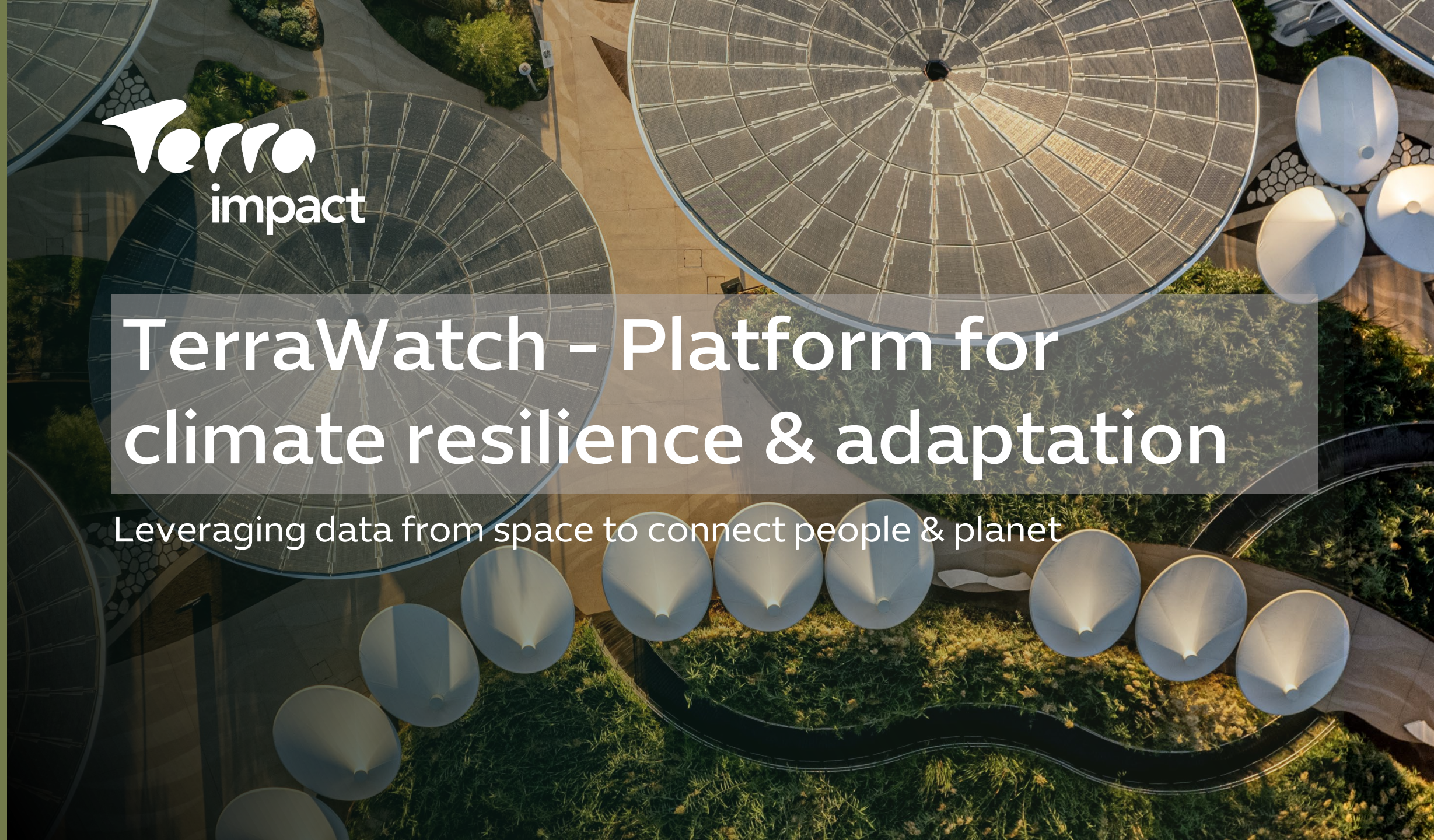


Terra impact

TerraWatch - Platform for climate resilience & adaptation

Leveraging data from space to connect people & planet

CONNECTING WITH NATURE

CITIZEN SCIENCE

Lead organizer of the City Nature Challenge for Dubai: The UAE community has a keen interest in local ecology, is ready and willing to be more involved, spending time in nature and supporting urban biodiversity conservation.

