

Rwanda Elevation Model

Note 2026-01-09: This model is currently being integrated with windPRO

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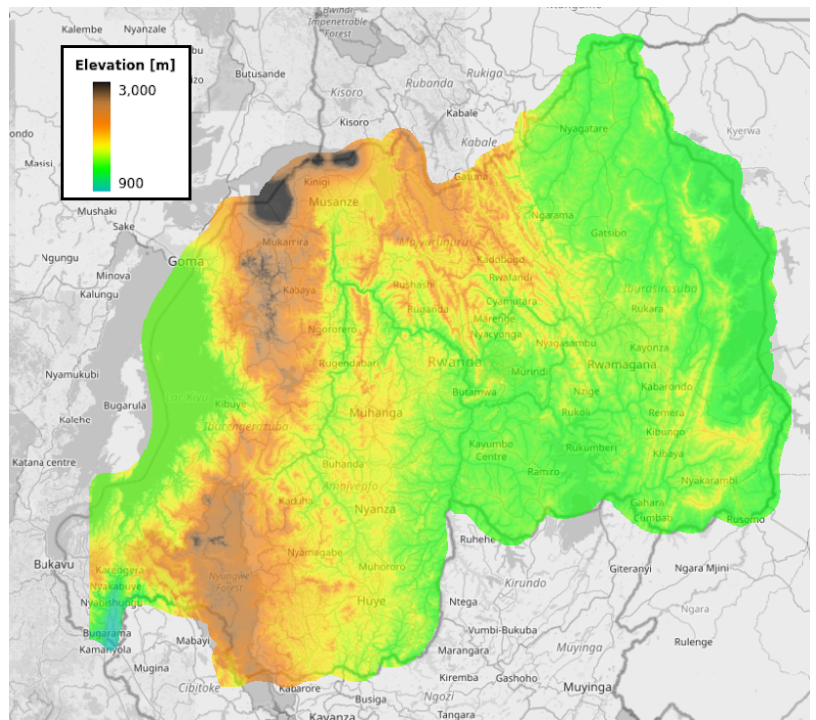
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Introduction

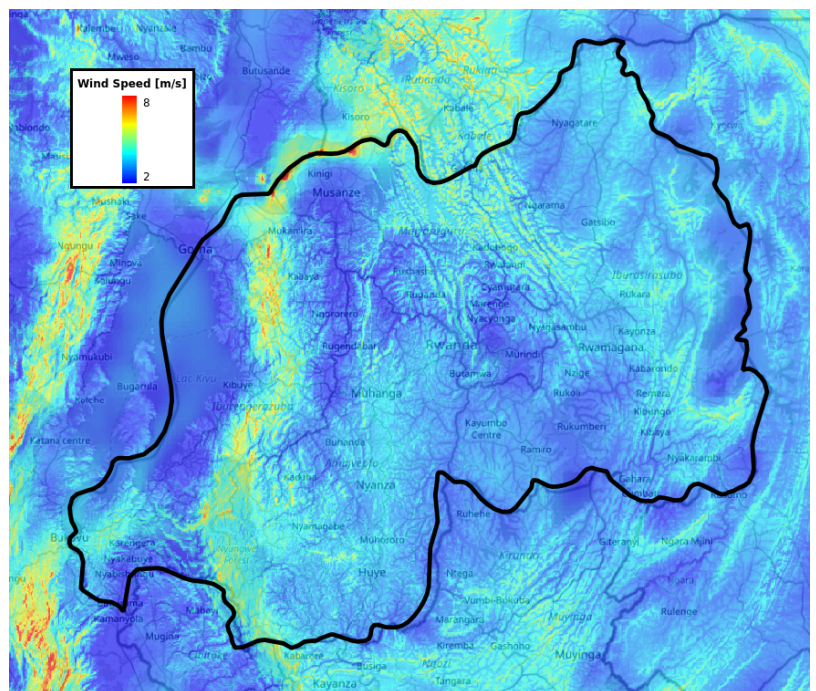
The Rwanda 10m DEM is the first nationwide open-data digital elevation dataset (DEM) released from a country on the African continent. The data is available under the [Creative Commons BY 4.0](https://creativecommons.org/licenses/by/4.0/) (<https://creativecommons.org/licenses/by/4.0/>) license through the [UNDP GeoHub](https://geohub.data.undp.org/data/ood5add9be37e465398bo81683c3eco3) (<https://geohub.data.undp.org/data/ood5add9be37e465398bo81683c3eco3>). The Rwanda 10m DEM was prepared by the [National Land Authority](https://www.lands.rw/home) (<https://www.lands.rw/home>) (NLA), and the dataset was provided to UNDP by [WASAC Ltd.](https://www.wasac.rw/en) (<https://www.wasac.rw/en>), Rwanda. The dataset is available at a 10m grid resolution, making it highly suitable for renewable energy development, including wind and solar energy applications.

