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Reef Resilience Conference 2008

Climate Change: Linking Environmental Analysis to Decision Support Using GIS Tools

Florida Program World Wildlife Fund

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Dan Wagner (Florida Institute of Technology)

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Lara Hansen (World Wildlife Fund)

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Climate LEADS

Accessible Tools for Information Exploration

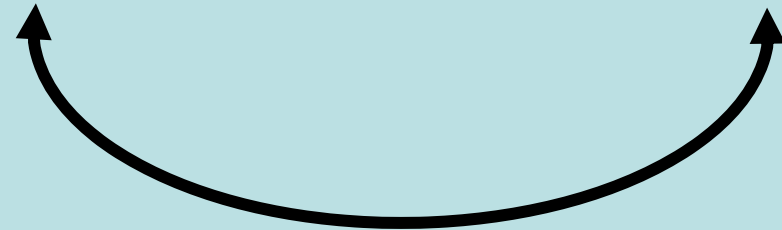
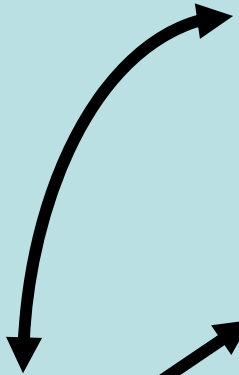
Users



**Resilience
Based
Solutions!**

Research

Managers





Linking Environmental Analysis to Decision Support Using GIS

Geographic Information System (GIS)

~ Dynamic and customizable computer based map portraying almost any kind of location based information in different layers.

Very similar to modern electronic charts, GPS chart plotters, and in-car navigation.

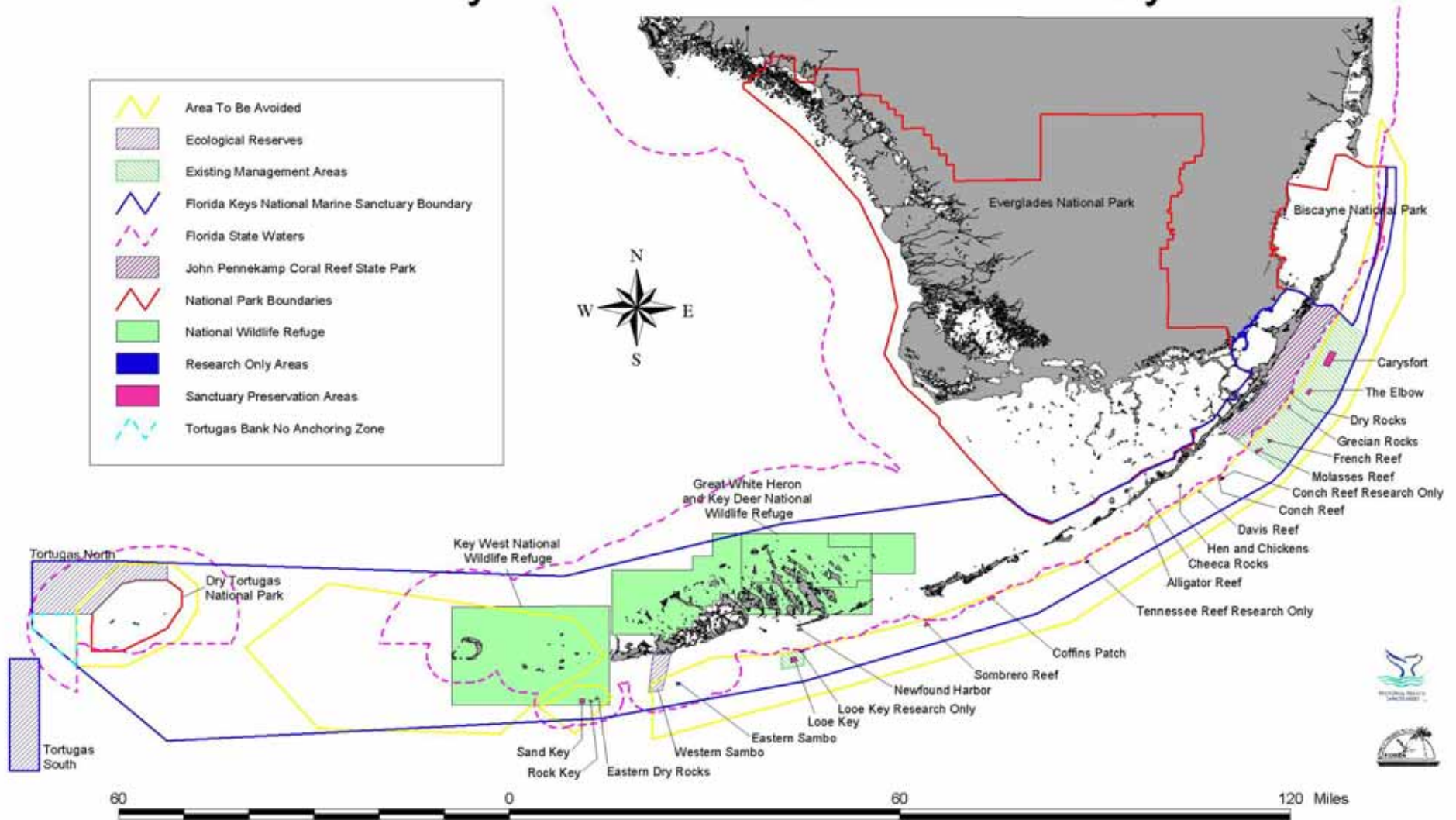


“Turn left at the next buoy.”

“You are now near three DRM survey sites and one SERC water quality site.”

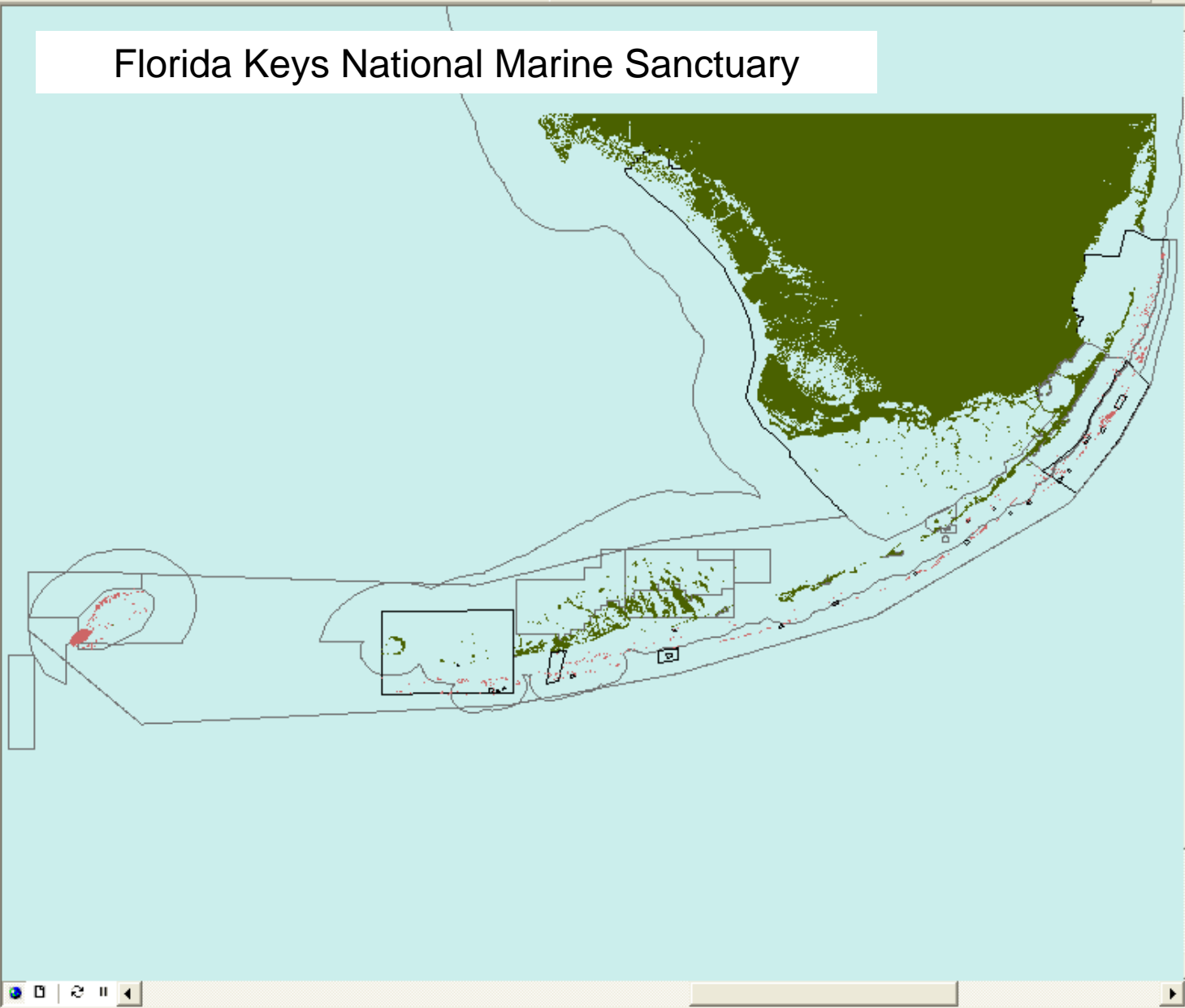


Florida Keys National Marine Sanctuary



Florida Keys National Marine Sanctuary

- Layers
 - FRRP DRM Paling
 - FRRP DRM Bleaching
 - Water Quality Locations
 - FRRP Zones
 - FRRP Zones truncated
 - Coral Reefs
 - S Florida
 - Management areas
 - aquatic preserves
 - biscayne national park
 - crocodile lake nwr
 - dry tortugas national park
 - everglades national park
 - florida keys national marine
 - key west nwr
 - looe key ema
 - marine zones
 - key largo ema
 - national key deer refuge
 - great white heron nwr
 - national parks
 - state parks
 - tortugas ecological reserve
 - state waters
 - Bathymetry
 - WQ Means & Variance
 - WQ Interpolations

