



# 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**

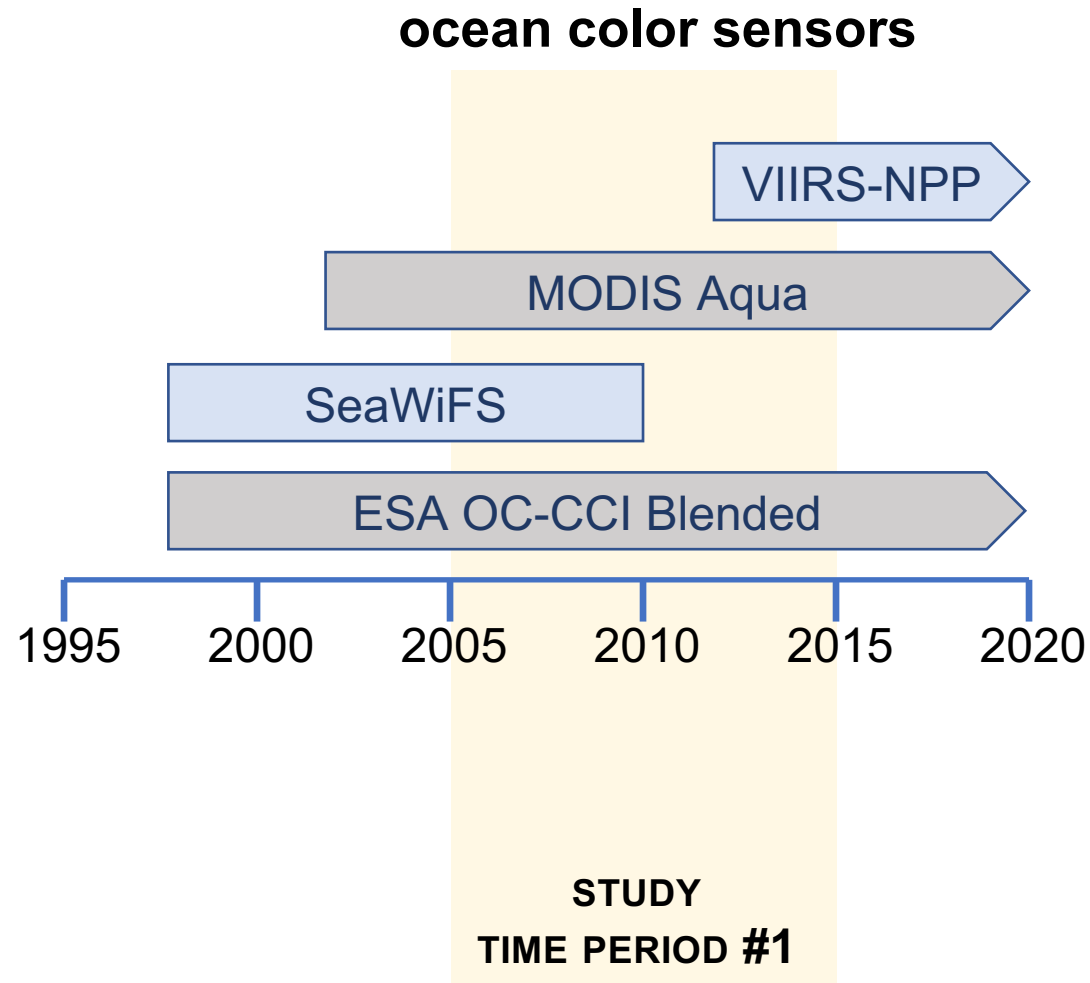
How fast do I need the data after its been collected and at what quality?

## **Missing data**

How much missing data can I tolerate?

