




CoastWatch Data in Google Earth: A How-to Guide

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Talk Outline

- About Google Earth
- Preparing Data
- Demonstration

Features

 **About
Google Earth**

Preparing
Data

Demo

- Geographic data display: points with labels, lines, images
- Network and local data sources
- Tools for adding new items and measuring distances
- Hardware-accelerated 3D graphics

Advantages over CDAT



About
Google Earth

Preparing
Data

Demo

- It's "dynamic": geographic data from multiple network data sources in real time
- Built-in and community data sources
- Storage/recall of data via KML
- Google software development team



Drawbacks :- (



About
Google Earth

Preparing
Data


Demo

- No access to data values
- Cannot change color enhancement
- Only one projection supported
- Cannot survey or correct data (not an analysis tool)

Images

- Data must be in a geographic projection (regularly spaced in latitude and longitude)
- Data must be rendered to an image (PNG, JPEG, GIF, TIFF)
- Blank data areas set to transparent (PNG, GIF)
- Color scale from plot legends

About
Google Earth

 Preparing
Data

Demo

Images (continued ...)

Data image

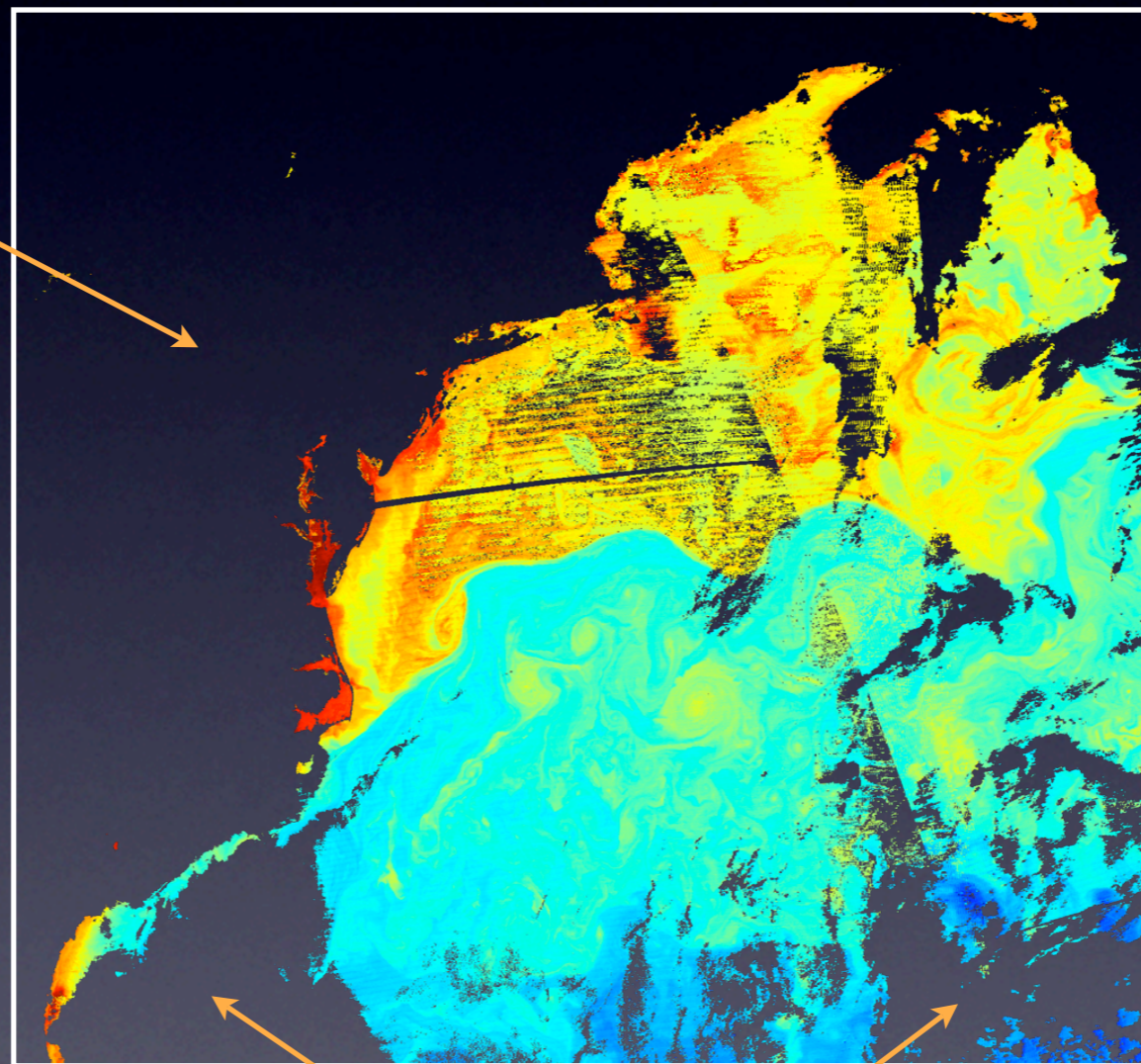
Legend

About
Google Earth

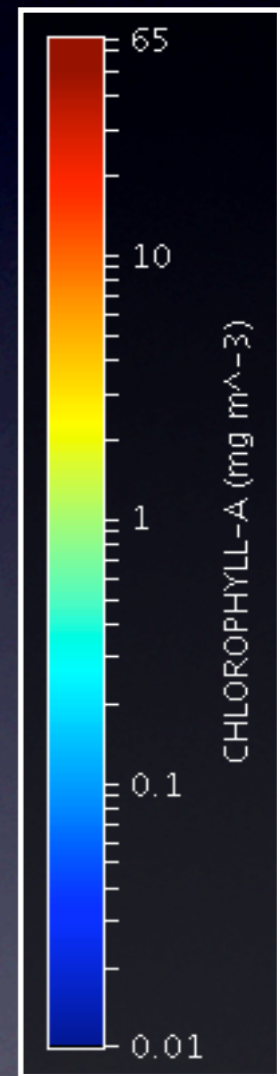
Preparing
Data

Demo

Land




Cloud



Markup Language

- `<GroundOverlay>` for geographic images
- `<ScreenOverlay>` for legends
- `<Region>` and `<NetworkLink>` to limit loading to view area (optional)
- `<Folder>` to group related images and legends


About
Google Earth

 Preparing
Data

Demo

Markup (continued ...)

About
Google Earth

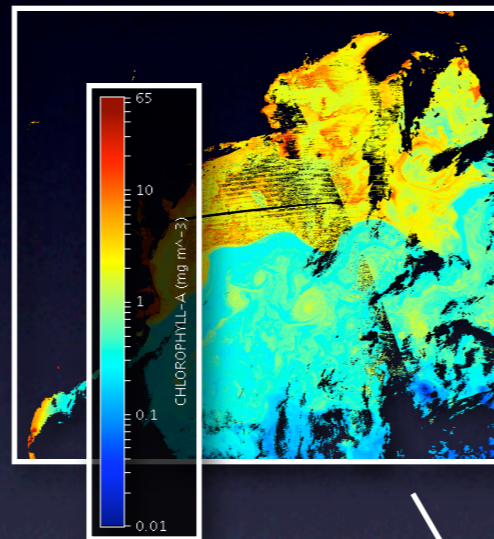
 Preparing
Data

Demo

```
<GroundOverlay>
  <name>Test Overlay</name>
  <Icon>
    <href>my_image.png</href>
  </Icon>
  <LatLonBox>
    <north>45.0</north>
    <south>30.0</south>
    <east>-60.0</east>
    <west>-82.0</west>
  </LatLonBox>
</GroundOverlay>
```

