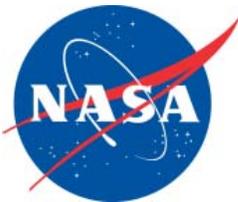


Guidelines for Posting on the U.S. Air Quality Weblog ("Smog Blog")

<http://alg.umbc.edu/usaq/>



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1. Introduction and Overview of Air Quality Pollutants

The U.S. Air Quality (USAQ) weblog, also known as “The Smog Blog,” is a daily diary of air quality in the United States. Posts are prepared by authorized personnel using NASA and NOAA satellite images, ground-based lidar data, ground-based pollutant monitor measurements, numerical model output, and other information. This document is a guidance manual for posting on the Smog Blog, including how, when, and what to post.

1.1 Overview of the Main Pollutants Contributing to Poor Air Quality

There are many sources of air pollution in the United States, including motor vehicles, agricultural fires, burning of solid fuels, transport of smoke and dust from Canada and Central America, industry, and power plants. The types and magnitudes of individual sources vary by region and season. Below is an overview of the main pollutants that can contribute to poor air quality in the United States, including a summary of sources, atmospheric chemistry, and health effects. Young children, senior citizens, individuals with cardio-pulmonary diseases, and people who work or exercise outdoors are the most vulnerable to the negative health effects associated with exposure to atmospheric pollutants.

1.1.1 Particulate Matter (PM_{2.5} and PM₁₀)

Health Effects:

- **Acute (short-term) – PM_{2.5} and PM₁₀:** coughing, wheezing, shortness of breath, tightness of the chest, irritation of the eyes, irregular heartbeat, possible heart attacks
- **Chronic (long-term) – PM_{2.5}:** premature death, reduced lung function, development of respiratory diseases in children, aggravation of heart disease
- **Chronic (long-term) – PM₁₀:** none

Sources:

- **Primary particles:** incomplete combustion (elemental carbon); motor vehicle emissions, road dust, wood-burning fireplaces, cooking (primary organic particles); unpaved roads, stone crushing, construction, metallurgical operations, erosion (crustal material and dust)
- **Secondary particles:** no direct sources – formed in the atmosphere from chemical reactions (see Discussion below for examples)

Atmospheric Chemistry:

- **Peak production:** varies depending on location and chemical composition of PM

Discussion:

Particulate matter (PM) is a general term for aerosol particles or droplets in the atmosphere. PM is subdivided into two size classes: PM_{2.5} and PM₁₀. PM_{2.5} particles, often called fine particles, have aerodynamic diameters ≤ 2.5 microns (μm), while PM₁₀ particles, often called coarse particles, have aerodynamic diameters ≤ 10 μm . Total suspended particulate matter (TSP) is a term used to describe the total atmospheric aerosol mass concentration, including PM_{2.5}, PM₁₀, and particles larger than 10 μm and smaller than 40-50 μm . Since PM_{2.5} is a subset of PM₁₀, it is

important to note that ambient concentrations of $PM_{2.5}$ can never be higher than ambient concentrations of PM_{10} for a specific location and time period.

$PM_{2.5}$ particles have relatively long atmospheric residence times (days to weeks) and therefore can travel over a wide geographic area (hundreds to thousands of miles). PM_{10} particles are larger and heavier, and they tend to settle out of the atmosphere by gravity more quickly than $PM_{2.5}$ particles. As a result, PM_{10} particles have a shorter atmospheric lifetime (minutes to days) and travel shorter geographic distances (tens of km or less) than $PM_{2.5}$ particles.

Ambient PM is a complex mixture of particles that contain a variety of chemical species. Individual particles can be solid, liquid, or solid surrounded by a layer of liquid. Typical components of PM include sulfate (SO_4^{2-}), nitrate (NO_3^-), ammonium (NH_4^+), elemental or “black” carbon, organic carbon compounds, and crustal materials. The composition of PM varies by season and location.

Particulate matter is hazardous because when particles are inhaled, they affect the respiratory system, and they can also pass into the blood stream and affect other parts of the body. Acute effects of exposure to $PM_{2.5}$ and PM_{10} include coughing, wheezing, shortness of breath, tightness of the chest, irritation of the eyes, and irregular heartbeat. Chronic effects of exposure to $PM_{2.5}$ include premature death, reduced lung function, and development of respiratory diseases in children. Available evidence suggests that there are no adverse health effects from chronic exposure to PM_{10} .

Depending on how they are formed, particles are classified as either *primary* or *secondary*. Primary particles are emitted directly into the atmosphere; examples include elemental carbon, organic carbon, crustal material, and dust. Elemental carbon is produced during incomplete combustion from sources such as cars, trucks, heavy equipment, forest fires, and burning waste. Primary organic particles include hundreds of compounds from a variety of sources, such as motor vehicle emissions, road dust, wood burning fireplaces, and meat cooking. Crustal material and dust come from sources including unpaved roads, stone crushing, construction sites, metallurgical operations, and erosion. Secondary particles are formed in the atmosphere from chemical reactions. Common secondary particles include sulfate, nitrate, ammonium, and organic carbon compounds. In general, primary particles tend to be coarse particles, while secondary particles tend to be fine particles.

Several types of secondary particles, such as ammonium sulfate and ammonium nitrate, are hygroscopic, which means they readily absorb water vapor from the atmosphere through a process called deliquescence. Haze during a typical urban air quality event is caused by visible light reflecting off deliquesced sulfate and nitrate particles.

1.1.2 Ozone (O_3)

Health Effects:

- **Acute (short-term):** coughing, wheezing, chest pain, headaches
- **Chronic (long-term):** permanent lung damage, aggravation of existing lung diseases such as asthma and emphysema

Sources:

- No direct sources – formed in the atmosphere from chemical reactions
- Produced by complex atmospheric reactions between nitrogen oxides (NO_x) and volatile organic compounds (VOCs)
- **NO_x sources:** motor vehicles, power plants, industry, biomass burning (fires), lightning, soil
- **VOC sources:** motor vehicles, evaporation of fuel, trees, plants, crops

Atmospheric Chemistry:

- **Peak production:** suburban regions on hot, sunny, cloud-free days with light winds

Discussion:

Ozone is one of the main constituents of photochemical urban air pollution, commonly called “smog.” It is a colorless gas with a distinctive odor. Ozone is a dangerous pollutant because it oxidizes mucous membranes that line the respiratory system. As a result, exposure to ozone can irritate the respiratory system, reduce lung function, and aggravate chronic diseases, such as asthma and emphysema. Acute exposure to ozone causes coughing, wheezing, chest pain, and headaches, while chronic exposure can lead to permanent lung damage.

