GLOBAL MANGROVE WATCH

Global Mangrove Watch

A remote sensing data and monitoring platform for catalyzing the action needed to protect and restore mangroves

www.globalmangrovewatch.org

Photo ©Joeri Borst, Wetlands International

The Global Mangrove Watch (GMW) is the most complete and up-to-date source of information on mangroves worldwide. The online platform gives universal access to remote sensing data and tools to catalyze action to protect and restore mangroves.

GMW Platform, Worldwide

Wetlands International

The Nature Conservancy

Prifysgol Aberystwyth University

soloEO

Global Mangrove Alliance

Global Mangrove Watch (GMW) gives policymakers, mangrove practitioners and investors universal access to near real-time information on the location, extent and status of mangroves across the world, as well as data highlighting why they are valuable.

The urgency

Mangroves are unique and vital coastal ecosystems that harbor incredible biodiversity and provide food, shelter, and livelihoods. These ecosystems stabilize coastlines and help coastal communities adapt to climate change.

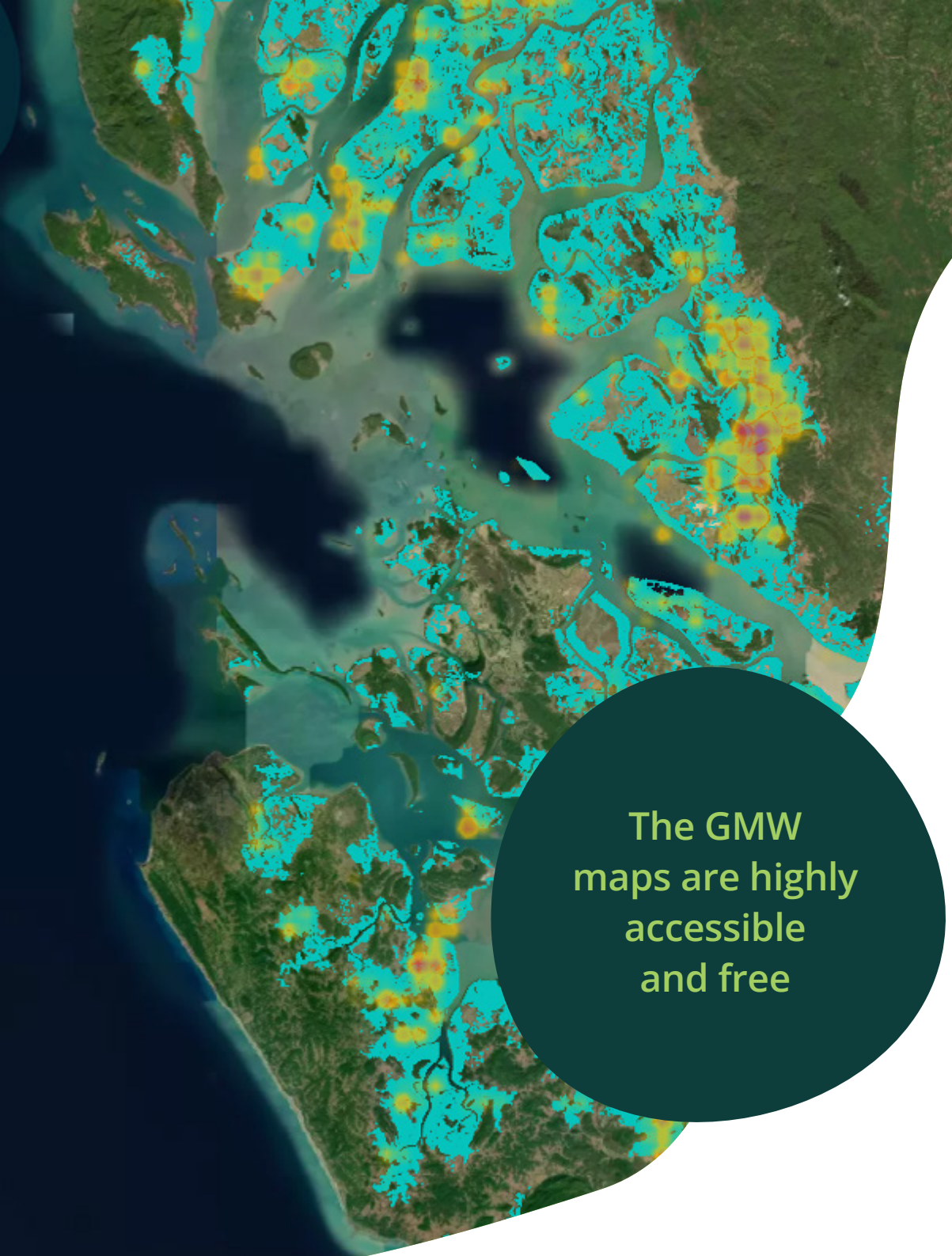
Additionally, healthy mangroves and their underlying soils sequester carbon at up to four times the rate of terrestrial forests on a per hectare basis, making them indispensable allies in the race to a net zero world. Despite the many benefits they provide, the world's mangroves are highly threatened and poorly protected.

