

How to choose the best dataset for your project

NOAA Coastwatch Satellite Course



Balance the Needs of Your Project



Temporal coverage

Was the satellite flying during the dates of my study?

Geographical coverage

Does the dataset have data in my area of interest?

Spatial resolution

How big can the pixels be?

Temporal resolution

How often does the satellite fly over my area of interest?

Latency / Quality

How fast do I need the data after it's been collected and at what quality?

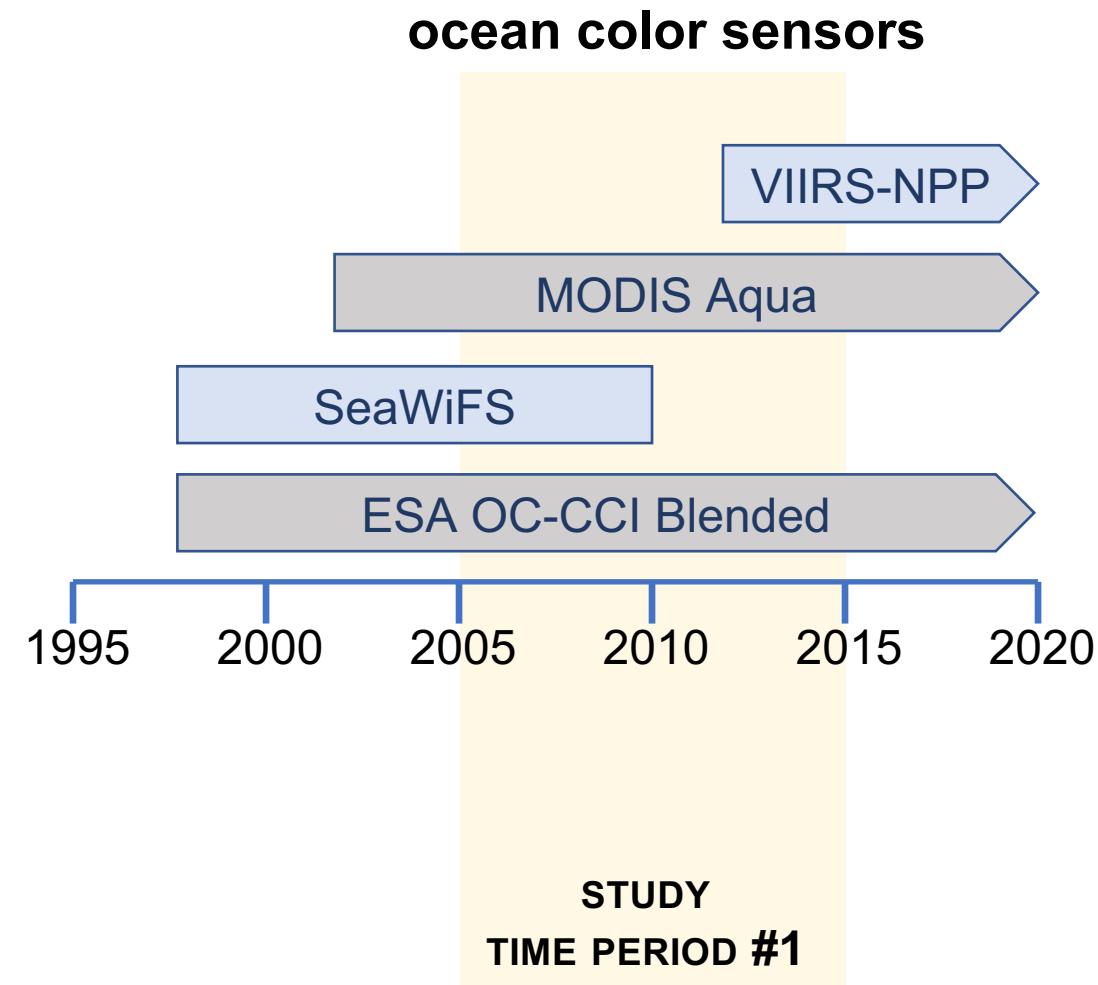
Missing data

How much missing data can I tolerate?



Does the dataset cover the time of your study?

