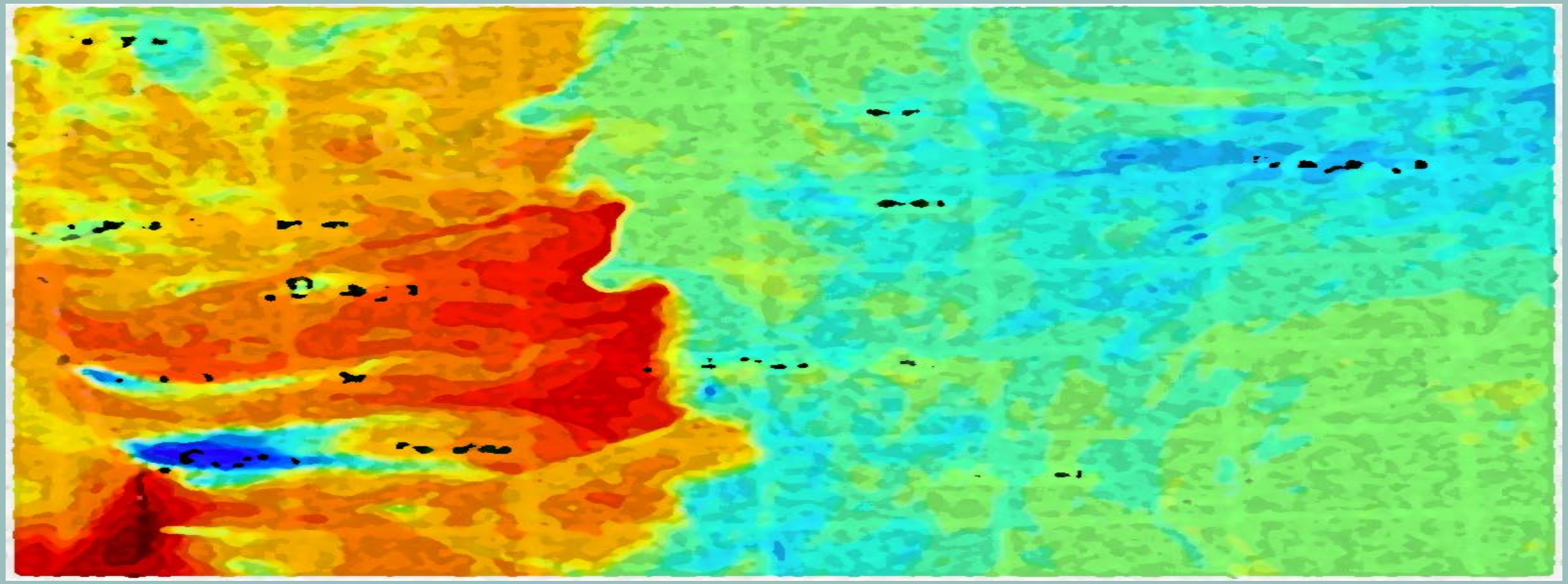

INVESTIGATING A HIGH OZONE EPISODE IN A RURAL MOUNTAIN SITE

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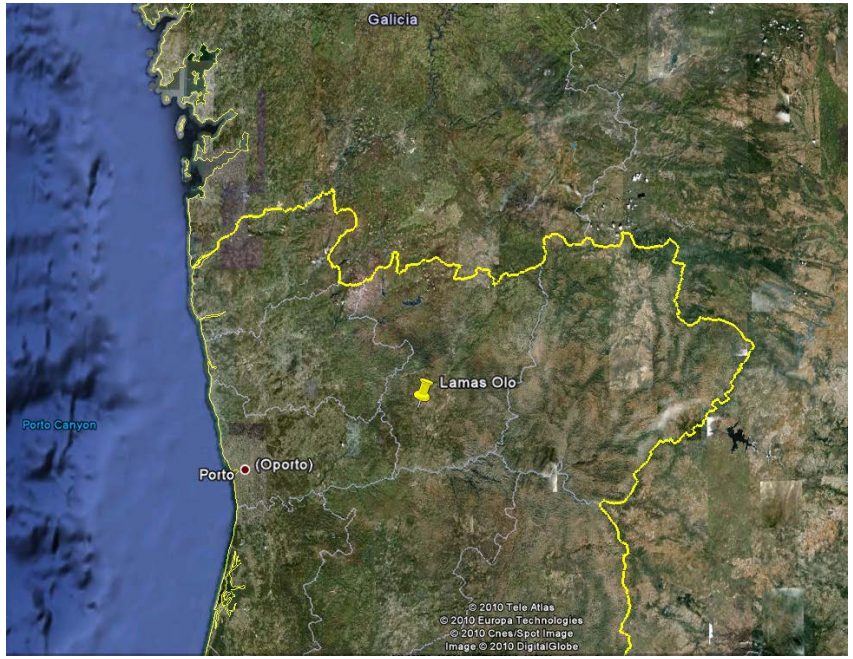
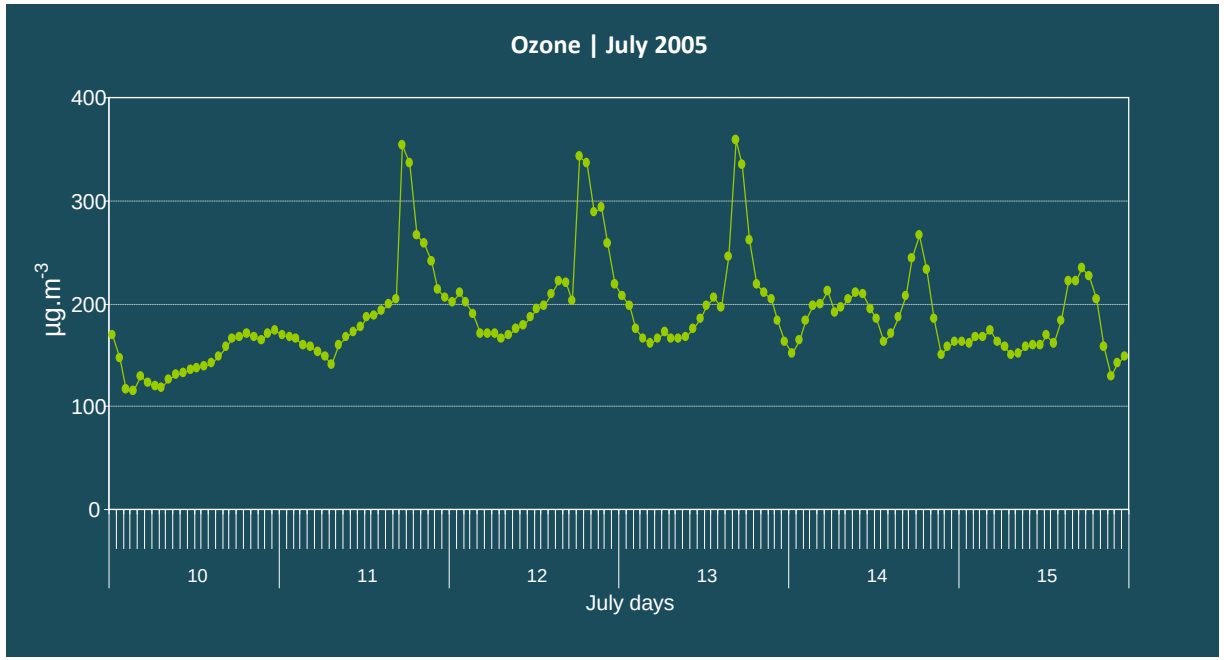
universidade de aveiro

