

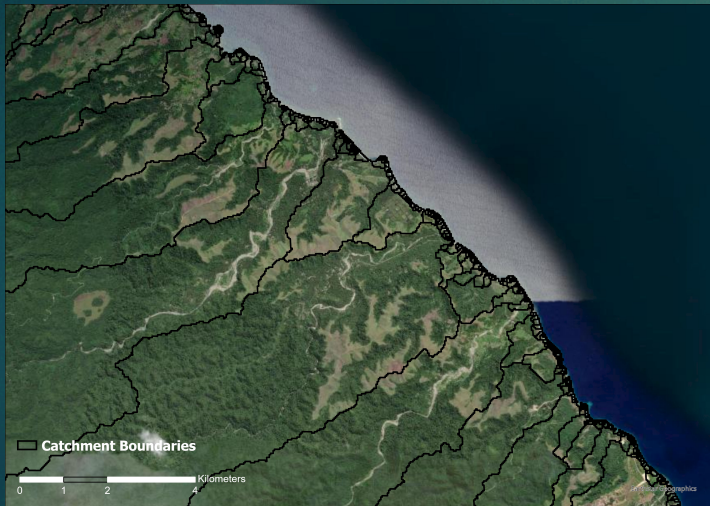
An aerial photograph of a coastal town in the Solomon Islands. The town is built on a green, hilly peninsula with a prominent runway. The surrounding water is a deep blue-green, showing a clear reef system with varying depths and textures. The text is overlaid on the upper portion of the image.

Development and Trialing of a Procedure for the Identification of Priority Ridge to Reef Sites in the Solomon Islands

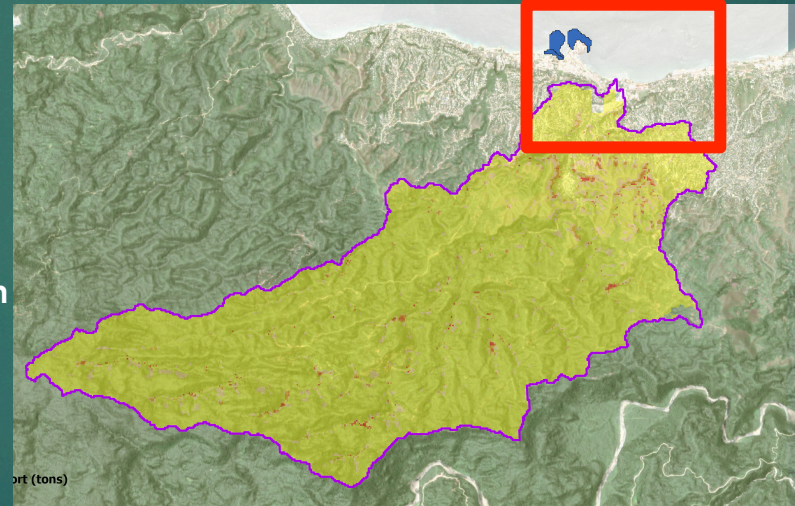
BRADLEY EICHELBERGER
BAE-ECOSPATIAL
CONSULTANT FOR SPC

Process Overview

Soil, Climate, and
Topographical Data
(InVEST SDR Model)

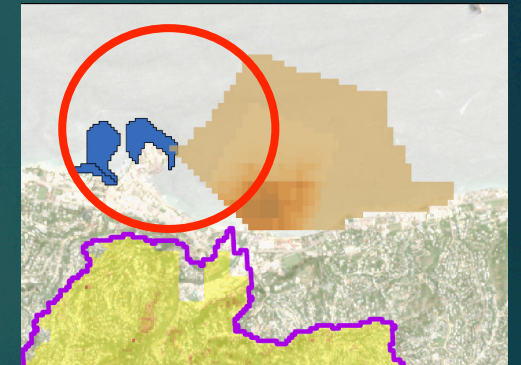


Catchment Outlet
Land Sea Linkage



Sediment
Export
And
Deposition

Sediment Plume Model
Ocean Current, Depth, Time



Sediment
Load
At
Outlet

Spatial Prioritization for Interventions or Future Protection

~2,000 catchments and sub-catchments



Total Sediment Export (tons)

-  0 - 10,000
-  10,000 - 20,000
-  20,000 - 40,000
-  40,000 - 50,000
-  50,000 +