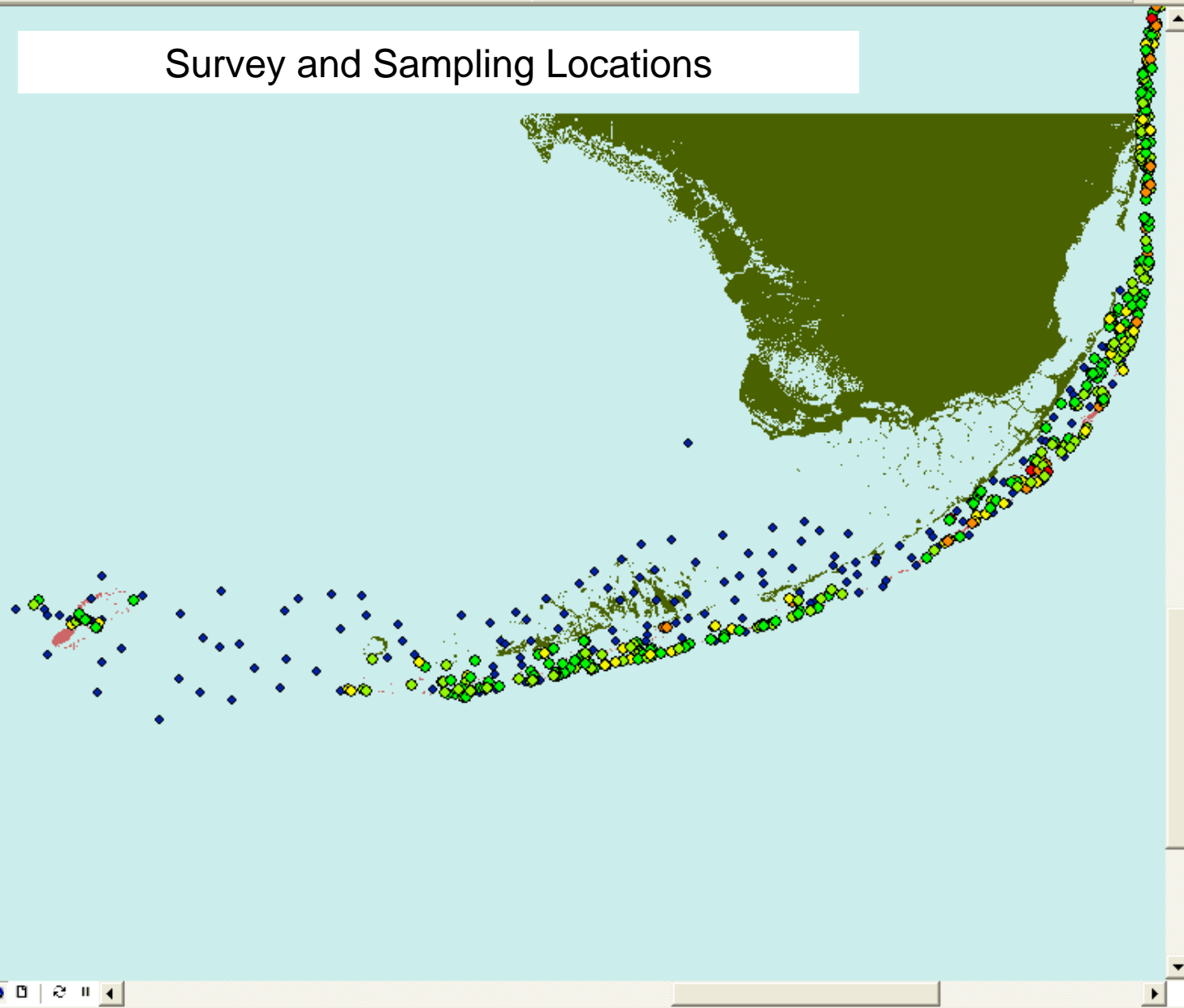




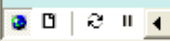
1:1,676,566

- Layers
 - FRRP DRM Paling
 - FRRP DRM Bleaching
 - % Bleached
 - 0.0 - 4.5
 - 4.6 - 13.6
 - 13.7 - 25.9
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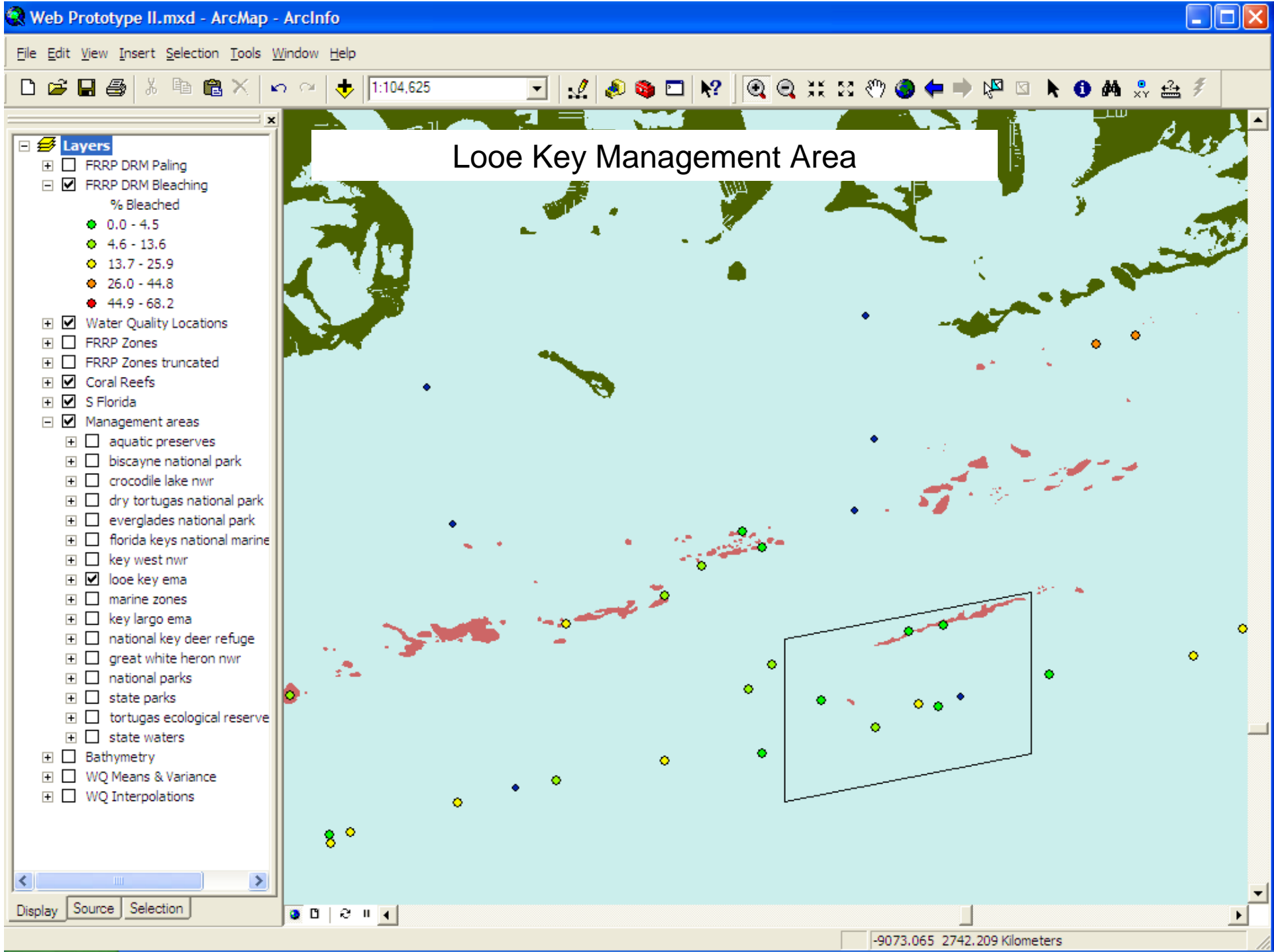
Survey and Sampling Locations



