

Global Rangelands Monitoring System Overview and Update

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LAND and WATER
www.csiro.au



GEOGLAM Rangeland and Pasture Productivity

Goal: To provide the global community the means to regularly **monitor** the condition of the world's **rangelands and pasture** lands on a routine basis, and assess their **capacity to sustainably produce animal protein** in real-time, at **global, regional and national** levels

Drivers:

- Grazing Land Management & Policy
- Rangeland conservation and soil erosion control
- Drought assessment and monitoring
- Food security, countries at risk
- Livestock weight gain modelling
- Livestock markets

Users:

- International: Global food security, sustainability and global assessments (eg AMIS, FAO, Aid Agencies, NGOs)
- Governments: National stats and carrying capacity; economic development, trade and market development, food security, environmental protection
- Regional: Sustainable rangeland/pasture & herd management

GEOGLAM RaPP Map

Goal: A tool for **visualising** and **interrogating** in an interactive and efficient way information about the **condition of rangelands and pastures** and the **livestock production systems** they support, at global and regional scales.

Time series of vegetation (from RS and models):

- Rangeland/pasture condition
 - Vegetation cover, including fractions of green and dry veg and bare soil
 - tree/ grass decomposition
- Vegetation growth and biomass (feed)

Vegetation type:

- Vegetation structure
- Land use and land cover, livestock production systems

Climate :

- Rainfall time series
- Soil moisture time series

Livestock

- Livestock densities
- Biomass use, CO₂ eq emissions, feed efficiencies
- Weight gain, herd dynamics

Other?

Monitoring System (RaPP Map)

<http://map.geo-rapp.org/> (under development)

Vegetation Fractional Cover:

Fractions of green vegetation, dry vegetation, bare soil.

