Detailed Insights: South Africa

Contents

Welcome!

You have reached the CCN Inventory Tool Detailed Insights Report.

Congratulations! This geography has available data.

Potential data availability within the Inventory Tool ranges from Tier I, Tier II, or Tier III Carbon stock estimates.

This document includes country-specific insights and more detailed analysis, including carbon stocks, emissions factors, and ecosystem wetland area for mangrove, marsh, and seagrass habitats. This report details information for the selected geography, **South Africa**.

Explore the rest of the dashboard for more exciting visualizations, map features and data.

Resources referenced to calculate estimates for **South Africa** are listed below under 'References' at the end of this document.

If you have any questions or data you would like to add to the Coastal Carbon Network, please reach out to us at CoastalCarbon@si.edu.

Total Carbon Stock Estimates

Total Carbon stock estimates were calculated for each geography in total, and for mangrove, tidal marsh, and seagrass habitats when available.

We estimate that **South Africa** contains a mean estimate of 2.67714×10^6 metric tonnes soil Carbon.

We estimate that **South Africa** contains between 3.40887×10^6 to 1.9454×10^6 metric tonnes of soil C to a depth of 1 m, with a mean estimate of 2.67714×10^6 metric tonnes C.
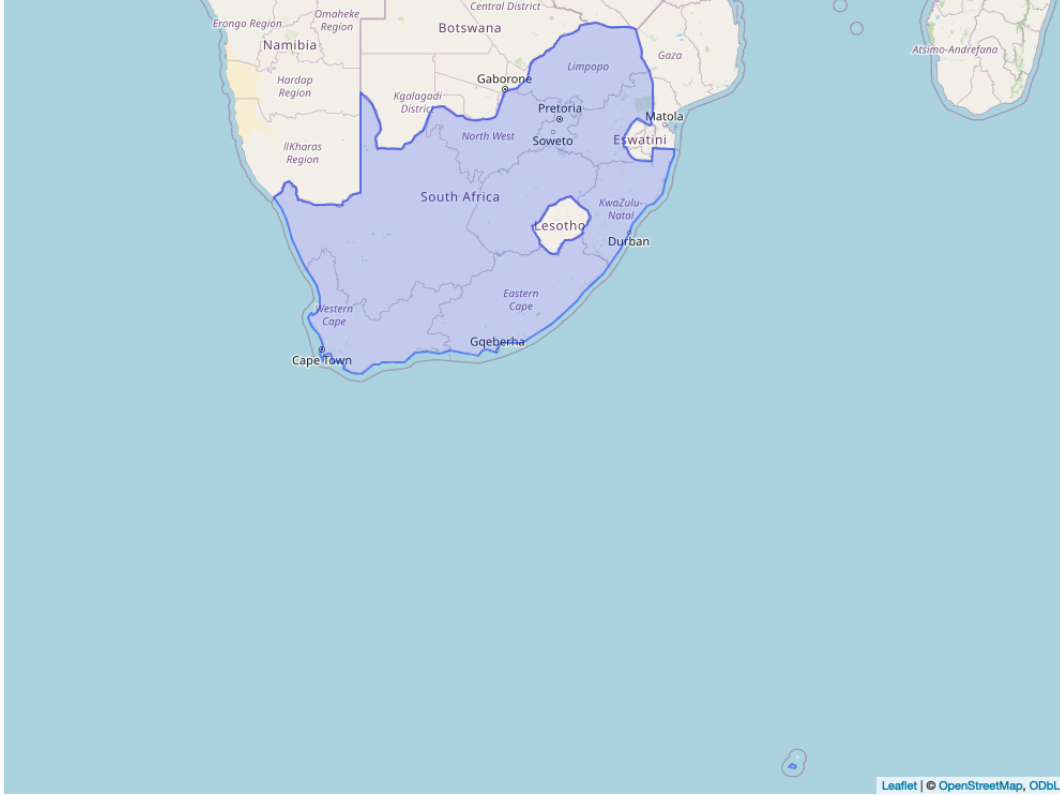
Figure 1: South Africa

Table 1: Total Geography Level Carbon Stocks

Country	Territory	Total Stocks	Upper CI	Lower CI
South Africa	South Africa	2677136	1945401	3408871

This total estimate includes total mangrove soil carbon stocks, with a mean estimate of 1.6131×10^5 metric tonnes of soil C to a depth of 1 meter.

This total estimate also includes total tidal marsh carbon stocks, ranging from 1.83661×10^6 to 1.11533×10^4 metric tonnes of soil C to a depth of 1 m, with a mean estimate of 2.51583×10^6

We estimate seagrass soil carbon stocks for **South Africa** to have a mean estimate of 4.115124×10^6

Wetland Areas and Activities

We estimate mangrove area in **South Africa** to be 1188 to 1568 hectares, with a mean estimate of 1353 hectares according to Global Mangrove Watch Bunting et al. (2018).