# Does the dataset cover the time of your study?

SENSORS HAVE A LIMITED LIFESPAN

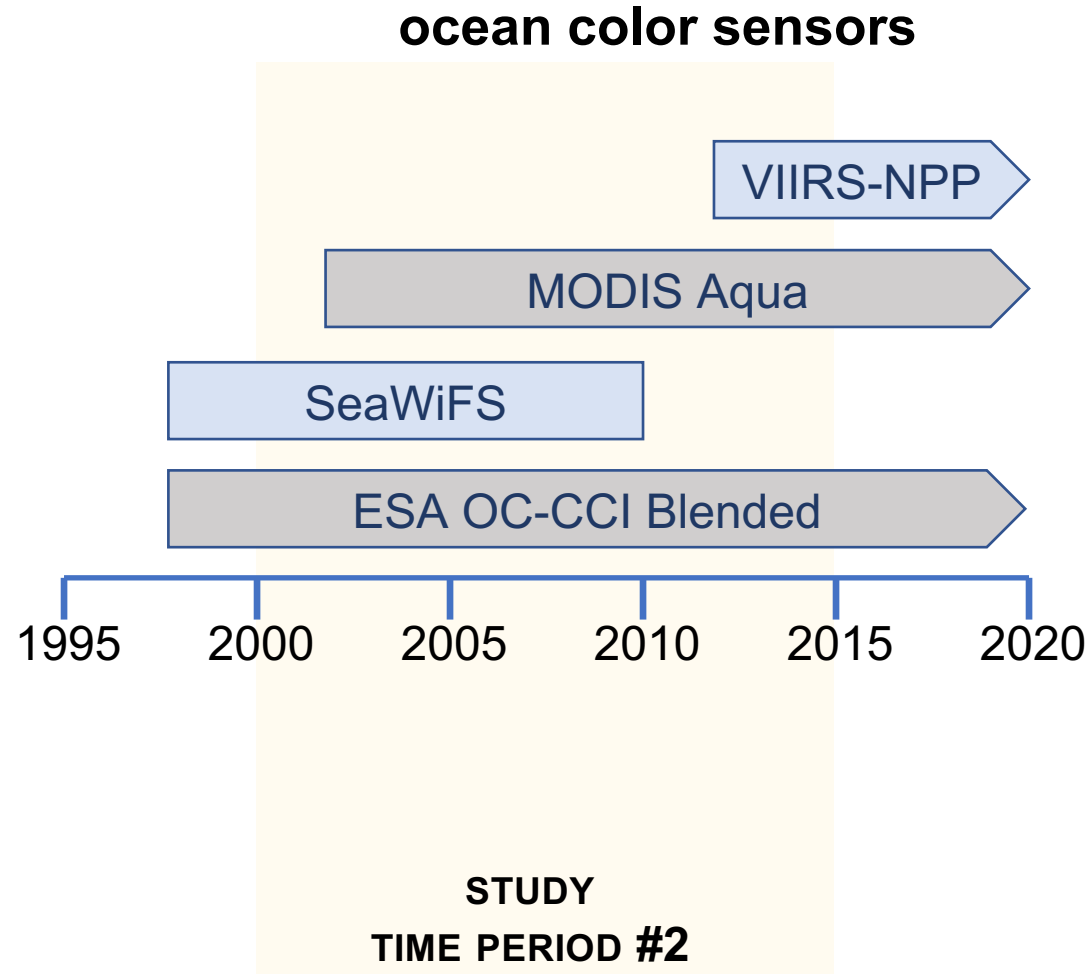


TEMPORAL COVERAGE



# Does the dataset cover the time of your study?

SENSORS HAVE A LIMITED LIFESPAN



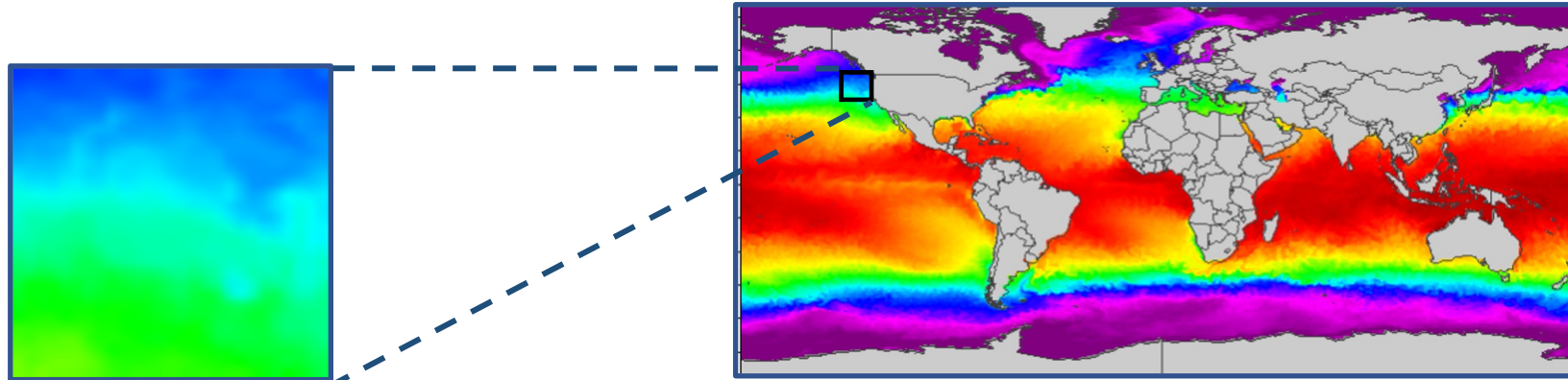
TEMPORAL COVERAGE



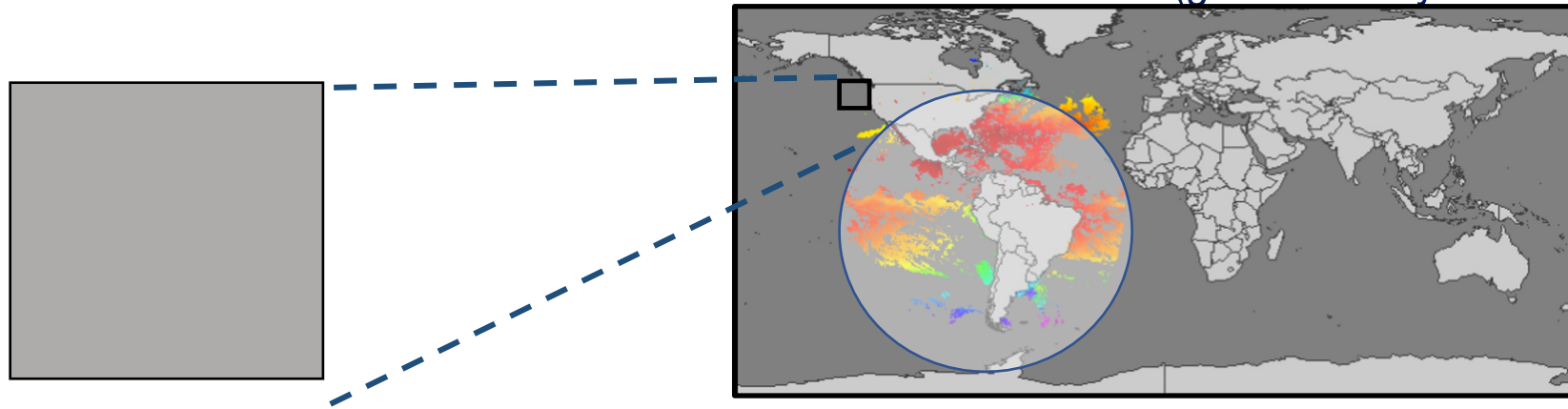
