CURRICULUM VITAE

Yuval Shmilovitz
CIRES postdoctoral fellow
University of Colorado Boulder, CO, USA
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EDUCATION

2014-2017	B.Sc. with high honor (Magna cum laude) at The Hebrew University of Jerusalem, Earth Sciences and History departments
2017-2019	M.Sc. at The Hebrew University of Jerusalem, the program of Hydrology and Water Resources. Advisors: Prof. Efrat Morin (HUJI), Prof. Yehuda Enzel, (HUJI), Prof. Itai Haviv (BGU). Thesis: *Linking storm-scale rainfall regime with arid slope morphology and evolution*
2019-2023	Ph.D. (direct track) at The Hebrew University of Jerusalem, the program of Hydrology and Water Resources. Advisors: Prof. Efrat Morin (HUJI), Prof. Yehuda Enzel, (HUJI), Prof. Itai Haviv (BGU). Thesis: *Climatic imprints on arid cliff-related hillslope evolution: linking hydrogeomorphic processes across time scales*
2024–present	PostDoctoral fellowship at the University of Colorado Boulder, Cooperative Institute for Research in Environmental Sciences (CIRES). Host: the computational geomorphology group led by Prof. Gregory Tucker

PROFESSIONAL EXPERIENCE, VISITS & TRAINING

June 2018 – Aug. 2018	Research Assistant, excellent student's summer project, The Hebrew University of Jerusalem, Jerusalem, Israel. Supervisor: Prof. Dov Avigad
Aug. 2018	Runoff Prediction in Ungauged Basins (PUB) summer school, Vienna University of Technology, Vienna, Austria
Aug. 2020	Earth Surface Processes Institute (ESPIn) summer school, University of Colorado Boulder, CO, USA
May 2022 – July 2022	Visiting scientist, The Community Surface Dynamics Modeling System (CSDMS), University of Colorado Boulder, CO, USA
2024 – present	PostDoctoral fellow, Cooperative Institute for Research in Environmental Sciences (CIRES), University of Colorado Boulder, CO, USA

GRANTS AND FELLOWSHIPS

2021-2025	Collaborative Research, BSF-NSF (EAR-2100702/2100753) $(\$239,902/\$239,902)^*$ *Deciphering the role of extreme rainstorms and hydroclimatic regime on arid escarpment retreat and sub-cliff slope evolution*
2022	Jewish National Fund (KKL-JNF) fellowship for climate change studies $(\$13,500/\$13,500)$ (sole PI) *Soil erosion and characterization of extreme erosive events in arid areas*
2024-2026	CIRES Postdoctoral Grant, University of Colorado Boulder $(\$150,000/\$150,000)$ (sole PI) *Understanding hydrogeomorphic impacts of rainstorm variability on dryland headwater catchments*
2024-2027	Jewish National Fund (KKL-JNF) Forestry Division $(\$120,000)^{**}$ *Rainstorms and climate change impacts on soil erosion in the Northern Negev and effective preservation strategies*

**Yuval Shmilovitz wrote the research proposal, but is not the official PI*

** *Yuval Shmilovitz is a research associate and collaborator who played a significant role in developing and writing the research proposal, but is not the official PI*

AWARDS AND HONOURS

2014, 2015, 2016	Dean's list for academic excellence (awarded 3 times), The Hebrew University of Jerusalem
2015	Institute of Earth Sciences summer scholarship for excellent students, The Hebrew University of Jerusalem
2018, 2019, 2020	The Advanced School for Environmental Studies' scholarship for academic excellence (awarded 3 times), The Hebrew University of Jerusalem
2021	Outstanding paper by a PhD student, Israel Geographical Society
2022	Student Research Award for Desert Research (Farouk El-Baz), Geological Society of America
2023	Peretz Grader award for an excellent early-career scientist, Israel Geological Society
2024	Bentor Award (best Ph.D. dissertation), Institute of Earth Sciences, The Hebrew University of Jerusalem
2024	CIRES Postdoctoral fellowship, University of Colorado Boulder

TEACHING EXPERIENCE

2017 – 2022	The Hebrew University of Jerusalem	The Dynamic Earth (frontal teaching, B.Sc., 1st year)
2019, 2021 – 2023	The Hebrew University of Jerusalem	Geological Excursion in the Negev (field teaching, B.Sc., 2nd year)
2020	The Hebrew University of Jerusalem	Northen Negev Field Trip (field teaching, B.Sc., 2nd year)
2020 – 2022	The Hebrew University of Jerusalem	Introduction to Geological Mapping (field teaching, B.Sc., 2nd year)
2020, 2021, 2023	The Hebrew University of Jerusalem	Introduction to Geomorphology (frontal & field teaching, B.Sc., 2nd/3rd year)
2021 – 2023	The Hebrew University of Jerusalem	Summer Field Camp (field teaching, B.Sc., 2nd year)

