How to choose the best dataset for your project

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Versioning

-Robinson, 2017, WCN

-Robinson, 2019, WCN

Balance the Needs of Your Project

Geographical coverage

Does the dataset have data in my area of interest?

Temporal coverage

Was the satellite flying during the dates of my study?

Spatial resolution

How big can the pixels be?

Temporal resolution

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

Latency / Quality

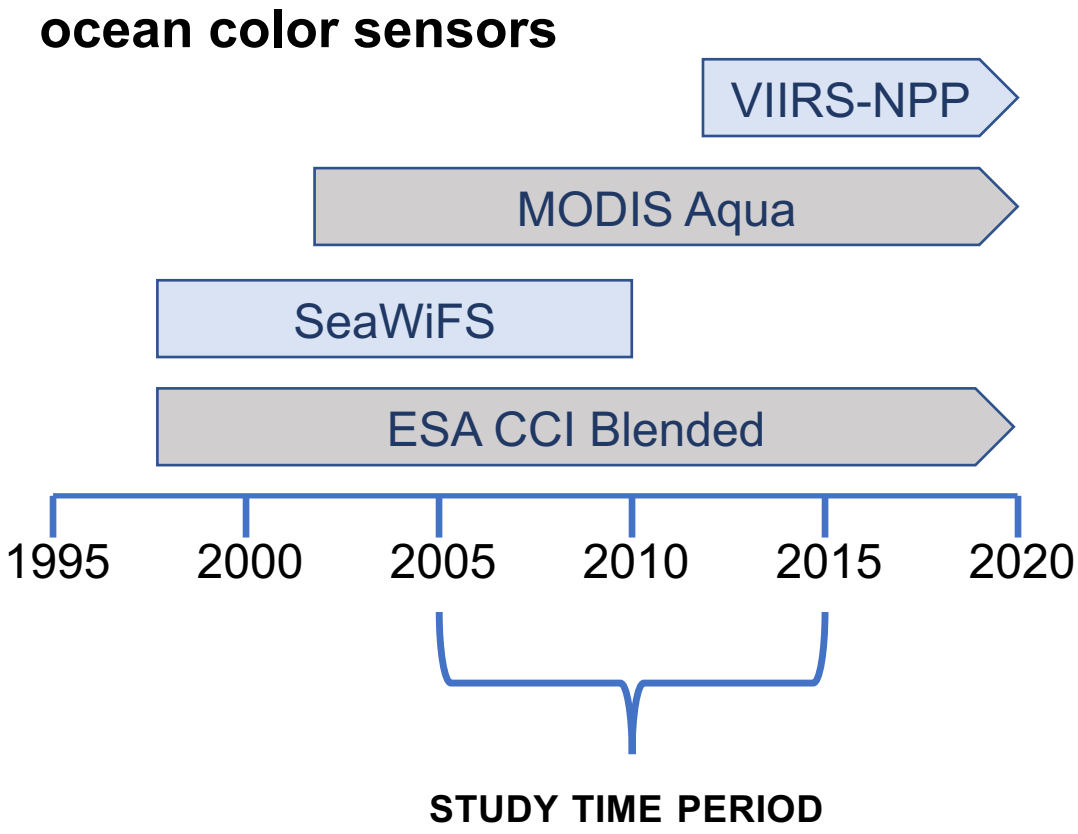
How fast do I need the data and at what quality?

Missing data

How much missing data can I tolerate?

Does the dataset cover the time of your study?

