

Summary of PM₁₀ episode across England and Wales during March

Between the 25th and 30th of March, the AURN experienced a widespread PM₁₀ episode of moderate air pollution levels. This event was due to a mixture of local emissions and transboundary pollution from continental Europe. This note investigates and briefly summarises this matter further.

In order to delimit the event, PM₁₀ concentrations have been plotted as 24 hour running mean concentrations during March (Figure 1). This shows that during the particular event the majority of AURN sites with PM₁₀ monitors had elevated concentrations. Also, it shows that on the 3rd – 5th, 8th and between the 16th and 17th of March, further widespread episodes of lower PM₁₀ levels were experienced

Figure 2 shows the 24 hour running mean of selected sites across England and Wales to illustrate the regional nature of the episode. Scotland and Northern Ireland were largely unaffected by the increased concentrations. Between Saturday 26th and Sunday 27th, similar elevated PM₁₀ levels were measured at many different sites at different location types including London Marylebone Road, Camden Kerbside, Harwell rural and Plymouth Centre.

Figure 3 has been plotted in order to quantify the number of AURN stations that reached moderate throughout the event and the number of stations exceeding the daily mean limit value of 50µgm⁻³. On the 29th of March, 37 AURN stations exceeded the daily mean limit value.

The weather conditions during the episode are summarised using European surface conditions over the period of 25th to 30th of March (Figure 4) and air mass back trajectories arriving over the UK (Figure 5). The weather conditions were largely stable thanks to a blocking high pressure which helped in the build up and poor dispersion of local emissions combining it with an intrusion of pollution from Europe.

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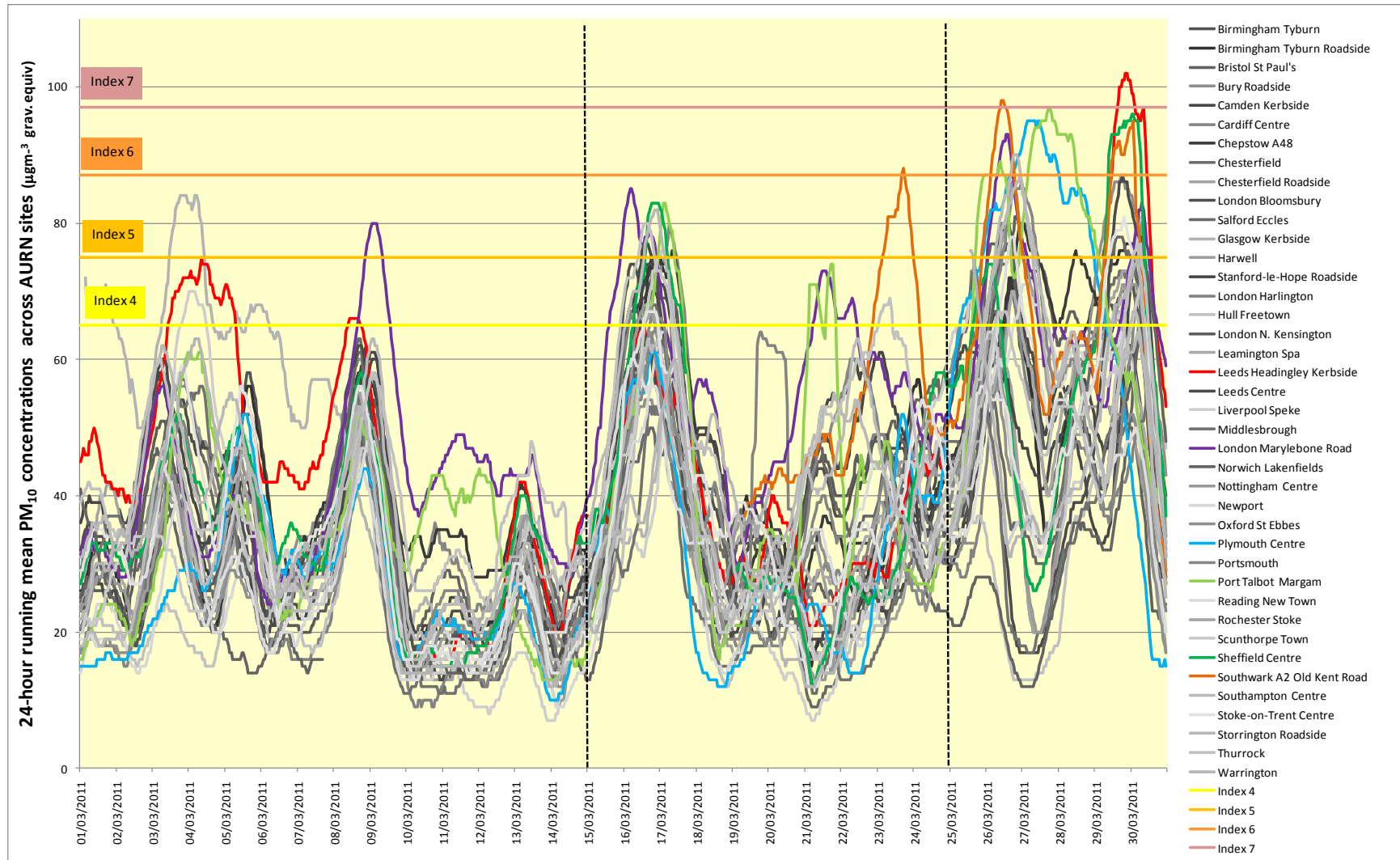


