Carbon Sequestration

Engaging Youth in Science and Conservation

Tatiana Becker, MSc. ing.
Marine Ecologist/Environmental Engineer

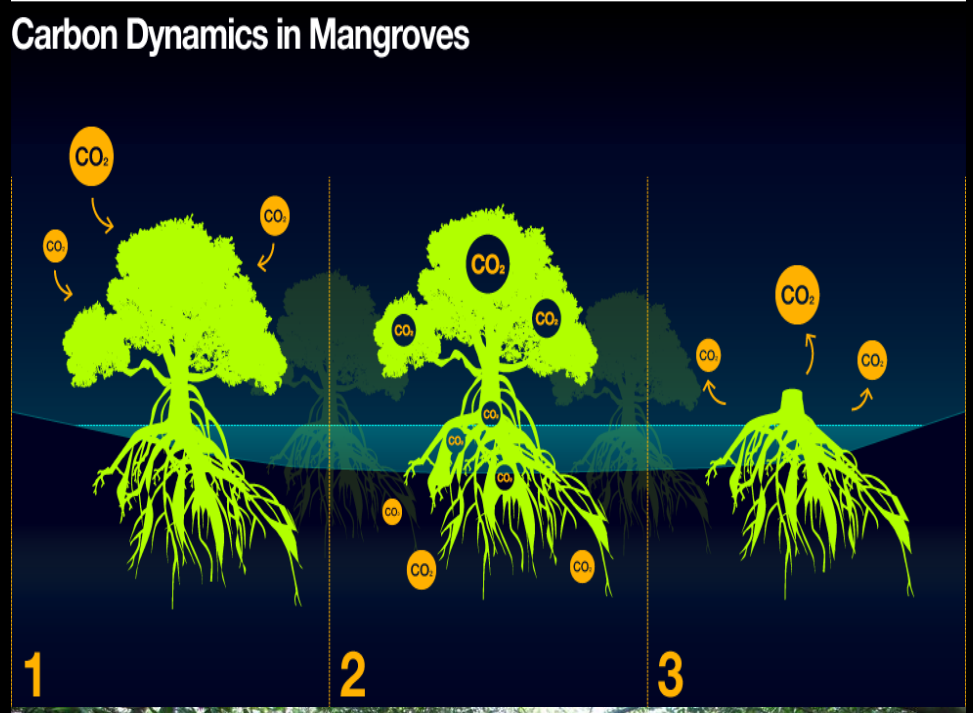
Tobia de Scisciolo, MSc.
Marine Ecologist (Lecturer at University of Aruba)