Satellite remote sensing

- Recurring data covering entire globe
- Open data – daily to biweekly
- Available since 1980's
- AI is improving reliability

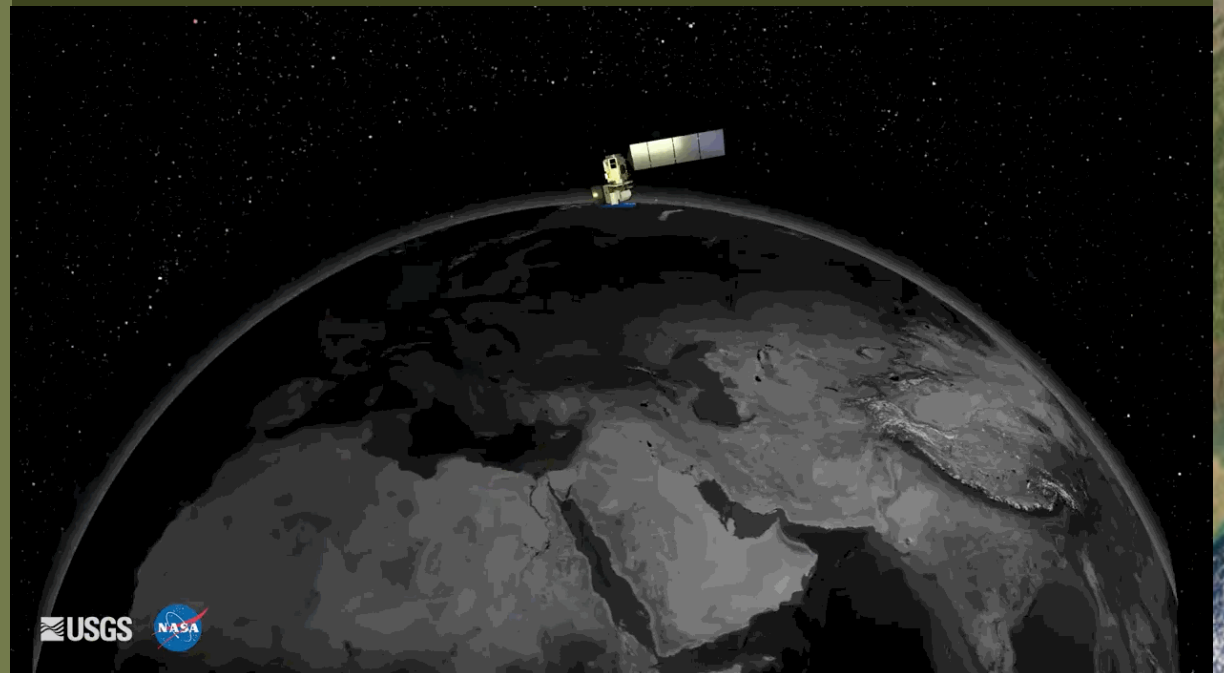


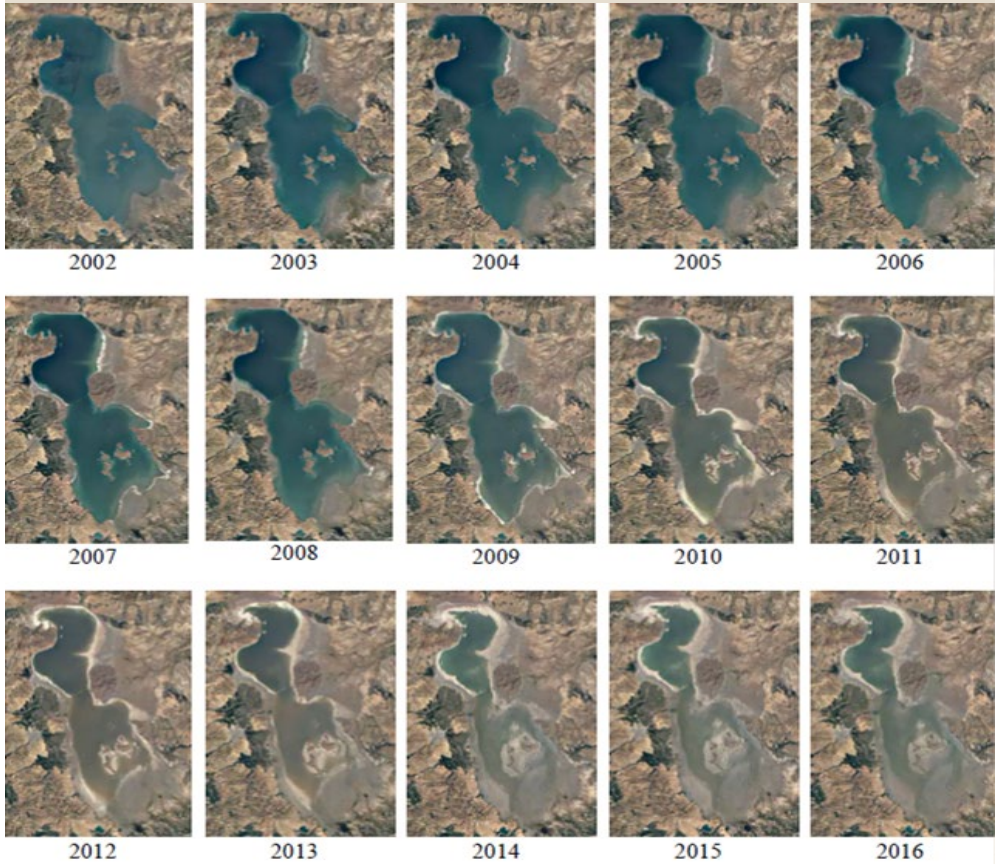
Photo: NASA

How much water do we have?

