

# Asthma, other breathing problems or a heart condition?

Affected by  
air pollution?  
Hazy about  
venturing out?

**KR**

Know&Respond  
Scotland

Get FREE alerts  
when poor air quality  
is forecast for the  
day ahead.

Visit

[www.scottishairquality.co.uk/know-and-respond](http://www.scottishairquality.co.uk/know-and-respond)

to register and get FREE alerts for you or people in your care

# Know and Respond Air Quality Alert System for Scotland

- Know and Respond was launched on January 27<sup>th</sup> 2012 to provide early warning of air pollution episodes free to the public in Scotland.
- It is the UK's first National Air Quality Alert service
- Alerts can be received by SMS, email or "Text to Speech" services.
- Alerts are issued if "Moderate" or worse levels of pollutants are forecast - as defined by the new Daily Air Quality Index. Moderate pollutant levels can affect susceptible members of the population.
- People can sign up on a simple web page.

# About Know and Respond



## Air Quality in Scotland www.scottishairquality.co.uk

[Home](#) [Current Levels](#) [About Air Quality](#) [Maps](#) [Data](#) [Publications](#) [LAQM](#) [Emissions](#) [Know & Respond](#) [Mobile](#) [Forum](#) [Children's Pages](#)

### Know & Respond

[About Know & Respond](#)  
[Health Advice](#)  
[Sign up to Know & Respond](#)  
[Terms and Conditions](#)

### Air Quality Forecasts

[Highlands](#)  
[North East Scotland](#)  
[Central Scotland](#)  
[Scottish Borders](#)

### Your account

Username, email or mobile:

Password:

## Know & Respond - Scotland, the free air pollution alert messaging system

### Know & Respond - Scotland

Air pollution can cause short-term health effects to sensitive individuals (people who suffer from heart disease or lung diseases, including asthma).

### Air Quality Information and Health

Know & Respond-Scotland is a free service to subscribers in Scotland that sends registered users an alert message if air pollution in their area is forecast to be moderate, high or very high. The description of the level of pollution is based upon the [Air Quality Banding System](#).

The alert service is provided for anyone wishing to know about the quality of the air they breathe. It will be of particular benefited to people with medical conditions that may be affected by pollution, such as asthma, bronchitis and emphysema. It may also benefited people whose breathing gets worse when air pollution increases. This early warning service allows you to make [informed decisions and take action](#) if necessary to minimise the effects of pollution episodes.

The Know and Respond System is not designed to report on levels of pollen. For further information on levels of pollen please visit the [pollen forecast](#).

### How does it work?

Every day at 4pm, our air quality forecasters at AEA issue a detailed pollution forecast for the following 24 hours. Under the scheme, anyone who lives or works in the Scotland can sign up to receive free air pollution alerts by mobile phone text message, voicemail or email. You will get a Know & Respond alert whenever air pollution levels are forecast to be MODERATE, HIGH or VERY HIGH. Guidance outlined by health professionals is provided with each alert to enable you to make informed decisions and take any precautions necessary.

Due to the restricted content of SMS, an abbreviated alert will be sent to SMS subscribers with further details available on the website. In order to receive alerts in full, please select Voicemail or email options when subscribing.

Air Pollution Alert	Associated Health Guidance
Moderate	If you have a pre-existing heart or lung condition you may notice some mild effects, however, these are unlikely to require any action.
High	If you have a pre-existing heart or lung condition you may notice significant effects.  If this happens and you suffer from a lung disorder, you may need to change your treatment in the usual way to increase its effectiveness or reduce the time you spend outdoors. If these steps don't help, consult your doctor or ring NHS 24 on 08454 242424.
Very High	If you suffer from a heart condition and you notice a change in your symptoms, do not try to change your treatment yourself, but seek medical advice as you normally would or ring NHS 24 on 08454 242424.