OUTREACH, SUPERVISING AND MENTORING

2020 - 2022	Bachelor project mentor, The Hebrew University of Jerusalem, *Rainfall spatiotemporal analysis in the central Negev using a convection-permitting climate model*
2021 - 2022	Bachelor project mentor, The Hebrew University of Jerusalem, *Optimization of stochastic rainfall generator for arid regions*
2021 - 2023	Research project instructor (youth program), 'Kadim' educational center, Israel, *Geomorphology and hydrology across the Ramon cliffs and slopes*
May 2025 & July 2024	Project mentor, The Earth Surface Processes Institute (ESPIn), CSDMS, University of Colorado Boulder

REVIEWER SERVICE

2023 *Water Resources Research (2)*
2024 *Geophysical Research Letters (1), Journal of hydrology (2)*
2025 *NSF proposal ad hoc reviewer (1)*, *Earth Surface Processes and Landforms (1)*, *Journal of Geophysical Research: Earth Surface (1)*

CONFERENCE SESSIONS CONVENED

2019 Co-convener: The 4th student seminar on innovations in hydrology and water resources, the Hebrew University of Jerusalem
2022 Co-convener: Graduate student conference, Water Research in Israel, Technion, Haifa, Israel
2022 Lead-converner (GM 10.2/CL 3.1/HS 13/NH 1): From hydro-climatology to hydro-geomorphology under extreme climatic events (at EGU annual meeting)
2023 Lead-converner (GM 11.1): Geomorphic perspectives of environmental changes and extreme events in drylands and beyond (at EGU annual meeting)
2024 Co-convener (GM 4.2): Hydrogeomorphic cascading processes and hazards impacted by environmental changes and extreme events (at EGU annual meeting)

PRESS AND QUOTATIONS

2021	*Researchers are using ICESat-2 elevation data to create bathymetry maps of shallow lakes in the remote desert*	NASA Earth Observatory
2023	*Desert Landscape Evolution Controlled by Storm Intensity*	AGU's *EOS* (Editor's highlights)
2024	*Rainstorm Intensity Drives Desert Landscape Evolution*	AGU's *EOS* (Editor's highlights)
2025	*Dams failures intensified 2023 flood tragedy in Libya*	CIRES Newsroom
2025	*A Disaster foretold: The Failures That Led to the Deadliest Flood of the 21st Century*	Yedioth-Net (ynet, in Hebrew)

INVITED TALKS

April 2021	**Shmilovitz, Y.**, *Frequency analysis of storm-scale soil erosion and characterization of extreme erosive events by linking process-based erosion model and a stochastic rainfall generator*, Volcani Institute - Agricultural Research Organization, Israel
Nov. 2022	**Shmilovitz, Y.**, *Modeling long-term arid cliffs and sub-cliff slopes evolution under short-duration extreme rainstorm events*, CSDMS fall webinar
June 2024	**Shmilovitz, Y.**, *On rainfall variability, erosion, and evolution of ephemeral landforms*, Colorado State University
Feb. 2025	**Shmilovitz, Y.**, *Integration of high-resolution climate variability in the quantification of floods, erosion, and landscape evolution of ephemeral landforms*, Southwest Watershed Research Center, Tucson, AZ, USA
May 2025	**Shmilovitz, Y.,**, *On rainfall variability, erosion, and evolution of ephemeral landforms*, The Earth Surface Processes Institute, CSDMS, University of Colorado Boulder
(Dec. 2025, upcoming)	**Shmilovitz, Y.**, Rossi, M. W., Gensini, V., Ashley, W., Haberlie, A., & Tucker, G. E. Climate-induced sediment budget transitions in dryland catchments: insights from landscape evolution numerical experiments across timescales, AGU 2025 annual meeting

PUBLICATIONS

12 Wei, H., Polyakov, V., Goodrich, D., Morin, E., Guertin, P. D., Assouline, S., Heilman P., Unkrich, C., **Shmilovitz, Y**. Marra, F., (2025). Modeling Runoff and Sediment Yield at the Event scale in Semiarid Watersheds. *International Soil and Water Conservation Research*. https://doi.org/10.1016/j.iswcr.2025.07.001.