To answer **Where, How, When** & **What** questions on land & water resources!

Remote sensing –
Sensing from a distance
In this case: ~1000 km

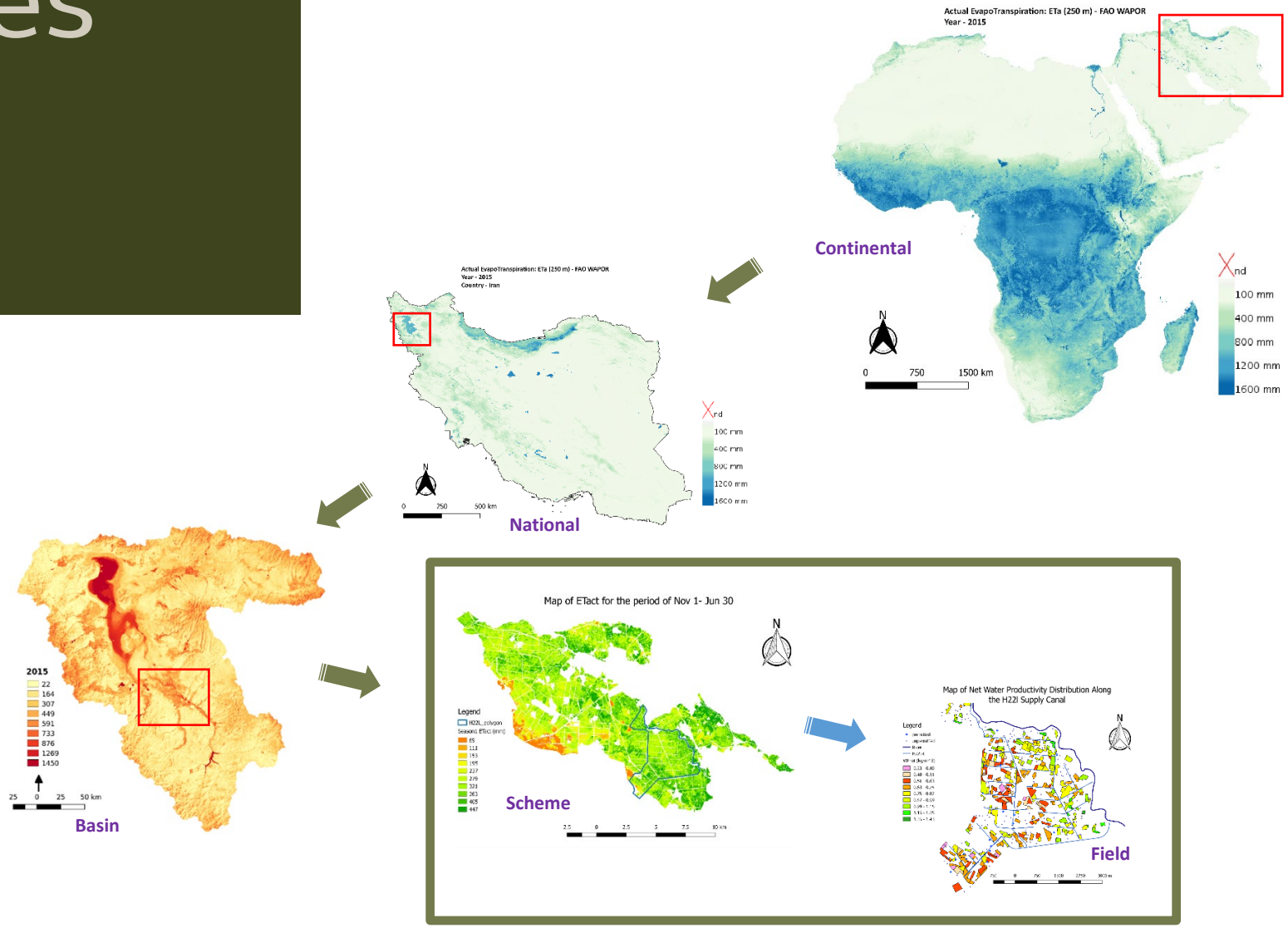
What do you see here?
Guess which one is