Ozone is a secondary pollutant, which means it has no direct sources. Instead, ozone is produced in the atmosphere via complex chemical reactions involving nitrogen oxides (NO and NO_2 , collectively called NO_x), volatile organic compounds (VOCs), and sunlight. Most atmospheric NO_x originates as NO , which is created as a byproduct of the combustion process and thus is emitted directly from motor vehicles, power plants, industry, and biomass burning. Natural sources of NO include wildfires, lightning, and soil emissions. Various chemical reactions interconvert NO and NO_2 in the atmosphere. VOCs comprise all anthropogenic and natural gas-phase organic molecules except carbon monoxide (CO) and carbon dioxide (CO_2). Anthropogenic sources of VOCs include incomplete automobile combustion and evaporation of fuel, while trees, plants, and crops are significant sources of natural VOCs such as pinenes and terpenes.

In metropolitan regions, ozone production at any given location is a function of atmospheric chemistry, meteorology, and geography. NO_x is required to create ozone, but high levels of NO_x suppress O_3 production, so ozone levels tend to be relatively low in dense urban centers like the “downtown” areas of cities. On the metropolitan scale, ozone levels peak in suburban areas (outskirts of cities) where prevailing winds transport NO_x and VOCs in favorable ozone-generating ratios. Ozone levels tend to be very low in rural regions that have few sources of NO_x and VOCs, but there are some exceptions. It is possible for NO_x to travel far from its urban source regions in stable “reservoir species” such as peroxyacetyl nitrate (PAN). High temperatures cause PAN to thermally decompose, releasing NO_2 , which can lead to ozone production in remote areas, far away from direct sources of NO_x . In rural areas that have high emissions of natural VOCs, such as forests and some agricultural regions, ozone levels can also be relatively high. Since ozone requires sunlight for formation, levels tend to peak in the afternoon and early evening during the summer months. In general, clear, sunny days with high temperatures are most conducive for ozone production.

1.1.3 Nitrogen Dioxide (NO₂)

Health Effects:

- **Acute (short-term):** irritation of the eyes, nose, throat, and lungs
- **Chronic (long-term):** development of respiratory diseases in children

Sources:

- Few direct sources – formed by oxidation of NO in the atmosphere
- **NO sources:** as a byproduct of the combustion process in motor vehicles, power plants, industry, and biomass burning (fires); natural sources include lightning and soil

Atmospheric Chemistry:

- **Peak production:** near combustion sources, particularly cities and large fires; conversion to acid rain and nitrate particles is enhanced by humid or cloudy conditions

Discussion:

Nitrogen dioxide is formed by oxidation of nitric oxide (NO) in the atmosphere. As explained in section 1.1.2, NO is emitted directly into the atmosphere primarily as a by-product of fossil fuel combustion from cars, power plants, and industry. In the United States, automobile emissions and wildfires are major sources of NO₂.

Nitrogen dioxide is a very strong oxidizer, and when it is inhaled, NO₂ oxidizes the mucus membranes that line the respiratory system. The most serious health effects associated with ambient levels of NO₂ are due to its conversion to other atmospheric chemicals, however. In the atmosphere, nitrogen dioxide can take part in several different reactions that affect air quality and the environment. As explained in section 1.1.2, NO₂ can react with hydrocarbons from fossil fuel combustion or natural sources to produce ozone, which is a very hazardous pollutant. NO₂ is ultimately oxidized to nitric acid (HNO₃) in the atmosphere, which is very soluble and can be adsorbed by cloud drops. This process causes acid rain, which destroys buildings and monuments, and can have negative impacts on fish and wildlife. Nitric acid can also react with ammonia to form ammonium nitrate (NH₄NO₃), which is a fine mode particulate (PM_{2.5}). This reaction is very temperature and humidity dependent; formation of NH₄NO₃ is favored under low temperatures and high humidity. Nitric acid can also react with sodium chloride (sea salt aerosol) and crustal material to make coarse mode particulates (PM₁₀).

1.1.4 Sulfur Dioxide (SO₂)

Health Effects:

- **Acute (short-term):** temporary breathing problems, aggravation of existing cardiovascular disease
- **Chronic (long-term):** development of respiratory diseases in children

Sources:

- Combustion of fossil fuels containing sulfur (coal, gas, diesel); metal smelting and other industrial processes; volcanoes

Atmospheric Chemistry:

- **Peak production:** near fossil fuel combustion sources; conversion to acid rain and sulfate particles enhanced under humid or cloudy conditions

Discussion:

Sulfur dioxide is emitted primarily from combustion of fossil fuels, particularly coal in power plants and high-sulfur gas and diesel in cars and buses. SO₂ is also emitted during metal smelting and other industrial processes. Volcanoes are significant natural sources of SO₂. Once in the atmosphere, SO₂ undergoes oxidation in both the gas phase and liquid phase to form sulfuric acid (H₂SO₄) and sulfate. Sulfuric acid, like nitric acid, is very soluble and contributes to the formation of acid rain. Sulfate is a component of fine mode particulates (PM_{2.5}).

Oxidation of SO₂ is significantly faster in the liquid phase than gas phase, so the presence of clouds, fog, light rain, and high humidity enhances the formation of sulfate PM.

Direct exposure to high levels of gaseous SO₂ can cause temporary breathing problems for people with cardiovascular diseases. The most serious health effects associated with ambient levels of SO₂ are due to its conversion to sulfate aerosol. In addition to being a health hazard, sulfate particles can be a nuisance because they are a major cause of reduced visibility, which can be an issue for pilots and visitors to national parks.

2. Data and Images for the Smog Blog

In order to create a post for the Smog Blog, it is necessary to review the current air quality conditions for the United States. **Posts should be made in the early evening**, so that a full and accurate account of the day's air quality can be reported. **Posts should cover all major air quality events in the United States.** If time and conditions permit, posts may also focus on one or two other events of interest to the blogger.

2.1 Sources of Data and Images for the Smog Blog

There are a variety of internet resources that can be used to prepare posts for the Smog Blog, including satellite images, ground-based data, forecast model output, webcams, data tools, and meteorological surface observations. Links to these air quality resources are listed on the **sidebar on the right-hand side of Smog Blog home page**. The home page also includes **help files** to aid in interpretation and use of the air quality internet resources.

