

# Earth Observation for Seagrass Blue Carbon Assessment in East Africa

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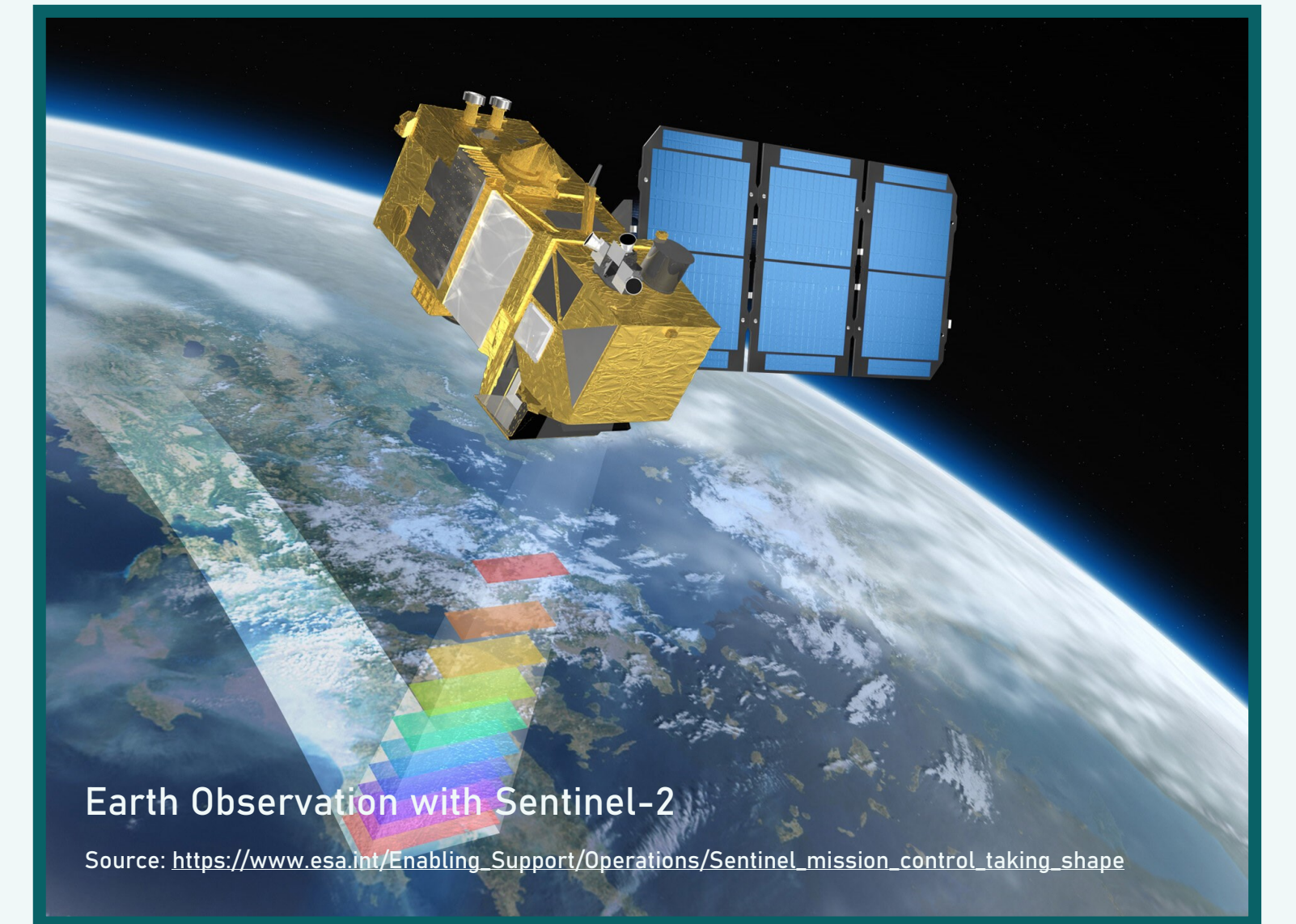
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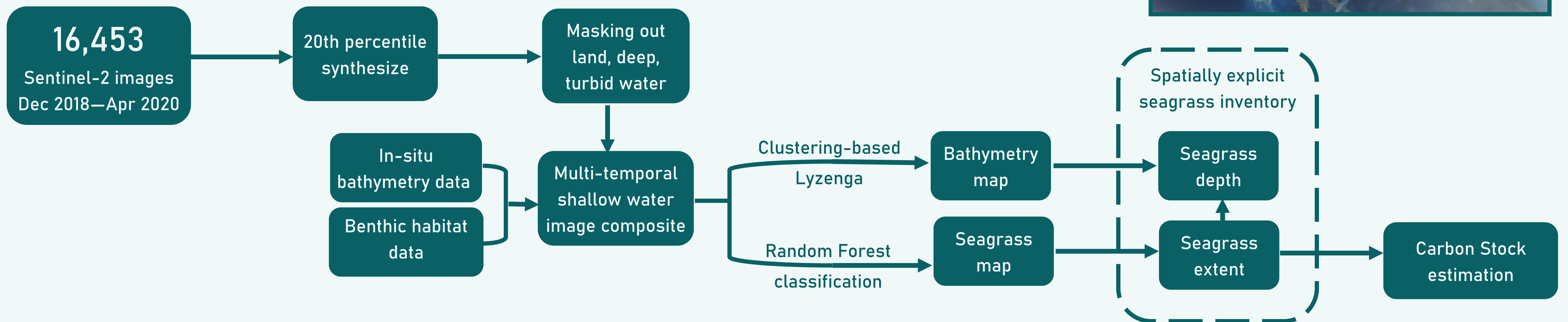
<sup>3</sup> Here+There Mapping Solutions, Richard-Sorge-Str. 65, Berlin, Germany