SENSORS HAVE A LIMITED LIFESPAN



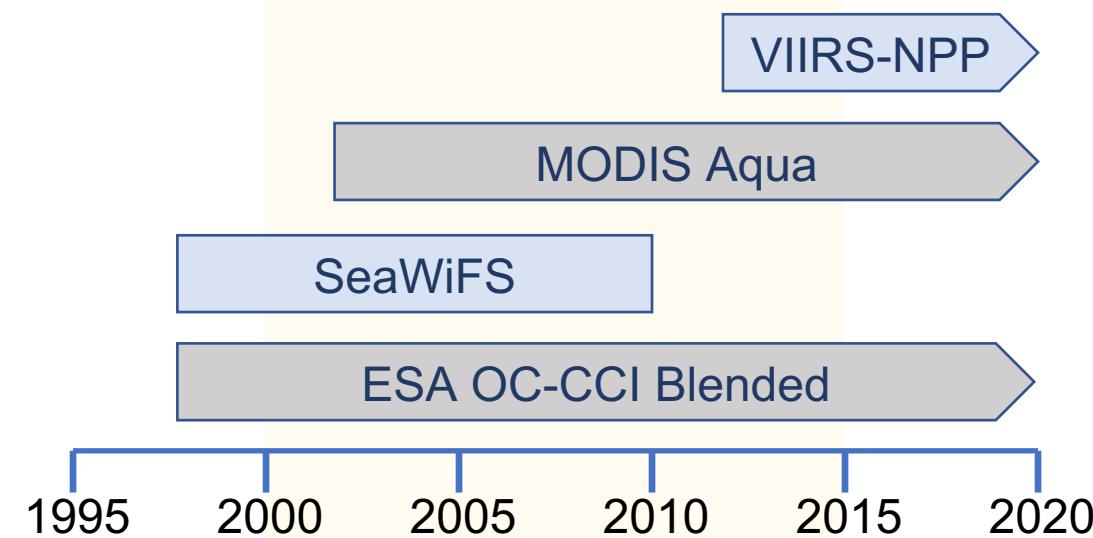
TEMPORAL COVERAGE



Does the dataset cover the time of your study?

SENSORS HAVE A LIMITED LIFESPAN

ocean color sensors



TEMPORAL COVERAGE

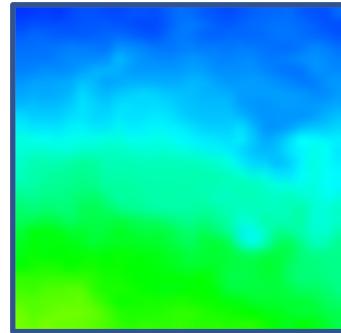


4

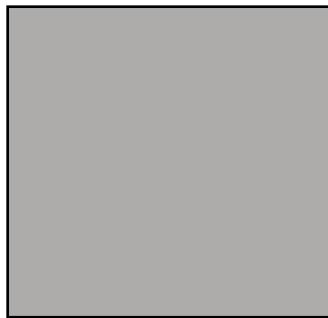
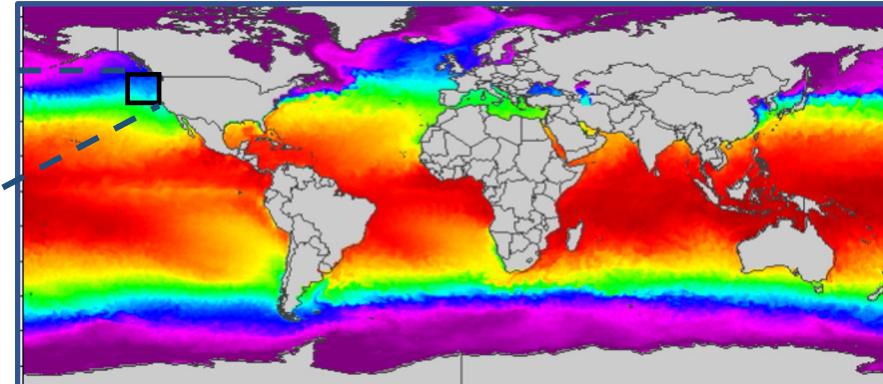


Does the dataset cover your area of interest?

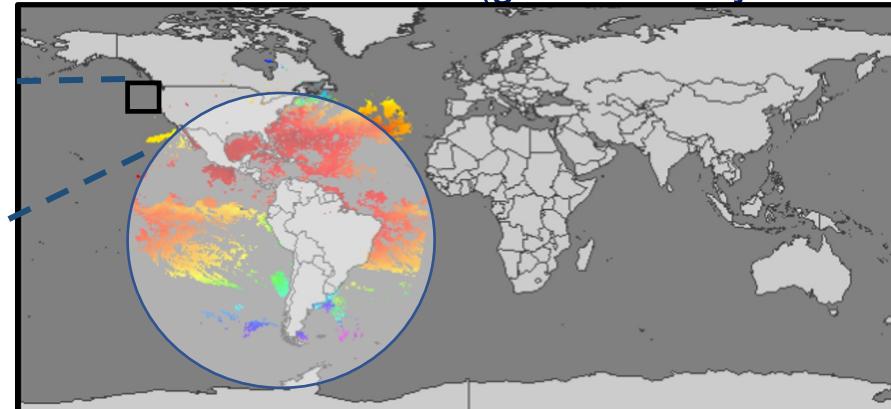
SOME DATASETS HAVE GLOBAL COVERAGE, OTHERS ARE REGIONAL



NOAA GeoPolar Blended SST



NOAA GOES East SST(geostationary satellite)

