

# USFJ Air Quality Awareness

## Introduction

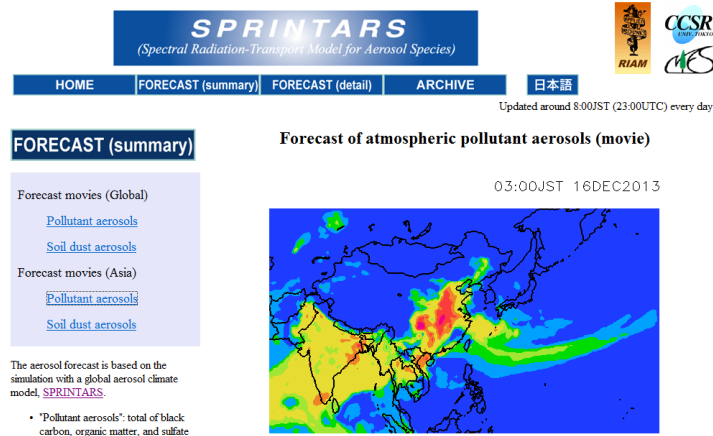
Dust storms originating in the deserts of central Asia blow across the Korean peninsula and the Sea of Japan. These storms tend to occur in late winter or early spring and are sometimes referred to as Yellow Dust, Yellow Sand, Kosa, Hwangsa, and Dust and Sand Storm. This dust contains very fine particles with a diameter of 2.5 micrometers or less (referred to as PM<sub>2.5</sub> or Particulate Matter 2.5) which have the potential to affect air quality in China, Korea and Japan. Similar particles are found in emissions from burning wood, motor vehicles, power plants and other industrial activities.

[Instruction link \(once available\)](#)

## ➤ Air Quality Forecast

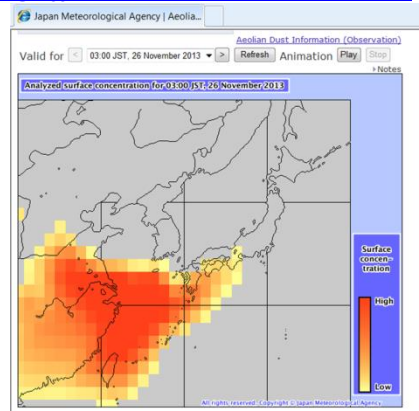
The Government of Japan provides tools to the public to predict dust and pollution

<http://sprintars.riam.kyushu-u.ac.jp/forecast.html> (Click link to view)



The screenshot shows the SPRINTARS website interface. At the top, there is a navigation bar with links for HOME, FORECAST (summary), FORECAST (detail), ARCHIVE, and 日本語. The main content area is titled "Forecast of atmospheric pollutant aerosols (movie)" and includes a date and time stamp: "03:00JST 16DEC2013". A map of East Asia is displayed, showing aerosol concentrations with a color scale from blue (low) to red (high). The map shows high concentrations of aerosols over the Korean peninsula and the Sea of Japan. The website also features a sidebar with links for "Forecast movies (Global)" and "Forecast movies (Asia)", and a note about the simulation model used.

<http://www.jma.go.jp/en/kosafcst/kosafcst-c.html> (Click link to view)



**Please Note!!!** Colors on JMA and SPRINTARS Predictive Web-Sites do not correspond to the values in the chart below (Step #3)

## ➤ What Are Conditions Like Now?

Real Time PM 2.5 data is available through the Japanese Ministry of Regional Air Pollutant Monitoring System (AEROS):

➤ 3 Simple steps below can help you navigate through AEROS

### Step 1 – Click on Air Quality Results for Your Area:

八戸市 六日町 Hachinohe Muikamachi Misawa AB area

<http://soramame.taiki.go.jp/DataList.php?MstCode=02203510>

千葉県/横田 Chiba Prefecture/ Yokota area

<http://soramame.taiki.go.jp/DataList.php?MstCode=12201120>

横須賀 Yokosuka area

<http://soramame.taiki.go.jp/DataList.php?MstCode=14201020>

沖縄: Okinawa area

<http://soramame.taiki.go.jp/DataList.php?MstCode=47211050>

### What you will see



### Step 2- Interpret Table

Once there you will see a chart/guide, similar to above. Use the guide to determine what the PM 2.5 reading was for the time and date of concern. From left to right the first four columns list: year, month, day, and hour. The 6th column from the right lists the PM 2.5 reading in ug/m3. For example, the PM 2.5 reading at 1400 hours on 19 Sept 2013 was 12 ug/m3.