Alerts will be dispatched on the evening before a high pollution day

[More information on the potential impact of air quality on health](#)

## Air Quality in Scotland

[www.scottishairquality.co.uk](http://www.scottishairquality.co.uk)

[Home](#) [Current Levels](#) [About Air Quality](#) [Maps](#) [Data](#) [Publications](#) [LAQM](#) [Emissions](#) [Know & Respond](#) [Mobile](#) [Forum](#) [Children's Pages](#)

### Know & Respond

[About Know & Respond](#)  
[Health Advice](#)  
[Sign up to Know & Respond](#)  
[Terms and Conditions](#)

### Air Quality Forecasts

[Highlands](#)  
[North East Scotland](#)  
[Central Scotland](#)  
[Scottish Borders](#)

### Your account

Username, email or mobile:

Password:

## Sign up to Know & Respond - Scotland

Please note that the service providers are not responsible for the health of the individuals subscribing to the service; subscribers should contact their GP or health service for specific advice on any issues of concern to their condition.

That personal information will only be used for the purposes of the alert system. We will not pass on any personal information to a third party.

All fields marked \* are mandatory, and you will need to complete all sections of the sign up process to activate your subscription.



### Step 1: Your details

Username \*

Username should not be longer than 10 characters

Password \*

At least 5 but not longer than 15 characters

Firstname \*

Surname \*

Subscribe for

Age group

Email \*

The account details will be sent to this address.

Mobile

Start Date \*

(dd/mm/yyyy), this subscription will take effect from this date

### Step 2: Please select forecast area(s)



- ☐ Glasgow Urban Area
- ☐ Edinburgh Urban Area
- ☐ North East Scotland
- ☐ Highland
- ☐ Central Scotland

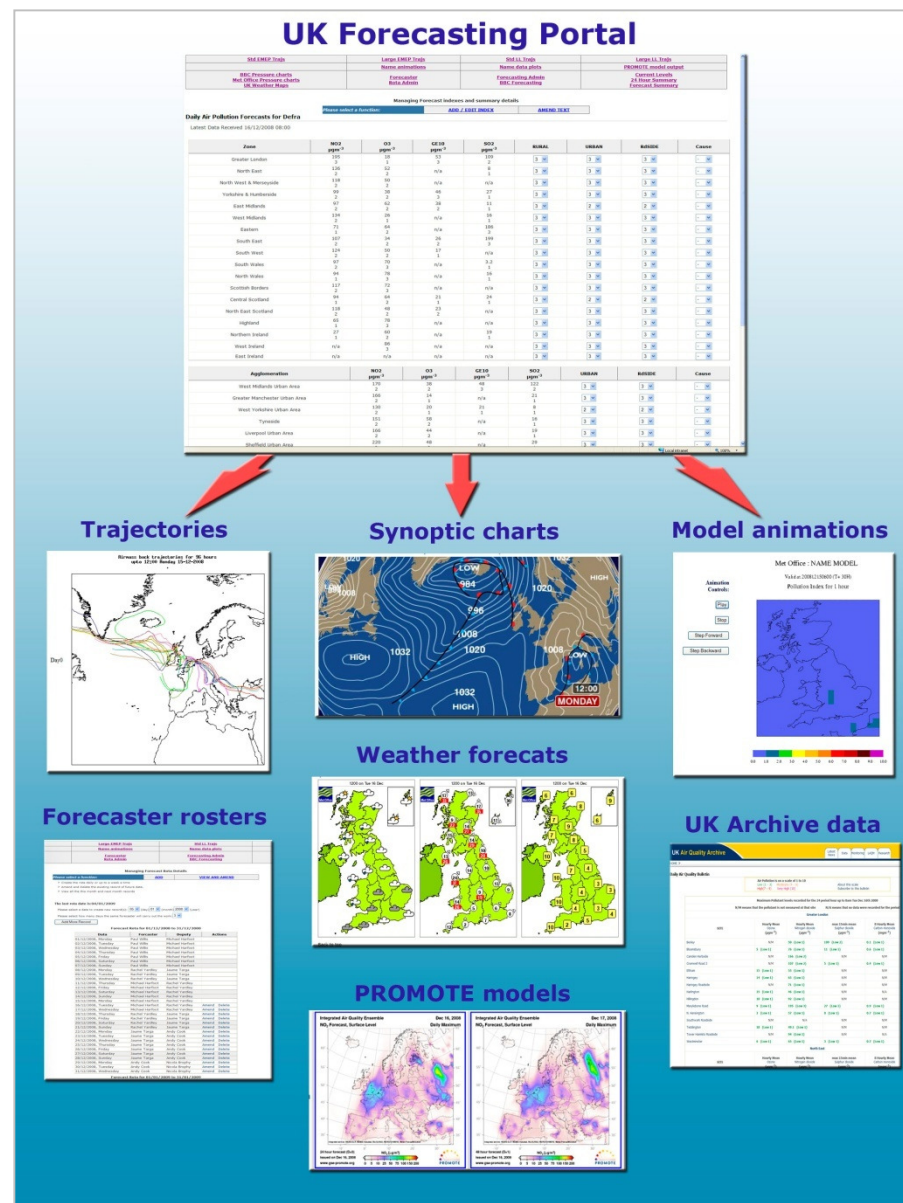
- Air Quality Forecasts are produced twice each day on behalf of the Scottish Government by a team of experts at AEA.
- Forecasts are based on a combination of computer models and expert judgement, analogous to weather forecasting.
- A forecast is issued for rural, urban background and roadside locations in each region of Scotland.
- The “overall” forecast for any region is based on the “worst-case” location and pollutant in that region.