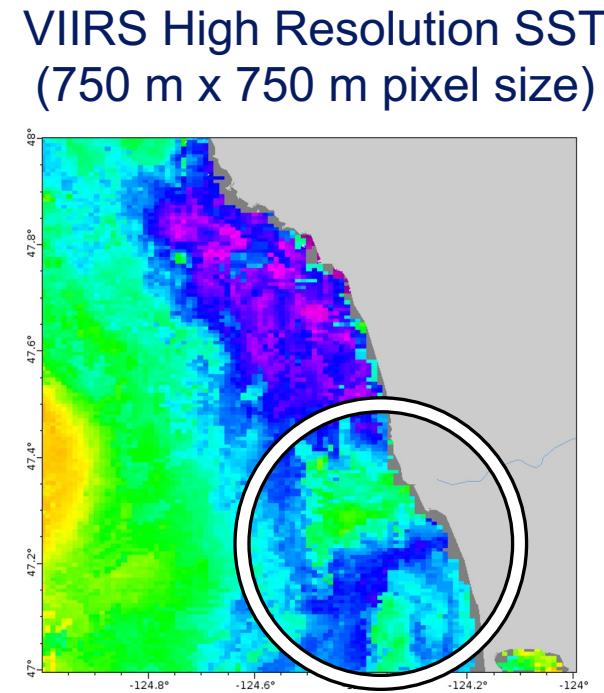
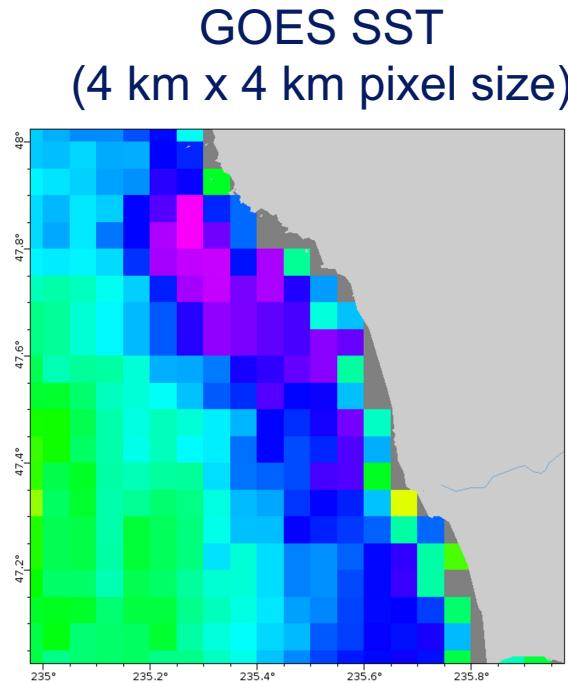


SPATIAL COVERAGE



How big are the pixels?

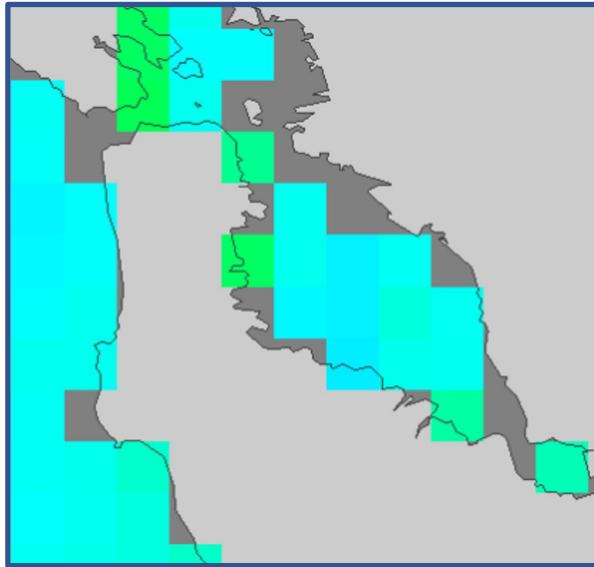
LARGE PIXELS ARE BEST FOR LARGER REGIONS AND WHEN NOT TRACING SCALE FINE FEATURES



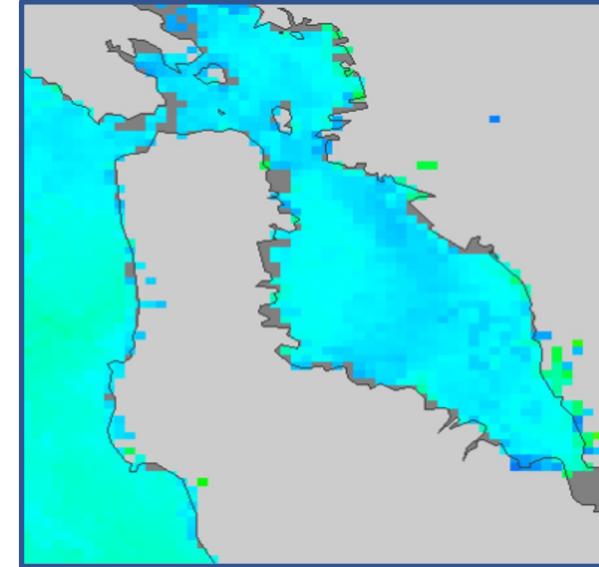
How big can the pixels be?