# Does the dataset cover your area of interest?

SOME DATASETS HAVE GLOBAL COVERAGE, OTHERS ARE REGIONAL

NOAA GeoPolar Blended SST



NOAA GOES East SST(geostationary satellite)



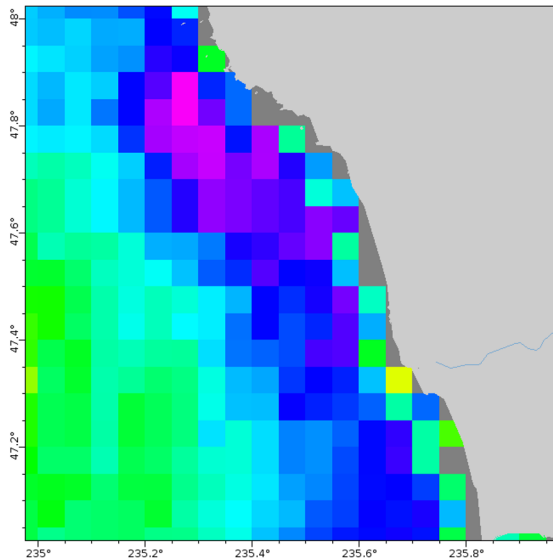
**SPATIAL COVERAGE**



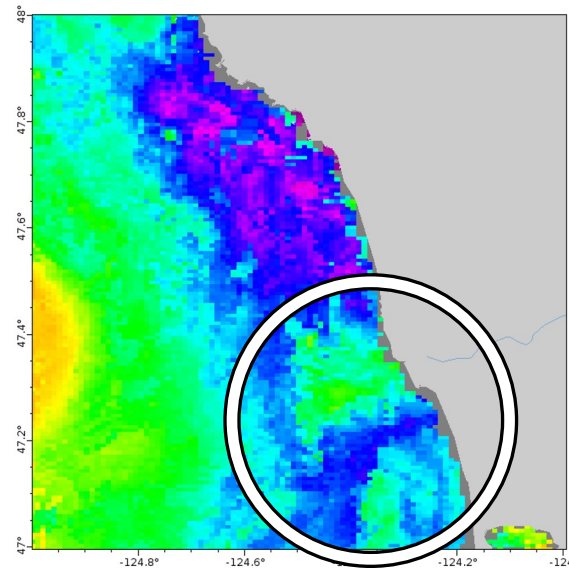
# How big are the pixels?

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

GOES SST  
(4 km x 4 km pixel size)