Dataset Overview

- **Spatial Coverage:** Rwanda (Republic of Rwanda)
- **Resolution:** 10m
- **Data-type:** Officially a Digital Elevation Model (DEM) - but likely a DSM (see comments below)



Coverage of the Rwanda Elevation Model in windPRO (heights in m).



Wind Resources of Rwanda at 250m Grid Resolution. From the EMD/DTU [Global Atlas of Siting Parameters \(GAsP\)](#).

Rwanda 10 m Elevation Model

Contains modified data from the National Land Authority (NLA), Republic of Rwanda.

The dataset was provided to UNDP by WASAC Ltd., Rwanda. Distributed through UNDP, EMD, and windPRO. Licensed under CC BY 4.0.

Acknowledgements

- The Rwanda 10 m Digital Elevation Model (DEM) was prepared by the Rwanda Land Authority (RLA) (<https://www.lands.rw/home>) following a nationwide aerial survey.
- The dataset was provided by WASAC Ltd. (<https://www.wasac.rw/en>) and released as open data through the UNDP GeoHub (<https://geohub.data.undp.org/>) with Jin Igarashi serving as the data curator. It is distributed under the Creative Commons Attribution 4.0 (CC BY 4.0) license and represents the first nationwide open-data digital elevation model (DEM) released in Africa.
- The analysis ready version distributed with windPRO has been lightly adjusted to correct localized elevation outliers using reference datasets such as Copernicus DEM, while preserving the original model's spatial characteristics.
- EMD International A/S (<https://www.emd-international.com/>) and our many windPRO users (<https://www.emd-international.com/software/windpro>) gratefully acknowledge the contributions of all institutions involved in the production and open-data release of this important national geospatial dataset.

Data Preparation by EMD

The version of the Rwanda 10m DEM delivered with windPRO has been adapted for use in wind farm and renewable energy asset analyses. The original model exhibited some outliers (exceeding 100 m) in edge areas when compared with a benchmark reference model such as Copernicus DEM and GEDTM30. These discrepancies are likely the result of TIN-to-GRID edge interpolations, as well as a limited number of artifacts, possibly originating from the use of optical aerial sources in the original elevation model. To address these issues while preserving qualities from the original model values as much as possible, the Rwanda DEM used in windPRO has been adjusted using the following methodology:

- **1: Identification of outliers:** Through comparison with coarser reference elevation models (30m grid resolution, interpolated to 10m):
 - Within heavily forested areas - elevation differences beyond 50 m were marked as outliers
 - Outside forested areas, discrepancies larger than 25 m were considered as outliers
- **2: Linear correction:** Small outlier patches:
 - Patches of outliers smaller than 100 m in extent (i.e. 10 pixels) were corrected using inverse distance weighting (IDW) interpolation.
- **3: Correction of remaining outlier areas:**
 - A small number of remaining internal patches were replaced using Copernicus DEM 30 m data, resampled to a 10 m resolution to match the Rwanda DEM grid. In the border regions of Rwanda, a 2 km buffer zone was also added using Copernicus DEM data.

External Links

- National Land Authority (NLA) - Republic of Rwanda - HERE (<https://www.lands.rw/home>)
- WASAC Group . Water & Sanitation Corporation - HERE (<https://www.wasac.rw/en>)
- Dataset on UNDP Geohub - HERE (<https://geohub.data.undp.org/maps/291>)

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