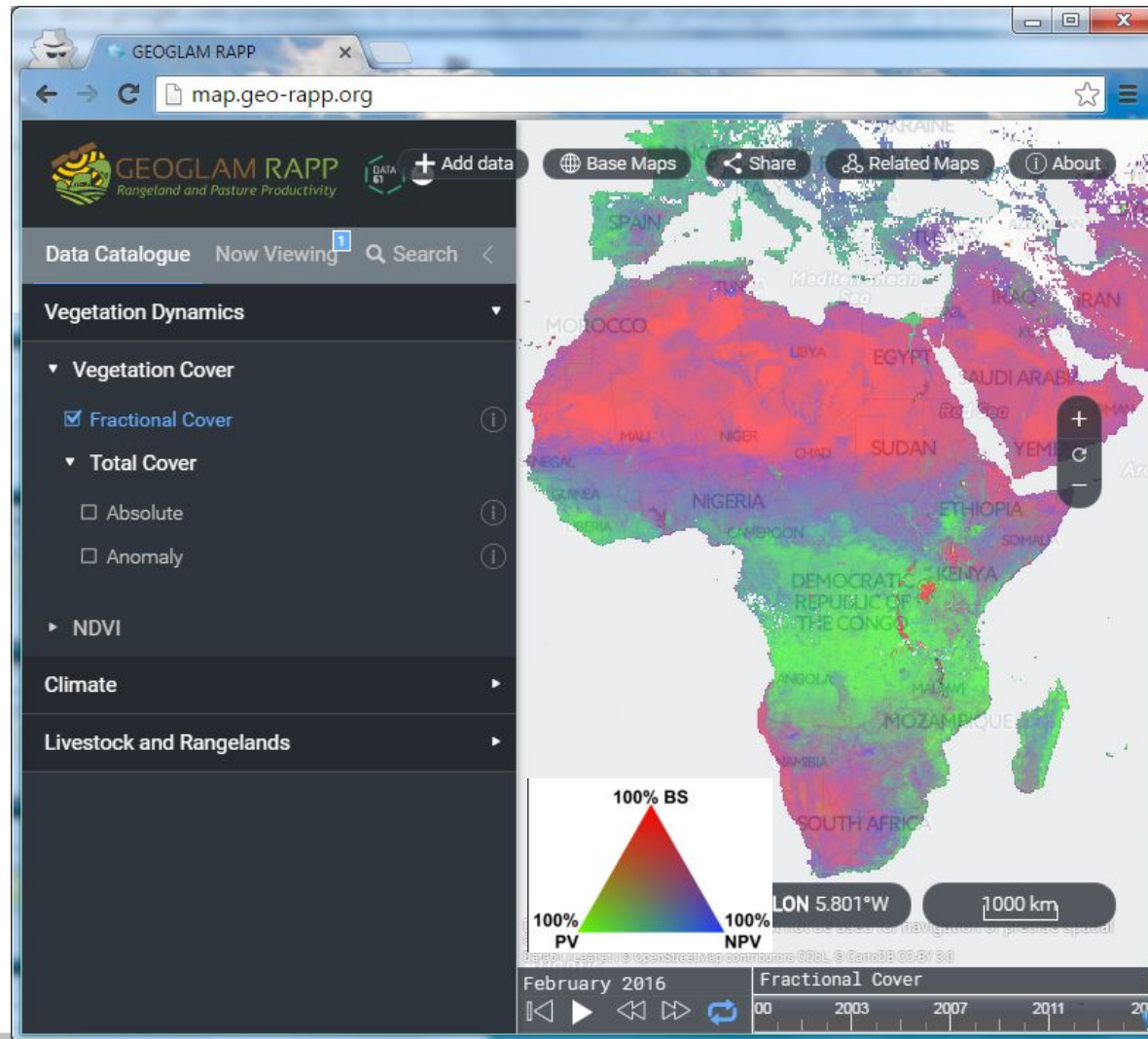
MODIS based

Global, Monthly, 2000- present

5km

500m in Sep 2016

30 meter potentially doable



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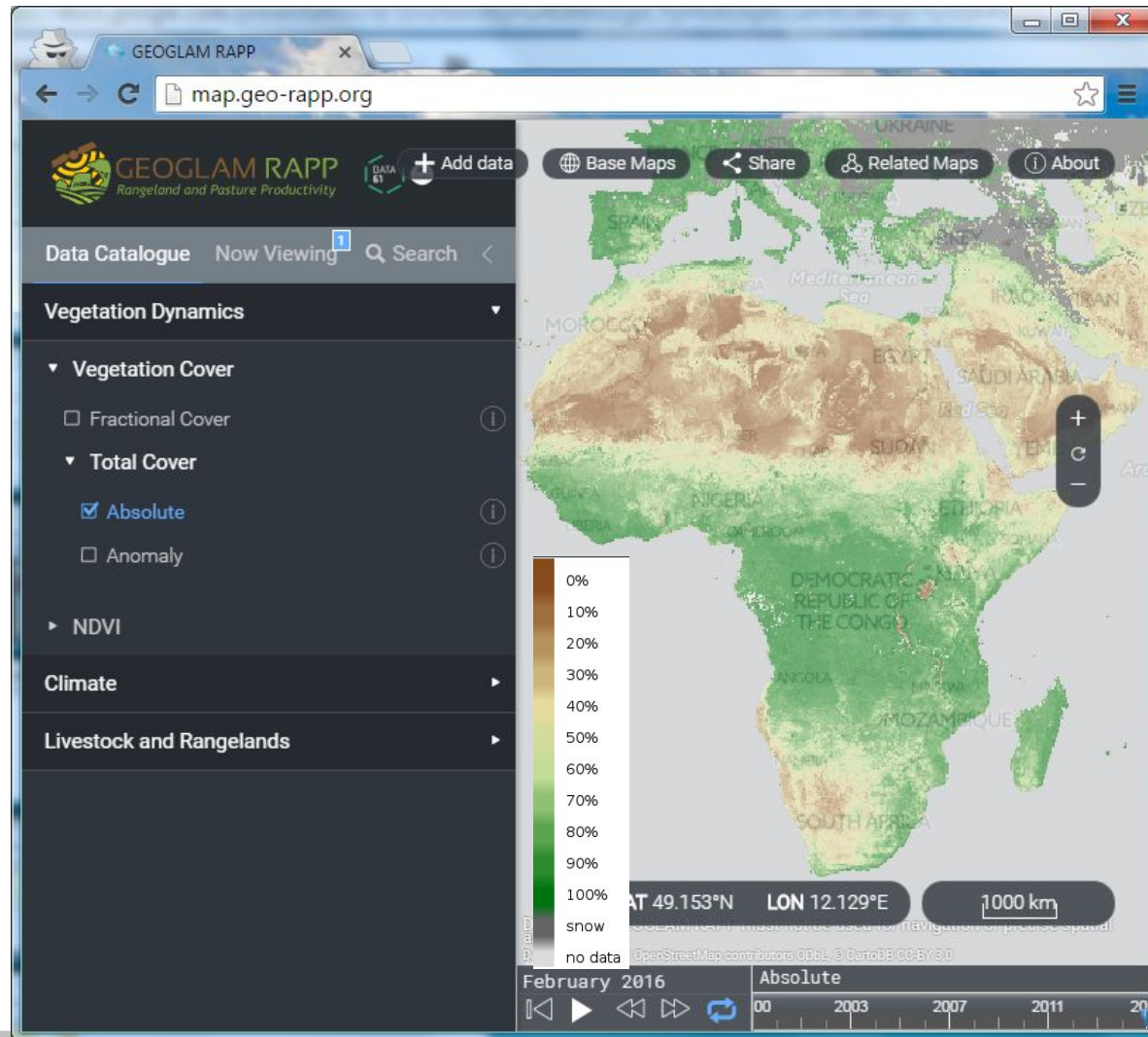
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Total Veg Cover (green+dry vegetation)