# Approach

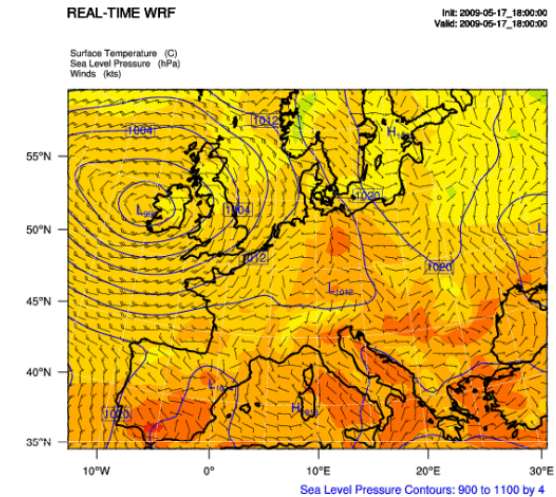


- Our approach uses a team of air quality experts to compile the forecasts.
- The team use a daily forecasting protocol and a web-based portal to deliver forecasts 365 days a year.
- The inputs include:
  - UK optimised AQ forecasting models.
  - Pan-European model results.
  - Latest Scottish, UK & European monitoring data.
  - Weather forecasts.
  - Satellite imagery.
  - Expert judgement based on analyses of historical air pollution episodes.