2.2 Recommended Basic Methodology for Reviewing Data Sources

With so many data sources to choose from, it is helpful to have a standard methodology for reviewing them. Below is a suggested order in which to review internet resources in preparation of your Smog Blog post. Experienced bloggers will develop their own methodology that focuses on their areas of interest. **Remember: posts should cover all major air quality events occurring in the U.S.!**

1. **Read the most recent posts on the Smog Blog.** Recent posts will orient you to the latest air quality conditions and alert you to past air quality events that may still be occurring.
2. **Check ground-based monitor Air Quality Index (AQI) values.** AQI values of PM_{2.5} and O₃ indicate current air quality conditions at the surface. Areas of elevated pollutant values are a sign that an air quality event, such as a fire, haze, or urban pollution, is occurring.
3. **Review AOD images.** GASP and MODIS Terra/Aqua AOD images indicate areas of elevated particulate concentrations due to smoke, dust, and/or haze.
4. **Review the Hazard Mapping System (HMS) Fire and Smoke Product.** The HMS maps show active fire locations (red dots) and associated smoke plumes for North America and Central America.
5. **Review MODIS true color images.** MODIS true color images provide visual confirmation of smoke plumes, dust, and haze. True color images can also be used to show tropical storms and other relevant weather features.
6. **Review NOAA NWS Air Quality Forecast Guidance.** The NOAA NWS air quality forecast guidance is output from a numerical model that predicts 1-hour and 8-hour average ozone levels at the surface. When an ozone event is occurring, these forecast images and data are useful because they indicate whether the event is likely to continue, and what areas will be affected. Smoke forecasts are also available, and can be useful during a fire event.
7. **Review the Navy Aerosol Analysis and Prediction System (NAAPS) aerosol model forecast from the U.S. Naval Research Laboratory (NRL).** The NAAPS forecast plots of smoke, dust, and sulfate aerosol show the expected distribution of particulates for the current day and the next 5 days. When an air quality event is occurring, these forecast images are useful because they indicate whether the event is likely to continue, and what areas will be affected.

2.3 Recommended Images to Post for Common Air Quality Events

The most common air quality events are related to fires, dust storms, and haze. Below are suggestions for the types of images to post for each of these common events. **In all cases, maps of current AQI values from ground-based monitor measurements of pollutants should be posted, if they are available.**

- **Fires.** Post an AOD image showing elevated AOD from smoke associated with the fire, and a true color image showing the location of the smoke plume(s); often, true color images also include red dots indicating “hotspots” of fire activity. It may also be helpful to post the HMS map showing the fire locations and reported extent of smoke plumes, and the NAAPS forecast images showing the expected distribution of smoke from the fire(s) over the next several days.

- **Dust.** Post an AOD image showing elevated AOD from the dust in the atmosphere. If the dust is visible in a true color image, then post that as well to show the location of the dust plume(s). It may also be useful to post NAAPS forecast images showing the expected distribution of dust for over next several days. If the dust is from Africa, make sure the geographic scale of the images you pose is sufficient to illustrate the intercontinental transport, and consider adding a HYSPLIT trajectory to show the intercontinental path of the dust.
- **Haze.** Post an AOD image showing elevated AOD associated with the haze, and a true color image to show the location and extent of the haze. If the haze contains significant amounts of sulfate aerosol, it may also be useful to post NAAPS forecast images showing the expected distribution of sulfate aerosol over the next several days.
- **Ozone.** Ozone is a colorless gas, so it does not appear on true color imagery. Post a forecast image from the NOAA NWS Air Quality Forecast Guidance, showing the future 8-hour average values of ozone for the next day.
- **Tropical Storms or Hurricanes.** Post a true color image or a GOES visible satellite image to show the location and extent of the tropical cyclone. Air quality can deteriorate rapidly in advance of a tropical system's landfall, due to subsidence (sinking air) ahead of the system, and dust can be advected in the wake of the storm's circulation. Post AOD images and NAAPS forecast images if they show evidence of elevated particulate levels associated with the storm. The direct impact of a tropical system is very good air quality in the affected region, due to strong winds, widespread cloud cover, and the influence of a clean marine airmass.
- **Regional Transport of Pollutants.** In the event of widespread transport of smoke, dust, or haze, post the appropriate true color and AOD images to show the regional distribution of the pollutants. It may also be helpful to post a HYSPLIT back or forward trajectory to show the sources or expected future location, respectively, of the polluted airmass.

2.4 Saving and Naming Images for the Smog Blog

Once you have decided what images to include in your post, *you must save them on your computer* in order to upload them to the server when you create your post. **Only materials that are not copyrighted or prohibited from being reproduced may be posted on the Smog Blog!**

Please note that images must be in .jpg , .jpeg, .gif, or .tiff format in order to be uploaded to the Smog Blog. Images in .png format are not compatible with Movable Type!

To enable accurate archival and easy searching of images, a naming convention has been developed for images posted on the Smog Blog. **Please follow the naming convention for all posts!** Note that "RGB" is short for "red-green-blue" and is an abbreviation for true color images, and "AOD" is an abbreviation for "aerosol optical depth."

All image names should include the following information, in order, separated by an underscore symbol _ :

- **Date of image** in YYYYMMDD format
- **Name of satellite/instrument or data source** (e.g., MODIS Terra, GASP, GOES, OMI, NAAPS, AERONET)
- **Type of data in image**, if a satellite image (e.g., RGB, AOD, visible, NO₂)
- **Observed region** (e.g. USA1, Region 4, NAmerica)
- **Time of image**, if applicable (e.g., 2015 UTC)