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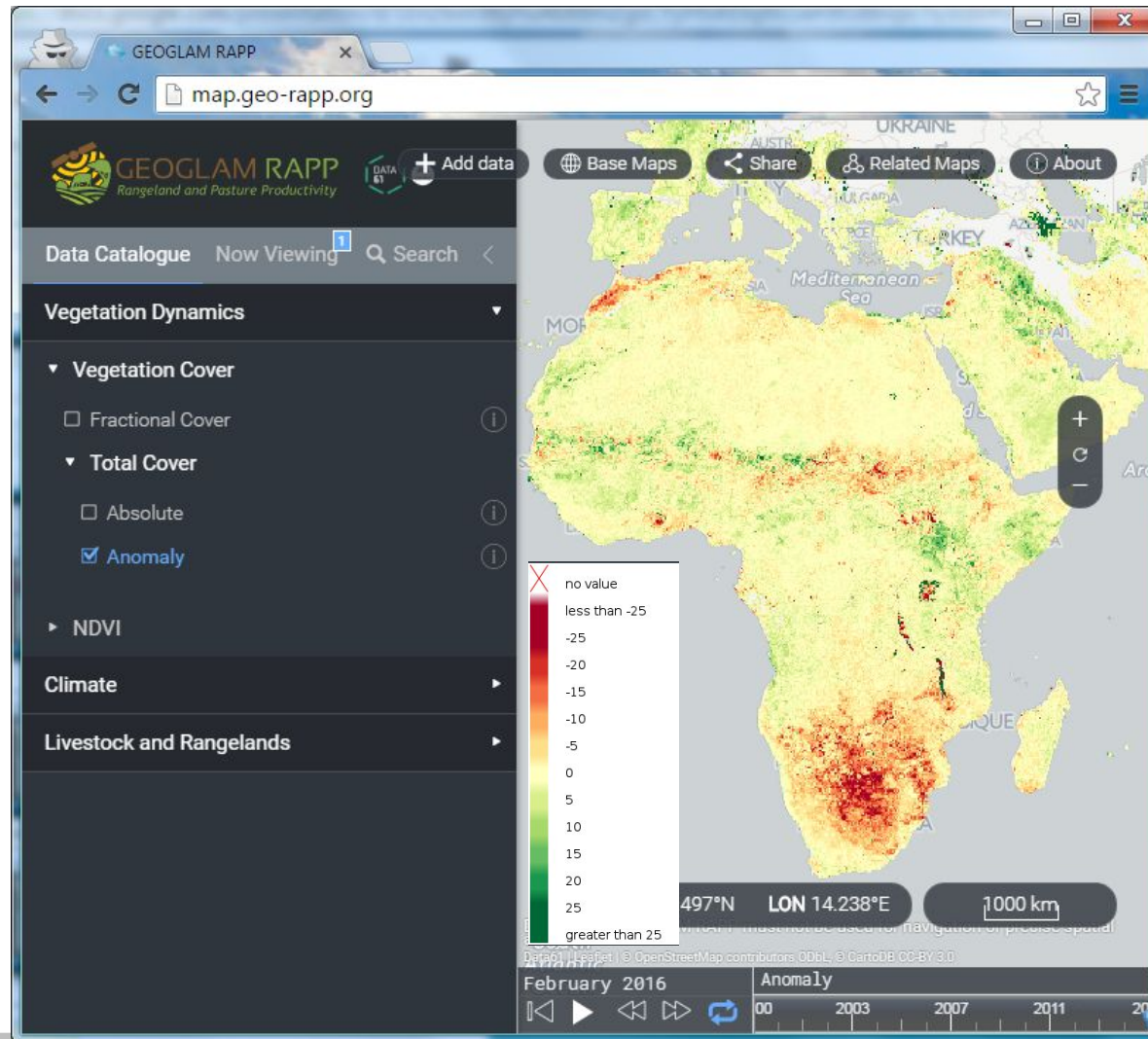
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Total Veg Cover (green+dry vegetation)

Total Veg Cover anomaly
(difference with long-term mean)