## INTRODUCTION

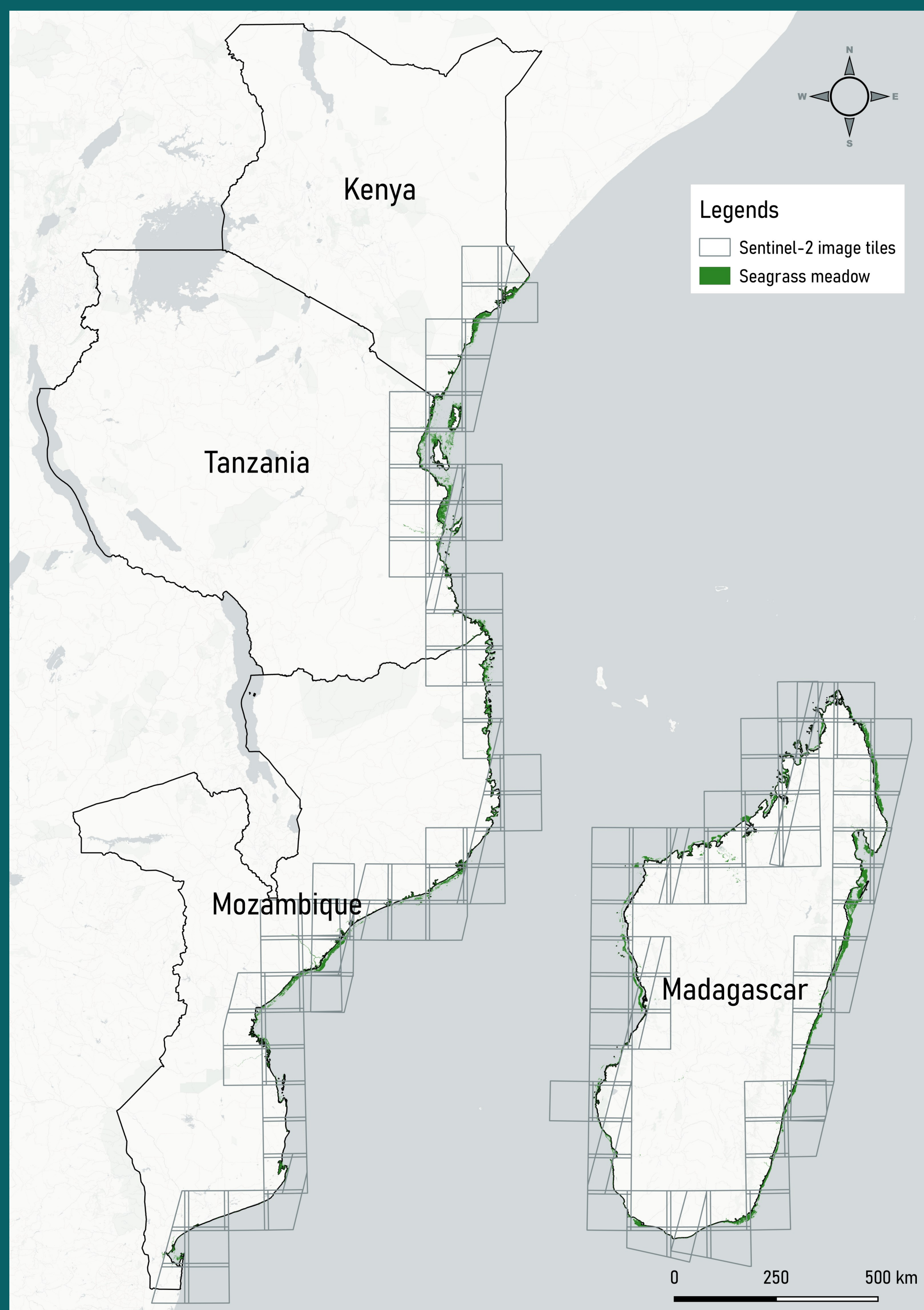
- Blue Carbon is carbon sequestration by coastal and oceanic ecosystems
- Seagrass meadows are considered one of the most efficient natural carbon sinks
- Earth Observation helps spatially explicit measures of seagrass extent in a big scale



## METHODS



## RESULTS



Scale	Seagrass extent (km <sup>2</sup> )	Seagrass Depth (m)	Tier 1 Assessment		Tier 2 Assessment	
			Carbon stock min (Mg)	Carbon stock max (Mg)	Carbon stock min (Mg)	Carbon stock max (Mg)
Kenya	679.6	2.1 - 9.2	679,590	56,338,011	7,995,546	29,253,529
Tanzania	548.2	2.1 - 23	548,160	45,442,464	313,104	3,416,955
Mozambique	1779.3	1.6 - 9.2	1,779,300	147,503,970	1,642,089	4,354,146
Madagascar	1309.3	1.06 - 8.52	1,309,340	108,544,286	1,208,370	3,204,101
East Africa	4316.4	1.06 - 23	4,316,390	357,828,731	11,159,109	40,228,732

- The overall accuracy of nationwide seagrass mapping ranges between 73–89%, with F1-score ranging between 44–70%
- The RMSE of bathymetry mapping is 1.64 m, which is less than 10% of the maximum modeled depth (23 m)
- Further comparison to the only other existing national seagrass carbon estimate reveals that the latter estimate falls closer to the minimum of our Tier 2 calculation

## CONCLUSIONS

- We developed and applied a cloud-native architecture to convert terabytes of Sentinel-2 datasets pixels into seagrass extent and carbon stocks in Kenya, Tanzania, Mozambique and Madagascar
- Integrating Earth Observation into Ecosystem Accounting is a promising approach for blue carbon ecosystems and holistic natural climate solutions to biodiversity, society and economy

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