Display Source Selection



-9165.198 2788.278 Kilometers



Bleaching Information

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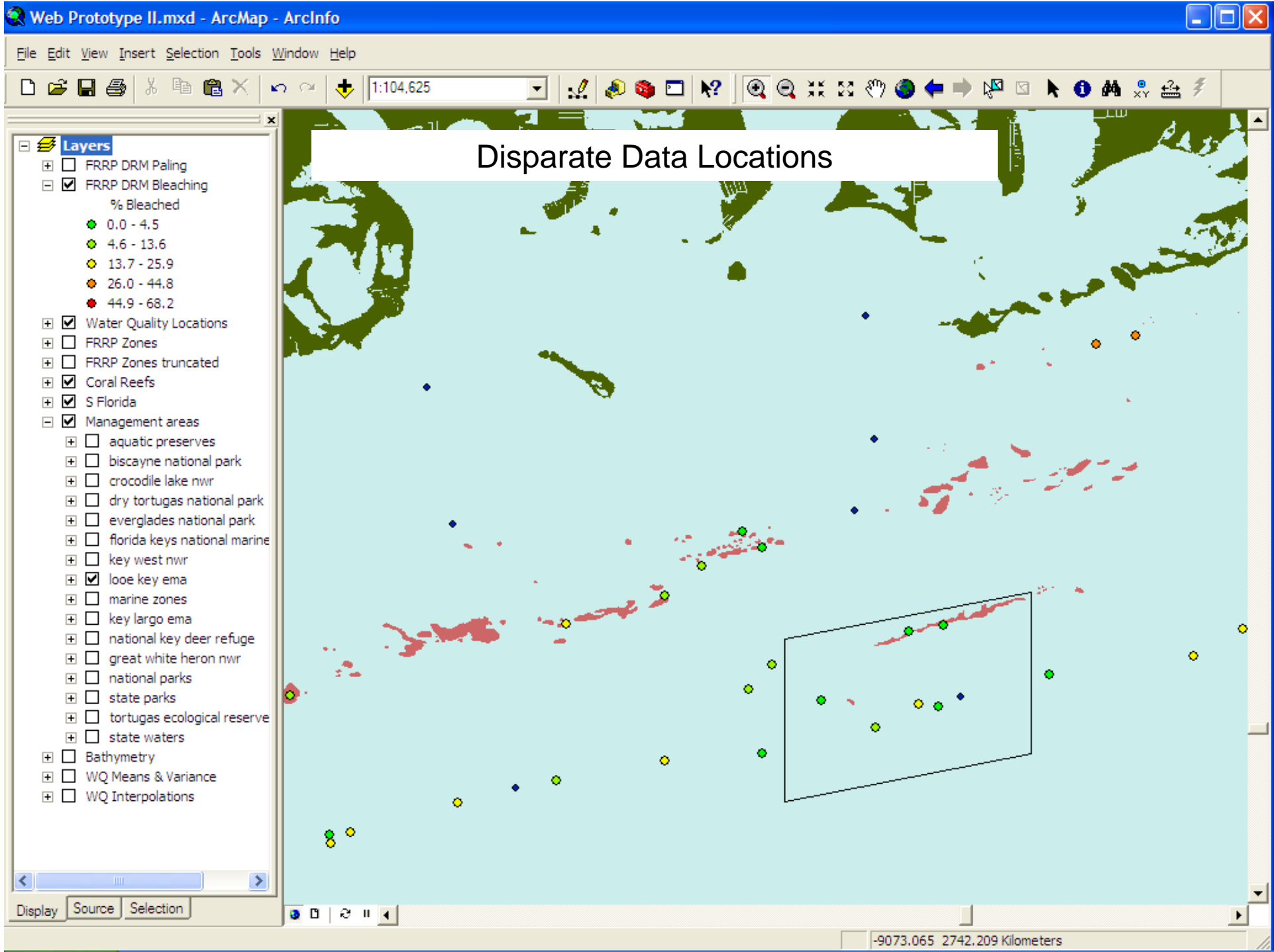
Identify

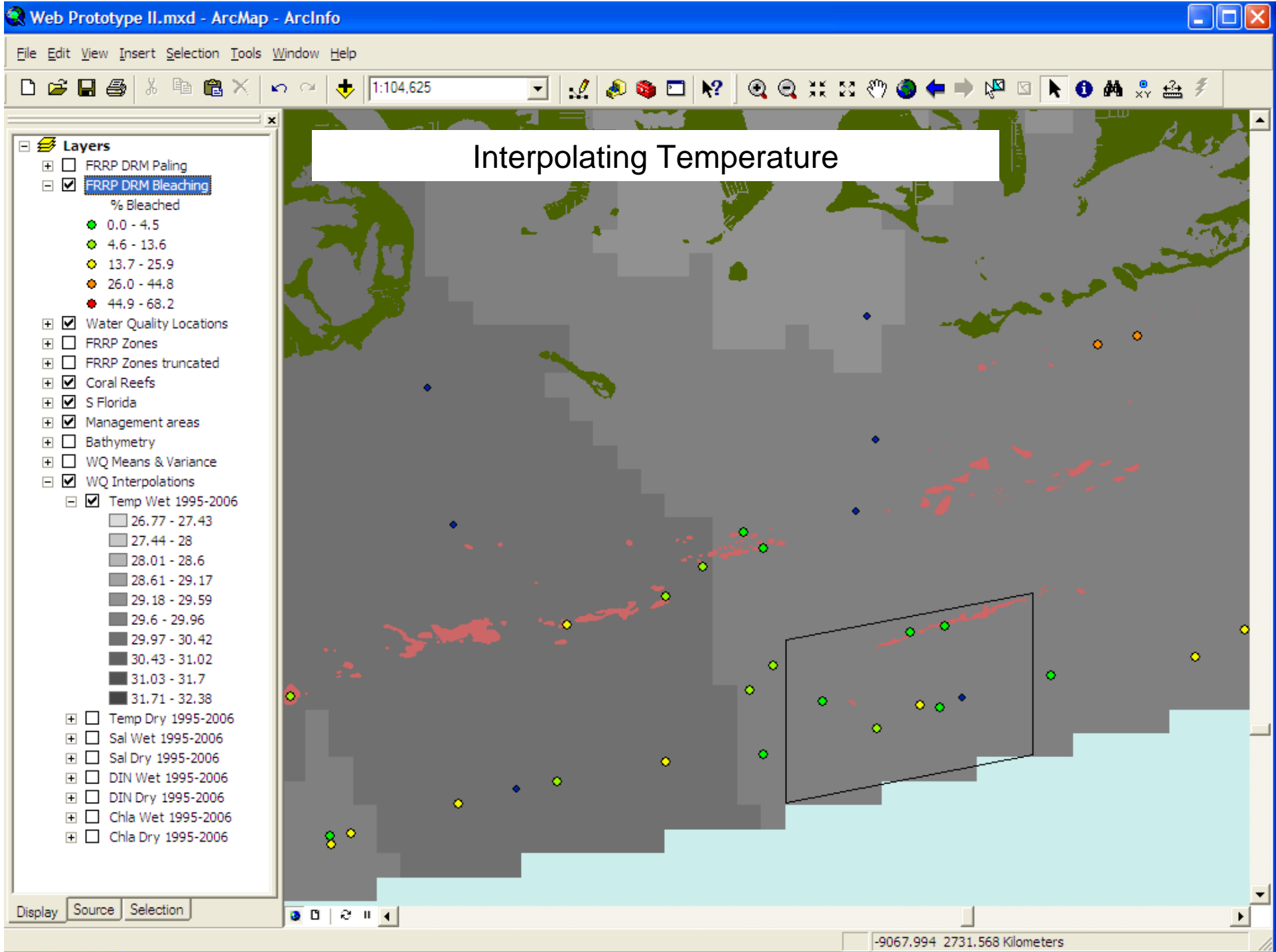
Identify from: FRRP DRM Bleaching

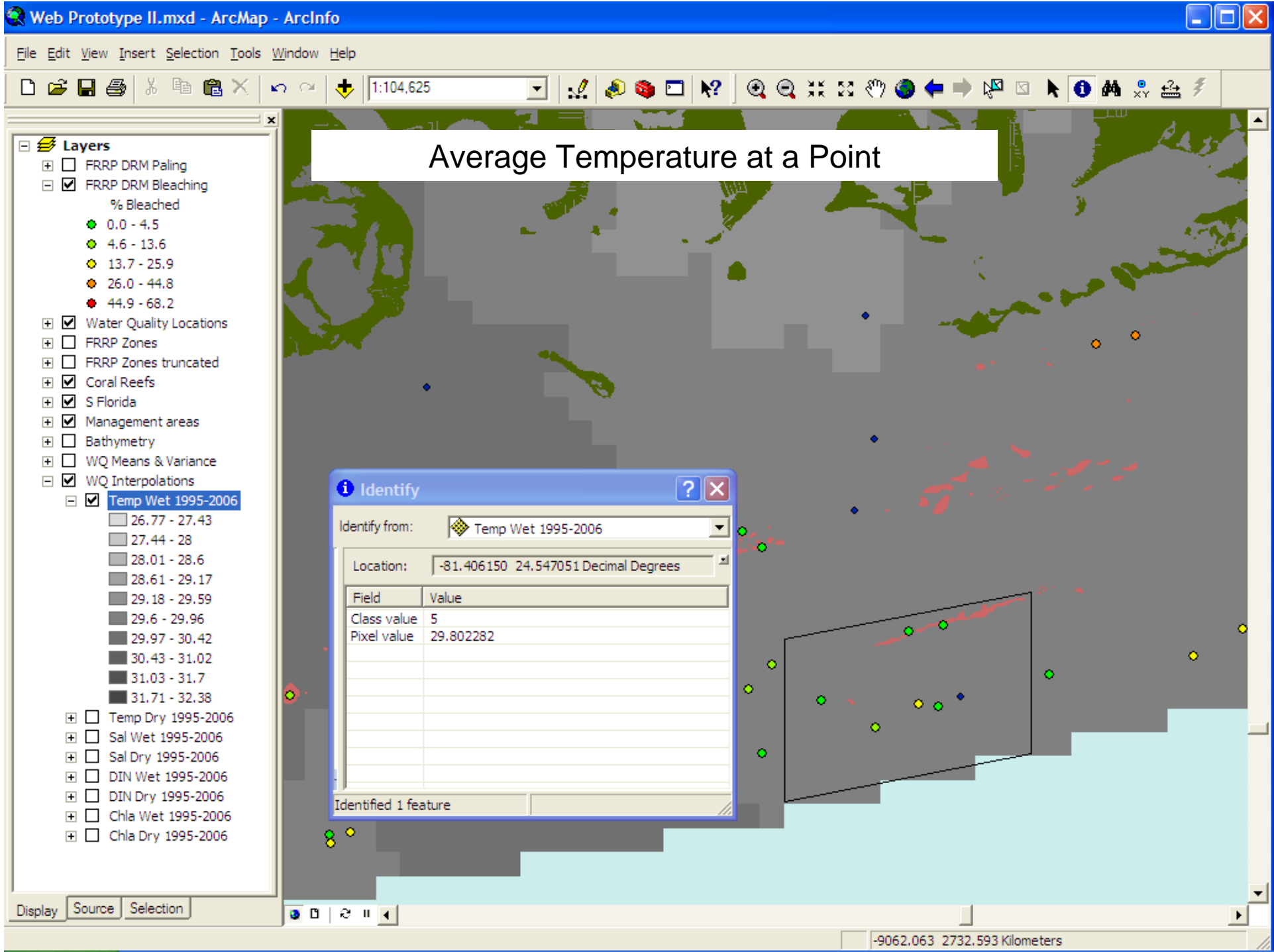
Location: -81.405901 24.547300 Decimal Degrees