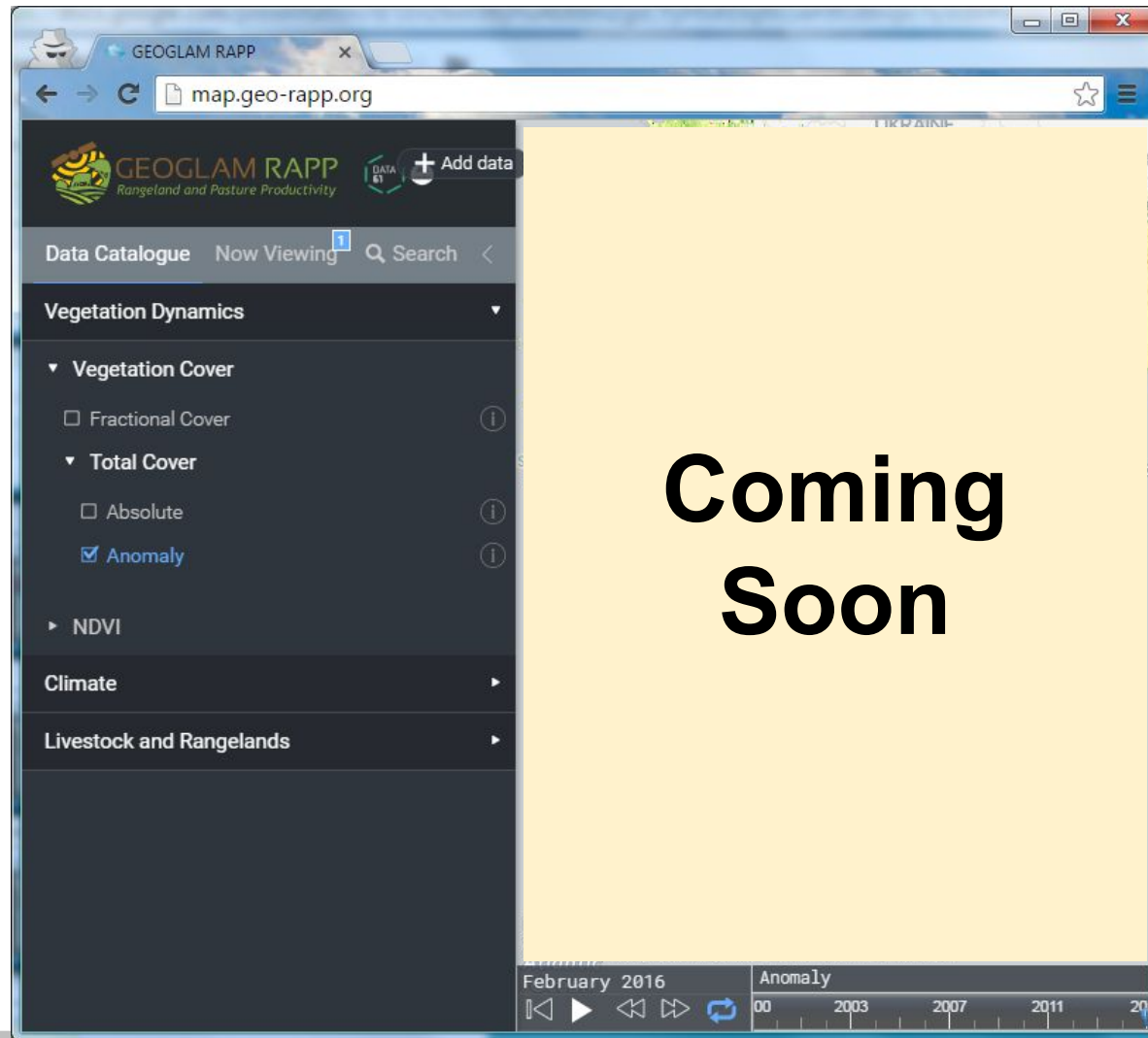
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Vegetation GPP, NPP and biomass:

Under development (C-Store model)