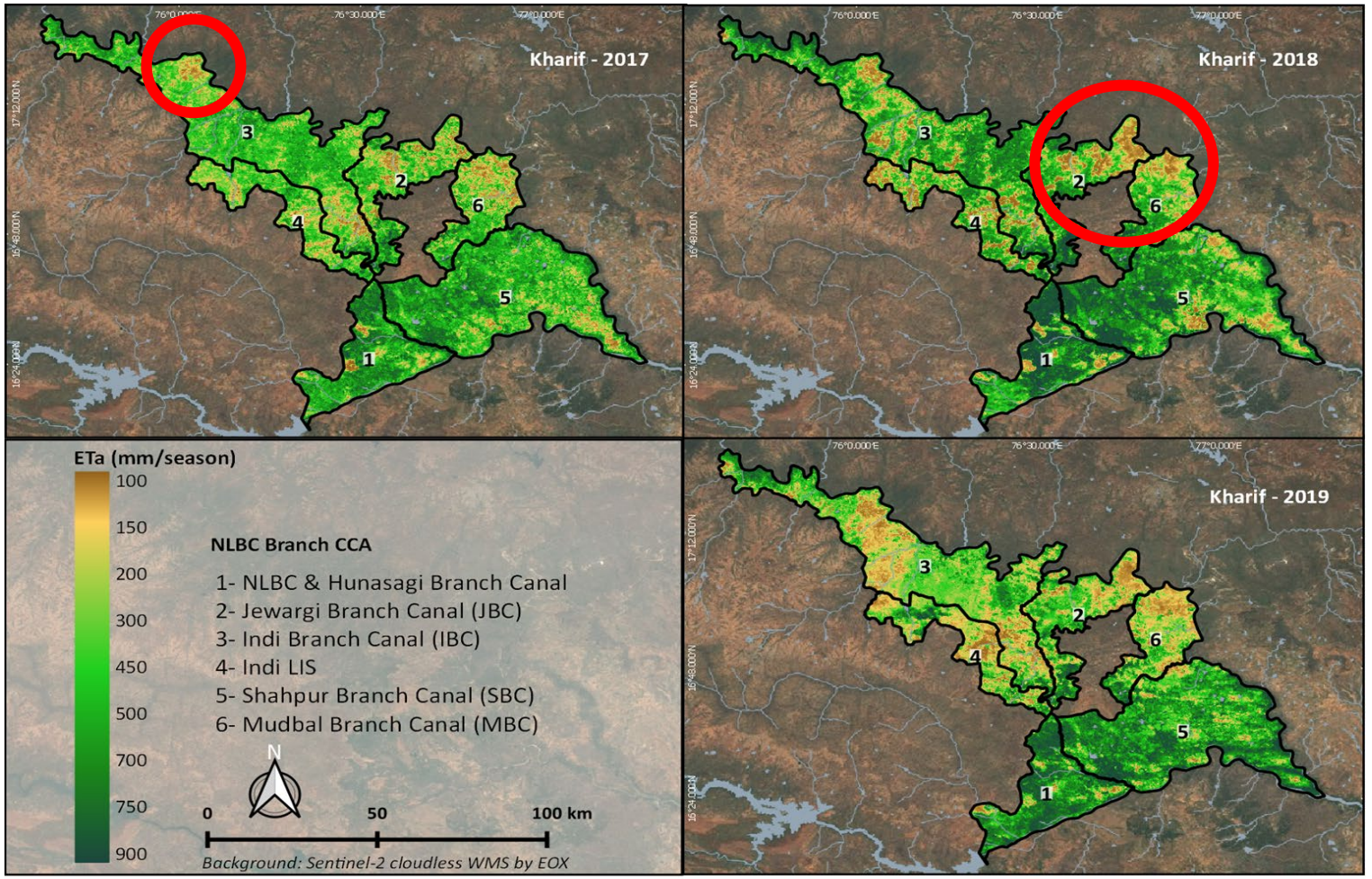
TERRA ADVISORY SERVICES

Advantages of EO/RS

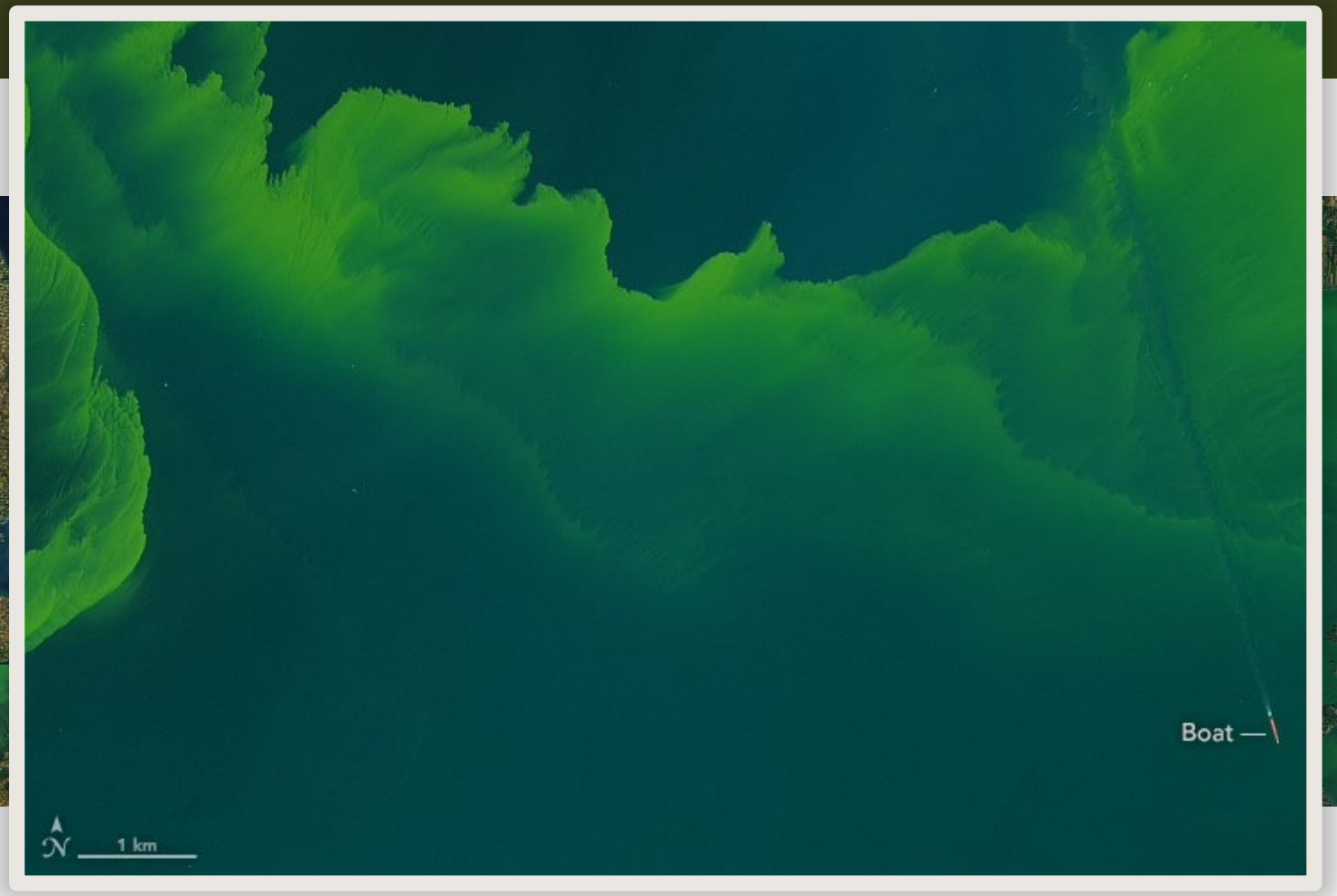
- Earth observation satellite offers:
  - Data covering entire globe
  - Monitoring at high spatial and temporal scale
  - National >> Basin >> field
  - Newer and future missions offer more opportunity
- **Open data policies by space agencies**
- Newer algorithms to estimate bio-physical variables more accurately



