Iphigenia Keramitsoglou

URBAN THERMAL ENVIRONMENT

Institute for Astronomy, Astrophysics, Space Applications and Remote Sensing, National Observatory of Athens

# Concept, Problem & Data Gap

- **URBAN HEAT ISLAND**
  Urban areas are warmer than their rural surroundings| UHIs prolong and intensify heatwave events.

- **HEATWAVES**
  The 2003 heatwave resulted to 70,000 excess deaths in Europe | Many countries are affected | There is a need for preparation
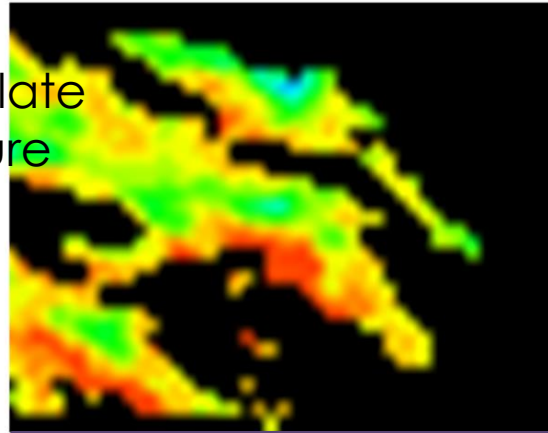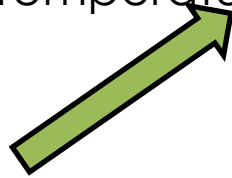
- **LACK OF DATA**
  Currently, no operational service to provide high spatiotemporal urban temperature data exists.
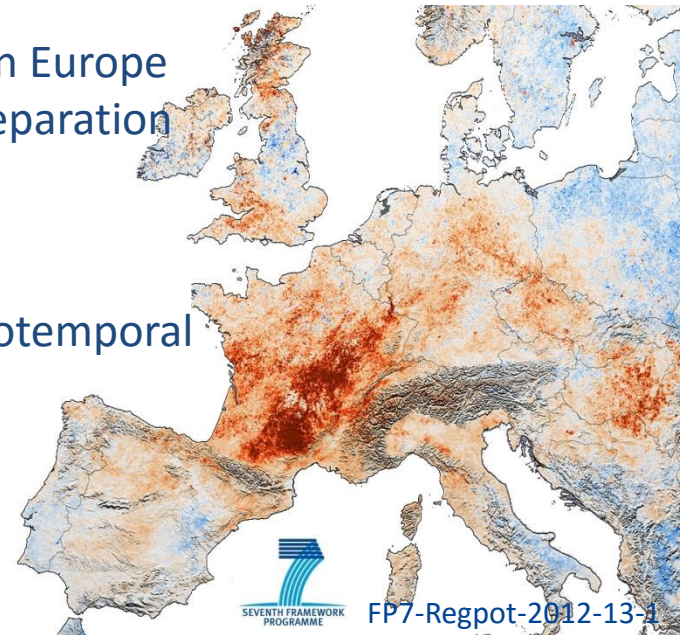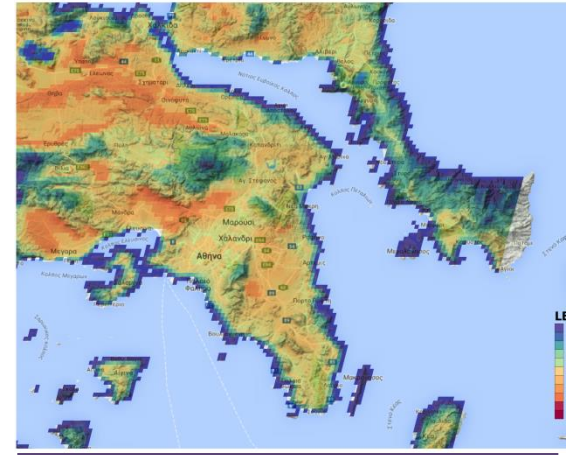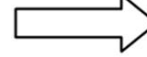
Applications: Urban Thermal Environment