Field	Value
SITE	D4038
DATE_	9/27/2007
LATITUDE	24.54698
LONGITUDE	-81.40602
DEPTH	1.6
REGION	Lower Keys
ZONE	Forereef
PALE_1	37.5
BLEACH_1	25.0

Identified 1 feature





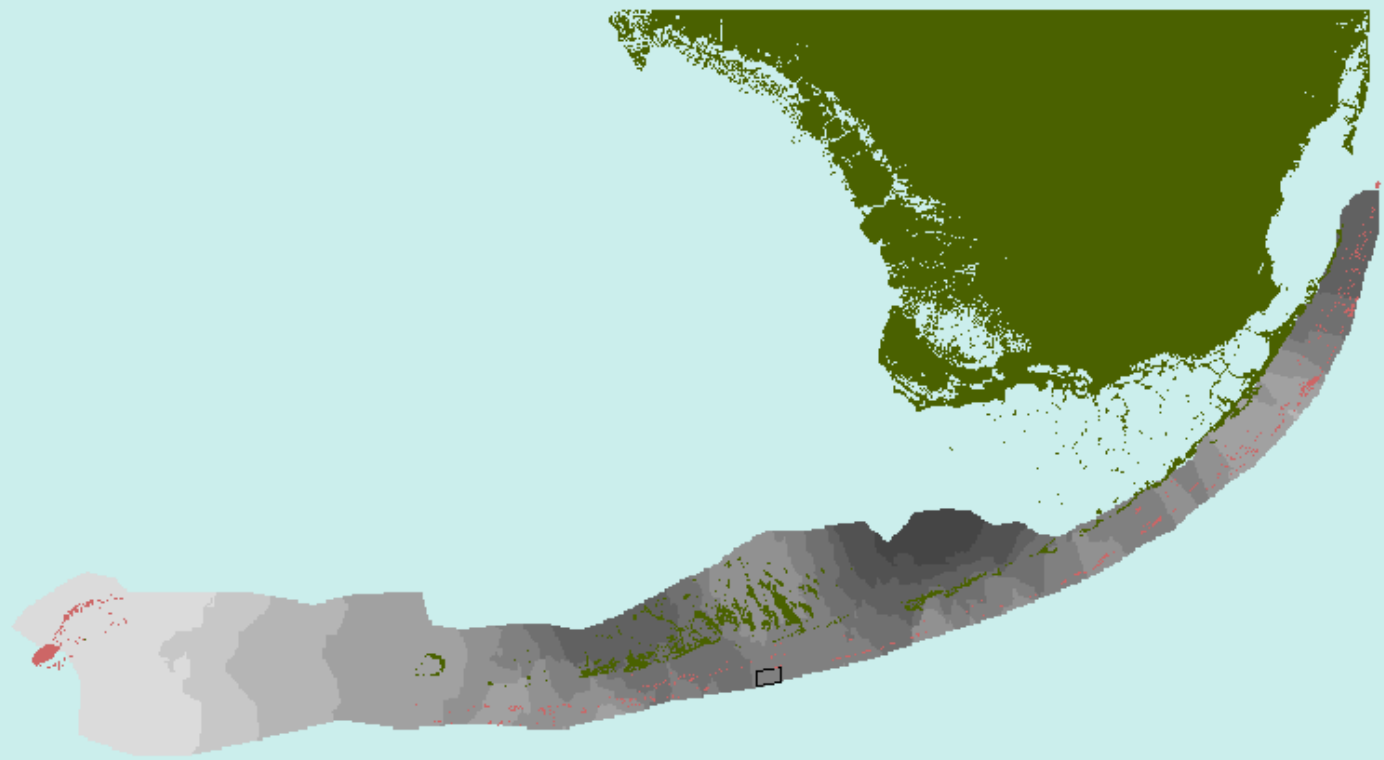




Layers

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- FRRP Zones
- FRRP Zones truncated
- Coral Reefs
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- Management areas
- Bathymetry
- WQ Means & Variance
- WQ Interpolations
 - Temp Wet 1995-2006
 - 26.77 - 27.43
 - 27.44 - 28
 - 28.01 - 28.6
 - 28.61 - 29.17
 - 29.18 - 29.59
 - 29.6 - 29.96
 - 29.97 - 30.42
 - 30.43 - 31.02
 - 31.03 - 31.7
 - 31.71 - 32.38
 - Temp Dry 1995-2006
 - Sal Wet 1995-2006
 - Sal Dry 1995-2006
 - DIN Wet 1995-2006
 - DIN Dry 1995-2006
 - Chla Wet 1995-2006
 - Chla Dry 1995-2006

Temperature Patterns

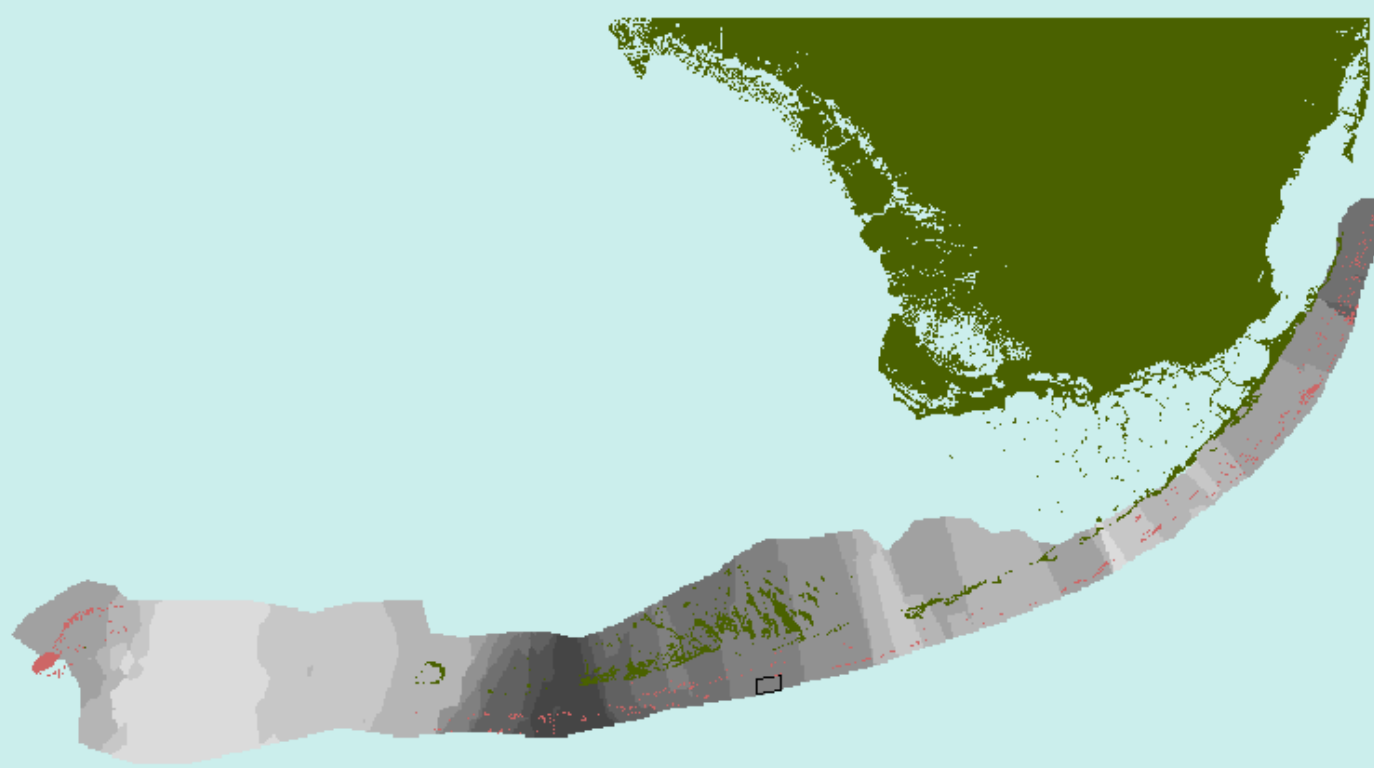




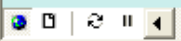
1:1,676,566

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 - Temp Wet 1995-2006
 - Temp Dry 1995-2006
 - Sal Wet 1995-2006
 - Sal Dry 1995-2006
 - DIN Wet 1995-2006
 - 0.0036 - 0.0046
 - 0.0047 - 0.0054
 - 0.0055 - 0.0061
 - 0.0062 - 0.0071
 - 0.0072 - 0.0084
 - 0.0085 - 0.0097
 - 0.0098 - 0.0109
 - 0.011 - 0.0119
 - 0.012 - 0.013
 - 0.0131 - 0.0142
 - DIN Dry 1995-2006
 - Chla Wet 1995-2006
 - Chla Dry 1995-2006

