

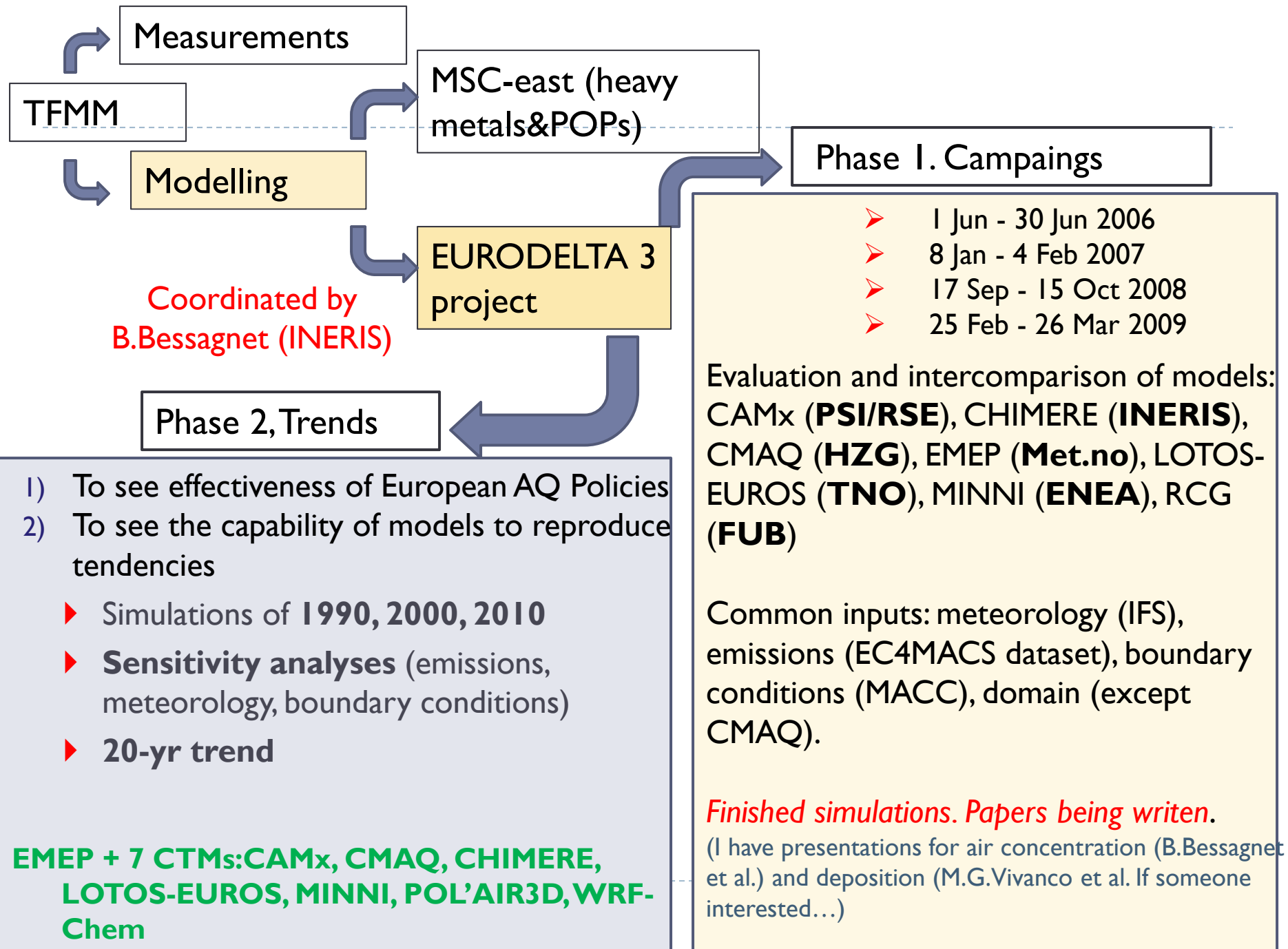
TFMM/EuroDelta

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Including slides from the presentations in Krakow, 6-8 May 2015 :