SENSORS HAVE A LIMITED LIFESPAN

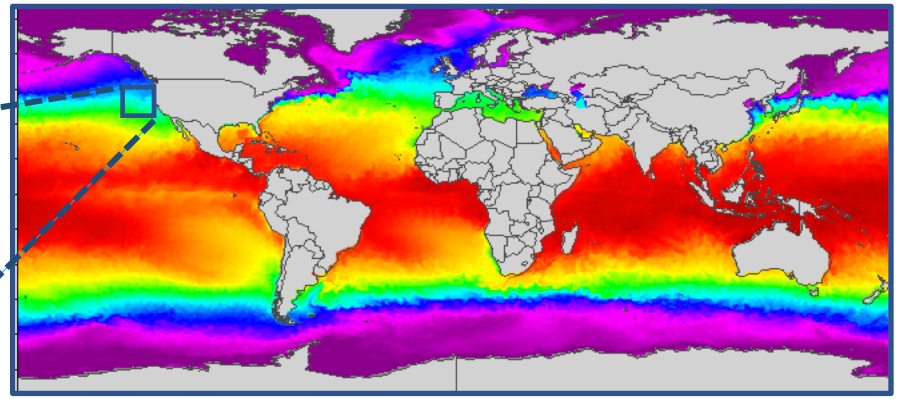


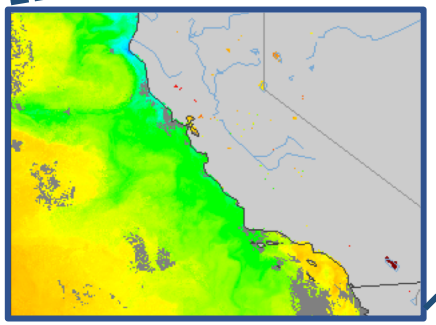
Temporal Coverage

Does the dataset cover your area of interest?

SOME DATASETS HAVE GLOBAL COVERAGE, OTHERS ARE REGIONAL