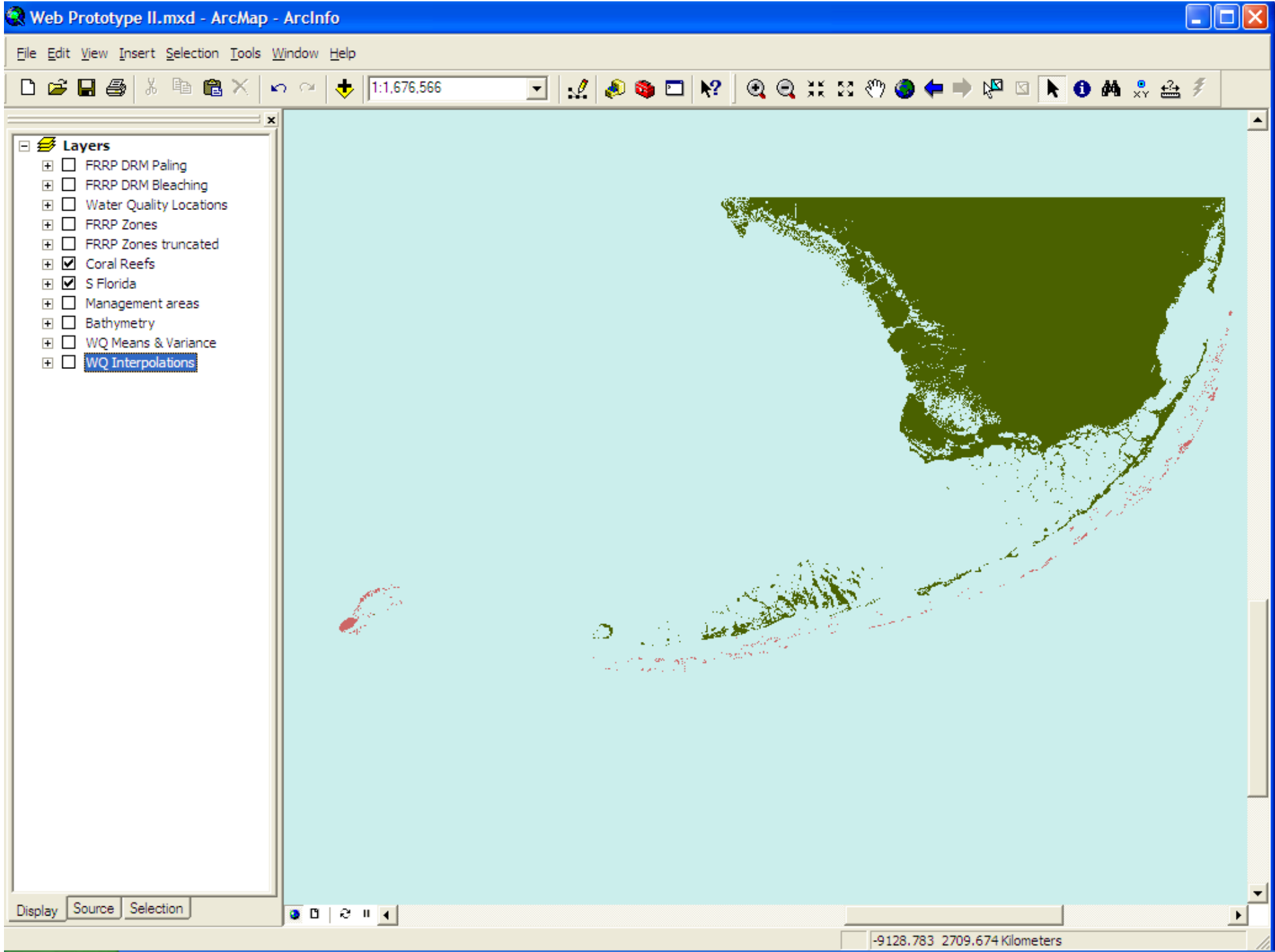
Dissolved Inorganic Nitrogen



Display Source Selection



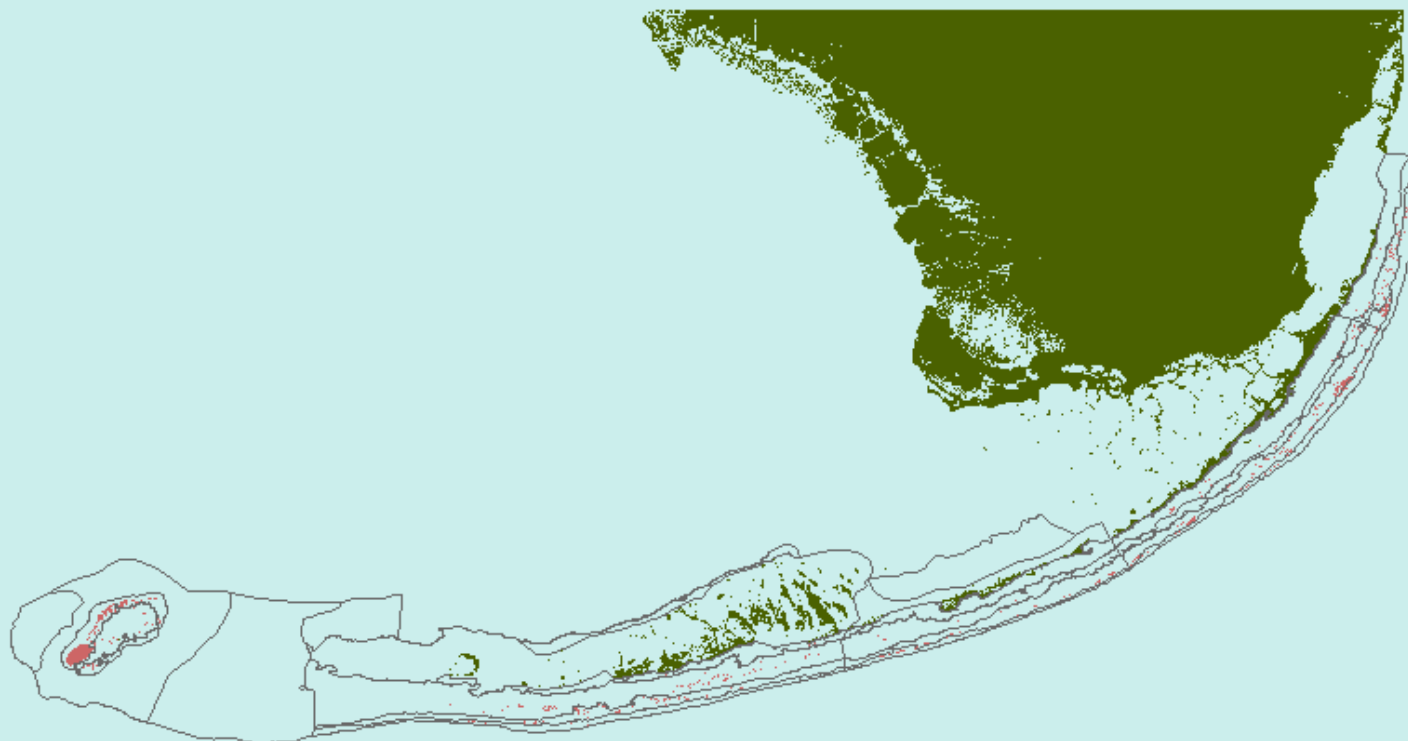
-9189.179 2734.987 Kilometers

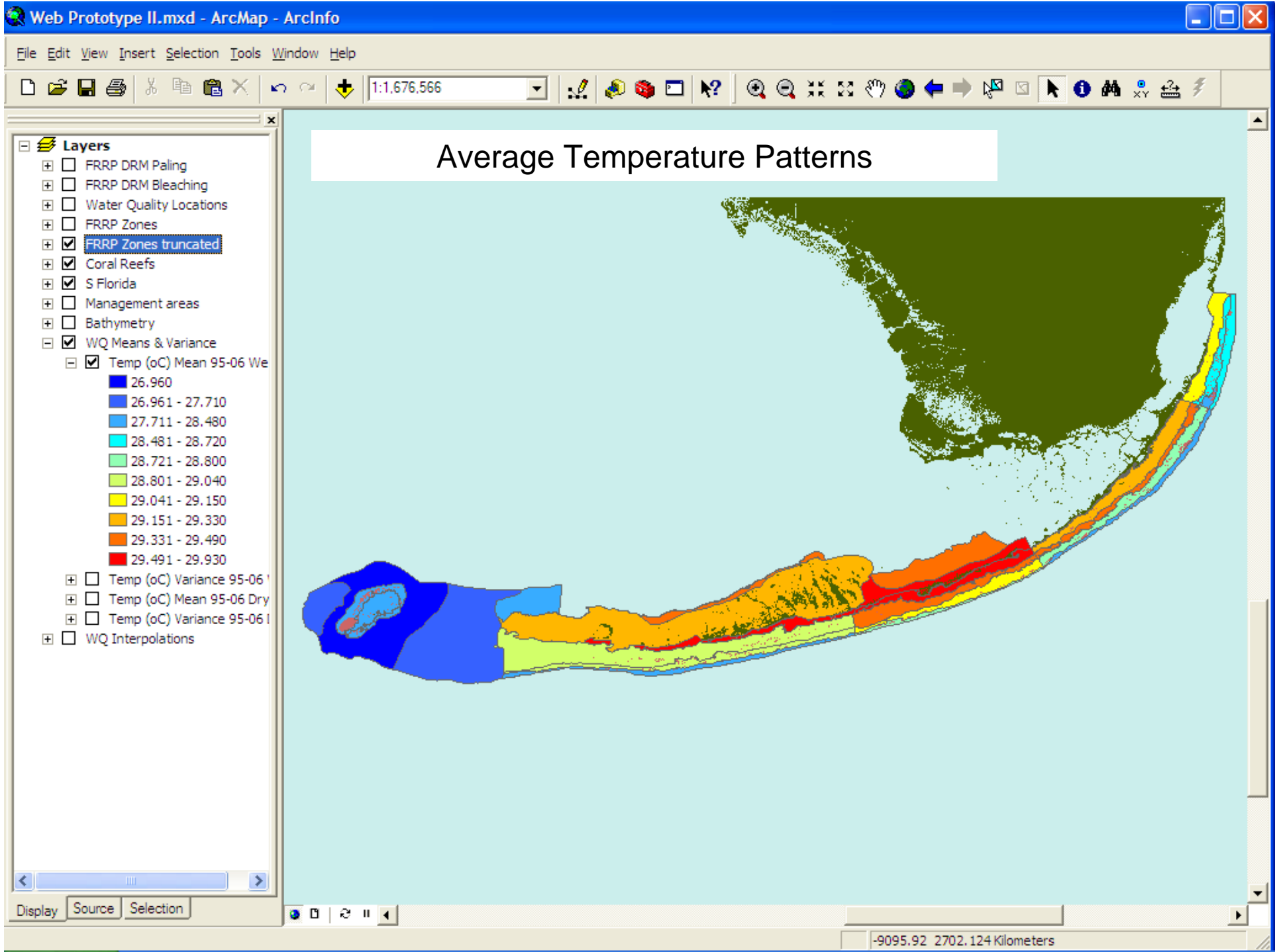