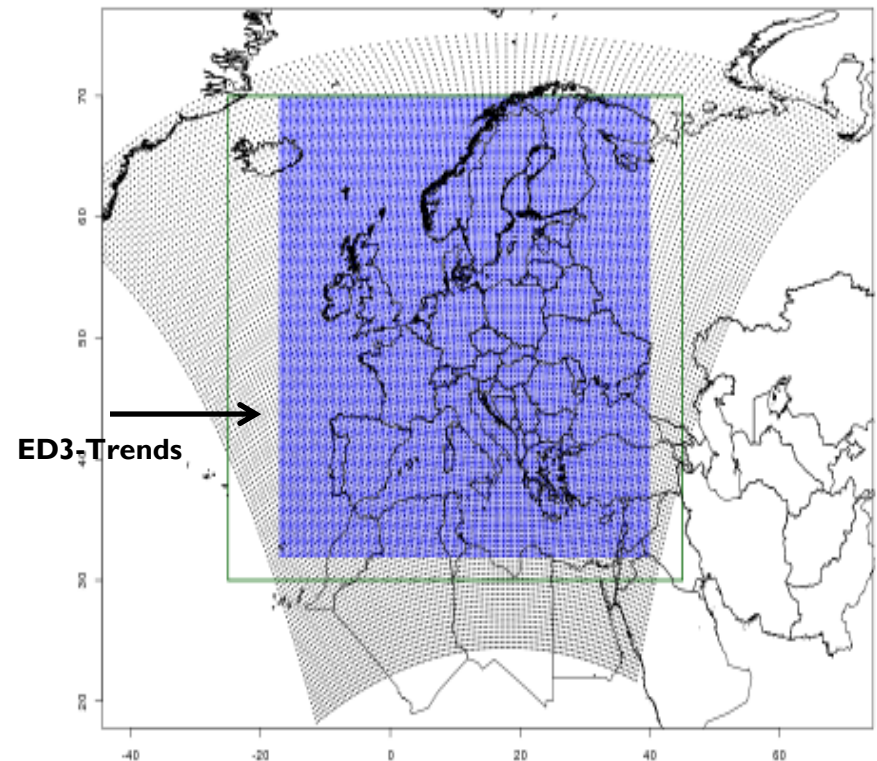
A. Colette, K. Cuvelier, S. Aksoyoglu, B. Bessagnet, J. Bieser, G. Ciarelli, H. Fagerli, M. Garcia, L. Gonzales, M. Mircea, M. T. Pay, V. Raffort, L. Rouil, Y. Roustan, M. Schaap, R. Stern, P. Thunis, S. Tsyro, L. White, P. Wind.
EURODELTA 3 – Trend Analysis Experiment Overview

K. Cuvelier and the EuroDelta Trend Modelling Teams. ***Visualization of first Modelled Trends (1990-2000-2010) Model - to – Model (Model - to – Observations/Emissions)***



Phase 2. Trends: Modelling Setup

- ▶ Consensus specifications:
 - ▶ Regular lat/lon projection
 - ▶ Resolution about 25km
 - ▶ Meteorology (WRF/ERA-interim: downscaling of the ERA-Interim global reanalysis with WRF at 0.44 °)
 - ▶ Emissions (GAINS; ECLIPSE-V5)
 - ▶ Boundary Conditions (Obs; 3D climatology based on observational vertical profiles). Sensitivity test with CamChem
 - ▶ Output format
- ▶ For more details, see:
 - ▶ <https://wiki.met.no/emep/emep-experts/tfmmtrendeurodelta>



No constrain for biogenic emissions (NO & VOCs) and for natural and road

- ▶ resuspension of dust emissions

Trends: Workplan

HTAP: Different emissions, different bc

Tier # years		Experiment	Key questions
Tier 1 5 yrs	1A	Reference for 1990, 2000, 2010	How do model compare with observation in 1990, 2000, and 2010 ? -> Comparison 1A & OBS
	1B	Meteorology and boundary conditions of 2010 emissions of 1990, 2000	What if no emission change occurred in Europe ? -> Comparison 1A vs. 1B
Tier 2 5 yrs	2A	Meteorology & emissions of 2010 boundary conditions of 1990, 2000	What if no emission changed out of Europe ? -> Comparison 2A vs. 1B
	2B	Meteorology & emissions of 2010 modelled boundary conditions of 1990, 2000, 2010	What is the uncertainty related to boundary conditions ? -> Comparison 2A & 2B
Tier 3 38 yrs	3A	21-yr reference trend	How do model capture the trend in observations ? -> Comparison 3A & OBS
	3B	21-yr trend with 2010 emissions	Does meteorological variability contribute to the AQ trend over the past 20 yrs? -> Comparison 3A & 3B

Trends: Already delivered...

