding and plotting for closed geometries	<a href="https://github.com/atsyplenkov/centerline">https://github.com/atsyplenkov/centerline</a>	2024
<b>filters</b> Rust-boosted linear and spatial filtering	<a href="https://github.com/atsyplenkov/filters">https://github.com/atsyplenkov/filters</a>	2024
<b>rusleR</b> A workflow for the potential soil erosion estimation in R environment based on RUSLE equation	<a href="https://github.com/atsyplenkov/rusleR">https://github.com/atsyplenkov/rusleR</a>	2023
<b>rp5pik</b> Download And Preprocess Russian Meteorological Data	<a href="https://github.com/atsyplenkov/rp5pik">https://github.com/atsyplenkov/rp5pik</a>	2023
<b>loadflux</b> Tools for intra-event turbidity and sediment transport analysis	<a href="https://cran.r-project.org/web/packages/loadflux/index.html">https://cran.r-project.org/web/packages/loadflux/index.html</a> <a href="https://github.com/atsyplenkov/loadflux">https://github.com/atsyplenkov/loadflux</a>	2022

### References

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
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