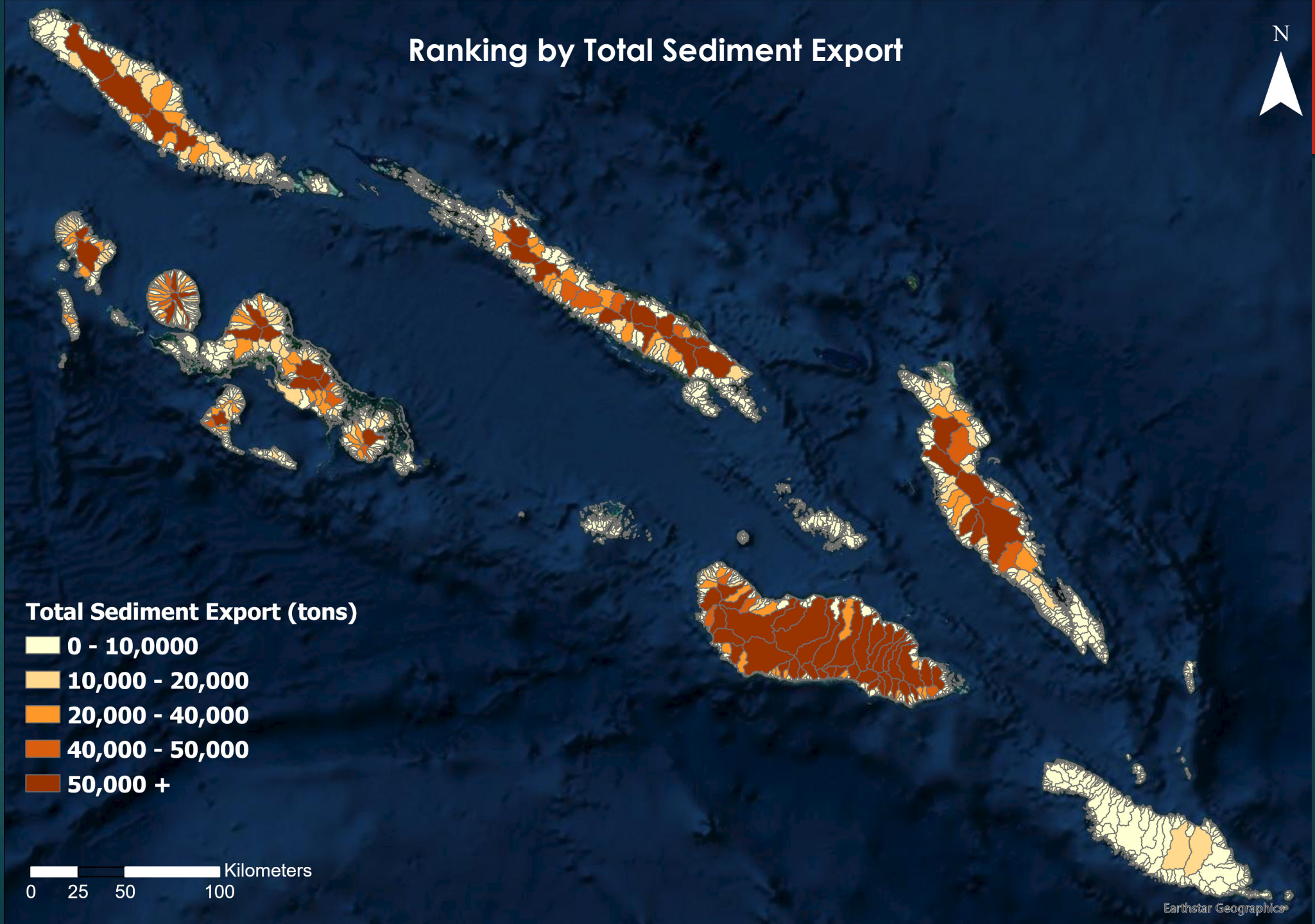


Ranking by Total Sediment Export



Total Sediment Export (tons)

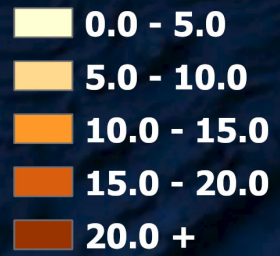
- 0 - 10,000
- 10,000 - 20,000
- 20,000 - 40,000
- 40,000 - 50,000
- 50,000 +



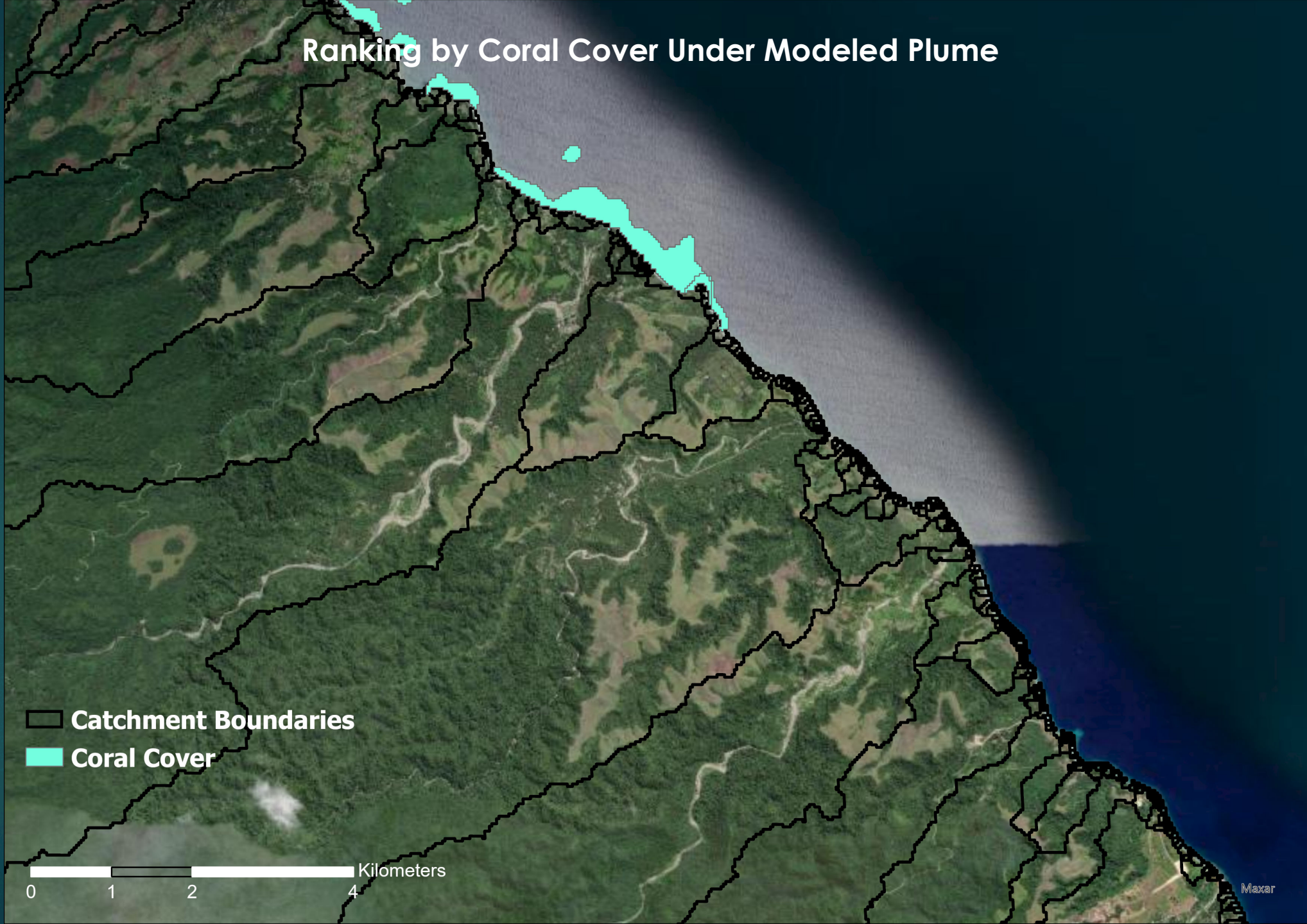
Ranking by Sediment Export/Hectare



Sediment Export (ton/ha)



