Environmental *Earth Observation of urban areas* in Armenia:

a perspective on the need for *in situ data*

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Environmental Earth Observation in ARMENIA

1. SPACE-BORN SENSING (Satellites)
2. ARIAL SENSING (UAVs: multispectral, thermal)
3. Proxy SENSING (visible and near-infrared (VIS-NIR) spectroscopy)
4. In-situ measurements for calibration and validation
Environmental issues of urban areas: Armenia

- Green areas
- Air quality
- Soil quality
- Water quality
- Etc.
YEREVAN: Capital of Armenia

CAPITAL AND SOCIAL-ECONOMIC CENTER OF ARMENIA
Total area >220 sq. km
Population - 1,060138 million

The goal of the Yerevan’s Master Plan
the preparation of an urban development strategy for
creation of favorable living conditions and provision of
sustainable development.
Earth Observation benefits

Land Cover of the Yerevan for the years 1989, 2000, 2010 and 2018 derived from Landsat 8 OLI

The urban thermal field variance index (UTFVI)* is widely used to describe the

Urban heat island (UHI) effect

https://doi.org/10.1016/j.buildenv.2020.107390
**In-situ data** to monitor spatial variations of air temperature in local climatic zones

**YEREVAN BOTANICAL GARDEN**

**Thermal and multispectral drone survey**

![Drone survey images and data plots]

**In-situ thermoscopy**

![In-situ thermoscopy images and data plots]
**In-situ data** to monitor spatial variations of air temperature in local climatic zones

**YEREVAN BOTANICAL GARDEN**

Data loggers: thermochrons
Limitations of \textit{in situ} observations

Method-produced error:

• sampling design
• improper operation of in situ measurement instruments;
• uncalibrated in situ measurement instruments
• ...

Challenges

QUALITY, CALIBRATION AND VALIDATION

DATA POLICY AND ACCESS CONDITIONS

DATA GAPS
CONTACT DETAILS

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