Global, 500m, 2000-present



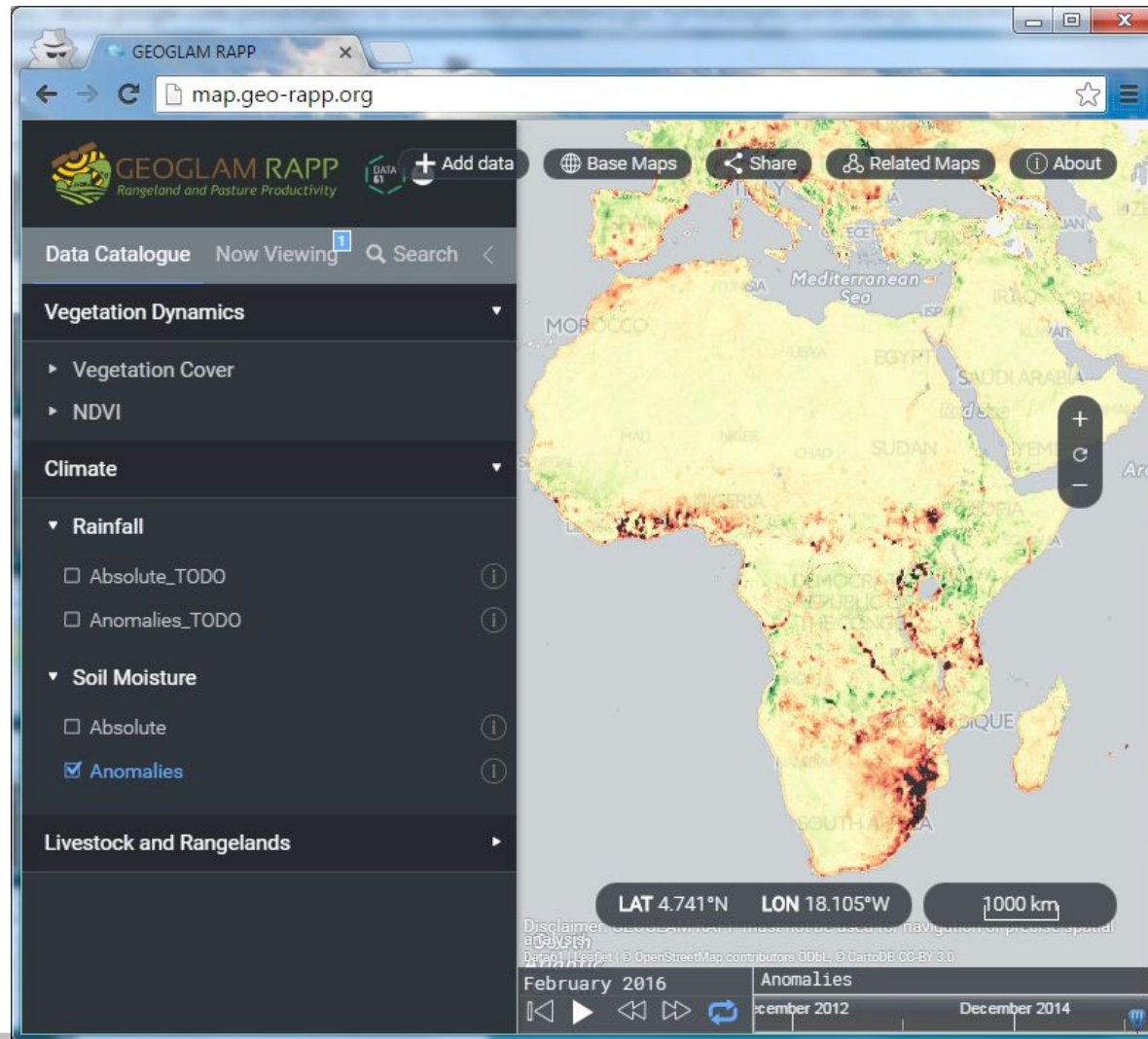
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Climate:

Rainfall and rainfall anomalies
(under development)

Soil moisture and anomalies
(current 10km, 5km under
development)