Figure 1 - 24-hour running mean PM₁₀ concentrations across AURN sites during March 2011

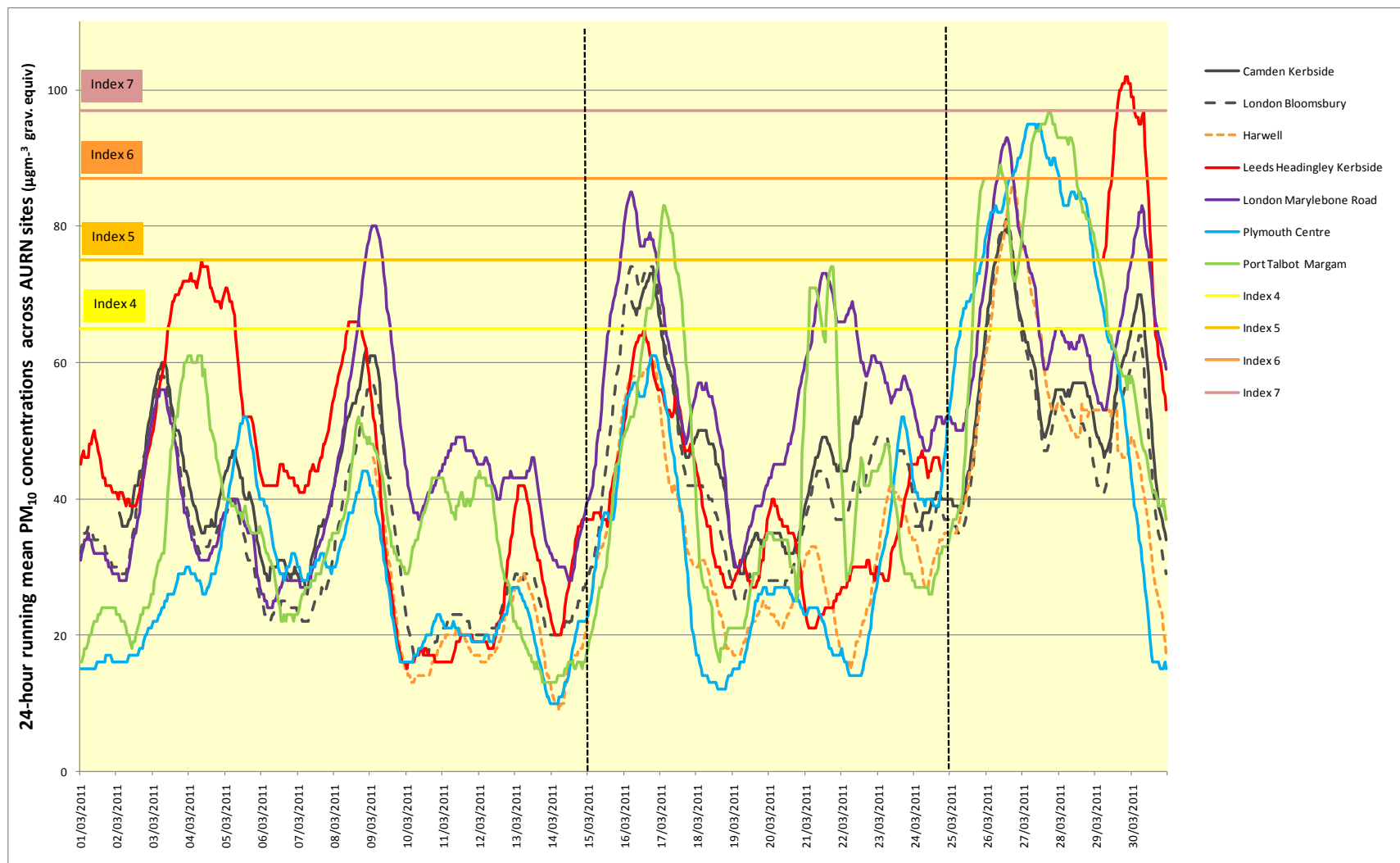


Figure 2 - 24-hour running mean PM₁₀ concentrations across selected AURN sites during March 2011