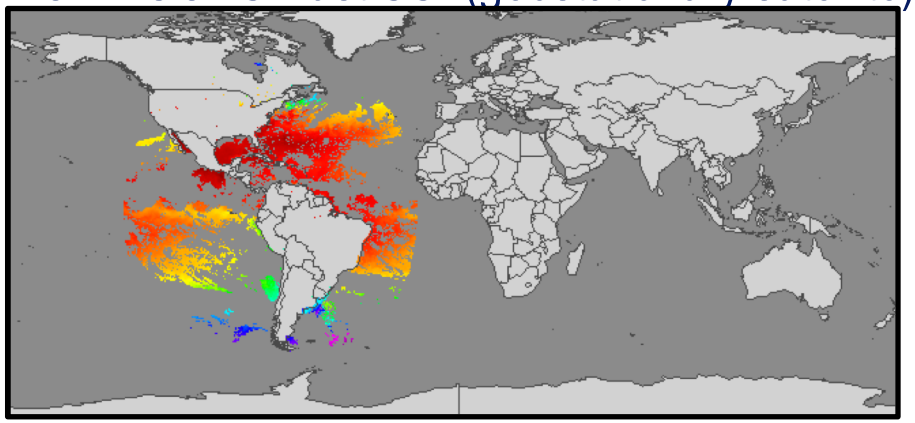
NOAA GeoPolar Blended SST





NOAA VIIRS SST
High Resolution

NOAA GOES East SST(geostationary satellite)

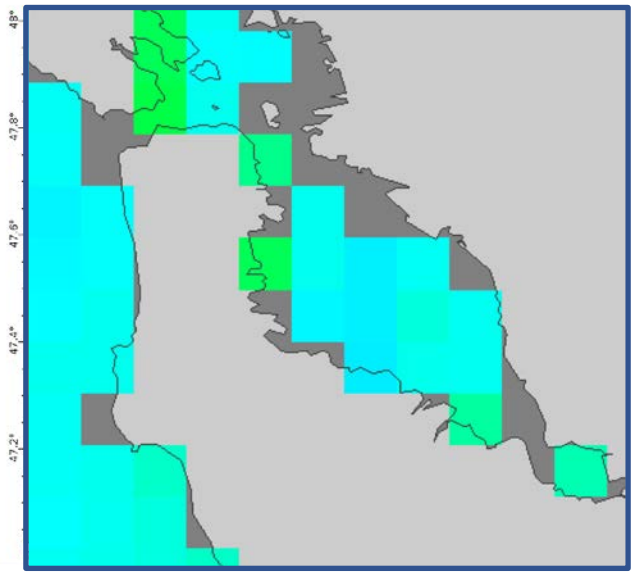


Spatial Coverage

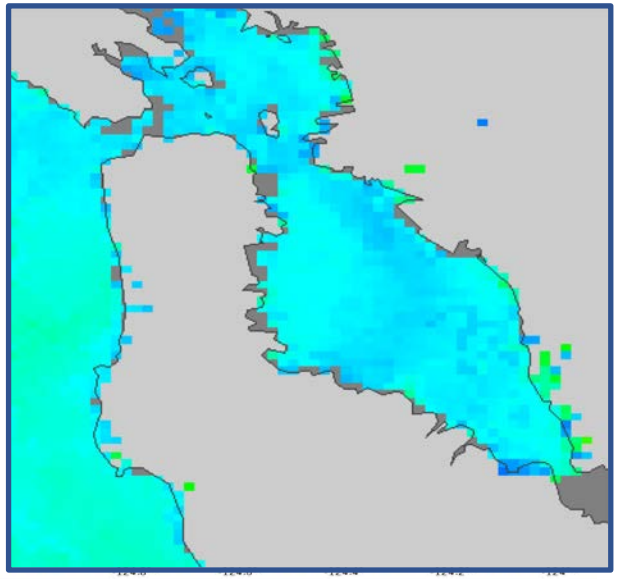
How big can the pixels be?