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



Central California Coast

August 2015

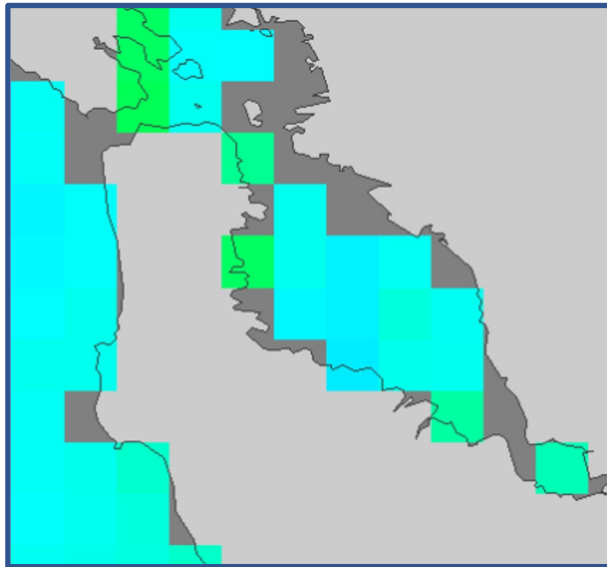
**SPATIAL RESOLUTION**



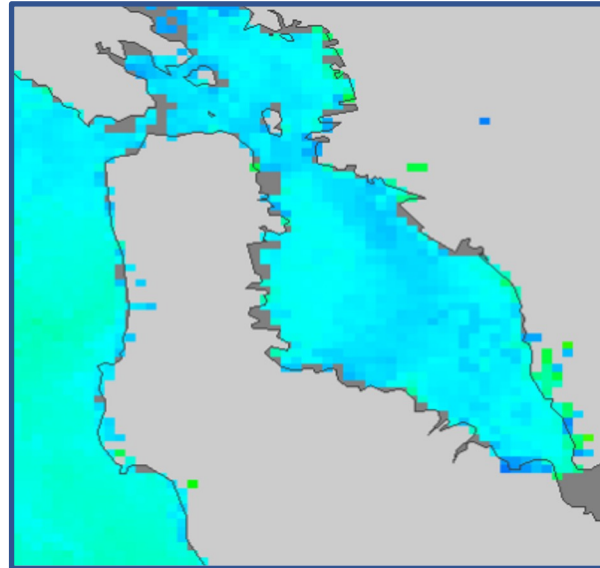
# How big can the pixels be?

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

GOES SST  
(4 km x 4 km pixel size)