SMALLER PIXELS BEST FOR SMALLER REGIONS AND WHEN TRACING SCALE FINE FEATURES

GOES SST
(4 km x 4 km pixel size)



VIIIRS High Resolution SST
(750 m x 750 m pixel size)



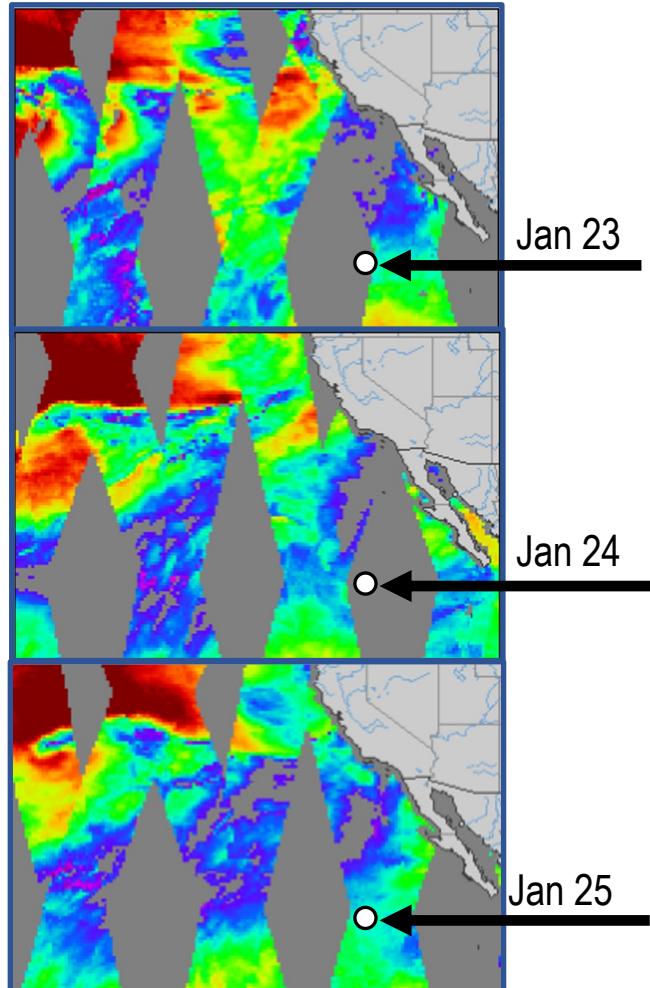
San Francisco Bay

SPATIAL RESOLUTION



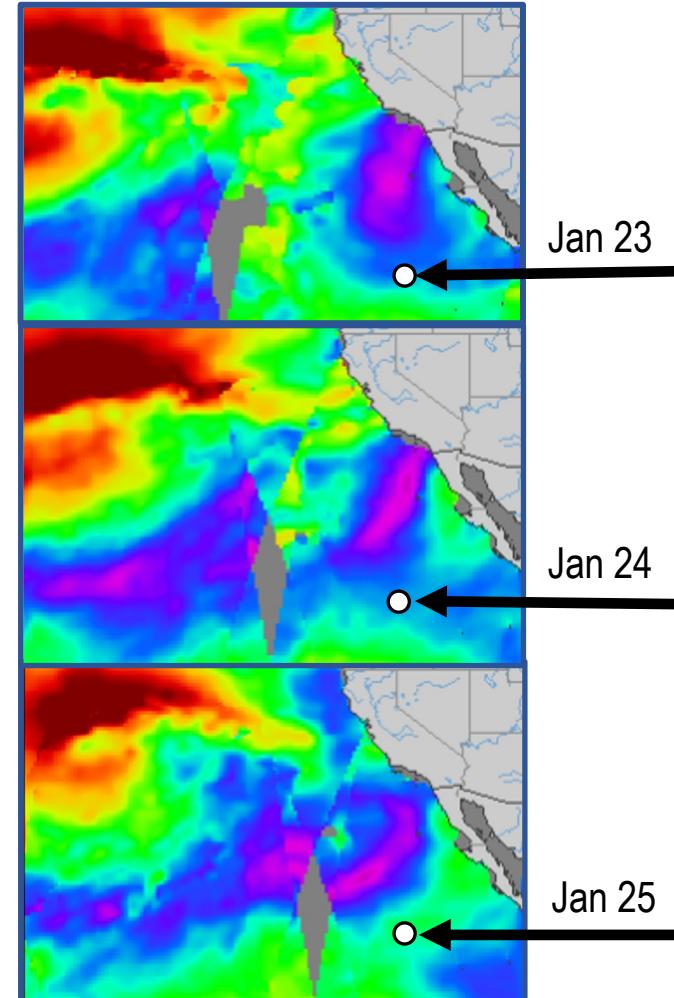
How often do you need a measurement?

