
TRENDS.EARTH
tracking land change
from Conservation International

Trends.Earth - Taarifa za Jumla
Release 2.1.4

Conservation International

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Contents

1	Kuwasiliana na timu ya Itrends.earthI	2
2	Authors	3
3	Acknowledgements	4
4	Citation	5
5	License	6
6	Trademark	7
7	Publications	8
7.1	Peer-reviewed Publications	8
7.2	Academic dissertations	10
7.3	Other resources	10

Trends.earth ilizalishwa kama sehemu ya mradi wa "kuwezesha matumizi ya vyanzo vya data duniani kupima na kufuatilia uharibifu wa ardhi (mazingira) katika ukubwa tofauti tofauti ", ukifadhiliwa na Global Environment Facility yaani Taasisi ya Mazingira Duniani.

CHAPTER 1

Kuwasiliana na timu ya Itrends.earth

Wasiliana na timu ya *Trends.Earth* <[mailto: trends.earth@conservation.org](mailto:trends.earth@conservation.org)> kwa kutoa maoni au mapendekezo yoyote. Kama una taarifa za kuripoti juu ya virusi au kupendekeza kuhimarishwa kwa chombo hiki unaweza kuwasilisha kwenye tracker ya Github kwa  TRENDSEARTH.

Mradi wa Ufuatiliaji wa Uharibifu wa Ardhi ni ushirikiano wa shirika la Conservation International, Chuo Kikuu cha Lund, na National Aeronautics and Space (NASA), na unafadhiliwa na Global Environment Facility (GEF)/ Chombo cha Mazingira Duniani.

Wachangiaji katika uandishi wa nyaraka za Itrends.earthl ni pamoja na Yengoh Genesis, Lennart Olsson, Mariano Gonzalez-Roglich, Monica Noon, Tristan Schnader, Anna Tengberg, na Alex Zvoleff.



▲TRENDS.EARTH inatumia [Google Earth Engine](#) kupitia mtandao kukokotoa viashiria vya uharibifu wa ardhi.

Google Earth Engine

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CHAPTER 4

Citation

Ikiwa ungependa kutaja | trends.earth |, tafadhali tumia funguo ifuatayo:

Trends.Earth. Conservation International. Available online at: <http://trends.earth>. 2022.

CHAPTER 5

License

▲TRENDS.EARTH ni bure and huru kwa waendelezaji wa chombo hiki. Kimeundwa chini ya mpango wa Leseni Huru kwa Umma yaani [GNU General Public License, toleo 2.0](#) au zaidi.

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CHAPTER 6

Trademark

▲TRENDS.EARTH has a service mark trademark registered June 9, 2020 (reg. No. 6,074,442 and Int. Cl.: 9,35,42) by the United States Patent and Trademark Office.

7.1 Peer-reviewed Publications

The below peer-reviewed publications either use or relate to [▲TRENDS.EARTH](#).

- Alamanos, A. and Linnane, S., 2021. Estimating SDG Indicators in Data-Scarce Areas: The Transition to the Use of New Technologies and Multidisciplinary Studies. *Earth*, 2(3), pp.635-652.
- Dong, J., Metternicht, G., Hostert, P., Fensholt, R., Chowdhury, R.R., 2019. Remote sensing and geospatial technologies in support of a normative land system science: status and prospects. *Curr. Opin. Environ. Sustain.* 38, 44–52. <https://doi.org/10.1016/j.cosust.2019.05.003>
- Easdale, M.H., Fariña, C., Hara, S., Pérez León, N., Umaña, F., Tiftonell, P., Bruzzone, O., 2019. Trend-cycles of vegetation dynamics as a tool for land degradation assessment and monitoring. *Ecol. Indic.* 107, 105545. <https://doi.org/10.1016/j.ecolind.2019.105545>
- Giuliani, G., Chatenoux, B., Benvenuti, A., Lacroix, P., Santoro, M., Mazzetti, P., 2020a. Monitoring land degradation at national level using satellite Earth Observation time-series data to support SDG15 – exploring the potential of data cube. *Big Earth Data* 4, 3–22. <https://doi.org/10.1080/20964471.2020.1711633>
- Giuliani, G., Mazzetti, P., Santoro, M., Nativi, S., Van Bemmelen, J., Colangeli, G., Lehmann, A., 2020b. Knowledge generation using satellite earth observations to support sustainable development goals (SDG): A use case on Land degradation. *Int. J. Appl. Earth Obs. Geoinformation* 88, 102068. <https://doi.org/10.1016/j.jag.2020.102068>
- Gonzalez-Roglich, M., Zvoleff, A., Noon, M., Liniger, H., Fleiner, R., Harari, N., Garcia, C., 2019. Synergizing global tools to monitor progress towards land degradation neutrality: Trends.Earth and the World Overview of Conservation Approaches and Technologies sustainable land management database. *Environ. Sci. Policy* 93, 34–42. <https://doi.org/10.1016/j.envsci.2018.12.019>
- Jiang, L., Bao, A., Jiapaer, G., Liu, R., Yuan, Y. and Yu, T., 2022. Monitoring land degradation and assessing its drivers to support sustainable development goal 15.3 in Central Asia. *Science of The Total Environment*, 807, p.150868. <https://doi.org/10.1016/j.scitotenv.2021.150868>
- Kadaverugu, A., Nageshwar Rao, C. and Viswanadh, G.K., 2021. Quantification of flood mitigation services by urban green spaces using InVEST model: a case study of Hyderabad city, India. *Modeling Earth Systems and*