We estimate tidal marsh area in **South Africa** to be 5976 to 11150 hectares, with a mean estimate of hectares according to Worthington et al. (2024).

We estimate seagrass area to be **South Africa** to be a mean of 38100 hectares, according to McKenzie et al. (2020), which aggregates global seagrass data from a number of sources.

Calculated Stocks and Emissions Factors

This section of the report details whether data is available to estimate Tier I, Tier II, or Tier III value estimates for tidal marsh, mangrove, and seagrass ecosystems in **South Africa**.

If data for the selected country is available in the Coastal Carbon Atlas, we have applied a Tier II emission factor based on a simple average of country specific data queried from the Atlas.

Data from **South Africa** included in the Coastal Carbon Atlas consists of 253 soil profiles from 21 watersheds. This data comes from 2 distinct habitat type(s).

In the case that there is not yet any country specific information in the Coastal Carbon Atlas, we instead applied IPCC Tier I estimate. IPCC Tier I estimates for mangrove, marsh, and seagrass ecosystems are listed below.

The table in this section also details whether the calculated Tier II value is significantly different from the estimated Tier I values. This is observed in the "Overlap" column.

Table 2: IPCC Tier I Value Estimates

Habitat	Mean	Lower_CI	Upper_CI
mangrove	386	351	424
marsh	255	254	297
seagrass	108	84	139

Data Availiability by Tier

Table 3: Availiability of Tier I and Tier II Data

Country	Territory	Habitat	Tier	Overlap
South Africa	South Africa	mangrove	Tier II	Country-specific average is significantly less than Tier I
South Africa	South Africa	marsh	Tier I	No Tier II data available at this time
South Africa	South Africa	seagrass	Tier I	No Tier II data available at this time

Tier I Carbon Stocks

This section includes Tier I Carbon Stocks included for **South Africa**. In the case that all habitats; mangrove, tidal marsh, and seagrass have availiable Tier II estimates, please refer to Table 2: IPCC Tier I Value Estimates for applicable Tier I values.

Table 4: Tier I Carbon Stock Estimates

Country	Territory	Habitat	Mean Stock (MgHa)	Lower CI	Upper CI
South Africa	South Africa	marsh	255	254	297
South Africa	South Africa	seagrass	108	84	139

Good news! The selected country has Tier II data for each available habitat. Please refer to Table 2: IPCC Tier I Value Estimates for applicable Tier I estimates and Table 5: Tier II Carbon Stock Estimates.

Tier II Carbon Stocks

This table includes Tier II Carbon Stock estimates for **South Africa**. Estimates in this table were derived from data queried from the Coastal Carbon Atlas.

A selected country may have available Tier II values for one or multiple habitats, this is dependent on core data accessible through the Coastal Carbon Atlas. At the time of analysis, referencing Version 1.5.0, **South Africa** represents a total of 253 cores across 2 distinct habitats.

Table 5: Tier II Carbon Stock Estimates

Country	Territory	Habitat	Mean Stock (MgHa)	Lower CI	Upper CI	Standard Error
South Africa	South Africa	mangrove	119	83.3	155	18.32378

Tier III Carbon Stocks

Tier III carbon stocks were estimated, when available, from remote sensing data from Maxwell et al 2021 and Sanderman et al 2018. The table below details whether estimated values are available for **South Africa**, and any overlap with associated Tier I or Tier II values.

If there are no Tier III estimates associated with the selected country and specific habitat of interest, please refer to above Tier I and Tier II tables.

Table 6: Tier III Carbon Stock Estimates

| Country	Territory	Habitat	Mean Stock (MgHa)	Lower CI	Upper CI
South Africa	South Africa	mangrove	239	196	282