Prioritizing investments – Water in agriculture infrastructure

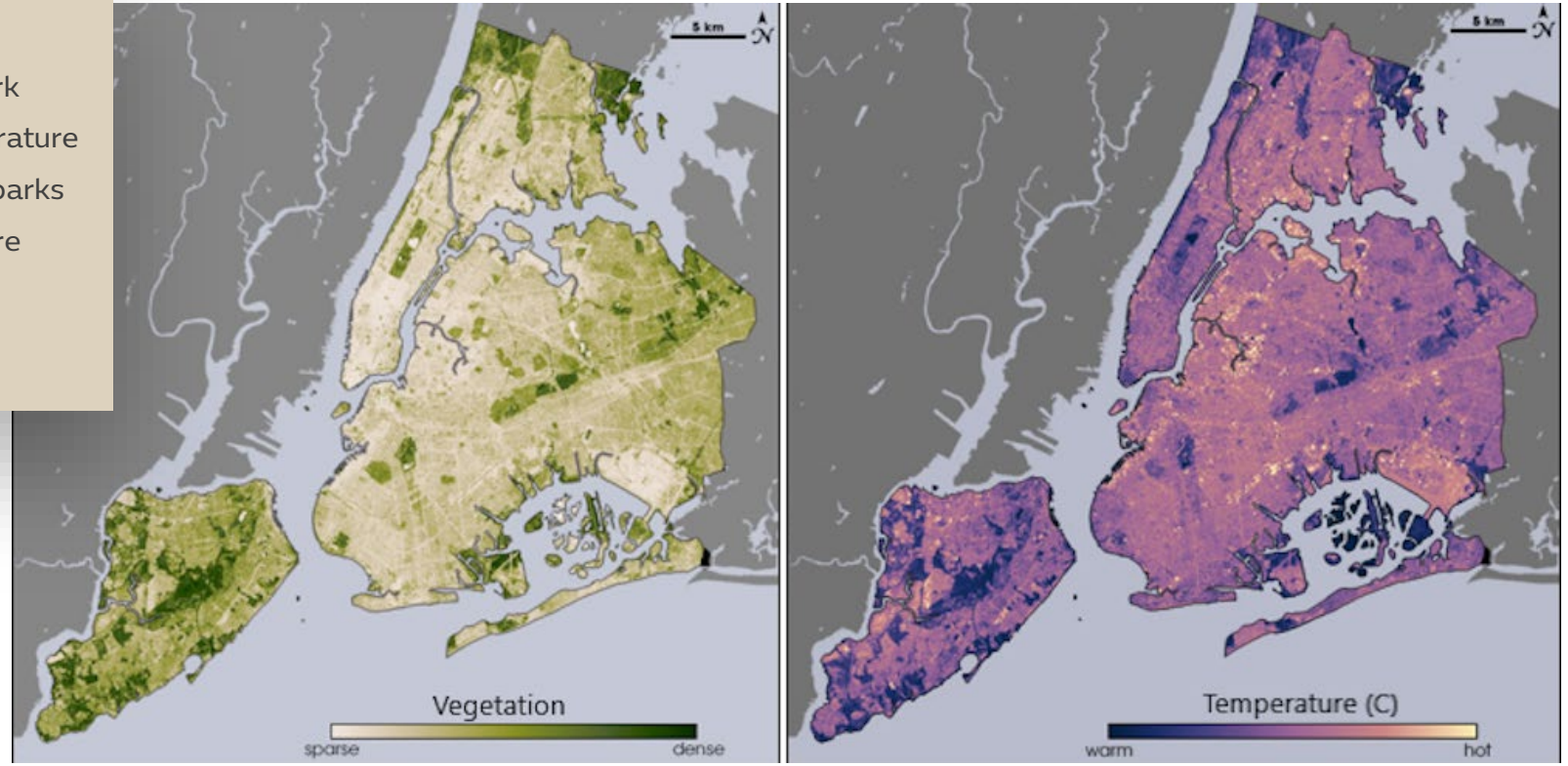


Water Quality (Algal Blooms)