11 Armon, M., **Shmilovitz, Y (equal contribution)**., & Dente, E. (2025). Anatomy of a foreseeable disaster: Lessons from the 2023 dam-breaching flood in Derna, Libya, *Science Advances, 11(13), eadu2865*. http://doi.org/10.1126/sciadv.adu2865

10 **Shmilovitz, Y.**, Rossi, M. W., & Tucker, G. E. (2025). Multi-century erosion and landscape evolution of ephemeral catchments in response to sub-daily rainfall distribution changes, *Geophysical Research Letters*, *52(5), e2024GL113179*. https://doi.org/10.1029/2024GL113179

9 **Shmilovitz, Y.**, Tucker, G. E., Rossi, M. W., Morin, E., Armon, M., Pederson, J., Campforts, B., Haviv, I., & Enzel, Y. (2024). Impacts of rainstorm intensity and temporal pattern on caprock cliff persistence and hillslope morphology in drylands. *Journal of Geophysical Research: Earth Surface, 129(2), e2023JF007478*. https://doi.org/10.1029/2023JF007478

8 **Shmilovitz, Y.**, Marra, F., Enzel, Y., Morin, E., Armon, M., Matmon, A., Mushkin, A., Levi, Y., Khain, P., Rossi, Matthew W., Tucker, G., Pederson, J., & Haviv, I. (2023). The impact of extreme rainstorms on escarpment morphology in arid areas: Insights from the central Negev Desert. *Journal of Geophysical Research: Earth Surface, 128(10), e2023JF007093*. https://doi.org/10.1029/2023JF007093

7 **Shmilovitz, Y.**, Marra, F., Wei, H., Argaman, E., Goodrich, D., Assouline, S., Morin, E. (2023). Assessing the controlling factors on watershed soil erosion during intense rainstorm events using radar rainfall and process-based modeling. *Catena, 231, 107282*. https://doi.org/10.1016/j.catena.2023.107282

6 **Shmilovitz, Y.**, Shelef, E., Wieler, N., Zhang, H., Mushkin, A. (2023). Estimating the age of abandoned alluvial surfaces using morphologic dating of gully incision. *Journal of Geophysical Research: Earth Surface*, *128(3), e2022JF006875*. https://doi.org/10.1029/2022JF006875

5 **Shmilovitz, Y.**, Enzel, Y., Morin, E., Armon, M., Matmon, A., Mushkin, A., Pederson, J., Haviv, I. (2023). Aspect-dependent bedrock weathering, cliff retreat, and cliff morphology in a hyperarid environment. *GSA Bulletin 2022; 135 (7-8): 1955–1966*. https://doi.org/10.1130/B36442.1

4 Wieler, N., Mushkin, A., Zhang, H., Sagy, A., Porat, N., **Shmilovitz, Y.**, Zhikun, R., Feipeng H., Pilong, S., Jinrui, L., Shelef, E. (2022). Geomorphic Dating of Across-Fault Gully Incision Reveals Time-Invariant Late Quaternary Slip-Rates at the Eastern Termination of the Altyn Tagh Fault. *Geophysical Research Letters, 49(8), e2021GL096933*. https://doi.org/10.1029/2021GL096933

3 **Shmilovitz, Y.**, Marra, F., Wei, H., Argaman, E., Nearing, M., Goodrich, D., Assouline, S., Morin, E. (2021). Frequency analysis of storm-scale soil erosion and characterization of extreme erosive events by linking the DWEPP model and a stochastic rainfall generator. *Science of The Total Environment, 787, 147609*. https://doi.org/10.1016/j.scitotenv.2021.147609

2 **Shmilovitz, Y.**, Morin, E., Rinat, Y., Haviv, I., Carmi, G., Mushkin, A., Enzel, Y. (2020). Linking frequency of rainstorms, runoff generation and sediment transport across hyperarid talus-pediment slopes. *Earth Surface Processes and Landforms, 45(7), 1644-1659*. https://doi.org/10.1002/esp.4836

1 Armon, M., Dente, E., **Shmilovitz, Y.**, Mushkin, A., Cohen, T. J., Morin, E., Enzel, Y. (2020). Determining bathymetry of shallow and ephemeral desert lakes using satellite imagery and altimetry. *Geophysical Research Letters, 47(7), e2020GL087367*. https://doi.org/10.1029/2020GL087367

CONFERENCE PRESENTATIONS

15 **Shmilovitz, Y.**, Rossi, M. W., Gensini, V., Ashley, W., Haberlie, A., & Tucker, G. E. (2025). Ecohydrology and lithological controls on ephemeral catchments landscape evolution: insights from the High Plains (Colorado) using high-resolution climate projections. Poster, CSDMS 2025 annual meeting.