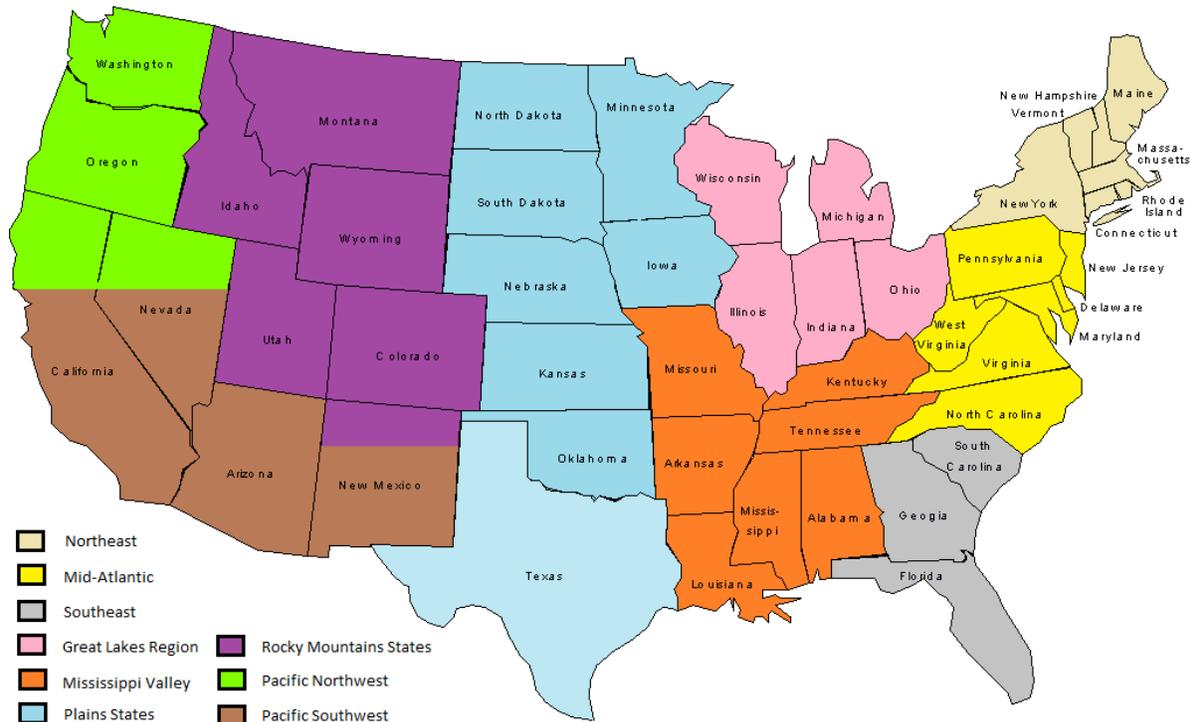
Examples:

- 20080829_Terra_MODIS_RGB_USA3
- 20080830_Aqua_MODIS_AOD_Region 10
- 20080903_GOES_Visible_Northeast_2145UTC
- 20081120_NAAPS_NAmerica_1200UTC

2.5 Referring to Geographic Regions on the Smog Blog

We have adopted a standard set of geographic regions for the United States, shown in Figure 1. These regions should be used in posts when referring to areas where air quality events are occurring. When an air quality event is confined to a smaller area, individual state names should be used. State name abbreviations should only be used in the title of a post, not the body of a post. When using state abbreviations, use the official United States Post Office state abbreviations (<http://www.usps.com/ncsc/lookups/abbreviations.html#states>).

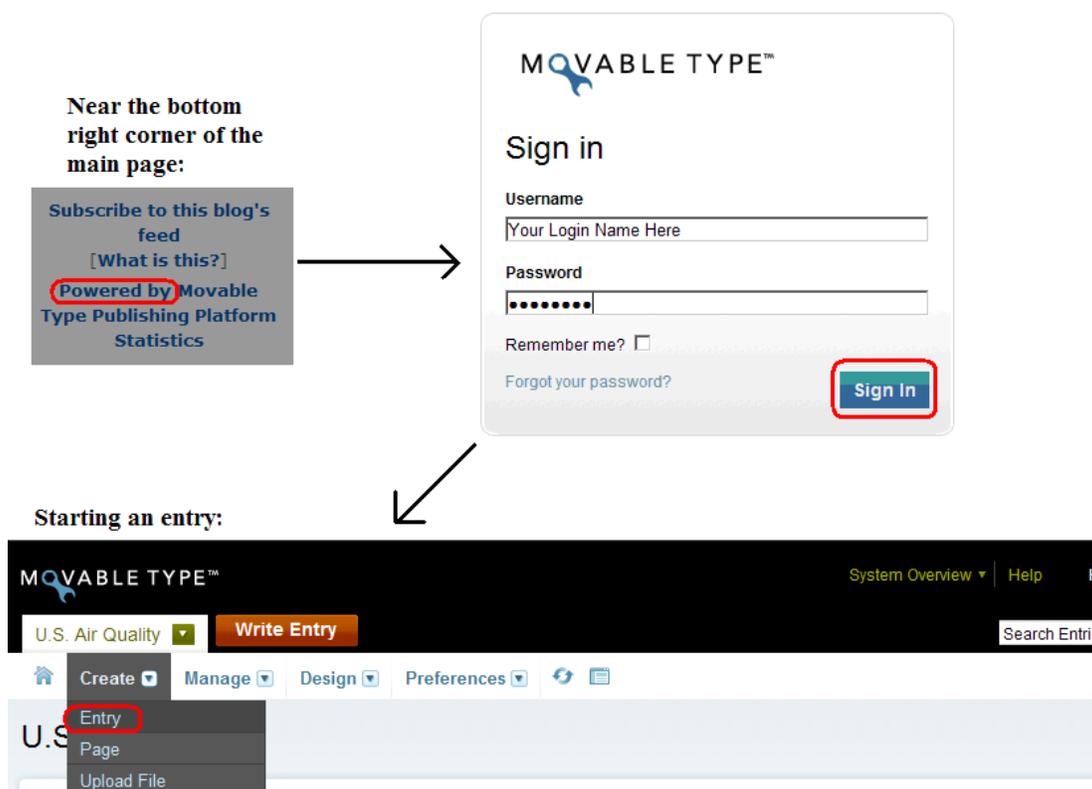
Figure 1. Geographic regions for the Smog Blog. These regions should be used in posts to describe the areas where air quality events are occurring.



3. Posting on the Smog Blog

Once you have reviewed the main data sources and saved the relevant images, it is time to post on the Smog Blog. Posting involves logging onto the web site, adding text and a title, adding images and links, categorizing the post, publishing the post, and checking the final published post for errors.

Figure 2. Logging onto the Smog Blog and Starting a New Post. The screen shots below demonstrate how to log on to the Smog Blog and create a new entry.



3.1 Logging onto the Smog Blog

To log onto the Smog Blog, click on the small “Powered by” link located on the lower right side of the homepage, as shown in Figure 2. The Moveable Type “Sign in” page will appear; enter your user name and password in the appropriate boxes and click “Sign In.” For security purposes, do not check the “Remember me?” box; if you do, anyone using the same machine can log on to the Smog Blog with your username. After you sign in, the blog manager page will appear. Make sure U.S. Air Quality tag is open at the top of the page (see Figure 2); do not post on any other blogs. Place your cursor over the “Create” menu at the top left side of the page and click “Entry” to create a new post. The “Create Entry” page will open.