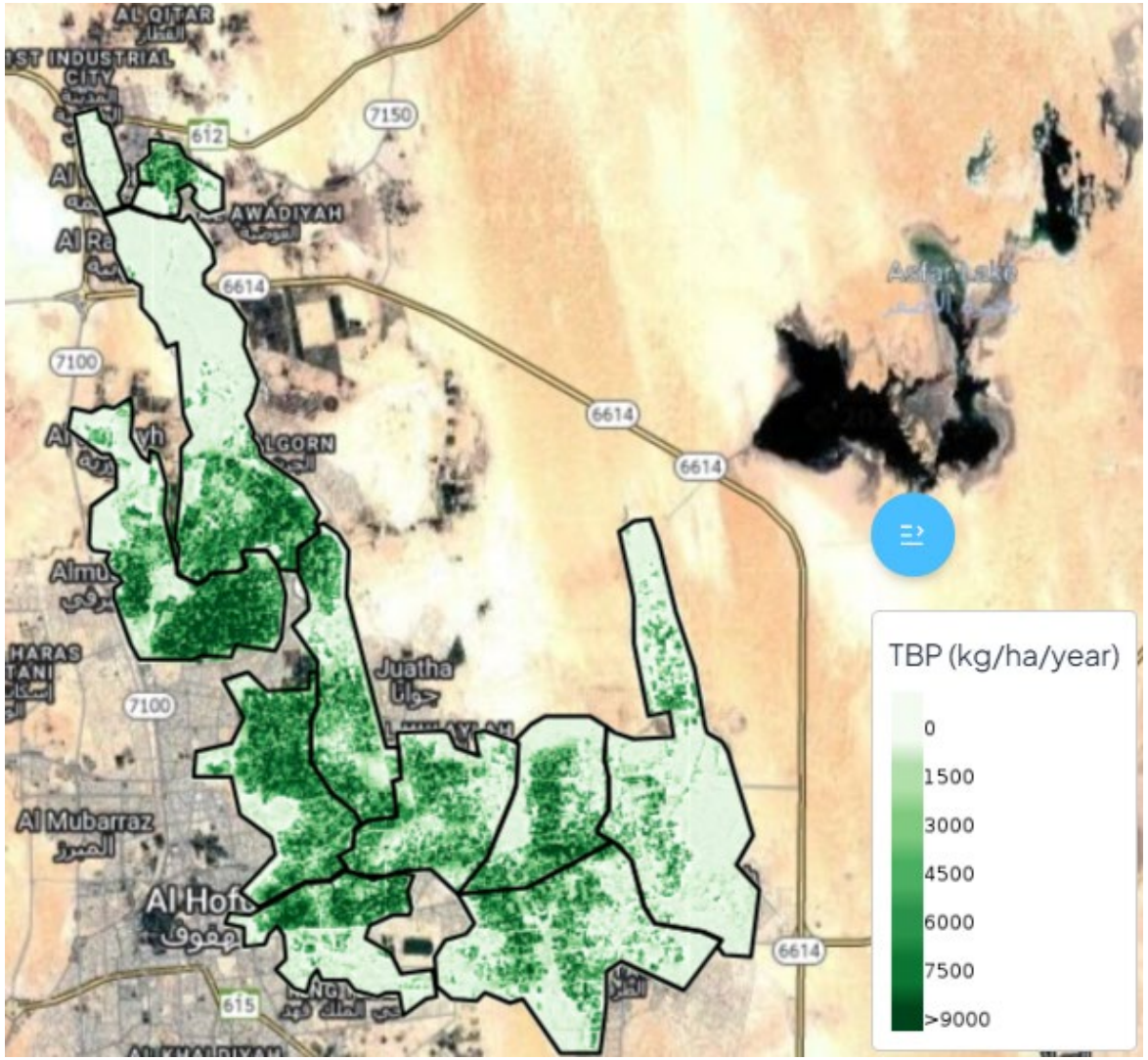
Urban Heat Islands

Comparing maps of New York City's vegetation and temperature shows the cooling effect of parks and neighborhoods with more trees. NASA/USGS Landsat



Biomass & Carbon stock estimations

Objective: To estimate carbon stock in Trees & crops & mangroves using high resolution satellite data



IMPACT PROGRAM ON LAND, WATER & CLIMATE

TerraWatch

Evidence based decision making platform

At Terra, we develop operational platforms where data from multiple sources such as:

- Satellites
- Drones
- IoT sensors
- Citizen Science

Goal: *To generate evidence-based strategies towards resource optimization, sustainability, prioritize investments & climate change adaptation.*

What we do:

On-demand support to perform assessment, M&E on land, water & climate using spatial analytics

Developing new fit-for-purpose digital tools and applications

Capacity Development: Provide tailor made trainings for educators, planners, decision makers etc.

Community of practice: connecting scientific knowledge to decision making systems in different themes

THEMES

HEALTH | WATER | ECOSYSTEMS & BIODIVERSITY | INFRASTRUCTURE | CULTURAL HERITAGE | FOOD & AGRICULTURE | POVERTY & LIVELIHOODS

SECTORS

Private <<>> Public <<>> Multi-lateral

Monitoring resources from space

Remote sensing, Geo spatial tech, Artificial Intelligence

Operational systems to monitor and conduct assessments on resources

- **Water & Land –** impact assessment on resources
- **Biodiversity –** green areas, plant health, species diversity etc.
- **Climate & urban –** urban heat island, urban expansion, droughts & floods etc.
- **Construction –** mapping progress, hot spots, planning and resource mobilization
- **Carbon sequestration –** Mapping & quantifying carbon sinks and prioritizing interventions
- **Agriculture –** water use, production, field boundaries, productivity, crop health, pest control