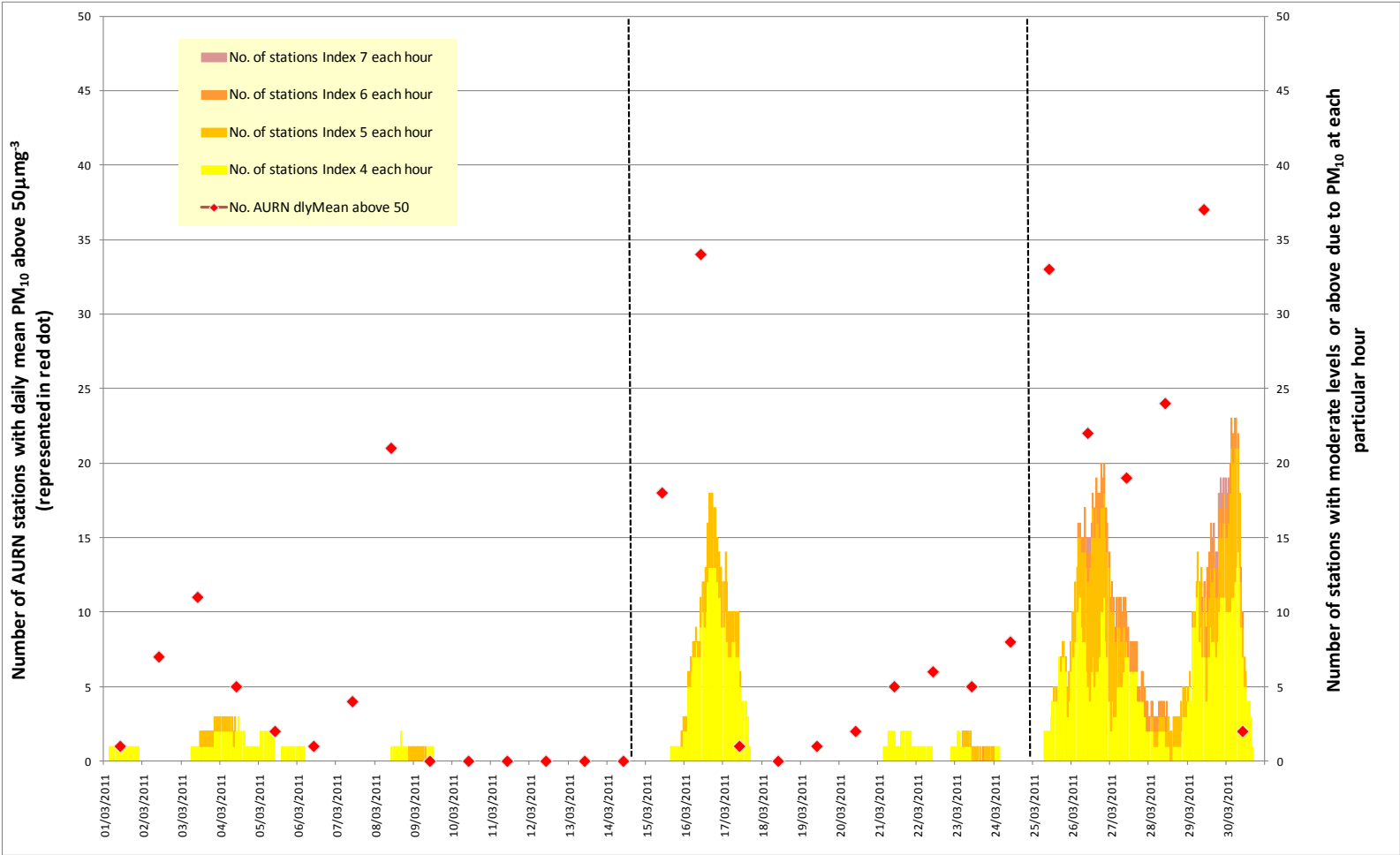


Figure 3 - Summary of PM₁₀ statistics across the AURN during March 2011