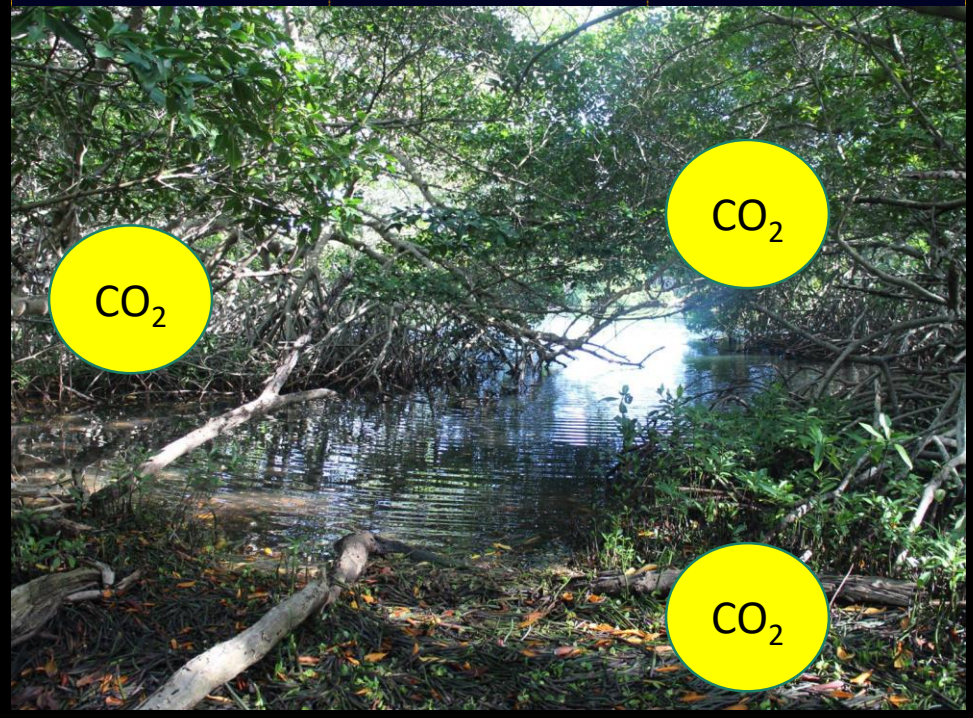
University of Aruba

Carbon Sequestration

Dynamics

1. High absorbance
2. Burying of plant material
3. Reduced oxygen
4. Long term storage of carbon away from atmosphere
5. Release CO2





- Coastal Ecosystems Vs. Terrestrial Ecosystems
- Blue Carbon
- Climate-financing Blue Carbon projects
- Carbon offset schemes

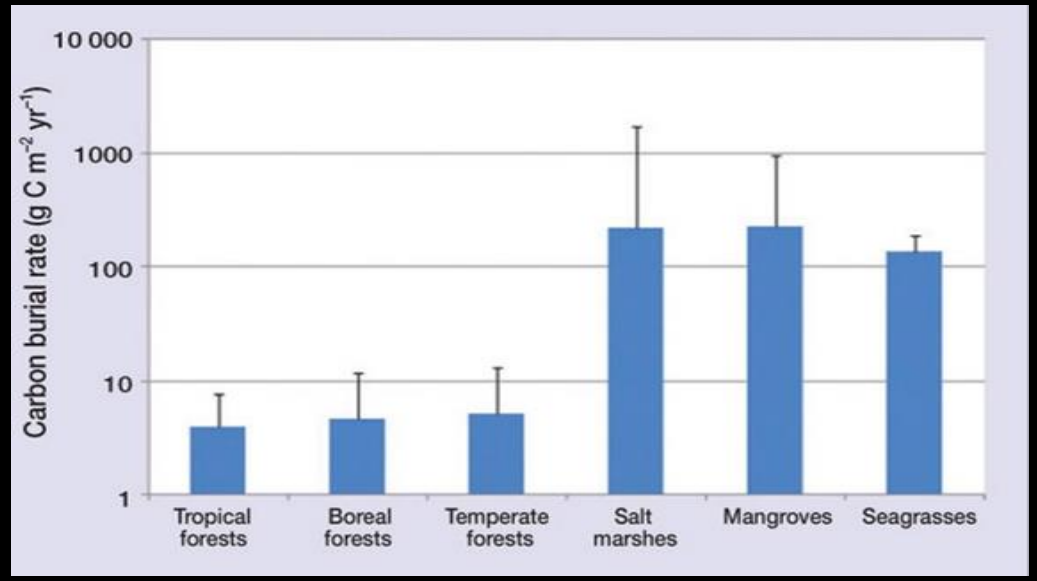


Table 29 Carbon stock in Aruba (Mg)

Ecosystem (ha)	Total carbon stock (Mg)
Mangroves (171)	66,006
Seagrass (1,044)	112,752
Salt marshes (239)	61,100
Tropical dry forests (7,733)	974,400
Tropical dry shrubs (1,484)	78,700

Table 30Carbon sequestration potential in coastal and terrestrial ecosystems in Aruba (Mg/year)

Ecosystem (ha)	Carbon sequestration potential (Mg)
Mangroves (171)	240
Seagrass (1,044)	870
Salt marshes (239)	500
Tropical dry forests (7,733)	3640
Tropical dry shrubs (1,484)	700

TEEB study

Table 3 Calculated carbon stocks and burial rates for the Dutch Caribbean

Blue carbon ecosystem	Area (ha)	Carbon stock* (tonnes C ha^{-2})	Carbon burial rate** (tonnes C ha^{-2} yr^{-1})	Carbon stock (tonnes C)	Carbon burial rate (tonnes C yr^{-1})
Mangroves	1205	468	1.39	563940	1675
Salt marshes	1107	393	1.51	435051	1672
Seagrass	1042	72	0.83	75024	865

* (Nellemann et al. 2009) ** (Siikamäki et al. 2013)

Extent of ecosystems matters!