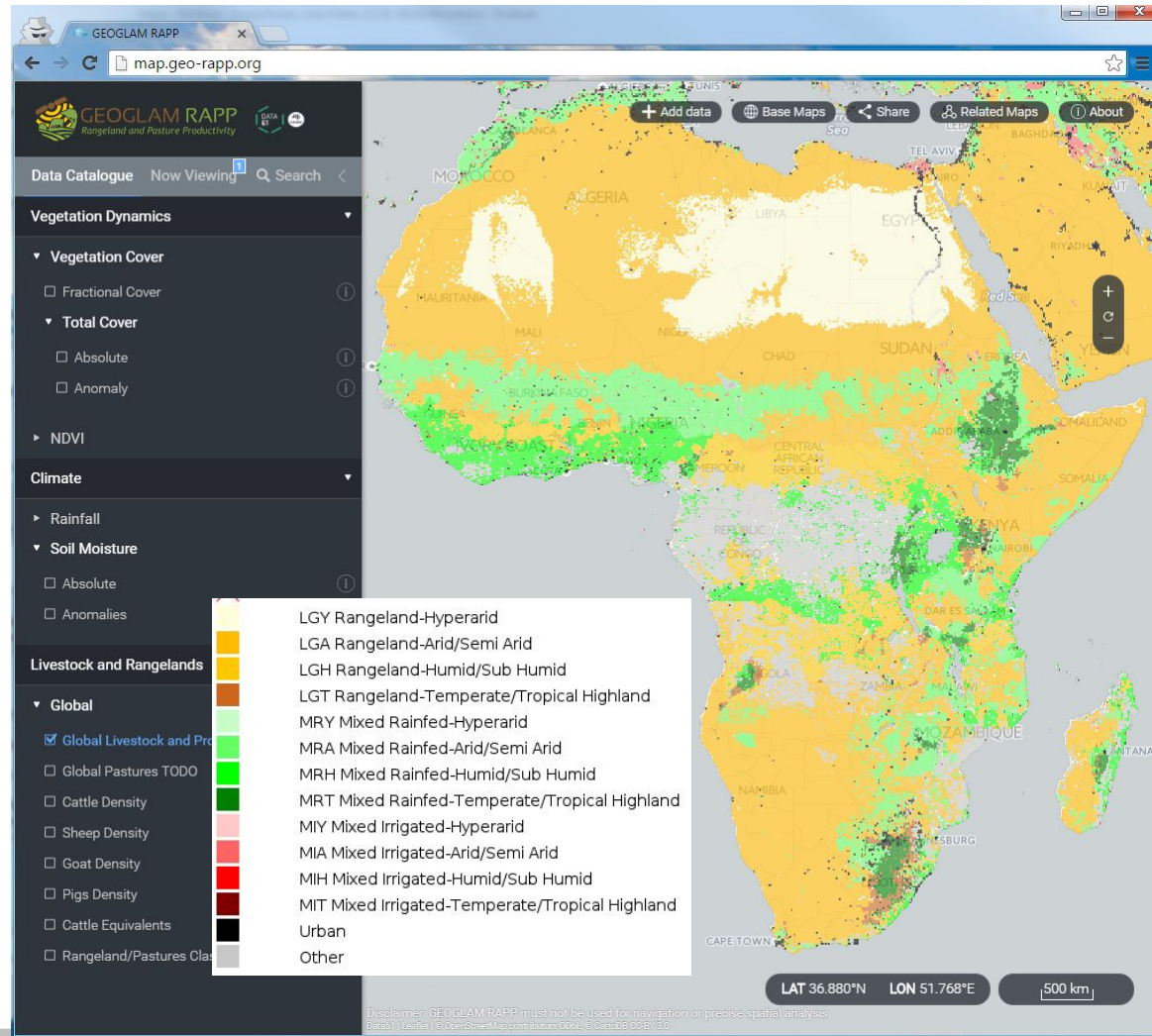
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Land use/ Land Cover:

Global Livestock Production Systems (Robinson et al, 2011, FAO)

Global, 1km



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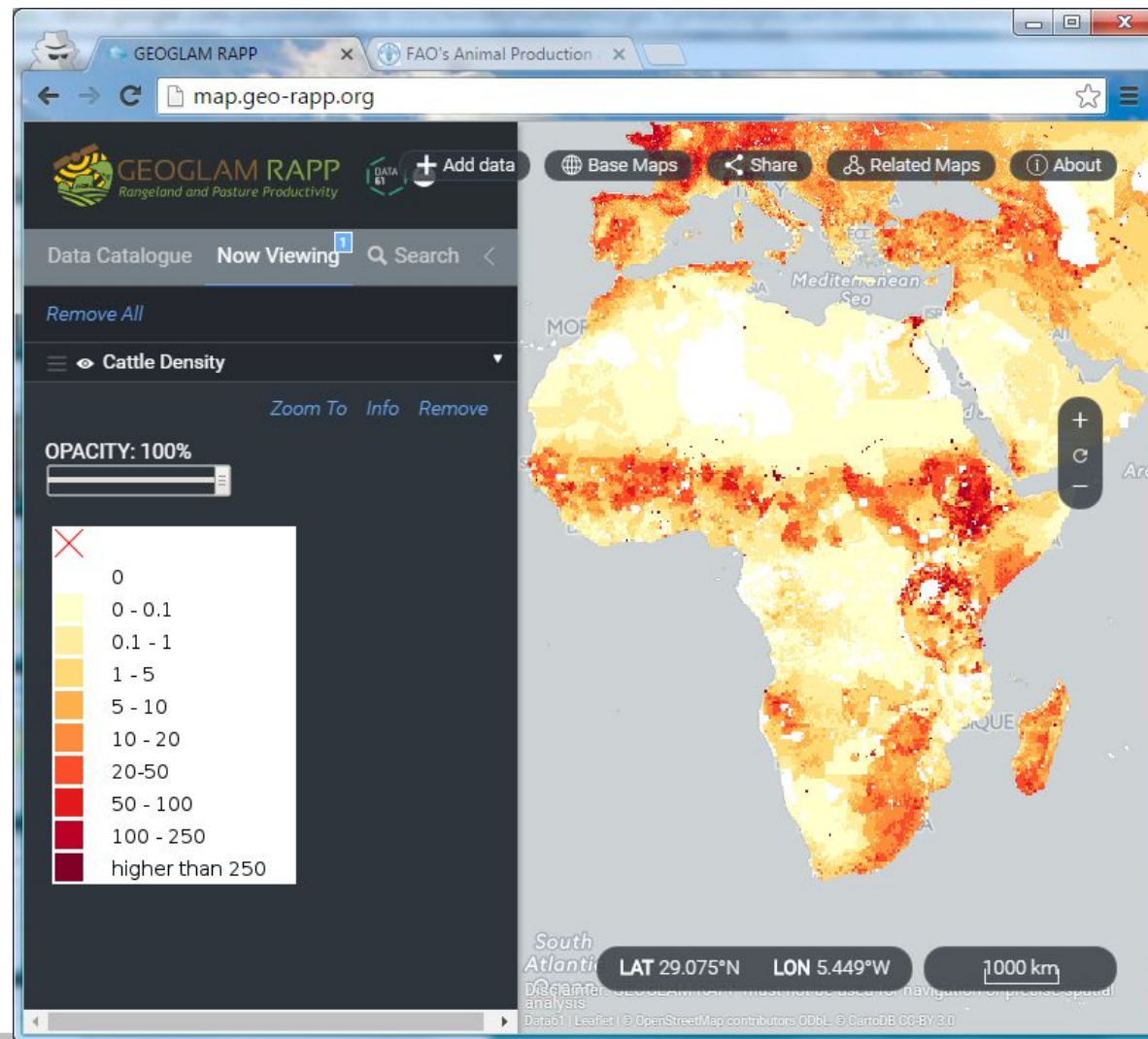
Global Livestock Production Systems (Robinson et al, 2011, FAO)

