



# Resilience Data Base



UNITED NATIONS



José Luis Olarte

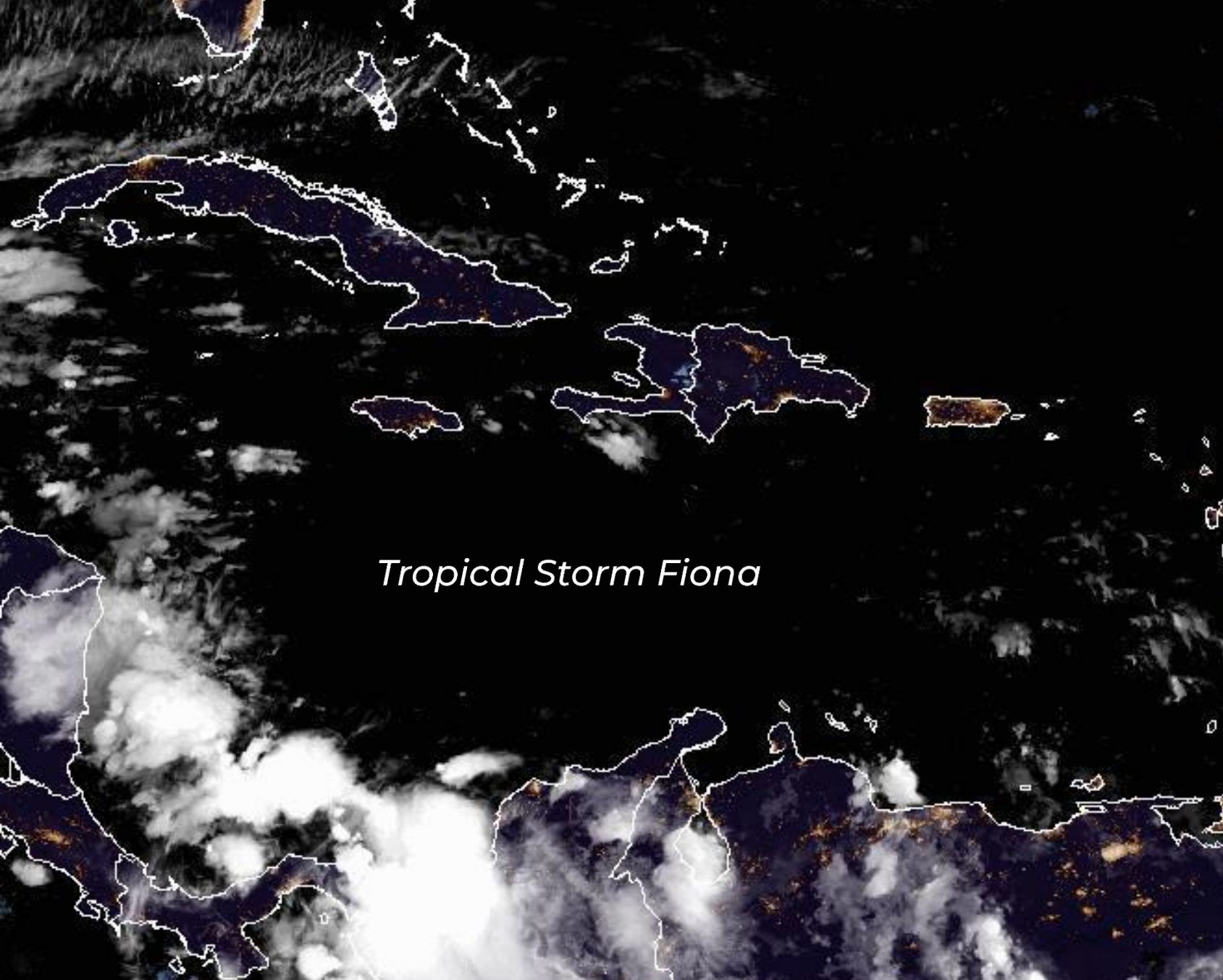
ECLAC. Statistics Division.  
Climate Change and Environment Statistics



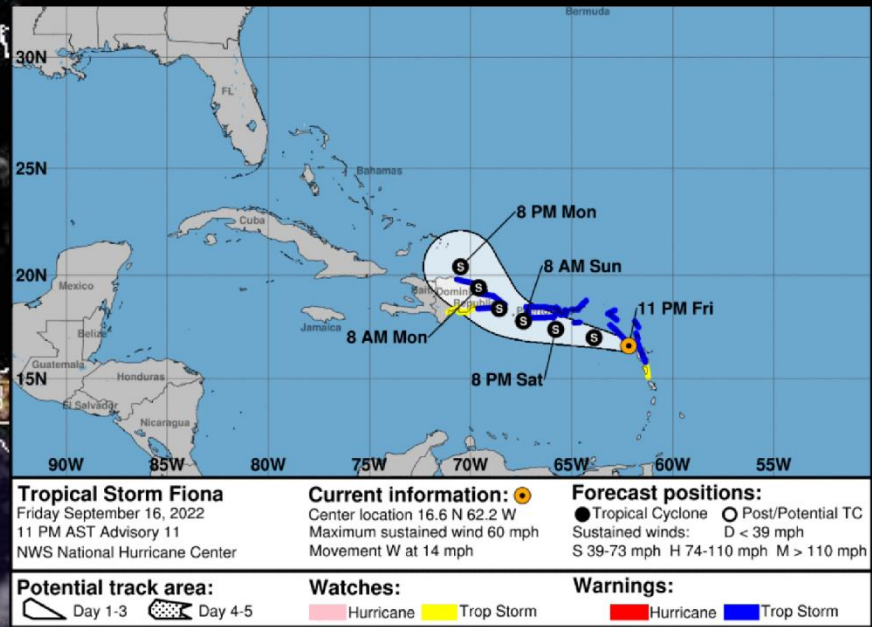
# Objective

Show the ECLAC Resilience Database possibilities, through a disaster risk analysis case due to a hurricane presence in Dominican Republic and Puerto Rico.