In the selected geography, South Africa ,Tier III estimated stock MgHa values are greater than Tier II values estimated from Coastal Carbon Atlas Data. In this case, the Tier III Remote-sensing esimate is significantly greater than country-specific average. Additionally, estimated Tier III stock values derived from remote sensing are less than estimates Tier I values. In this case, the Tier III Remote-sensing esimate is significantly less than Tier I estimate.
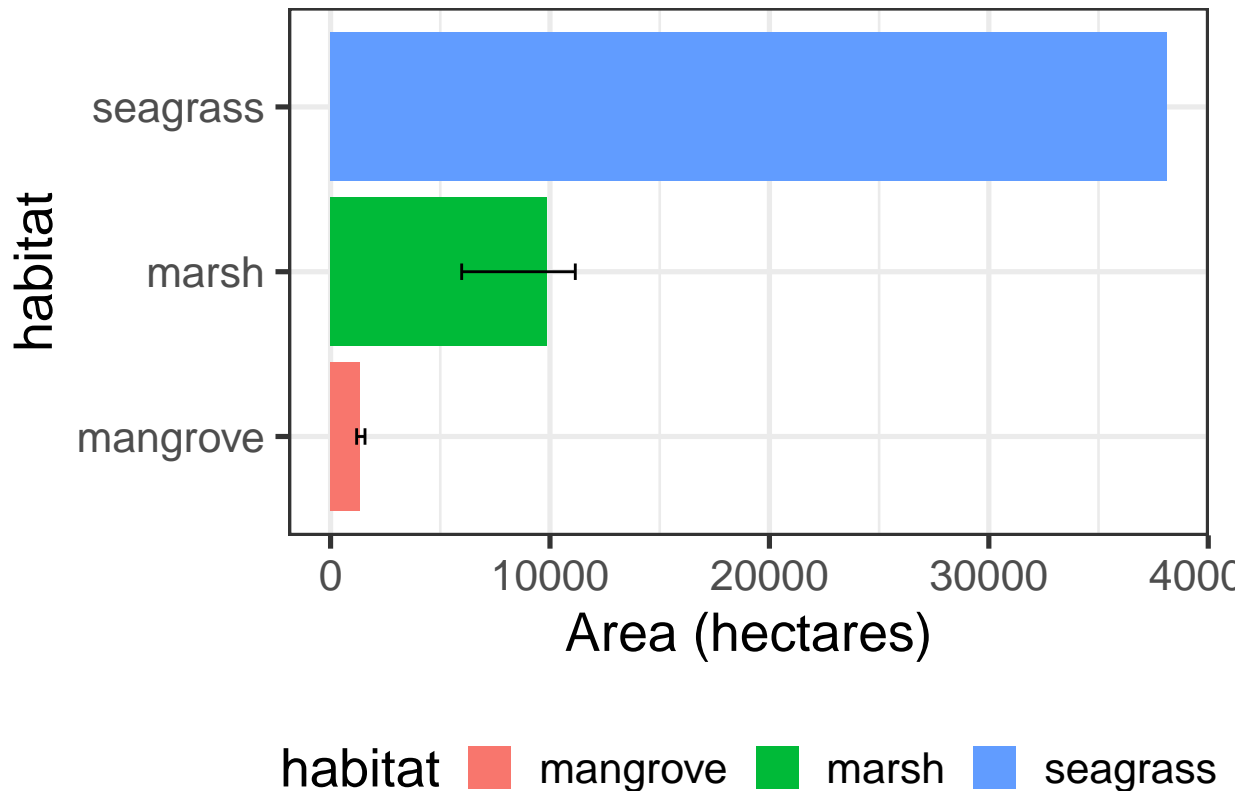
Visualizations