Global, 1km

Livestock densities:

Cattle, Sheep, Goats, Pigs (Robinson et al, 2014)

Global, 1km (driven by sub-national statistics and modelling)



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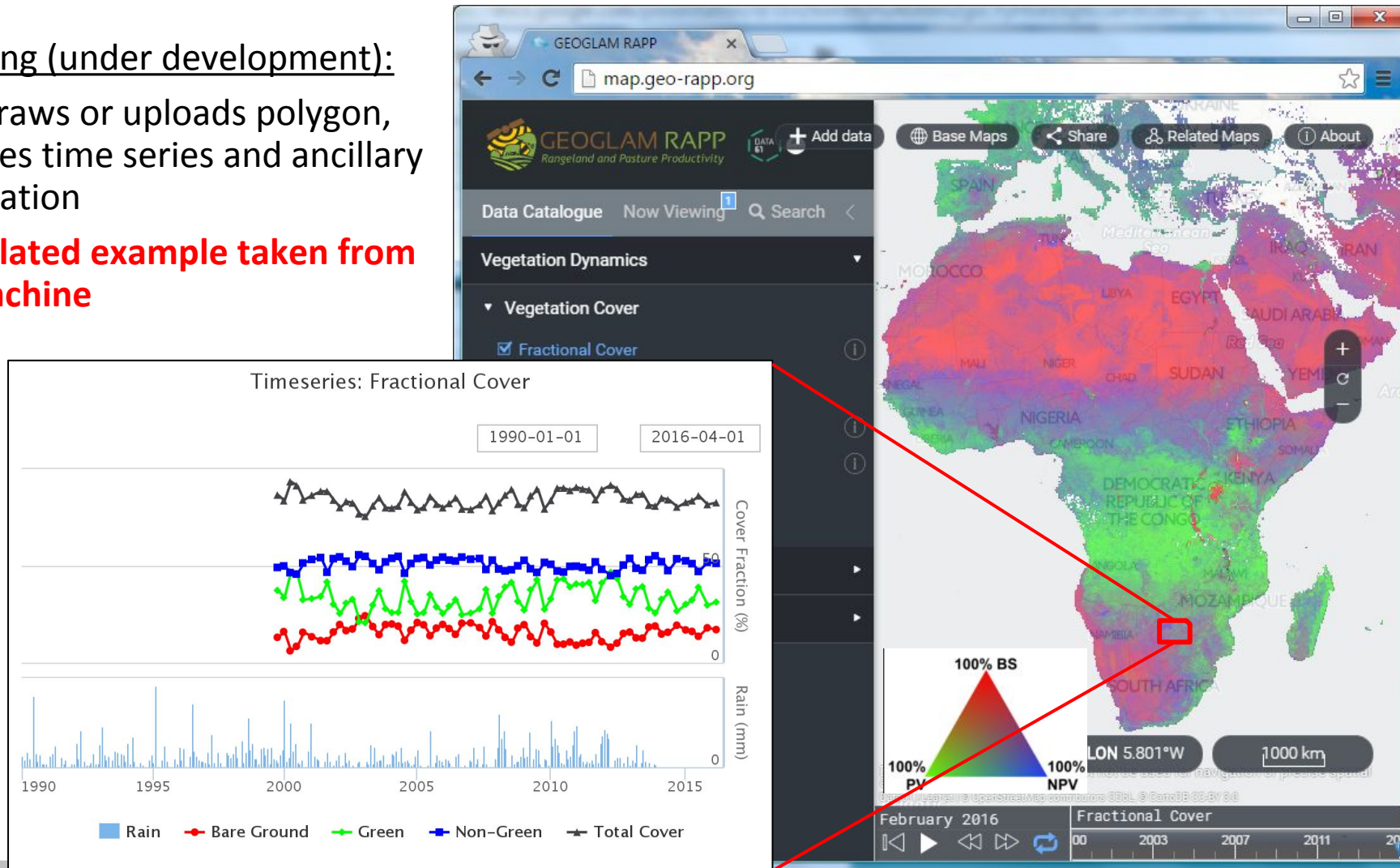
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Querying (under development):