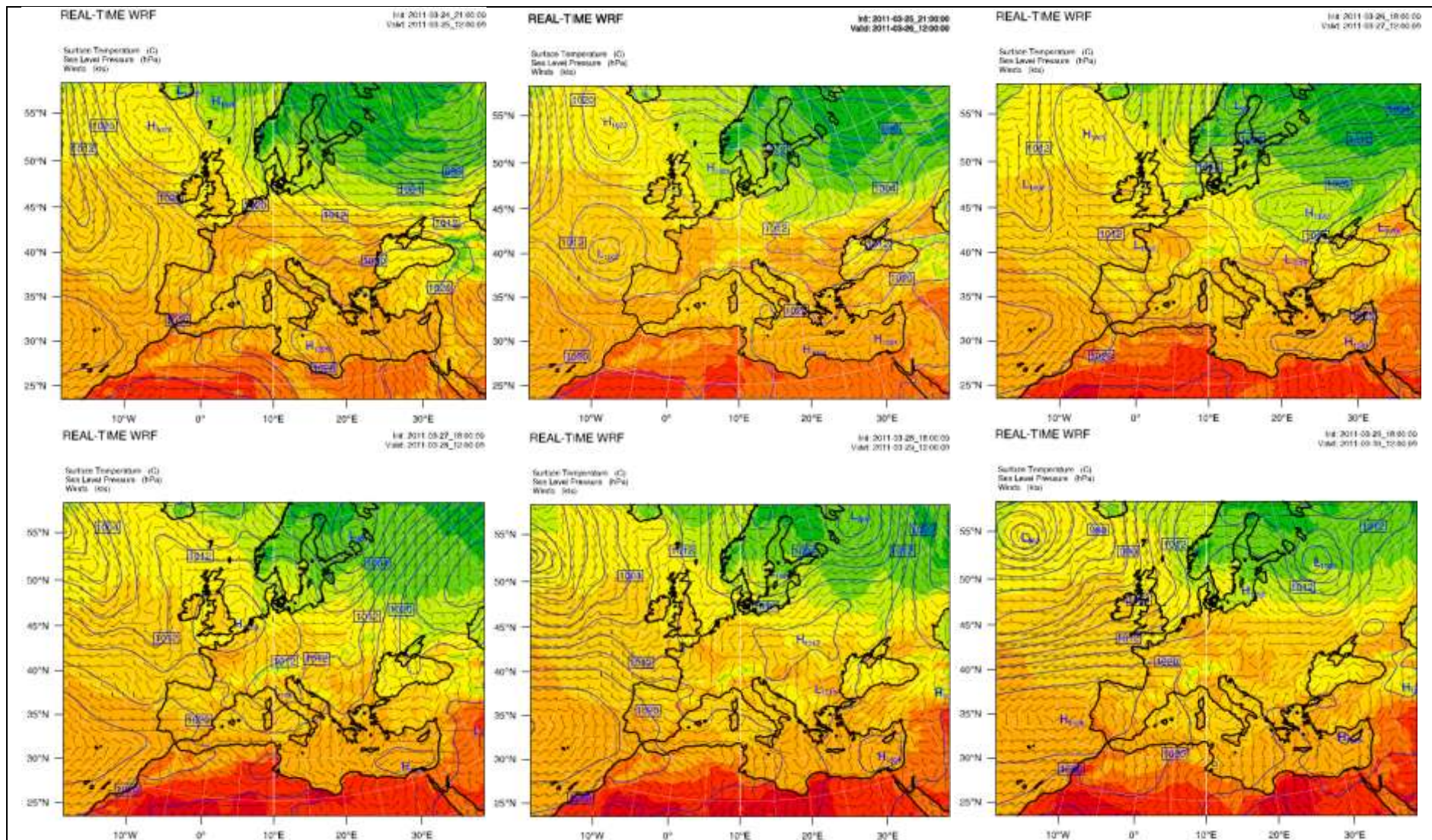


Figure 4 - European surface conditions during the period of 25th to 30th March at 12:00.