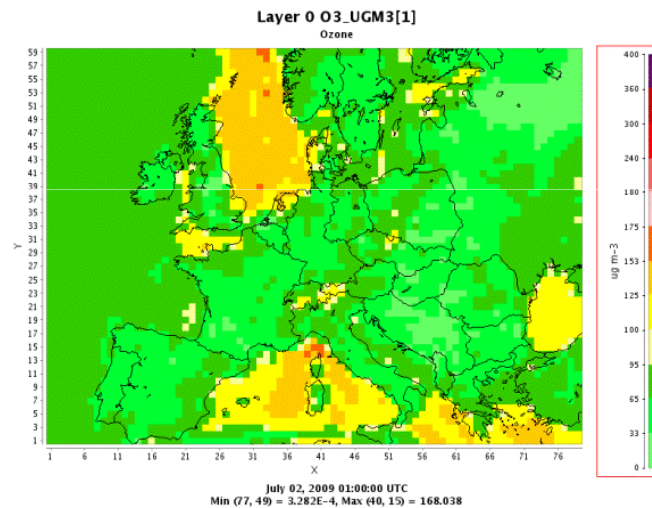


# Model Outputs

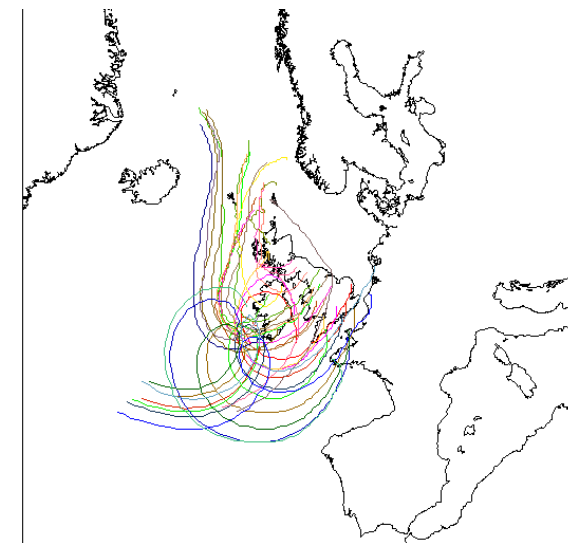
- Meteorology.