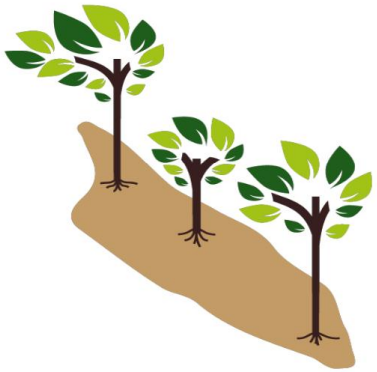
Changing Carbon Sequestering Potential

Santo Largo, Aruba

Parkietenbos, Aruba

Changing Carbon Sequestering Potential

Ban Lanta y Planta!



Trees for Aruba

PARKE NACIONAL ARUBA

Invasive species expansion, Santo Largo Beach, Aruba

The Program: Academic Foundation Year

University of Aruba

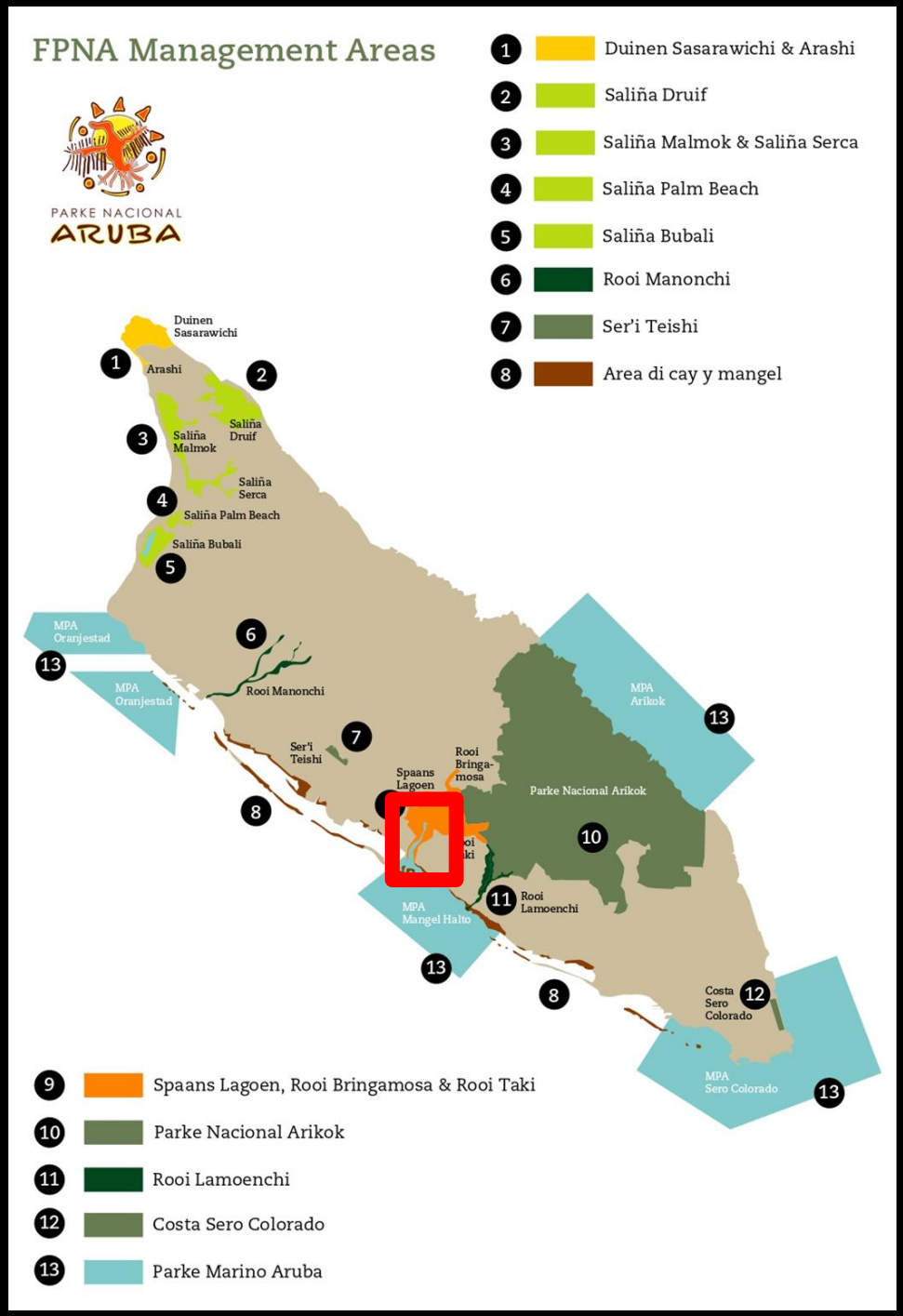
Introduction to Earth and Environment

The Practical aspect

Fieldwork

Dirty Science

Mangroves areas on Aruba

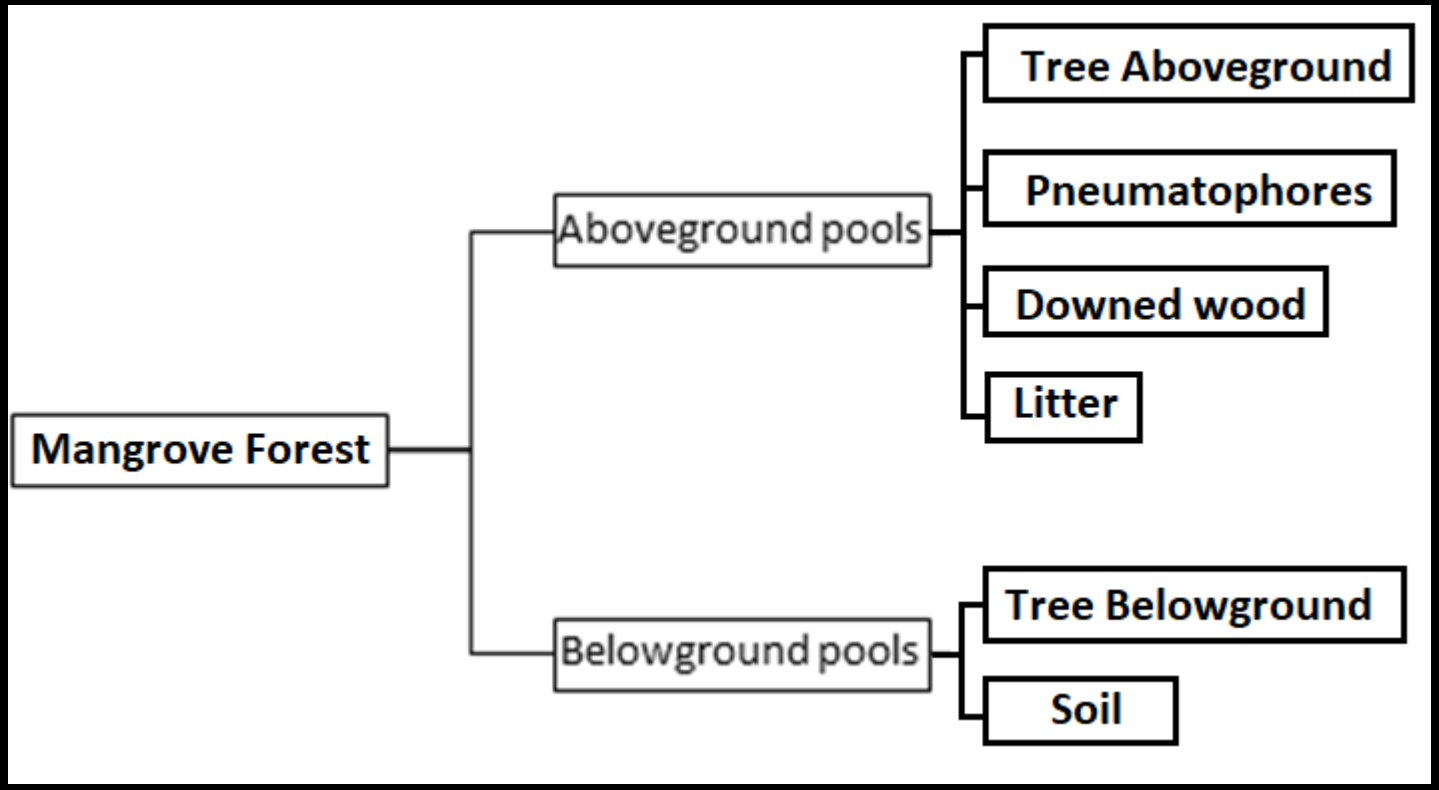


Carbon pool data collection

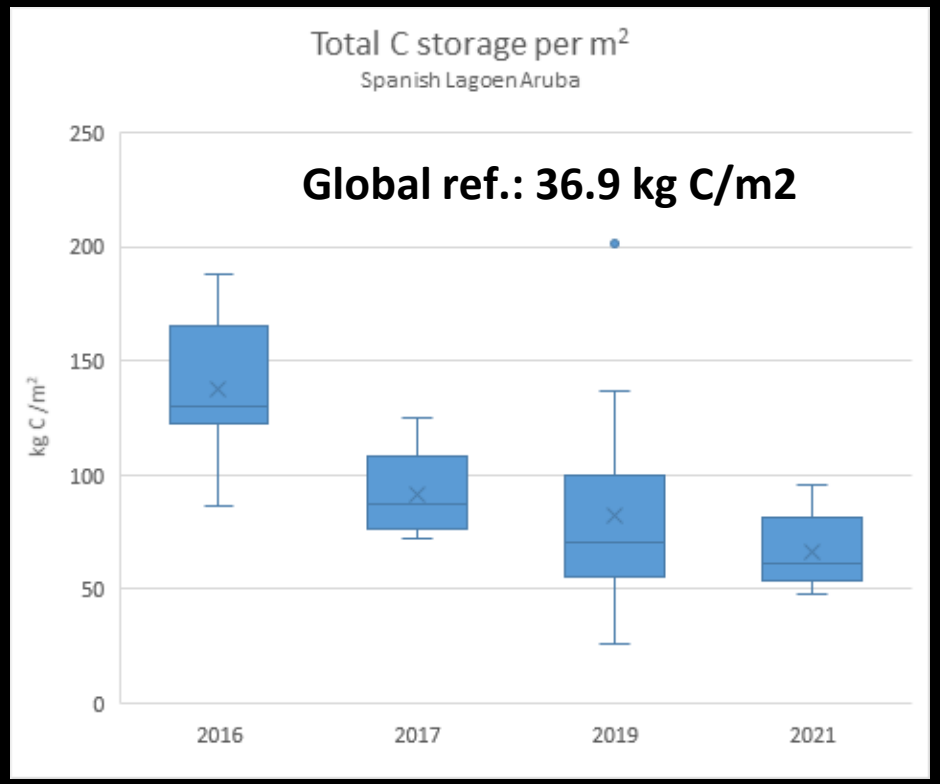
- Multi-year data (2016 -2021) at Spaans Lagoen
  - RAMSAR site since 1980
  - Since 2017 under the management of FPNA
  - Collaboration and support with FPNA
- Species
  - Red Mangrove (Rhizophora mangle)
  - Black Mangrove (Avicennia germinans)
  - White Mangrove (Laguncularia racemosa)
  - Buttonwood (Conocarpus erecta)