TAIEX workshop on ozone
Madrid, 22 Nov 2018

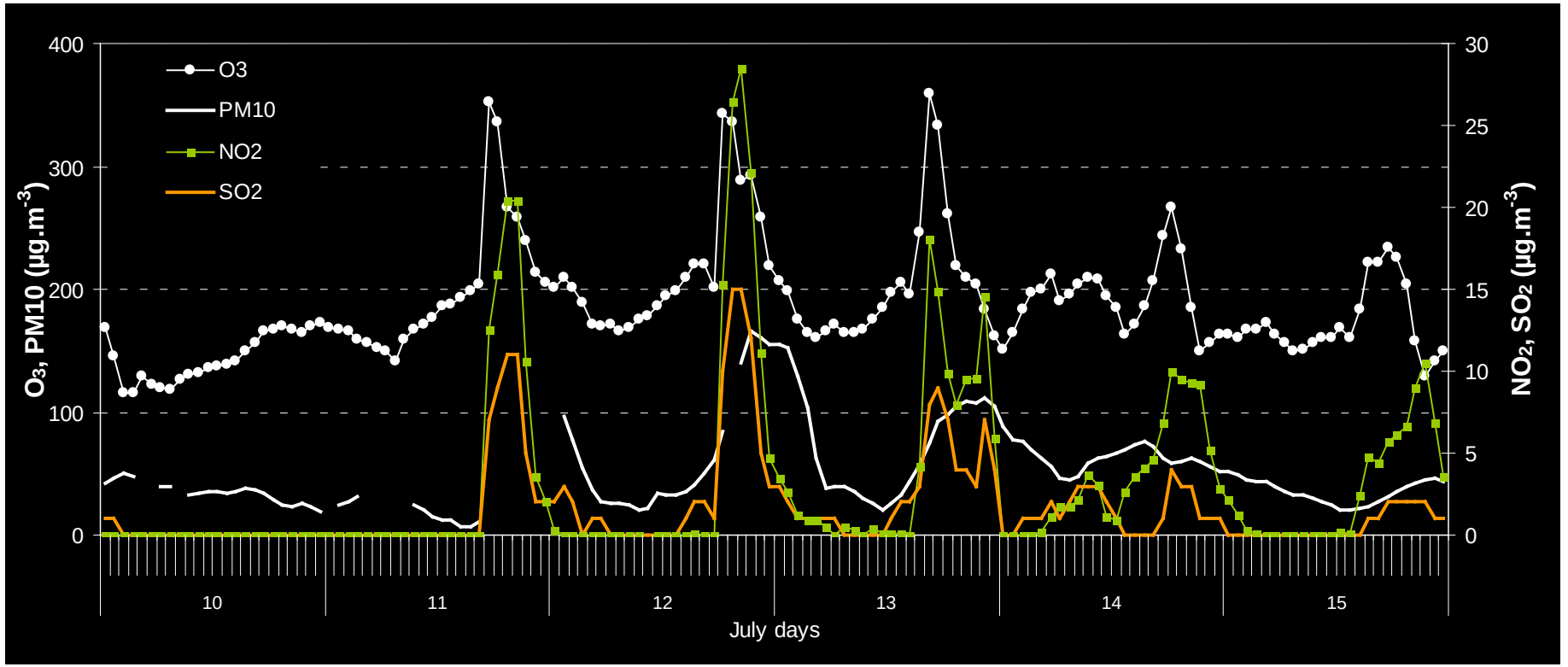
THE STUDY/OBJECTIVE

To identify the origin and formation of an ozone-rich episode with hourly values above **350 µg.m^{-3} that occurred in July 2005** at the Douro Norte station, located in a mountainous area in the north of Portugal…