Ranking by Coral Cover Under Modeled Plume

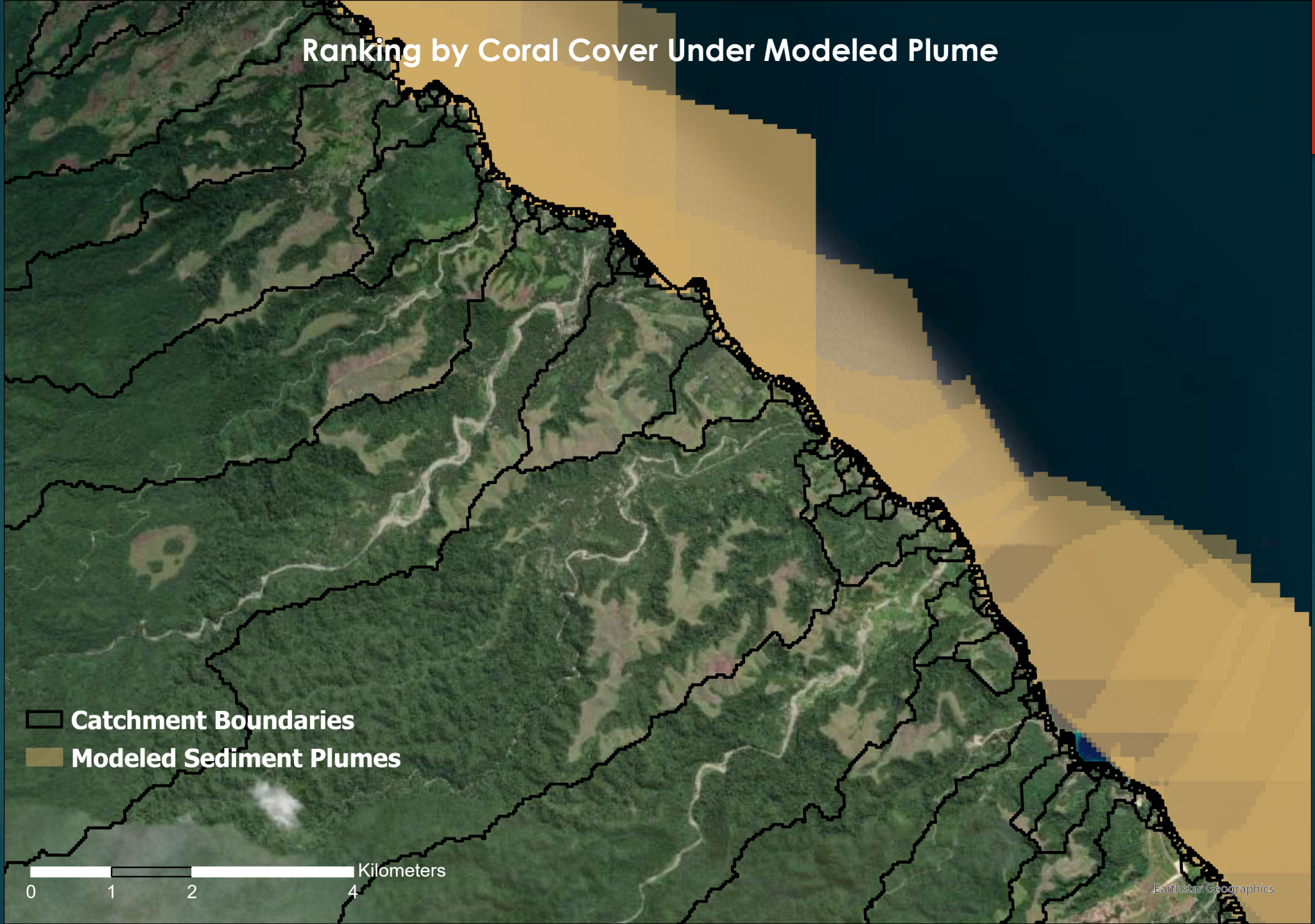


- Catchment Boundaries
- Coral Cover

0 1 2 4 Kilometers

Maxar

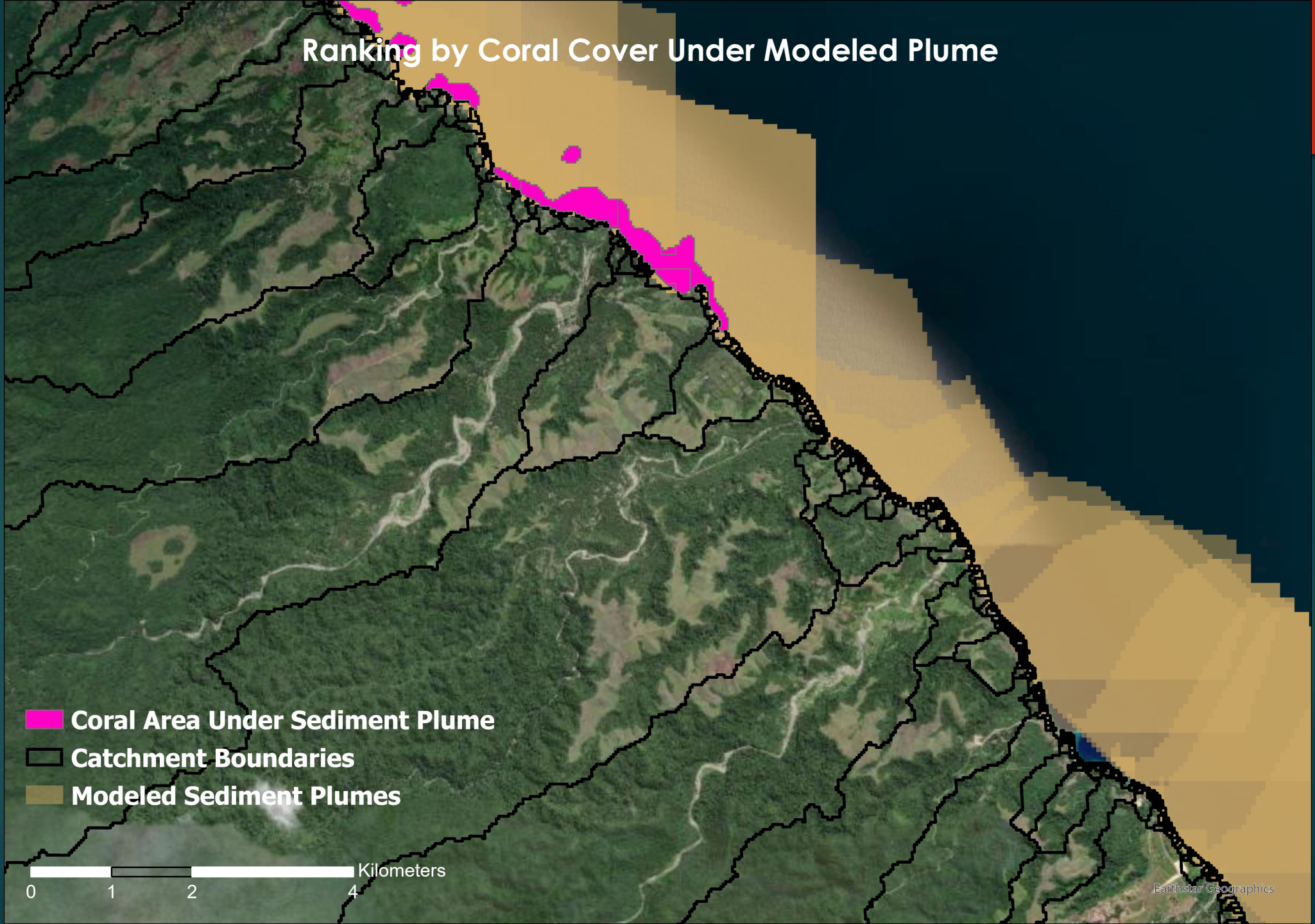
Ranking by Coral Cover Under Modeled Plume