### Step 3- Compare values to chart below

24-hr Average PM <sub>2.5</sub> Level (µg/m <sup>3</sup> )	Color Code	Early Morning Hourly PM <sub>2.5</sub> Level (µg/m <sup>3</sup> )	Recommended Guidance
0-35.9	Green	0-54.9	Normal outdoor activities
36.0-69.9	Amber	55.0-84.9	Persons with diagnosed cardio or respiratory sensitivities should consider reducing prolonged or heavy outdoor activity
>70.0	Red	>85	All personnel should consider minimizing prolonged outdoor activity. Person with diagnosed cardio or respiratory sensitivities should remain indoors where possible

Please Note!!! Colors on JMA and SPRINTARS Predictive Web-Site do not correspond to this chart

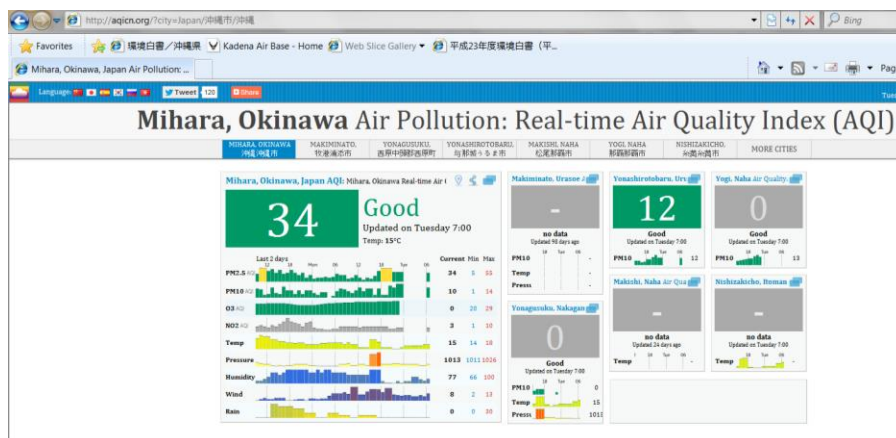
### Traveling?

Below is a good tool to see what current Air Quality levels are in cities world-wide  
 Please Note!!! Air Quality is described in many ways to keep the public informed. The site below is a good example, but the AQI numbers should not be confused with the PM 2.5 concentrations.

Go to this link and type in the city you are traveling

Link

<http://aqicn.org/city/all/>





# Frequently Asked Questions regarding Particulate Matter

## **1. What is PM<sub>2.5</sub>?**

- Particulate matter, or PM, is the term for particles found in the air, including dust, dirt, soot and smoke. Particles can be suspended in the air for long periods of time. Some particles are large or dark enough to be seen as soot or smoke. Others are so small that individually they can only be detected with an electron microscope.

- Many manmade and natural sources emit PM directly or emit other pollutants that react in the atmosphere to form PM. These solid and liquid particles come in a wide range of sizes.

- Particles less than 10 micrometers in diameter (PM<sub>10</sub>) pose a health concern because they can be inhaled into and buildup in the lungs. Particles less than 2.5 micrometers in diameter (PM<sub>2.5</sub>) are referred to as "fine" particles and are believed to pose the greatest health risks to certain or specifically identified individuals. These particles, because of their small size (approximately 1/30th the average width of a human hair), can lodge deeply into the lungs putting individuals at high risk for health issues related to particulate matter (see questions 5-9).

(Source USEPA) <http://www.epa.gov/airquality/particlepollution/designations/faq.htm>

## **2. Who is most at risk?**

Children and the elderly are potentially the most at risk. People of all ages who are active outdoors are at increased risk because, during strenuous physical activity, PM<sub>2.5</sub> can lodge deeply into the lungs putting individuals at high risk for health issues related to particulate matter (see questions 5-9).

