

CT1 - Source apportionment

Exercise SA Protocol



FAIRMODE

Forum for air quality modelling in Europe

Your Mission

In 1938, the 8th comic strip of the Belgian author Hergé refers to a fictional Balkan nation : the Syldavia.

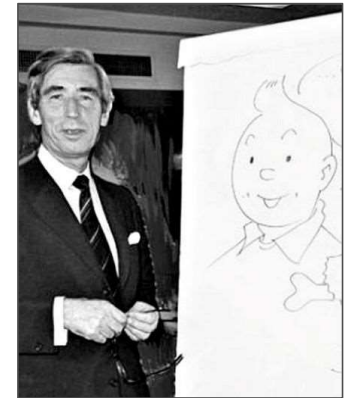
In 2022, Syldavia announces its wish to join the European Union. In this perspective, the Syldavian government must comply with the European directive on air quality as soon as possible.

The country has a network of “standard” measurements and has monitored PM2.5 exceedances but has not yet conducted any air quality studies.

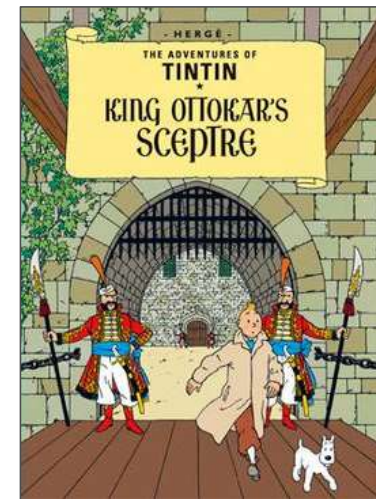
Since no one in the country has sufficient expertise in air quality management, the Syldavian government calls **YOU** to help them develop air quality plans for PM2.5 (only).

You decide to call different foreign service providers to put in place the different stages of the work.

Your task in this exercise is to order the different stages of the work following a chronological logic. For each step you must argument why it is selected in that order and if you consider it as : *necessary, optional or useless*.



Hergé and its hero Tintin



In « King Ottokars Sceptre » Tintin's adventures take place in Syldavia

	Air quality plan elements/steps	Provider capacities
1	Standard Measurements	You have a network of measurement stations which results have never been used to develop air quality plans. Among the concentrations of different pollutants (CO, SO2, NO2, O3) and meteorological parameters (temperature, solar radiation) the stations provide the concentration of PM2.5.
2	Down Scale Models	Provider A: provides scenario simulations down to 50 m resolution – meteorology included
3	Speciated Measurements	Provider B: may install specific measurement points and provide detailed concentrations for different fractions of PM2.5.
4	Chemical Transport Models operated in Tagging only	Provider C: provides simulations at 1km resolution with a chemical transport model equipped with a tagging module (Brute force simulations are not available) – meteorology included
5	Receptor Models Fingerprint data base for RM	Provider D: runs receptor models for source apportionment and has access to a database of source fingerprints.
6	Chemical Transport Models operated in Brute Force mode only.	Provider E: provides Brute Force simulations at 1km resolution with a chemical transport model (tagging is not available) – meteorology included
7	Low Cost Sensors	Provider F: supplies and installs PM2.5 low-cost sensors
8	Emissions Inventory	Provider G: develops emission inventory in connection with Syldavian administration relevant to all sectors

	Air quality plan elements/steps	Argumentation (why?)	Priority: Necessary – Optional – Useless
1	Standard Measurements	to quantify the PM2.5 levels and identify the exceedances locations.	Necessary
2			
3	Down Scale Models		
4			
5			
6			
7			
8			

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Thank you for your attention