- Catchment Boundaries
- Modeled Sediment Plumes

0 1 2 4 Kilometers

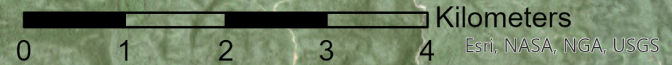
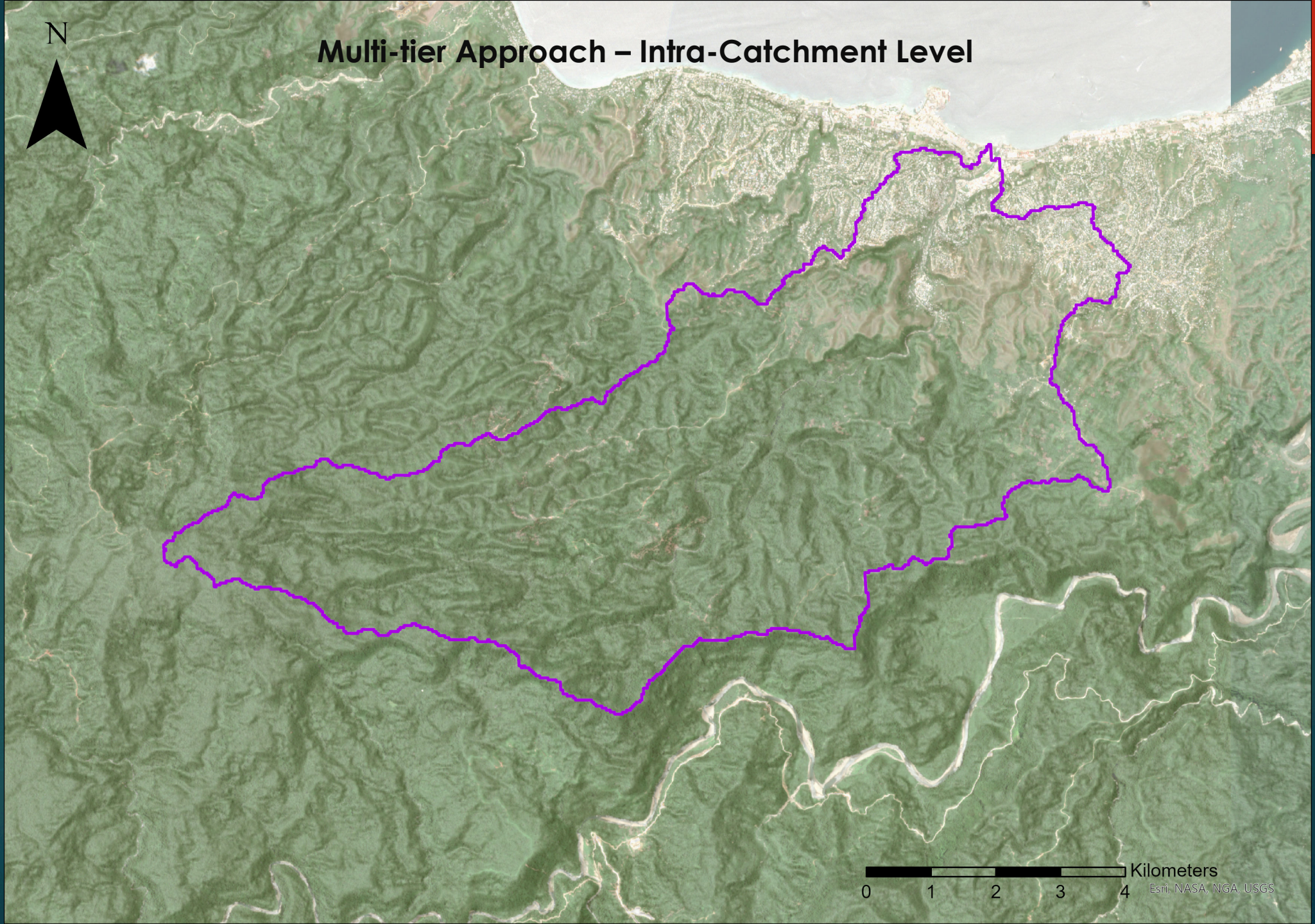
Ranking by Coral Cover Under Modeled Plume

