



Climate forecast enabled knowledge services

CLARA sets to develop fourteen climate services building upon the Copernicus seasonal forecasts, and demonstrate their marketability and value.

AQCLI: a CLARA Service for Air Quality in future CLimate



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Aim

The AQCLI is a climate service within CLARA project. It provides an assessment of how climate change will affect air quality on a local scale and is addressed to decision makers involved in air quality management.

Method

The AQCLI service will provide an assessment of how climate will affect air quality, in typical situation: Warm, Cold, Dry, Wet, Neutral years.

The required essential climate variable for future scenario is based on RCP8.5 (Riahi et al. 2011) and are provided by Urban-SIS project

Riahi, K., Rao, S., Krey, V. et al. 2011: RCP 8.5—A scenario of comparatively high greenhouse gas emissions. Climatic Change, 109: 33. doi:10.1007/s10584-011-0149-y

Motivation

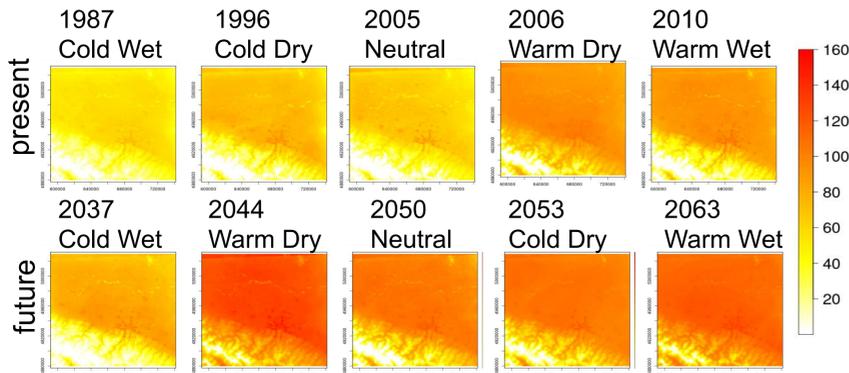
Meteorological conditions strongly affect air quality in Northern Italy. Low ventilation often causes particulate matter accumulation during winter and high solar radiation and high temperature frequently cause increasing ozone concentrations during summer. What impact will have future meteorological conditions if no reduction of emissions is adopted?

$T_{max} > Threshold1$
=> day favourable to Ozone accumulation

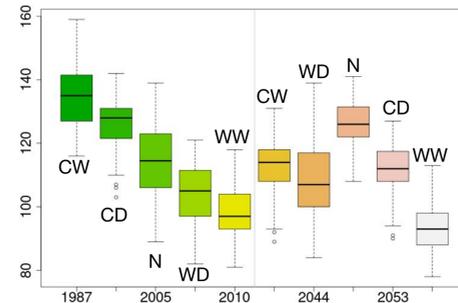
$(Wind\ speed) * (H_{mix}) < Threshold2 \ \& \ No\ Precipitation$
=> day favourable to PM10 accumulation

Pilot applications

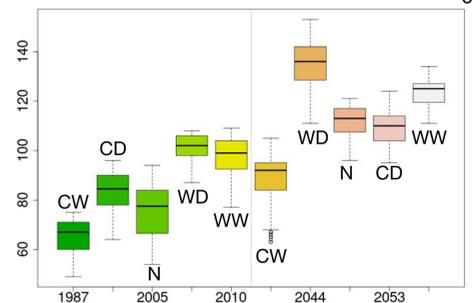
Conditions favourable to Ozone accumulation – Days per year



Bologna – Days favourable to PM10



Bologna – Days favourable to O3



Visualization Web Tool

Select pollutant: O3
 Select year: 2053 Wet Dry
 Select municipality: Bologna
 Select color palette type: Discrete (selected), Continuous

- Select
- Pollutant
- Period
- Area
- Elaboration Type

Bologna - estimated days of exceedance of O3 - 2053

Estimated days of Ozone exceedance on Bologna, 2053 (Cold Dry Year)

Web visualizer

<https://sdati.datamb.it/aqcli-vis/>

Open data

<https://dati.arpae.it/dataset/clara-aqcli>

