EMS Annual Meeting Abstracts
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EMS Annual Meeting 2021

FONDAZIONE Osservatorio Meteorologico Milano Duomo

Spatially detailed urban climatology for temperature and precipitation.

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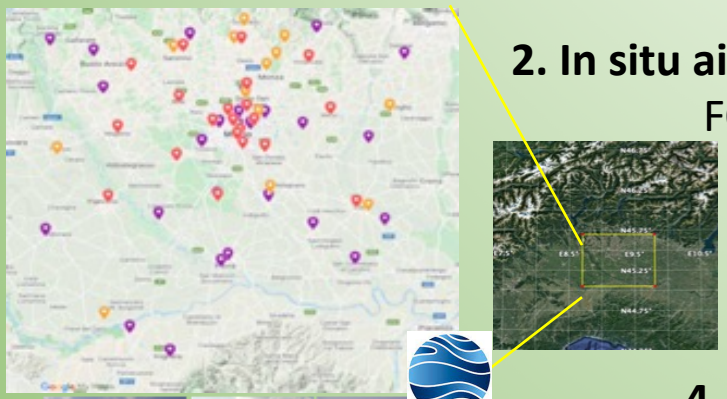
1. **Resolution requirements for urban resilience plans to Climate Change:**
   Urbanists: 1000 ÷ 100 m, Engineers and Architects: 100 ÷ 10 m

Stakeholders feedbacks as in ClimaMI project:
www.progettoclimami.it



2. **In situ air temperature measurements in the Milan' UCL (C-UHI):**
   FOMD urban Climate Network (CN), Reg. Environ. Agency (ARPA Lombardy), MeteoNetwork

3. **Space-borne remote sensing of Milan' surface temperature (LST, S-UHI):**
   ESA-Copernicus Sentinel-3 (1 km) and NOAA-USGS Landsat-8 (30 m)

4. **Milan' High-resolution UCL air temperature by Co-kriging:**
   COK methodology developed to provide air temperature at bottom of UCL
   at medium- (100 m) and high-resolution (30m) from in situ air temperarure and LST

Recently published:

*Montoli, E., Frustaci, G., Lavecchia, C. , Pilati, S.: High-resolution climatic characterization of air temperature in the urban canopy layer. Bull. of Atmos. Sci.& Technol. **2**, 7 (2021).*
https://doi.org/10.1007/s42865-021-00038-5, or: https://rdcu.be/cv2TS

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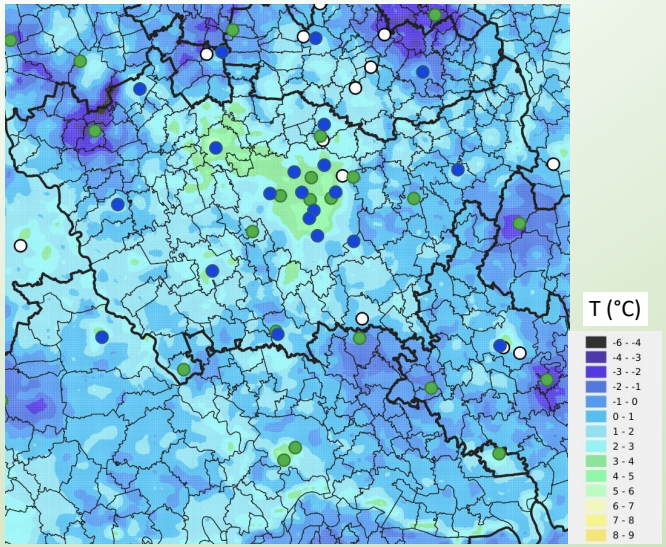
Results for climatology and assessing procedures

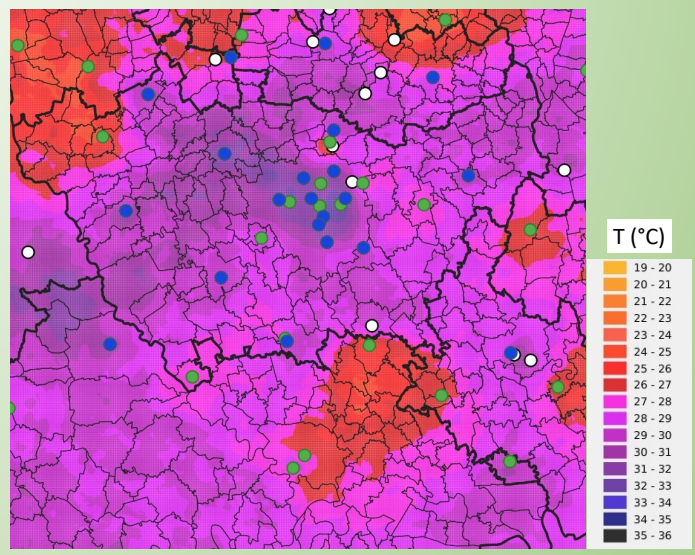
1. Single episodes and Mean fields of air temperature for satellite passing times and different UHI configurations at medium-resolution (100 m), with related uncertainty fields

PROGETTO CLIMAMI www.progettoclimami.it
(see also EMS2021-207)

Winter UHI at 22:00 LT: minimum air temperature



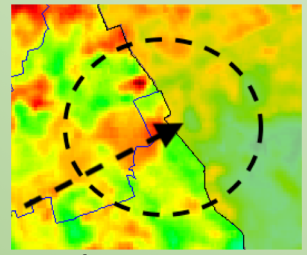
Summer UHI at 22:00 LT: maximum air temperature

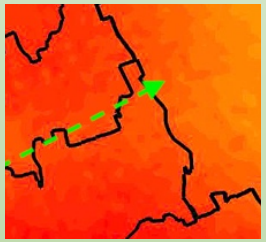


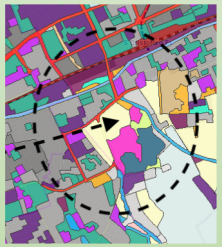
100m x 100m

2. Impact assessment of (small-scale) urbanistic modifications

2013-07-16 10:10 UTC







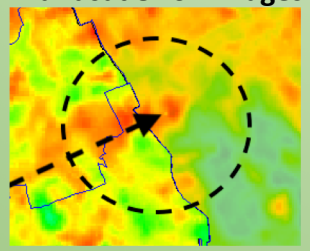
2014

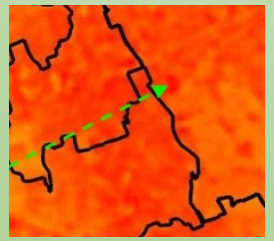
Spatial resolution: **30 m**

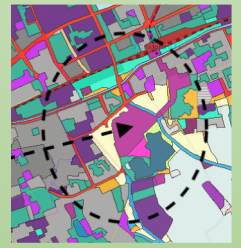
Landsat 8 LST images | **Cokriging T_a** | **DUSAF LU-LC**

Ronchetto s/N (Milan)
New industrial and extraction area in 2015

2019-07-17 10:10 UTC







2018

Almost a decade of data already elaborated since 2011

Extension to precipitation under development (2021-'22)