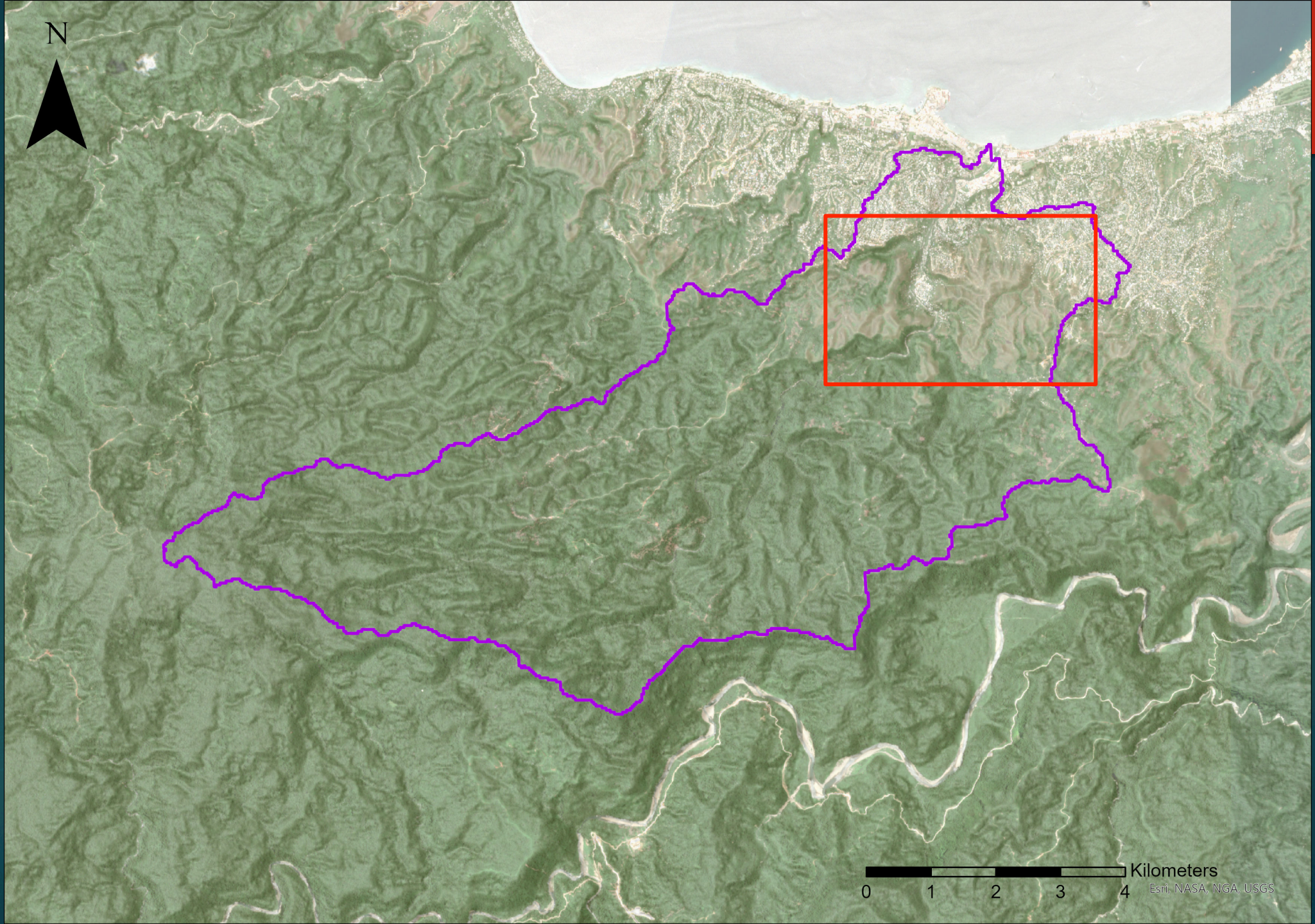


- Coral Area Under Sediment Plume**
- Catchment Boundaries**
- Modeled Sediment Plumes**

0 1 2 4 Kilometers

Multi-tier Approach – Intra-Catchment Level

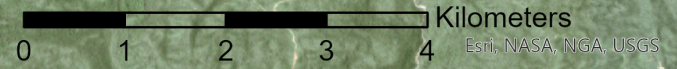
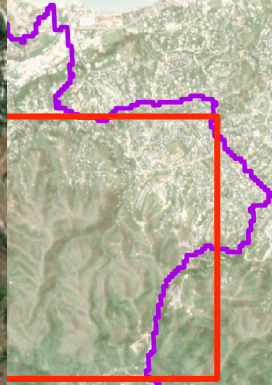


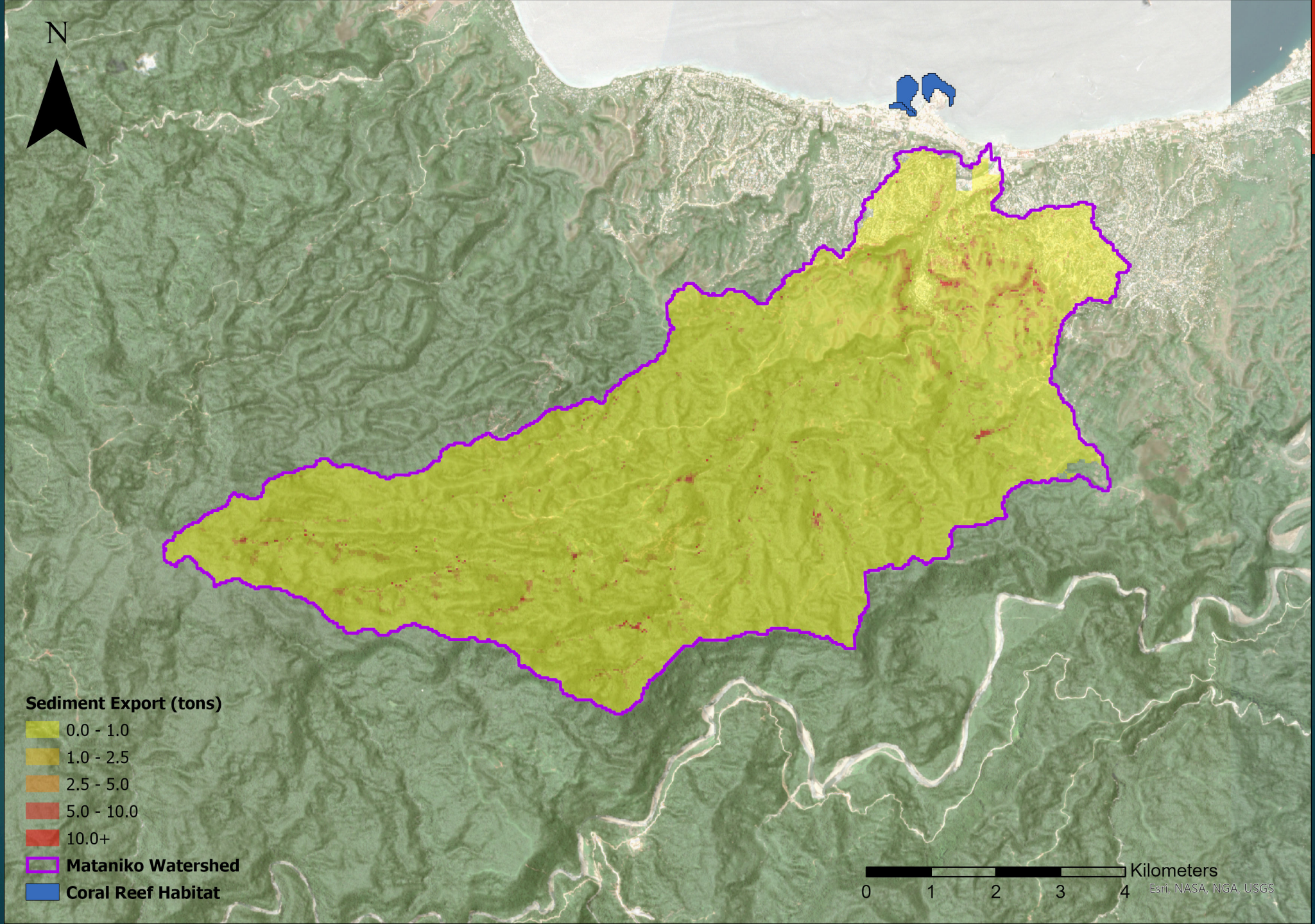


N





0 1 2 3 4 Kilometers
Esri, NASA, NGA, USGS



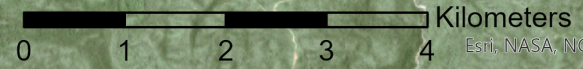


Sediment Export (tons)