ASCAT Daily Winds



TEMPORAL RESOLUTION

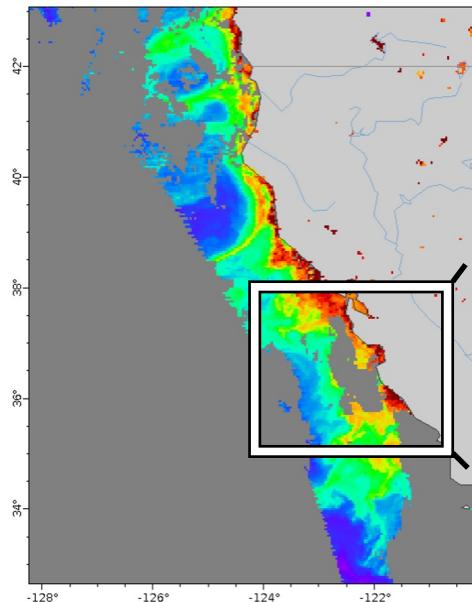
Cross-Calibrated
Multi-Platform Winds



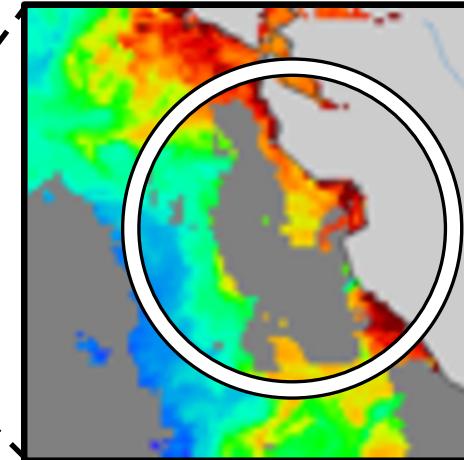
How fast do you need the data and at what quality?

THERE IS A TRADEOFF BETWEEN LATENCY AND QUALITY

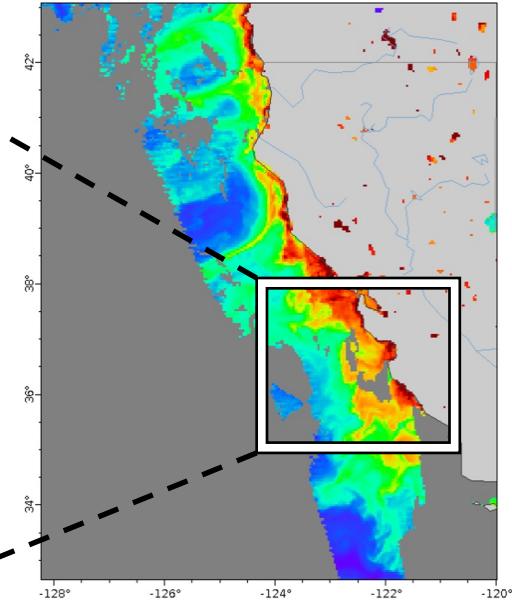
VIIRS Chlorophyll Delayed-Release
Science Quality (2 week lag)



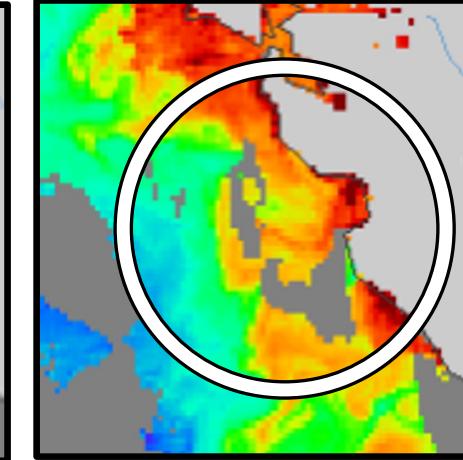
Science Quality Inset



VIIRS Chlorophyll, Near Real-Time
Lower Quality Control



Near Real-Time Inset



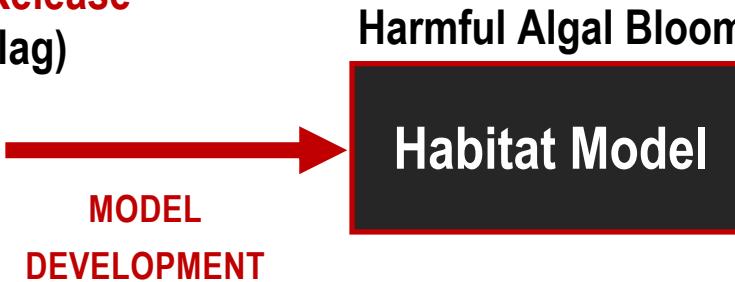
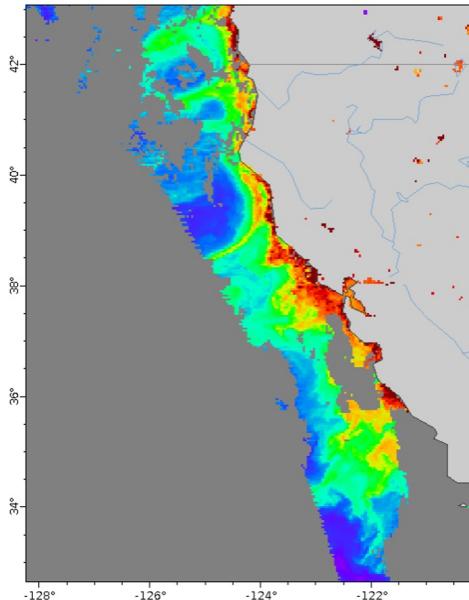
LATENCY / QUALITY