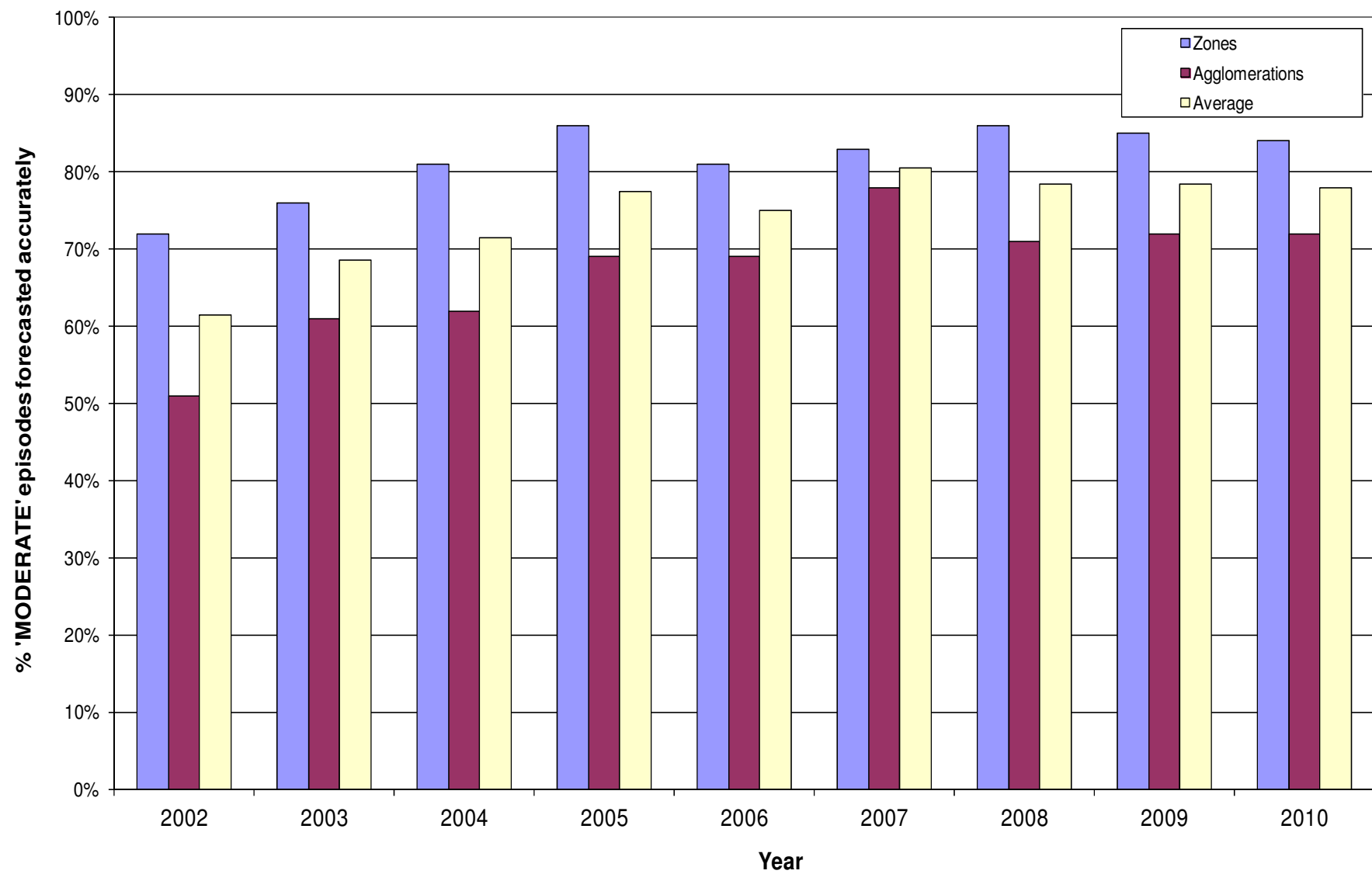
- Pollutants



- Forecast Airmass back-trajectories



# Success Rates





# Implications of the new Daily Air Quality Index



- PM<sub>2.5</sub> is included in the Know & Respond Scotland Service.
- Daily modelling of this pollutant is included in CMAQ.
- Carbon monoxide concentrations are so low they no longer need to be considered.
- There will be more forecasts of “Moderate” pollution due to lower nitrogen dioxide and PM<sub>10</sub> thresholds compared to previously.

Band	Index	Ozone	Nitrogen Dioxide	Sulphur Dioxide	PM <sub>2.5</sub> Particles	PM <sub>10</sub> Particles
		Running 8 hourly mean	hourly mean	15 minute mean	24 hour mean	24 hour mean
		µgm <sup>-3</sup>	µgm <sup>-3</sup>	µgm <sup>-3</sup>	µgm <sup>-3</sup>	µgm <sup>-3</sup>
LOW						
	1	0-33	0-66	0-88	0-11	0-16
	2	34-65	67-133	89-176	12-23	17-33
	3	66-99	134-199	177-265	24-34	34-49
MODERATE						
	4	100-120	200-267	266-354	35-41	50-58
	5	121-140	268-334	355-442	42-46	59-66
	6	141-159	335-399	443-531	47-52	67-74
HIGH						
	7	160-187	400-467	532-708	53-58	75-83
	8	188-213	468-534	709-886	59-64	84-91
	9	214-239	535-599	887-1063	65-69	92-99
VERY HIGH						
	10	240 or more	600 or more	1064 or more	70 or more	100 or more

***This is a Know and Respond Air Quality Alert***

***The air pollution forecast for the Glasgow Urban Area is 'Very High'***

***If you have a pre-existing heart or lung condition your symptoms may worsen as a result of exposure to the air pollution. If this happens and you suffer from a lung disorder, you may need to change your treatment in the usual way to increase its effectiveness, or reduce the time you spend outdoors. If these steps don't help, consult your doctor or ring NHS 24 on 08454 242424.***

***If you suffer from a heart condition and you notice a change in your symptoms, do not try to change your treatment yourself, but seek medical advice as you normally would or ring NHS 24 on 08454 242424.***

Alerts based on Daily AQ Forecasts are available by SMS, email and Text to Speech services.



# Promotion of the Know and Respond System



A range of promotional material has been prepared and distributed:

- A3 Poster



# Promotion of the Know and Respond System



- Business card fliers and holder for GP surgeries



# Promotion of the Know and Respond System



- Animated Banner and Powerpoint slide for Display Screens

**Asthma, other breathing problems or a heart condition?**

**KR**  
Know&Respond  
Scotland

Get FREE alerts when poor air quality is forecast for the day ahead.

Affected by air pollution?  
Hazy about venturing out?

**Visit** [www.scottishairquality.co.uk/know-and-respond](http://www.scottishairquality.co.uk/know-and-respond)  
to register and get FREE alerts for you or people in your care

The Scottish Government

AEA

Health Protection Scotland

NHS National Services Scotland

The banner features a central smartphone displaying the 'KR Know&Respond Scotland' logo and a message about free alerts. The background is a stylized landscape with green hills, a blue sky with clouds, and a red car on a road. A red arrow points to the website URL. Logos for the Scottish Government, AEA, Health Protection Scotland, and NHS are at the bottom.