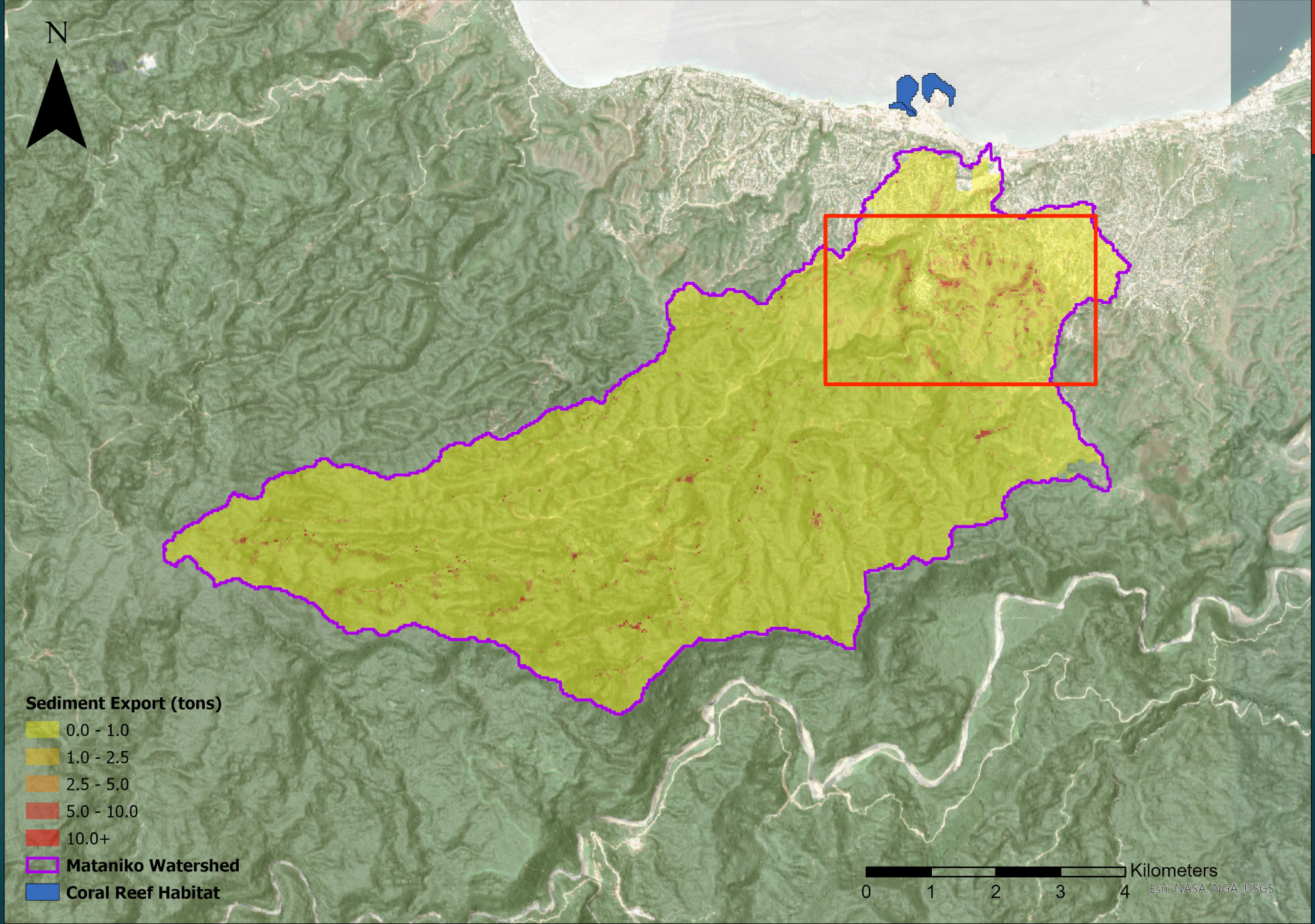
-  0.0 - 1.0
-  1.0 - 2.5
-  2.5 - 5.0
-  5.0 - 10.0
-  10.0+

 **Mataniko Watershed**


 **Coral Reef Habitat**




Esri, NASA, NGA, USGS

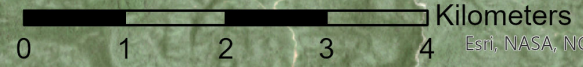


Sediment Export (tons)