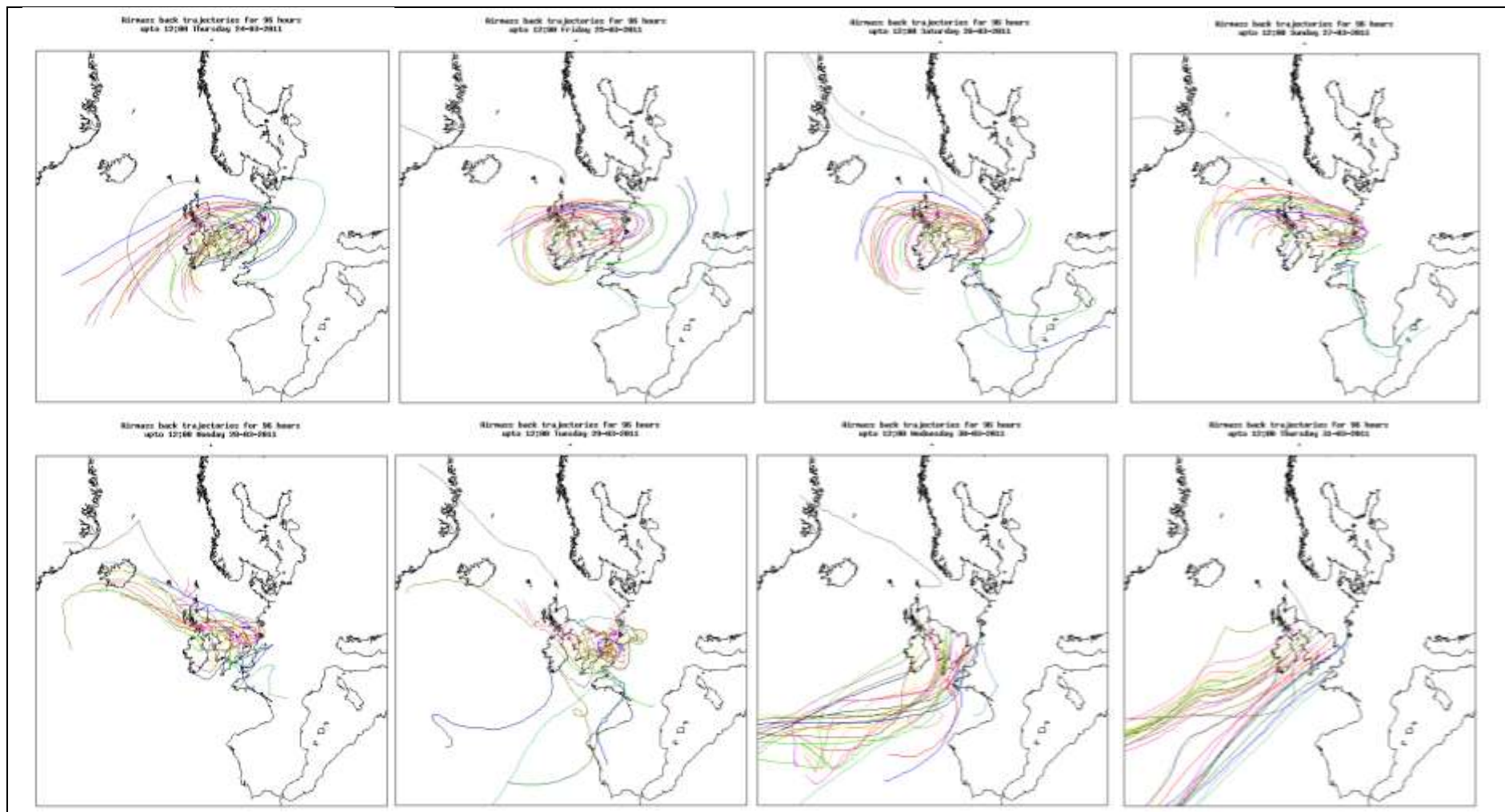


Figure 5 – Forecast 96-hour Air Mass back trajectories for the UK between 24th and 31st March 2011