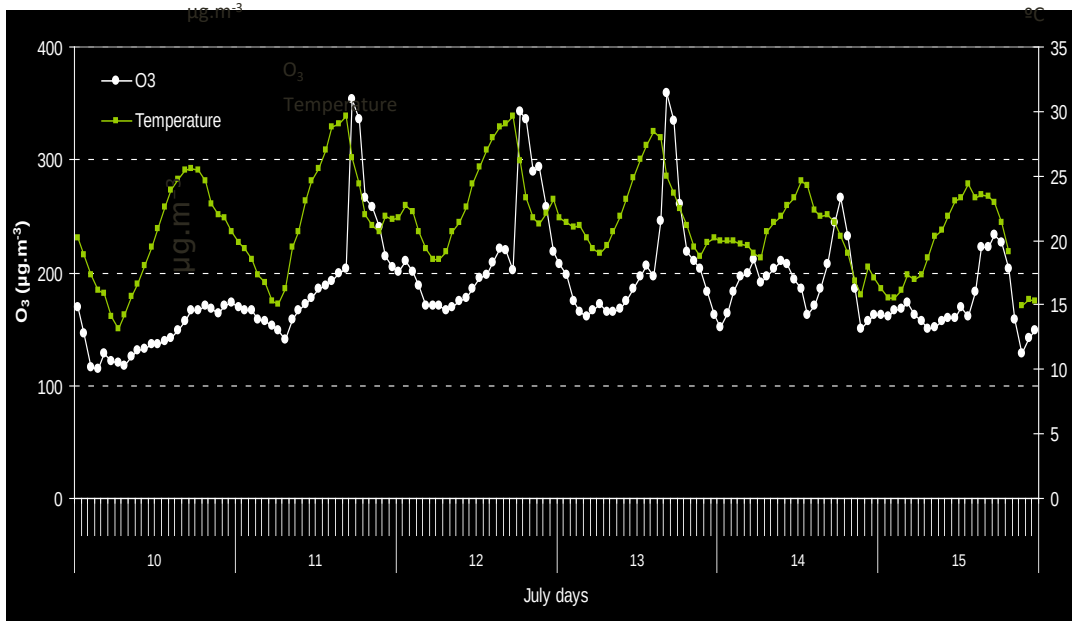
MONITORING DATA



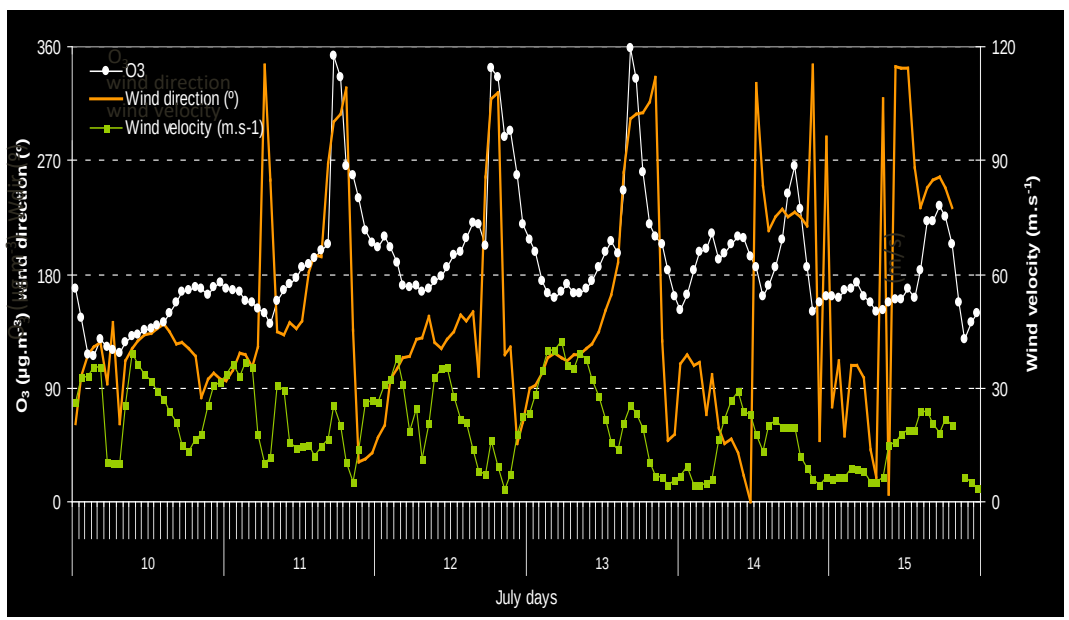
- Overlap of the gas pollutants peaks -> non-local origin ?
- O_3 peaks after 17 UTC -> not only local chemical production ?
- Peaks developed within 1 hour interval and last < 4 hours -> transport ?