-  0.0 - 1.0
-  1.0 - 2.5
-  2.5 - 5.0
-  5.0 - 10.0
-  10.0+

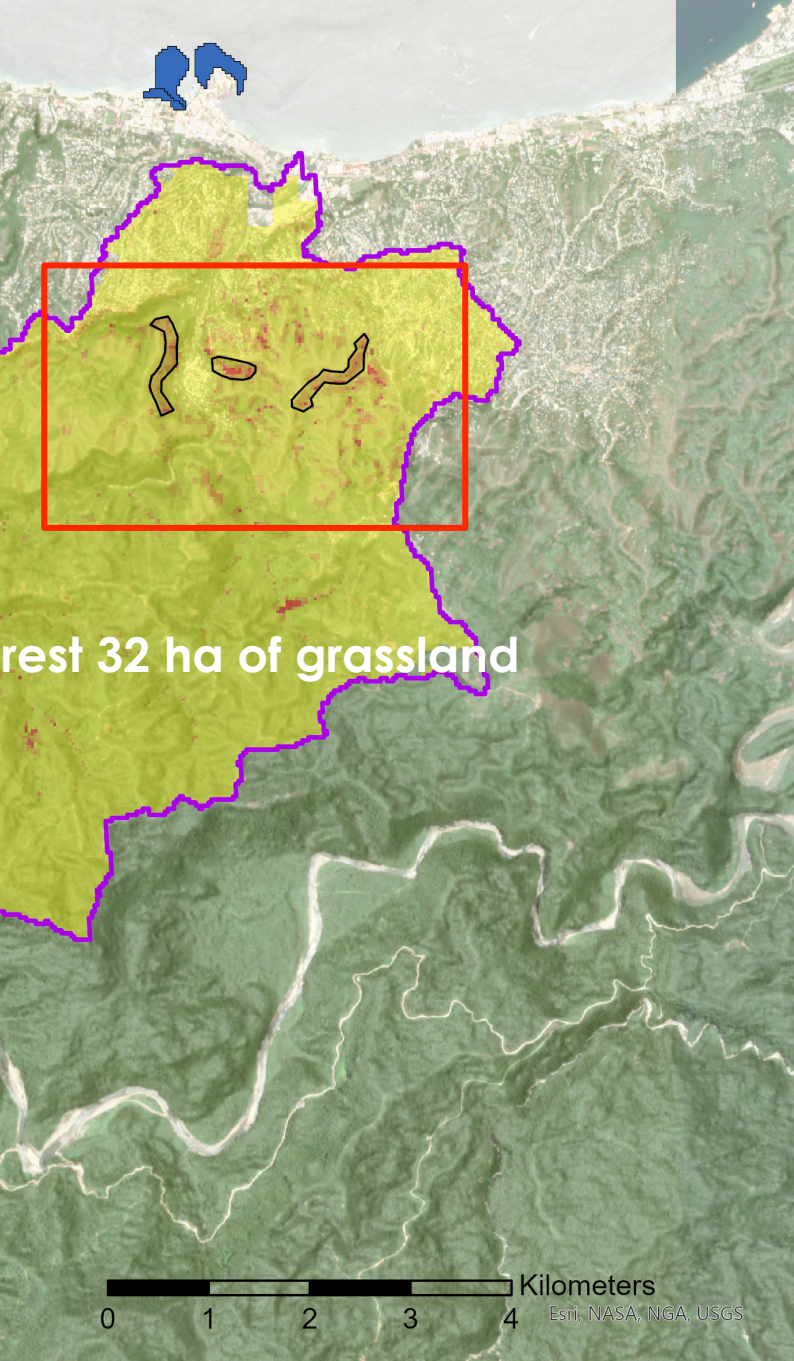
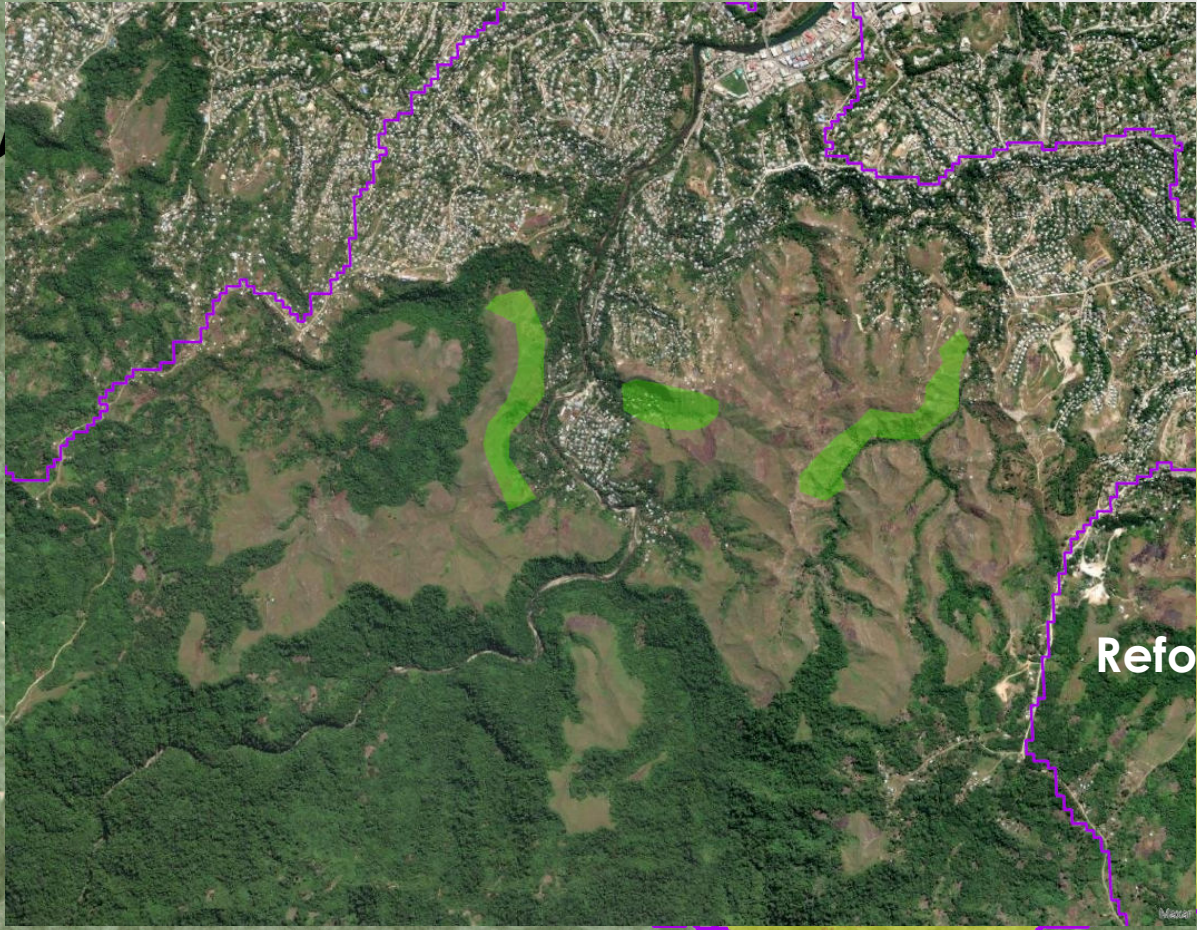
 **Mataniko Watershed**

 **Coral Reef Habitat**



Esri, NASA, NGA, USGS

N

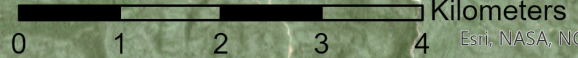


Reforest 32 ha of grassland

Sediment Export (tons)