- Ministerial Statement
  - Articles in scientific journals
  - Ongoing dialogue with BBC Scotland Health Correspondent – news items (TV, Radio and Website);
  - The British Heart Foundation (Scottish Branch);
  - The British Lung Foundation (Scottish Division);
  - The British and Scottish Thoracic Societies;
  - Regional Radio Stations
- 
- Promotional materials have been distributed to GP surgeries across Scotland;
  - Posters and electronic promotional materials will also be sent to a selection of organisations including local authorities.
  - HPS to publicise system this year via Health Promotion Campaign

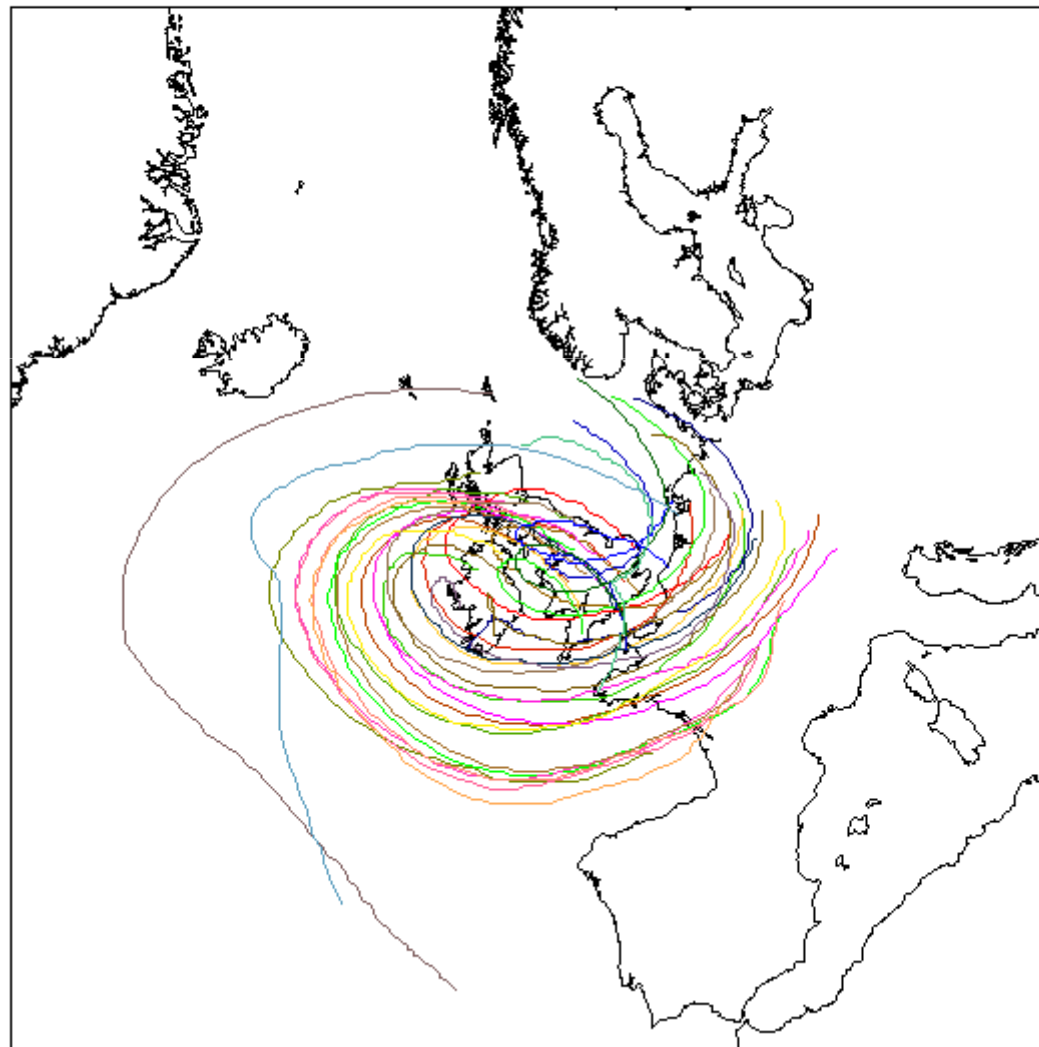
## How are we doing so far?



