



Australian Government



Digital Earth  
AUSTRALIA

# Digital Earth Africa: From Satellites to Insights

Dr Stuart Minchin,  
Geoscience Australia



# Developing the Australian Geoscience Data Cube

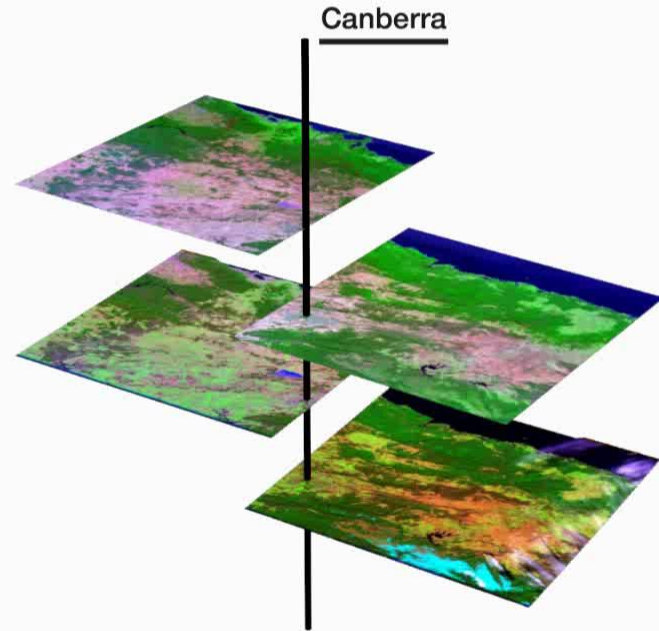
Orthorectification