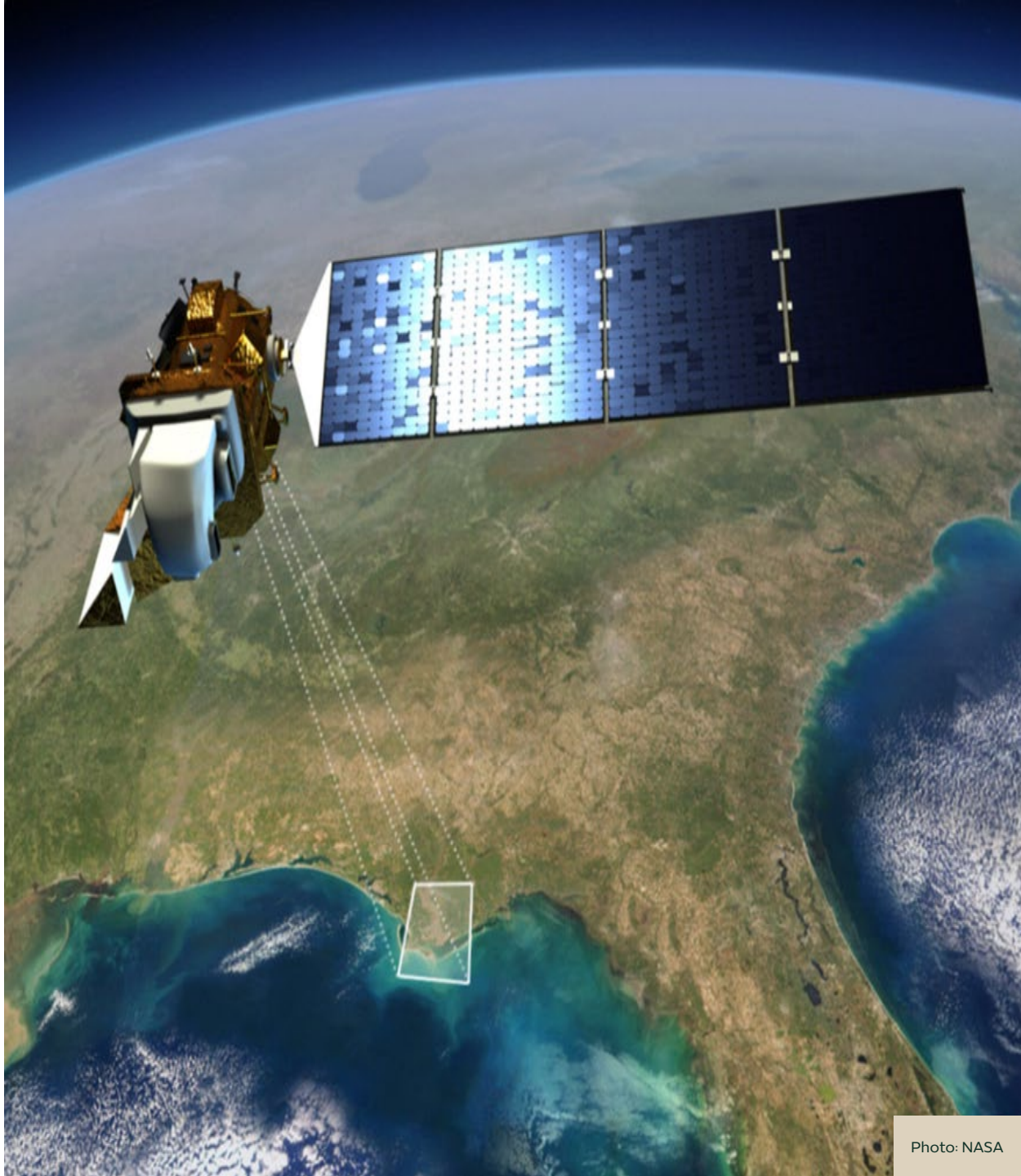


Photo: NASA

Projects

Ongoing activities

Title	Client	Sector
EOtoolkit – platform to prioritize investments in development sector & monitor impacts using satellite data	Islamic Development Bank, KSA	Multi-lateral donor
Integrating Earth Observation & Geospatial Technologies in Uganda's Irrigation Schemes Development Project (enhance agricultural water productivity & water management)	Ministry of Water & Environment (MWE); Uganda	Multi-lateral donor
GeoAI for water & climate investments	World Bank	Multi-lateral donor
National level operational system for monitoring crop production & water use using remote sensing	Saudi Irrigation Organization, KSA	Public
Impact assessment on water and coastal environment	AECOM	Private

Research (Geospatial)

Ongoing activities

Topics

How biodiverse is Dubai's green ? Species Habitat mapping & long term expansion of green areas and its impact on water use, climate change impacts etc.

Assessment of Agricultural water productivity in the MENA Region

Water use assessment for landscape irrigation using satellite data in UAE

City resilience in the context of climate change impacts and nature-based solutions

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PROOF

Assessing the spatio-temporal variations of wheat yield and water productivity under centre pivot irrigation systems using open-access remote sensing data.

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IMPACT PROGRAM ON LAND, WATER & CLIMATE

Dubai 2040 Urban Master Plan

Green objectives

- Green and recreational spaces will double in size
- Nature reserves and rural natural areas will constitute 60 per cent of the emirate's total area
- Several green corridors will be established to link the service areas, residential areas and workplaces,

Develop vibrant, healthy and inclusive communities and double green and leisure areas to provide a healthy environment to residents and visitors

IMPACT PROGRAM ON LAND, WATER & CLIMATE

Digital observatory for Dubai's Nature

Evidence based decision making platform

Live monitoring of Dubai's nature & climate change resilience at unprecedented scale (Global first) – Four themes.

- **Biodiversity health** - all about species & green cover
- **Climate resilience -** Carbon, Risk prone & preparedness
- **NbS suitability -** what fits where?
- **Nature wellness -** Equity, Adequacy & Reliability

Outcomes

- Climate change impact mitigation & adaptation
- Planning of green infrastructure
- Greening priorities & strategies
- 2040 Urban plan of Dubai