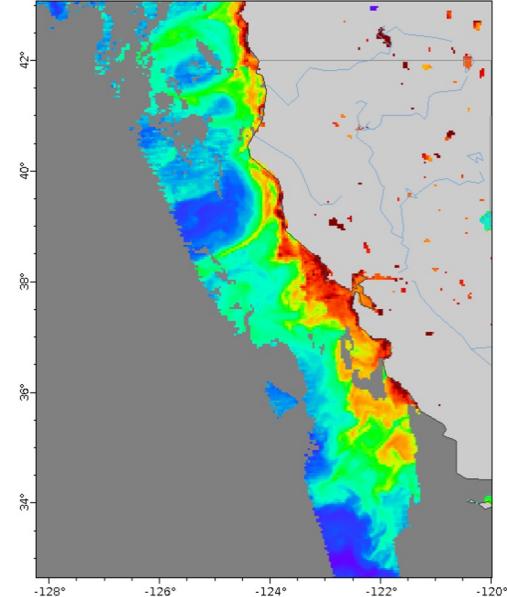
Some applications require science quality data

EXAMPLE: DEVELOPING HABITAT MODELS

VIIRS Chlorophyll **Delayed-Release**
Science Quality (2 week lag)



VIIRS Chlorophyll, **Near Real-Time**
Lower Quality Control



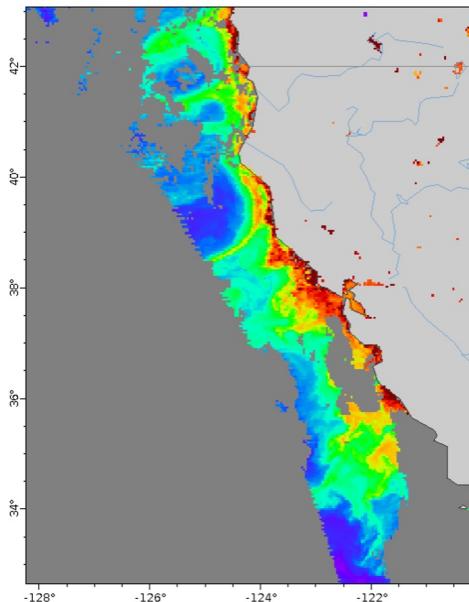
LATENCY / QUALITY



Other applications require near real-time data

EXAMPLE: GENERATING FORECASTS AND NOWCASTS FROM THE MODEL

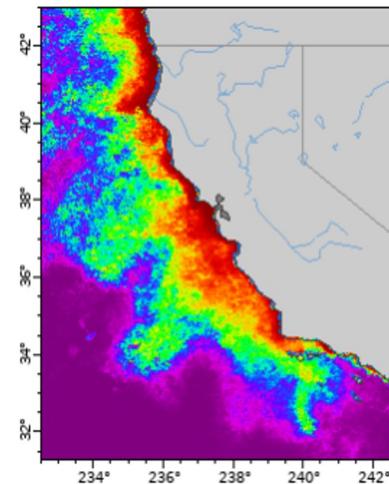
VIIRS Chlorophyll **Delayed-Release**
Science Quality (2 week lag)



