

AUGUST 2026

UNCCD COP 17 and Rangeland Science at Woodwell



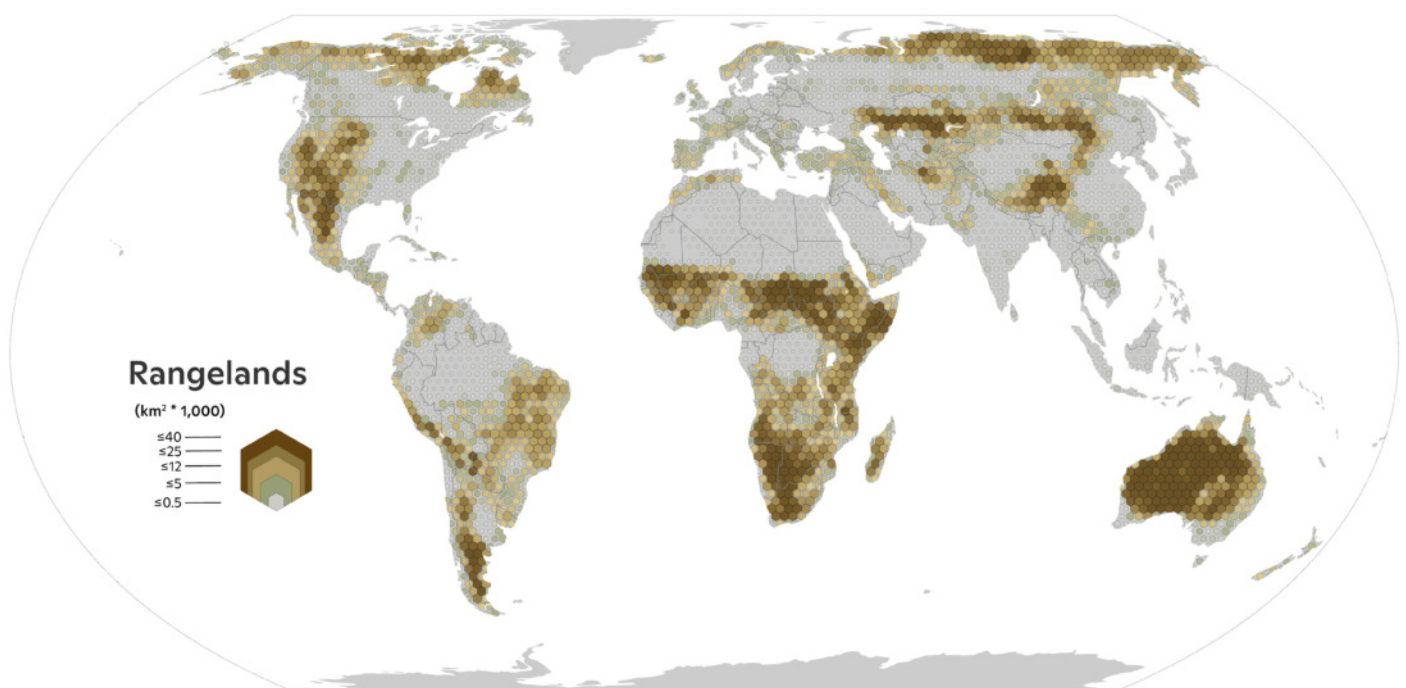
Woodwell
Climate
Research
Center

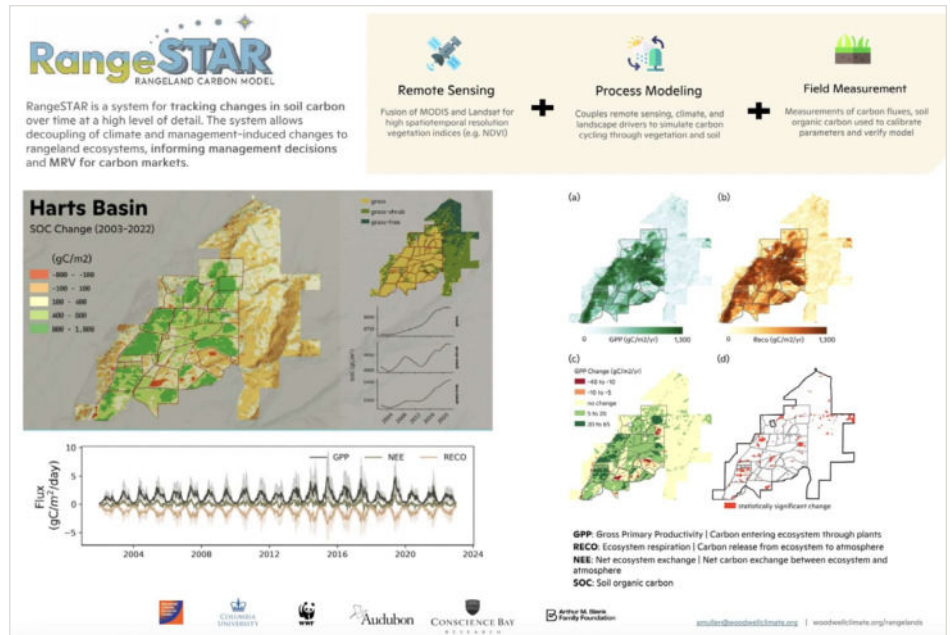
In August 2026, governments will meet in Ulaanbaatar, Mongolia, for the 17th Conference of the Parties (COP 17) to the UN Convention to Combat Desertification (UNCCD). COP 17 will focus on developing a global drought protocol; a post-2030 UNCCD strategic framework; enhanced action on rangelands and agriculture; and linkages between land degradation, migration and security.

Rangelands cover more than half of the global land surface, support 500 million people, and are essential to food security. Yet, they are degrading and overlooked in policy debates. Fortunately, global attention is growing, and COP 17 will take collaboration to protect and restore rangelands to the next level. With Mongolia's territory

comprising 90% rangelands, and COP 17 alignment with the UN International Year of Rangelands and Pastoralists, the conference will be a key platform for elevating rangelands and food systems in the global agenda.

