GEO Incubator: Global Heat Resilience Service

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December 5, 2023
What is GEO?

GEO is an intergovernmental partnership for people, nature, and the planet.

GEO draws expertise from an extensive global network that includes 114 governments, 162 private sector and civil society organizations and thousands of world-leading scientists.

GEO promotes open, equitable access to Earth observation information to help decision makers understand and act on the global challenges of climate change, biodiversity loss and pollution, and achieve sustainable development.

The GEO Secretariat is hosted by the World Meteorological Organization (WMO).
Warming is already occurring in all areas of the globe, but models of future temperatures show that the changes will not be distributed equally. IPCC, 2021
The Global Heat Resilience Service

a co-designed service that will provide every urban area in the world with data and knowledge on the health risks from exposure to extreme heat. These insights will help cities develop interventions and policies to adapt to heat and reduce the impact on citizens’ health and local economies.
Global Heat Resilience Service

**Inputs**
- Meteorological and climate models
- Satellite based mapping of people, infrastructure and other assets
- Community-based mapping of heat and social vulnerability
- Socio-economic and public health data

**Outputs**
- Climate: current and projections
- Heat vulnerability mapping
- Decision-support platform for heat resilience planning
- Technical support, capacity building and awareness raising tools

**Outcomes**
- Cities can better understand risks from heat
- Cities can better address risks from heat through local solutions
- Cities can better communicate risks from heat to raise awareness

**Engagement, partnerships, & capacity building**
- Spatially-rich approach, collecting +100,000 points / city
- Machine learning algorithm (Random Forest), uses imagery from Sentinel-2 satellite for land characteristic variables
- Generates “snapshot-in-time” temperature and heat index maps of heat on high-temperature, stagnant air conditions and heat exposure descriptions at human level, high resolution

People go out mapping for a day
NOAA Urban Heat Island Mapping Campaigns: 2017-2023 Locations

- **United States**
  - Hillsboro, Beaverton, and Tigard, Washington County, OR
  - Scranton, Lackawanna County and Wilkes Barre, Luzerne County, PA
  - Toledo, Lucas County, OH
  - Iowa City and Cedar Rapids, IA
  - Johnson County and Wyandotte County, KS
  - Salt Lake City, UT
  - Denver, CO
  - Salt Lake City, UT
  - Oklahoma City, OK
  - Asheville, NC
  - Little Rock, AR
  - Dallas, TX

- **Brazil**
  - Rio de Janeiro

- **Chile**
  - Santiago

- **Sierra Leone**
  - Freetown

- **Notable Cities**: Chicago, IL; Wilmington, DE

- **Key Campaigns**:
  - 2023 campaigns
  - Previous campaigns

- **Logos**:
  - NIHHS
  - Heat Watch
  - NOAA
  - Climate.gov
Global Heat Impacts and Solutions Survey

- Evidence to articulate need: heat impacts and solutions and catalogues ongoing and planned heat resilience initiatives
- Target audience: policy makers, urban communities, development organizations, and practitioners.
- Output developed as an Interactive Heat Story Map - presented at COP28