LATENCY / QUALITY

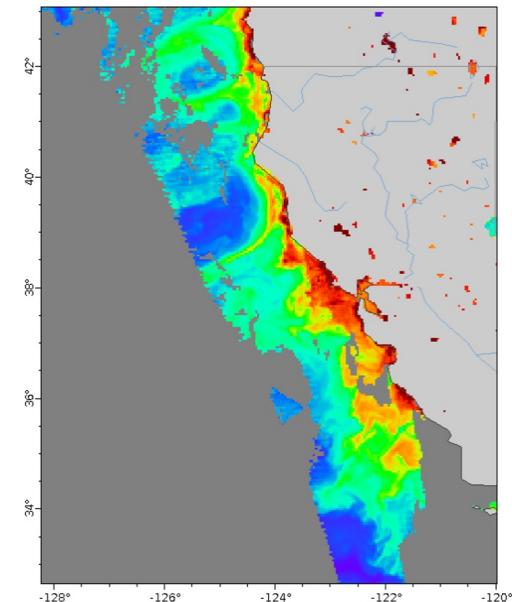
Harmful Algal Bloom

Habitat Model



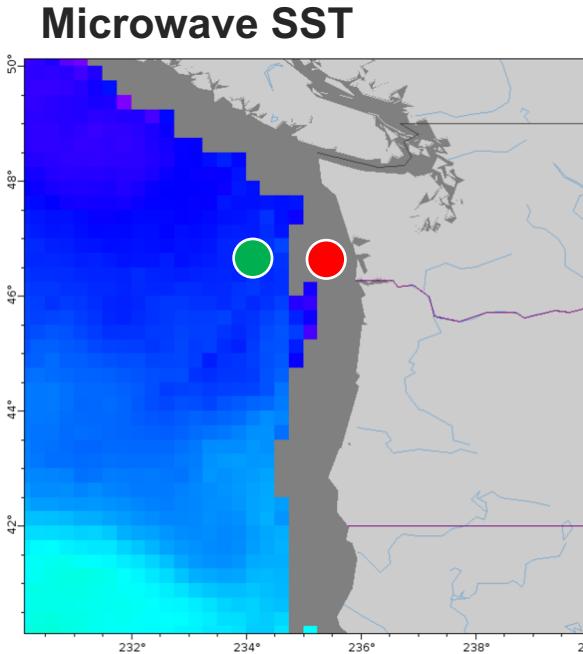
Harmful Algal Bloom Forecast

VIIRS Chlorophyll, Near Real-Time
Lower Quality Control



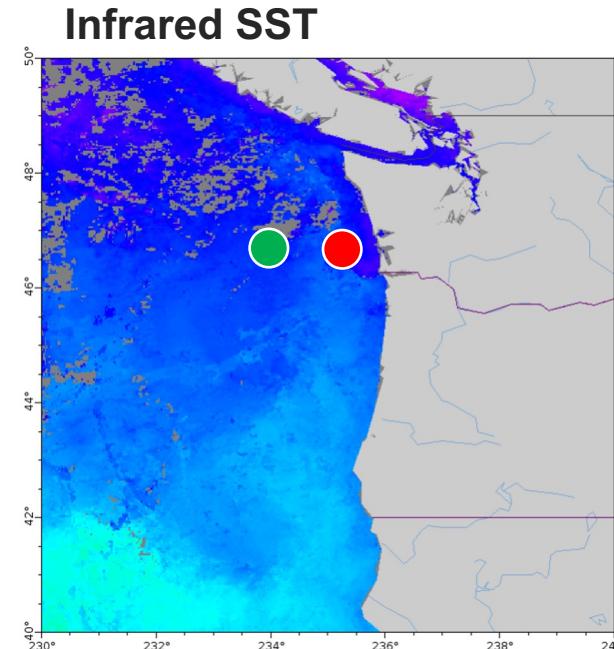
How much missing data can your project tolerate?

