



THE CARIBBEAN ENERGY CORRIDOR: Enabling an energy loop throughout the Americas

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MOTIVATION

The next 25 years will be crucial for the Greater Caribbean as it faces a rapidly shifting climate that threatens its **energy-water security**. At the same time, the growing global dependence on data-intensive technologies like AI is putting immense pressure on energy infrastructure, which still relies heavily on water for power generation. Addressing these challenges will require large-scale, long-term upgrades to the electrical grid.

As nations work to achieve ambitious net-zero emissions targets while driving economic growth, the competition for reliable and sustainable energy and water resources is heightening geopolitical tensions. This is especially evident in cross-border water management and energy trade, where securing access to these critical resources is becoming an increasingly contentious issue.

THE CARIBBEAN AT GLANCE*

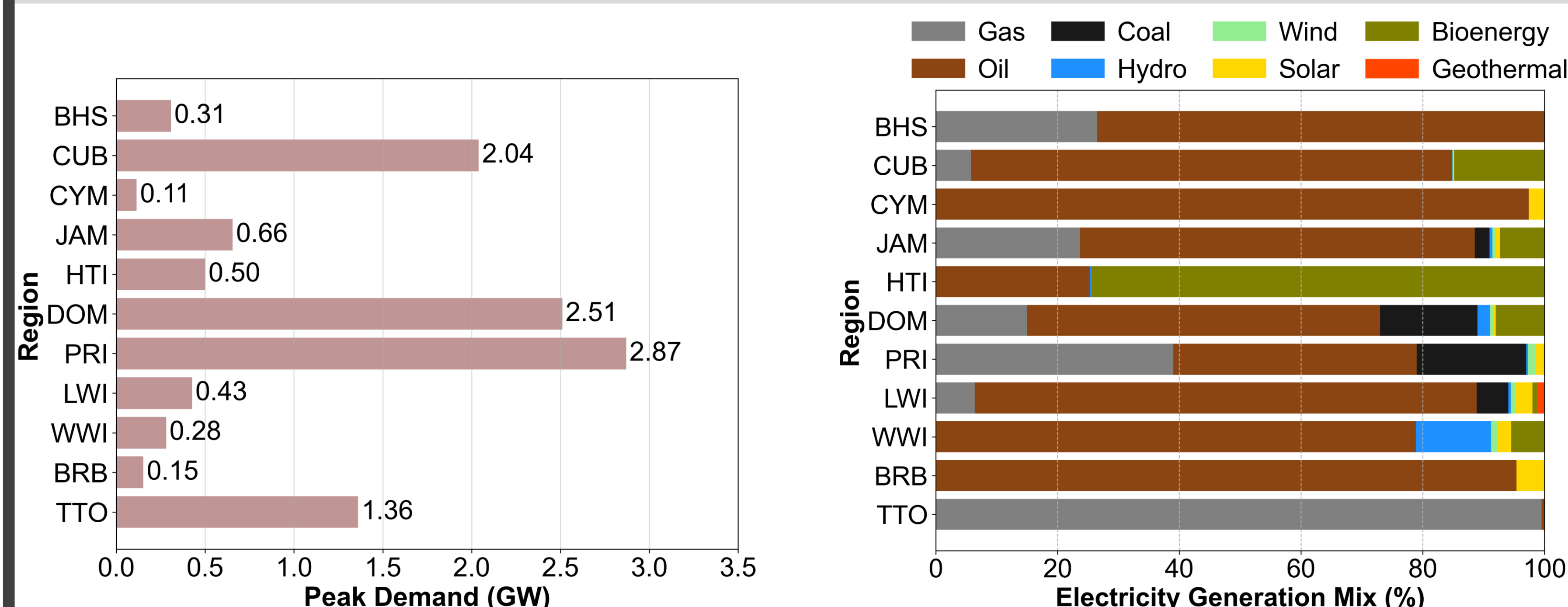


Fig 1a. Peak electricity demand.

Fig 1b. Installed energy mix.

Fig 1c. Energy vs. water.

Fig 1d. CO₂ emissions per country.

Country names are abbreviated according to their ISO 3166-1 alpha-3 codes.

BHS: Bahamas, CUB: Cuba, CYM: Cayman Islands, JAM: Jamaica, HTI: Haiti, DOM: Dominican Republic, PRI: Puerto Rico, LWI: Leeward Islands, WWI: Windward Islands, BRB: Barbados, TTO: Trinidad & Tobago.