Woodwell Climate Research Center's (Woodwell) research on soil carbon, remote sensing (RS), science-based metrics, and rangelands aligns with these priorities. Woodwell experts will be in Ulaanbaatar to present a new Grazing Lands Health Assessment and to highlight monitoring, soil carbon restoration, and preservation of pastoral environments as climate solutions. This brief maps how Woodwell's rangeland and soil science provides answers to the questions the world will be asking at COP 17.





COP 17 Will Put Rangelands at the Center of Global Policy Debate

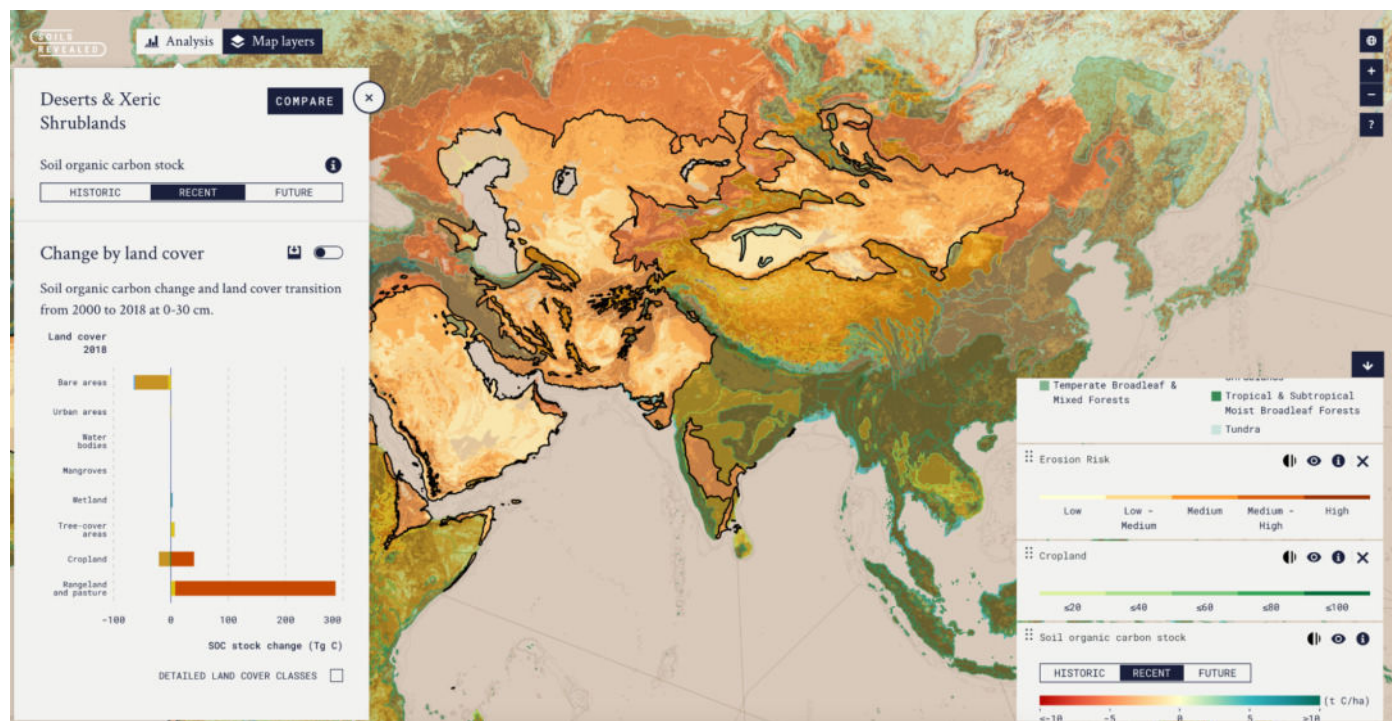
COP 16 in Saudi Arabia recognized rangelands as critical for combating land degradation and requested the UNCCD to strengthen public-private partnerships, projects, and programs to support rangeland health. COP 16 also requested the UNCCD and the Food and Agriculture Organization (FAO) to develop guidance to governments for promoting sustainable land use and responsible governance to combat the degradation of agricultural lands and soils. COP 17 will build on this recognition and catalyze collective action on rangelands and agriculture by:

