First results using new delta tool in Arpae

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We analize PM10 forecast (d0,d1,d2) from CTM NINFA (COSMO+ CHIMERE) + bayesan module for background station. The statistical output is a probability distribution of concentration values and we choose 50percentile as "forecast value"

We test two period:

- October-December 2020
- January-March 2021: for the first time the emergency measures are activated if the air PM10 forecasts indicate a non-negligible probability of exceeding the daily limit value for PM10 in the control day and in the two following days in at least one station of the Province

D0: October December 2020 (1/5)



D0: October December 2020 (2/5)



D0: October December 2020 (3/5)







D2: October December 2020 (1/5)



D2: October December 2020 (2/5)



D2: October December 2020 (3/5)

background stations Forecast Performance Normalized PM10 DayFarecast= 2 8 Thresh= 50.0 MQL_(POD/PODp)= 1.70303 MQL_(SR/SRp)= 1.26891 6 26/32 valid stations traffic stations 96 % of valid stations better than Persistence POD Forecast Performance Normalized PM10 3.5 2 DayForecast= 2 3.0 -Thresh= 50.0 NQL_(POD/PODp)= 1.34354 0 2.5 -MQL_(SR/SRp)= 1.34013 8 12/12 valid stations Ô 2 2.0 SR 91 % of volid stations better than Persistence POD 1.5 -1.0 0.5 0.0 3.0 3.5 0.0 0.5 1.0 1.5 2.0 2.5

D2: October-December 2020 (4/5)



D2: October December 2020 (5/5)



D0: January-March 2021 (1/5)



D0: January March 2021 (2/5)



D0: January March 2021 (3/5)



D0: January March 2021 (4/5)



D0: January March 2021 (5/5)



D2: January March 2021 (1/5)



D2: January March 2021 (2/5)



D2: January March 2020 (3/5)



D2: January March 2021 (4/5)



D2: January March 2021 (5/5)



Preliminary comments

- The model has better results than the model "persistence" with the increase of the forecast time
- The new forecast plot that take into account measurement error seems more "realistic" than the previous one