Using Zones

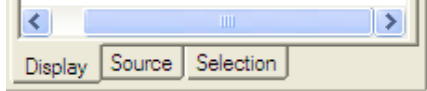
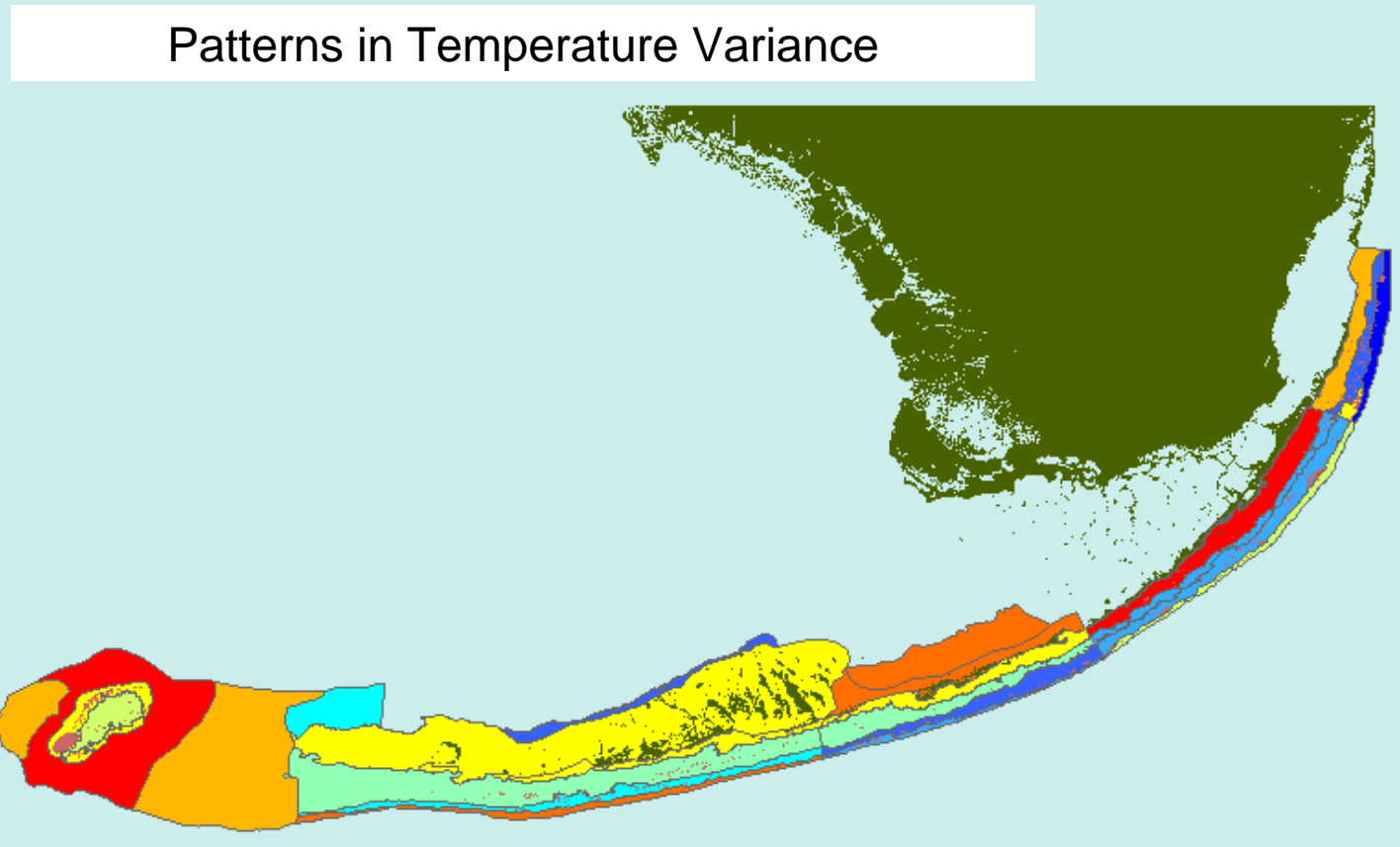
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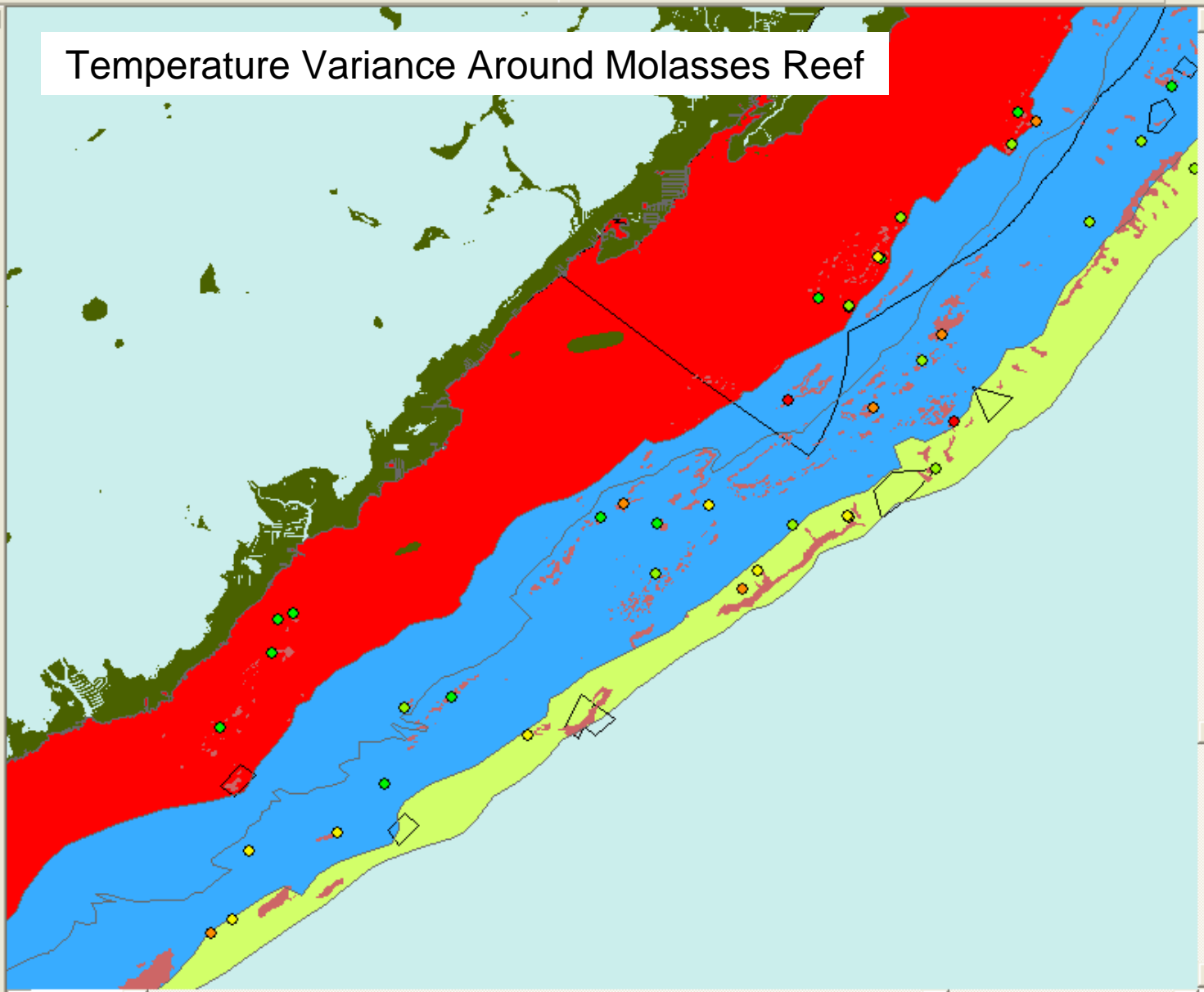