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



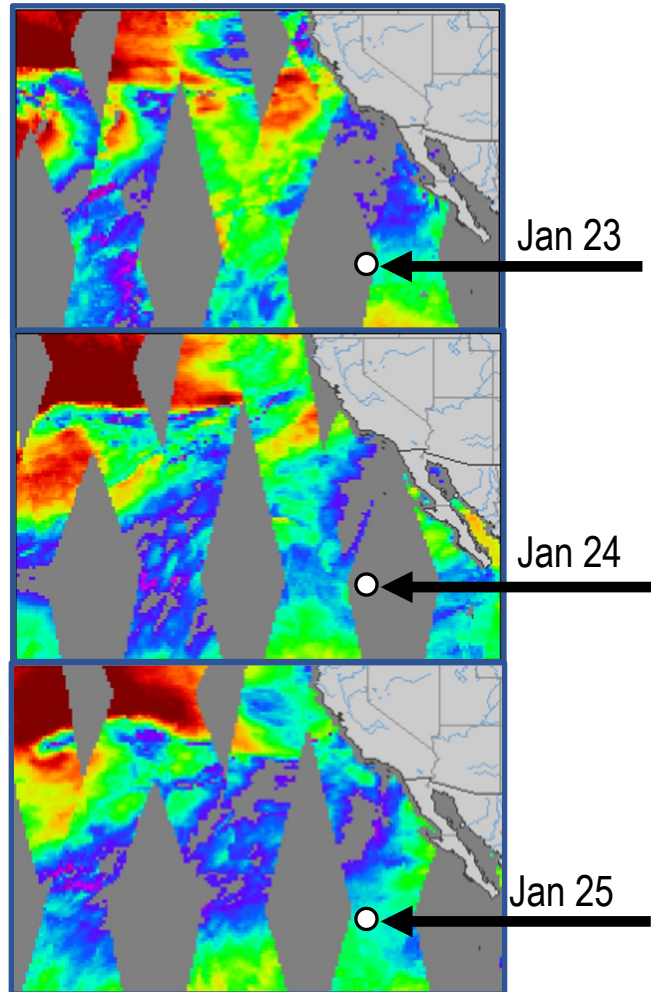
San Francisco Bay

**SPATIAL RESOLUTION**

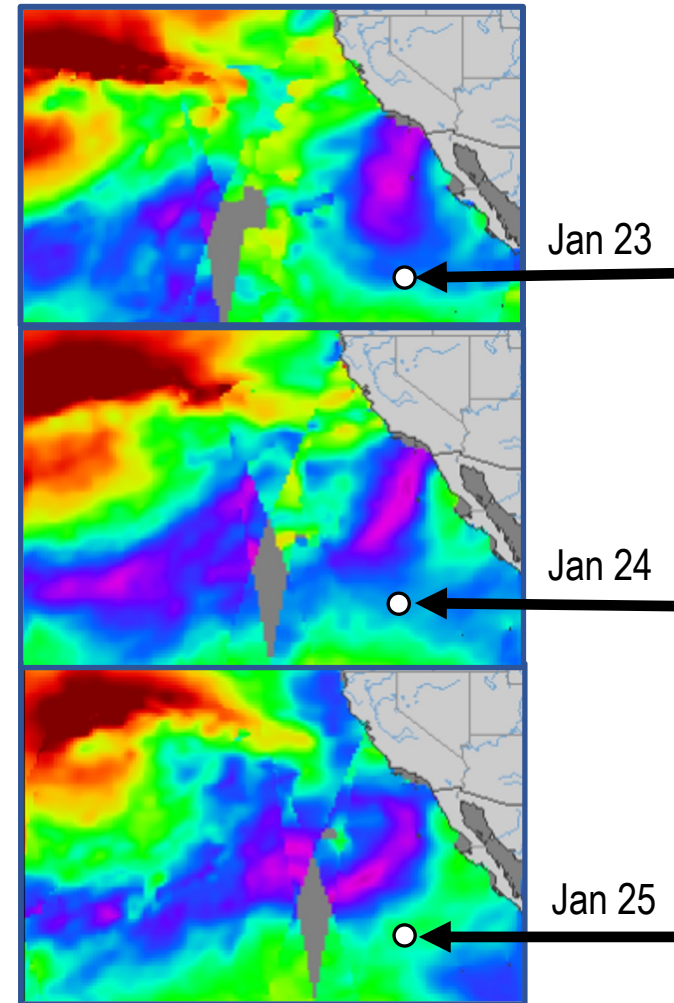


# How often do you need a measurement?

ASCAT Daily Winds