3.2 Adding Text and a Title

Add a title in the box at the top of the “Create Entry” page, as shown in Figure 3. Use a title that is short and descriptive of your post, such as “Fires Degrade Air Quality in the Southeast.” Look at previous posts to get an idea of appropriate titles. Do not use all capital letters for the title.

For best results, use a word processing program, such as Microsoft Word, to create the main body of text for your post. The text box on the “Create Entry” page does not have spell checking capability, so using a word processing program prevents spelling errors. Simply copy and paste your text from the word processing program into the text box on the “Create Entry” page. If you are a good speller, you can type directly into the text box.

While you are working on your post, **regularly save your work** in Moveable Type by clicking the blue “Save” button at the bottom of the page and keeping the status as “Unpublished” until the entry is complete, as shown in Figure 3. This step will prevent loss of your work in the event of a power surge, system crash, or any other computer problem. Note that after you save your post for the first time, the title of the “Create Entry” page changes to “Edit Entry.”

3.3 Adding Images to a Post

Images should be included in your post to illustrate current air quality conditions. You can add a single image (Figure 4a) or two images side by side (Figure 4b). In the text of your post, refer to images by the type of data they contain (e.g., true color image, AOD), the satellite and instrument (e.g., MODIS Terra, OMI), and the region (e.g., Southeast, Mid-Atlantic – see Section 2.5 for more information). **Attribution of the official source of any image included on the Smog Blog is very important and should be noted in the text as close as possible to the data posted.** An example of blog text might read, “Smoke from fires in Florida is evident in today’s MODIS Terra true color image from the NASA Rapid Response System (below on left). AOD levels are elevated from particulates associated with the fires, as shown in the corresponding MODIS Terra AOD image for region 4, provided by IDEA (below on right).”

3.3.1 Inserting Images into the Text of the Post

Use HTML code to insert images into the text of your post. The appropriate HTML code, shown on pages 14-15, should be copied and pasted directly into the text box in the location where you want the images to appear in the finished post.

Note that the yellow-highlighted “IMAGE,” “IMAGE1,” and “IMAGE2” in the HTML code are placeholders for the names of your images. After you paste the HTML code into the text box of your post, replace “IMAGE” or “IMAGE1” and “IMAGE2” with the names of your images. **When you paste your image names into the HTML code, be very careful to ensure there are no leading or trailing spaces, and do not accidentally delete the single quotation mark (') or double quotation mark (") adjacent to the name of the image.** Any accidental alternation in the HTML code will prevent your images from appearing in the final post. Refer to Section 2.4 for information on how to name images.

Figure 3. Creating an Entry on the Smog Blog. The screen shot below of the “Create Entry” page demonstrates where to enter a title, enter text, change the date and time of an entry, change the status of an entry to “Published,” and save an entry on the Smog Blog.

HTML code for a single image:

```
<a href="http://alg.umbc.edu/mac/images/IMAGE"
onclick="window.open('http://alg.umbc.edu/mac/images/IMAGE','popup','width=900,height=700,scrollbars=yes,resizable=yes,toolbar=no,directories=no,location=no,menubar=no,status=no,left=0,top=0'); return false"></a>
```

HTML code for a single larger image:

```
<a href="http://alg.umbc.edu/mac/images/IMAGE"
onclick="window.open('http://alg.umbc.edu/mac/images/IMAGE','popup','width=900,height=700,scrollbars=yes,resizable=yes,toolbar=no,directories=no,location=no,menubar=no,status=no,left=0,top=0'); return false"></a>
```

HTML code for two images side by side:

Note that Image 1 will appear to the left of Image 2 (see Figure 3b)

```
<table width="200" border="0" cellpadding="0"><tr><td><a href="http://alg.umbc.edu/mac/images/IMAGE1" onclick="window.open('http://alg.umbc.edu/mac/images/IMAGE1','popup','width=900,height=700,scrollbars=yes,resizable=yes,toolbar=no,directories=no,location=no,menubar=no,status=no,left=0,top=0'); return false"></a></td><td><a href="http://alg.umbc.edu/mac/images/IMAGE2" onclick="window.open('http://alg.umbc.edu/mac/images/IMAGE2','popup','width=900,height=700,scrollbars=yes,resizable=yes,toolbar=no,directories=no,location=no,menubar=no,status=no,left=0,top=0'); return false"></a></td></tr></table>
```

Figure 4. Orientation of Images in a Final Post. A single image (a) or two images side by side (b) can be added to a post. Note that images are shown smaller than they appear in a post on the Smog Blog.

