The use of remote sensing for lake management

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- Basic remote sensing of lake concepts
- Characteristics of Remote Sensors
- Examples of Remote Sensing in Lake Management
- Important Considerations When Selecting a Remote Sensor

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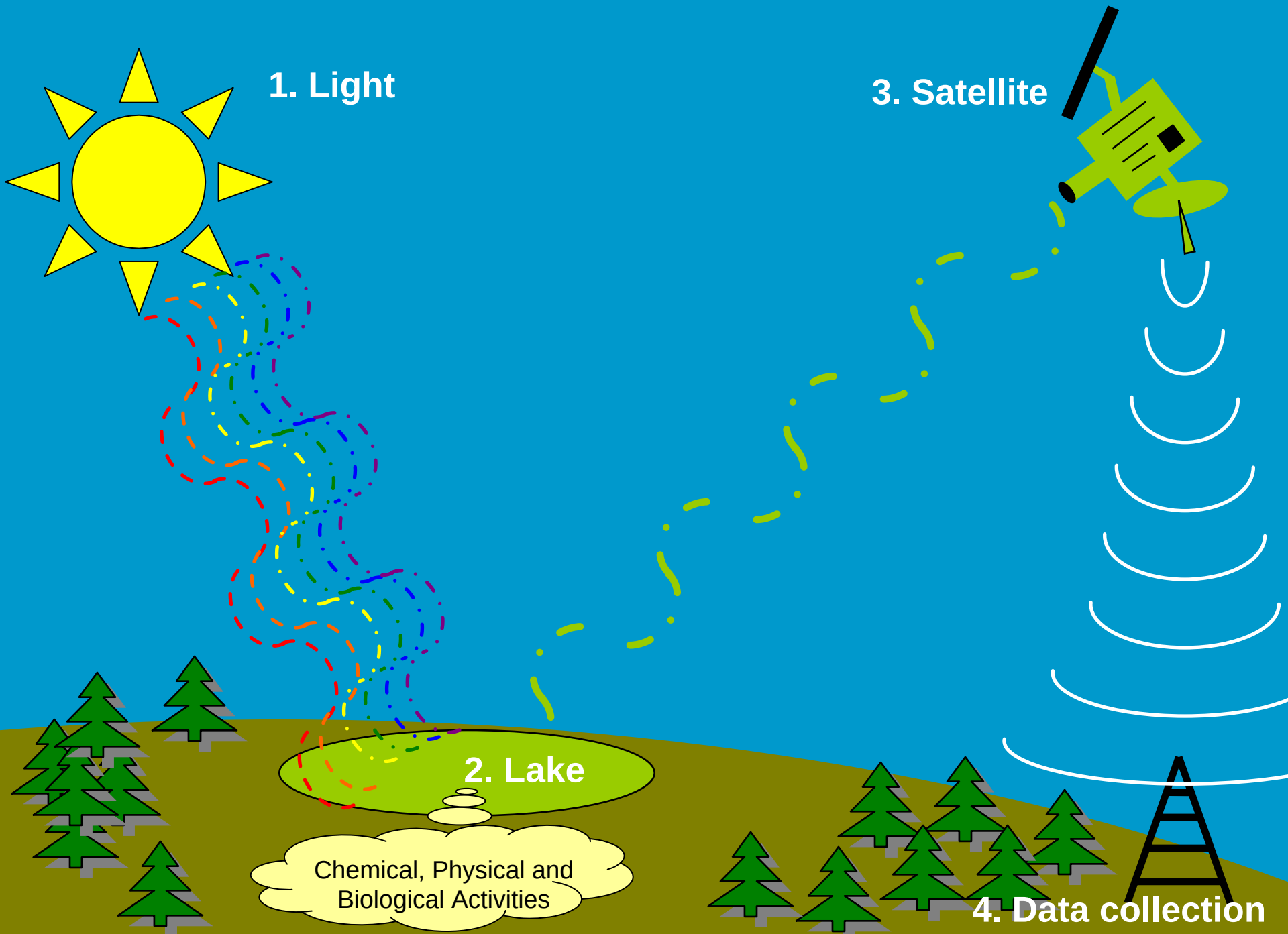
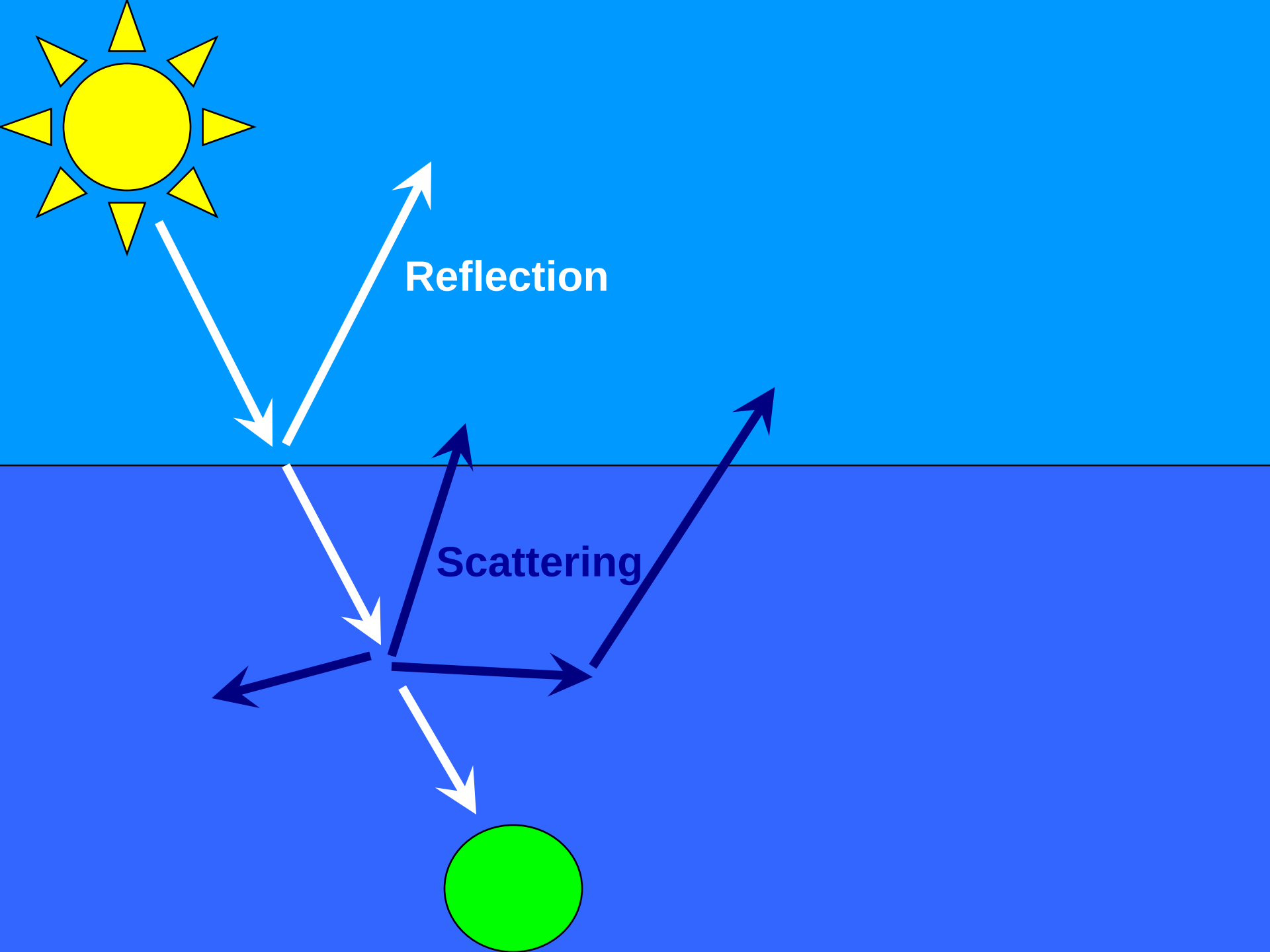
Lower Sawyer Pond, NH