Calibration



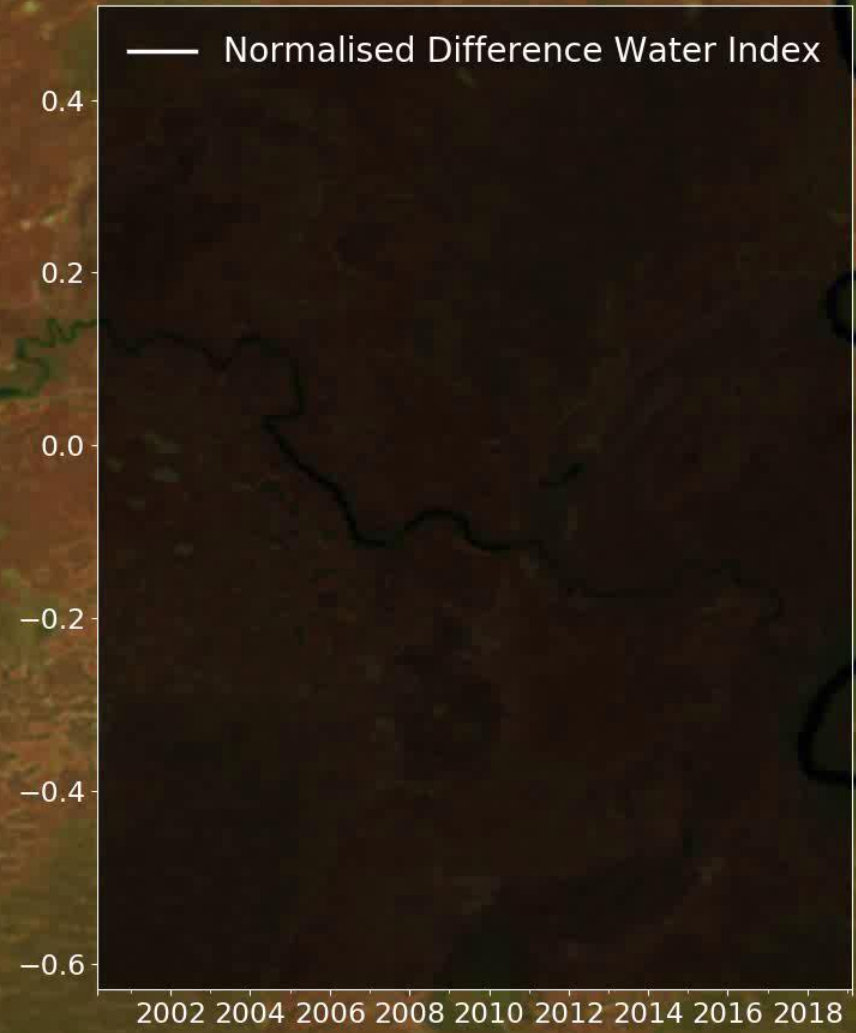
Time series







7 Jan 2001



6 CLEAN WATER AND SANITATION

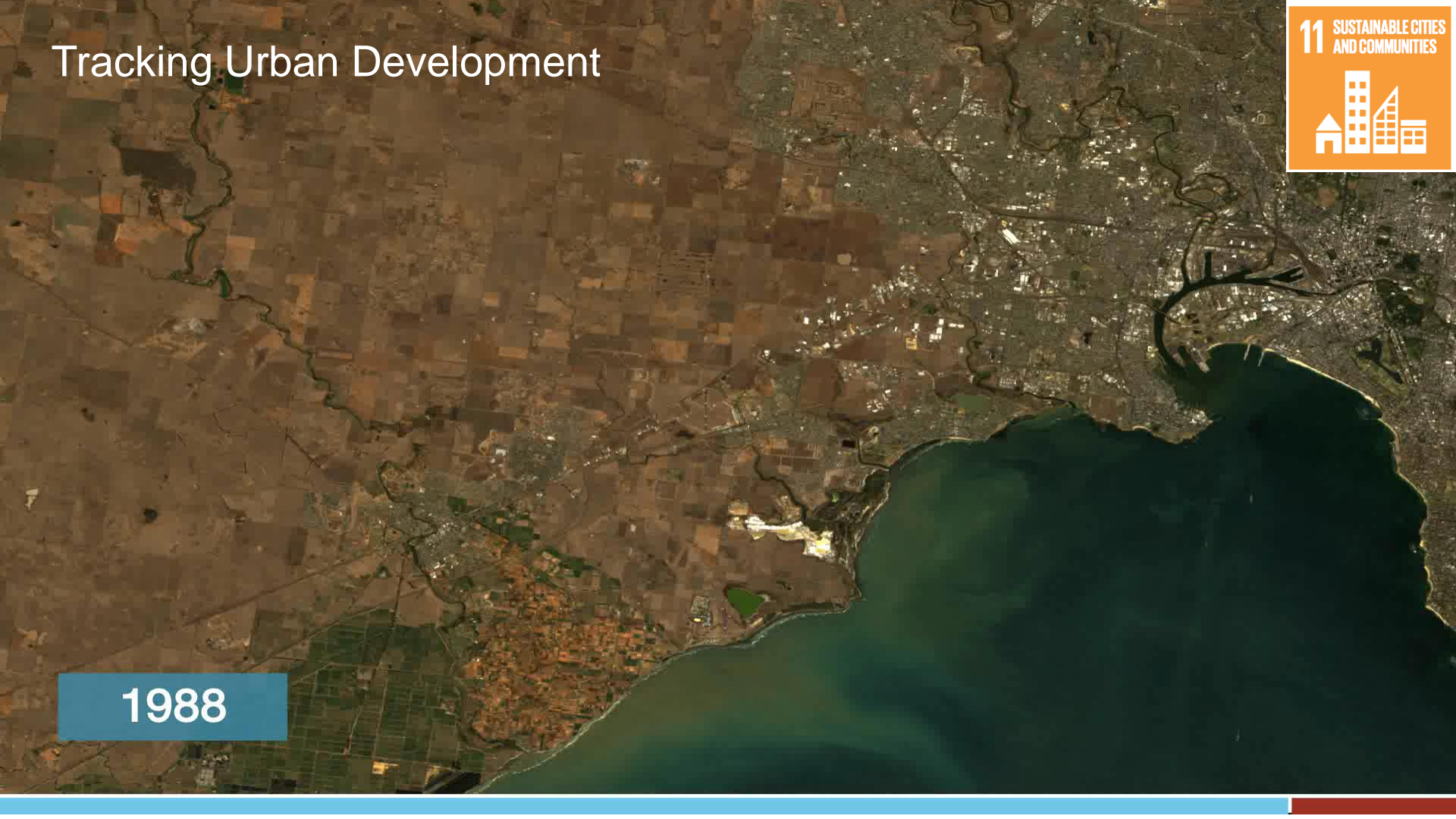


# Tracking Urban Development

11 SUSTAINABLE CITIES  
AND COMMUNITIES



1988





■ green

■ dry