1. We get this image from our station
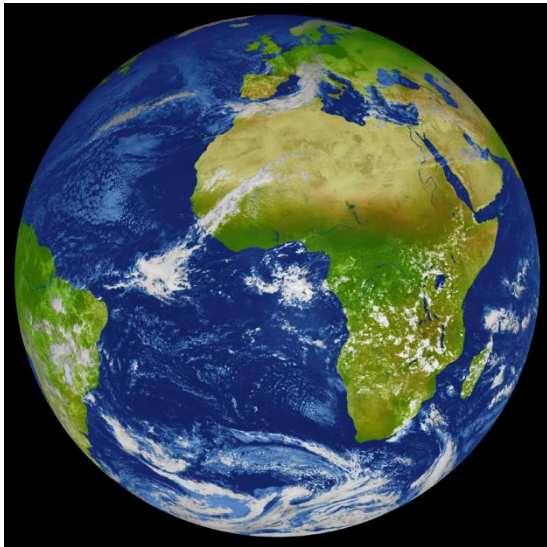
2. We calculate Temperature

4-5 km, 5-15 min, whole Europe and Africa
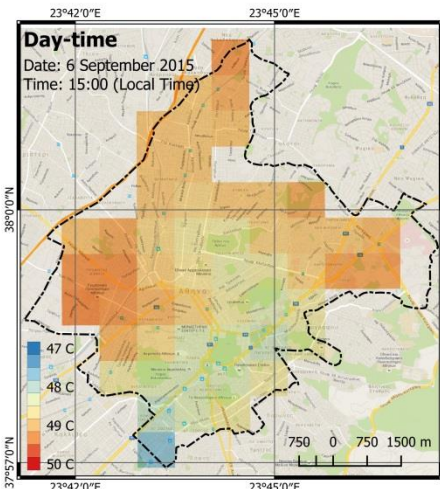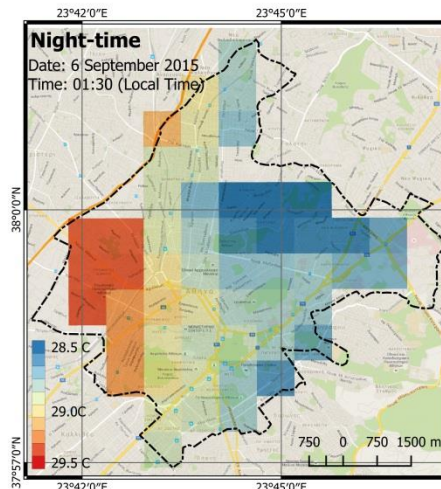
3. We turn it into

1 km, 5-15 min, all major European and African cities, Greater City area scale

4. Local scale

LAND SURFACE TEMPERATURE
City of Athens

Night-time
Date: 6 September 2015
Time: 01:30 (Local Time)

Day-time
Date: 6 September 2015
Time: 15:00 (Local Time)

28.5 C
29.0 C
29.5 C

47 C
48 C
49 C
50 C

Real-time, Operational, Online every 5' at 1km. Diurnal variability

IAASARS

Satellite images are provided through the ground segment infrastructure of IAASARS/NOA for acquisition of Meteosat Second Generation – Spinning Enhanced Visible and Infrared Imager

Service

- We have developed of a fully automated system for the continuous monitoring of Land Surface Temperatures of European cities in real time every 5 minutes at 1km resolution.

- We employ EO data from MSG2-SEVIRI RSS.

- The system offers four significant advantages:
  1. it exploits the high temporal resolution of SEVIRI RSS imagery (5 min)
  2. it enhances the spatial resolution of LST down to 1 km
  3. it covers a large number of cities around the world, and
  4. the derived products are available in real time.
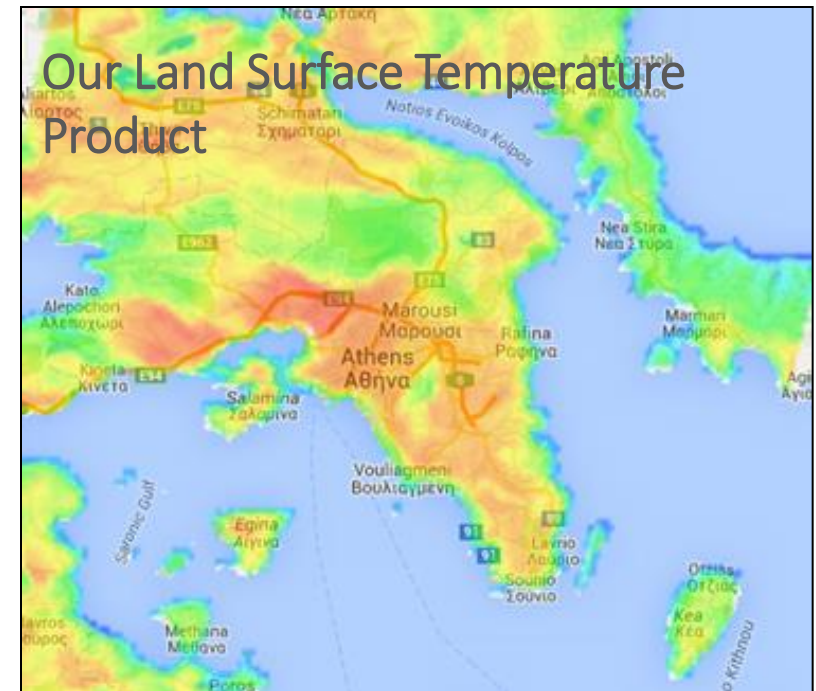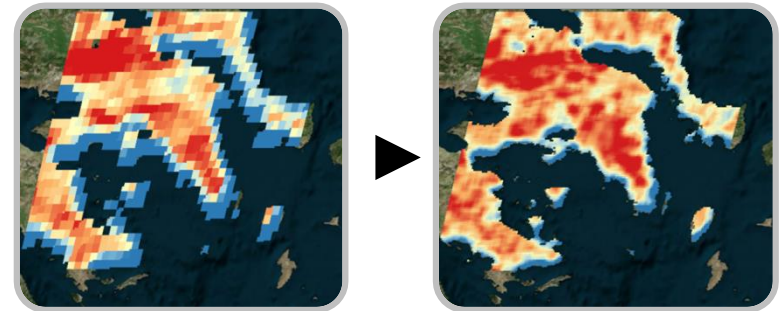
Our Land Surface Temperature Product

Twinnings

NASA Marshall Space Flight Center, Earth Science Office, USA

Center for Earth System Research and Sustainability, University of Hamburg, Germany

University of Valencia

Highlights

1. MoU with the City of Athens (GR)

2. Negotiations with Region of Attica.

3. Co-Leader GEO Task

Applications

The way forward:

1. Scale up

2. Inclusion of more Cities

3. Development of Applications