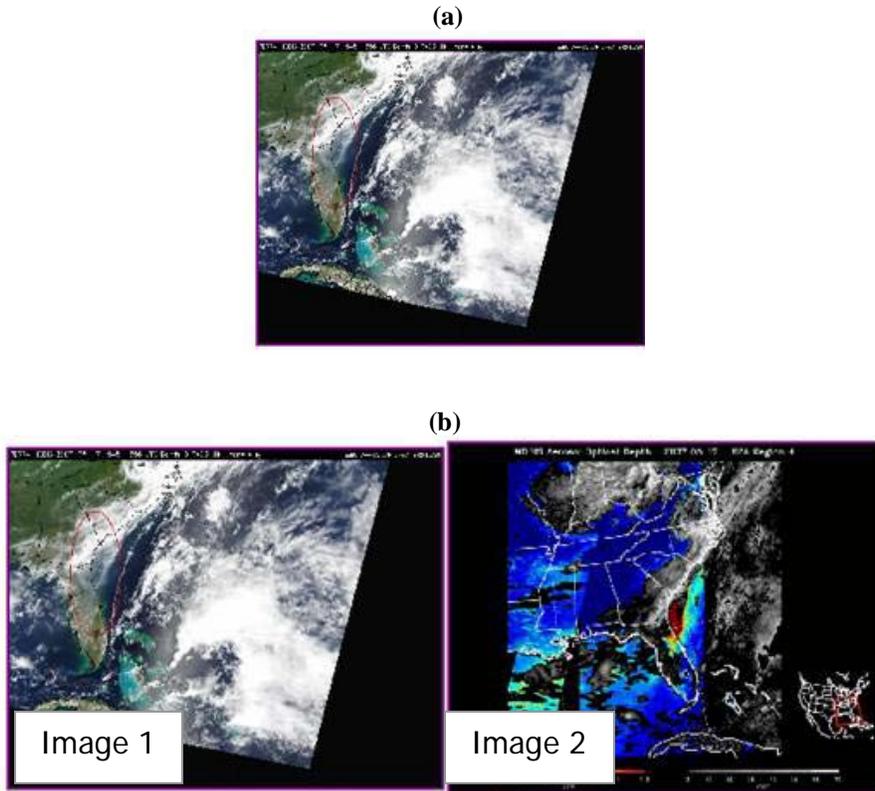
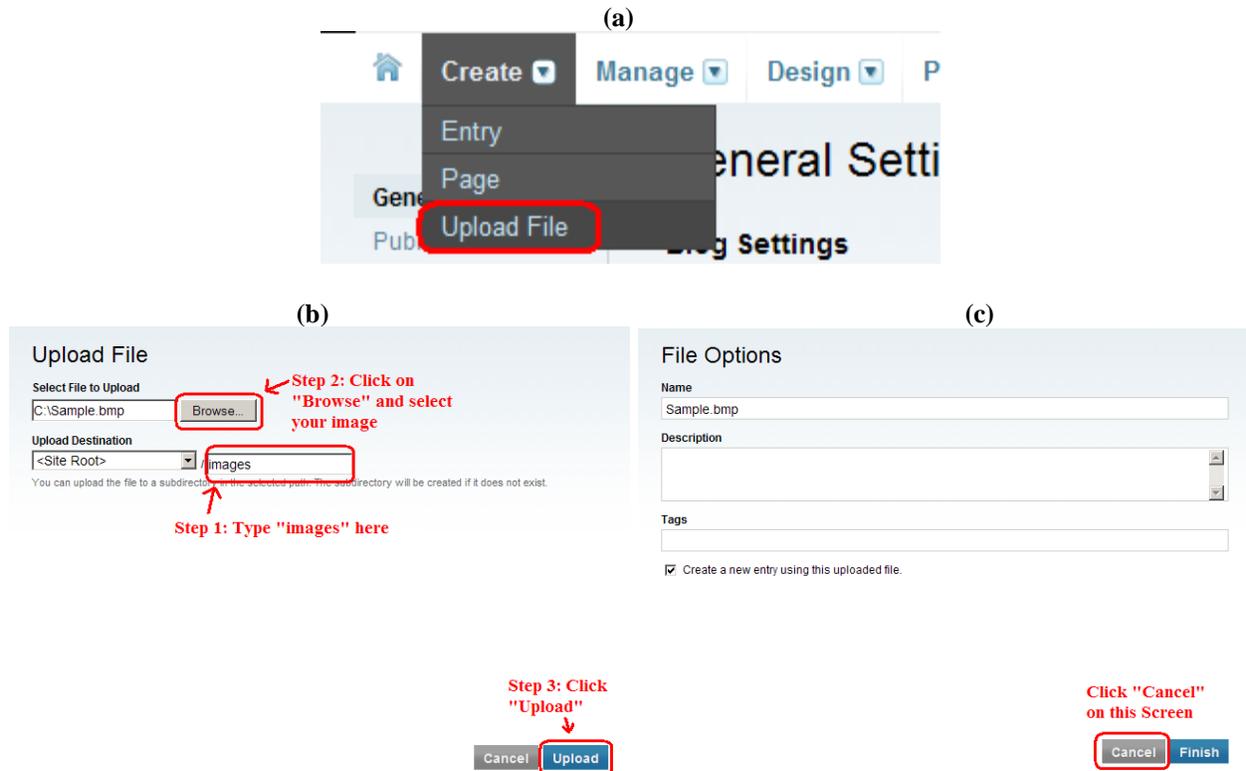


Figure 5. Uploading Images for a Post. Image files must be uploaded to the server in order for them to appear in your final post.



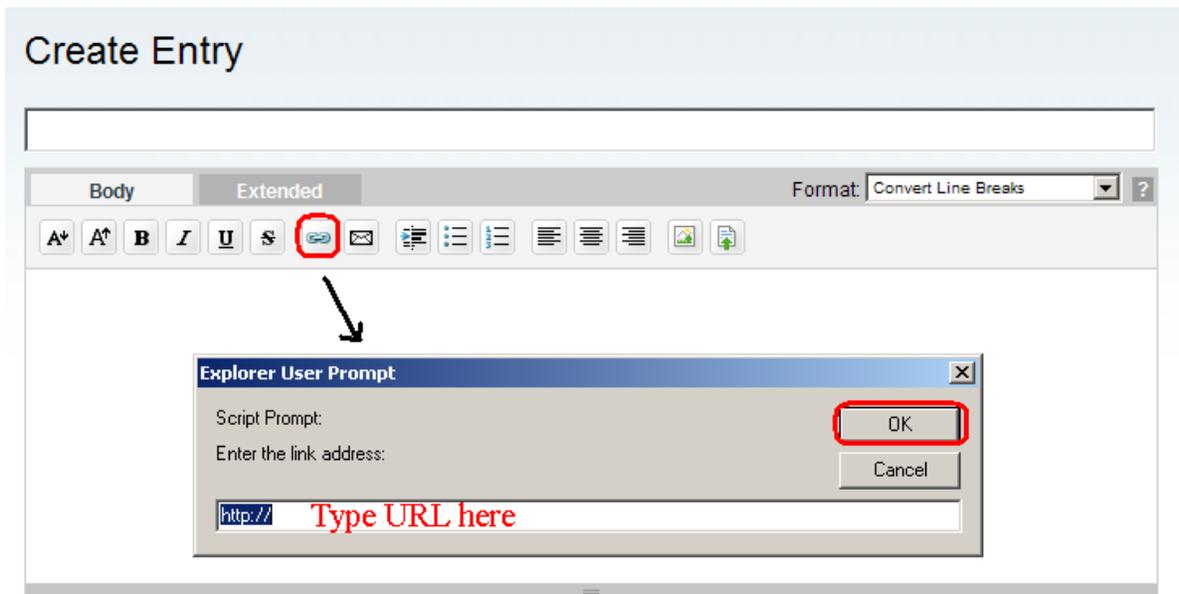
3.3.2 Uploading Images for the Post

After you have added the HTML code to the text of your post, you must upload the image files to the server. Place your cursor over the “Create” menu at the top left side of the page and click “Upload File,” as shown in Figure 5a. The “Upload File” window will open, as shown in Figure 5b. Type “images” in the empty box under “Upload Destination.” Then under “Select File to Upload,” click on the “Browse” button and navigate to the image file on your computer. Once you have selected the file to upload, click the blue “Upload” button at the bottom right side of the window. The “File Options” window will appear, as shown in Figure 5c; click the grey “Cancel” button at the bottom left side of the window to finish the image uploading process.