■ soil

1988

2000

2006

2014





# Local Scale Water Quality Monitoring: Lake Burley Griffin

1987

2001

2013



325

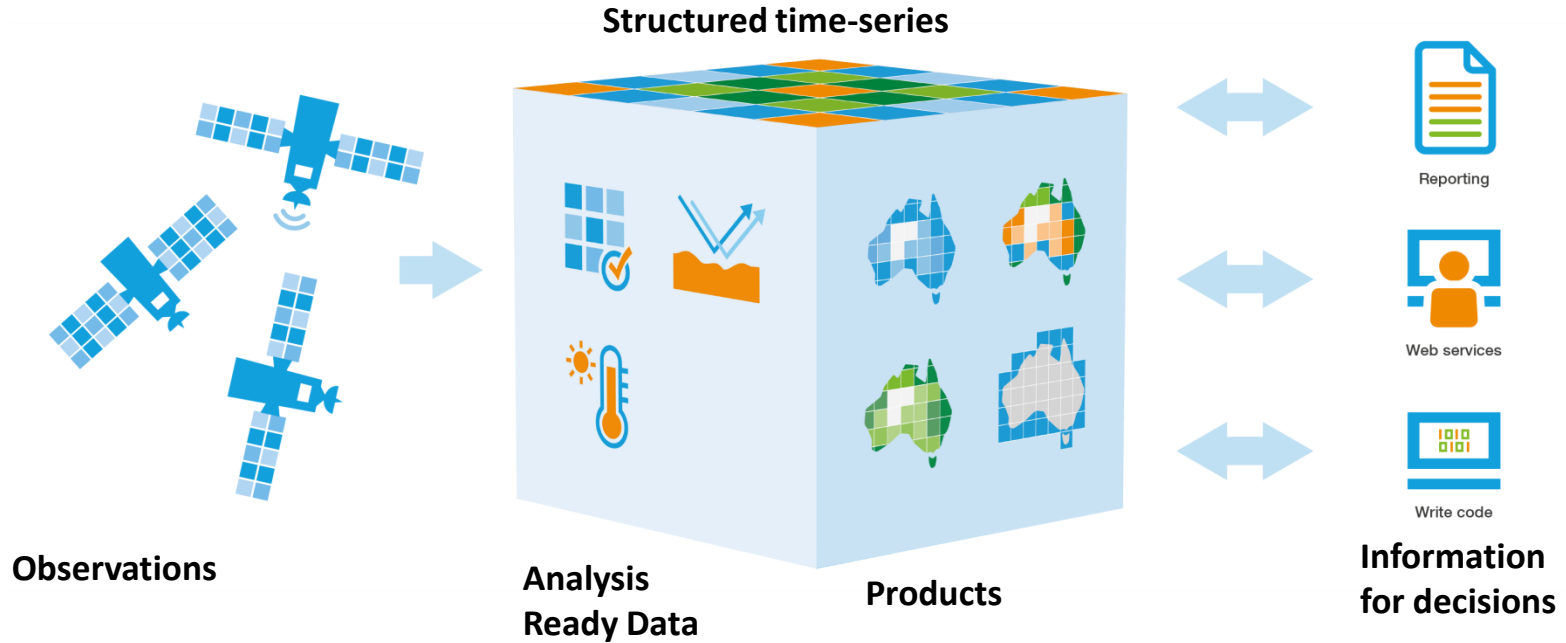
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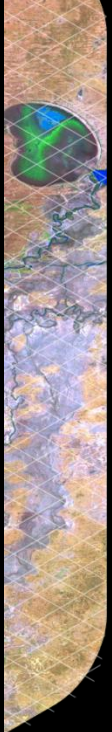






