



NASA Air Quality Remote Sensing Training for EPA

March 21-23, 2023, EPA, Research Triangle, NC

Case Study Presentation

In this exercise, you will analyze an air quality event as a team. The goal is to make use of as many relevant resources presented in this training as possible, as well as any data you wish to include. Conceptually, think of this as a story using images and data to reinforce the points you want to make. Your case study will be presented here; you will make a **PowerPoint presentation** and use other tools to present your case study. Plan on **5 minutes** for your presentation, so that we can accommodate each group.

Conducting the Case Study

1. Find a group of 4-5 people to work with on your case study. Determine what dates, source, and receptor regions you wish to examine. As a basis for your case study, you can use one of the suggested events below, or a case study of your choosing.

Suggested Case Studies:

1. Kilauea Volcano Eruption, May/June 2018
[Earth Observatory Story](#)
2. Mauna Loa Eruption, Nov 27, 2022
[Earth Observatory Story](#)
3. Dust Storm over OK/Kansas, Dec 15, 2021
Suggested Data Sources: VIIRS True Color, Aerosol Type
4. Pawnee Fire – Northern California, Jun 2018
[Earth Observatory Story](#)
5. Thomas Fire – Southern CA, Dec 2017
[Earth Observatory Story](#)
6. Fires in Idaho, WA, OR – Sept 2017
[Worldview Visualization](#)
7. Camp Fire, Nov 2018



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[Earth Observatory Story](#)
[Worldview Visualization](#)

8. CA and BC Fires, Summer 2018
9. OR and CA Fires, Aug 5, 2021
 - a. Pyrocumulonimbus in Geostationary
[Worldview Visualization](#), Step 9)
10. Caldor Fire, CA, Aug 17, 2021
[Earth Observatory Story](#)
11. Bolt Creek Fire, WA, Sept 10, 2022
[Earth Observatory Story](#)
12. Nakia Creek Fire, WA, Oct 10, 2022
13. Cedar Creek Fire, OR, Oct 11, 2022
[Earth Observatory Story](#)
14. Mineral Fire. CA, July 17, 2020
[Earth Observatory Story](#)
15. Fires in Kentucky, Ohio, W. VA, Nov 2022
[Earth Observatory Story](#)
16. Smoke Over the Northern Plains, Sept 7, 2022
[Earth Observatory Story](#)
17. McKinney Fire, CA, Aug 6, 2022
[Earth Observatory Story](#)
18. Alaska Fires, July 2022
[Earth Observatory Story](#)
19. Calf Canyon-Hermits Peak Fire, NM, May 2022



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Earth Observatory Story

2. Identify the resources you wish to use and list these in the **case study resources** (a useful space for tools and data at the end of this document).
 - You can make use of any and all course materials (including instructors) to identify resources for each area listed on the resource sheet. There are some useful hints and tips in the rest of this guide – so read through this document.
3. Once you have identified the resources, begin assembling the data you will use. It will be more efficient to divide this task among the people in your group. We strongly suggest that in this step and the next, you begin to write the information in a document as a guide for your presentation.
4. Organize the information you have gathered so that it can be presented using your platform(s) of choice and practice telling your story.
5. The presentation should include event description, data sets used, Tools used, and the analysis performed along with a summary of your experience.
6. Give your presentation. Select one ~~victim~~ person to make the presentation, or you can have several people take turns each presenting one piece.

Case Study Resources

Tools Covered in This Training:

- NASA Worldview – Event Section: <https://worldview.earthdata.nasa.gov/>
- Earthdata Search: <https://search.earthdata.nasa.gov/search>
- Giovanni: <http://giovanni.gsfc.nasa.gov/giovanni/>
- OMI NO₂ Data and Applications: <http://airquality.gsfc.nasa.gov/>
- NASA Global Forecasting: <https://fluid.nccs.nasa.gov/weather/>
- FIRMS: <https://firms.modaps.eosdis.nasa.gov/>



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- Aerosol Watch: <https://www.star.nesdis.noaa.gov/smcd/spb/aq/AerosolWatch/>
- JSTAR Mapper: <https://www.star.nesdis.noaa.gov/jpss/mapper/>
- Jupyter Notebook Examples (in Google Colab)

Meteorology Data:

- NOAA Climate Data Online: <https://www.ncdc.noaa.gov/cdo-web/>
- Weather Underground: <http://wunderground.com>
 - Enter the name of a city in your area of study into the search bar. Scroll down to the **History and Almanac** section and enter the date.

Ground-Based Air Quality Data:

- EPA Data Mart: <http://www.epa.gov/airdata/>
- AQICN.org: <http://aqicn.org/>
- OpenAQ: <http://openaq.org/>
- Windy: <https://www.windy.com/>

Other Useful Data and Tools:

- MODIS Atmosphere Site: <http://modis-atmos.gsfc.nasa.gov/IMAGES/index.html>
- AERONET Data Synergy Tool: http://aeronet.gsfc.nasa.gov/cgi-bin/bamgommas_interactive
- CALIPSO Browse Images (can provide a vertical profile): https://www-calipso.larc.nasa.gov/products/lidar/browse_images/std_v4_index.php
- MODIS Dark Target Algorithm: <http://darktarget.gsfc.nasa.gov/>
- MODIS Deep Blue Algorithm: <http://deepblue.gsfc.nasa.gov>
- Satellite Surface Comparisons, MAPSS: <http://giovanni.gsfc.nasa.gov/mapss/>
- NASA Earth Observatory: <http://earthobservatory.nasa.gov/NaturalHazards/event.php?id=81040>