OUR PROPOSAL – THE CEC

Unlike most of the Americas, Europe, and Asia...

... **the Caribbean remains the most populated region in the Western Hemisphere without an interconnected electrical grid, despite its vast wind and solar energy potential.**

A regional network would enable surplus energy transmission between islands, enhancing resilience during shortages and fostering economic integration through a shared energy market. This, in turn, would strengthen both energy and water security across the region.

We call this vision **The Caribbean Energy Corridor (CEC)**—a super-grid spanning the Caribbean islands, facilitating clean and resilient energy exchange while also connecting to North America (via Miami and the U.S.-Mexico border) and Latin America (via Colombia and SIEPAC).

Annual energy: **132 TWh**

Annual savings: **Water 602 billion liters, CO₂ 132 Mt**

Initial investment: **\$200 billion**

LCOE: **\$0.11/kWh**

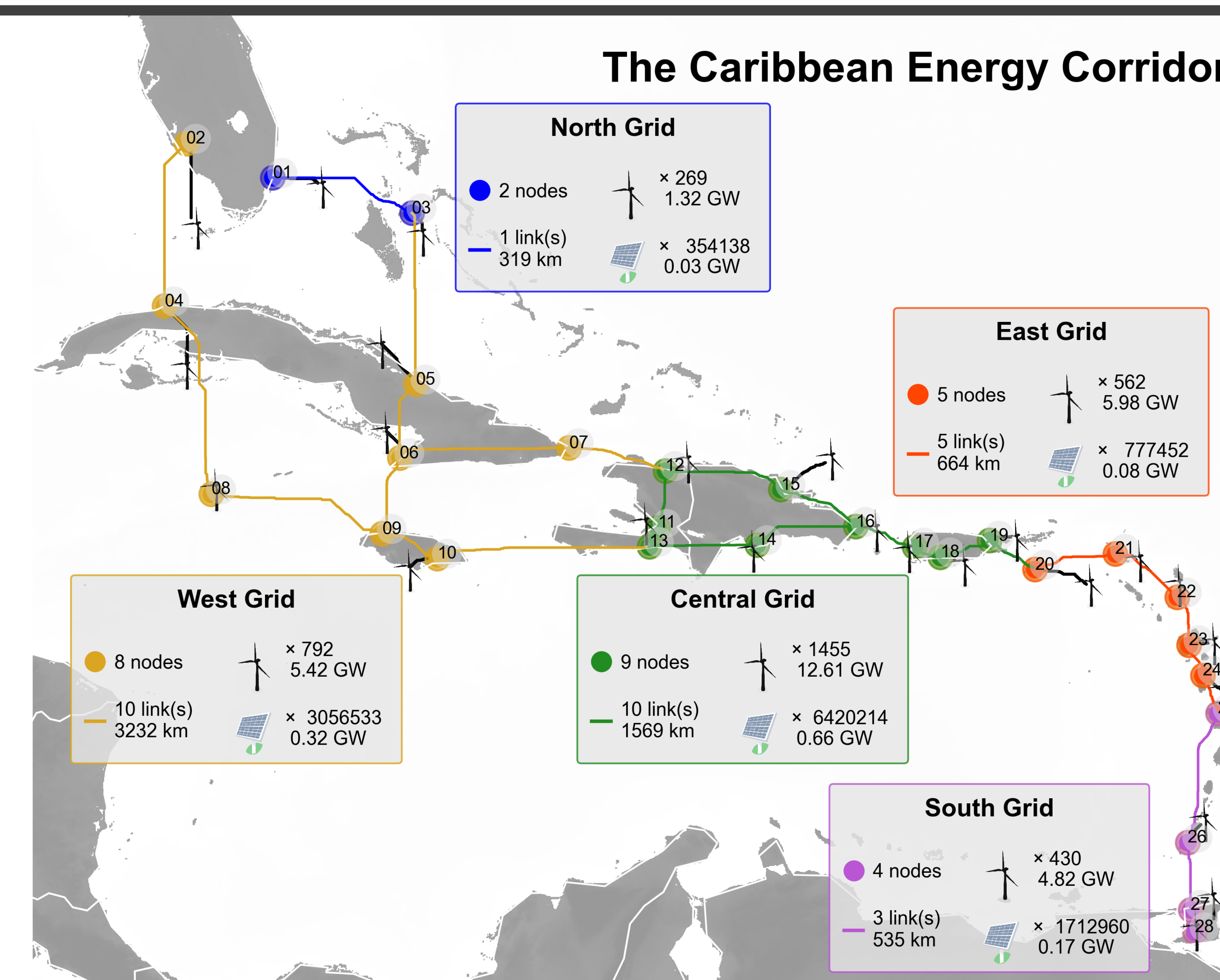


Fig 2. Visualization of the five primary grids forming the CEC.