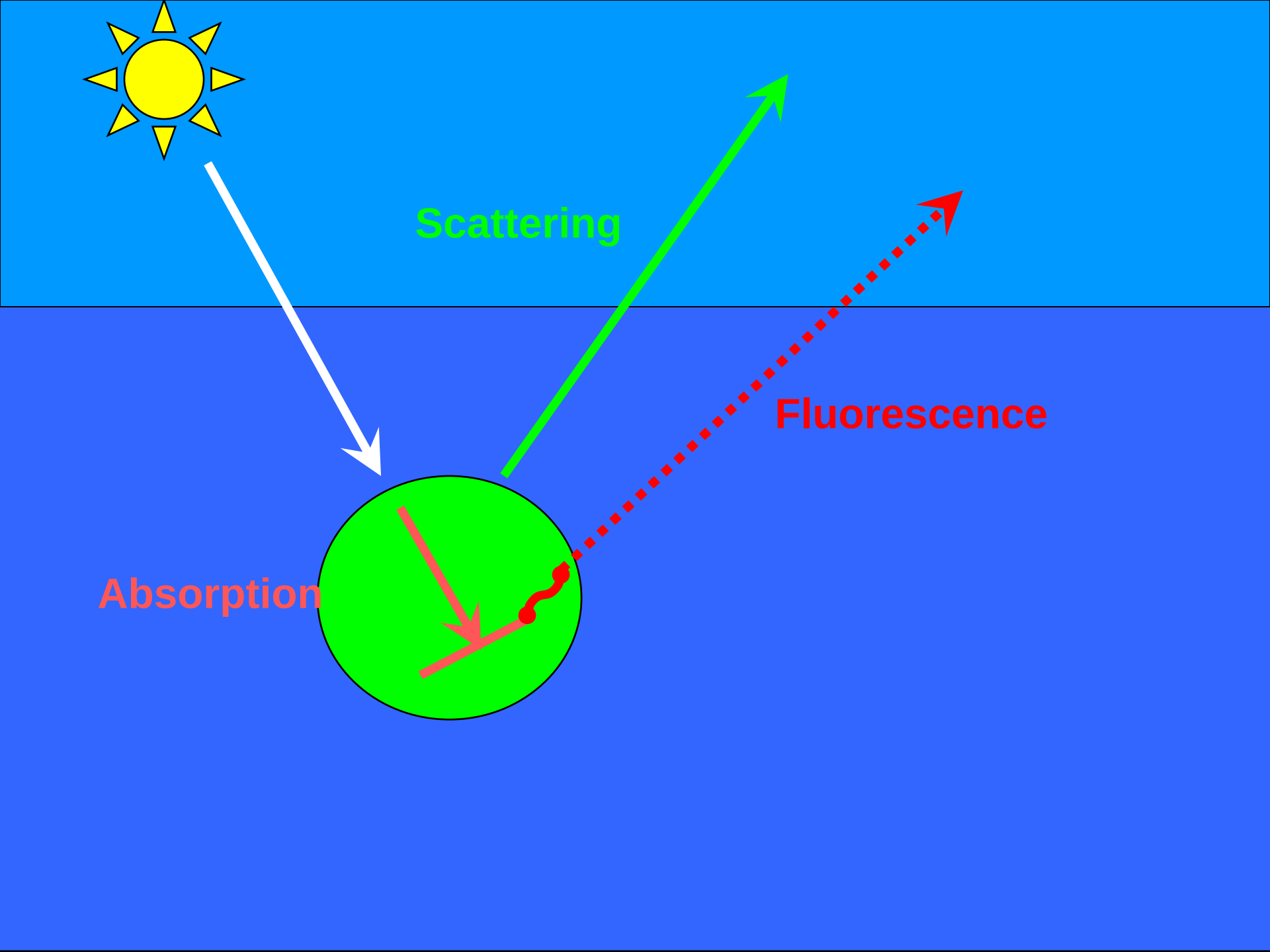

York Pond, NH


SDD = 9.8 m
Chl = 1.4 μg l-1
TP = 4.0 μg l-1


SDD = 0.9 m
Chl = 39.4 μg l-1
TP = 46.3 μg l-1


1. Light
3. Satellite
2. Lake
Chemical, Physical and
Biological Activities
4. Data collection


Reflection
Scattering


Scattering
Fluorescence
Absorption

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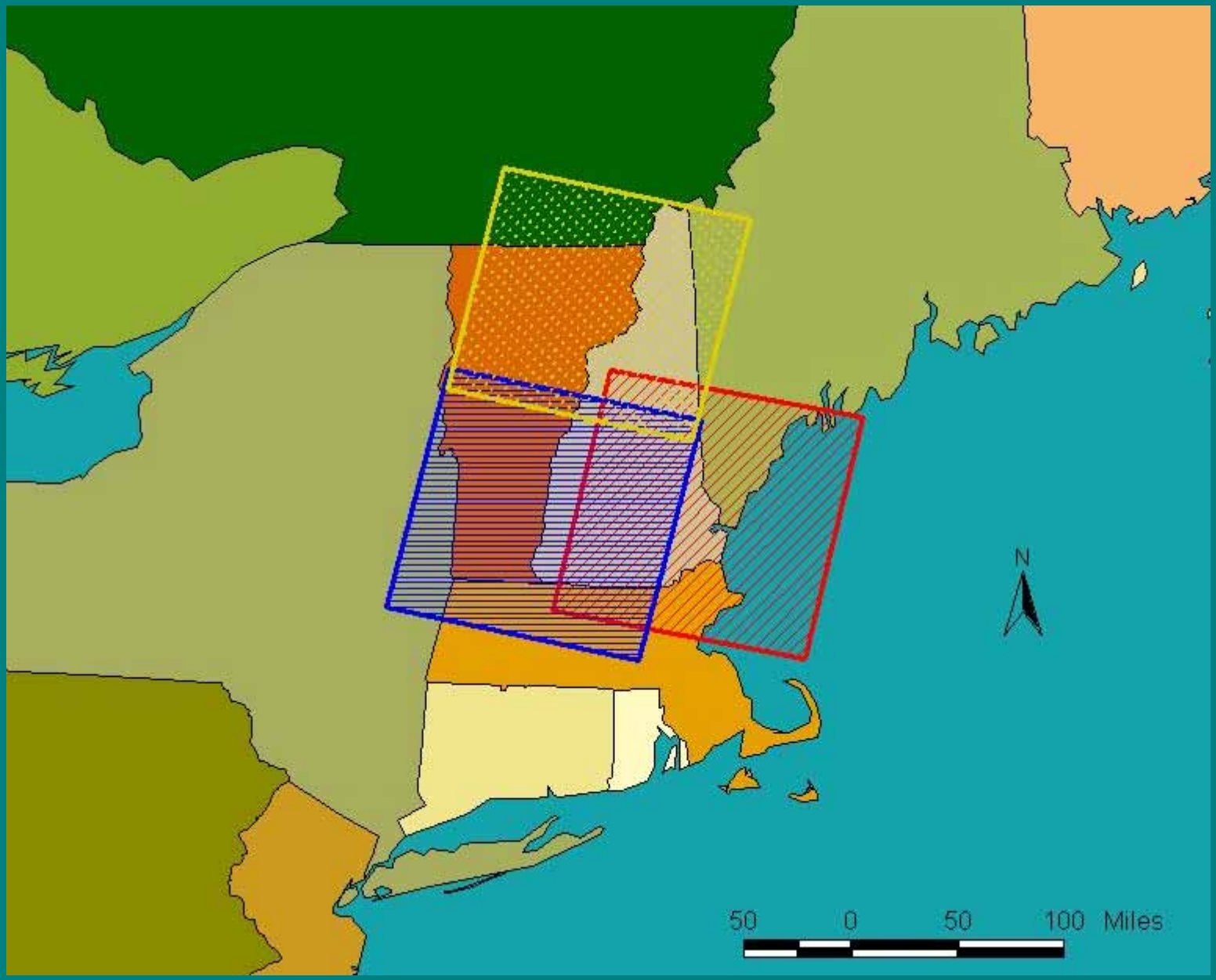
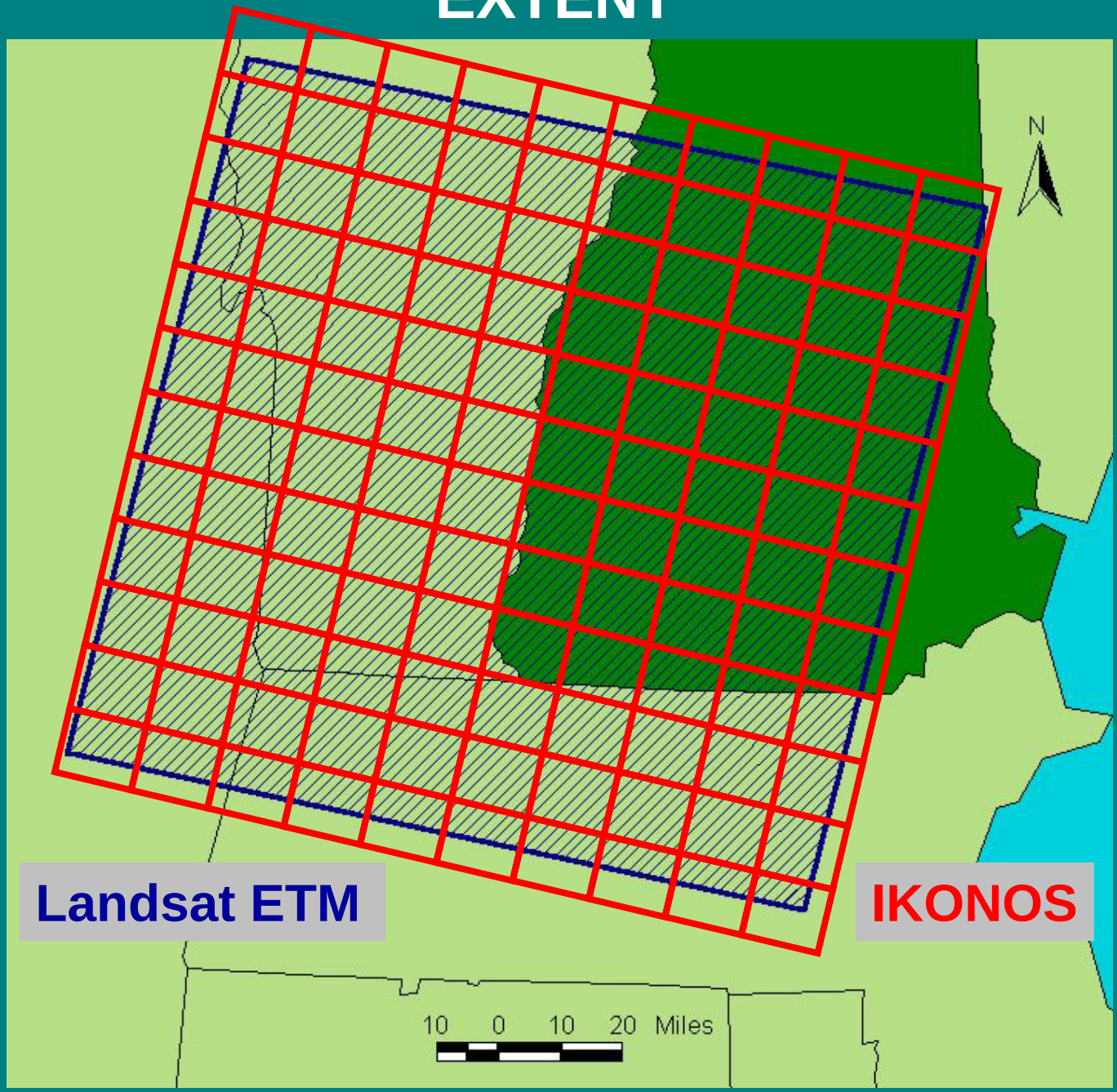
SPATIAL RESOLUTION