Environment, 7(1), pp.589-602. <https://doi.org/10.1007/s40808-020-00937-0>

- Kust, G.S., Andreeva, O.V., Lobkovskiy, V.A., 2020. Land Degradation Neutrality: the Modern Approach to Research on Arid Regions at the National Level. *Arid Ecosyst.* 10, 87–92. <https://doi.org/10.1134/S2079096120020092>
- Hu, Y., Wang, C., Yu, X. and Yin, S., 2021. Evaluating Trends of Land Productivity Change and Their Causes in the Han River Basin, China: In Support of SDG Indicator 15.3. 1. *Sustainability*, 13(24), p.13664. <https://doi.org/10.3390/su132413664>
- Li, Z., Lun, F., Liu, M., Xiao, X., Wang, C., Wang, L., Xu, Y., Qi, W., Sun, D., 2021. Rapid diagnosis of agricultural soil health: A novel soil health index based on natural soil productivity and human management. *J. Environ. Manage.* 277, 111402. <https://doi.org/10.1016/j.jenvman.2020.111402>
- Liniger, H., Harari, N., van Lynden, G., Fleiner, R., de Leeuw, J., Bai, Z., Critchley, W., 2019. Achieving land degradation neutrality: The role of SLM knowledge in evidence-based decision-making. *Environ. Sci. Policy* 94, 123–134. <https://doi.org/10.1016/j.envsci.2019.01.001>
- Mariathan, V., Bezuidenhout, E., Olympio, K.R., 2019. Evaluation of Earth Observation Solutions for Namibia's SDG Monitoring System. *Remote Sens.* 11, 1612. <https://doi.org/10.3390/rs11131612>
- Mazzetti, P., Nativi, S., Santoro, M., Giuliani, G., Rodila, D., Folino, A., Caruso, S., Aracri, G. and Lehmann, A., 2022. Knowledge formalization for Earth Science informed decision-making: The GEOEssential Knowledge Base. *Environmental Science & Policy*, 131, pp.93-104. <https://doi.org/10.1016/j.envsci.2021.12.023>
- Meyer, D. & Riechert, M. Open source QGIS toolkit for the Advanced Research WRF modelling system. *Environmental Modelling & Software* 112, 166–178 (2019). <https://doi.org/10.1016/j.envsoft.2018.10.018>
- Moussa, S., El Brirchi, E.H. and Alami, O.B., 2022. Monitoring Land Productivity Trends in Souss-Massa Region Using Landsat Time Series Data to Support SDG Target 15.3. In *Geospatial Intelligence* (pp. 119-129). Springer, Cham. https://doi.org/10.1007/978-3-030-80458-9_9
- Ogorodnikov, S.S., 2021, March. Land Degradation Neutrality in the Tula region. In *IOP Conference Series: Earth and Environmental Science* (Vol. 723, No. 4, p. 042053). IOP Publishing. doi:10.1088/1755-1315/723/4/042053
- Prakash, M., Ramage, S., Kavvada, A., Goodman, S., 2020. Open Earth Observations for Sustainable Urban Development. *Remote Sens.* 12, 1646. <https://doi.org/10.3390/rs12101646>
- Philip, E., 2021. Coupling Sustainable Development Goal 11.3. 1 with current planning tools: city of Hamilton, Canada. *Hydrological Sciences Journal*, 66(7), pp.1124-1131. <https://doi.org/10.1080/02626667.2021.1918340>
- Reith, J., Ghazaryan, G., Muthoni, F. and Dubovyk, O., 2021. Assessment of Land Degradation in Semiarid Tanzania—Using Multiscale Remote Sensing Datasets to Support Sustainable Development Goal 15.3. *Remote Sensing*, 13(9), p.1754. <https://doi.org/10.3390/rs13091754>
- Rowe, H.I., Gruber, D. and Fastiggi, M., 2021. Where to start? A new citizen science, remote sensing approach to map recreational disturbance and other degraded areas for restoration planning. *Restoration Ecology*, 29(6), p.e13454. <https://doi.org/10.1111/rec.13454>
- Schiavina, M., Melchiorri, M., Freire, S., Florio, P., Ehrlich, D., Tommasi, P., Pesaresi, M. and Kemper, T., 2022. Land use efficiency of functional urban areas: Global pattern and evolution of development trajectories. *Habitat International*, 123, p.102543. <https://doi.org/10.1016/j.habitatint.2022.102543>
- Sims, N. C. et al. Developing good practice guidance for estimating land degradation in the context of the United Nations Sustainable Development Goals. *Environmental Science & Policy* 92, 349–355 (2019). <https://doi.org/10.1016/j.envsci.2018.10.014>
- Teich, I., Gonzalez Roglich, M., Corso, M.L., García, C.L., 2019. Combining Earth Observations, Cloud Computing, and Expert Knowledge to Inform National Level Degradation Assessments in Support of the 2030 Development Agenda. *Remote Sens.* 11, 2918. <https://doi.org/10.3390/rs11242918>