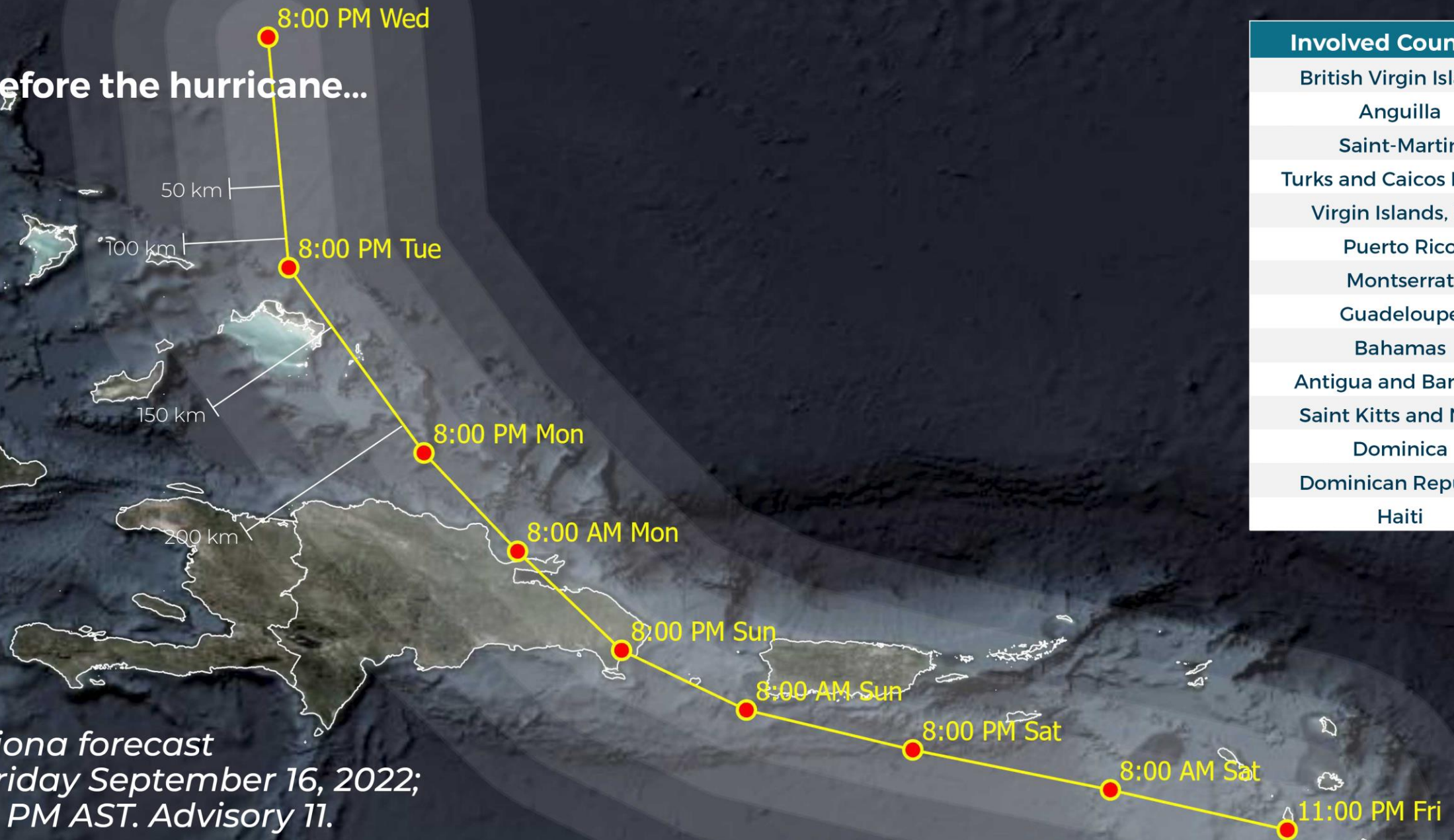




*Tropical Storm Fiona*

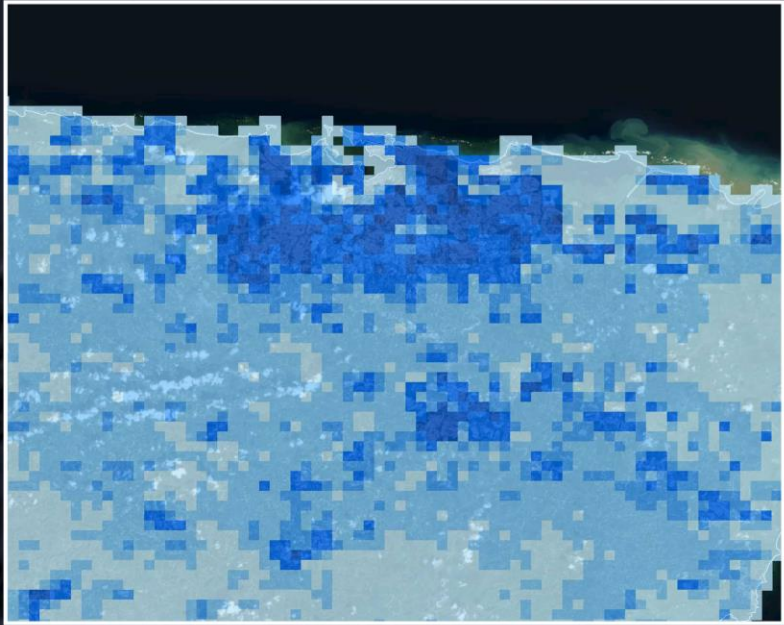
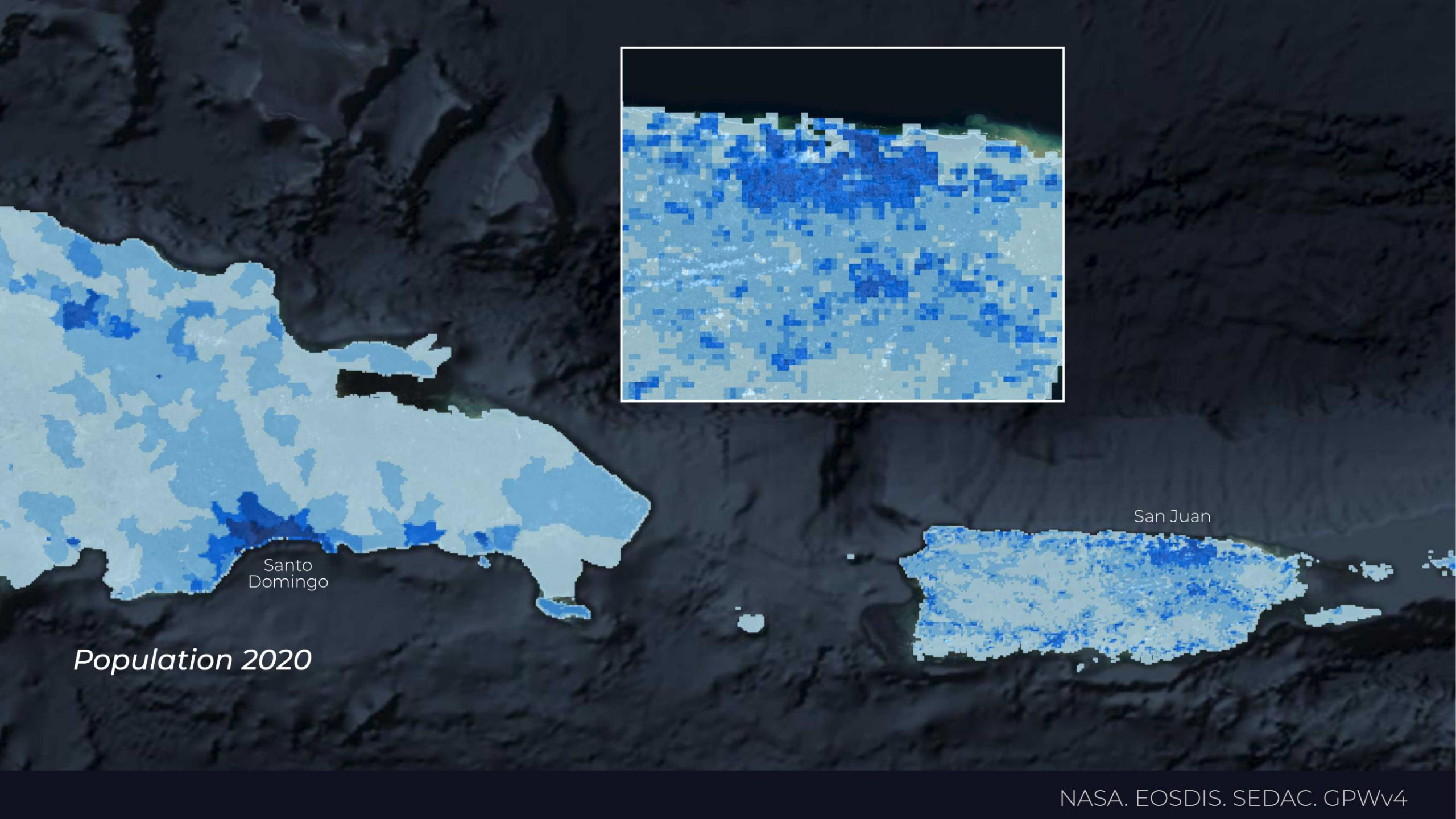


# Before the hurricane...



*Fiona forecast  
Friday September 16, 2022;  
11 PM AST. Advisory 11.*

Involved Countries
British Virgin Islands
Anguilla
Saint-Martin
Turks and Caicos Islands
Virgin Islands, U.S.
Puerto Rico
Montserrat
Guadeloupe
Bahamas
Antigua and Barbuda
Saint Kitts and Nevis
Dominica
Dominican Republic
Haiti