METHODS – A DATA DRIVEN APPROACH

Spatiotemporal resource assessment Techno-economic potential analysis Underwater transmission path optimization

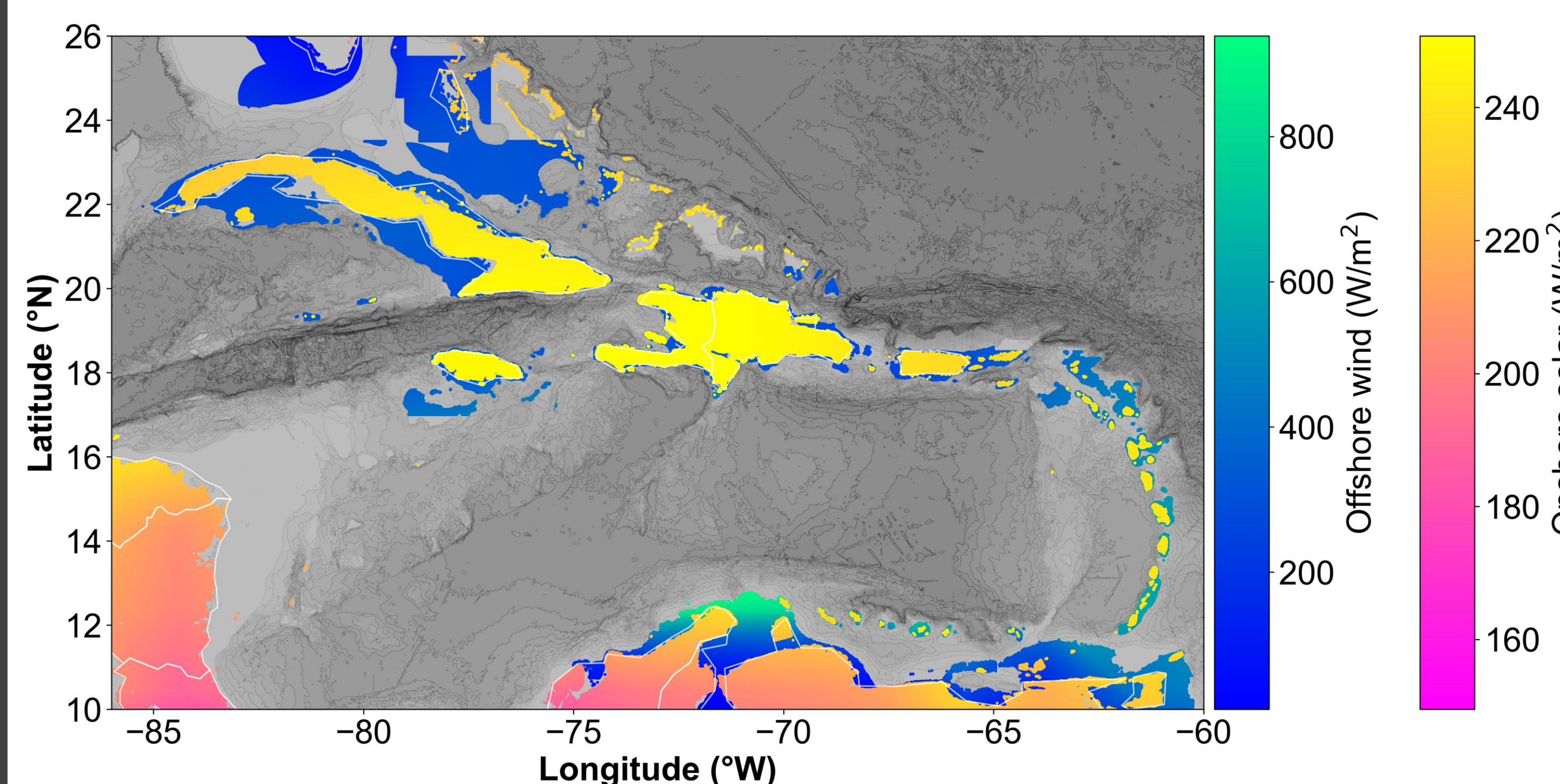


Fig 2. Power densities for offshore wind and solar in the Caribbean under today's technological constraints.