Ynn Year nn, i.e. MnnBnnEnn –
meteo, BoundaryConditions, Emissions

EMEP: Y90, Y00, Y10, Y10f, Y10fe, M10B10E00, M10B10E90

CHIM: Y90, Y00, Y10, Y10e, M10B10E00, M10B10E90

MINNI: Y90, Y00, Y10, Y10e

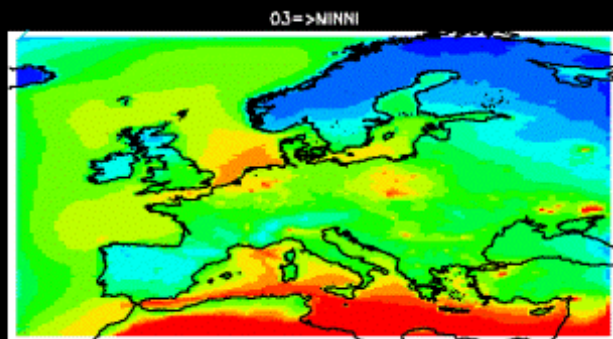
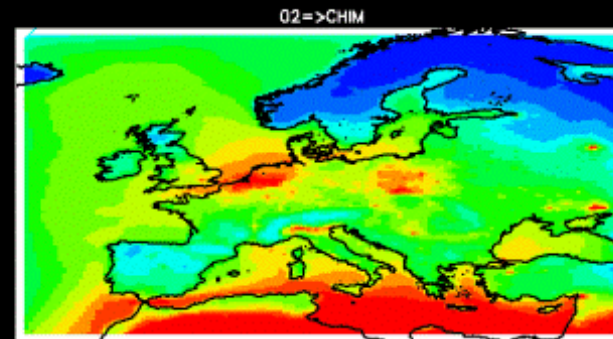
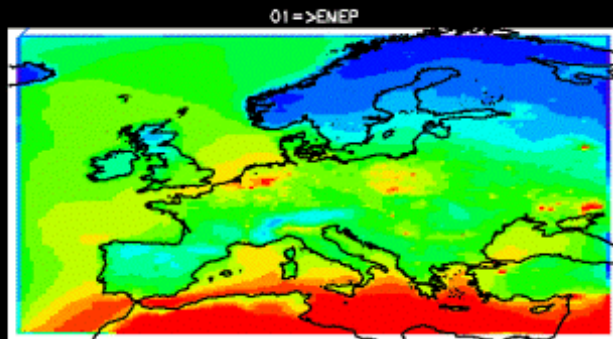
POLR: Y10e