- Timm Hoffman, M., Skowno, A., Bell, W. & Mashele, S. Long-term changes in land use, land cover and vegetation in the Karoo drylands of South Africa: implications for degradation monitoring. *African Journal of Range & Forage Science* 35, 209–221 (2018). <https://doi.org/10.2989/10220119.2018.1516237>
- Trifonova, T.A., Mishchenko, N.V., Shutov, P.S. et al. Estimation of the Dynamics of Production Processes in Landscapes of the South Taiga Subzone of the Eastern European Plain by Remote Sensing Data. *Moscow Univ. Soil Sci. Bull.* 76, 11–18 (2021). <https://doi.org/10.3103/S0147687421010063>
- Venter, Z.S., Scott, S.L., Desmet, P.G., Hoffman, M.T., 2020. Application of Landsat-derived vegetation trends over South Africa: Potential for monitoring land degradation and restoration. *Ecol. Indic.* 113, 106206. <https://doi.org/10.1016/j.ecolind.2020.106206>
- von Maltitz, G.P., Gambiza, J., Kellner, K., Rambau, T., Lindeque, L., Kgope, B., 2019. Experiences from the South African land degradation neutrality target setting process. *Environ. Sci. Policy* 101, 54–62. <https://doi.org/10.1016/j.envsci.2019.07.003>

7.2 Academic dissertations

- Mahlaba, B., 2022. The assessment of degradation state in Ecological Infrastructure and prioritisation for rehabilitation and drought mitigation in the Tsitsa River Catchment (Masters dissertation, Rhodes University).
- Owuor, G.O., 2021. Monitoring Land Degradation Neutrality using Geospatial Techniques in Support of Sustainable Land Management: A Case Study of Narok County (Doctoral dissertation, University of Nairobi).

7.3 Other resources

Print documentation from the Trends.Earth project (including fact sheets, reports, and other materials) is listed below.

7.3.1 Reports

- A Review of Publicly Available Geospatial Datasets and Indicators In Support of Land Degradation Monitoring
- A Review of Publicly Available Geospatial Datasets and Indicators in Support of Drought Monitoring
- A Review of Publicly Available Geospatial Datasets and Indicators in Support of UNCCD Strategic Objective (SO) 2: To Improve Living Conditions of Populations Affected by Desertification, Land Degradation, and Drought
- Trends in Population Exposure to Land Degradation - Methodological note
- Arnold S., Jun C., Olav E. 2019. Global and Complementary (Non-authoritative) Geospatial Data for SDGs: Role and Utilisation. Report produced jointly by the Task Team on Global Data and Task Team on Alternative Data Sources by the Working Group on Geospatial Information of the Inter-agency and Expert Group on Sustainable Development Goal Indicators (IAEG-SDGs).
- Using Spectral Vegetation Indices to Measure Gross Primary Productivity as an Indicator of Land Degradation
- Evaluation of approaches for incorporating higher-resolution data for disaggregation or targeted analysis
- Disentangling the effects of climate and land use on land degradation
- Monitoring and assessing land degradation to support sustainable development
- (French) Suivre et évaluer la dégradation des terres pour soutenir le développement durable

7.3.2 Fact sheets

- Conceptual Fact Sheet for Trends.Earth
- Technical Fact Sheet for Trends.Earth