MONITORING DATA

O_3 vs Temp

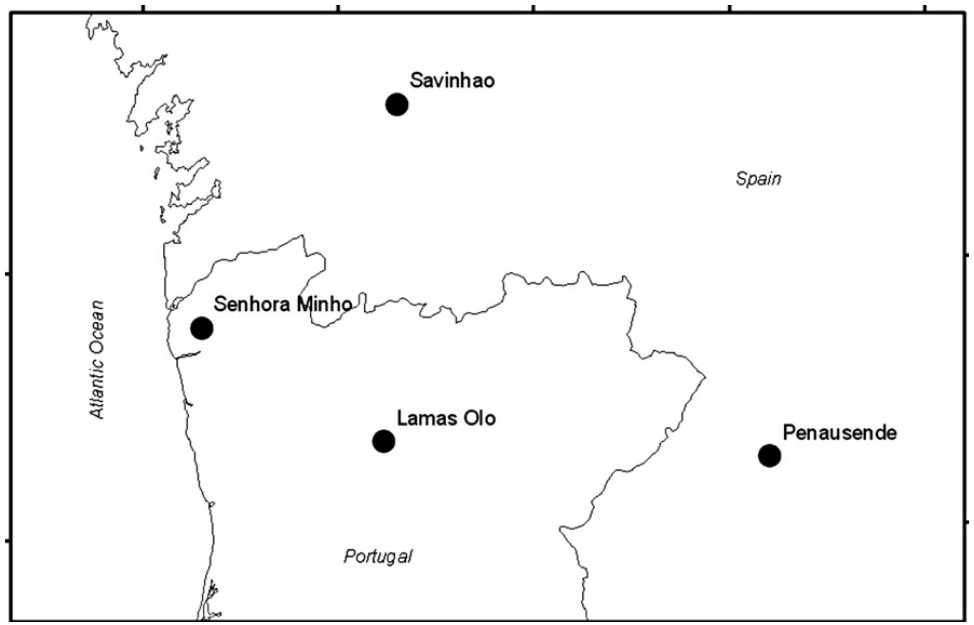


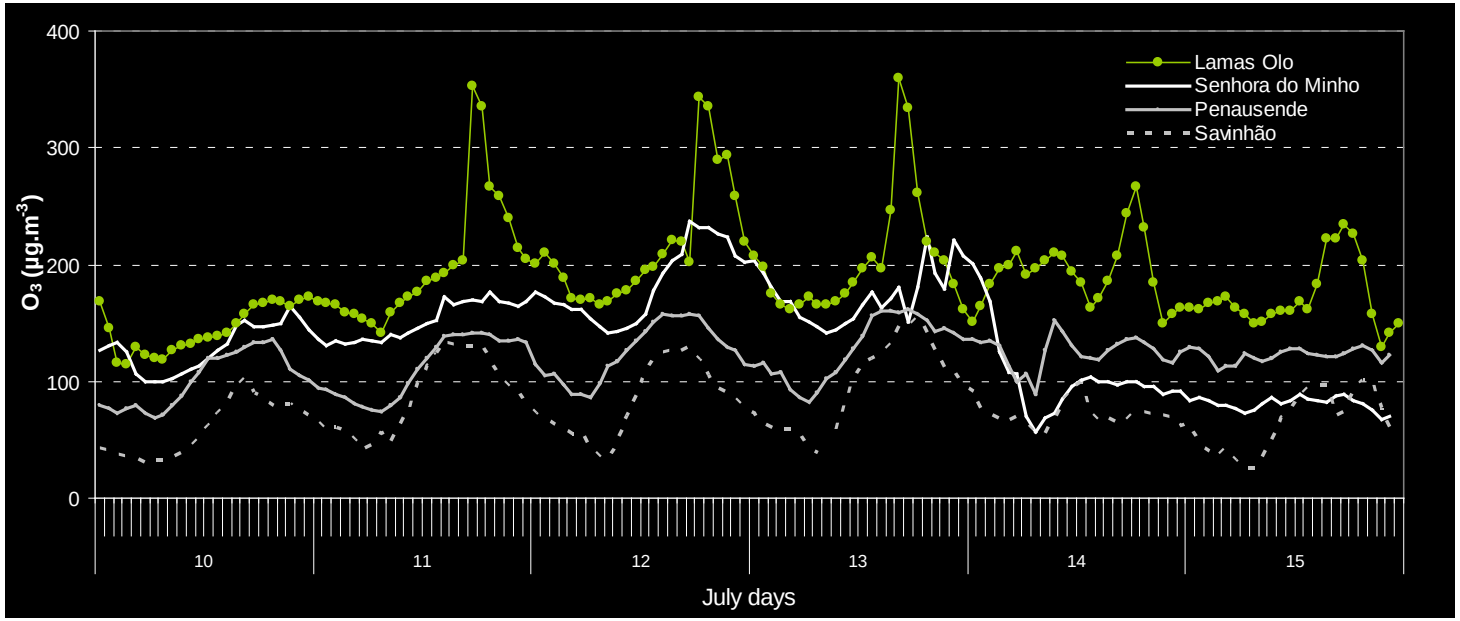
O_3 vs Wind



- very high values of T registered during the 3 episode days
- time lag between T and O_3 peaks -> transport of pollutants
- similar pattern in episode days: E winds with change to W in afternoon (sea-breeze)
- O_3 episodes occur within this W direction change followed by a wind velocity peak