(Source USEPA) <http://www.epa.gov/airquality/particlepollution/designations/faq.htm>

## **3. How often are PM 2.5 levels at elevated levels?**

**Elevated levels are only expected a few times each year roughly between the months of January to May with the worst months being February and March**

## **4. Where does PM<sub>2.5</sub> come from?**

- Natural sources created by dust and weather. Sources of fine particles also include all types of combustion activities (motor vehicles, power plants, wood burning, etc.) and certain industrial processes. Particles with diameters between 2.5 and 10 micrometers are referred to as "coarse." Sources of coarse particles include crushing or grinding (mining) operations, and dust from paved or unpaved roads. Other particles may be formed in the air from the chemical change of gases. They are indirectly formed when gases from burning fuels react with sunlight and water vapor. These can result from fuel combustion in motor vehicles, at power plants, and in other industrial processes. (Source USEPA)

## **5. Are you at risk from particulate matter?**

- People with heart or lung disease, older adults, and children are considered at greater risk from PM than other people, especially when they are physically active. Exercise and physical activity cause people to breathe faster and more deeply—and to take more particles into their lungs.

- **Older adults** are at increased risk because of the higher possibility of undiagnosed disease..... Many studies show that when particle levels are high, older adults are more likely to be hospitalized, and some may die of aggravated heart or lung disease.

- **Children** are at increased risk for because their lungs are still developing; they spend more time at high activity levels; and they are more likely to have asthma or acute respiratory diseases, which can be aggravated when particle levels are high.

(Source USEPA) <http://www.epa.gov/airquality/particlepollution/pdfs/pm-color.pdf>

## 6. How does this affect people with Asthma?

If you have asthma, watch for symptoms and carefully follow your asthma management plan when particle levels are high. Your doctor can help you develop a plan if you don't have one. (Source USEPA)

<http://www.epa.gov/airquality/particlepollution/pdfs/pm-color.pdf>

## 7. How does this affect people with heart disease?

Particle exposure can cause serious problems to susceptible individuals in a short period of time—even heart attacks. Symptoms such as chest pain or tightness, palpitations, shortness of breath, or unusual fatigue may indicate a serious problem. If you have any of these symptoms, follow your doctor's advice.

(Source USEPA)

<http://www.epa.gov/airquality/particlepollution/pdfs/pm-color.pdf>

## 8. How does this affect people with lung disease?

You may not be able to breathe as deeply or as vigorously as normal, and you may experience coughing, chest discomfort, wheezing, shortness of breath, and unusual fatigue. If you have any of these symptoms, reduce your exposure to particles and follow your doctor's advice. (Source USEPA)

<http://www.epa.gov/airquality/particlepollution/pdfs/pm-color.pdf>

## 9. How can particles affect your health?

- Particle exposure can lead to a variety of health effects. For example, numerous studies link particle levels to increased hospital admissions and emergency room visits—and even to death from heart or lung diseases. Both long- and short-term particle exposures have been linked to health problems.

- **Long-term exposures**, such as those experienced by people living for many years in areas with high particle levels, have been associated with problems such as reduced lung function and the development of chronic bronchitis—and even premature death.

- **Short-term exposures** to particles (hours or days) can aggravate lung disease, causing asthma attacks acute bronchitis, and may also increase susceptibility to respiratory infections. In people with heart disease, short-term exposures have been linked to heart attacks and arrhythmias. Healthy children and adults have not been reported to suffer serious effects from short-term exposures, although they may experience temporary minor irritation when particle levels are elevated. (Source USEPA)

<http://www.epa.gov/airquality/particlepollution/pdfs/pm-color.pdf>

## 10. What are the symptoms of particle exposure?

- Even if you are healthy, you may experience temporary symptoms, such as irritation of the eyes, nose, and throat; coughing; phlegm; chest tightness; and shortness of breath. If you have lung disease, you may not be able to breathe as deeply or as vigorously as normal, and you may experience coughing, chest discomfort, wheezing, shortness of breath, and unusual fatigue. If you have any of these

symptoms reduce your exposure to particles and follow your doctor's advice. Contact your doctor if symptoms persist or worsen. (Source: USEPA)