Cross-Calibrated  
Multi-Platform Winds



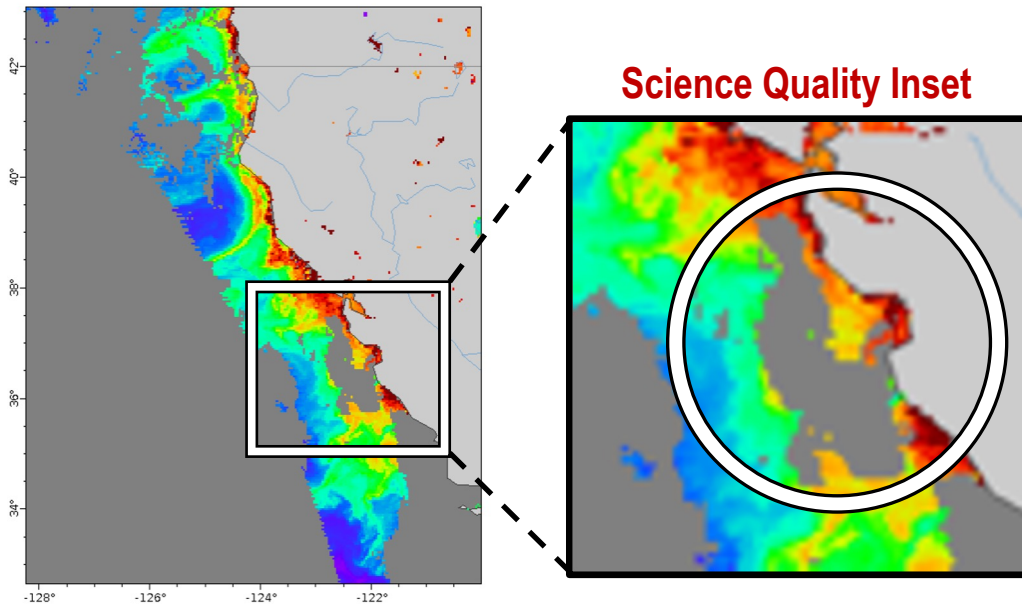
TEMPORAL RESOLUTION



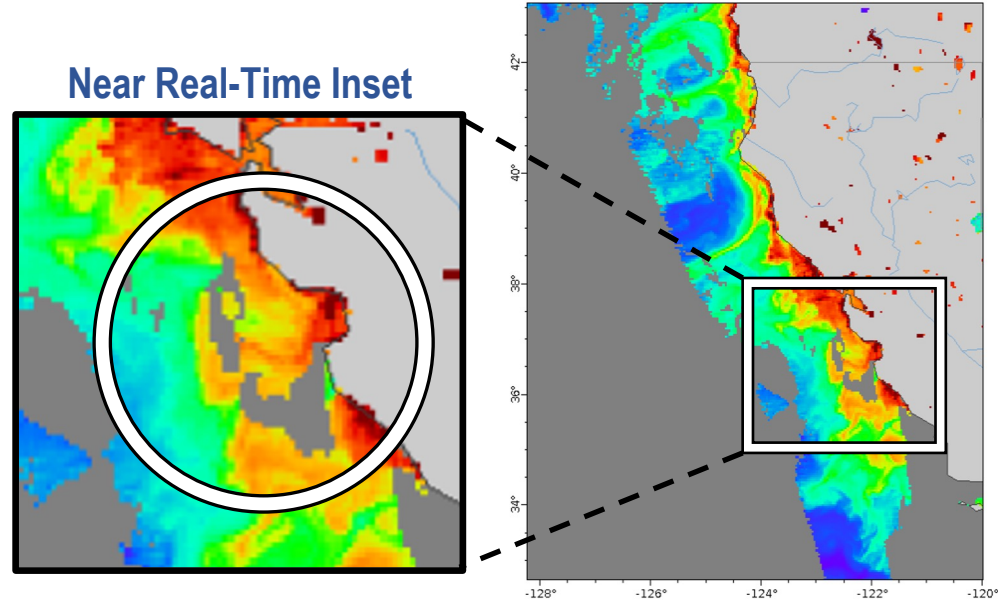
# How fast do you need the data and at what quality?