Packaging

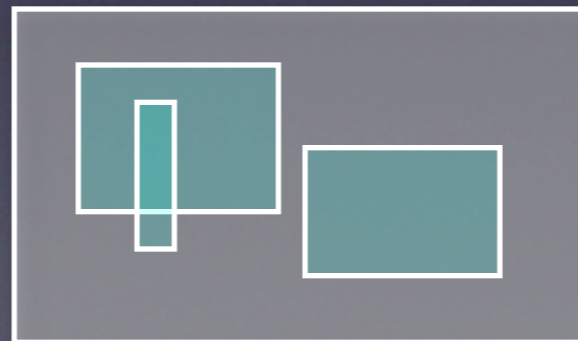
Images



Markup

```
<?xml version="1.0" encoding="UTF-8"?>
<kml xmlns="http://earth.google.com/kml/2.1">
  <GroundOverlay>
    <name>AVHRR Overlay</name>
    <Icon>
      <href>image.png</href>
      <viewBoundScale>0.75</viewBoundScale>
    </Icon>
    <LatLonBox>
      <north>63</north>
      <south>10</south>
      <east>-97</east>
      <west>-150</west>
    </LatLonBox>
  </GroundOverlay>
</kml>
```

ZIP file (.kmz)



About
Google Earth

Preparing
Data

Demo

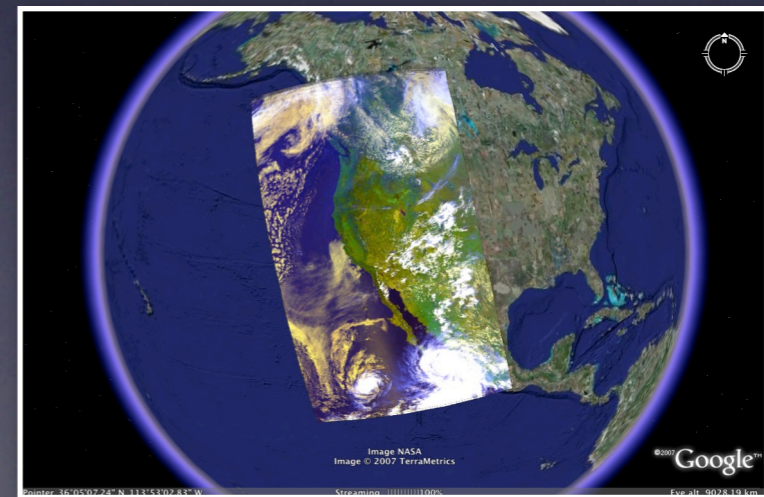
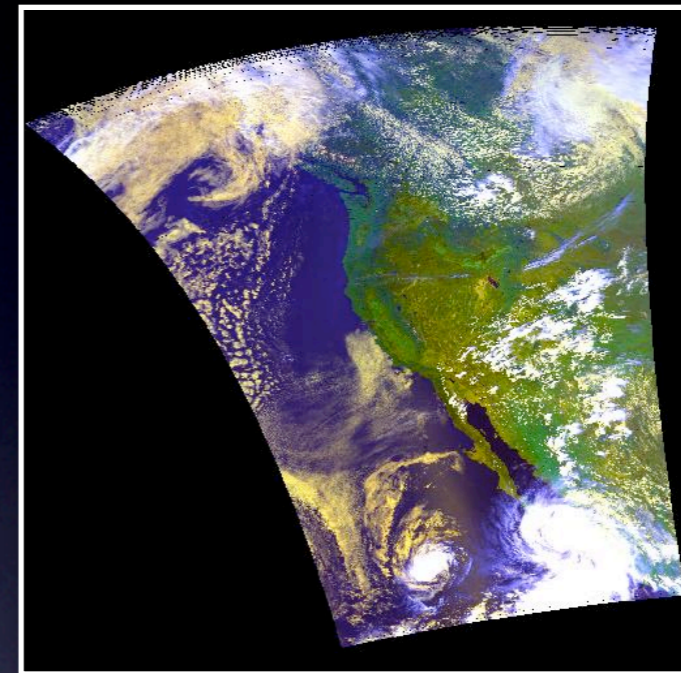
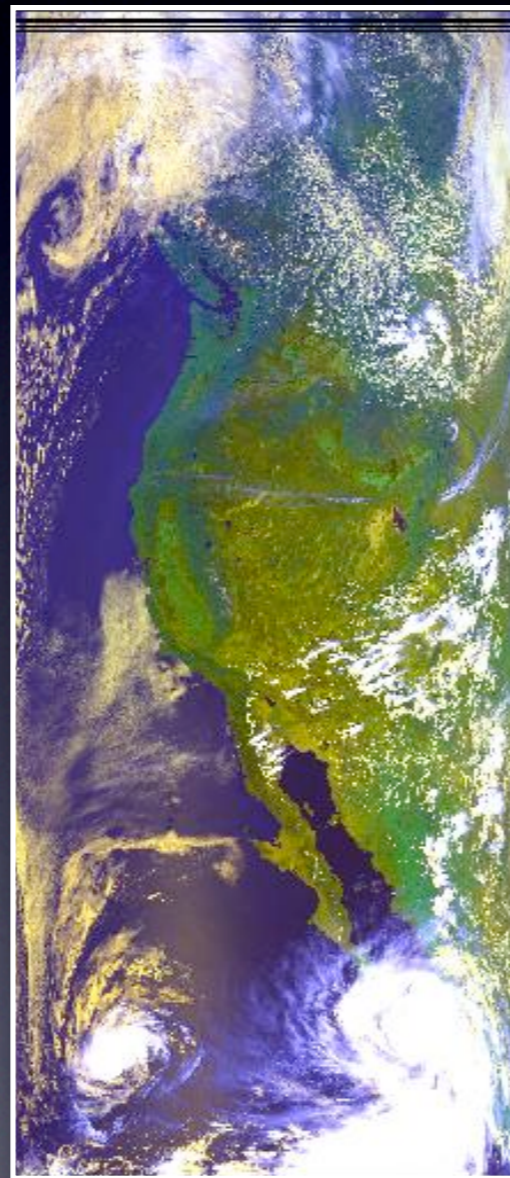
AVHRR Example