f = 'f'orest Fires

e = 'e'MEP emission inventory, otherwise GAINS

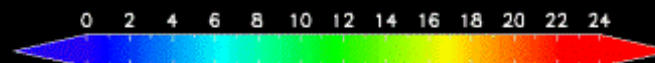


PM10 MIOBIOEIO

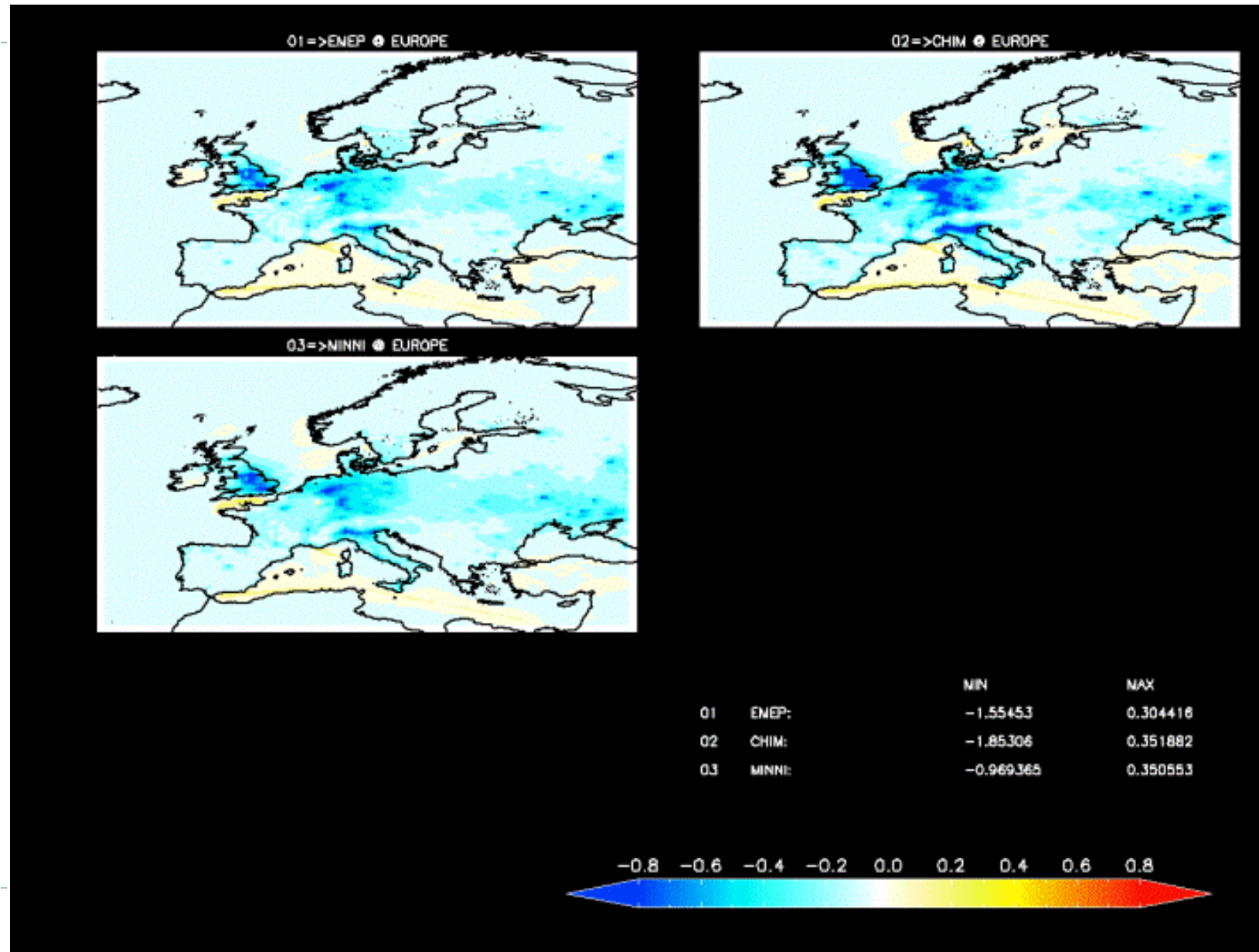


2D TOOL
visualization tool
(RC, Kees Cuvelier)

		MIN	MAX
01	EMEP:	0.533580	313.162
02	CHIM:	1.48193	66.4077
03	MINNI:	1.71730	97.1283



2d map Trend NO2 [ug/m3/year]



Year Selection, Multi-Species

The screenshot displays the ED_2dTOOL software interface, version 1.4, running on a Windows operating system. The main window is titled "EUROPEAN COMMISSION JRC - CONCAWE" and shows two trend analysis plots for PM10 concentration in Europe.

Left Plot (01=>EMEP @ EUROPE): Shows a time series of PM10 concentration from 1990 to 2010. The y-axis is labeled "PM10 [ug/m3]" and ranges from 20 to 60. The x-axis is labeled "Days" and ranges from 0 to 6000. A red trend line is shown with the equation $Slope = -0.0256678 \text{ [ug/m3/year]}$. The plot includes a "Yearly Mean" label and a "Toggle Years" list on the left.

Right Plot (02=>LOTOS-E @ EUROPE): Shows a time series of PM10 concentration from 1990 to 2010. The y-axis ranges from 0 to 14. The x-axis is labeled "Days" and ranges from 0 to 6000. A red trend line is shown with the equation $Slope = -0.0815962 \text{ [ug/m3/year]}$. The plot includes a "Yearly Mean" label and a "Toggle Years" list on the left.

Toggle Years List: A list of years from 1990 to 2010, each with a checkmark, indicating that all years are selected for the analysis.