THERE IS A TRADEOFF BETWEEN LATENCY AND QUALITY

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



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



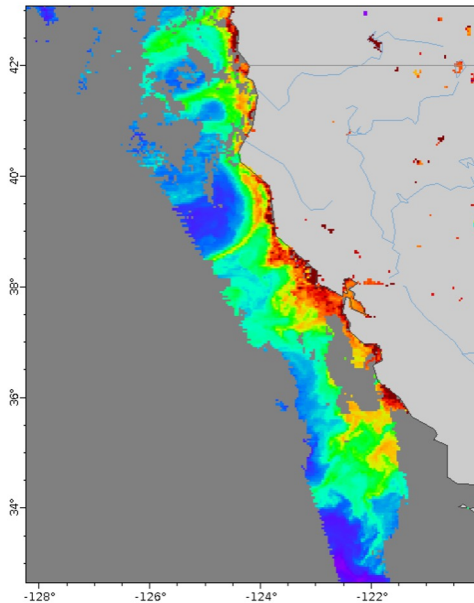
**LATENCY / QUALITY**



# Some applications require science quality data

## EXAMPLE: DEVELOPING HABITAT MODELS

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

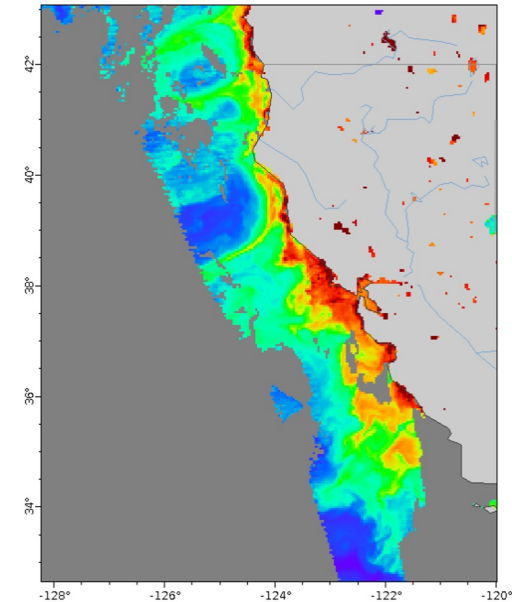


**MODEL  
DEVELOPMENT**

Harmful Algal Bloom

**Habitat Model**

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



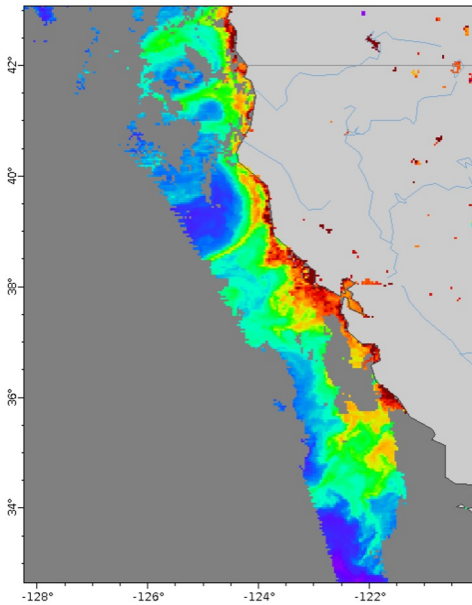
**LATENCY / QUALITY**



# Other applications require near real-time data

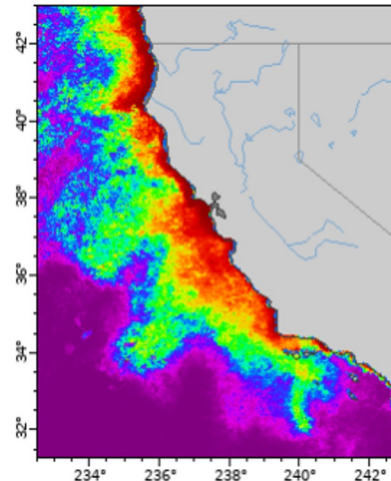
EXAMPLE: GENERATING FORECASTS AND NOWCASTS FROM THE MODEL

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



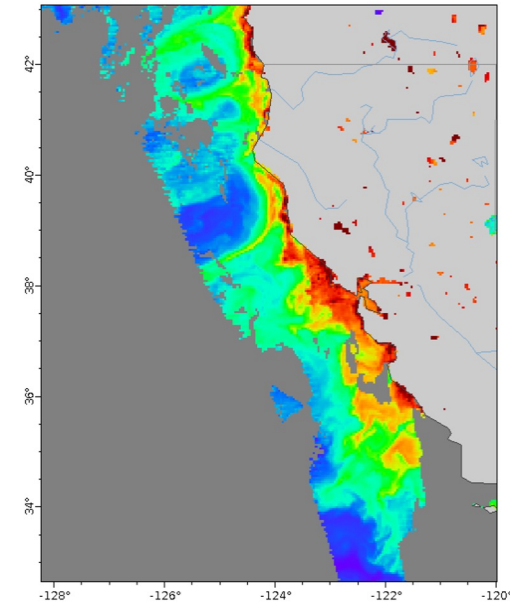
Harmful Algal Bloom

Habitat Model



Harmful Algal Bloom Forecast

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



FORECAST

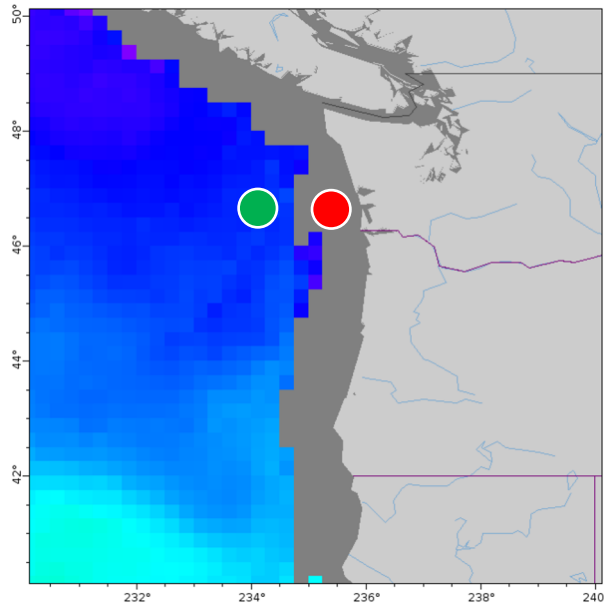
**LATENCY / QUALITY**



# How much missing data can your project tolerate?

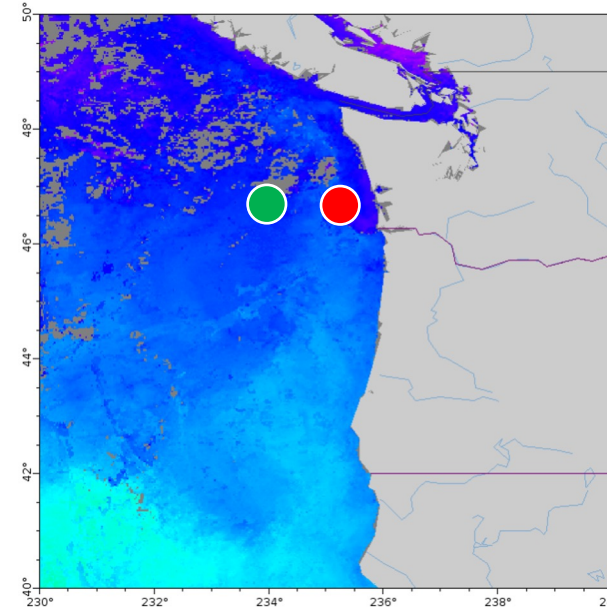
CLOUDS AND PROXIMITY TO LAND CAN CAUSE MISSING DATA