We only have 147,000 km^2 left, which need to be protected and sustainably managed to safeguard them in the long term.

There is an urgent need and opportunity for large stretches of mangroves to be restored, particularly lands that have been converted and abandoned.

Monitoring mangroves in Demak, Indonesia
©Kuswantoro, Wetlands International

Mangroves are unique and vital coastal ecosystems



The GMW maps are highly accessible and free

Support from space

Remote sensing data plays a major role in changing the fate of the world's rapidly declining mangrove forests. Without easily accessible, up-to-date information on mangrove conditions and threats, it is a challenge for governments and conservation groups to plan effective mangrove conservation and restoration efforts.

This is especially the case in remote locations, out of the sight of authorities and park managers, and for governments lacking their own national mangrove monitoring system. Satellite images and maps are also powerful tools to communicate mangrove threats and values.

The platform is being continually updated with new datasets and because of a consistent mapping approach it allows for direct comparisons between regions and through time.

The GMW maps are highly accessible and free to use for all policy-makers, investors, researchers, land managers and conservationists. With high-resolution maps and information on a large range of parameters, the GMW serves as the first point of entry to understand the state of mangroves across our planet.

Data layers of the Global Mangrove Watch

Data layer (widgets)	Description	Global	National	Local	Resolution (Meters)	Data Update Frequency
Mangrove Habitat Extent	Location and areal extent of mangrove habitat (km^2).	√	√	√	25	Yearly
Mangrove Net Change	The change in areal extent (km^2) of mangroves in a specific location between time periods.	√	√	√	25	Yearly
Mangrove Habitat Change	Ranking of locations with the largest change in areal extent of mangrove habitat between different times.	√	√	X	n/a	Yearly
Mangrove Disturbance Alerts	Near real-time alerts of mangrove loss detected through remote sensing.	√	√	√	20	Monthly
Mangrove Species	The number of mangrove species combined with their IUCN Red List status.	√	√	X	n/a	2022
Mangrove Protection	The area and proportion of mangroves in protected areas per country.	√	√	X	n/a	Yearly
Mangrove Biomass	The aboveground biomass density in t/ha of mangrove habitat in a specific location at different times. Serves as indicator of carbon storage and age.	√	√	√	25	2020
Mangrove Height	The mean maximum canopy height (m) of mangrove habitat in a specific location at different times. Serves as indicators for coastal protection, degradation, biomass and carbon.	√	√	√	25	2020
Mangrove Blue Carbon	Quantity and density of carbon stored in mangrove biomass and soil in Mt CO_2e.	√	√	√	25	2020

Data layer (widgets)	Description	Global	National	Local	Resolution (Meters)	Data Update Frequency
Mangrove Emissions Mitigation	Emissions mitigation potential by area for mangroves compared to other mitigation interventions.	√	√	X	n/a	2021
Mangrove International Status	National status reports on integration of mangroves into international policy commitments.	X	√	X	n/a	2022
Carbon Market Potential	The area of mangrove forest that can qualify for blue carbon financing.	X	√	X	n/a	2022
Mangrove Restoration (Potential)	Provides guidance on areas that have the greatest potential for mangrove restoration.	√	√	√	n/a	2020
Mangrove Restoration Tracker Tool	Record and track how specific conservation actions lead to outcomes for biodiversity, mangrove resilience, management effectiveness, communities, and governance.	√	√	√	n/a	Continuous
Mangrove Restoration Sites	Restoration sites derived from Mangrove Restoration Tracker Tool.	√	√	√	n/a	Continuous
Drivers of Mangrove Change	Primary drivers of mangrove loss between 2000 – 2016 and percentage of lost mangroves that can be attributed to each loss driver by country.	X	√	X	n/a	2020*
Mangrove Coastal Protection	Socioeconomic benefits provided by mangroves in preventing damage storms.	X	√	X	n/a	2020 **
Mangrove Fisheries	Fishing intensity in mangroves measured in fisher days per year.	√	√	√	1km	2021***
IUCN Ecoregional Assessments	Ecoregional assessments conducted by IUCN amongst others, based on GMW data.	√	X	X	n/a	2023
National-scale datasets	Other authoritative sources of mangrove extent provided for select countries.	X	√	√	Various	Various