# Digital Earth Australia

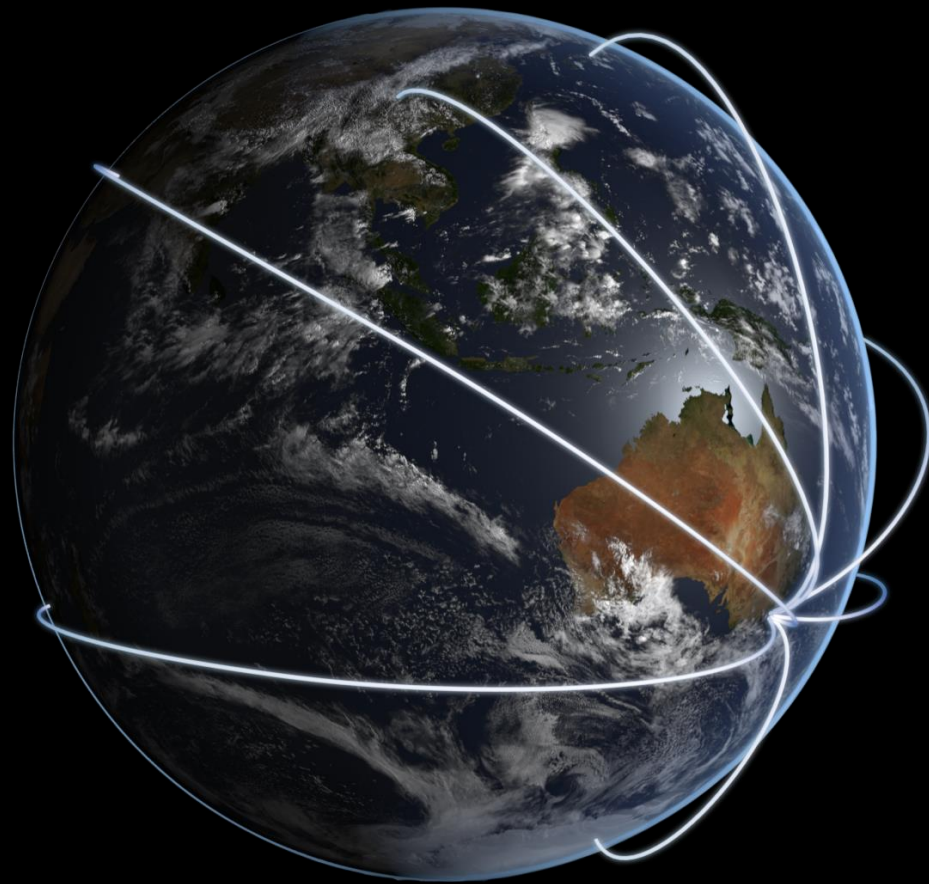




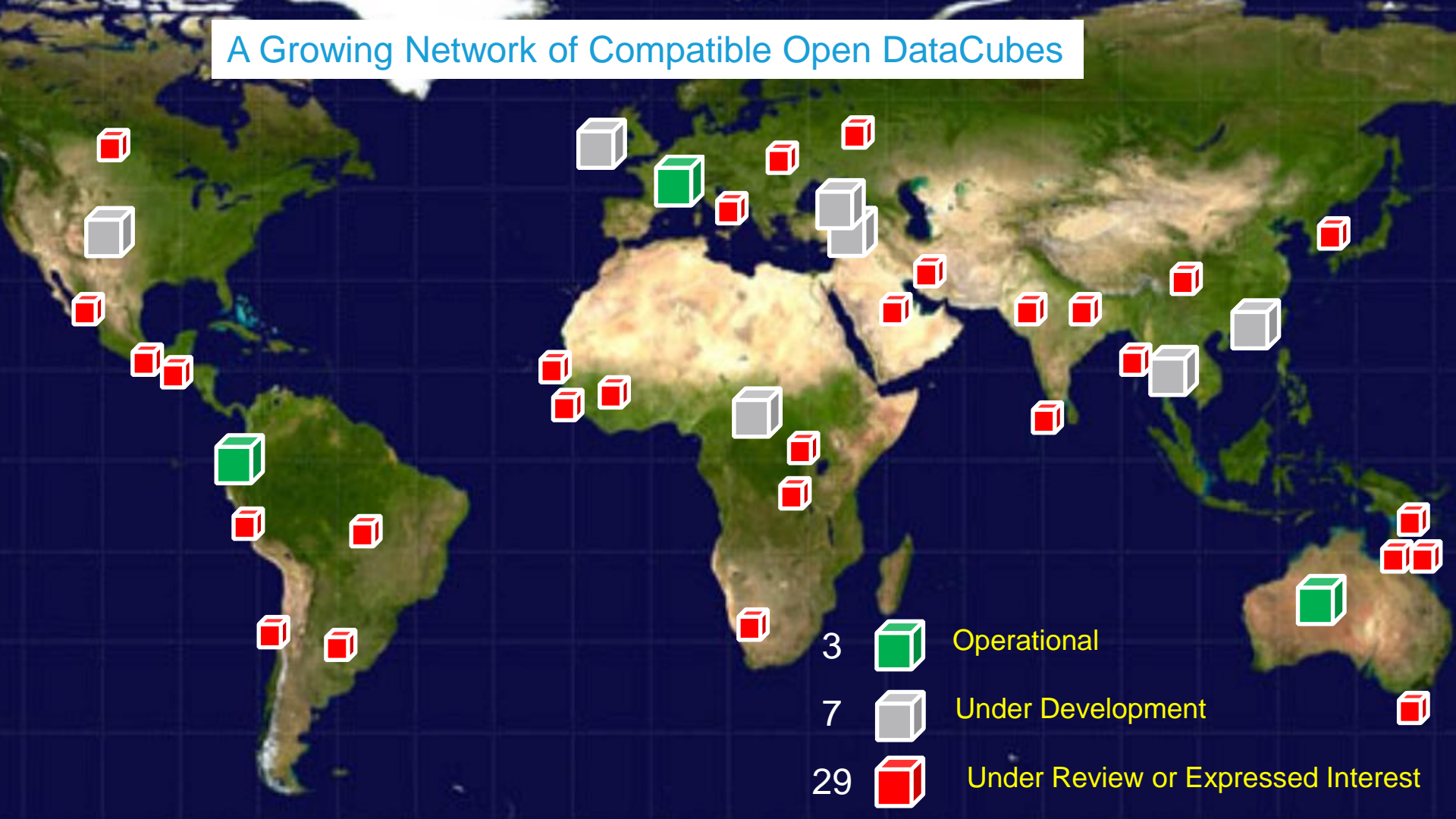
## Data Cubes for:

Africa, Antarctica, China, India,  
Europe, North America, ...

Connecting the EO, Spatial and Statistical  
world to support global SDGs?



# A Growing Network of Compatible Open DataCubes





Countries have expressed a need for better access and capacity for applying Earth observation data to national priorities, in relation to national development objectives and the 2030 Agenda.

Digital Earth Africa will provide an operational data infrastructure deployable in the cloud or locally that gives the government control over its management. The project will support a multi-stakeholder and data ecosystem approach.