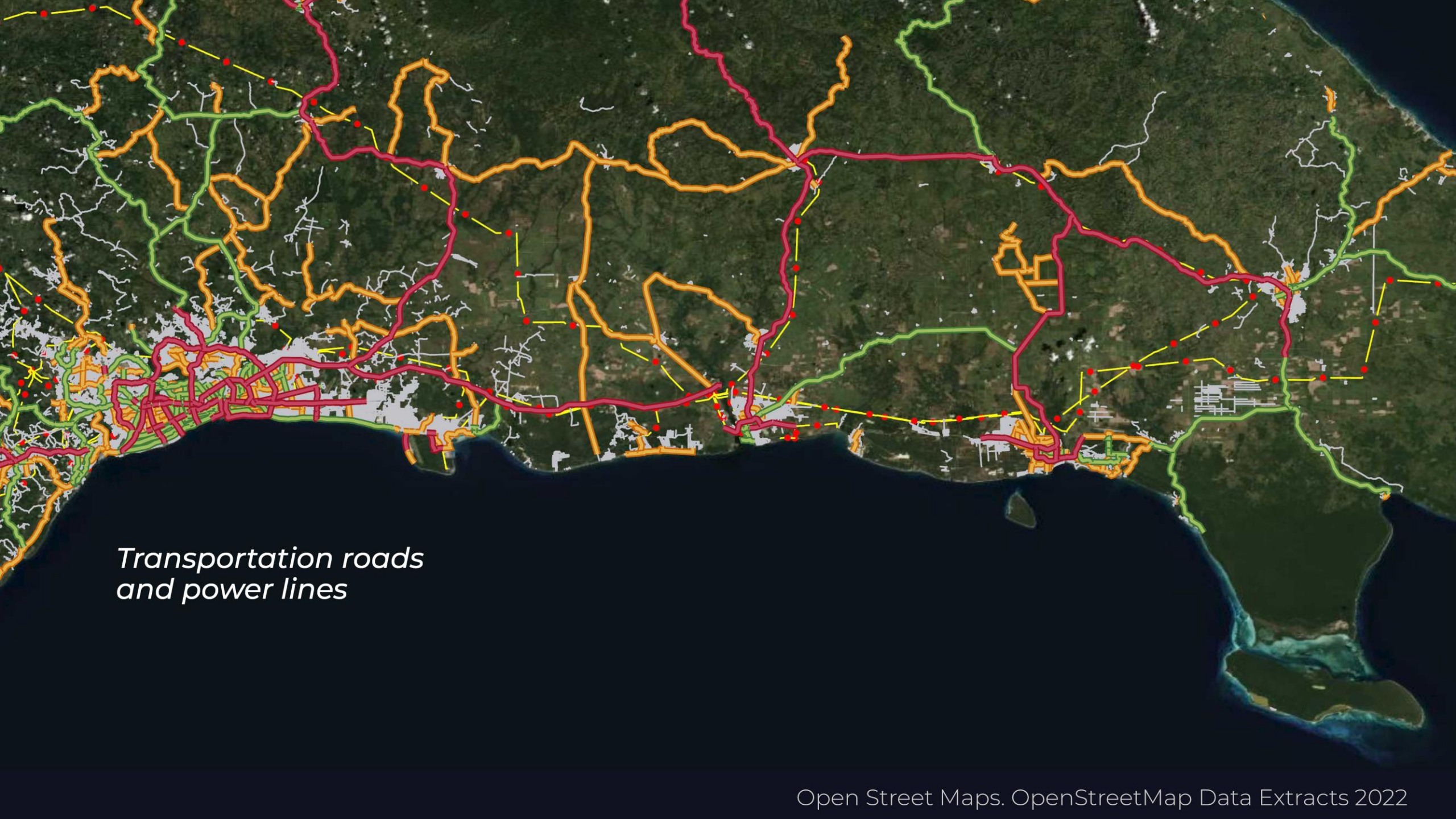
Santo Domingo

San Juan

*Population 2020*



*Land use / cover 2020*



*Transportation roads  
and power lines*

# Fiona hurricane potential damages

	50 km			100 km			150 km			200 km		
	Total	Dominican Republic	Puerto Rico	Total	Dominican Republic	Puerto Rico	Total	Dominican Republic	Puerto Rico	Total	Dominican Republic	Puerto Rico
<b>Countries</b>	7			9			13			14		
<b>Cities (&gt;=100'000 inhab.)</b>	11	9	1	27	20	5	38	28	8	46	33	8
<b>Towns (10'000 - 100'000 inhab.)</b>	19	2	11	124	13	63	159	23	71	195	37	71
<b>Villages (1'000 - 10'000 inhab.)</b>	83	63		232	111		313	149		486	168	
<b>Hamlets (&lt;1'000 inhab.)</b>	341	312	25	984	599	82	1 382	857	89	1 739	929	89
<b>Population count 2020</b>	2 527 686	1 985 010	514 871	12 334 442	8 612 974	3 073 910	15 552 979	11 040 384	3 663 563	17 470 524	11 678 345	3 663 563
<b>Cultivated land (km²)</b>	2 780	2 516	262	6 457	5 617	508	7 922	6 985	573	9 343	7 998	573
<b>Forest (km²)</b>	9 007	7 709	977	21 391	13 675	6 186	30 996	22 161	6 409	38 572	26 999	6 409
<b>Grassland (km²)</b>	1 643	1 465	99	3 552	2 345	908	4 741	3 374	946	6 758	4 452	946
<b>Shrubland (km²)</b>	22			109			314	164		462	292	
<b>Wetland (km²)</b>	616	167	48	761	187	93	947	293	132	1 061	322	132
<b>Water bodies (km²)</b>	88	36	10	203	92	43	284	139	55	329	160	55
<b>Artificial surfaces (km²)</b>	361	195	135	1 792	753	690	2 208	926	851	2 341	971	851
<b>Bare land (km²)</b>	56	7		92	24	11	129	53	13	159	77	13
<b>Highway Primary (km)</b>	625	544	71	2 654	1 626	432	3 417	1 980	539	3 884	2 252	539
<b>Highway Secondary (km)</b>	656	371		3 553	1 300	1 680	4 218	1 695	1 771	4 666	1 850	1 771
<b>Highway Tertiary (km)</b>	1 623	753	815	7 737	1 921	5 206	9 069	2 606	5 633	9 708	2 900	5 633