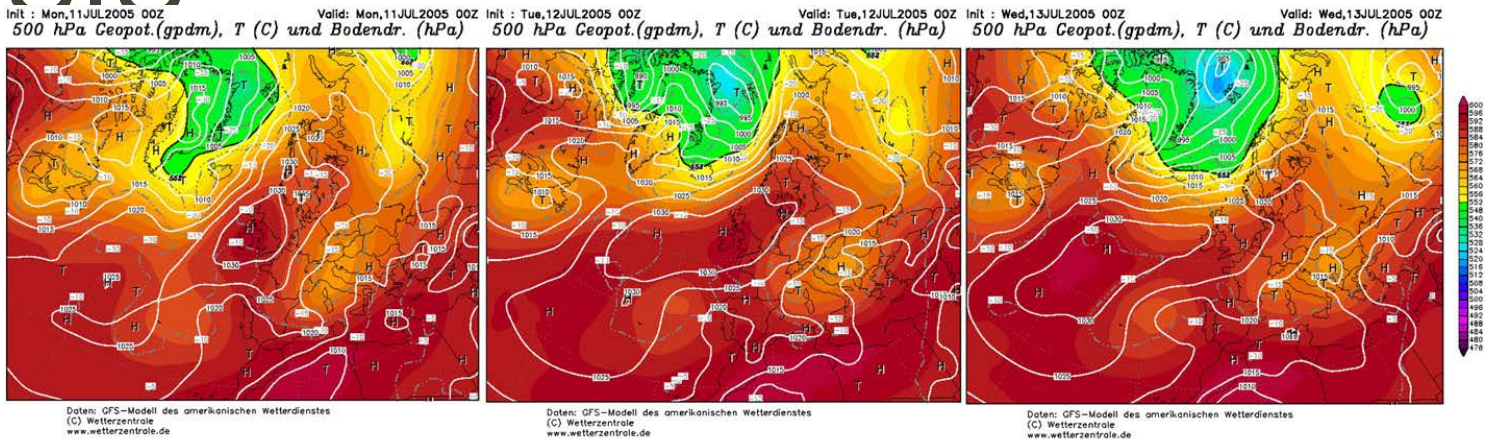
MONITORING DATA

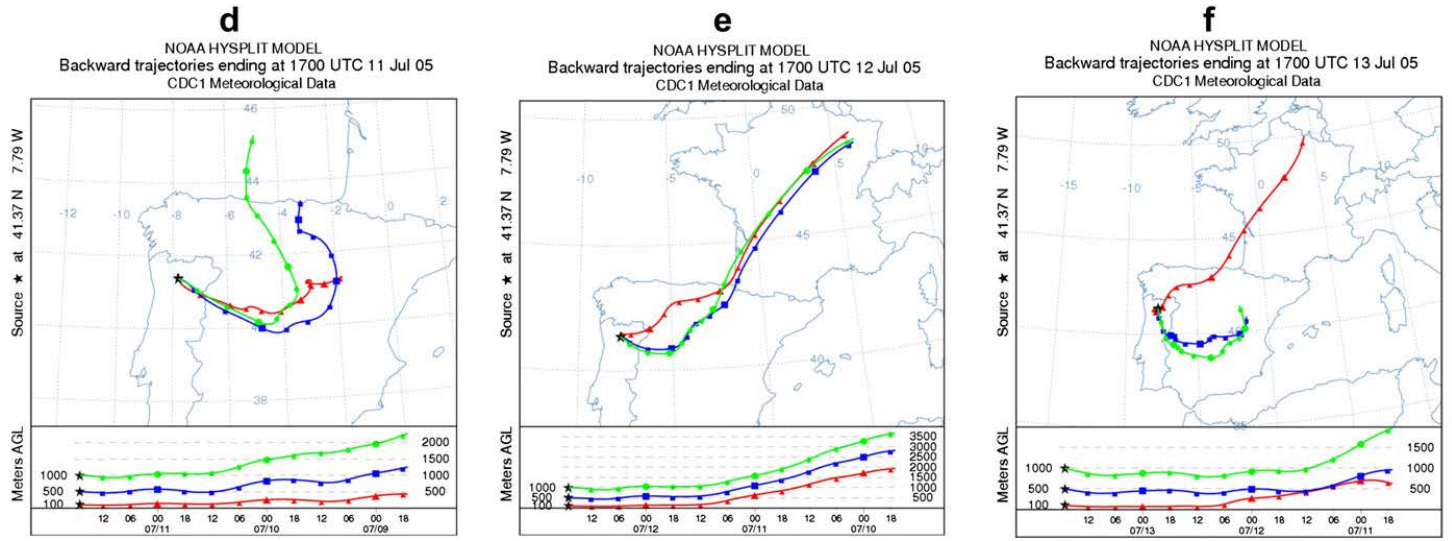




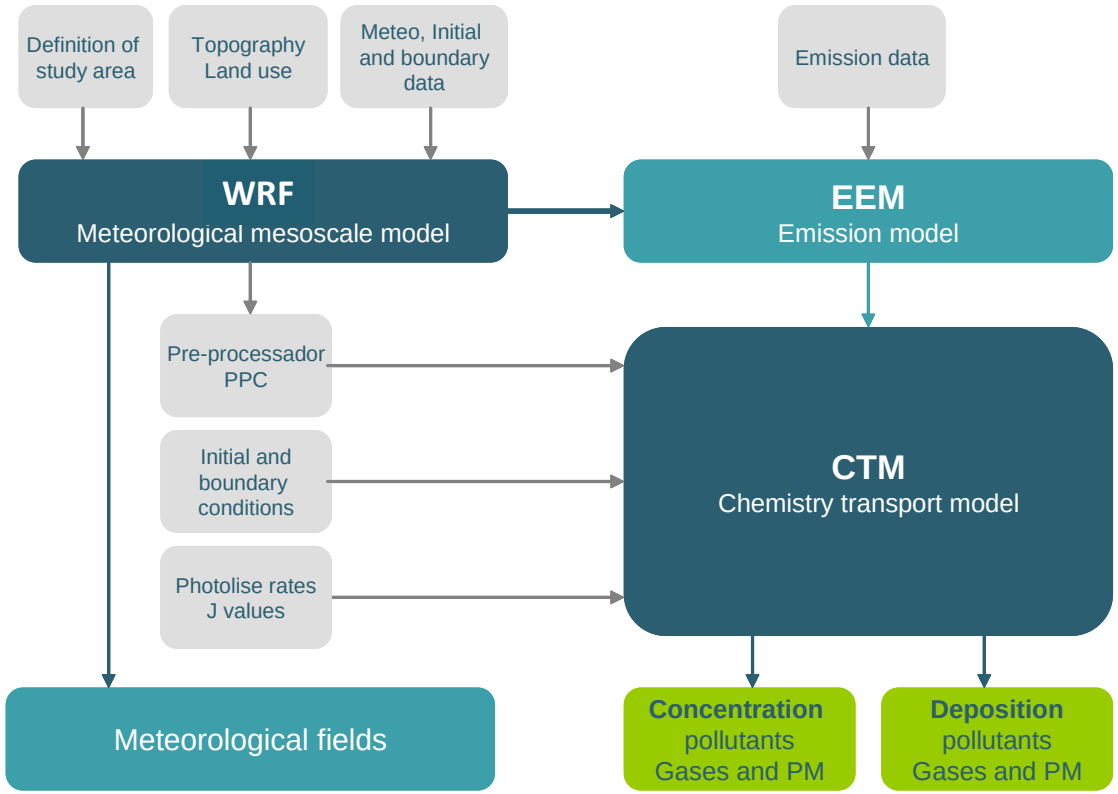
- highest O_3 values are observed at LOL
- peak values only observed at the LOL station
- “Senhora do Minho” (north coast of Porto) registered 2nd highest value
- sites in Spain (Peñausende and Saviñao) much lower concentrations