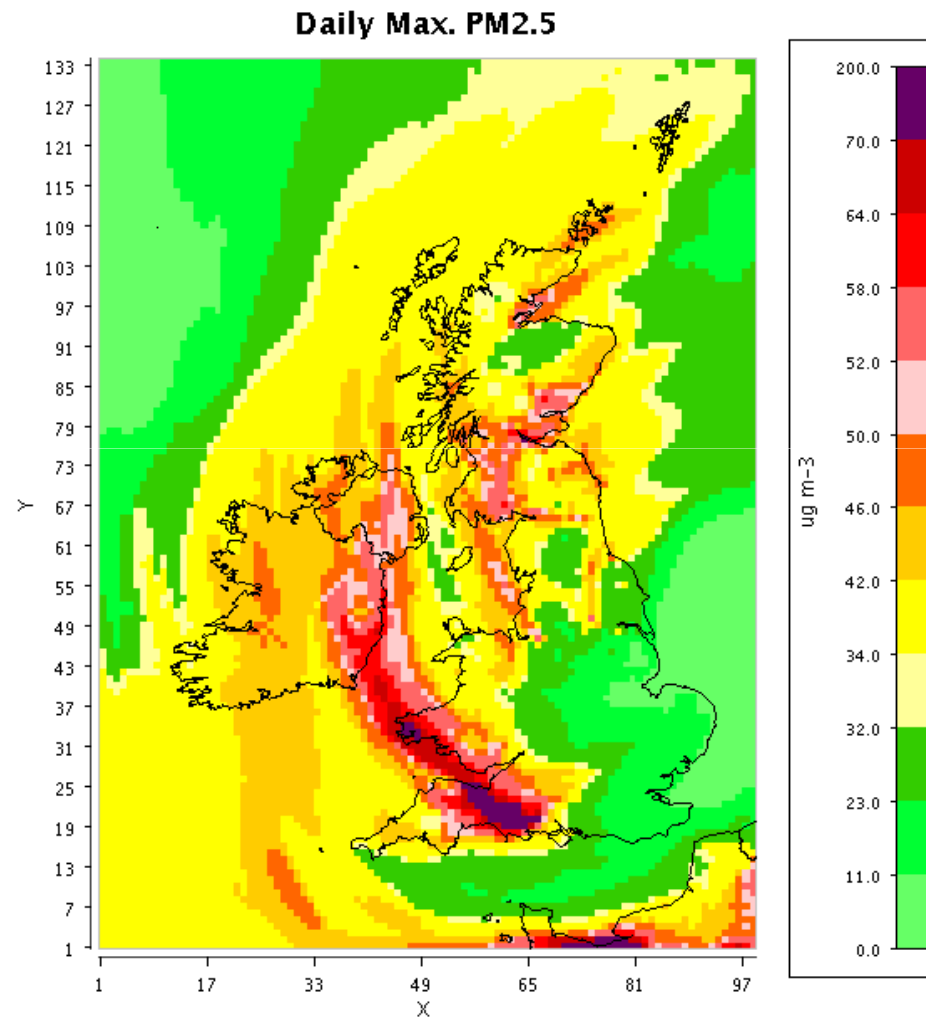
- 200 users have signed up so far.
- 19 alerts have been issued, mainly for the first two weeks of February and during the last week.
- These have been often for Glasgow and due to particulate matter.
- The recent pollution episode (again particulate matter) has been much more widespread to cover all the Scottish regions.
- Moderate alerts for ozone will become more likely as it becomes warmer.

