

MDG9b Vulnerability assessment of the mangrove ecosystem in Ambaro Bay

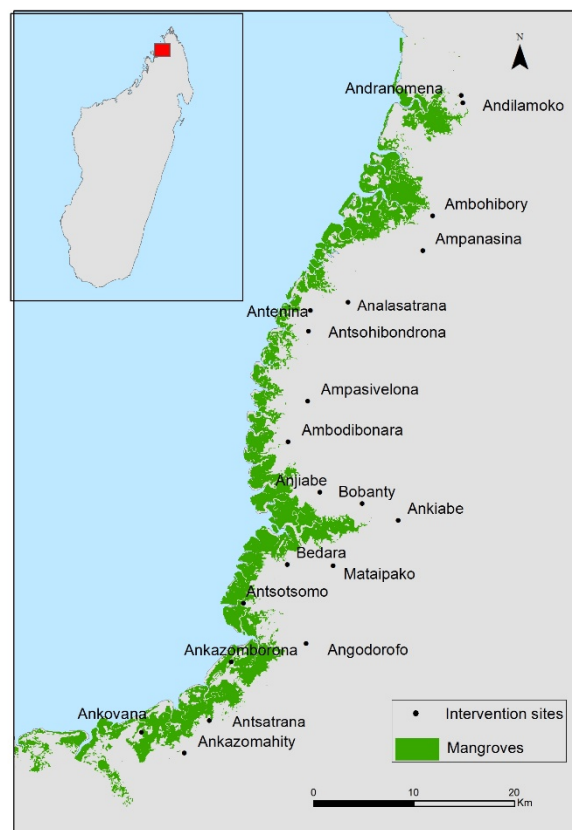
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Outline

- The project/operation C-RISe data was used for,
- What data was used,
- Summary of the main results
- Why is the information / analysis is useful,
- Future plans for the Use Case - will it be continued or repeated?
- Any recommendations (e.g. if other information, software or training would be useful).

Ambaro Bay



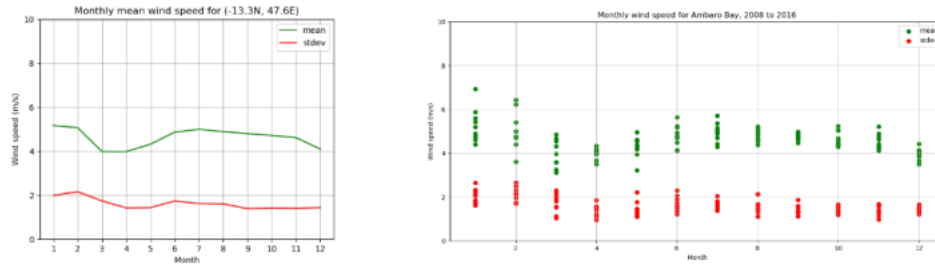
Use of the C-RISe data

- Analysis of current climatology of wind patterns and sea level rise derived from satellite data. The data from C-RISe project were combined with other data (rainfall, temperature, cyclones, local perceptions) to assess the vulnerability of mangroves regarding climate change through 2007 to 2017.
- The analysis focused on the incidence and climate parameters (wind patterns and sea level rise) both in the mangrove ecosystems and the local community livelihoods, in order to understand and reduce the impacts of climate change on mangroves ecosystems.

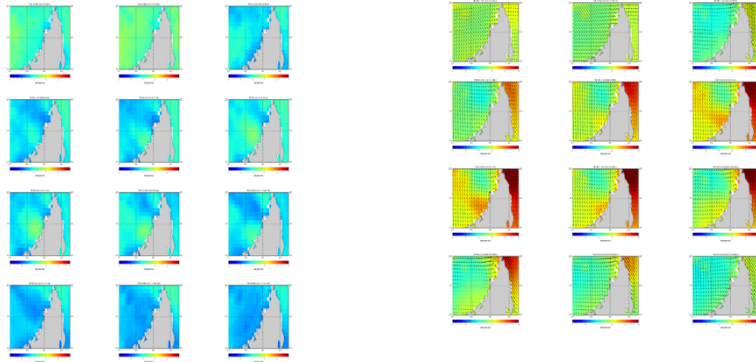
Data used

- 30 years temperature and rainfall data from National Weather Department (DGM)
- Drought (DGM) and cyclones (Meteo France, Wikipedia, www.firinga.com)
- Wind speed and direction (C-RISe data) from 2008-2016
- Sea level rise height (C-RISe data) from 2008-2016
- Mangrove areas from Landsat data from 1997, 2007 and 2017 (NASA/USGS)
- Google Earth Image (Data SIO, NOAA, U.S. Navy, NGA, GEBCO Landsat / Copernicus)
- Local perceptions (collected with Climate Crowd tools, WWF)