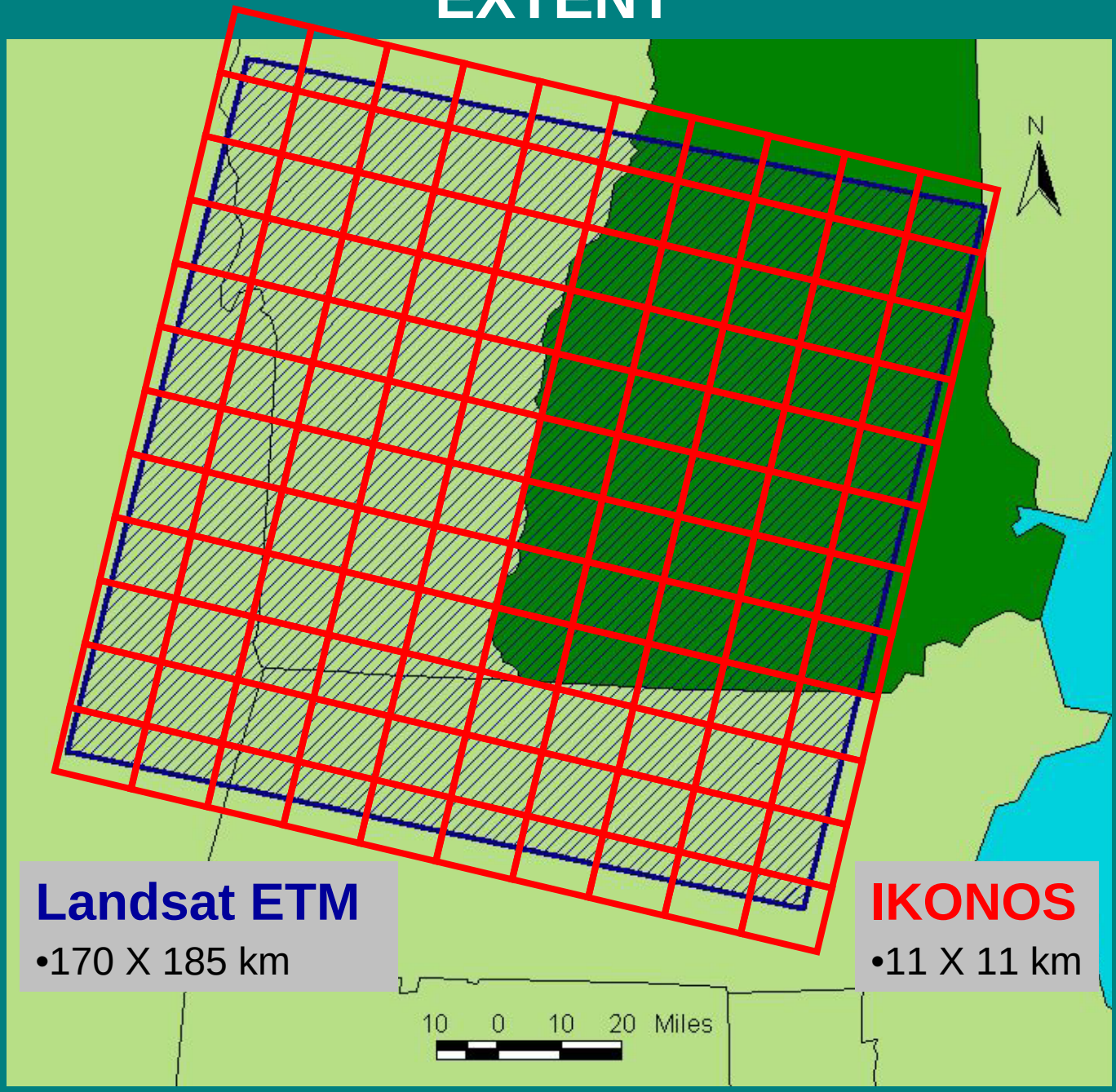
EXTENT



EXTENT



EXTENT



Landsat ETM

•170 X 185 km

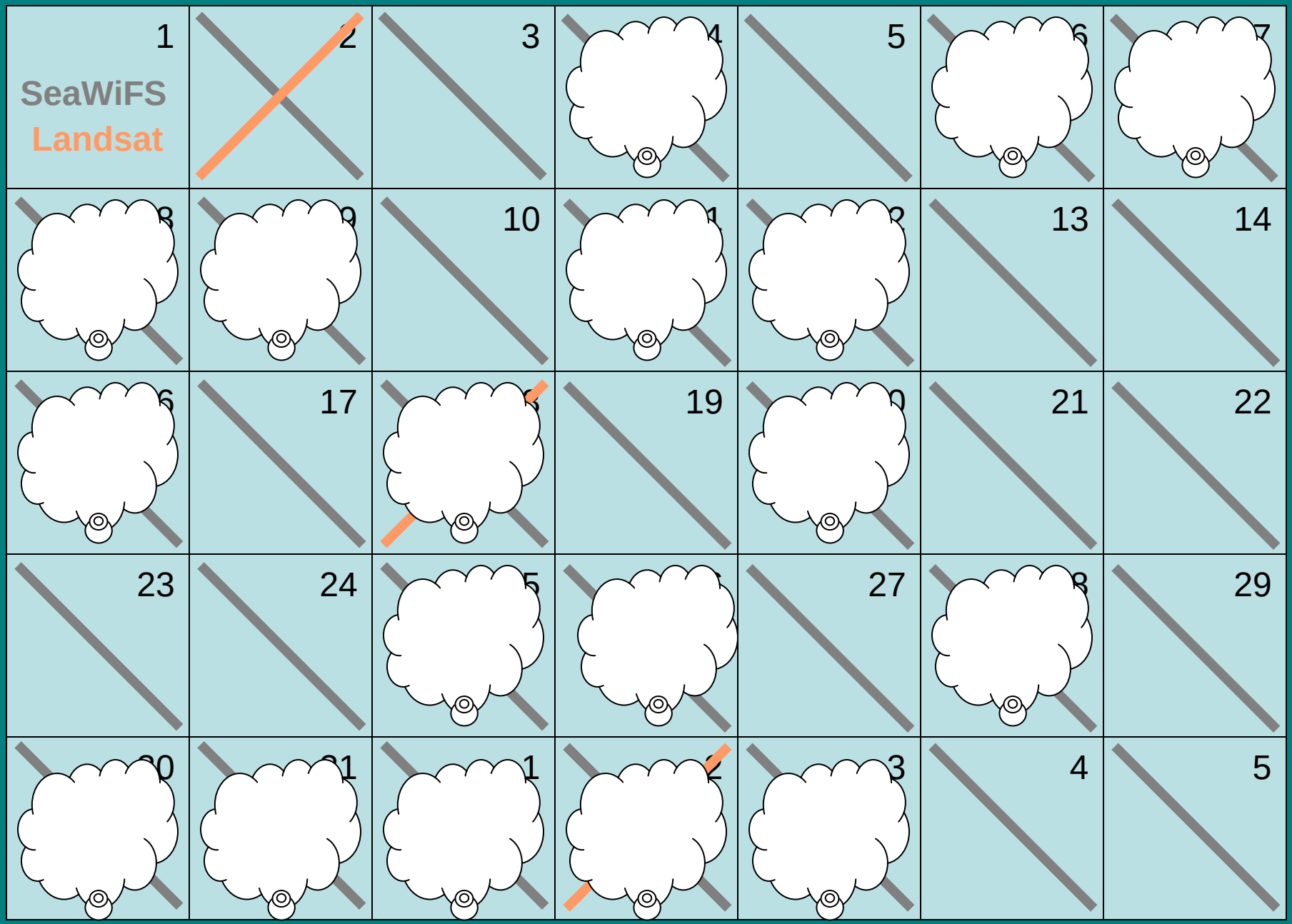
IKONOS

•11 X 11 km

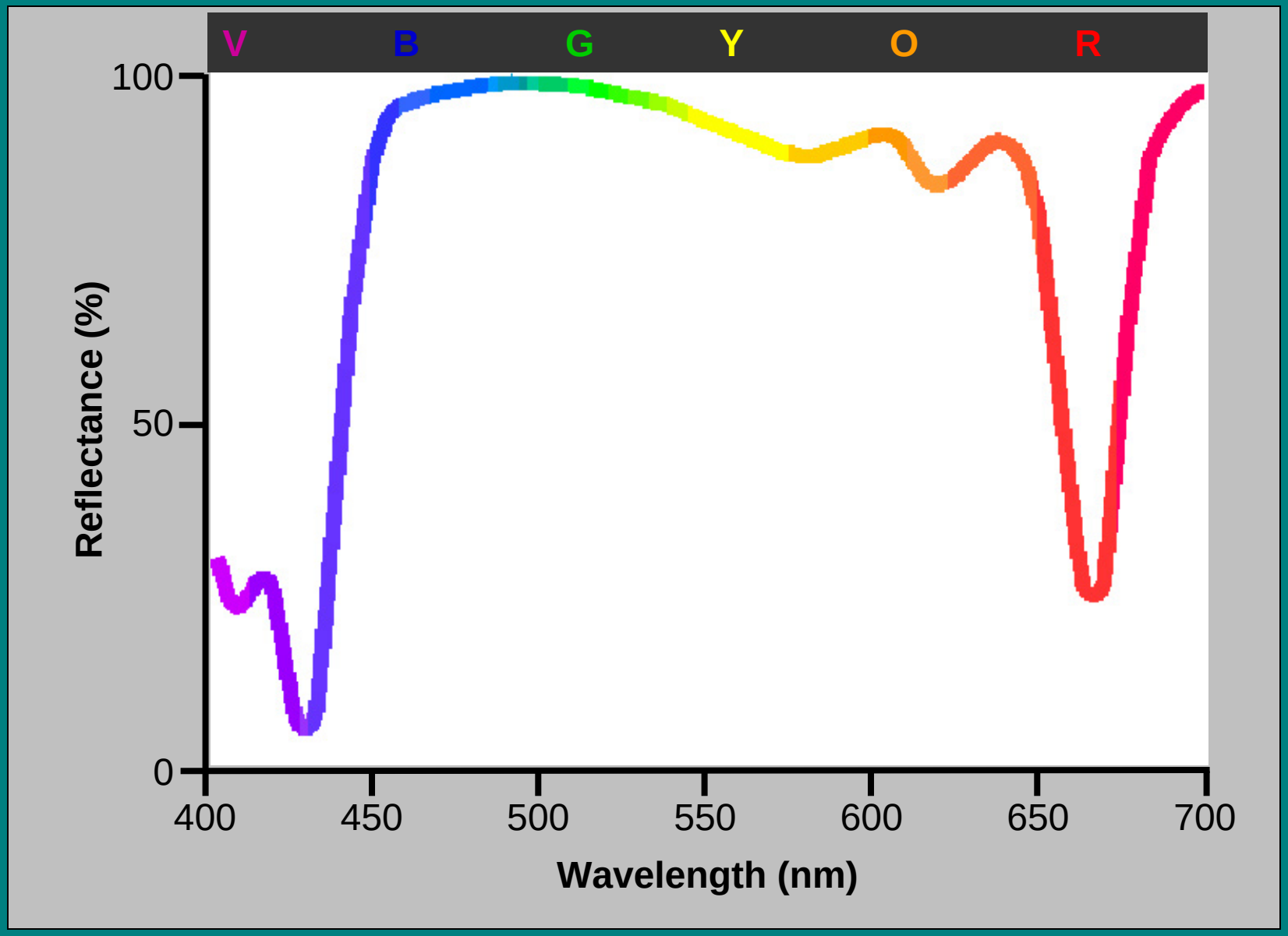
TEMPORAL RESOLUTION

1 **SeaWiFS**	2	3	4	5	6	7
8	9	10	11	12	13	14
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31	1	2	3	4	5