# The Current Air Pollution Episode

Airmass back trajectories for 96 hours  
upto 12:00 Thursday 29-03-2012

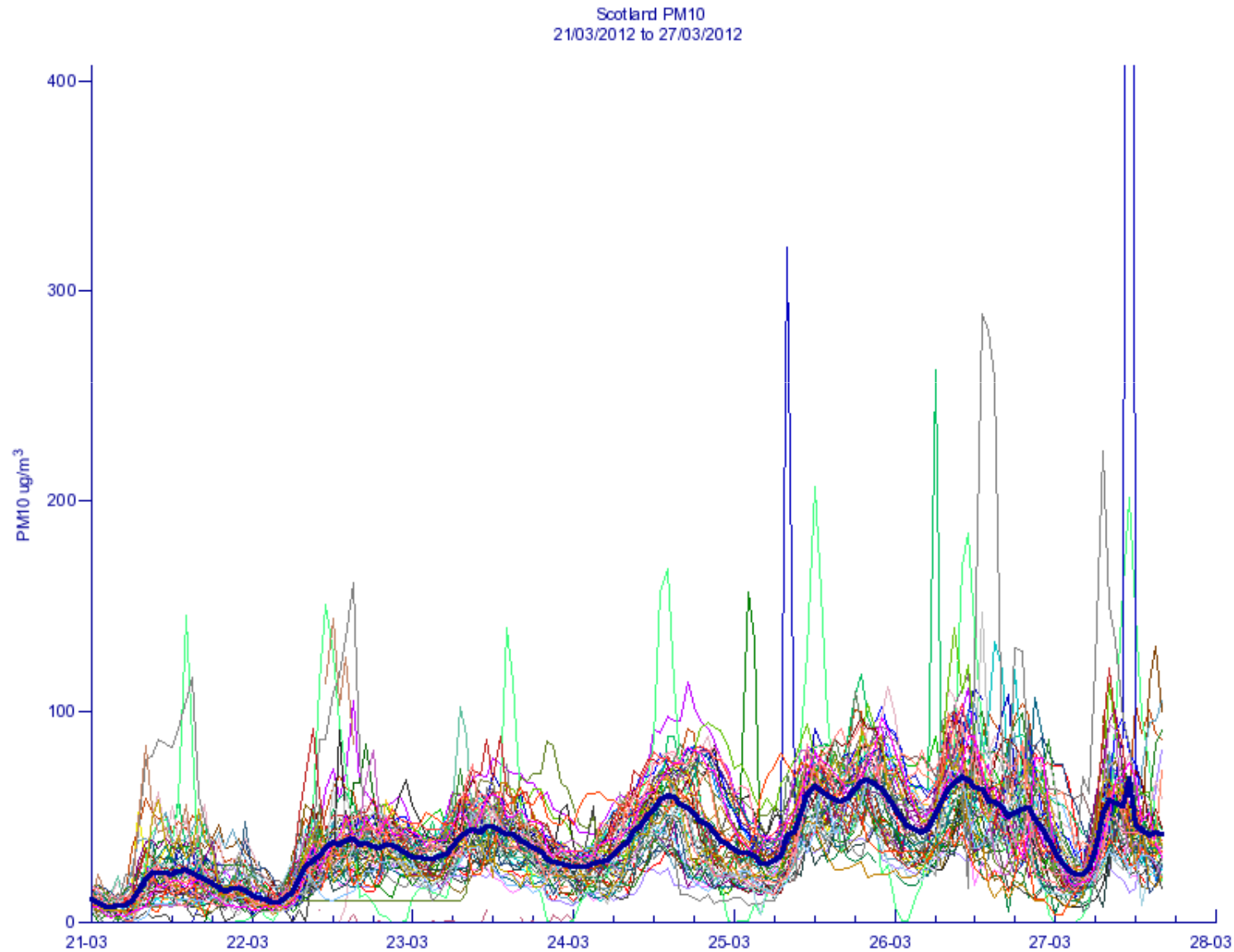


# The Current Air Pollution Episode



March 26, 2012 00:00:00 UTC  
Min (1, 90) = 2.4, Max (63, 20) = 87.6

# The Current Air Pollution Episode





- Alerts based on Daily AQ Forecasts are available by SMS, email and Text to Speech services.
- Alerts are based on the well established UK AQ Forecasting service operated by AEA on behalf of the Scottish Government
- Analysis shows the approach has around 80% success rate of forecasting “Moderate or Worse” air pollution incidents.
- There was good press coverage for the launch of the system.
- Ideas for further publicity are welcome!
- Questions