## Countries

- Tanzania
- Kenya
- Senegal
- Sierra Leone
- Ghana
- Uganda
- South Africa
- Rwanda
- Botswana
- Cote d'Ivoire
- Malawi
- Gabon
- Ethiopia

## Use Cases

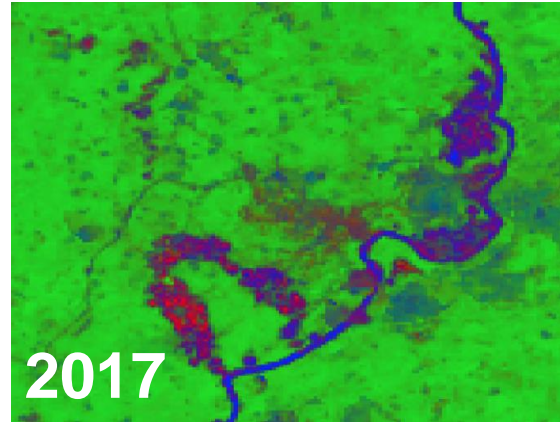
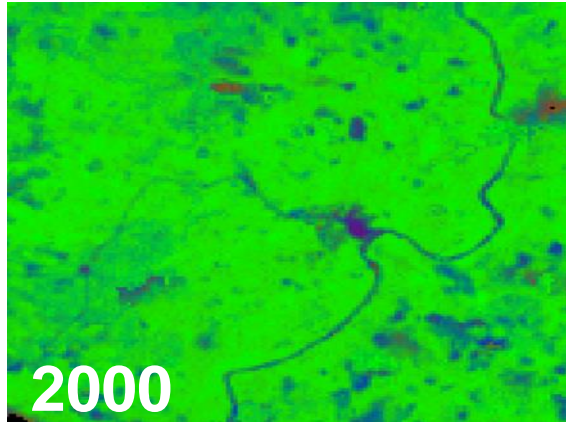
- Agriculture
- Land degradation
- Water quality and extent
- Disease/pests
- Deforestation
- Illegal mining
- Urban growth
- Flood risk
- Unplanned settlements
- Wildfires
- Mangroves
- Landslides
- SDG indicators

## Stakeholders

- Geoscience Australia
- Group on Earth Observations (GEO)
- Committee on Earth Observations (CEOS)
- World Economic Forum
- South Africa National Space Agency (SANSA)
- Kenya Office of the Deputy President
- Global Partnership for Sustainable Development Data
- CGIAR
- UNECA
- Africa Union
- AfDB
- RCMRD
- AGRHYMET

Phase 1 Steering Committee

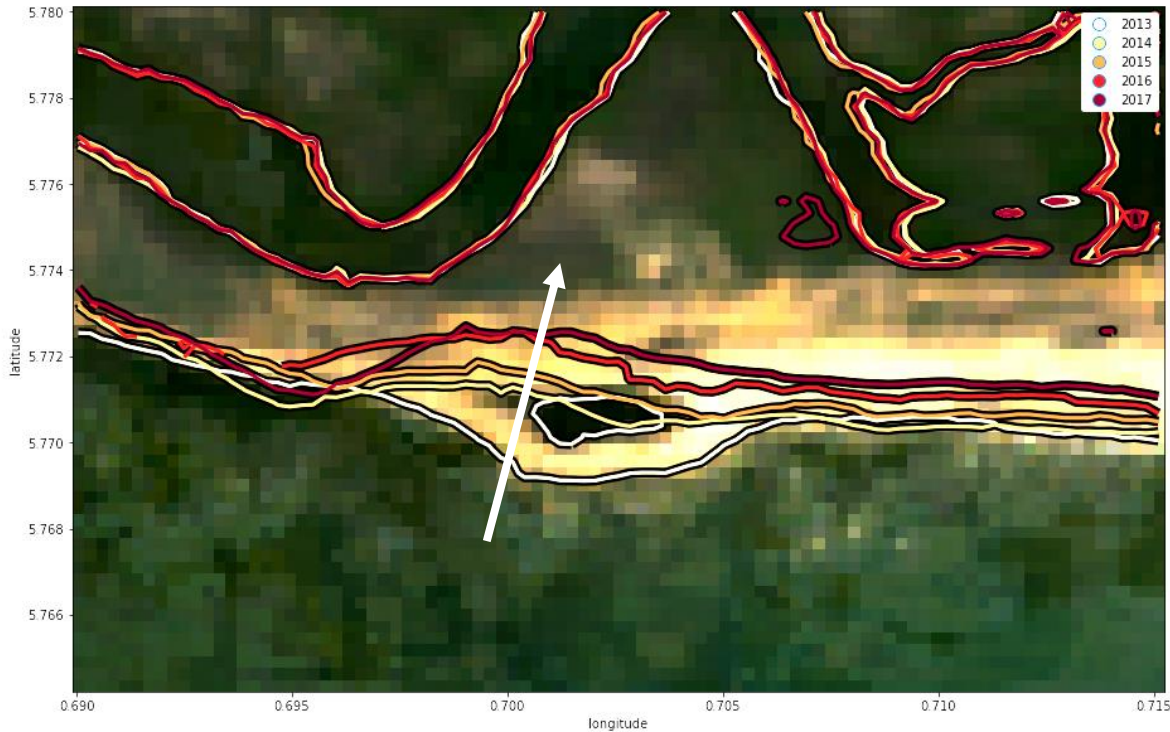
# Illegal Mining: Ankobra River, Ghana



**There is a 13% loss in dense vegetation from 2000 to 2017. These illegal mines have a significant impact to land and water resources**