*Published in 2020 using a non-GMW dataset from 2016; **Published in 2020 using a non-GMW dataset from 2011; ***Published in 2021 using 2016 GMW extent

What the GWM offers to users

At the global level, governments, investors and international bodies can inform their policies and investments under international frameworks:

- Find the data to include mangroves in climate mitigation, and sustainable development plans and policies and report on them. For example for identifying mangrove extent, threatened mangrove species, mangroves in protected areas, carbon storage and carbon market potential. GMW also offers a policy dashboard showing the mitigation potential of mangrove-related interventions, their international status, and carbon market potential.
- Assess collective global progress on mangrove restoration and blue carbon action towards the long-term goals of the Paris Agreement, the Global Biodiversity Framework, Ramsar Convention and other frameworks. The GMW maps are used as the official UN indicator to assess mangrove progress towards SDG 6.6.1 (change in the extent of water related ecosystems over time).
- Inform the priorities for investments in mangrove conservation at the national and international levels and explore the areas with the highest potential for restoration (to be complemented with detailed on the ground data).

The GMW maps are already used as the official UN indicator under SDG6

Use of drones to complement Global Mangrove Watch during a Global Mangrove Watch training in the Mangrove Capital Africa programme in Senegal ©Wetlands International

Diana Kishiki, conservator of forests of the Kenya Forest Service, receiving her certificate of the Global Mangrove Watch training
©Wetlands International

Mangrove alerts to mobilise rapid action

At the local level, mangrove practitioners, such as coastal and park managers, policy makers, project developers, conservationists, NGO's and experts can use GMW to prioritize, plan and monitor conservation and restoration action on-the-ground:

- Derive data to facilitate the development of management plans to protect, manage, and restore mangroves. With the GMW practitioners can easily observe tree height, mangrove species, calculate biomass, blue carbon stocks, explore protected areas, and explore the potential for mangrove restoration and ecosystem service benefits that will accrue for restoration in different locations.
- Quickly identify changes in mangrove cover with the GMW's mangrove alerts to mobilise rapid action to threats such as illegal logging, conversion to other land uses or to pinpoint other causes of local mangrove die back, for example upstream, coastal erosion or storm damage.

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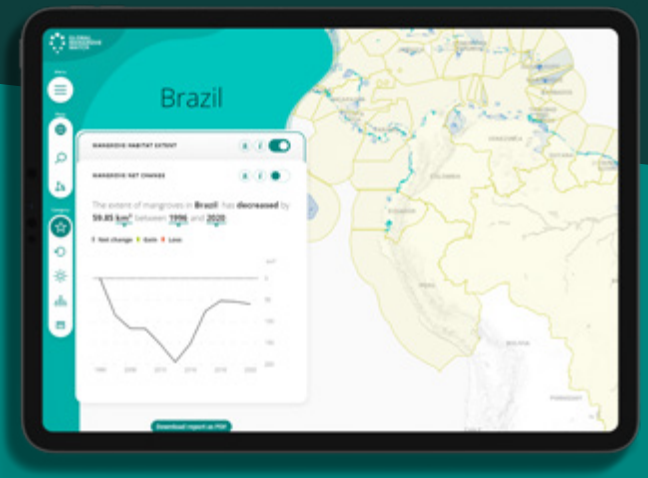
Examples of Global Mangrove Watch data layers and widgets

Mangrove Extent layer

Provides annual data on the national areal extent of mangrove habitat and the length of coast with mangrove forests over time, from 1996 onward.

Mangrove Net Change layer



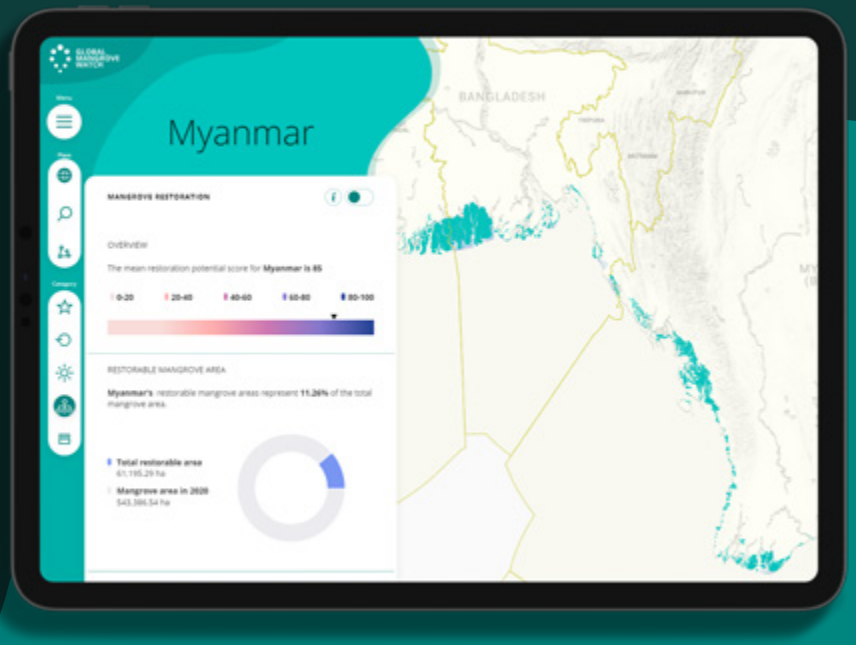
Showing how the extent of mangroves has changed over time, from 1996 to the present.