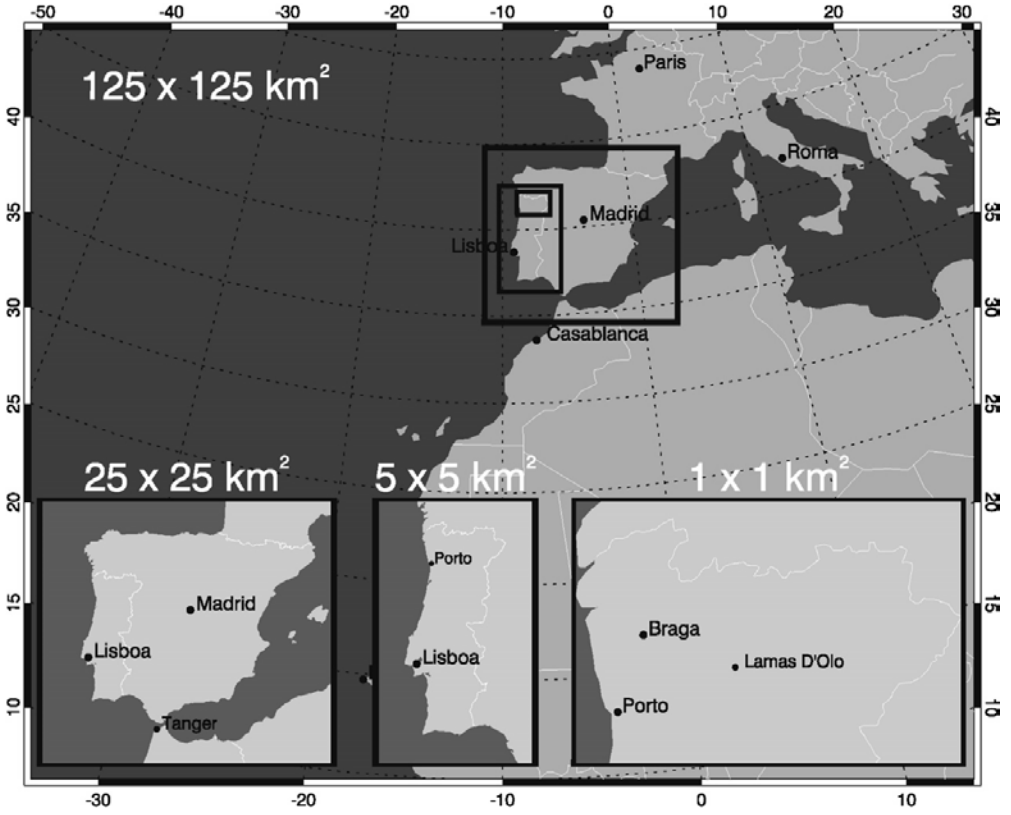
SYNOPTIC & BACK TRAJECTORIES ANALYSIS



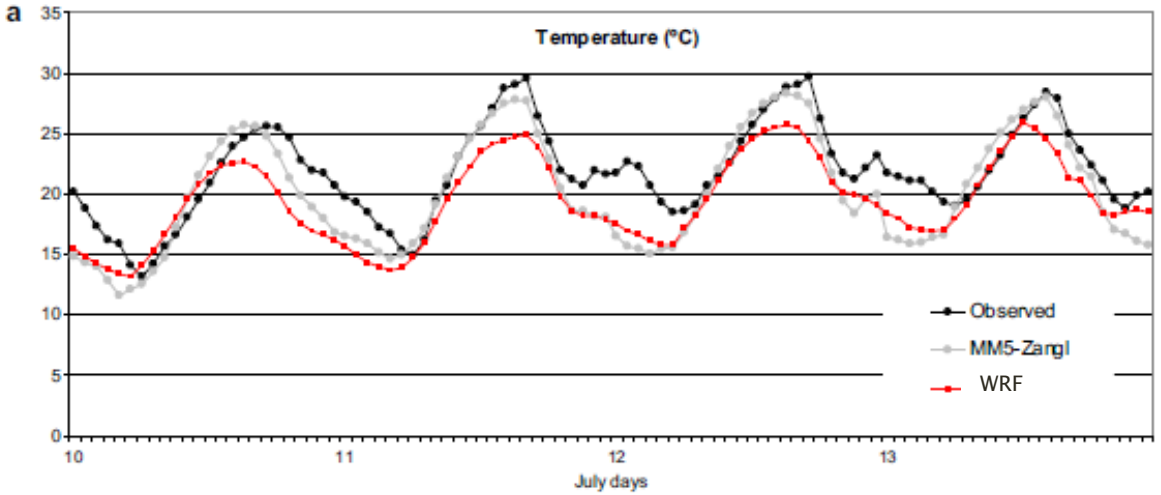


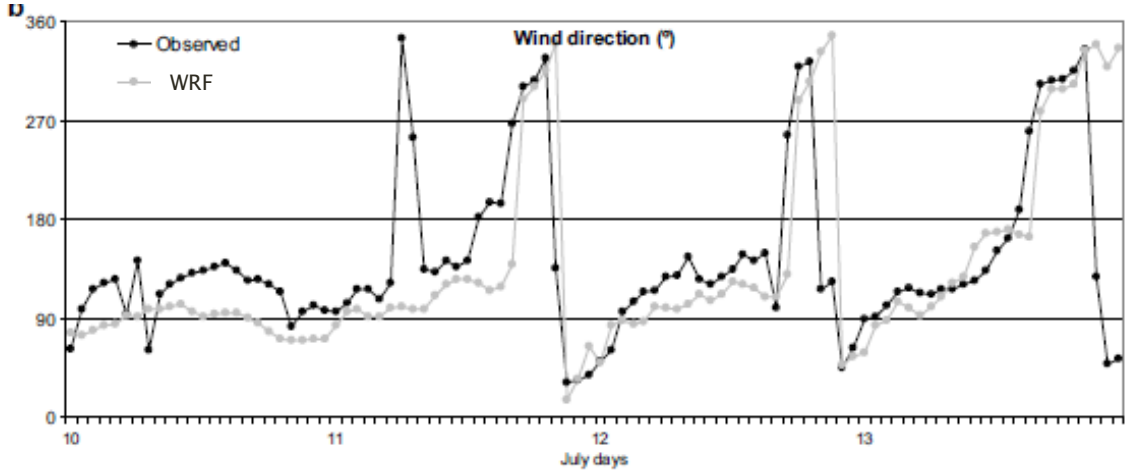
THE MODELLING SYSTEM

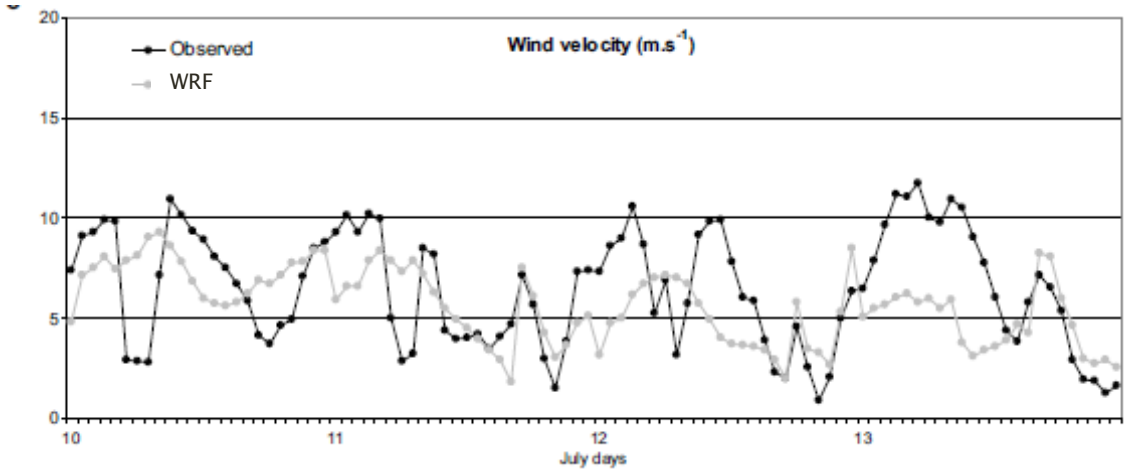




METEO VALIDATION

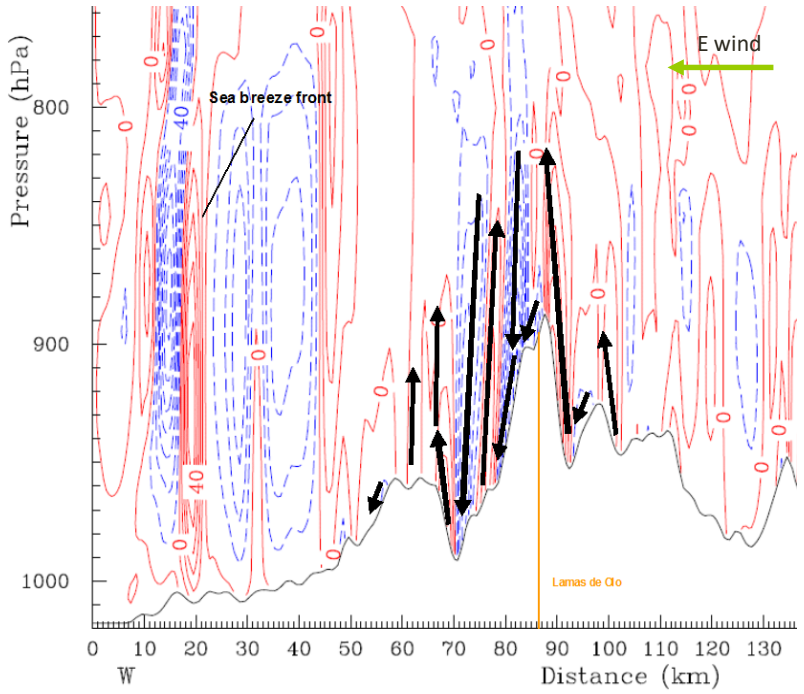




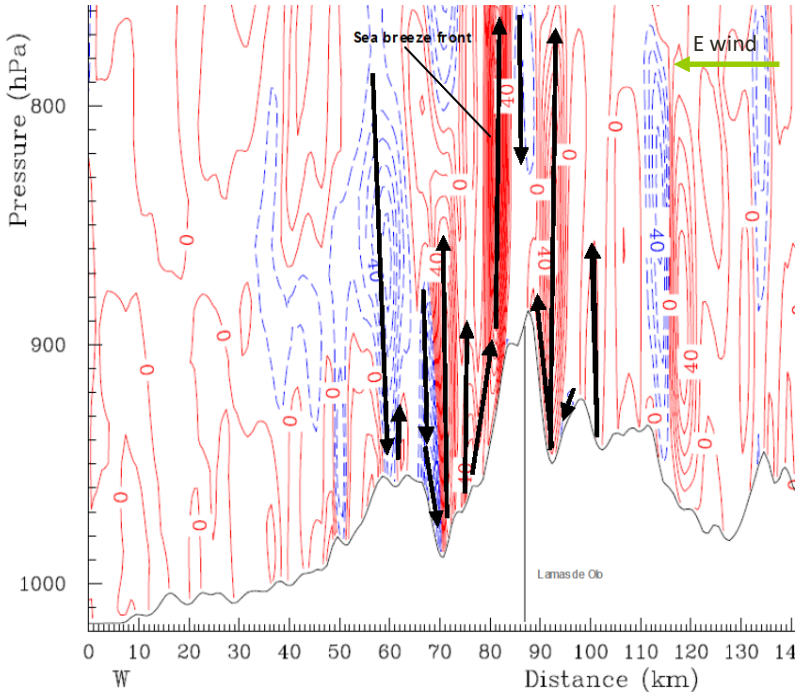


WIND VERTICAL PROFILES

12 UTC

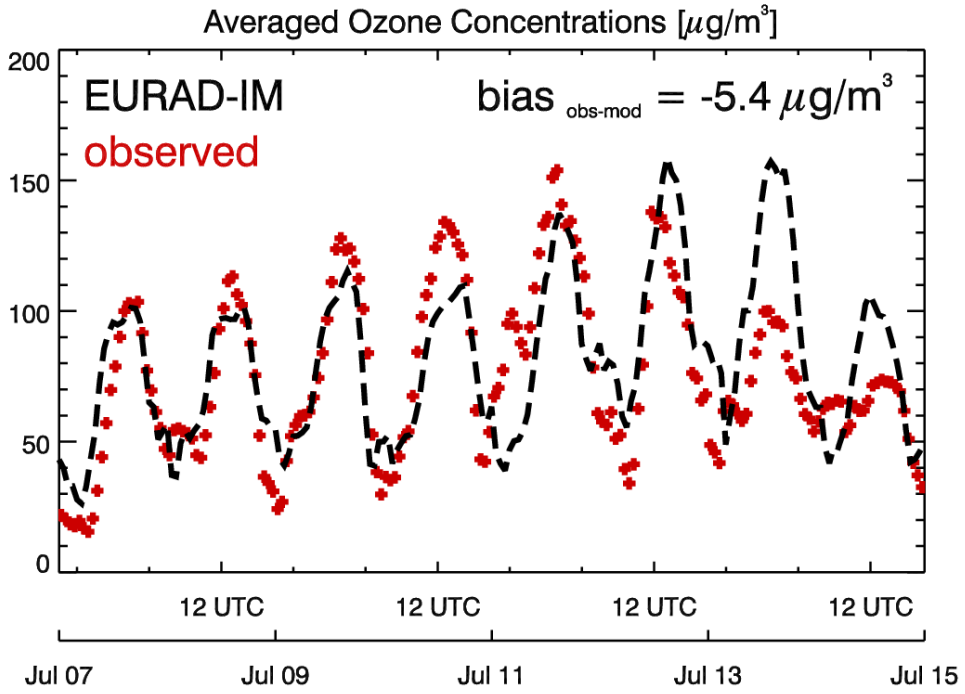


18 UTC

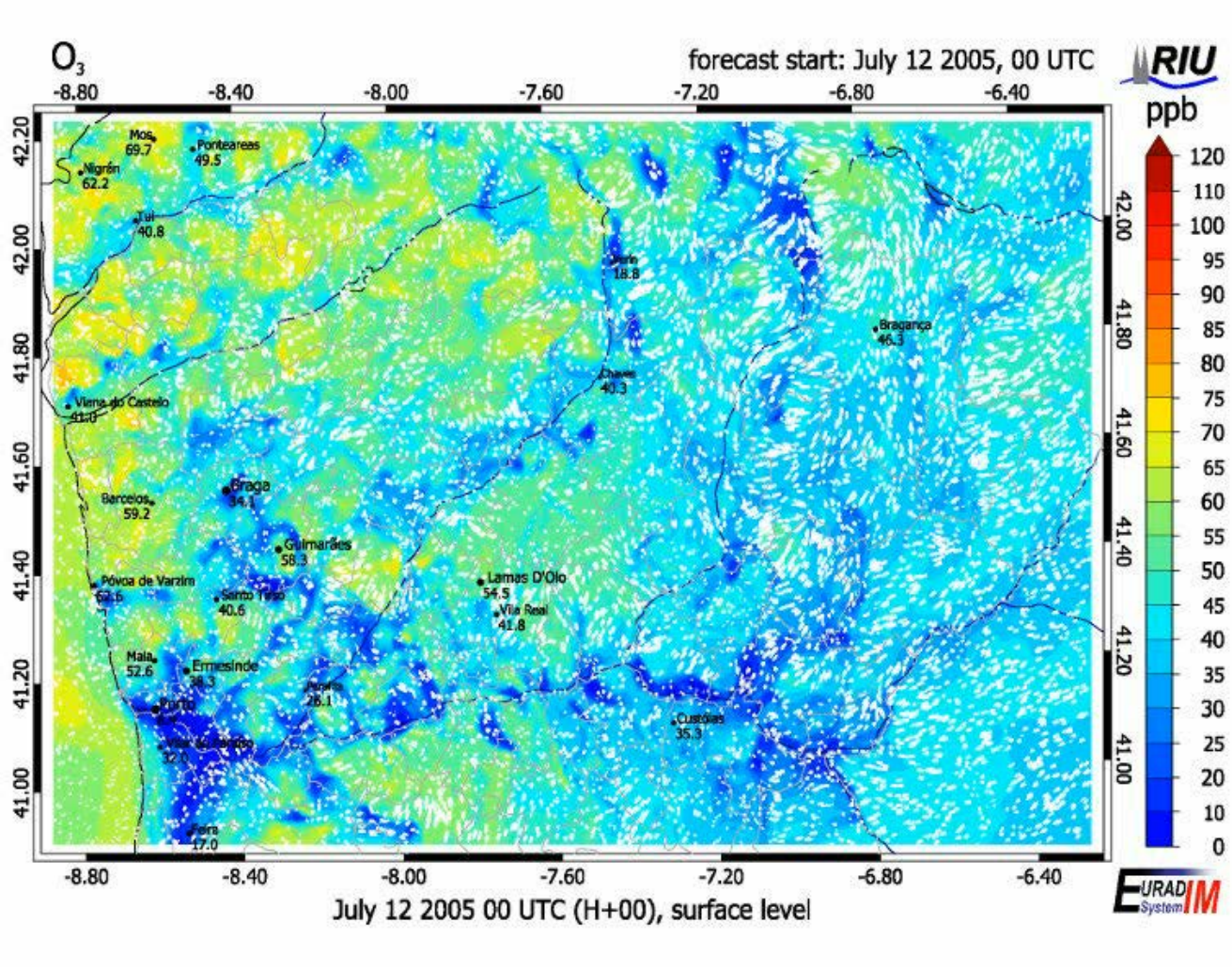


- sea breeze brings polluted air from the coast
- subsidence flow caused by the land breeze/topography is enhanced by E synoptic flow (favours updraft of aged air, enhancing its injection towards the LOL)

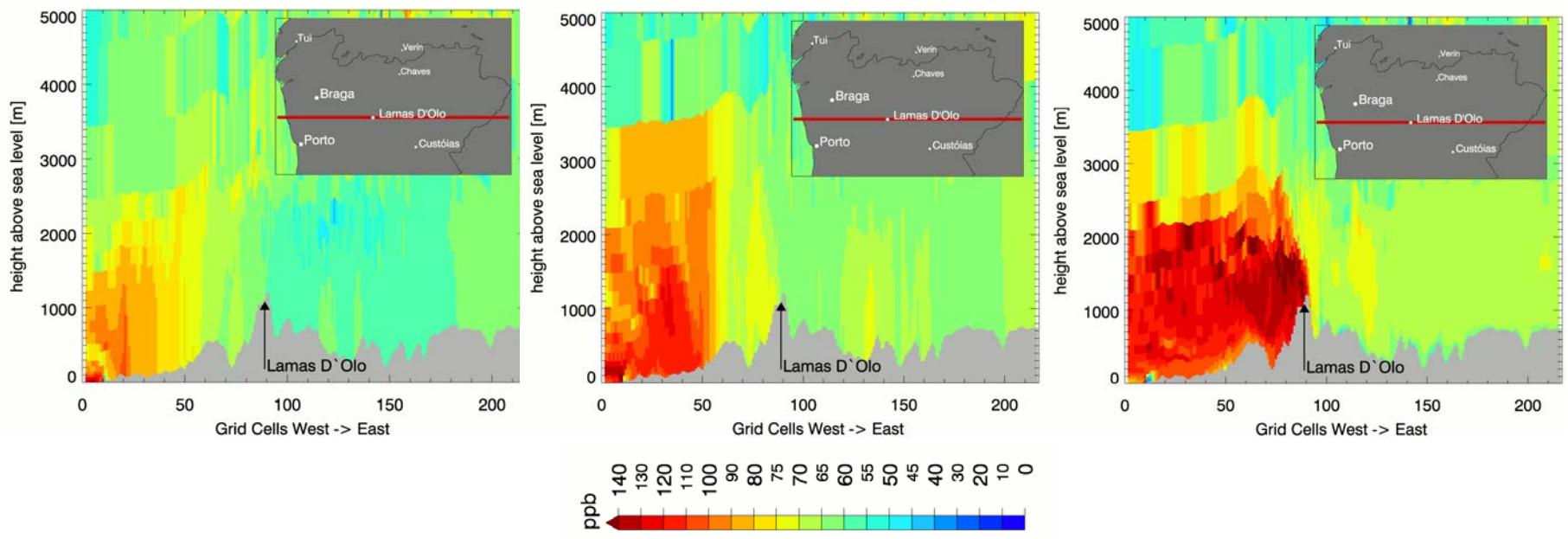
O3 VALIDATION



WHAT HAPPENED AT THE SURFACE?



WHAT HAPPENED IN THE VERTICAL?



- transport of polluted air masses from the coastal region to the interior
- high mixing ratios < 2500 m during the afternoon and aloft