1. Data Metrics
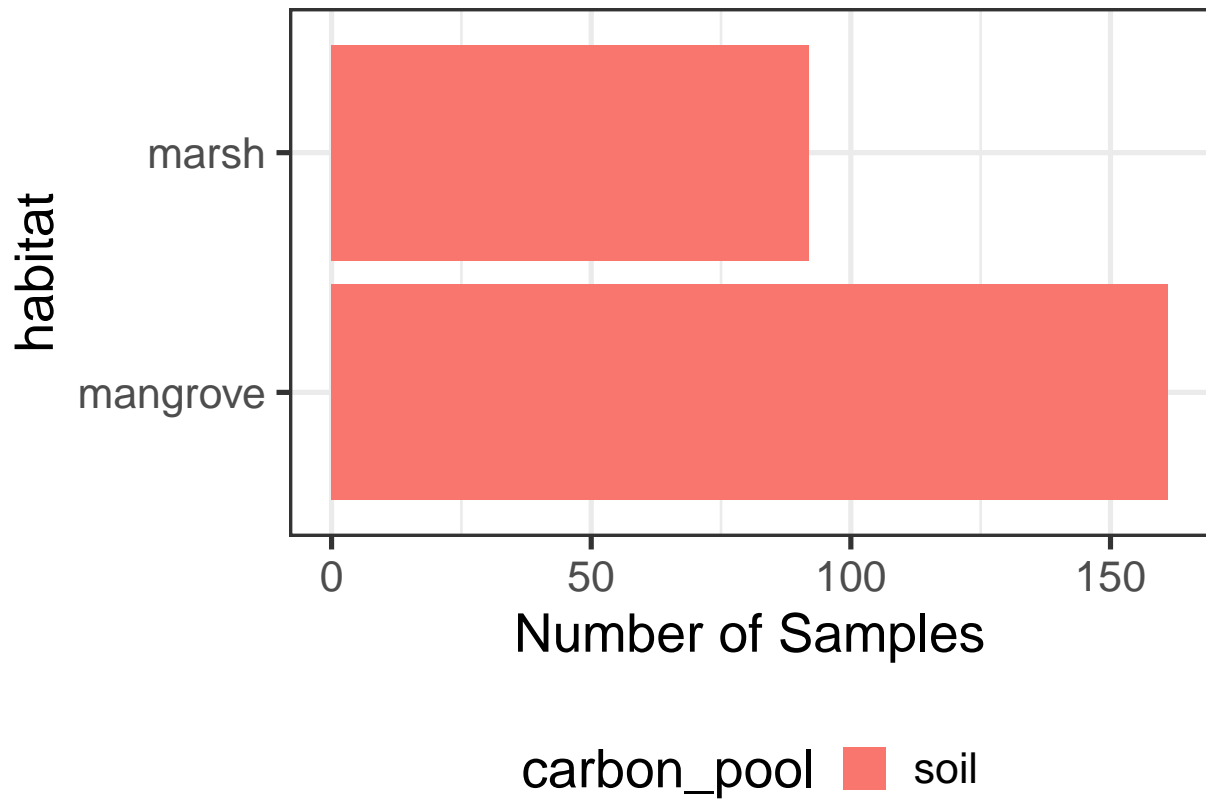
2. Emissions Factors
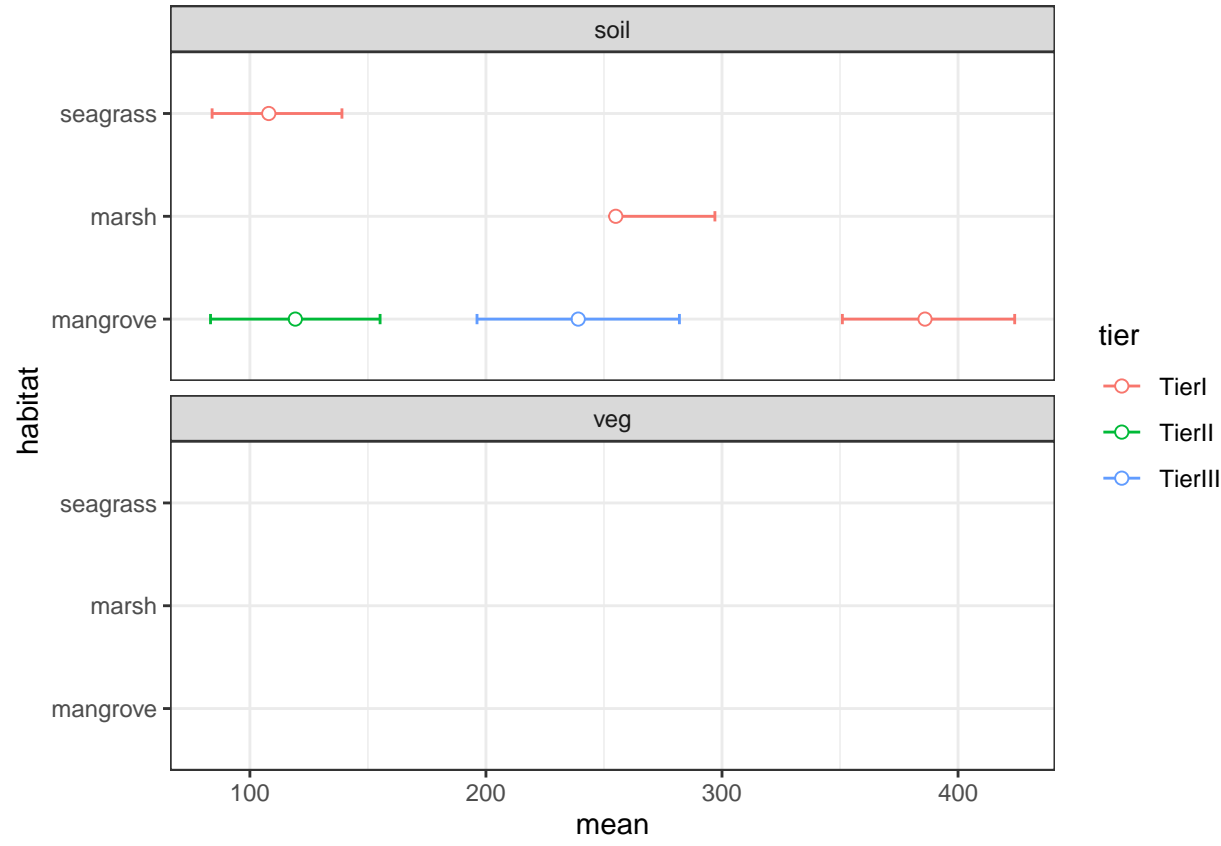
3. Activity Data

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