#### **11. How can you avoid unhealthy exposure?**

- Your chances of being affected by particles increase the more strenuous your activity and the longer you are active outdoors. If your activity involves prolonged or heavy exertion, reduce your activity time—or substitute another that involves less exertion. Go for a walk instead of a jog, for example. Plan outdoor activities for days when particle levels are lower. And don't exercise near busy roads; particle levels generally are higher in these areas. Particle levels can be elevated indoors, especially when outdoor particle levels are high. Certain filters and room air cleaners can help reduce indoor particle levels. You also can reduce particle levels indoors by not smoking inside, and by reducing your use of other particle sources such as candles, wood-burning stoves, and fireplaces. (Source: USEPA)

<http://www.epa.gov/airquality/particlepollution/pdfs/pm-color.pdf>

#### **12. Are there any concerns with radiation in the dust?**

PM 2.5 is not related to radiation. Radiation levels are monitored on installations and by the Government of Japan. Public service announcements would be issued if radiation levels were to approach dangerous levels

#### **13. Do Military installations monitor environmental hazards?**

Yes. Military bases routinely monitor environmental hazards on installations to ensure workers, residents and visitors are safe. Monitoring includes all media (soil, water and air). Particulate Matter monitoring by the government of Japan is accomplished at such a high level of quality that additional monitoring on bases is not always needed unless there is a specific health concern. Your installation's environmental health experts are monitoring levels recorded by the government of Japan to establish any notifications or advisories as needed. See web-links provided for air quality monitoring data for your area.

#### **14. How does this affect people with allergies?**

People with allergies may be more susceptible and more likely to develop symptoms. Those that have asthma triggered by allergies should watch for symptoms and carefully follow your asthma management plan when particle levels are high. Your doctor can help you develop a plan if you don't have one.

(Source USEPA) <http://www.epa.gov/airquality/particlepollution/pdfs/pm-color.pdf>

#### **15. What if my job requires me to work outside during high PM levels?**

If your work requires strenuous activity outdoors and/or you have health concerns such as: asthma, heart disease, lung disease or severe allergies you should monitor particulate matter levels (using the links provided in the web-page) and discuss a plan with your healthcare provider and your supervisor. For mission critical jobs there are environmental and industrial health experts on each installation that can advise and assist your supervisor to make decisions on how to mitigate exposures.

#### **16. What if I supervise workers who work outside during high PM levels?**

If you supervise workers who perform strenuous activity outdoors and/or you have health concerns such as: asthma, heart disease, lung disease or severe allergies you should take into consideration particulate matter levels outside and modify work schedules to include work/rest cycles to reduce your workers exposure as low as reasonably achievable. If the work is mission critical and you have a worker

you have concerns about utilize your chain of command. There are environmental and industrial health experts on each base that can advise and assist you to make decisions on how to mitigate exposures.

**17. Are there any concerns with expectant mothers and their fetus?**

There are no known health effects of high PM levels on an unborn fetus. The mother of the fetus may be more susceptible to symptoms due to additional stress being put on her body. If the mother has allergies, asthma or any other cardio/respiratory disease she should consult with her health care provider to discuss appropriate activity levels during elevated PM levels.

**18. Why are Japan and the USF-J PM2.5 standards different? Is one more protective than the other?**

In February of 2013, the Japanese Ministry of the Environment (MOE) published new interim PM2.5 guidelines. The standards were very conservative and the first of their kind, as they required public notification when PM2.5 reached certain levels, something that USEPA does not require. The Japanese MOE guidelines are separated into two levels, green (good) and red (bad). The USF-J standards use the new Japanese guidelines, and in the foundation of their standards, they created an additional level of protection using the amber air quality indicator. This “amber” region adds a level of protection by warning you and the health and safety professionals on your installation who monitor the air quality that the levels are slightly elevated.

**19. Will I be notified if the PM2.5 reaches certain levels?**

It depends on the Japanese city your installation resides in and your installation chain of command. Currently, it is recommended that installations release advisories in unison with the local government in order to maintain a similar message. However, all the tools and information needed to track and monitor the current and projected PM2.5 condition have been provided to monitor the condition individually.

**20. When doing my own research I see that several websites use many different colors to indicate different levels of PM2.5. Which one should I use?**

Different organizations choose to use different ways to represent the same information. There are even stark differences between how different organizations within the Japanese government represent PM2.5 levels. The most conservative method is to use the USF-J standards and the links provided on this web-page to obtain current and predicted levels of PM2.5.