**Microwave SST**



**CAN SEE THROUGH CLOUDS  
CANNOT MEASURE CLOSE TO LAND**

**Infrared SST**

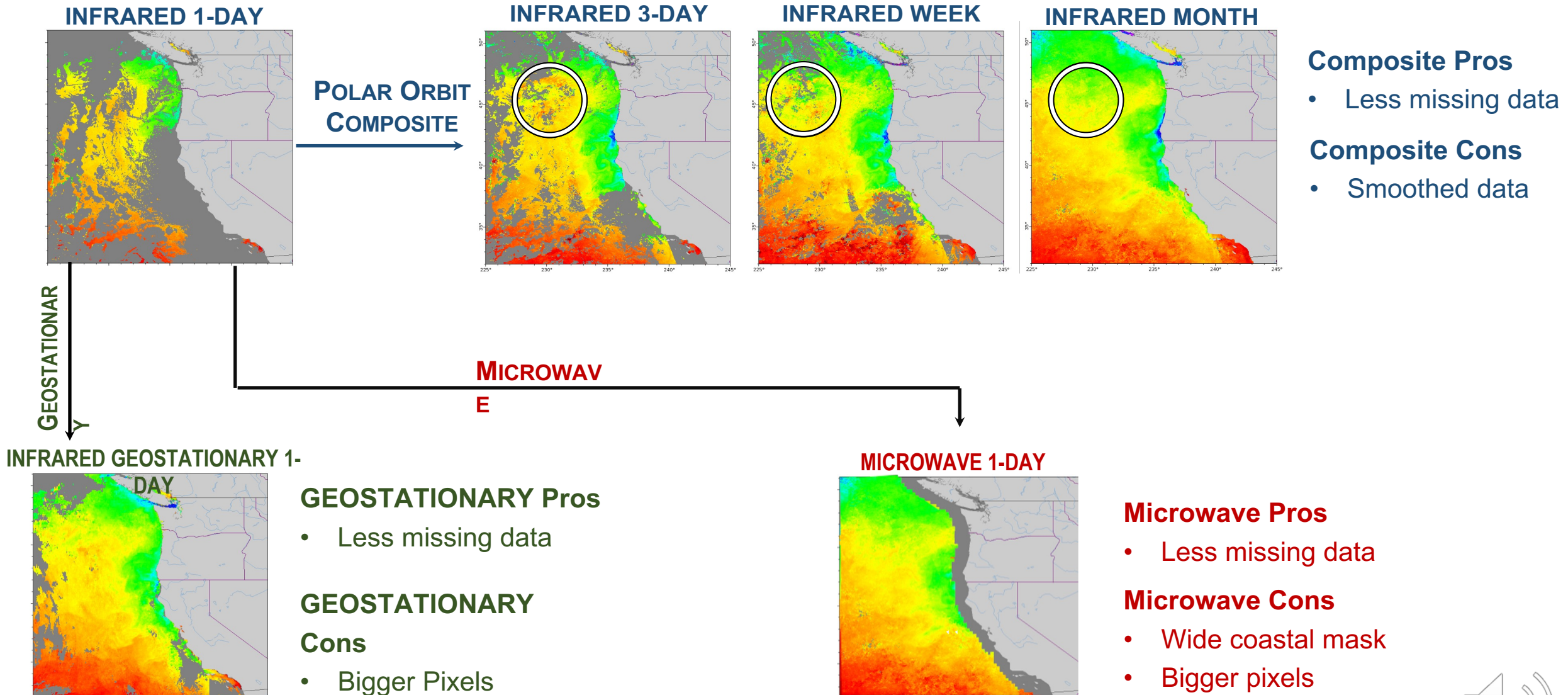


**CANNOT SEE THROUGH CLOUDS  
CAN MEASURE CLOSER TO LAND**

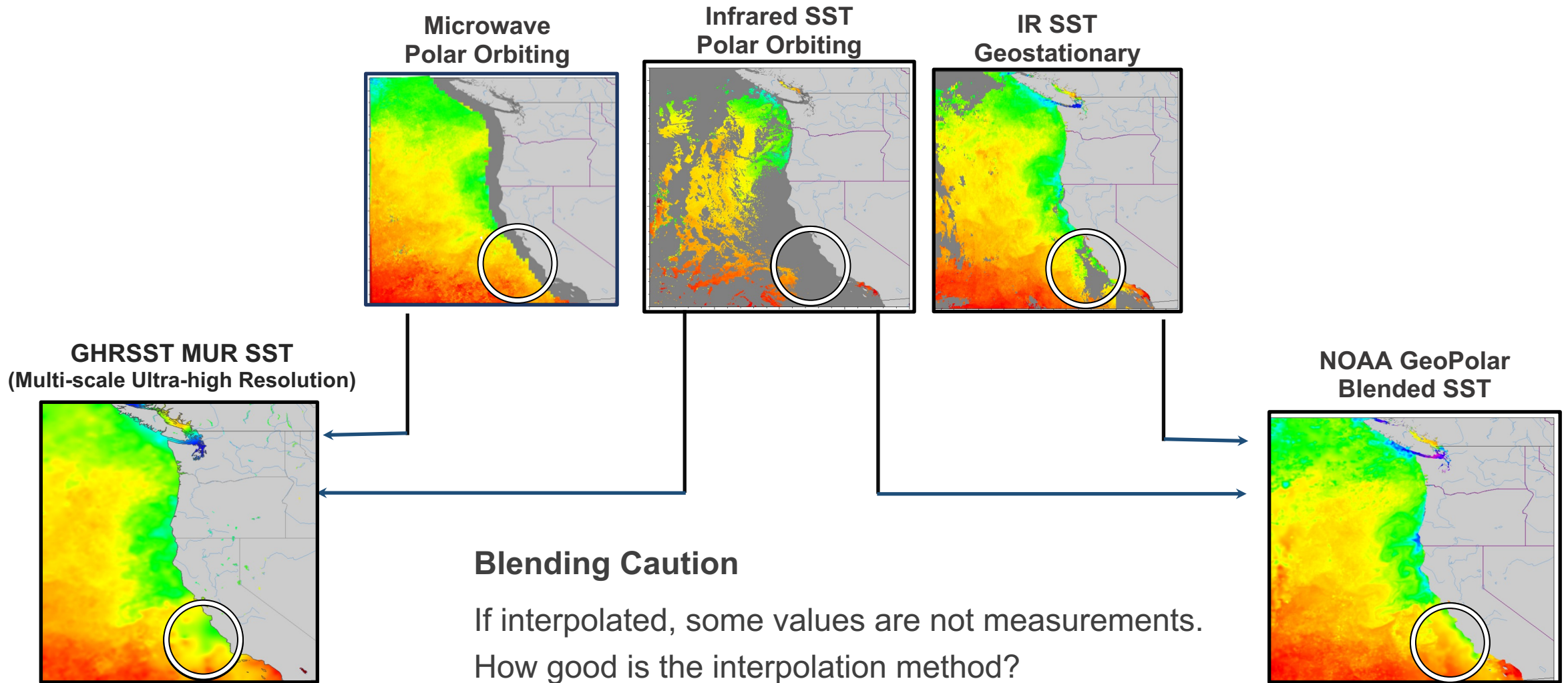
**MISSING DATA**



# 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](http://coastwatch.noaa.gov)

**NOAA** COASTWATCH  
WEST COAST REGIONAL NODE  
NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION  
[coastwatch.pteg.noaa.gov/data.html](http://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](http://polarwatch.noaa.gov)

**NOAA CoastWatch**  
Caribbean and Gulf of Mexico Regional Node  
[cwcaribbean.aoml.noaa.gov](http://cwcaribbean.aoml.noaa.gov)

**NOAA CoastWatch**  
EAST COAST NODE  
[eastcoast.coastwatch.noaa.gov](http://eastcoast.coastwatch.noaa.gov)

**NOAA CoastWatch**  
Great Lakes  
[coastwatch.glerl.noaa.gov](http://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