PIXELS COME IN DIFFERENT SIZES

GOES SST
(4 km x 4 km pixel size)



VIIRS High Resolution SST
(750 m x 750 m)



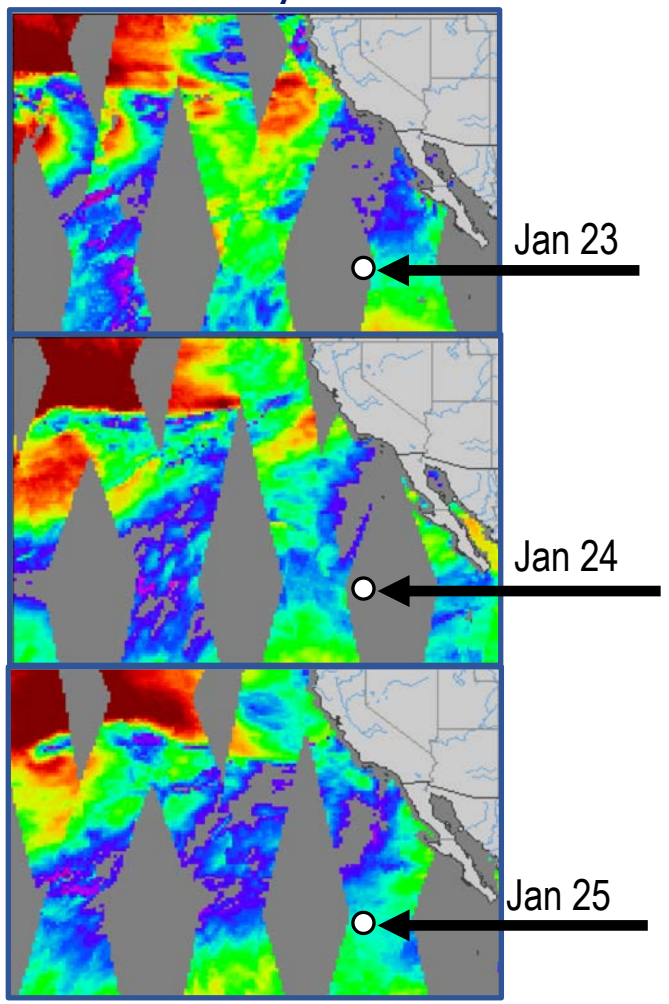
San Francisco Bay

Central California Coast

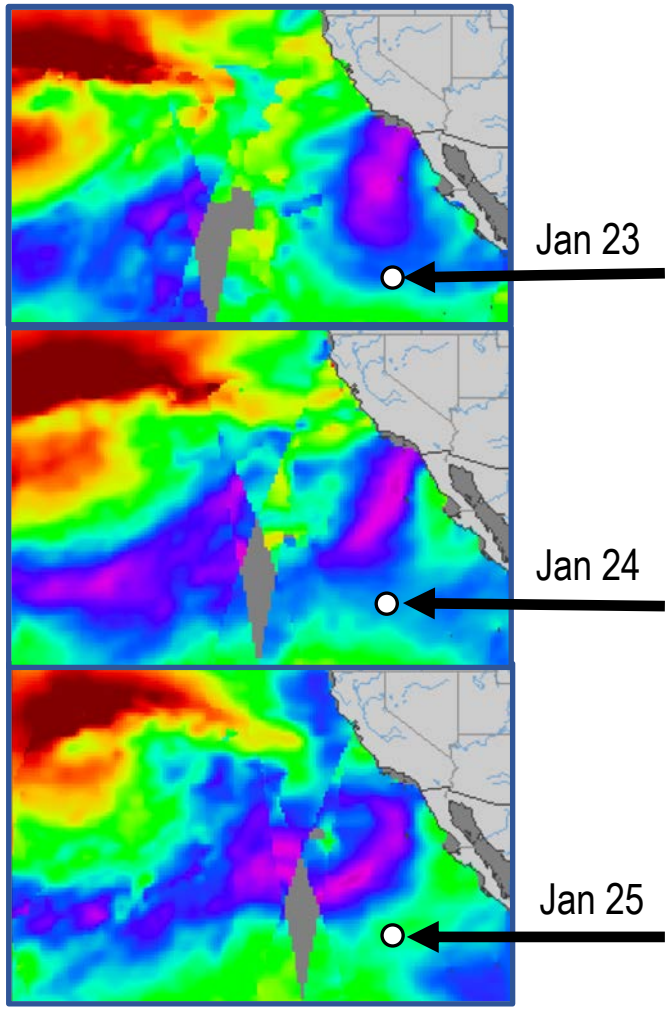
Spatial Resolution

How often do you need a measurement?

ASCAT Daily Winds



NOAA Blended Daily Winds

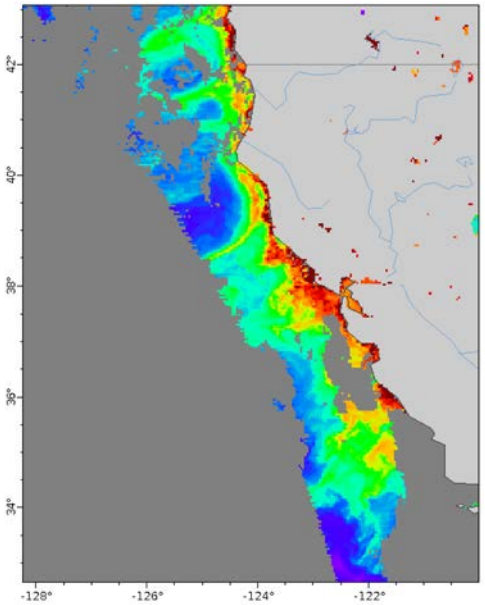


TEMPORAL RESOLUTION

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)