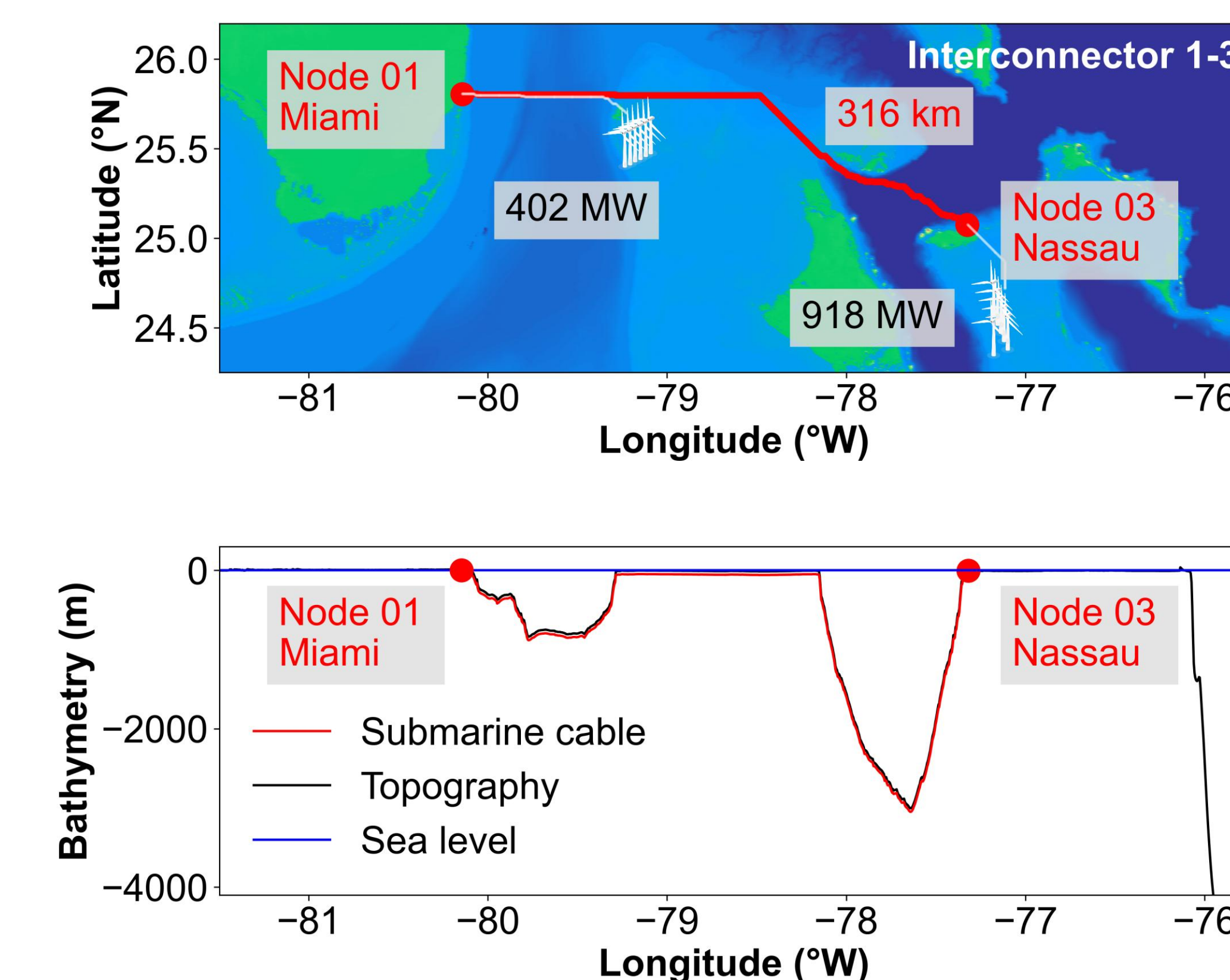


Fig 3. Sample proposed interconnector. Bathymetry changes along transmission route plotted below.