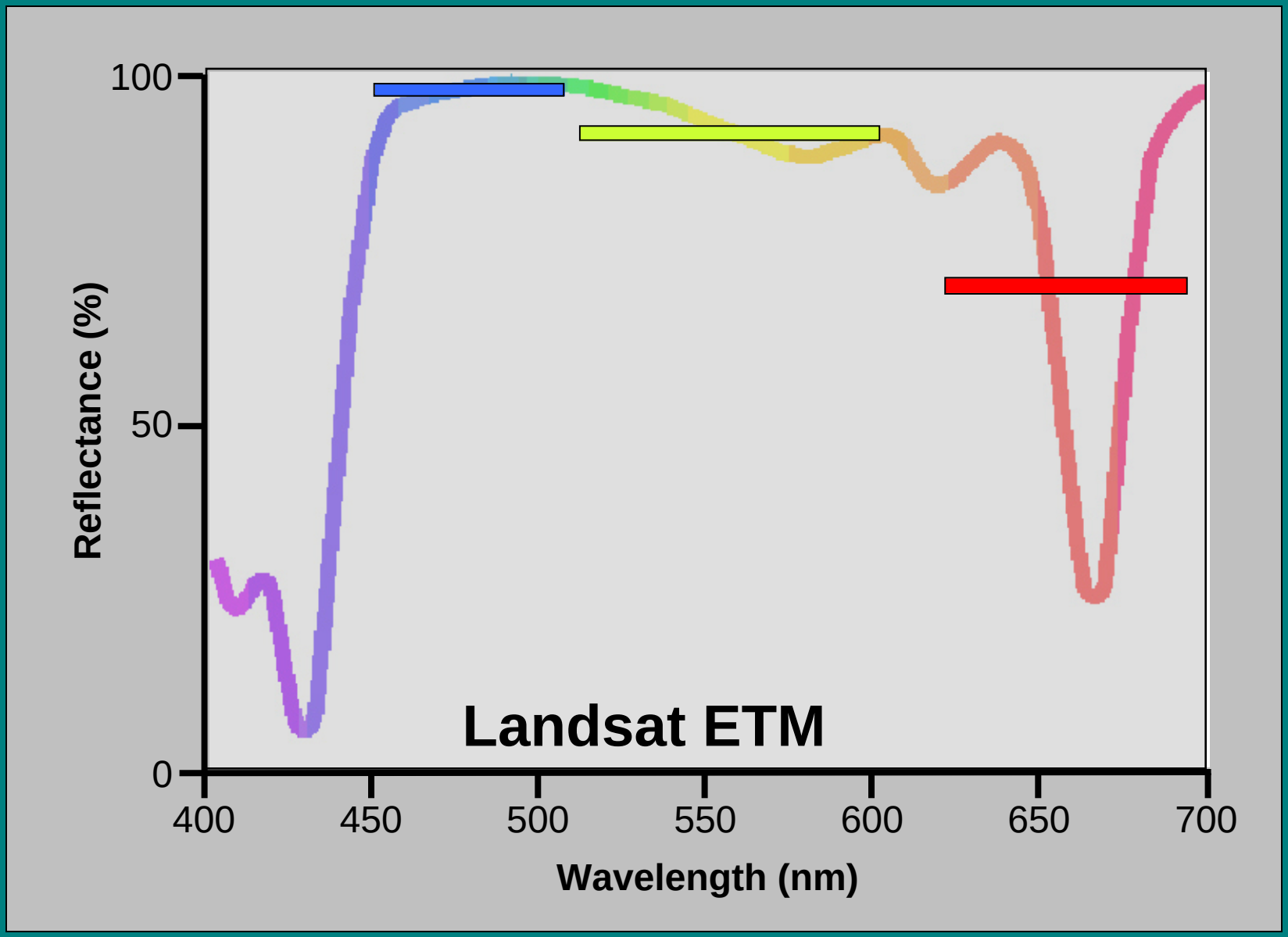
TEMPORAL RESOLUTION



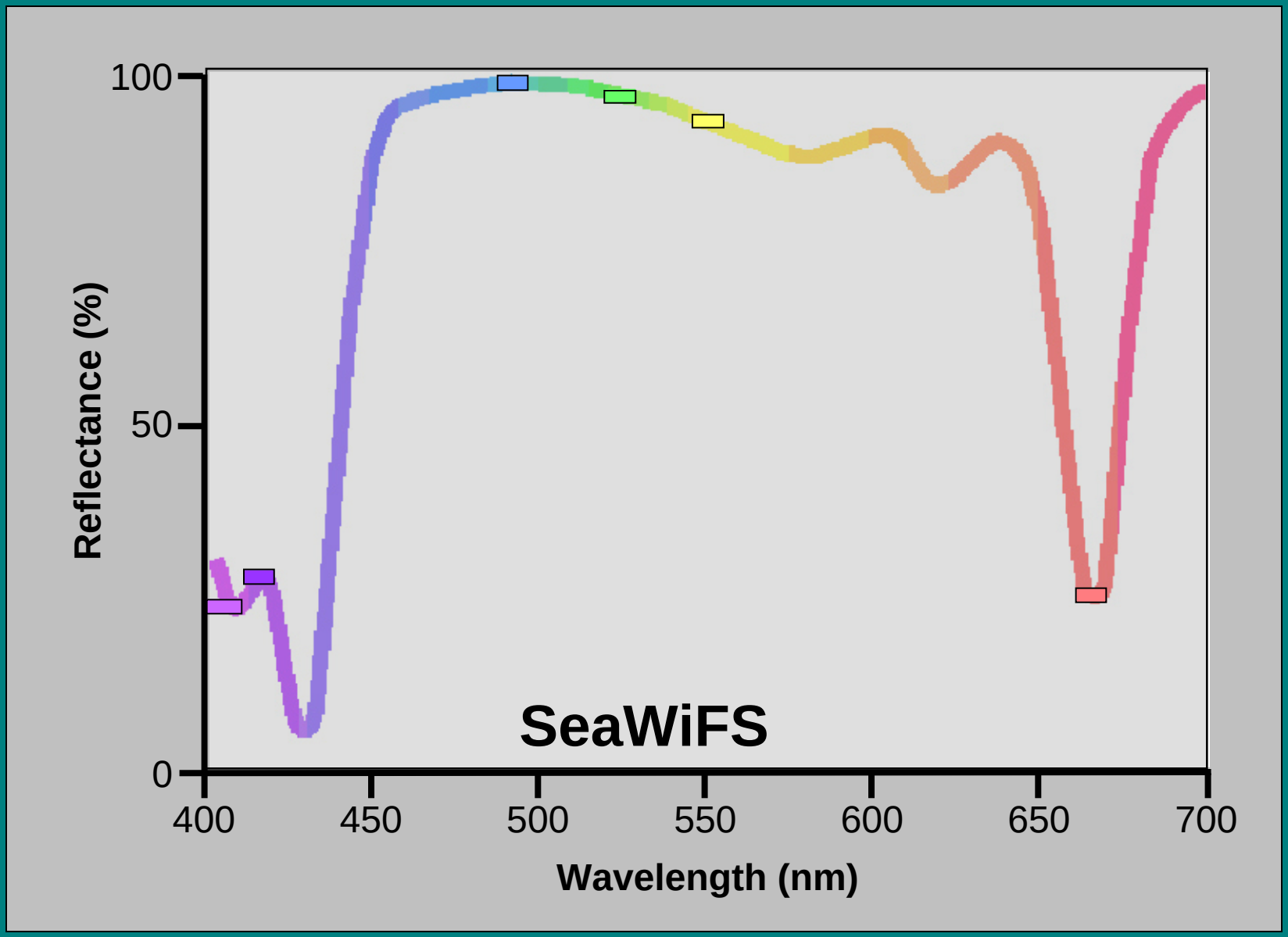
SPECTRAL RESOLUTION



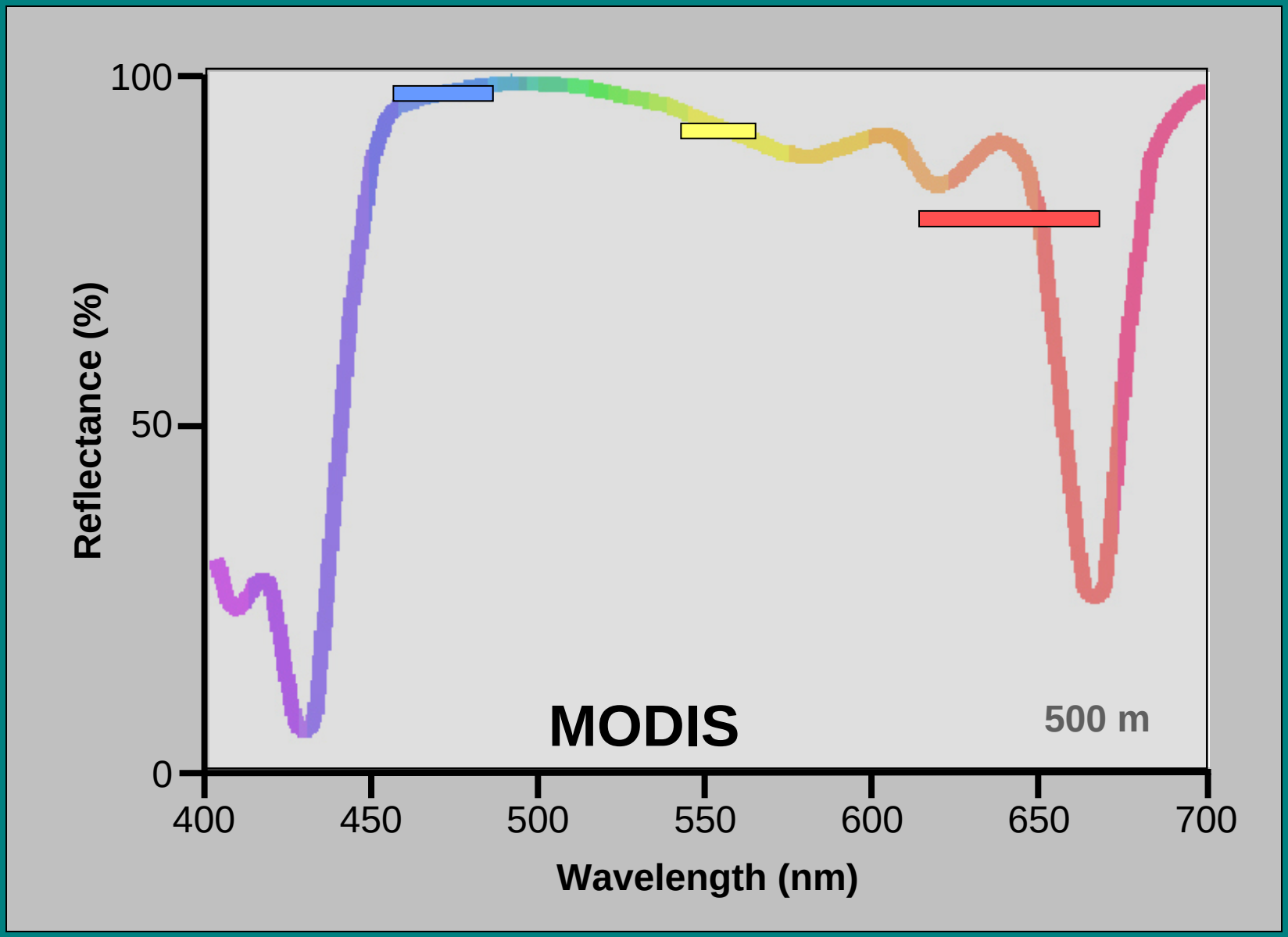
SPECTRAL RESOLUTION



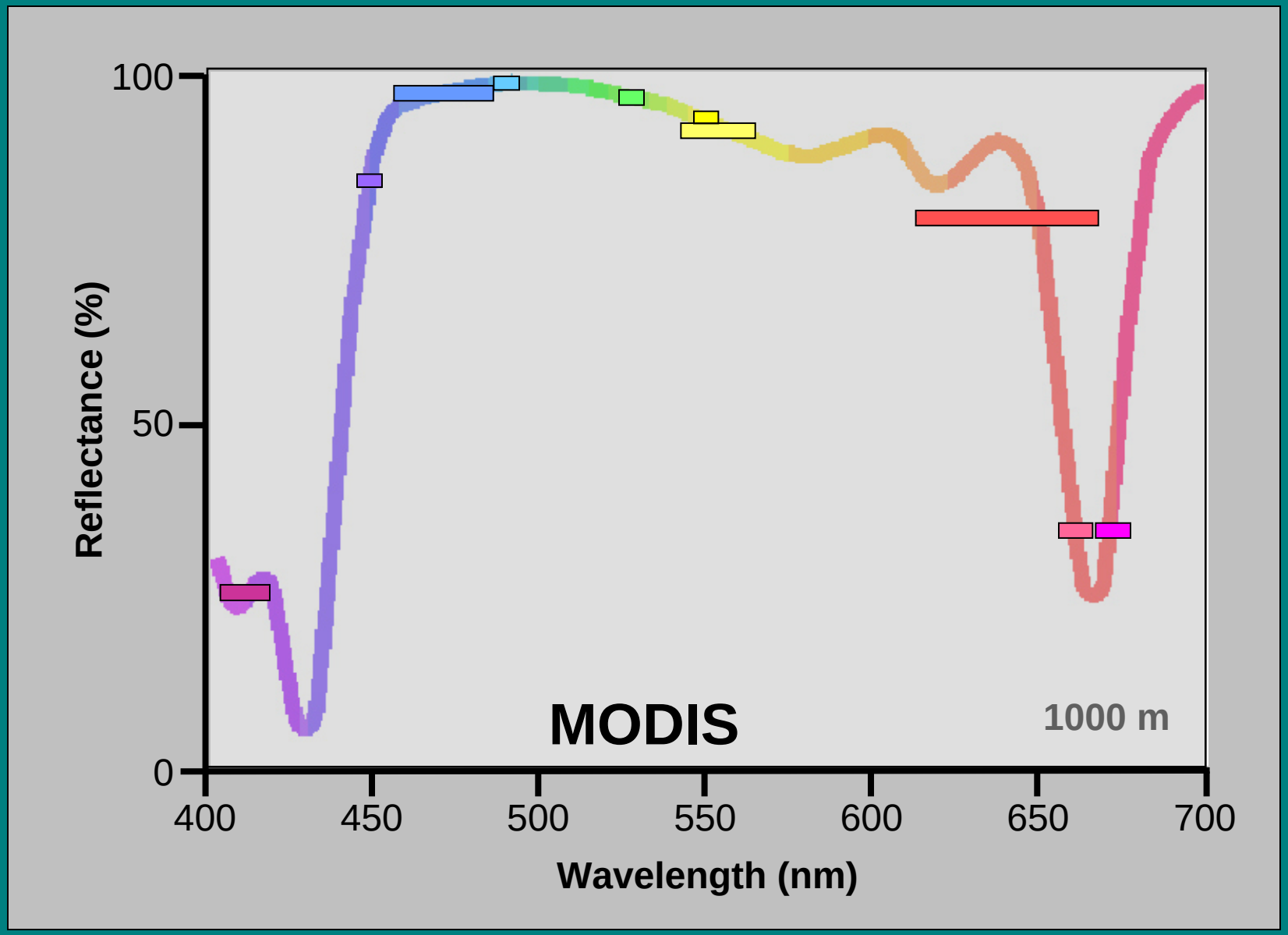
SPECTRAL RESOLUTION



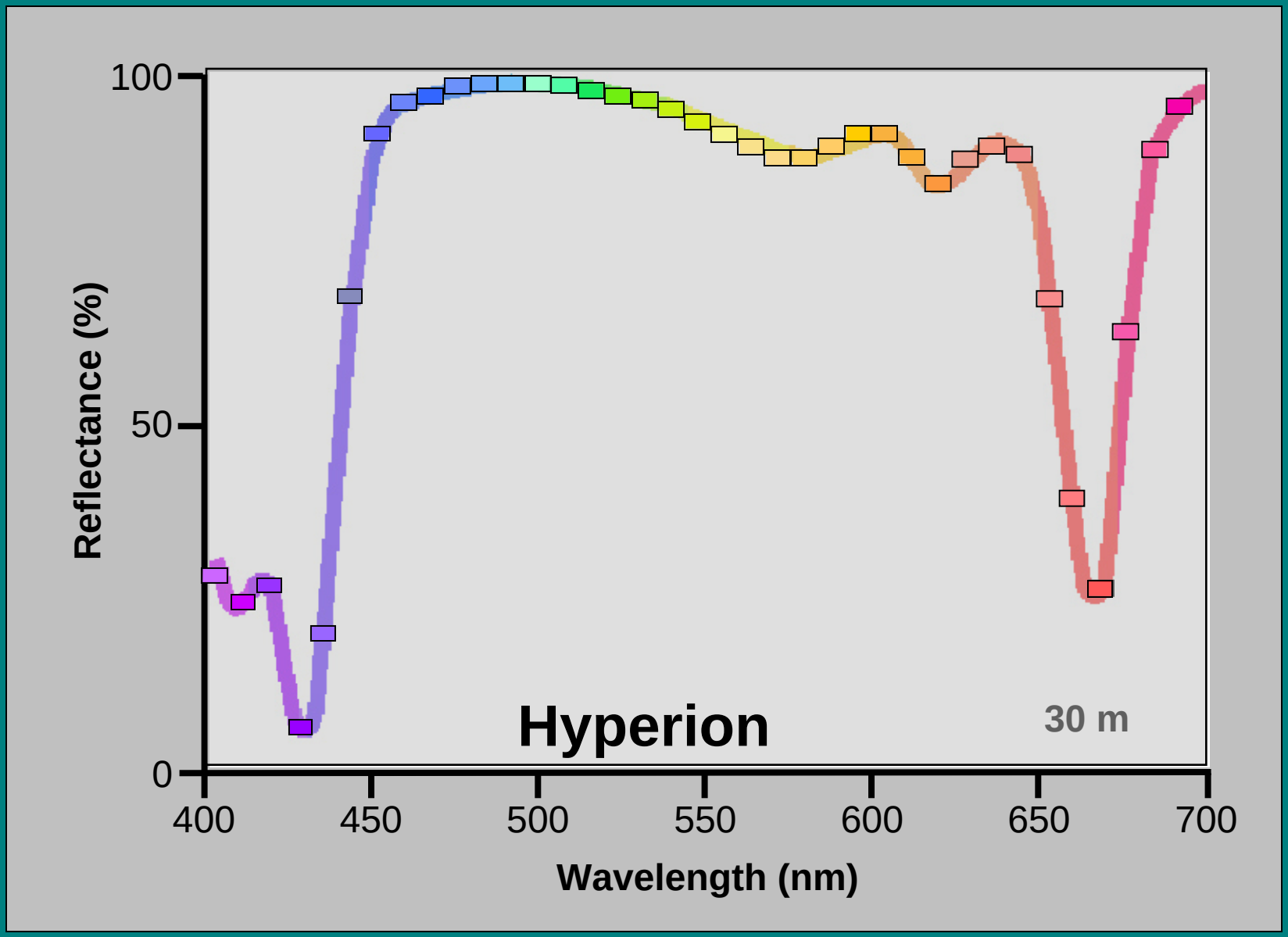
SPECTRAL RESOLUTION



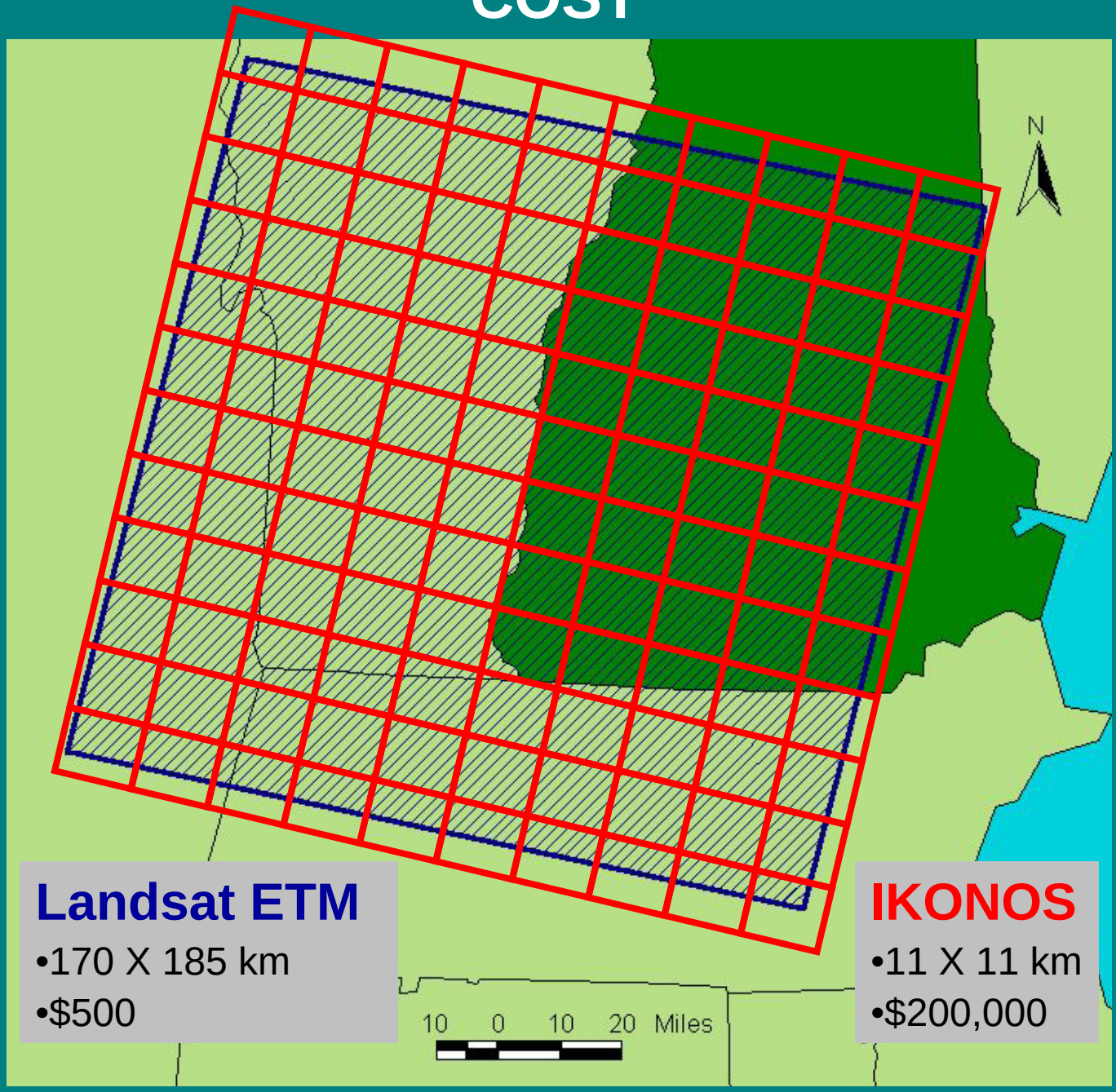