- Enhancing policy frameworks and collaboration to conserve, manage, and restore rangelands and by defining science-policy guidance on agricultural lands.
- Launching Mongolia's Rangeland Flagship Initiative (RFI), a global collaboration platform to advance knowledge, investments, and institutions for protecting rangelands.
- Hosting a Land and People Day, a session of high-level and technical discussions to put rangeland restoration at the heart of the conference.
- Advancing the "Silk Road Caravan" framework, which outlines the next steps on the Land and Soil Breakthrough Targets from COP 16.
- Designing a new framework for considering links between land degradation, migration, food security, and human security.

Woodwell Science and COP 17

One of Woodwell's strategic goals is to make grazing lands climate positive, and Woodwell scientists have created a large body of knowledge and practices to advance this goal:

- The **Carbon Monitoring in Rangelands** project works to address data deficits on land health and carbon stocks in global grazing lands.
- **Woodwell's System for Tracking and Reporting Carbon in Rangelands (RangeSTAR)** is a process-based modeling and RS tool that integrates satellite images with weather, vegetation, and soil data. It provides high-resolution estimates of rangeland productivity, ecosystem carbon fluxes, and soil organic carbon (SOC) to support measurement, reporting, and verification. RangeSTAR has been applied across the western United States and can be scaled to other locations.
- The **Soil Spectroscopy** project coordinates a network of technical experts to increase the efficiency of soil spectroscopy to support land and soil resource monitoring.
- **Soils Revealed** is an [interactive platform](#) mapping global soil carbon changes and local mitigation potentials. Users can adjust its data layers to examine different SOC stocks, land-use type, biomes, and risks like biodiversity intactness and erosion (next page).



Woodwell also aims to help countries understand and prevent climate-driven threats, including those to security, and has recently co-published a [Global Breadbaskets](#) report, which looks at the security risks arising from potential ramifications of climate impacts on agricultural production.

This science is available to government and non-Party stakeholders aiming to design and implement sustainable land-use activities and to evaluate agricultural soil health.