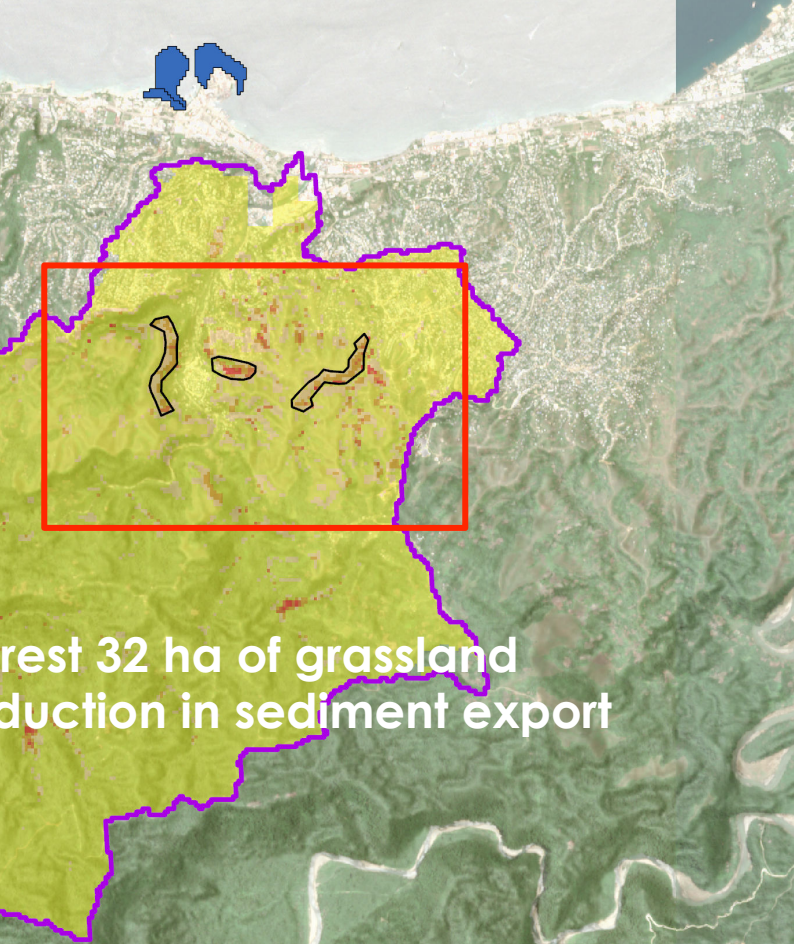
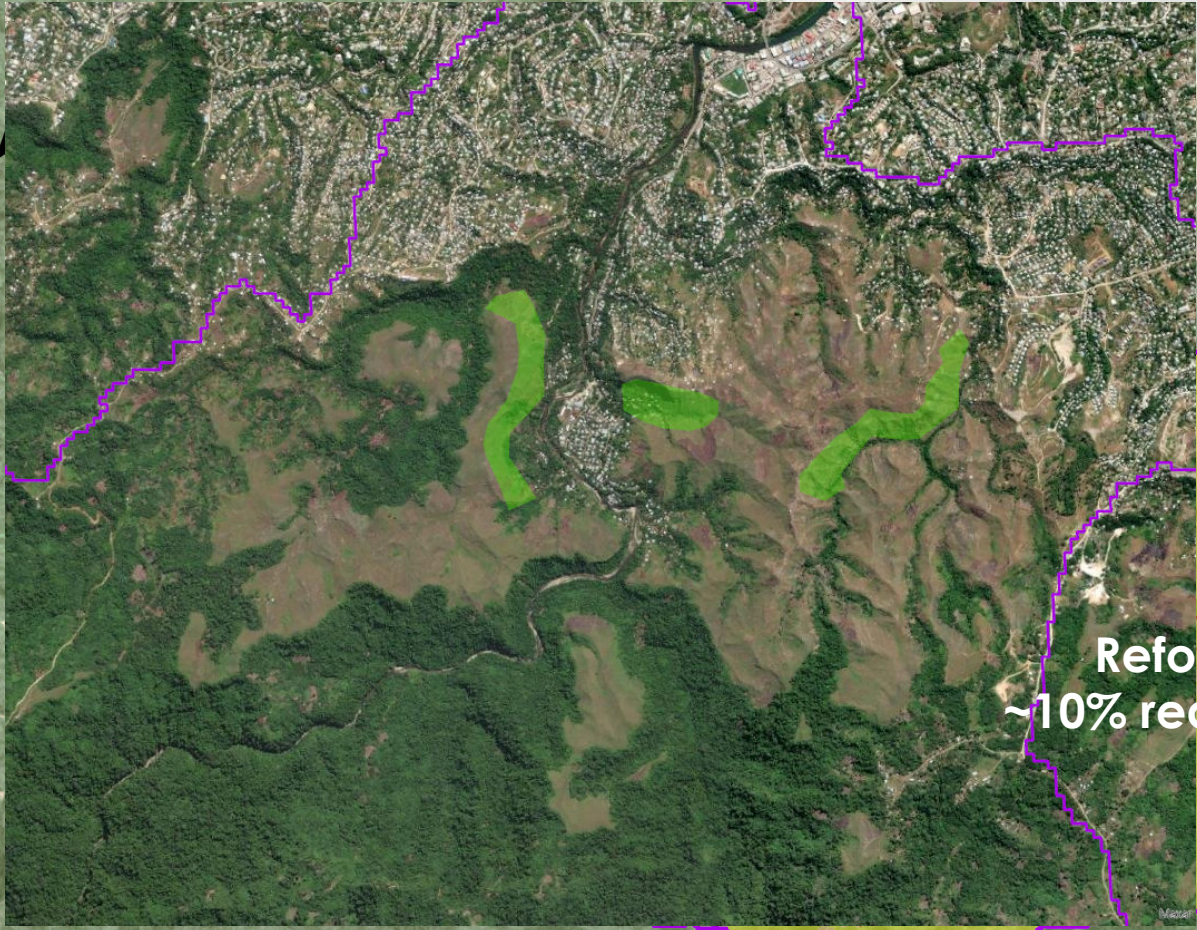
-  0.0 - 1.0
-  1.0 - 2.5
-  2.5 - 5.0
-  5.0 - 10.0
-  10.0+

-  **Mataniko Watershed**
-  **Coral Reef Habitat**



Esri, NASA, NGA, USGS

N

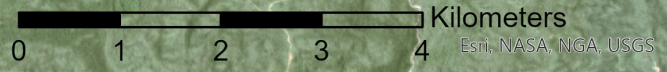


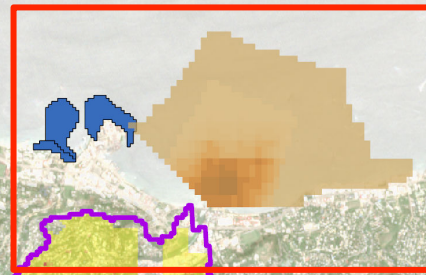
Reforest 32 ha of grassland
~10% reduction in sediment export

Sediment Export (tons)

- 0.0 - 10.0
- 10.0 - 25.0
- 25.0 - 50.0
- 50.0 - 100.0
- 100.0 - 250.0


- Mataniko Watershed
- Coral Reef Habitat



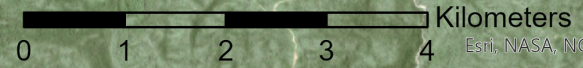


Sediment Export (tons)

- 0.0 - 1.0
- 1.0 - 2.5
- 2.5 - 5.0
- 5.0 - 10.0
- 10.0+

 **Mataniko Watershed**

 **Coral Reef Habitat**



Esri, NASA, NGA, USGS

Key Findings and Conclusions

- ▶ **Multi-tier approach for R2R prioritization**
 - ▶ Catchment identification
 - ▶ Specific sites for interventions/ protection
- ▶ **Models are not reality - assumptions can lead to misrepresentation**
- ▶ **Calibration and validation from field data are essential**
- ▶ **Sediment model (InVEST SDR) is supported by documentation, user forums, and datasets (user friendly)**
- ▶ **Plume models may require technical or GIS support to implement (workflow from this project)**
- ▶ **Input and final Interpretation from local stakeholders is key**