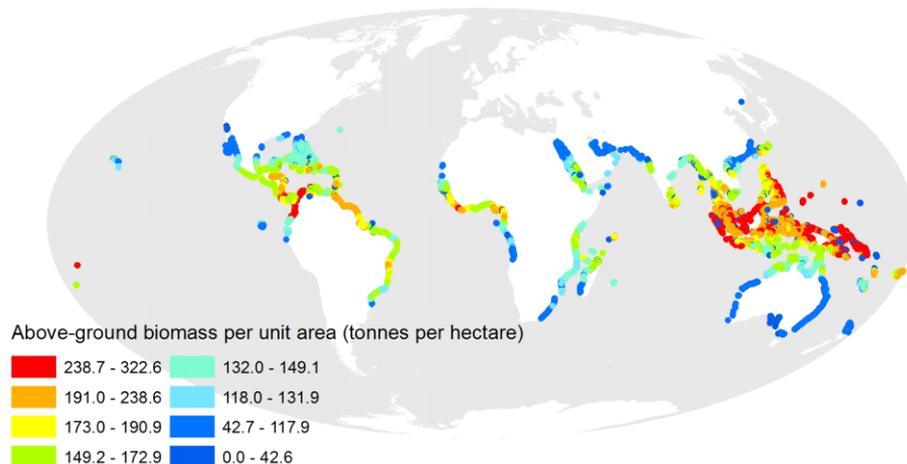


Global Distribution of Modelled Mangrove Biomass (2014)



Description: This dataset shows the modelled global patterns of above-ground biomass of mangrove forests. The dataset was developed by the Department of Zoology, University of Cambridge, with support from The Nature Conservancy. The work is based on a review of 95 field studies on carbon storage and fluxes in mangroves world-wide. A climate-based model for potential mangrove above-ground biomass was developed, with almost four times the explanatory power of the only previous published model. The map highlights the high variability in mangrove above-ground biomass and indicates areas that could be prioritised for mangrove conservation and restoration.

Citation(s): Hutchison J, Manica A, Swetnam R, Balmford A, Spalding M (2014) Predicting global patterns in mangrove forest biomass. *Conservation Letters* 7(3): 233–240. doi: <http://dx.doi.org/10.1111/conl.12060>; Data URL: <http://data.unep-wcmc.org/datasets/39>

Temporal range: 1977-2011

Geographical range: Global

Supplementary information: The underlying mangrove distribution map (vector) is taken from the World Mangrove Atlas (Spalding et al. 2010; WCMC-011).

This dataset refers to above-ground forest biomass (in tonnes per hectare), rather than above-ground carbon. A calculation to convert forest biomass to carbon is provided in Hutchison et al. (2014), but this is based on limited data and is not site-specific.

Attribute table: polygon area (AREA; in km²); polygon centroid longitude (Centroid_x; in decimal degrees); polygon centroid latitude (Centroid_y; in decimal degrees); predicted mean mangrove biomass for a given mangrove polygon (BM_t_ha; in tonnes/ha); predicted total mangrove biomass for a given mangrove polygon (BM_polygon; in tonnes).

Some of the field names have been truncated by ArcGIS and are now unclear. These are:

☐biomass_t1: total biomass for the polygon in tonnes, calculated by adding the biomass of all the underlying raster cells.

☐biomass_t_: average biomass per unit area for the polygon in tonnes/ha,

calculated by dividing biomass_t1 by polygon area.

Distributed alongside the vector dataset is a global (30 arc-sec) raster version showing predicted mangrove above-ground biomass in tonnes/hectare. The raster version shows predicted values for all land areas of the world, regardless of whether mangroves are present or not, but is only applicable in mangrove areas. The raster gives predicted biomass rather than actual biomass: where mangroves have been cleared or degraded, the model will not account for this. Furthermore, the model does not account for small-scale spatial variation, such as zonation within a mangrove area. It is based on the bioclimatic variables from Bioclim (Hijmans et al., 2005), which, although given as 30 arc-sec grids, are highly interpolated from individual weather stations. As such, it is not recommended that the layer be used in fine scale analyses.

Purpose of creation: This is the first ever global map of predicted mangrove above-ground biomass, revealing the spatial variation in mangrove biomass, and giving more precise estimates of global and national-level biomass totals. Previous assessments had all extrapolated from mean biomass values, missing this spatial variation.

Creation methodology: The dataset was created using a linear model for mangrove above-ground biomass based on four climatic variables from the Biomclim dataset (Hijmans et al., 2005), and parameterised using field data gathered from a literature review. See Hutchison et al. (2014) and Supplementary Online Material for further details.

Version: 1.0 (2014)

Data lineage:

Category: Biogenic habitat

Keywords: coastal, blue carbon, biomass, mangrove, habitat, marine

Similar datasets: WCMC-010

Limitations: The model used to generate this dataset predicts potential biomass rather than actual biomass. Where mangroves have been degraded, the model will not account for this.

The model does not account for small scale spatial variation, such as zonation within a mangrove area. It is based on the bioclimatic variables from Bioclim (Hijmans et al., 2005), which, although given as 30 arc-sec grids, are highly interpolated from individual weather stations. As such, it is not recommended that the layer be used in fine-scale analyses.

The model is only for above-ground biomass. Hutchison et al. (2014) gives an allometric equation to convert this to living root biomass, but other mangrove carbon stores (notably soil carbon) are not covered.

Some regions have large, multipart polygons. For example, all the mangroves of Colombia are grouped into a single polygon and therefore have a single value for total biomass and mean biomass per unit area. To see variation within these large polygons, it is possible to take data directly from the modelled raster layer (subject to the caveats mentioned about the scale at which the data can

Dataset ID: TNC-001

be sensibly used).

Maintenance frequency: Data are not being updated.

Main access/use constraint: UNEP-WCMC General Data License (excluding WDPA). See www.unep-wcmc.org/policies/general-data-license-excluding-wdpa#data_policy and www.unep-wcmc.org/policies. For commercial use, please contact business-support@unep-wcmc.org.

Other access/use constraints: None

Contact organisation: The Nature Conservancy

Organisation type: Resource provider **Acronym:** TNC

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Web site: <http://www.nature.org/>

Data format(s): Raster (ESRI Grid), Vector (polygon; .shp)

Distribution format(s): Raster (ESRI Grid), Vector (polygon; .shp) **Dataset size (uncompressed):** 1.15 Gb

Webpage and/or download: <http://data.unep-wcmc.org/datasets/39>

Other webpage: <http://dx.doi.org/10.1111/conl.12060>

Web map service: https://gis.unep-wcmc.org/arcgis/rest/services/marine/TNC_001_GlobalMangroveBiomass2014/MapServer

Factsheet: <http://wcmc.io/mangroves>

Resolution, scale: Not applicable **Reference system:** WGS 1984

West bounding: -180.0 **East bounding:** 180.00

South bounding: -38.9 **North bounding:** 42.7

Metadata standard: UNEP-WCMC Specific **Date of metadata:** 29/01/2016