# Coastal erosion in Ghana

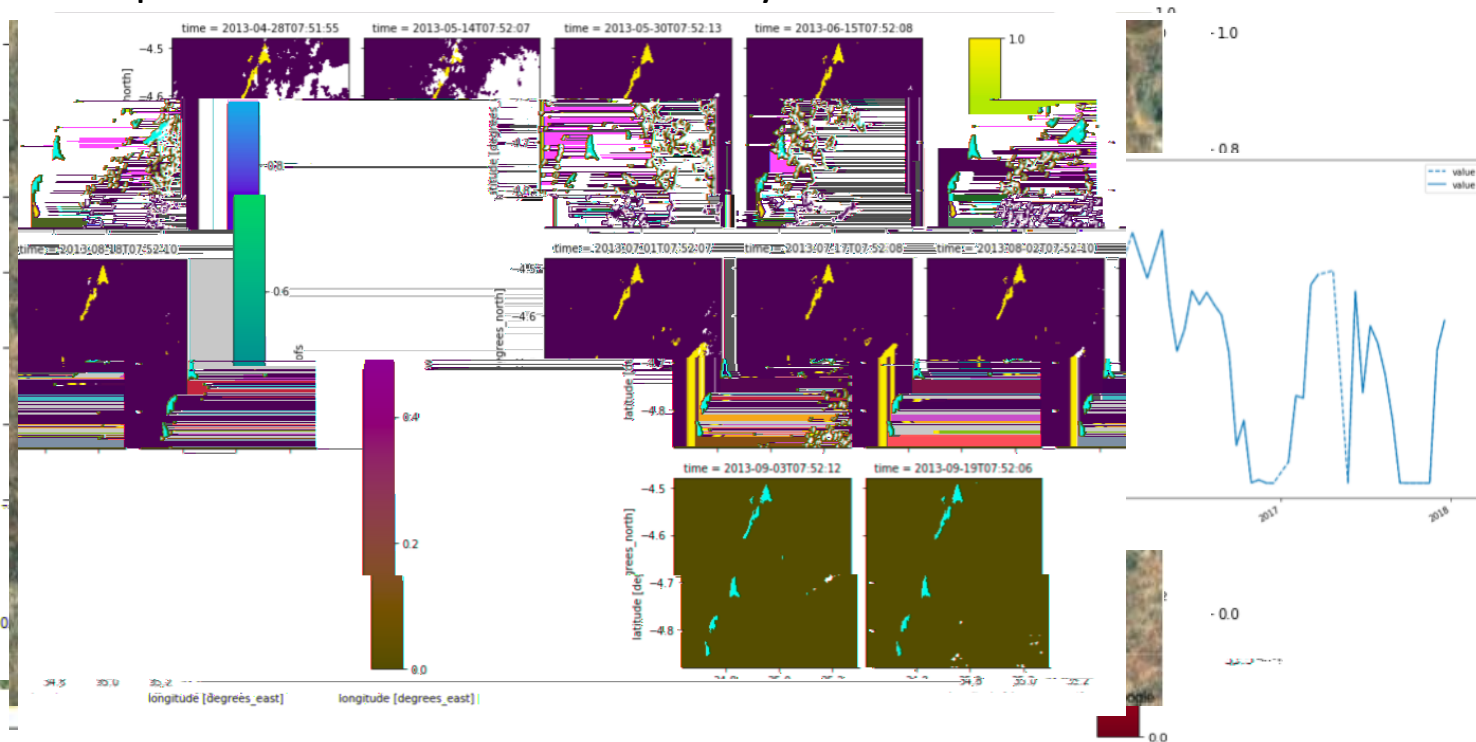
Sub-pixel resolution 2013-17 annual coastlines mapped from Landsat



> 500 m of coastal erosion (100 m / yr) at Fuveme village ([BBC news](#))