- Layers**
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 - FRRP Zones
 - FRRP Zones truncated
 - Coral Reefs
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 - Management areas
 - Bathymetry
 - WQ Means & Variance
 - Temp (oC) Mean 95-06 Wet
 - Temp (oC) Variance 95-06 Wet
 - 1.950
 - 1.951 - 2.240
 - 2.241 - 2.430
 - 2.431 - 2.500
 - 2.501 - 2.630
 - 2.631 - 2.810
 - 2.811 - 2.960
 - 2.961 - 3.590
 - 3.591 - 3.770
 - 3.771 - 4.330
 - Temp (oC) Mean 95-06 Dry
 - Temp (oC) Variance 95-06 Dry
 - WQ Interpolations



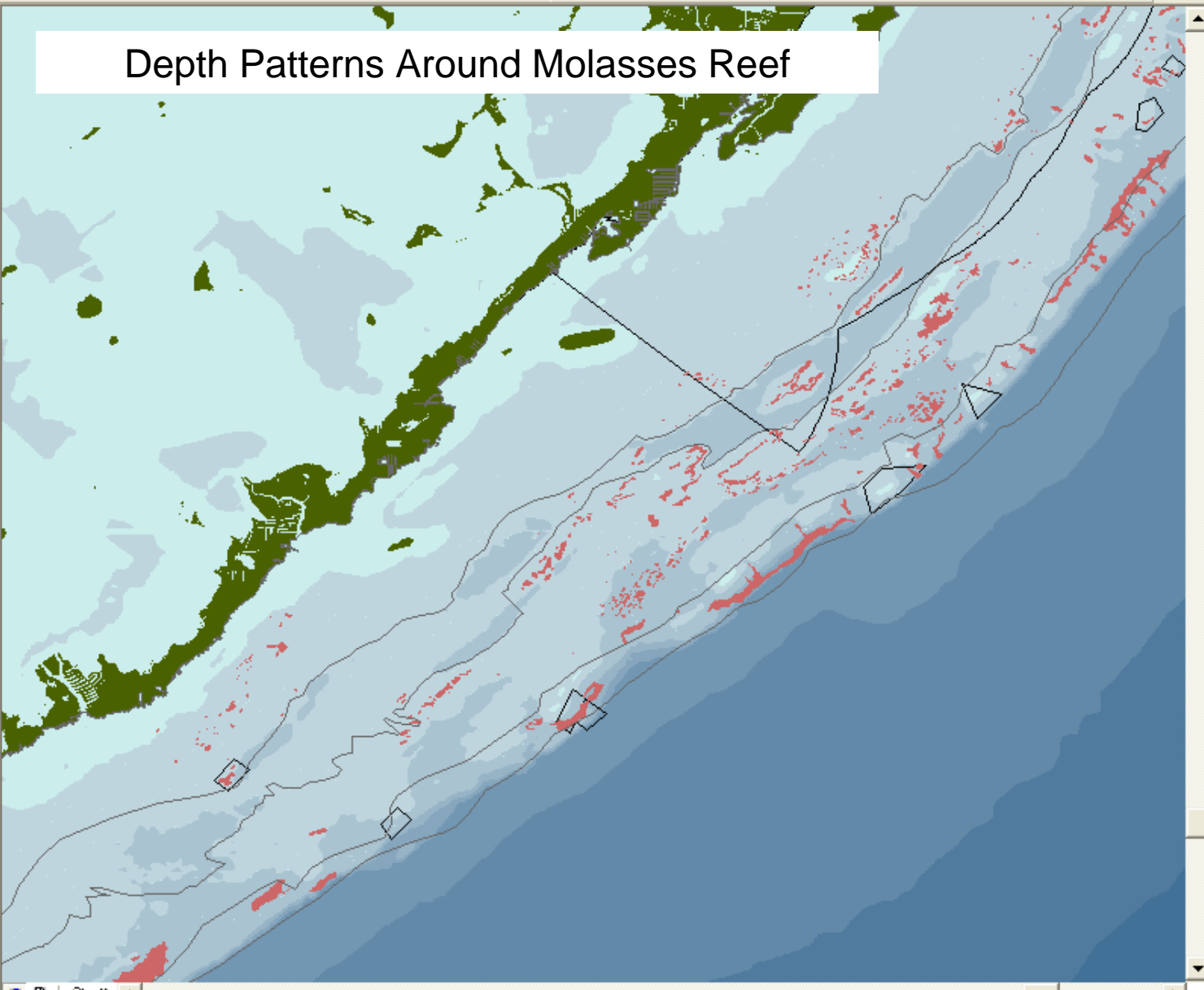
Temperature Variance Around Molasses Reef