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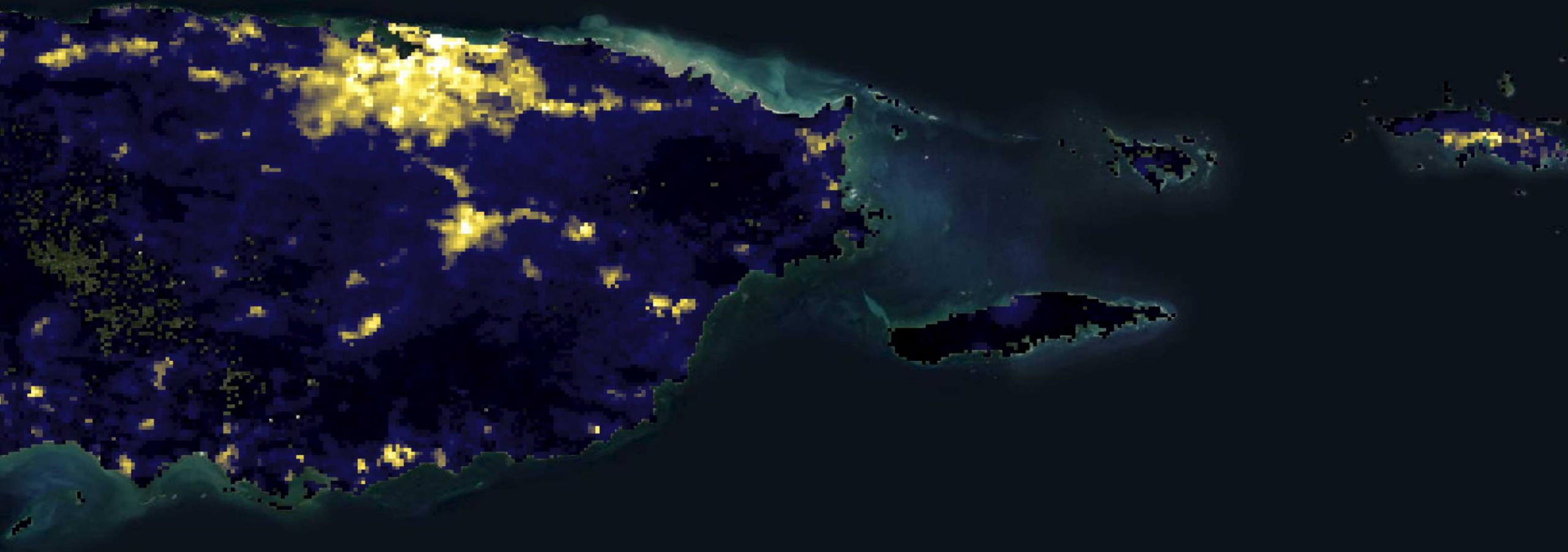
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