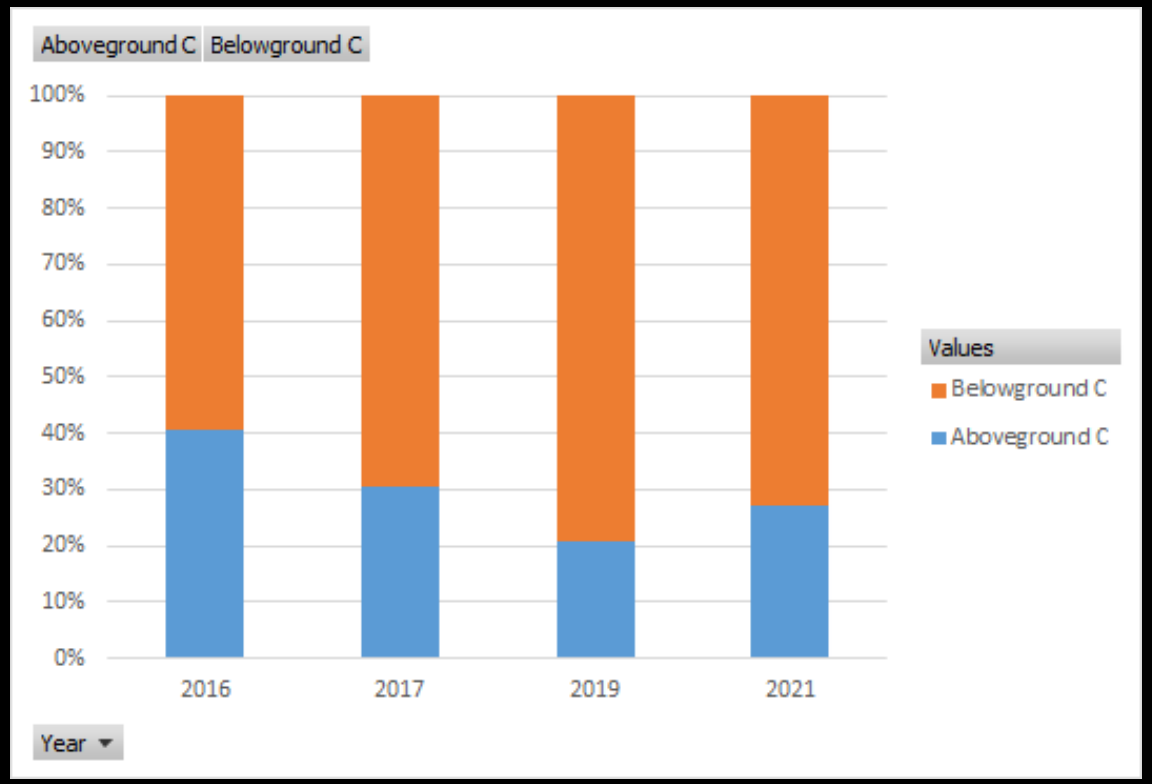
Methods

- Protocol by Kauffman, J.B. & Donato, D.C. (2012) with some adaptations
- Plots of 49 m2 (7 x7 m):



Preliminary findings





Extrapolated findings:
82.8 kT C stored in the Mangroves of Aruba, equivalent to 302 kT CO2e

Student learning and awareness

- Tailoring school curricula to local context and environment and promote hands-on experience and awareness

- Observable increase on the students' willingness to take environmental action and and appreciation of their environment (Eppinga et al. 2019)

ARUBA

'Making Aruba a Greener Environment Club'

Conclusion

- Importance of monitoring carbon sequestration in mangroves
- Engagement and inclusion of students in monitoring and conservation activities and of embedding the local context in the curricula
- Increasing awareness and engage community for capacity building

Acknowledgements

- Mangrove Maniacs
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- University of Aruba

MANGROVE MANIACS
LAC RESTORATION PROJECT

University of Aruba

PARKE NACIONAL ARUBA

Thank you for listening!

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