

## IDEA Exercise

The purpose of this exercise is to gain some familiarity with the features available from the Infusing satellite Data into Environmental Applications (IDEA) website. <http://www.star.nesdis.noaa.gov/smcd/spb/aq/>

You are encouraged throughout this exercise to first view the tutorial slides on the appropriate feature of the website.

The practice activities on this sheet are written for the primary case study we are covering in this training: June 14, 2011. Feel free to examine any other dates and locations of your choosing. Also note that data from VIIRS is not available until mid-January of 2013. You may want to work on these activities with a partner. After each section click “IDEA” at the top of the page to return to the main page.

### **Find areas of high PM for study location and time period:**

Click on the PM Estimation from AOD map located in the center right of the home page and select the date appropriate to your event. Note that this is a composite value and is not available for each sensor.

Identify (and keep available in separate window) the areas of high PM for your chosen date and area. What is the highest category and where is it located?

Select the “in situ” box. How does the estimation from satellite compare with the in situ data?

### **Evaluate the quality of the satellite-PM relationship.**

*Click on the Time-series and scatter plots of AOD, estimated PM<sub>2.5</sub> and surface PM<sub>2.5</sub> (located lower right on the page). You will need to select a state and then one of the sites available from that state. Select a site from one of the high PM areas identified in the previous step. Use the date selector on top to choose an end date.*

Enter your end date.

Record the following:

Site:

Date Range:

Correlations	1 Hour	24 Hour
MODIS		
GASP		

What is your evaluation of the skill of the satellites to evaluate AQI for this site (take into account different ranges of AOD.)?  
What is the problem with the graphs shown here for evaluating the skill of this data to estimate PM<sub>2.5</sub>?

### **48-hour aerosol trajectory forecast, with model winds and precipitation.**

It is strongly suggested you look at the tutorial for this section of the site.

Select the Java animation with controls.

Complete this section using two browser windows one to display the animation and one to look at the “Verification plot”. This is best done with a partner.

Use a start date two days prior to the air quality event you wish to examine.

Generate an animation plot in both browser windows first for one of the MODIS sensors and then for the GASP retrieval.

Use a start date two days prior to the air quality event you wish to examine.

In one of the browser windows click on “Verification plot”.

Compare the animation and the verification plots for each satellite product. How well did each of the satellites AOD trajectory products do in predicting the location of the aerosols as displayed in the verification plot?

If you have time move to a date range where you can compare VIIRS to the other sensors.

### **3-day composite history**

Select the date of your air quality event.

Select “Java animation with controls “and click “Go”

Make sure to select the PM<sub>2.5</sub> checkbox.

Stop the animation at some point during your selected date near the end of the time period.

### **RGB and aerosol optical depth (AOD) plots**

Clicking on the image in the upper right hand corner of the page will allow you to display true color images with the AOD. You can select the satellite from within the application or by selecting the tab before you click on the picture.

VIIRS will also give you the ability to display a dust mask and fire locations.

Links at the bottom of the page will allow you to display regional images and also download the images. You can also save the images using your browser. Saving the image from the GASP animation will save all of the frames.