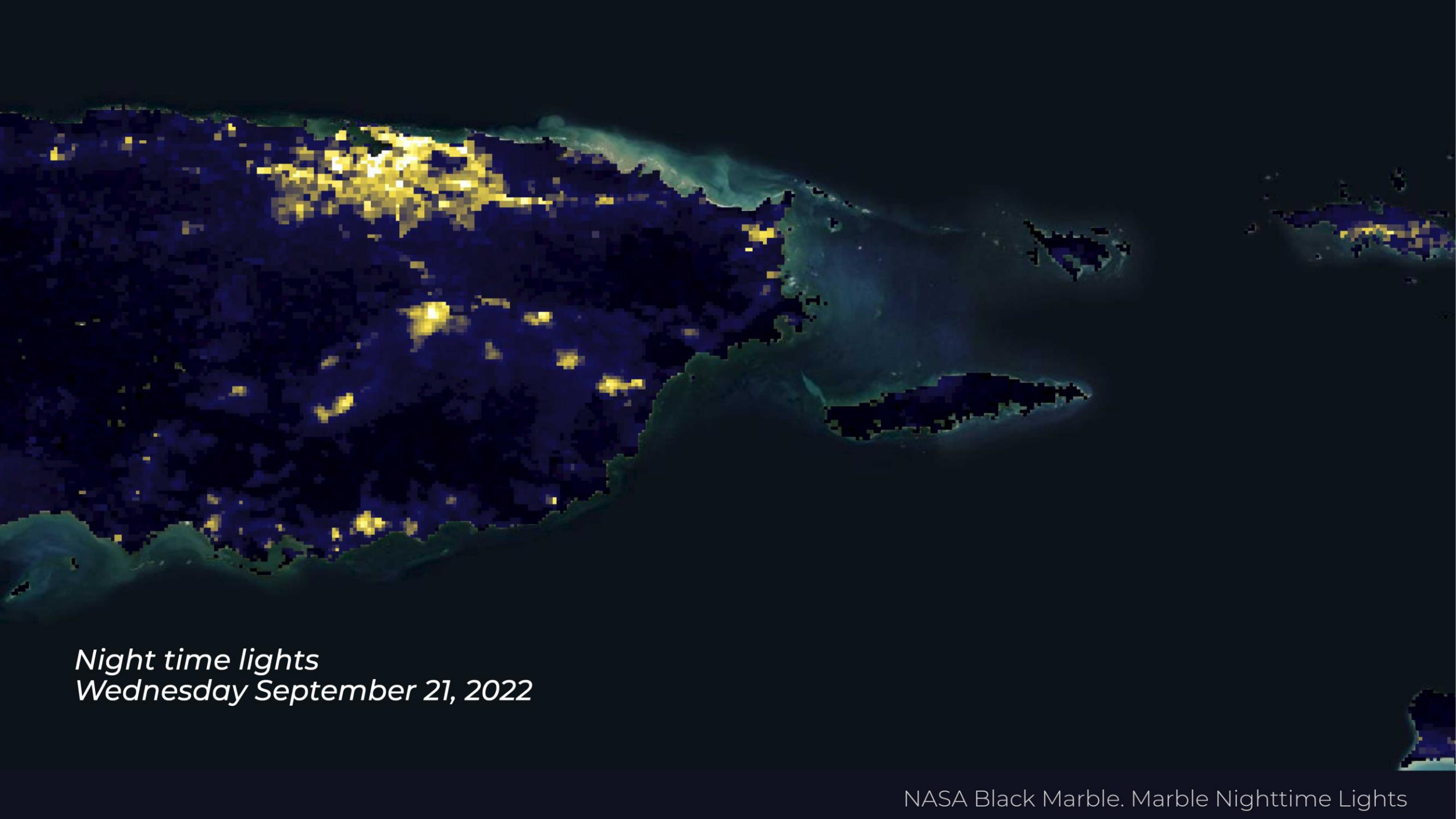
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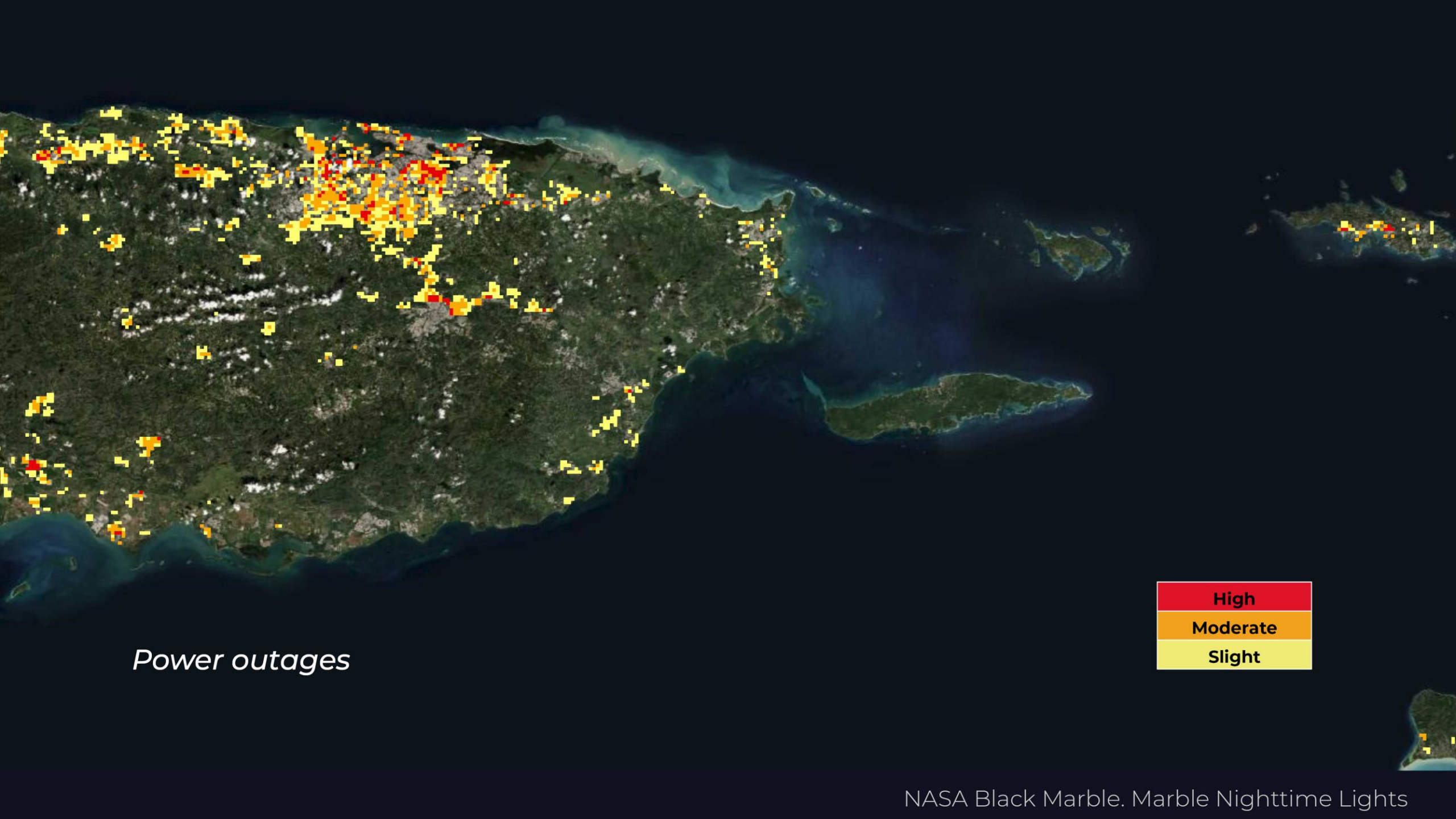
After the hurricane...