About
Google Earth

Preparing
Data



Demo



AVHRR Example (continued ...)

About
Google Earth

Preparing
Data



Demo

```
<?xml version="1.0" encoding="UTF-8"?>
<kml xmlns="http://earth.google.com/kml/2.1">
  <GroundOverlay>
    <name>AVHRR Overlay</name>
    <Icon>
      <href>image.png</href>
      <viewBoundScale>0.75</viewBoundScale>
    </Icon>
    <LatLonBox>
      <north>63</north>
      <south>10</south>
      <east>-97</east>
      <west>-150</west>
    </LatLonBox>
  </GroundOverlay>
</kml>
```

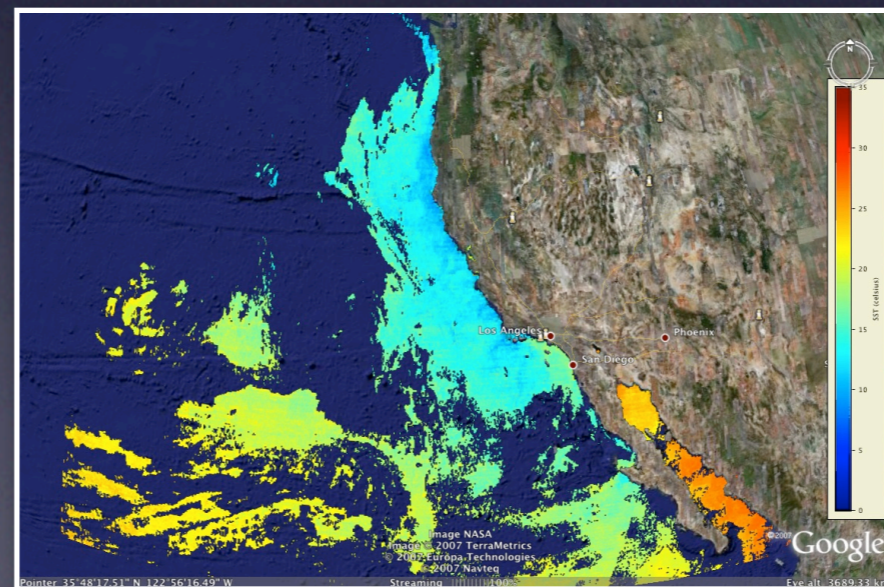
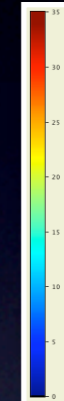
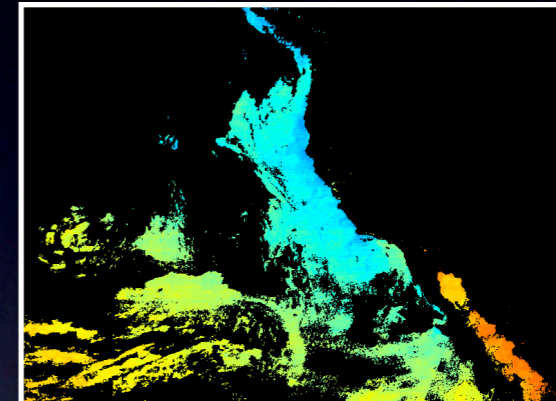
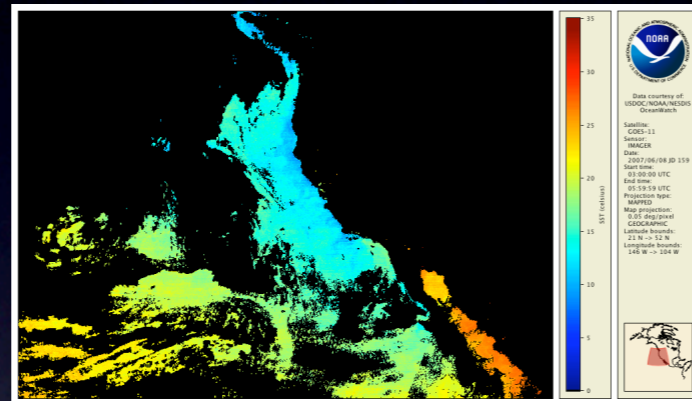
GOES SST Example

About
Google Earth

Preparing
Data



Demo



GOES SST Example (continued ...)

About
Google Earth

Preparing
Data



Demo

```
<?xml version="1.0" encoding="UTF-8"?>
<kml xmlns="http://earth.google.com/kml/2.1">
<Document>
<GroundOverlay>
  <name>GOES SST Overlay</name>
  <Icon>
    <href>2007_159_31W_image_trans.png</href>
    <viewBoundScale>0.75</viewBoundScale>
  </Icon>
  <LatLonBox>
    <north>51</north>
    <south>22</south>
    <east>-105</east>
    <west>-145</west>
  </LatLonBox>
</GroundOverlay>
<ScreenOverlay>
  <name>SST Legend</name>
  <Icon>
    <href>2007_159_31W_legend.png</href>
  </Icon>
  <overlayXY x="1" y="0.5" xunits="fraction" yunits="fraction"/>
  <screenXY x="0.98" y="0.5" xunits="fraction" yunits="fraction"/>
  <size x="0" y="0" xunits="fraction" yunits="fraction"/>
</ScreenOverlay>
</Document>
</kml>
```

Summary

- About Google Earth: features, advantages, drawbacks
- Preparing Data: images, KML code
- Demonstration: AVHRR, GOES SST

References

- Google Earth download:
 - earth.google.com
- KML language:
 - code.google.com/apis/kml