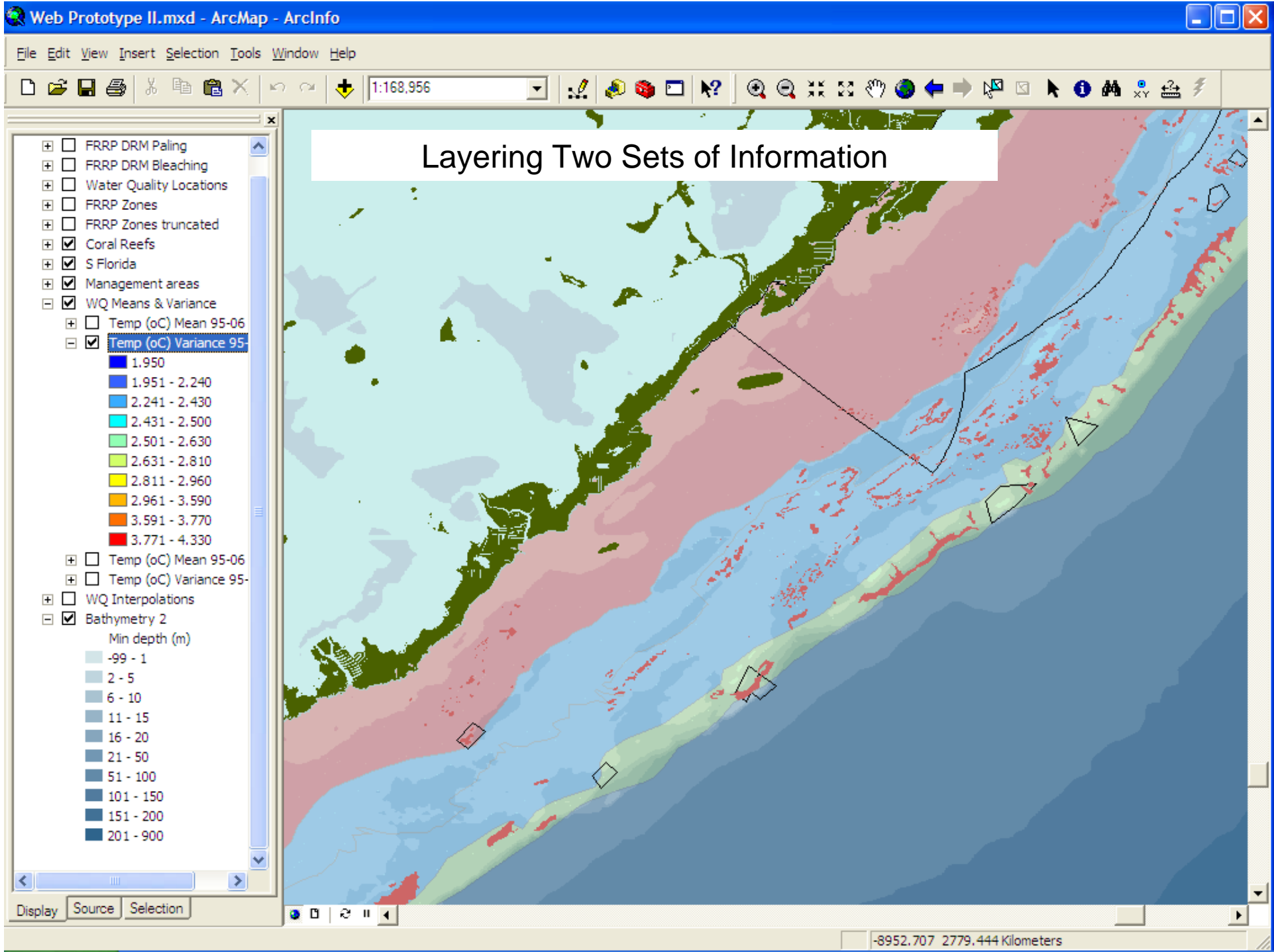
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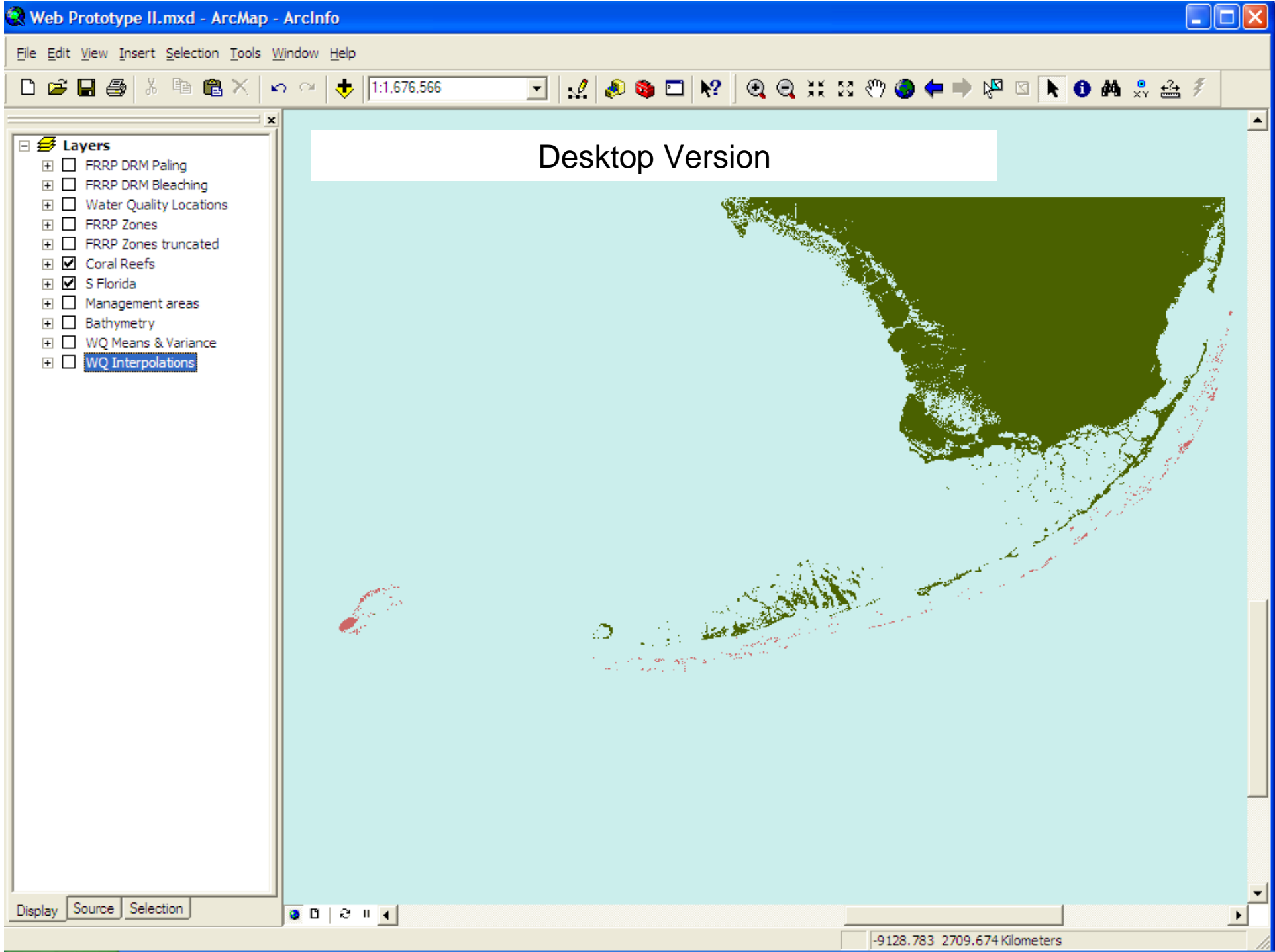


Depth Patterns Around Molasses Reef

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- WQ Means & Variance
- WQ Interpolations
- Bathymetry 2
 - Min depth (m)
 - 99 - 1
 - 2 - 5
 - 6 - 10
 - 11 - 15
 - 16 - 20
 - 21 - 50
 - 51 - 100
 - 101 - 150
 - 151 - 200
 - 201 - 900







Florida Keys Data Viewer - Mozilla Firefox

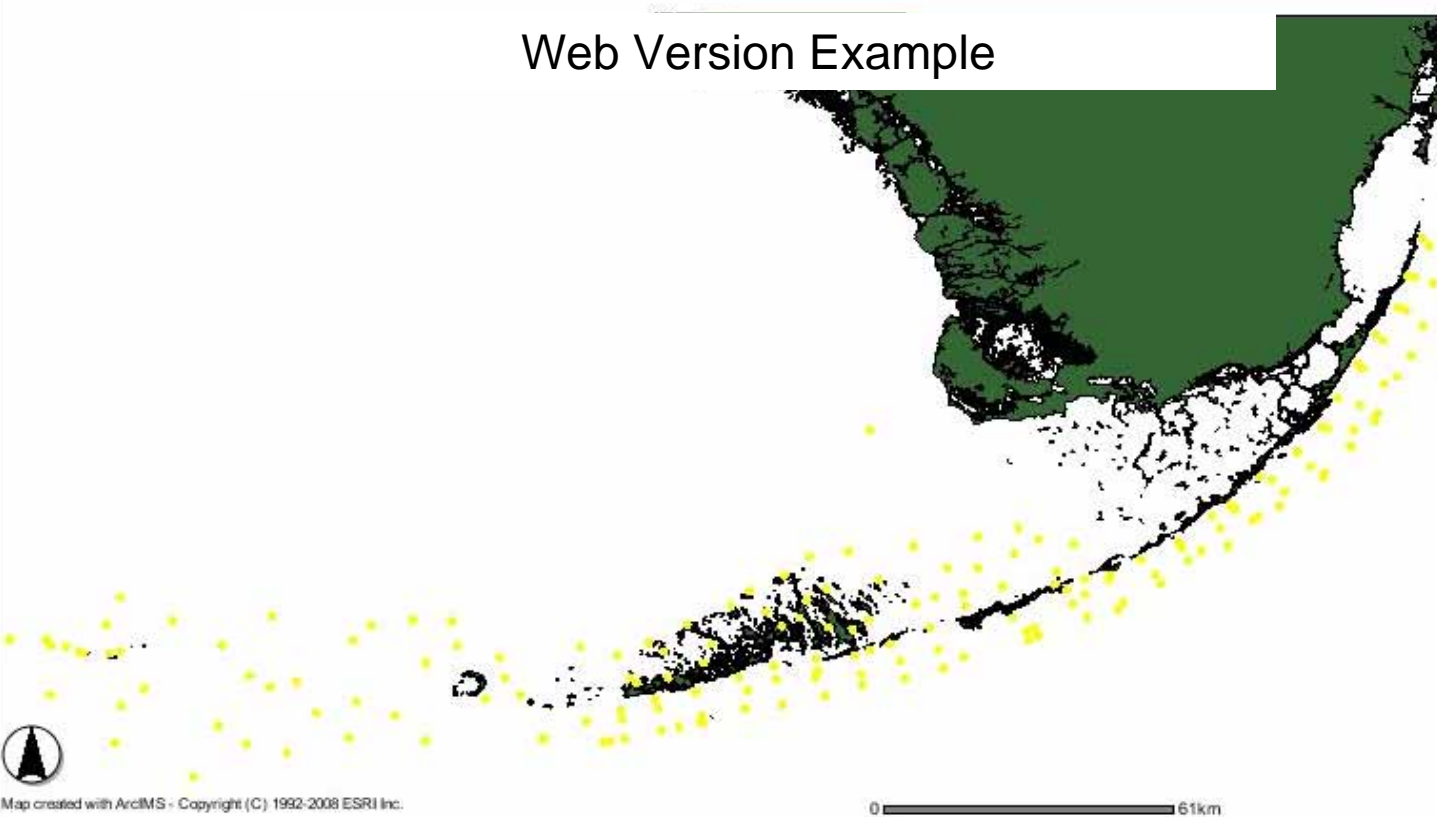
File Edit View History Bookmarks Tools Help Web-Based Email Google Google Scholar

http://coral.cs.ft.edu/Keys/viewer.htm

Florida Keys Data Viewer RCN Webmail Message View

Florida Keys Data Viewer

Web Version Example



The map displays the Florida Keys archipelago. The land is shown in dark green, and the surrounding water is light blue. Numerous yellow dots are scattered across the map, representing environmental data points. A scale bar at the bottom indicates a distance of 61km. A north arrow is located in the bottom left corner.

Map created with ArcIMS - Copyright (C) 1992-2008 ESRI Inc.

0 61km

Layers

Visible Active

- aggra sites
- cremp sites
- broward sites
- environmental data
- tnc_51_fireef_zones_d
- Land
- Ben_Hab
- Bathy

Refresh Map

Zoom In

Done



Linking Environmental Analysis to Decision Support Using GIS

Where can you find this?

It is not quite ready yet (our apologies!)

- Simple web-based access
- Stand alone desktop version (CDROM)



Further information:
www.worldwildlife.org/CCLEADS
or
www.FRRP.org

Or try this for a taste:
<http://coral.cs.fit.edu/Keys/viewer.htm>