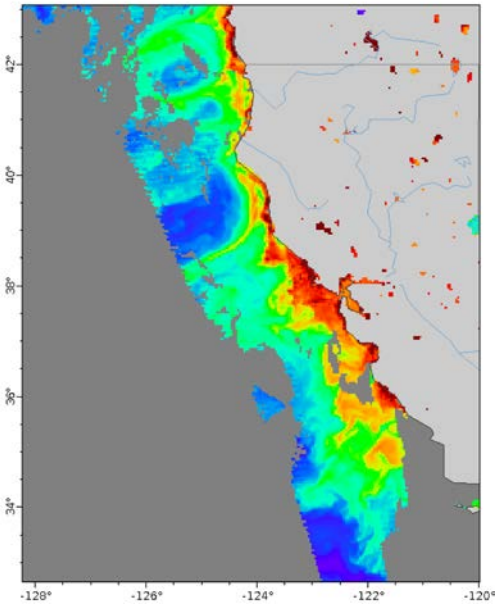
MODEL DEVELOPMENT

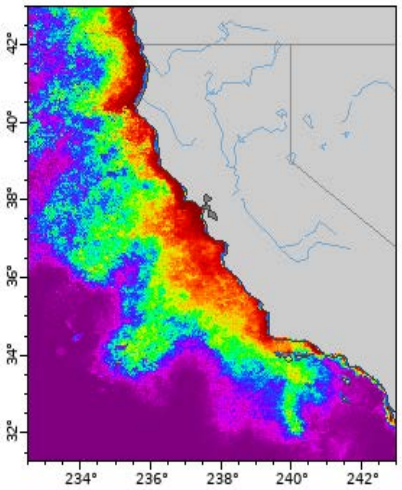
Harmful Algal Bloom

Habitat Model

FORECAST

VIIRS Chlorophyll, Near Real-Time
Lower Quality Control





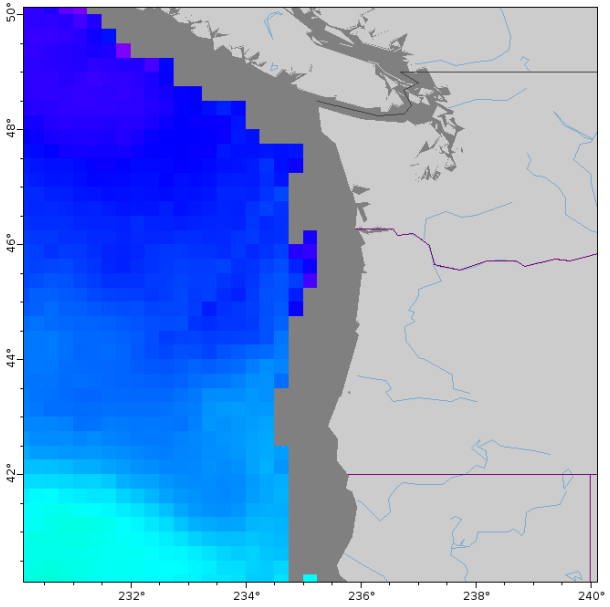
Harmful Algal Bloom Forecast

LATENCY / QUALITY

How much missing data can your project tolerate?

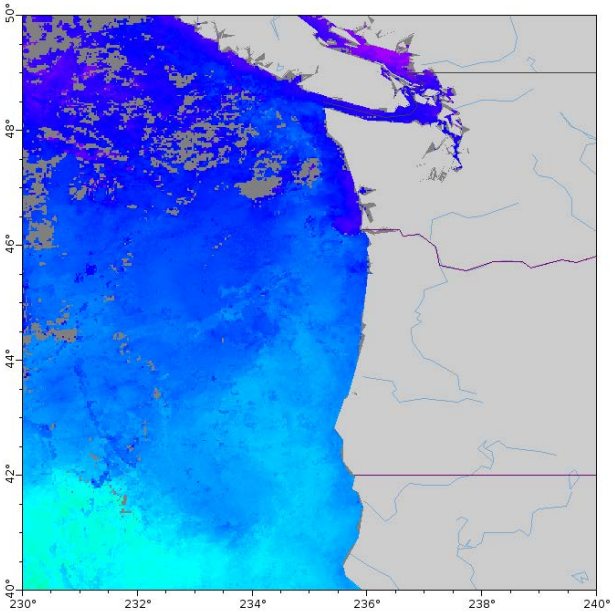
PASSIVE MICROWAVE MEASUREMENTS HAVE A WIDE COASTAL MASK

Microwave Modis SST



LAND MICROWAVE SIGNAL CONTAMINATES THE OCEAN SIGNAL

Infrared Modis SST

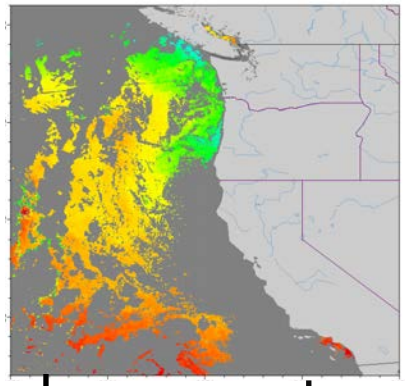


INFRARED SENSORS CAN MEASURE CLOSER TO LAND

MISSING DATA

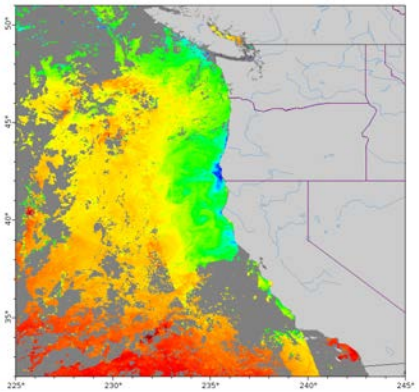
Case Study: Managing missing data from clouds