14 **Shmilovitz, Y.**, Rossi, M. W., Gensini, V., Ashley, W., Haberlie, A., & Tucker, G. E. (2025). Translating high-resolution climate change projections into erosion-vegetation feedbacks, sediment dynamics, and multi-century topographic evolution of dryland catchments. Oral presentation, EGU annual meeting.

13 **Shmilovitz, Y.**, Rossi,M., Tucker, G., (2024). Multi-century Sediment Yield and Topographic Evolution of Gullied Catchments: an Event-based Approach to Quantify the Effects of Changes in Rainfall Distribution, Oral presentation, AGU 2024 annual meeting

12 **Shmilovitz, Y.**, Rossi,M., Tucker, G., (2024). Gully development and soil erosion: An event-based approach using Landlab, Poster, CSDMS annual meeting

11 Dente, E., Armon, M., & **Shmilovitz, Y**. (2024). The September 2023 flood in Derna, Libya: an extreme weather event or man-made disaster? Oral presentation, EGU annual meeting

10 **Shmilovitz, Y**., Rossi, M., Tucker, G., Campforts, B., Pederson, J., Morin, E., Armon, M., Enzel, Y., Haviv, I.(2023). Simulating dryland cliffs evolution in response to extreme rainstorms, Poster, EGU annual meeting

9 **Shmilovitz, Y**., Shelef, E., Wieler, N., Huiping, Z., Mushkin, A., (2022). Estimating the age of abandoned alluvial surfaces using morphologic dating of gully incision, Oral presentation, GSA Annual Meeting 2022

8 **Shmilovitz, Y**., Marra, F., Enzel, Y., Morin, E., Armon, M., Matmon, A., Mushkin, A., Levi, Y., Khain, P., Haviv, I., (2022). The signature of extreme rainstorms properties on cliff morphology in arid areas, Pico, EGU annual meeting

7 **Shmilovitz, Y**., Marra, F., Wei, H., Argaman, E., Nearing, M., Goodrich, D., Assouline, S., Morin, E., (2021). Frequency analysis of storm-scale soil erosion and characterization of extreme erosive events by linking process-based erosion model and a stochastic rainfall generator, Oral presentation, Eyal annual meeting, Zichron Yaakov, Israel

6 **Shmilovitz, Y**., Mushkin, A., Wieler, N., Zhang, H., Shelef, E., (2021). Morphologic dating of gully incision on abandoned alluvial surfaces using a landscape evolution model, Oral presentation, The Israel Geological Society Annual Conference, Yerocham, Israel

5 **Shmilovitz, Y**., Marra, F., Wei, H., Argaman, E., Nearing, M., Goodrich, D., Assouline, S., Morin, E., (2020). The role of rainstorm properties on crop-land soil erosion: coupling event-scale modeling with a stochastic rainfall generator for estimating erosion risks, Poster, AGU annual meeting

4 **Shmilovitz, Y**., Enzel, Y., Morin, E., Armon, M., Matmon, A., Mushkin A., Haviv, I., (2020). Aspect-dependent escarpment retreat, sediment mobilization and slope evolution under hyper-arid conditions., Poster., GSA annual meeting

3 **Shmilovitz, Y**., Morin, E., Rinat, Y., Haviv, I., Carmi, G., Mushkin, A., Enzel, Y., (2020). Linking frequency of rainstorms, runoff generation and sediment transport across hyperarid talus-pediment slopes, Pico, EGU annual meeting

2 **Shmilovitz, Y**., Morin, E., Rinat, Y., Haviv, I., Carmi, G., Mushkin, A., Enzel, Y., (2019). Linking frequency of rainstorms, runoff generation, and sediment transport: Implications for arid hillslopes evolution and reorganization, Poster, EGU Leonardo Conference, Esch-sur-Alzetter, Luxembourg

1 **Shmilovitz, Y**., Morin, E., Rinat, Y., Haviv, I., Carmi, G., Mushkin, A., Enzel, Y., (2019). Linking hydro-metrology and geomorphology across hyper-arid talus-pediment slopes: frequency of runoff generating storms, sheetwash efficiency and form-processes relationships, Oral presentation, The Israel Geological Society annual conference, Kfar-Blum, Israel