Main results

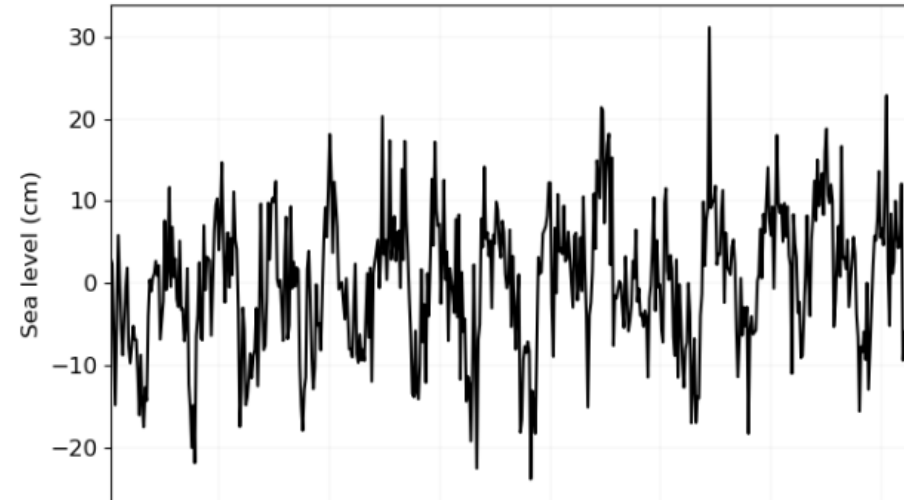


Wind patterns (2008-2016)



Standard deviation of
monthly wind speed
(2008-2016)

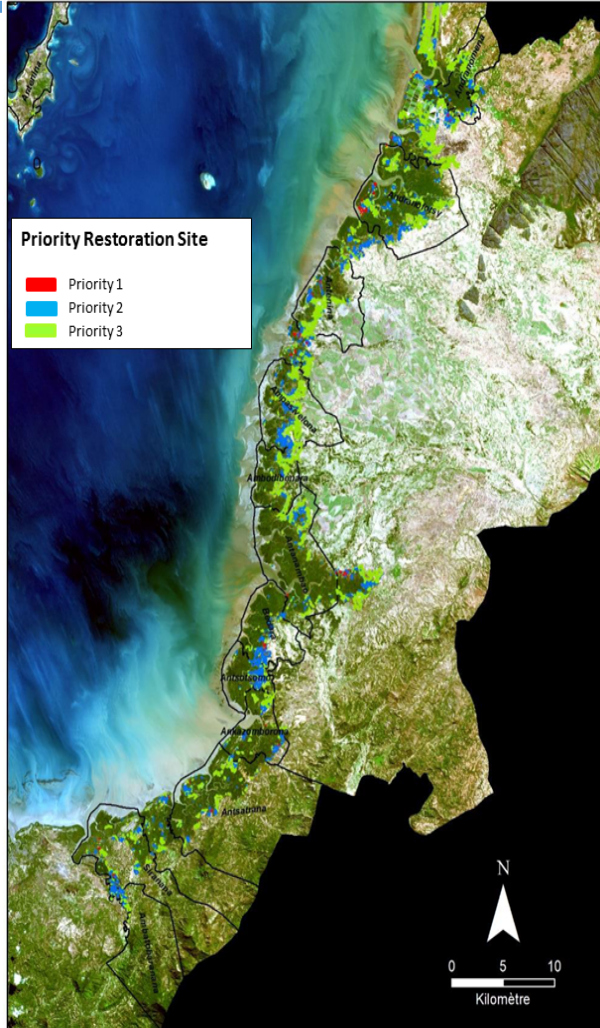
Monthly Wind
direction
(2008-2016)



Sea level rise trend

Note: Regarding C-RISe data, they contribute to the results of the study but their significance is arguable due to their low resolution and lack of coverage of the data for Ambaro Bay location, especially for sea level rise data.

Main results



- Mangrove forest of Ambaro Bay is moderately at risk regarding the climate variability
- Mangroves have different level of vulnerability and some villages are more affected by climate risks than others, which implies that each village has not the same restoration level and priority and therefore the same adaptation options. However, the total effort of restoration to be done is 5103.79 ha.

Level of priority	Surface (Ha)
1 (very high priority)	101.15
2 (high priority)	1618.23
3 (average priority)	3384.42

Utility of the information and analysis

- Information about the different climate risks affecting the mangroves in Ambaro Bay : (i) risk of dead standing of mangroves (ii) risk of silting of mangroves, (iii) risk of specific impoverishment of mangroves and (iv) risk of mangrove recession
- Information about mangroves vulnerability in Ambaro Bay
- Information for decision making regarding sustainable management and restoration activity in Ambaro Bay (location of the resilient and degraded sites to be prioritize)

Future plans

- Mangrove restoration plan and activity in Ambaro Bay
- Improvement of the monitoring system in Ambaro Bay taking into account the sea level rise and wind patterns

Recommendations

- Support for:
 - Training on satellite data processing and interpretation (mangroves cover), statistical analysis
 - Access to specific and precise data (high resolution time series of mangroves satellite image)
 - A thoroughly combined study of coastal information measured by instruments (needed to put in place) with satellite derived data to provide improved information to support the planning of the restoration activities.