This science is also **directly relevant to several key questions of COP 17:**

- As the RFI begins to develop knowledge products, Woodwell will introduce a new **Grazing Lands Health Assessment**. Our experts are analyzing NASA satellite data to assess carbon hotspots of rangelands around the world to calculate how much carbon those lands absorb or release, how soil carbon stocks change, and where losses or gains are occurring. They are also using climate model projections to identify regions at risk from drought and degradation. This will result in a consistent global picture of rangeland carbon balance and enhance understanding of climate risks. A [dynamic webviewer](#) enables practitioners, policymakers, and stakeholders to zoom in to regions and navigate data layers of interest.
- Woodwell can support the work of the COP and the Committee on Science and Technology with **science-**

based knowledge and tools that public and private stakeholders, communities, and policymakers can use to monitor rangeland health and engage with conservation initiatives and carbon markets.

- Woodwell's spatial datasets and baseline carbon dynamics science can supply the underlying metrics to support the development of the **New UNCCD post-2030 Strategic Framework**, and for moving the **Steppe Action Agenda** ahead.
- Woodwell is also part of a coalition for the **Land and Soil Breakthrough Targets on Grasslands, Savannas, and Rangelands**, and has provided technical expertise to the coalition's work on a report, to be launched at COP 17 to illustrate the importance of rangelands, to highlight key messages from the coalition, and to design targets for success (e.g. hectares under restoration and finance mobilized).
- Woodwell has submitted inputs to the **FAO-UNCCD Guidance framework for agriculture** to highlight RangeSTAR and Soil.Spectroscopy as important tools.
- Woodwell's work on **linkages between agricultural production, migration, and security** can inform the work by the COP towards a new framework on migration and security.

For more information about Woodwell's upcoming engagement at COP 17, please visit <https://www.woodwellclimate.org/unccd-cop-17> or contact jwatts@woodwellclimate.org.

Woodwell publications most relevant to COP 17

Publication	Woodwell Authors	DOI/URL
Sanderman, J. et al. 2026: Systematic review reveals soil organic carbon benefits of alternative grazing depend on study quality. In: Communications Earth and Environment.	Partida, C. Sanderman, J.	doi.org/10.1038/s43247-026-03790-8
Safanelli, J.L. et al. 2025: Open Soil Spectral Library (OSSL): Building reproducible soil calibration models through open development and community engagement. In: PLOS One.	Safanelli, J.L. Sanderman, J.	doi.org/10.1371/journal.pone.0296545
Sanderman, J. et al. 2025: Application of a Handheld Near Infrared Spectrophotometer to Farm-Scale Soil Carbon Monitoring. In: European Journal of Soil Science.	Partida, C. Safanelli, J.L. Sanderman, J.	doi.org/10.1111/ejss.70053
Xia, Y. et al. 2025: Coupling Remote Sensing With a Process Model for the Simulation of Rangeland Carbon Dynamics. In: Journal of Advances in Modeling Earth Systems.	Hernandez, H. Mullen, A.L. Rivard, C. Sanderman, J. Watts, J.D. Xia, Y.	doi.org/10.1029/2024MS004342
Oldfield, E.E. et al. 2023: Greenhouse gas mitigation on croplands: clarifying the debate on knowns, unknowns and risks to move forward with effective management interventions. In: Carbon Management 15(1).	RoyChowdhury, T. Sanderman, J.	doi.org/10.1080/17583004.2024.2365896
Roe, S. et al. 2021: Land-based measures to mitigate climate change: Potential and feasibility by country. In: Global Change Biology 27(33).	Rivard, C. Sanderman, J.	doi.org/10.1111/gcb.15873
Heuvelink, G.B.M et al. 2020: Machine learning in space and time for modelling soil organic carbon change. In: European Journal of Soil Science 72(4).	Sanderman, J.	doi.org/10.1111/ejss.12998
Sanderman, J. et al. 2017: Soil carbon debt of 12,000 years of human land use. In: Sustainability Science 114(36).	Fiske, G.J. Sanderman, J.	doi.org/10.1073/pnas.1706103114
Griscom, B.W. et al. 2017: Natural climate solutions. In: PNAS 114(44).	Houghton, R.A. Sanderman, J.	doi.org/10.1073/pnas.1710465114

cover photo: Colorado rangelands. / Dave Nagel



WOODWELL CLIMATE RESEARCH CENTER works at the intersection of science and decision-making. We partner with communities, businesses, and policymakers to protect life and livelihoods from the devastating impact of climate change. We bring together hands-on experience and over 40 years of policy impact to find societal-scale solutions that can be put into immediate action.

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