Mangrove Disturbance Alerts

Detects areas that are experiencing rapid mangrove loss over the course of a month.

An impression of some of the Global Mangrove Watch data layers

Mangrove Restoration Potential



Provides guidance as to areas that have the greatest potential for mangrove restoration.

Mangrove Emission Mitigation

shows the emissions mitigation potential for mangroves interventions compared to non-mangrove related interventions in the land use sector, e.g. grasslands, or peatlands.

Benefits and limitations of the GMW

The Global Mangrove Watch provides an effective means for periodic mangrove inventory, assessment and monitoring over local, national, regional, and global scales, in a uniform manner, with consistent data and classification algorithms for all areas and time frames.

This enables a more consistent and accurate comparison of extent and change between different countries and regions than comparing data obtained from different sources.

As GMW is a global-scale dataset, generated with a single methodology applied over all regions, the accuracy of the maps may vary between locations.

Knowledge of the local context and collection of in situ data remains critical for ensuring locally relevant outputs.

The GMW can therefore be combined with reports from staff on the ground and other tools to get to an even higher accuracy at the local level and to get further insight on the causes of loss and degradation to inform decision-making. Future iterations of the GMW will also enable further sharing of field studies and the peer-to-peer transfer of information.

Consistent and accurate comparisons between countries and regions

Green monkey, Senegal
©Lammert Hilarides, Wetlands International

The use of the GMW can be combined with other tools developed by the Global Mangrove Alliance (GMA) to increase successful mangrove conservation and restoration outcomes, leading to long-lasting change.

- **The Mangrove Restoration Tracker Tool (MRTT)** is an application to record and track outcomes from mangrove restoration projects. The tool will aid the mangrove conservation community in quantifying how specific conservation actions lead to outcomes for biodiversity, mangrove resilience, management effectiveness, communities, and governance. In turn, this will help improve mangrove conservation implementation and build a community to support more effective mangrove restoration projects.
- **Best Practice Mangrove Restoration Guidance**, developed and endorsed by the global mangrove community, provides best practice guidance to support successful mangrove restoration that reinstate functionality and connectivity of these vibrant ecosystems. It provides best practice guidance throughout the project cycle and additional modules over time geared towards achieving specific objectives, such as climate change mitigation, coastal defense, fisheries, and aquaculture. The Guidelines also serve as a one stop shop to existing high-quality guidelines and practical tools and templates that support restoration efforts along the way. *To be released towards the end of 2023.*

The Global Mangrove Watch (GMW) platform is the leading source of geospatial information related to mangroves worldwide and the evidence base informing the Global Mangrove Alliance (GMA). Learn more at www.mangrovealliance.org

GLOBAL MANGROVE ALLIANCE

Oyster farming by women groups, Senegal
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More information:

Integrating Mangrove Ecosystems into NDCs with the Global Mangrove Watch

Integrating Mangrove Ecosystems into NBSAPs with the Global Mangrove Watch

Supporting the implementation of the Ramsar Convention through the Global Mangrove Watch

Global Mangrove Watch training - https://www.conservationtraining.org/login/index.php

The Global Mangrove Watch (GMW) was established in 2011 under the Japan Aerospace Exploration Agency's (JAXA) Kyoto & Carbon Initiative by Aberystwyth University, soloEO and the International Water Management Institute, with the aim to provide open access geospatial information about mangrove extent and changes to the Ramsar Convention on Wetlands.

Today, The Nature Conservancy, Wetlands International, Aberystwyth University, and soloEO are working with JAXA, NASA and a host of partners to develop the Global Mangrove Watch Platform.

The Global Mangrove Watch (GMW) platform is the evidence-based informing tool for the Mangrove Breakthrough. The GMW will be used as the planning tool for the Mangrove Breakthrough, providing the most up to date information on mangroves, as a basis for development of strategies and investment plans.

www.globalmangrovewatch.org

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