3.4 Adding Links to a Post

In some cases, you may wish to refer readers to a separate web page for more information about current air quality conditions. In these cases, you can add hyperlinks to your post. Highlight the word or words that you wish to hyperlink in the text box, and then click the “link” icon in the tool bar above the text box, as shown in Figure 6. A prompt window will open; paste in the link’s URL and click “OK.” The program will automatically add the appropriate HTML code to the body of your text.

Figure 6. Adding Links to a Post. Click on the “link” icon in the “Create Entry” window to add hyperlinks to the text of the post.



3.5 Categorizing the Post

In order to organize and archive posts accurately, each post is categorized using keywords. When you have finished uploading the text, images, and links for your post, select the appropriate keywords by clicking on the “Add category” link in the center right side of the “Create/Edit Entry” page, as shown in Figure 7. The “Categories” box will open; select all the keywords that correspond to your post by checking the box next to the keyword. When you are done, click “OK” at the bottom of the “Categories” box. The keyword(s) you selected will appear next to the “Category” heading under “METADATA” on the left side of the “Create/Edit Entry” page, as shown in Figure 8.

If you select multiple keywords, you should designate one of them as the primary category. The primary category is the one which describes the majority of the post. The category that appears at the top of the list next to “Category” is the default primary category, as shown in Figure 8. To change the primary category, place your cursor over the name of the category you want to designate as primary, and left-click. The category will move to the top of the list and become the primary category, as shown in Figure 8.

The category keywords are mostly self-explanatory and include:

- **Air quality news**
- **AIRS data**
- **Back/forward trajectory** (select when including a HYSPLIT airmass trajectory in the post)
- **Data fusion**
- **Field exercise**

- **Ground-based PM data**
- **LIDAR** (select when including CALIPSO data or ground-based LIDAR data in the post)
- **Model** (select when including forecast model output in the post)
- **Nephelometer**
- **Note** (select for short posts discussing specific events)
- **Photographs** (select when including photographs, such as webcam shots, in the post)
- **Satellite** (select when including satellite images in the post)
- **Special feature**
- **International** (select for posts on air quality in countries other than the U.S.)
- **Sunphotometer** (select when including sunphotometer data, such as from the AERONET network, in the post)
- **SUOMINET**
- **Weekly summary**

Figure 7. Selecting Categories for a Post. All posts should be categorized using one or more keywords.

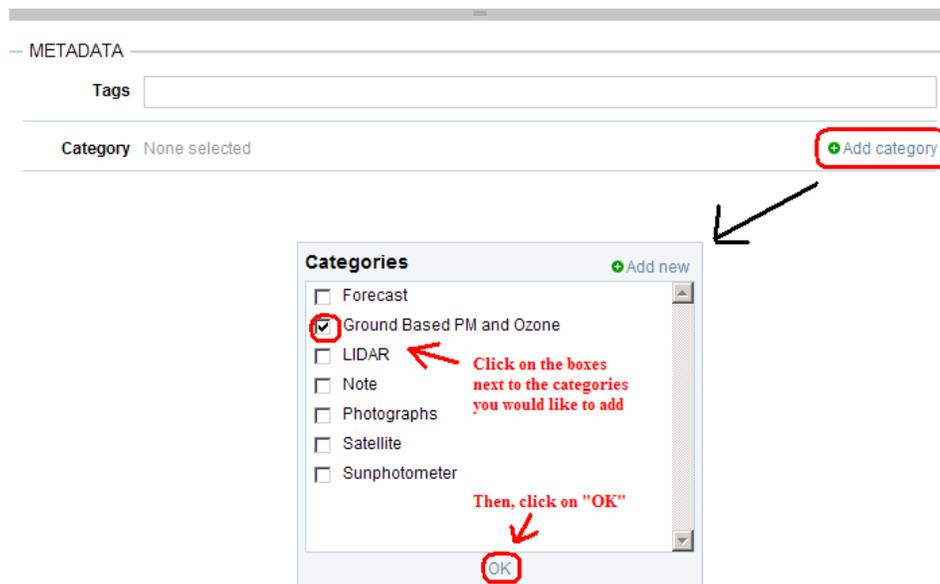
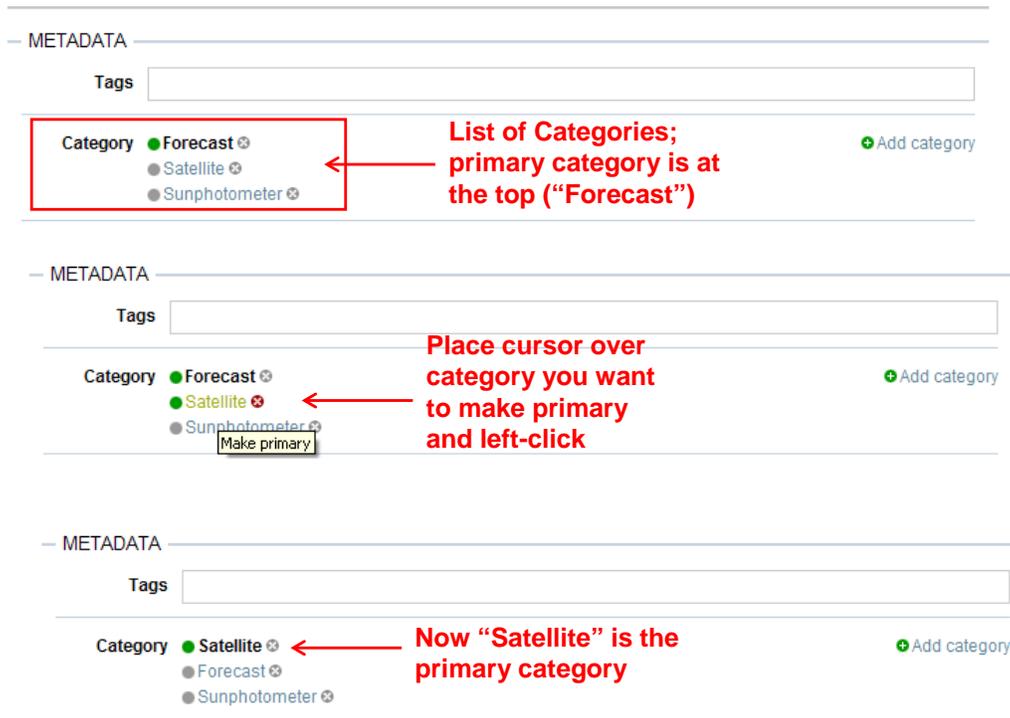


Figure 8. Designating a Primary Category for the Post. If multiple categories are selected for a post, one should be designated as the primary category.