combination of vertical transport phenomena together with sea-breeze patterns advecting strongly polluted air masses may explain the extraordinary high O_3 episode

FINAL REMARKS

- Results pointed out that observed ozone peaks at LOL in July 2005 were **not produced locally** but a result of transport phenomena.

- Sinoptic NW winds potentiated by **sea breeze circulation** transported O_3 and its precursors to LOL, the polluted air masses arrive around 17 UTC.

- The air quality modeling system shows **good agreement with observations** but was not able to reproduce the magnitude of O_3 at LOL.

COMENTAR | ENVIAR POR EMAIL | IMPRIMIR

Publicação: 18-08-2009 18:05

Ozono: Concentração acima do limiar de informação em Lamas D'Olo, Vila Real

Vila Real, 18 Ago (Lusa) - A serra do Alvão, em Vila Real, ultrapassou por quatro vezes, entre quinta-feira e hoje, os níveis normais de concentração de ozono no ar, disse fonte da Comissão de Coordenação e Desenvolvimento Regional do Norte (CCDR-N).

« Classifique este artigo Partilhar:

Segundo os Serviços de Ambiente da CCDR-N, a estação de monitorização da de Lamas D'Olo, na serra do Alvão, registou hoje, entre as 16:00 e as 17:00, uma concentração de 212 microgramas por metro cúbico.

De acordo com a lei, quando a concentração de ozono ultrapassa os 180 microgramas por metro cúbico, as autoridades têm de efectuar um anúncio público das zonas afectadas.

COMENTÁRIOS: 1 COMENTÁRIOS

Comentado a: 18-08-2009 19:22

por: **Rui Santos**

de: Vila Real

Amigos é só para avisar Lamas d" Olo é a zona mais bonita de vila real ;ate a volta a portugal em bicicleta passou por lá só quem nao conhece a que pode falar assim,e quanto a concentração de ozono do ar do é tudo mentira.Quem nao tem nada para falar que vá a pesca ,que faz melhor...

DENUNCIAR COMENTÁRIO