Infrared AQUA 1-DAY

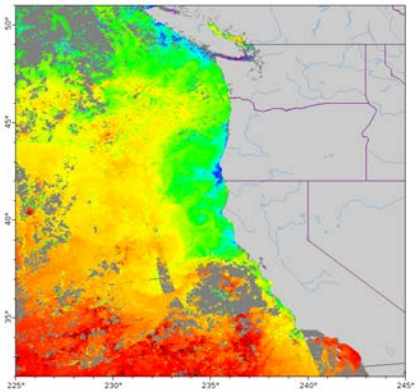


COMPOSITE

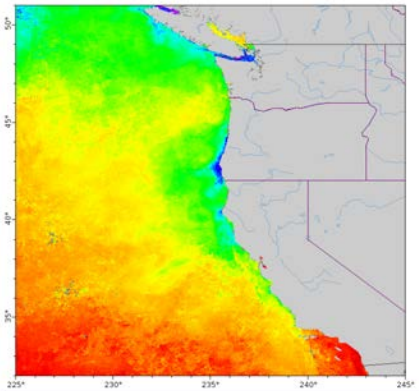
3-DAY



WEEK



MONTH



Composite Pros

- Less missing data

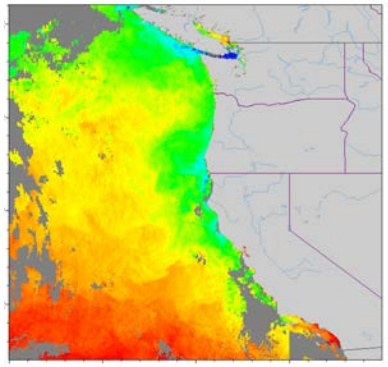
Composite Cons

- Smoothed data

GEOSTATIONARY

MICROWAVE

Infrared GOES 1-DAY



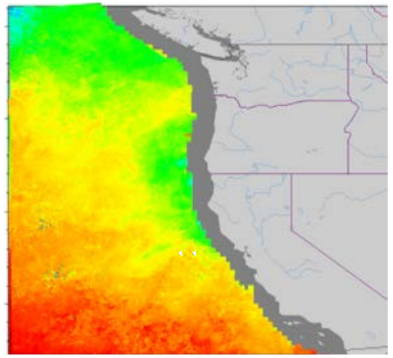
GOES Pros

- Less missing data

GOES Cons

- Bigger Pixels

Microwave AQUA 1-DAY



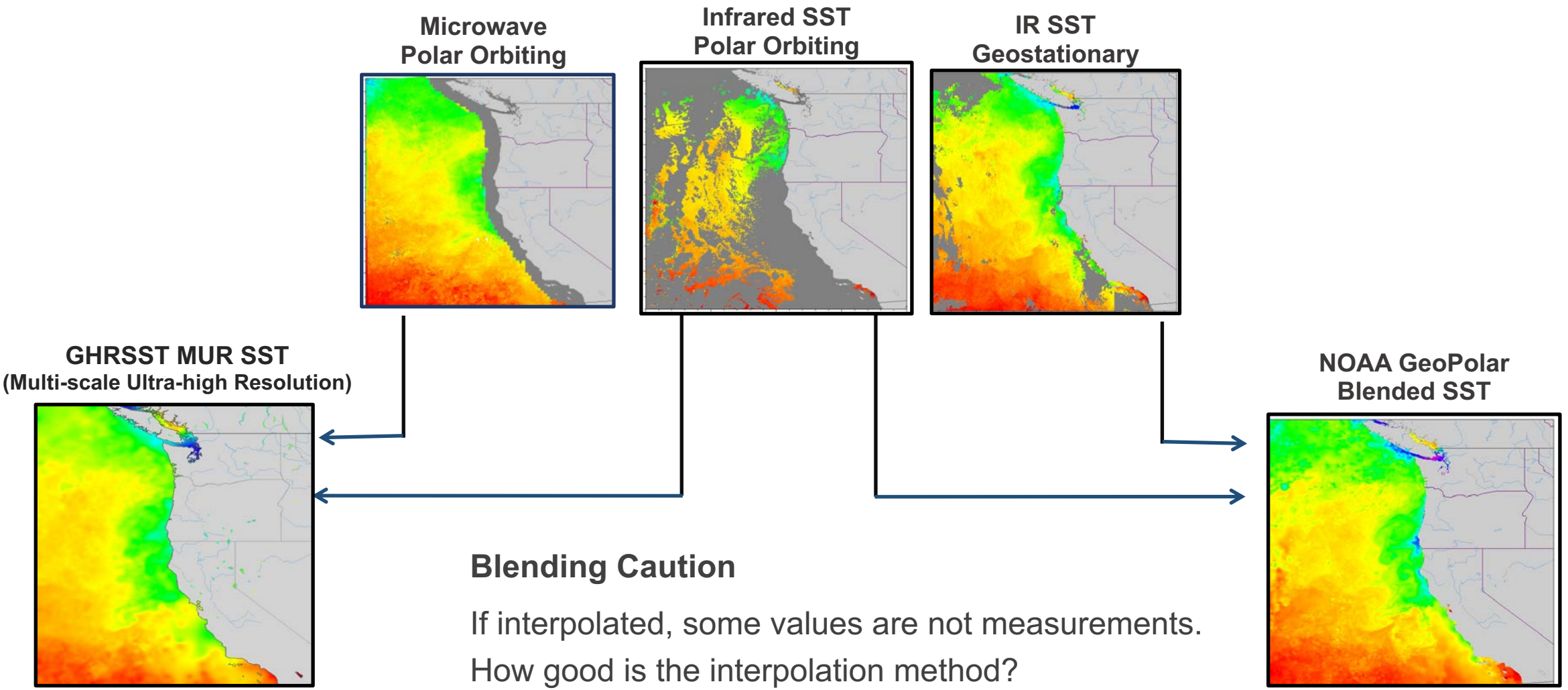
Microwave Pros

- Less missing data

Microwave Cons

- Wider coastal mask