SPECTRAL RESOLUTION



SPECTRAL RESOLUTION



COST



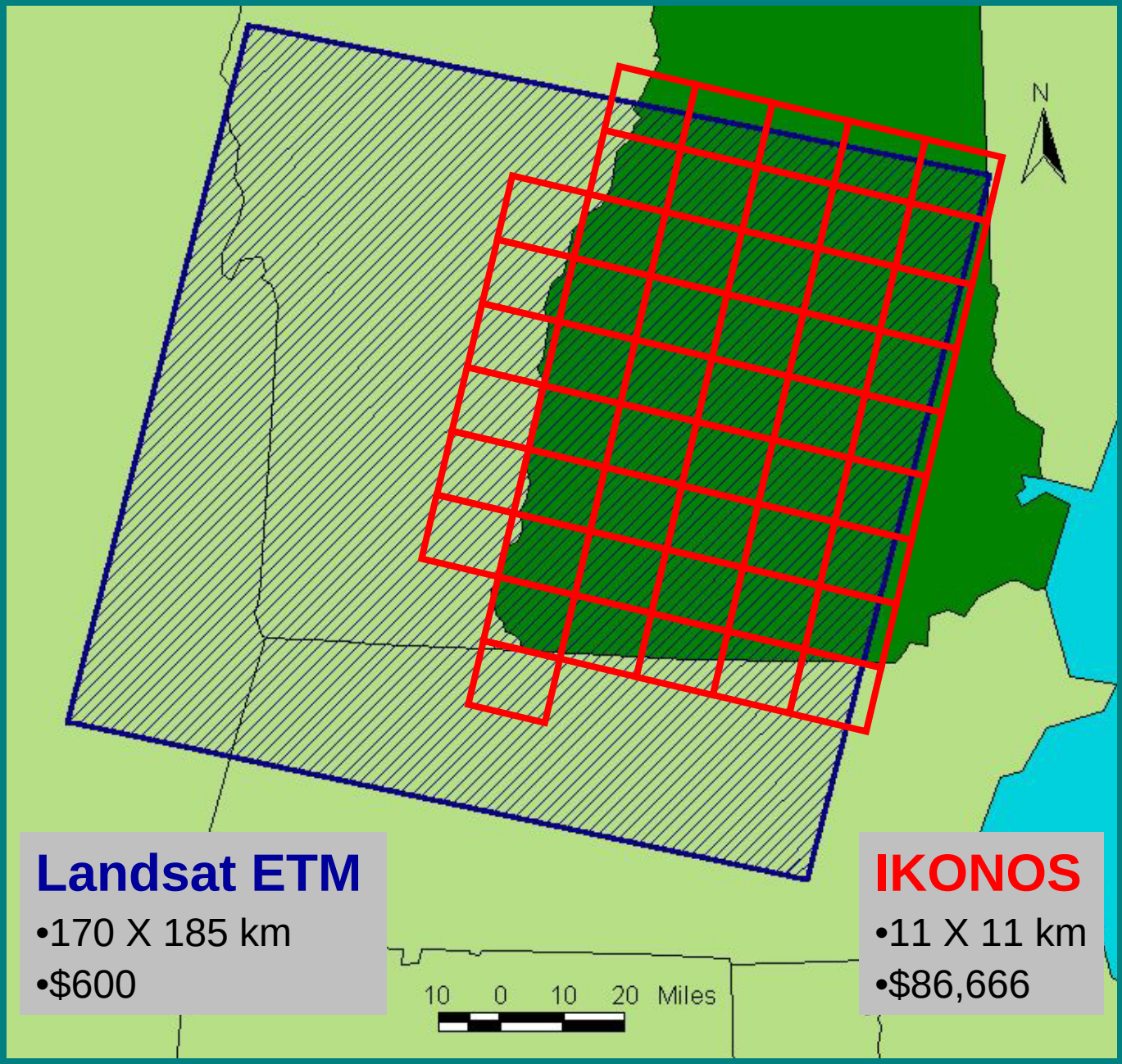
Landsat ETM

- 170 X 185 km
- $500

IKONOS

- 11 X 11 km
- $200,000

COST



Landsat ETM
- 170 X 185 km
- $600

IKONOS
- 11 X 11 km
- $86,666

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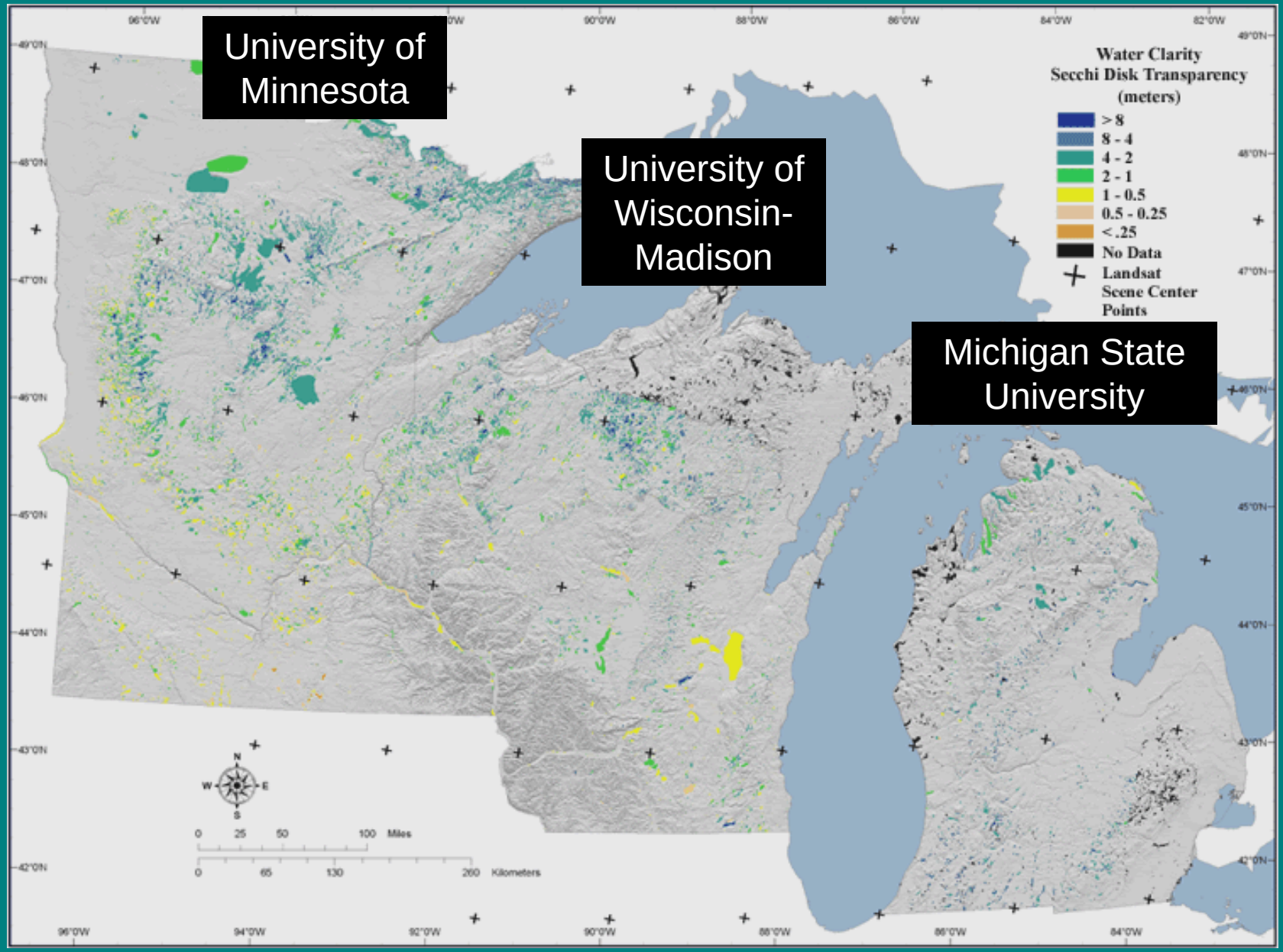