# Drought resilience workflow- Tanzania

## 2. Synthesis of satellite data to water body

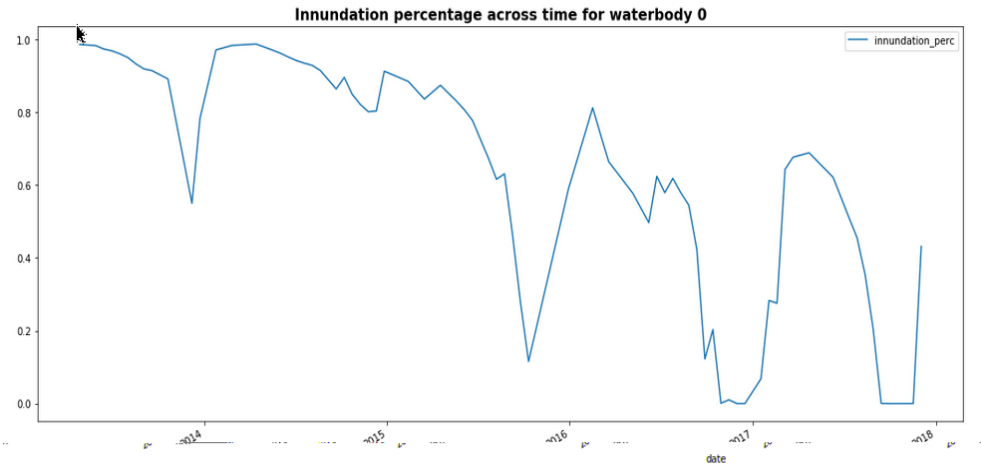
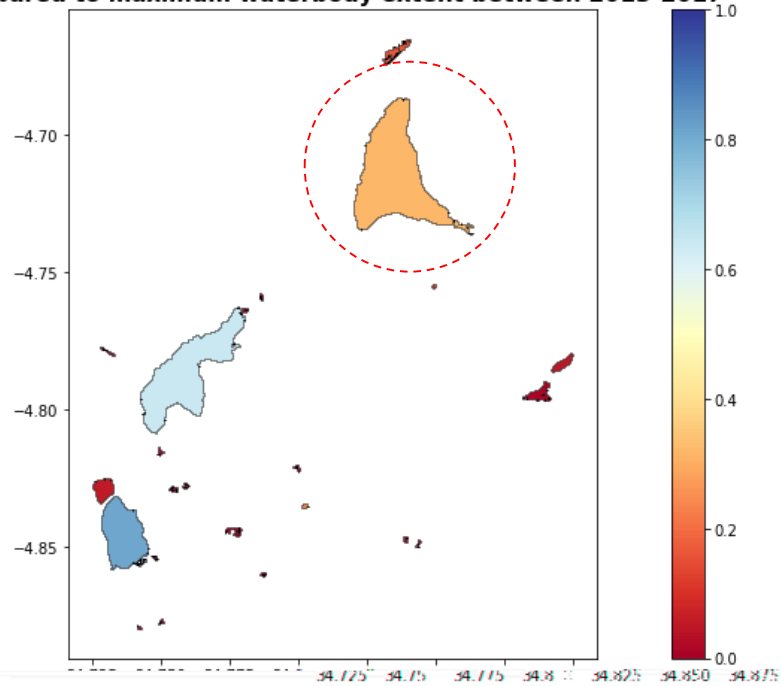




# Drought status for Tanzania

Inundation percentage compared to max waterbody extent

Average inundation percent for 2017-11-01 to 2017-12-19 compared to maximum waterbody extent between 2013-2017