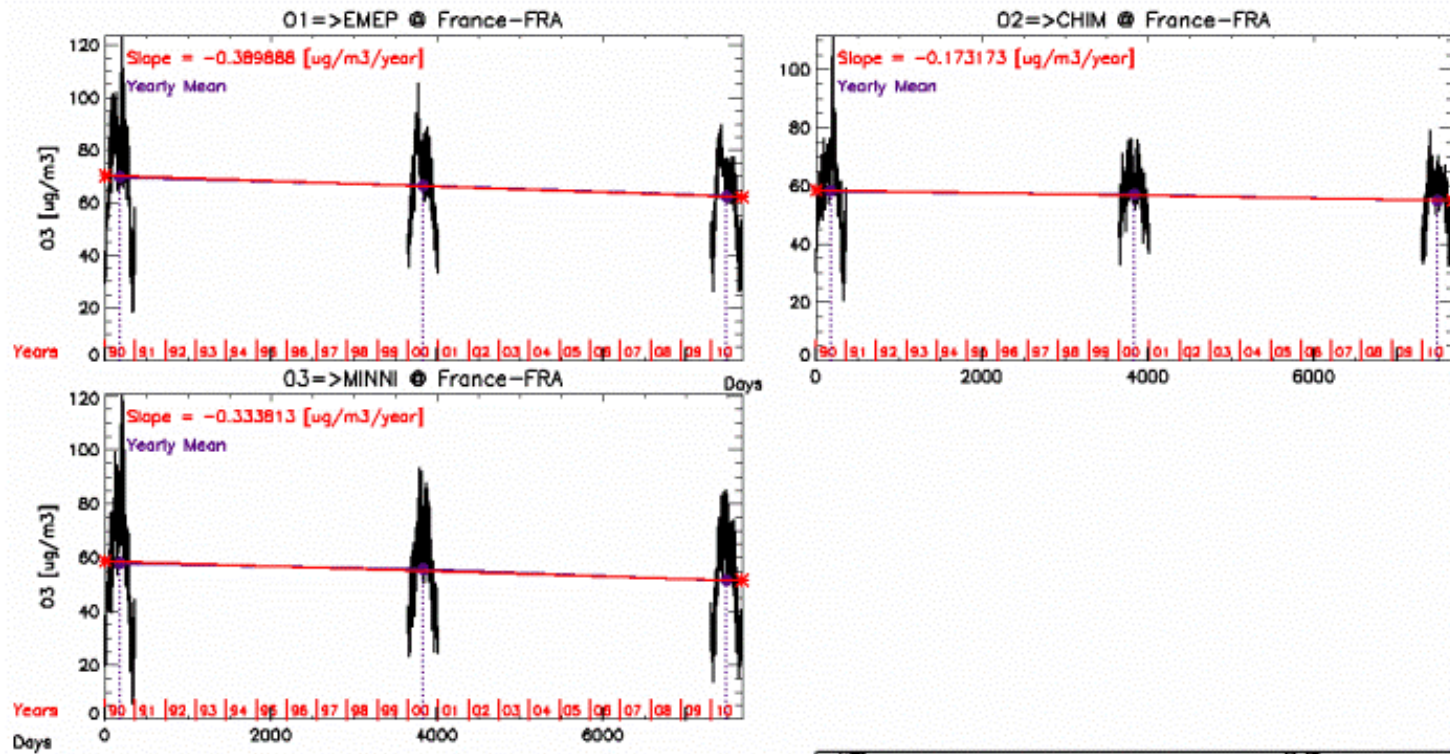
Species Selection Menu: A menu is open showing the selection of "PM10" under the "DIAGs" tab. Other options include METEO, GASES, PM2.5, INDICs, and DEP.

Map: A map of Europe is shown in the bottom right corner, indicating the geographical area of the analysis.

Blue Box: A blue box with white text reads "Trend Analysis TOOL (JRC, Kees Cuvelier)".

Windows Taskbar: The Windows taskbar at the bottom shows the Start button, several application icons (Internet Explorer, Firefox, File Explorer, etc.), and the system tray with the date and time: 3:09 PM, 13-Nov-14.

Trend in France, O₃



PROVISIONAL RESULTS!



Trend PM10 [ug/m3/year]

	EMEP	CHIM	MINNI	EMEP#Y90 ug/m3
	-0.326	-0.312	-0.316	
	-0.435	-0.397	-0.406	
	-0.342	-0.285	-0.307	44%
	-0.648	-0.649	-0.681	
	-0.462	-0.375	-0.394	
	-0.214	-0.164	-0.176	
	-0.498	-0.451	-0.561	45%

PROVISIONAL
RESULTS!

Thanks!