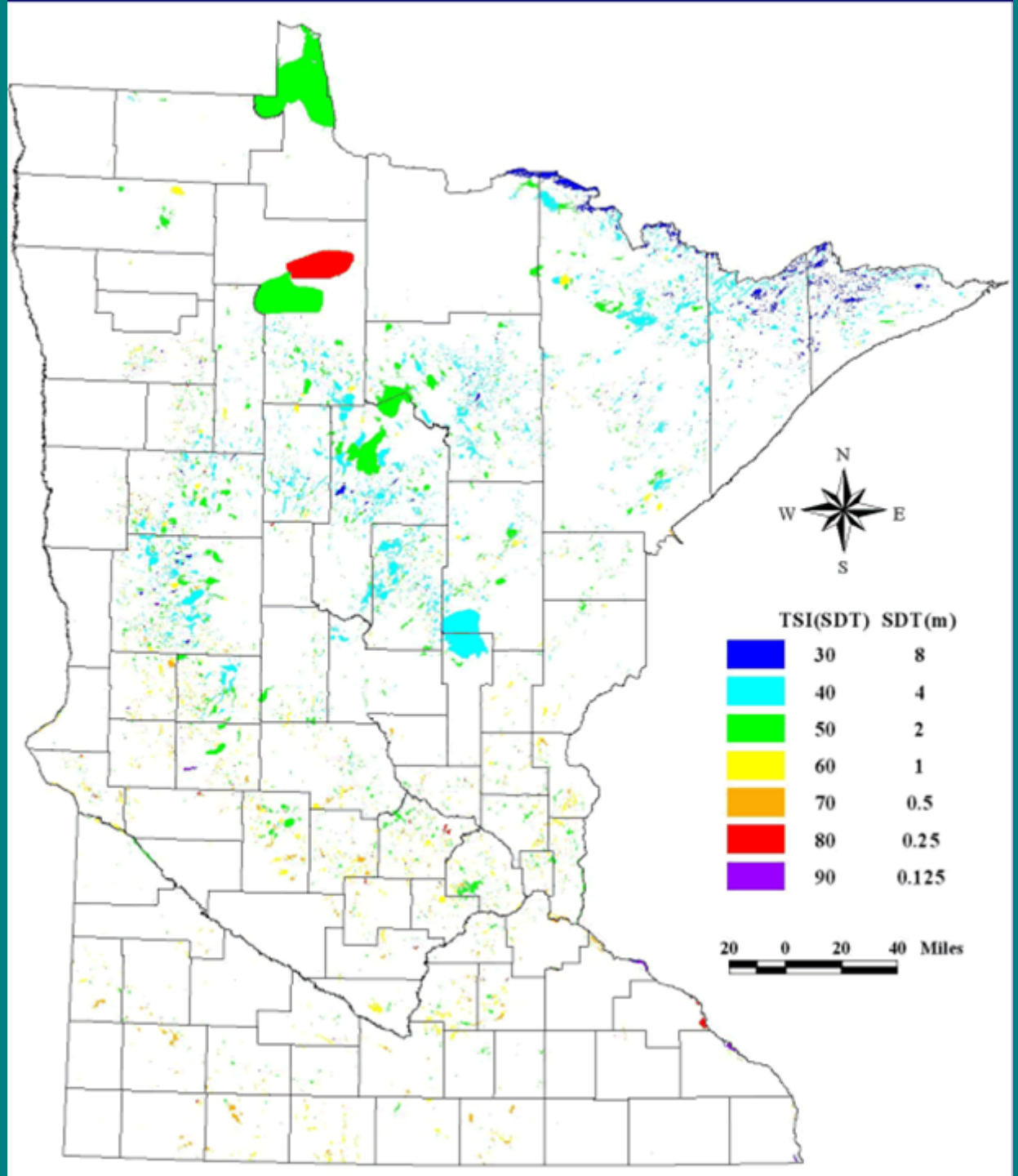
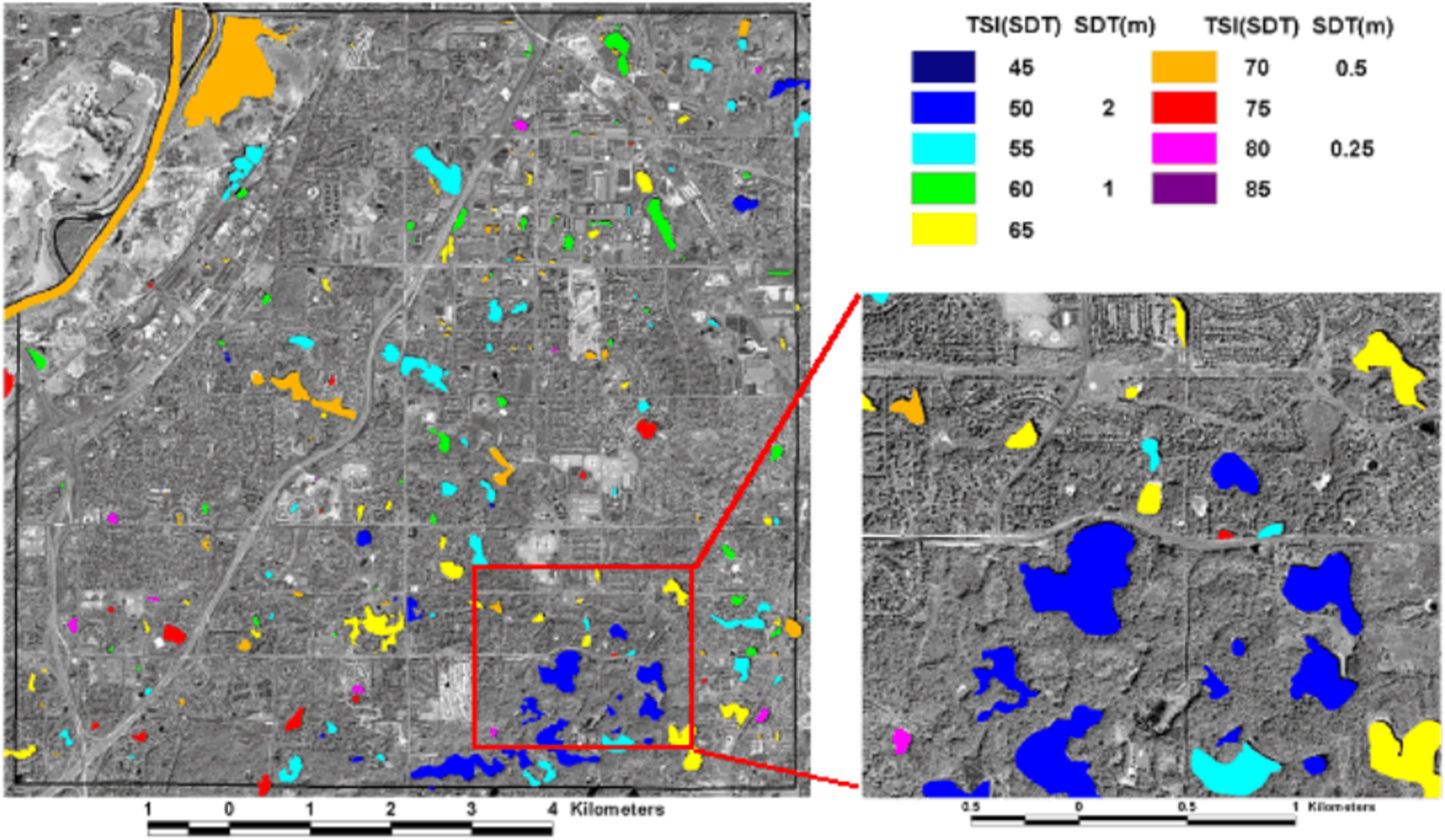
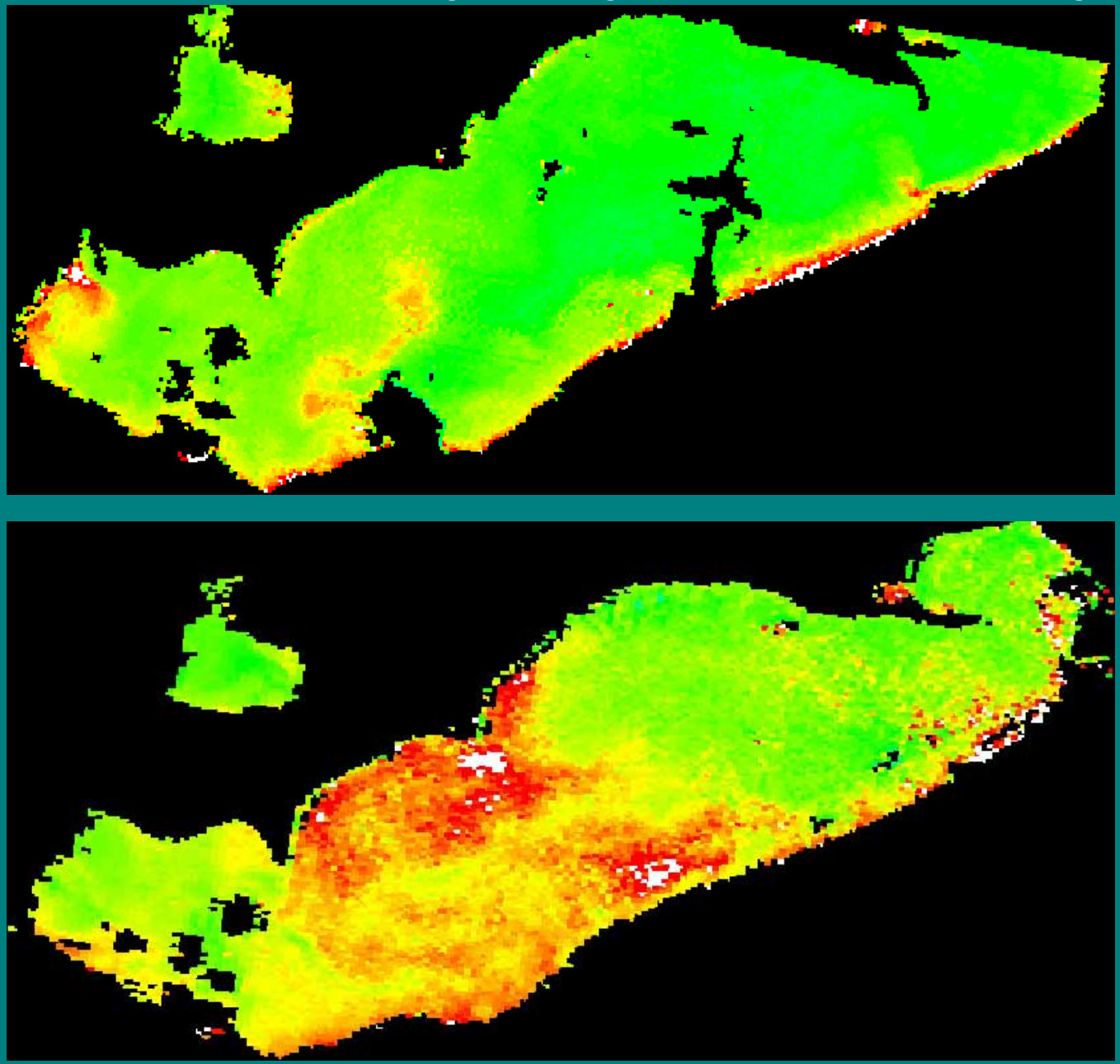
Upper Midwest Regional Earth Science Applications Center




N
W
E
S
TSI(SDT) SDT(m)
30 8
40 4
50 2
60 1
70 0.5
80 0.25
90 0.125
20 0 20 40 Miles


TSI(SDT)
SDT(m)
45
50
55
60
65
2
1
TSI(SDT)
SDT(m)
70
75
80
85
0.5
0.25
1 0 1 2 3 4 Kilometers
0.5 0 0.5 1 Kilometers

Chlorophyll mapping of Lake Erie
Dr. Carolyn Merry, Ohio State University



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Important considerations

- Would you like to observe one lake, or many lakes?
- How large is the lake(s) would like to observe?
- What types of measurements would you like to make?
- How often do you need measurements to be taken?
- How much expertise is required to handle/analyze the imagery?
- How much does the imagery cost?

The answers to these questions in consideration with spectral, spatial, and temporal resolution, as well as, extent and cost of imagery to choose a sensor…


Questions?