CLOUDS AND PROXIMITY TO LAND CAN CAUSE MISSING DATA



- LOCATION 1
- LOCATION 2

CAN SEE THROUGH CLOUDS
CANNOT MEASURE CLOSE TO LAND

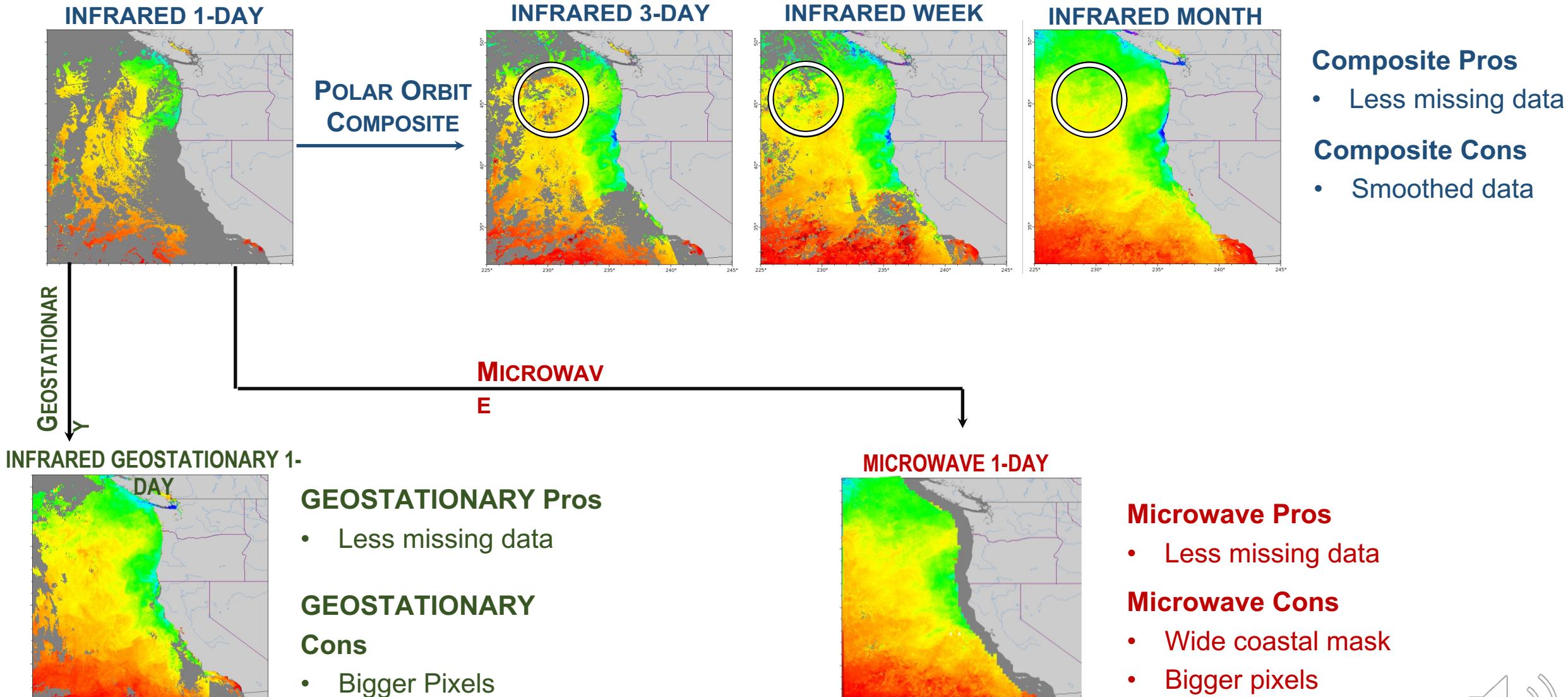


CANNOT SEE THROUGH CLOUDS
CAN MEASURE CLOSER TO LAND

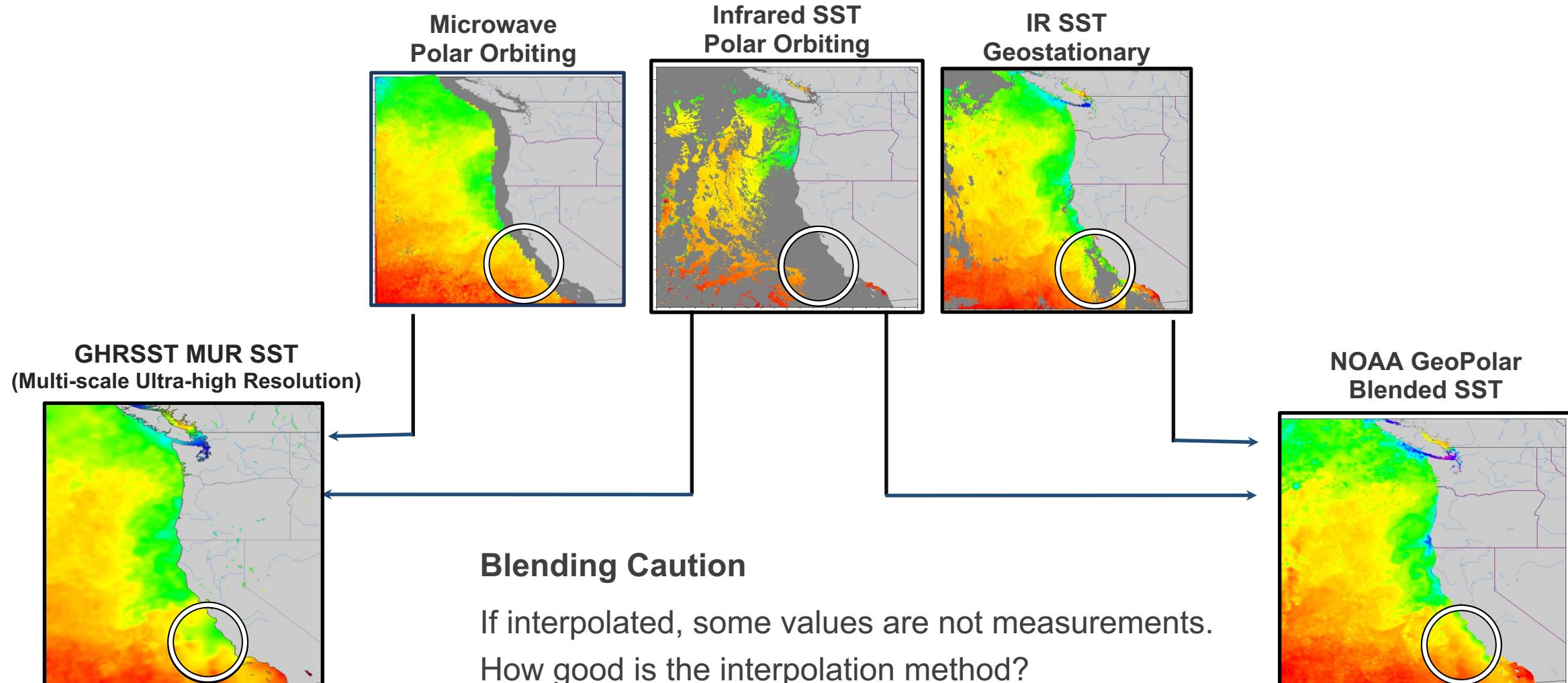
MISSING DATA



Case Study: Managing missing SST data from clouds



Blended SST products – best of all worlds?



Visit the NOAA CoastWatch data catalog pages

EACH OF THESE CATALOGS PROVIDE INFORMATION ABOUT DATASETS TO HELP YOU DECIDE WHICH TO USE



NOAA CoastWatch • OceanWatch
Central Office coastwatch.noaa.gov

NOAA COASTWATCH
WEST COAST REGIONAL NODE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
coastwatch.pteg.noaa.gov/data.html

NOAA OCEANWATCH
CENTRAL PACIFIC NODE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
<https://oceanwatch.pifsc.noaa.gov/doc.html>

NOAA POLARWATCH
COASTWATCH REGIONAL NODE
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION
polarwatch.noaa.gov

NOAA CoastWatch
Caribbean and Gulf of Mexico Regional Node
cwcaribbean.aoml.noaa.gov

NOAA CoastWatch
EAST COAST NODE
eastcoast.coastwatch.noaa.gov

NOAA CoastWatch
Great Lakes
coastwatch.glerl.noaa.gov

Preview sample images

Find out the geographical coverage

Find out the temporal range coverage

Review metadata for details about datasets



NOAA CoastWatch Satellite Course - Narrated Presentations

- Satellite 101 – Part 1
- Satellite 101 – Part 2
- Fundamentals of Ocean Color
- Fundamentals of Sea-Surface Temperature
- Fundamentals of Altimetry, Wind and Salinity
- Introduction to ERDDAP
- **What Dataset to Choose?**
- Bringing Satellite Data into ARCGIS