3.6 Publishing the Post

Once you have entered all the information for your post, you are ready to publish the final entry on the Smog Blog. First, update the time on the “Create/Edit Entry” page to reflect the time when you are publishing the post, as shown in Figure 9, not the time when you first began the entry. Then change the “Status” pull-down menu near the bottom of the “Create/Edit Entry” page to “Published” and click the blue “Save” button at the bottom of the page, as shown in Figure 9. It is not necessary to fill out the “Excerpt,” “Keywords,” or “Tags” boxes. It will take a few minutes for the post to be published to the Smog Blog.

Note that the “Preview” button does not work, so make sure that your post is as error-free as possible before you publish it!

Figure 9. Publishing the Post. Before you publish, update the time, then select “Published” and click “Save.”

— PUBLISHING —

Status: Unpublished

Publish Date: 2009-06-17 15:26:43 **Step 1: update time**

Basename: []

Save Preview

— PUBLISHING —

Status: Unpublished

Publish Date: Unpublished
Published
Scheduled **Step 2: select "Published"**

Basename: []

Save Preview **Step 3: click "Save"**

3.7 Checking the Final Published Post for Errors

After the final post has been published, review it on the Smog Blog. Make sure the images loaded properly, all the links take the reader to the correct web pages, and any special characters, such as quotation marks, appear correctly. If you find a mistake, go back to the “Create/Edit Entry” page, correct the problem, and re-publish the post. **Once you are satisfied with your post, log out of the “Create/Edit Entry” page. The “logout” link is at the top right side of the page.**

If you notice an error in another blogger’s post, let him/her know as soon as possible so the error can be corrected. If it is necessary to edit a post that has already been published and the blogger has logged out of the system, he/she must log back in and click on the link for the appropriate entry on the blog manager page.

3.8 Common Posting Errors

There are many potential mistakes to be made when posting to the Smog Blog. Tables 1 and 2 list some common image analysis and technical blogging problems and suggestions on how to solve them.

Table 1. Common Problems and Solutions when Analyzing Images for the Smog Blog

Analysis Problem/Mistake	Solution
Failing to read yesterday's post	Bloggers should always begin their analysis by reading recent posts in order to orient themselves to the latest air quality conditions and be aware past air quality events that may still be occurring.
Confusing sunglint with haze or smoke in true color images	Sunglint is an artifact of satellite measurements caused by visible light reflecting off of water. In true color images, sunglint is a solid, silver-brown feature that occurs only over water, usually near the center of the image. Haze is a diffuse, transparent, whitish feature that can occur over land and/or water. Smoke is also white and diffuse, but it is less transparent than haze. Haze and smoke are usually associated with elevated AOD levels, so you can frequently confirm the presence of haze and smoke with a corresponding AOD image(s). Sunglint is generally associated with missing AOD data.
Confusing fog with haze in true color images	Sometimes it is very difficult to distinguish clouds from haze in a true color image because both appear as diffuse, transparent, whitish features. Often the AOD algorithms have trouble differentiating between fog and haze, too, so consulting the corresponding AOD image(s) may or may not be helpful. Try looking at the surface meteorological station measurements, if they are available. Station measurements differentiate between haze (indicated by an infinity symbol, ∞) and fog (indicated by an equal sign, =). In addition, the temperature and dew point temperature are equal or nearly equal under foggy conditions (corresponding to 100% relative humidity), while they are not for hazy conditions.
Misinterpreting high AOD values around cloud edges and at the end of the daylight hours in GASP images as due to elevated particulate concentrations	GASP images are very useful because they are updated every 30 minutes. However, there are accuracy issues with GASP that makes it easy to misinterpret the images. If you see areas of high AOD (yellow and red areas) in GASP images, cross-check with the MODIS Terra and Aqua images. If both sets of AOD data show elevated AOD in the same area, it is likely an accurate measurement. If the high AOD in the GASP image is near the edges of clouds, or prominent at the beginning or end of daylight, then it may be an artifact, not a real measurement.

Table 2. Common Technical Problems and Solutions when Posting to the Smog Blog

Technical Problem	Mistake	Solution
The post does not appear on the Smog Blog after I have uploaded it.	Forgetting to publish and save the post	Go back to the “Create/Edit Entry” page and change the “Status” pull-down menu near the bottom of the page to “Published” and click the blue “Save” button at the bottom of the page (see Section 3.6 and Figure 9).
No images appear in the final post.	Forgetting to paste the image HTML code in the text box	HTML code is required in the body of the text in order for images to appear in the final text. Follow the directions in Section 3.3.1 to insert the appropriate HTML code in the text box on the “Create/Edit Entry” page.
	Accidentally copying over or deleting part of the image HTML code	Any alteration in the HTML code for images (see Section 3.3.1) will result in errors on the final post. When copying image names into the HTML code, make sure there are no leading or trailing spaces, and do not accidentally delete the single quotation mark (') or double quotation mark (") adjacent to the name of the image.
	Forgetting to upload images	Go back to the “Create/Edit Entry” page and follow the directions in Section 3.3.2 and Figure 5 to upload images to the server.
	Trying to use images in .png format	Images in .png format are not compatible with Movable Type. The permitted formats are .jpg , .jpeg, .gif, or .tiff (see Section 2.4). Change any .png images you have to one of the allowed formats and re-upload.
There are many spelling errors in my final post.	Typing the post directly into the text box on the “Create/Edit Entry” page	The text box on the “Create/Edit Entry” page does not have spell checking capability. For best results, use a word processing program, such as Microsoft Word, to create the main body of text for your post, and then paste it into the text box on the “Create/Edit Entry” page.
A blogger went on vacation or was out of the office, so no post was made.	Forgetting to arrange for another blogger to cover vacation or other absences.	Any blogger who will be unable to post on his/her regularly-scheduled day(s) should ask another blogger to cover for him/her. The request should be made well in advance to prevent any lapses in blogger coverage.
Posts are not classified by the correct category.	Forgetting to classify posts or failing to designate a primary category	All posts should be designated by one or more categories to facilitate archival and historical analysis. Follow the directions in Section 3.5 and Figures 7 and 8 to classify posts correctly and accurately.