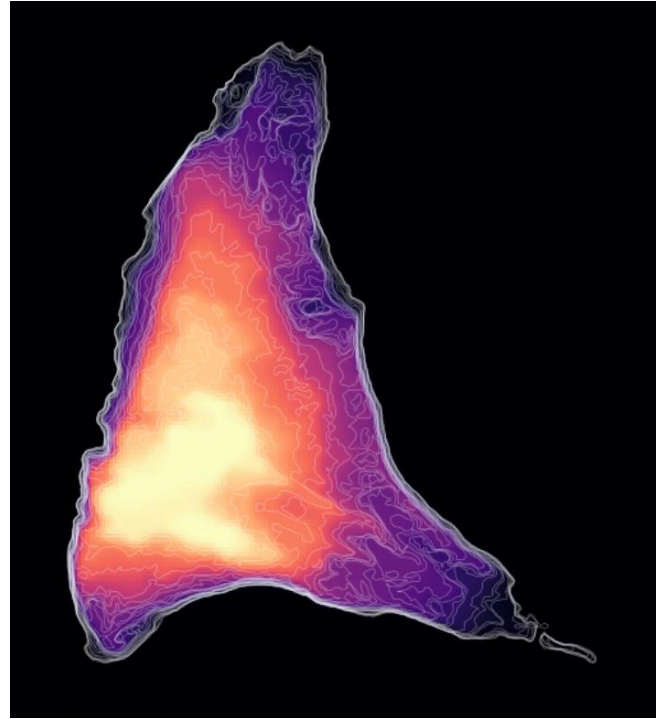


# Mapping relative waterbody topography

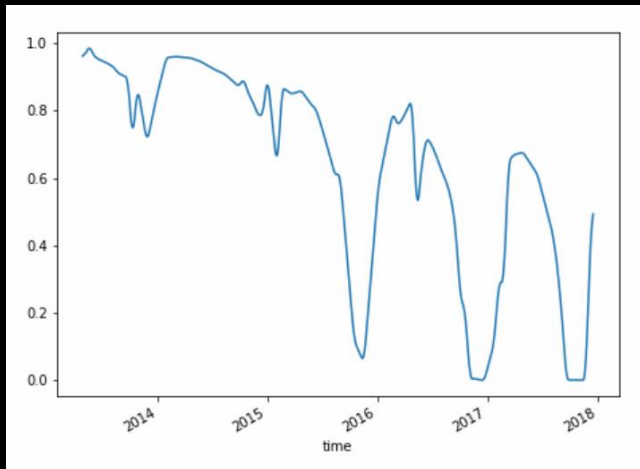
Inundation % contours



Interpolated 'relative' topography



# Percent inundated, 2014-18



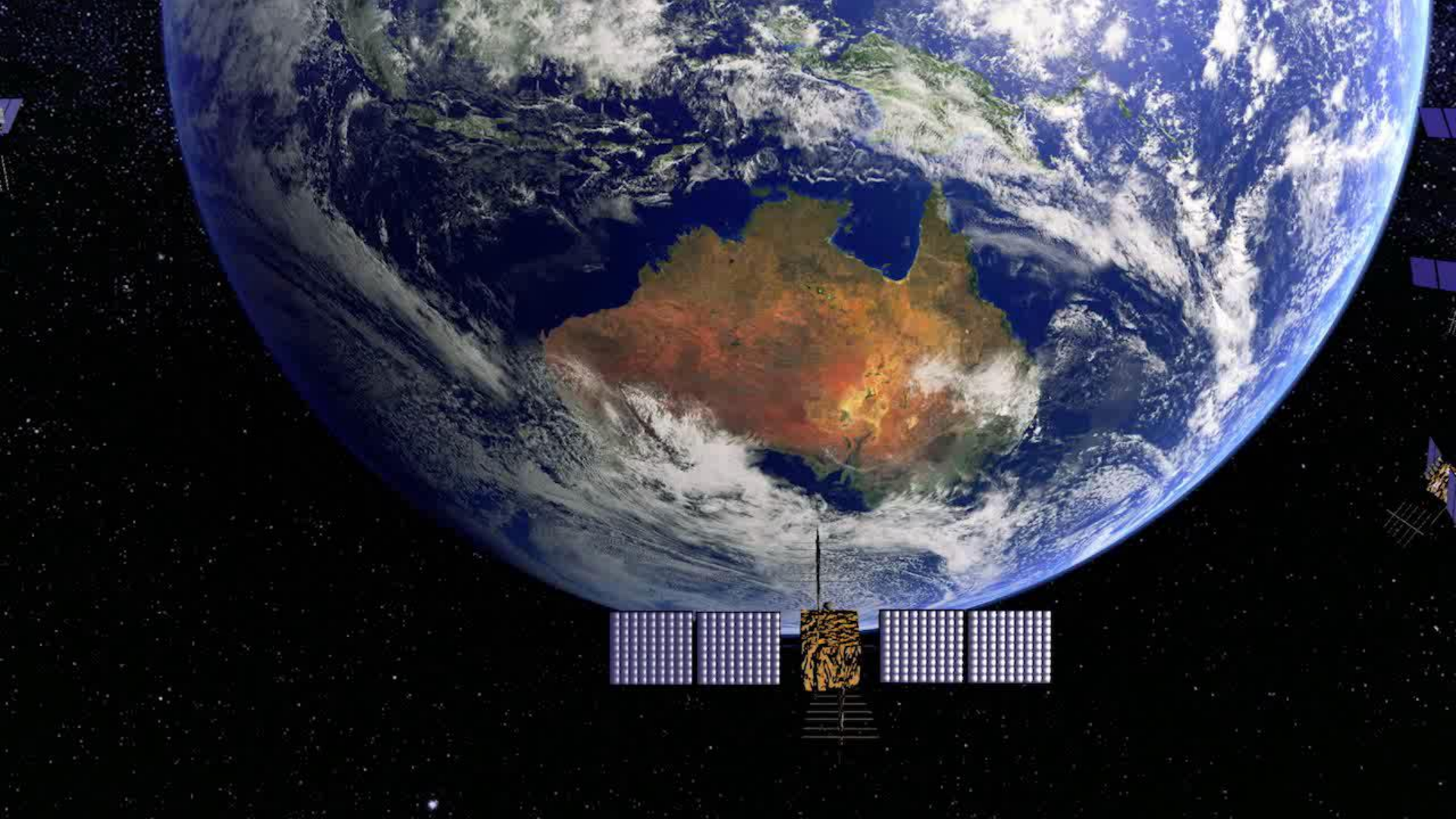
## Operational Data Cube for all of Africa



- Operational Data Cube for whole of Africa
  - Regular decision ready product / not research
  - Automated, run for every pixel for entire continent
  - Levering off other ODC developments
- New institutional home- (Host TBD)~30 staff
- Flexible cloud/HPC Infrastructure
- Funded for production of product and capacity building/App development
- Multilateral effort, not owned by one country
- Products free and open and available to every African









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[www.digitalearthaustralia.org](http://www.digitalearthaustralia.org)