*Night time lights*  
*Wednesday September 14, 2022*

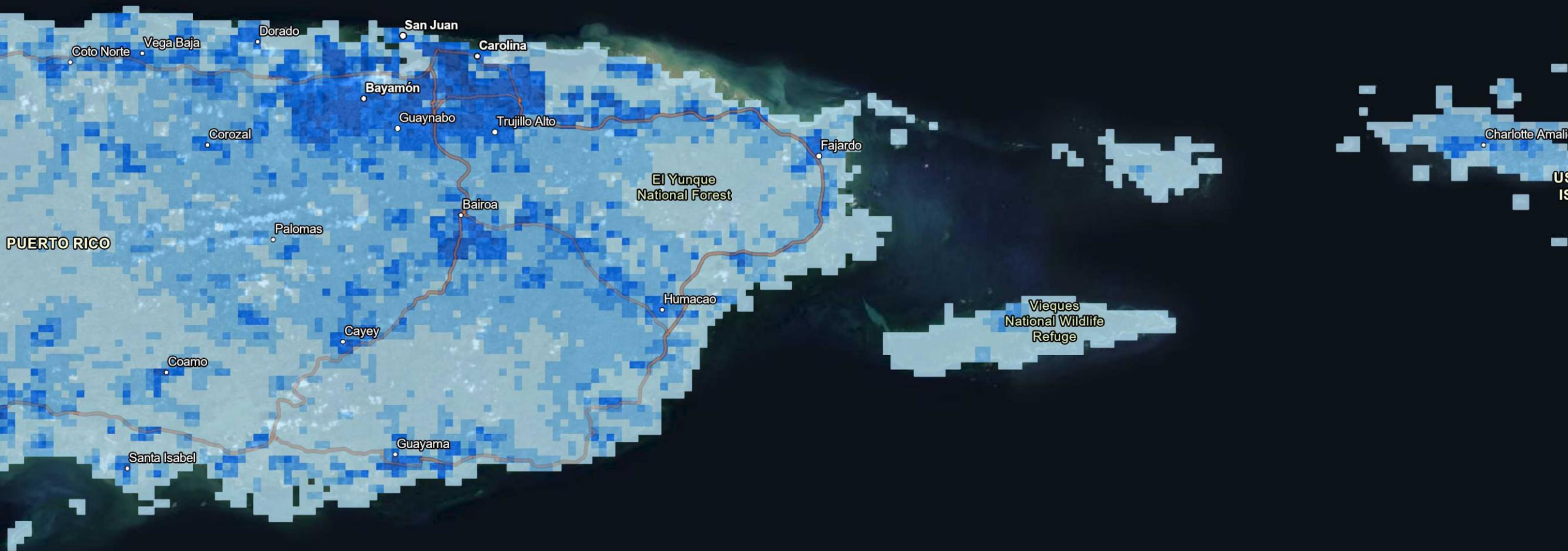


*Night time lights  
Wednesday September 21, 2022*



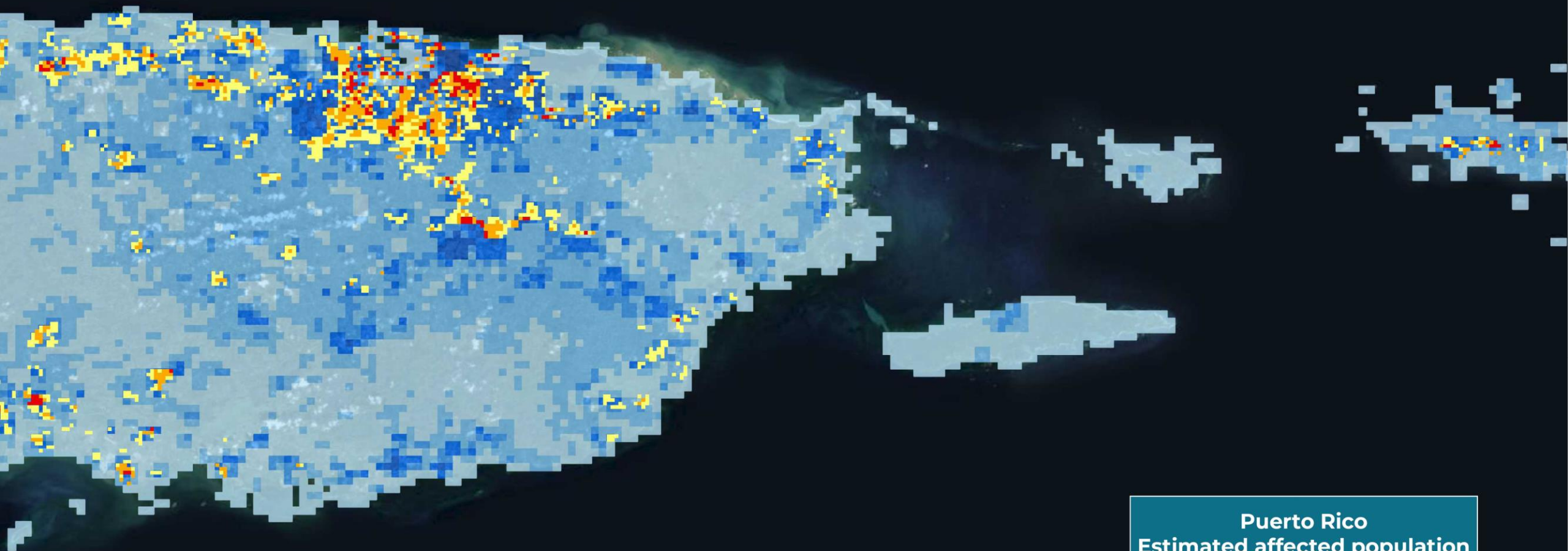
*Power outages*



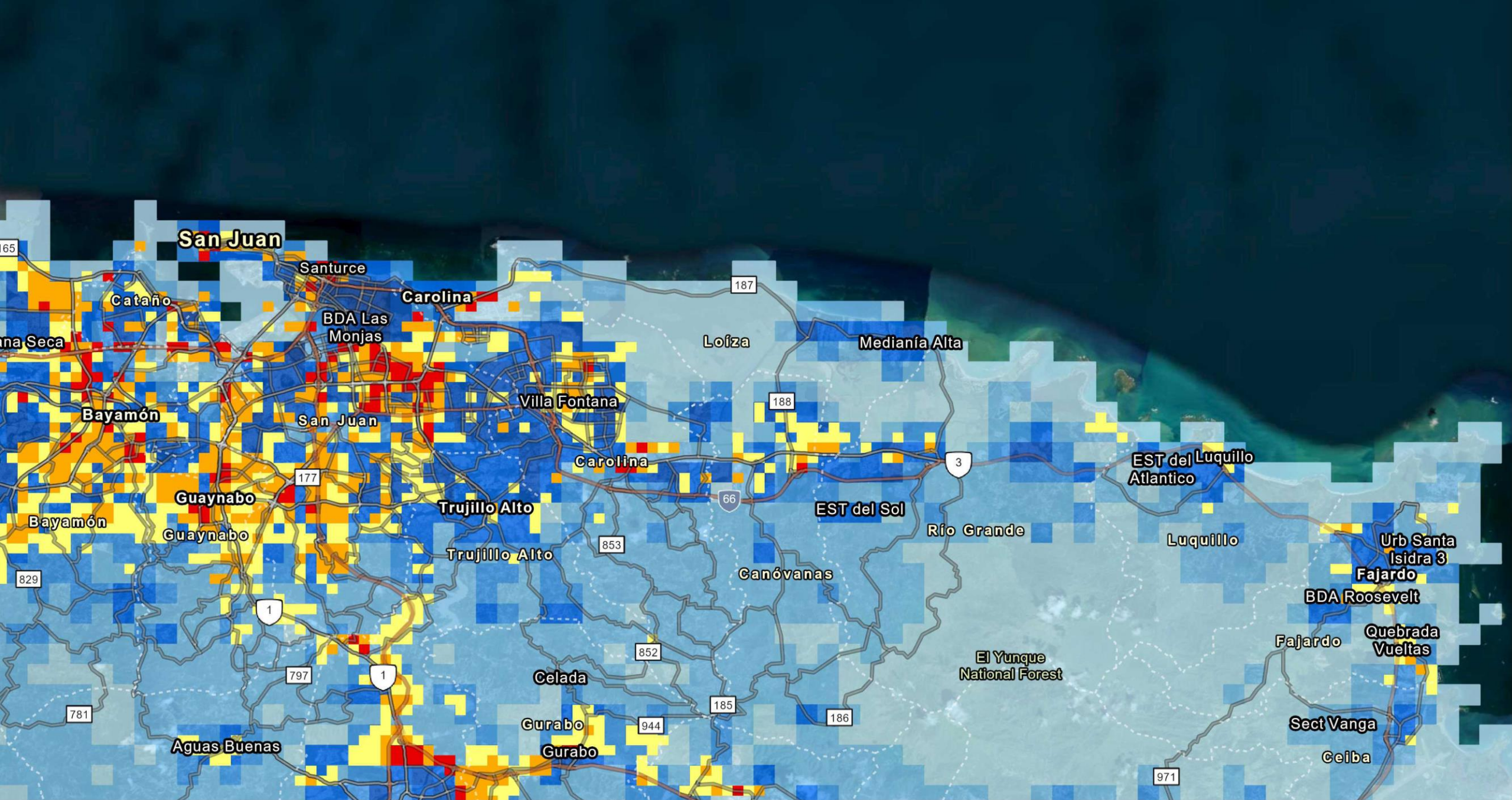


Population 2020



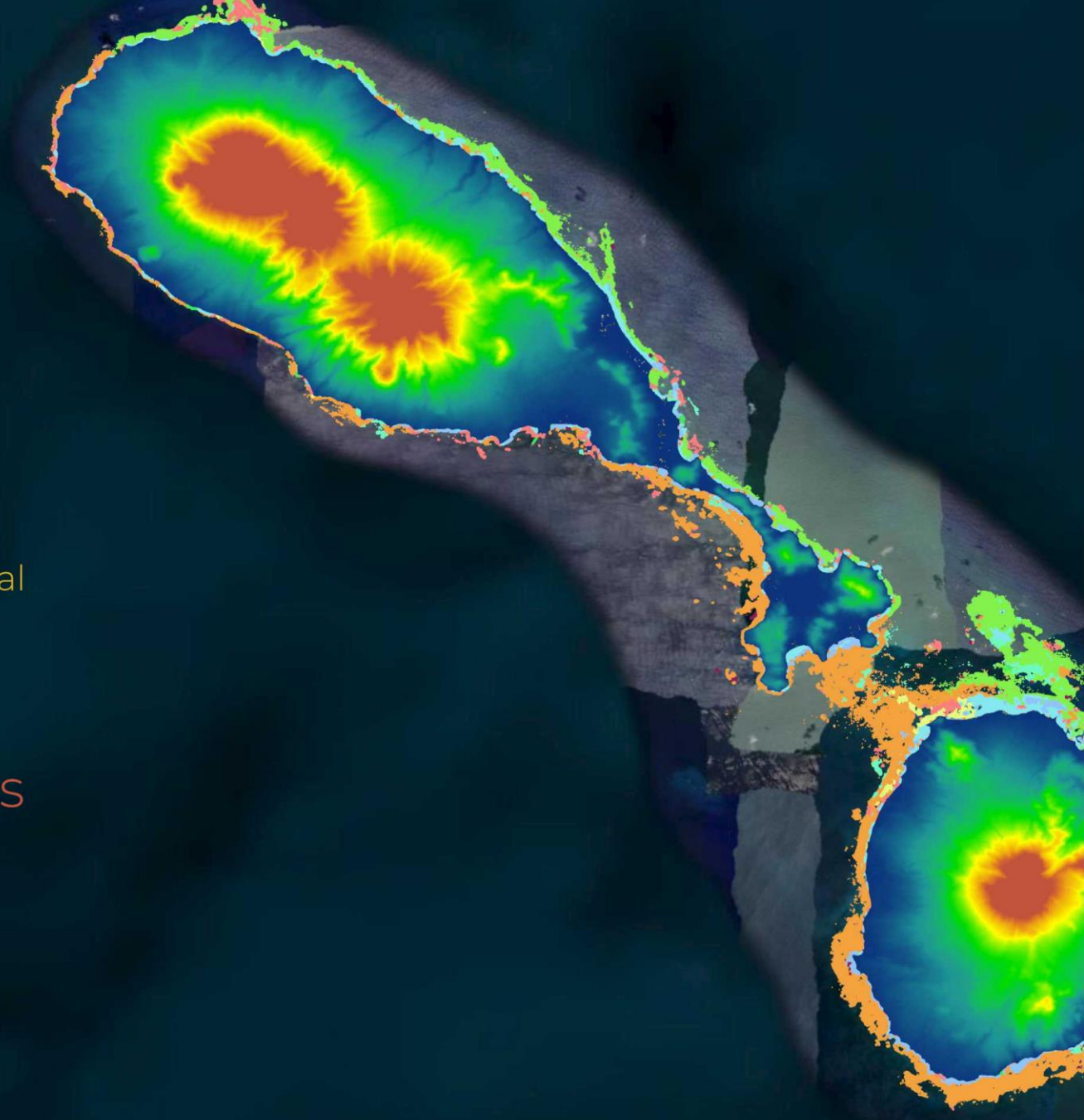


Puerto Rico Estimated affected population	
Highly	697 261
Moderately	291 770
Slightly	230 038
	1 219 068



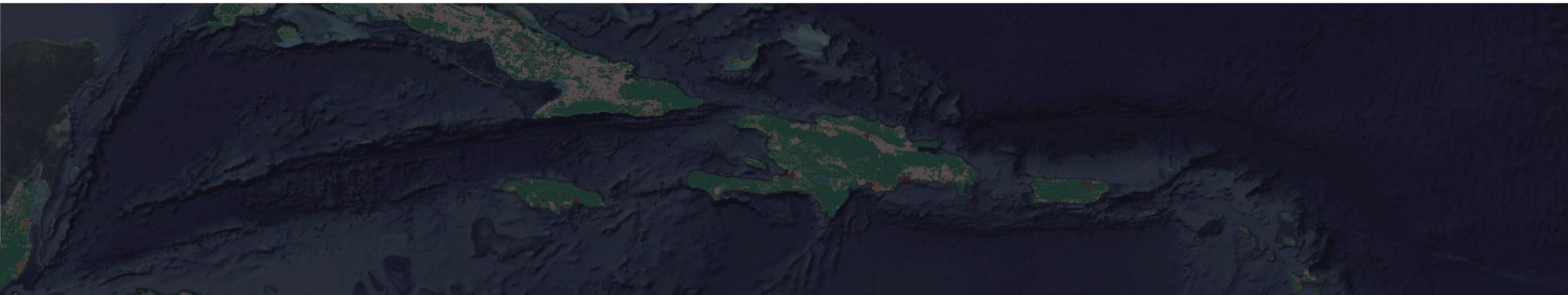
NASA Black Marble. Marble Nighttime Lights - NASA. EOSDIS. SEDAC. GPWv4

Open Street Maps  
**NASA Black Marble**  
**NASA SEDAC GPW**  
Dynamic World  
**Global Land Cover**  
**USGS SRTM**  
World Meteorological Organization  
**GeoNames**  
USGS General geologic map of the world  
Google Earth Engine  
**SEPAL**  
**Allen Coral Atlas**  
Copernicus  
UNdata



# Conclusions

- Geography and statistics integration
- Social, economic and environmental dimensions
- Alternative non-official data sources
- Earth observations and data science techniques
- Data governance





Thanks...



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