- Bigger pixels

Blended products – best of all worlds?

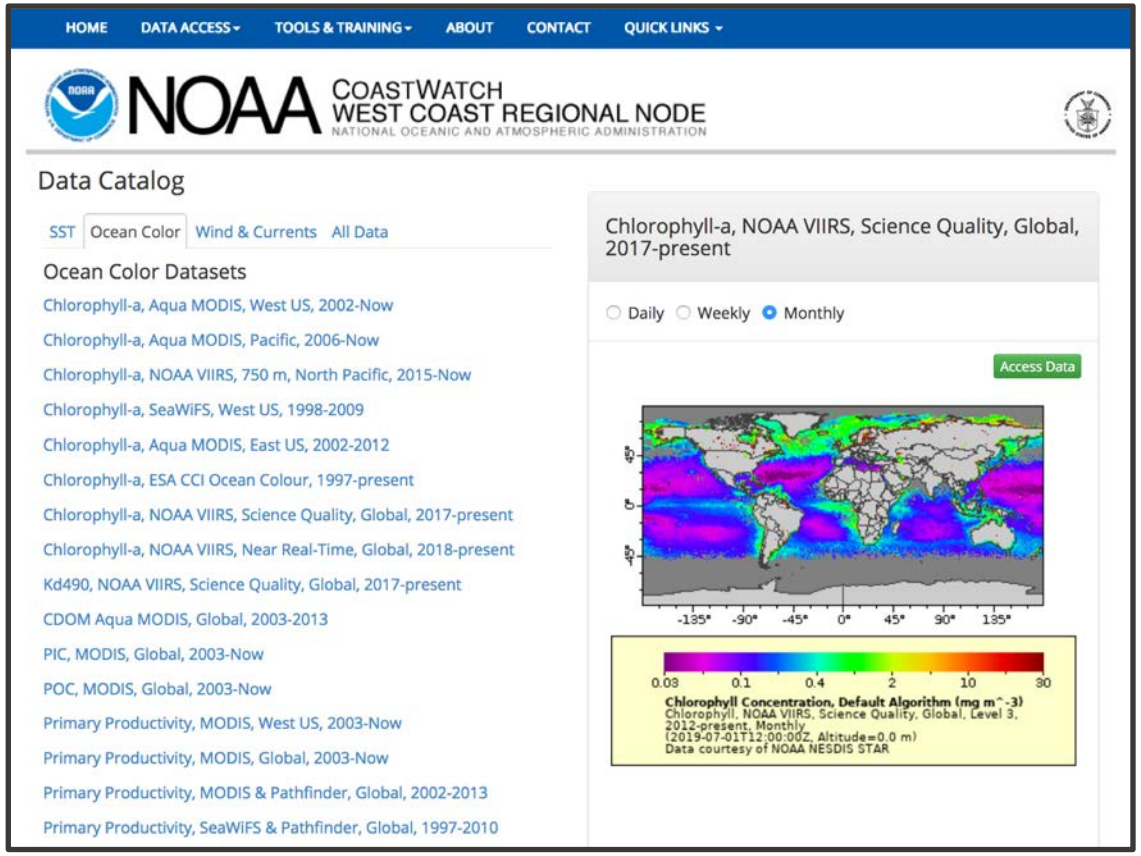


Blending Caution

If interpolated, some values are not measurements.

How good is the interpolation method?

Visit the WCN data catalog for information



coastwatch.pfeg.noaa.gov/data.html

The catalog contains a subset of our most popular datasets, organized by type

Preview a sample image

Find out the geographical coverage

Find out the temporal range coverage

Read metadata to find details about datasets

Remote sensing by eye