User draws or uploads polygon, retrieves time series and ancillary information

* **simulated example taken from Vegmachine**



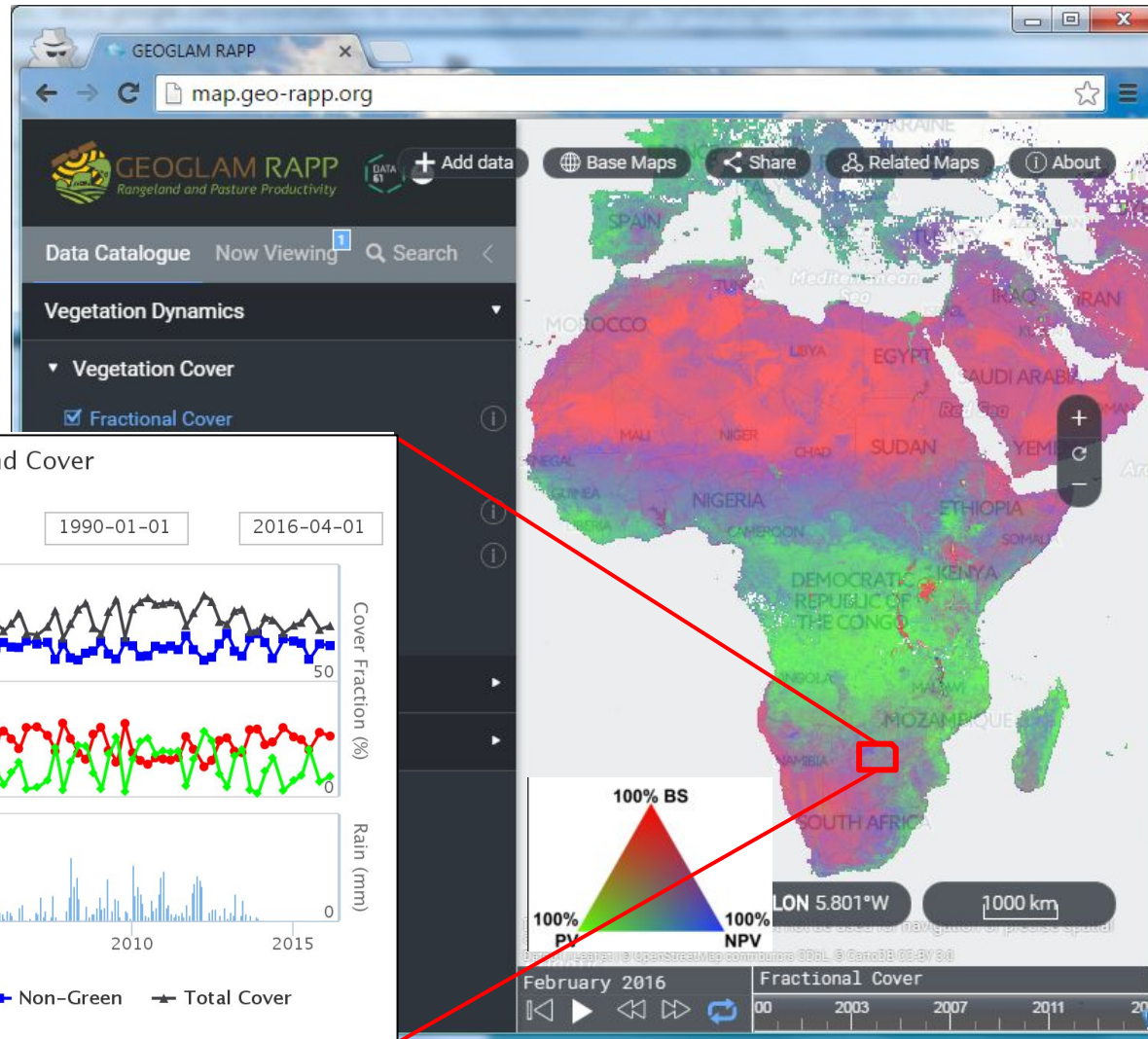
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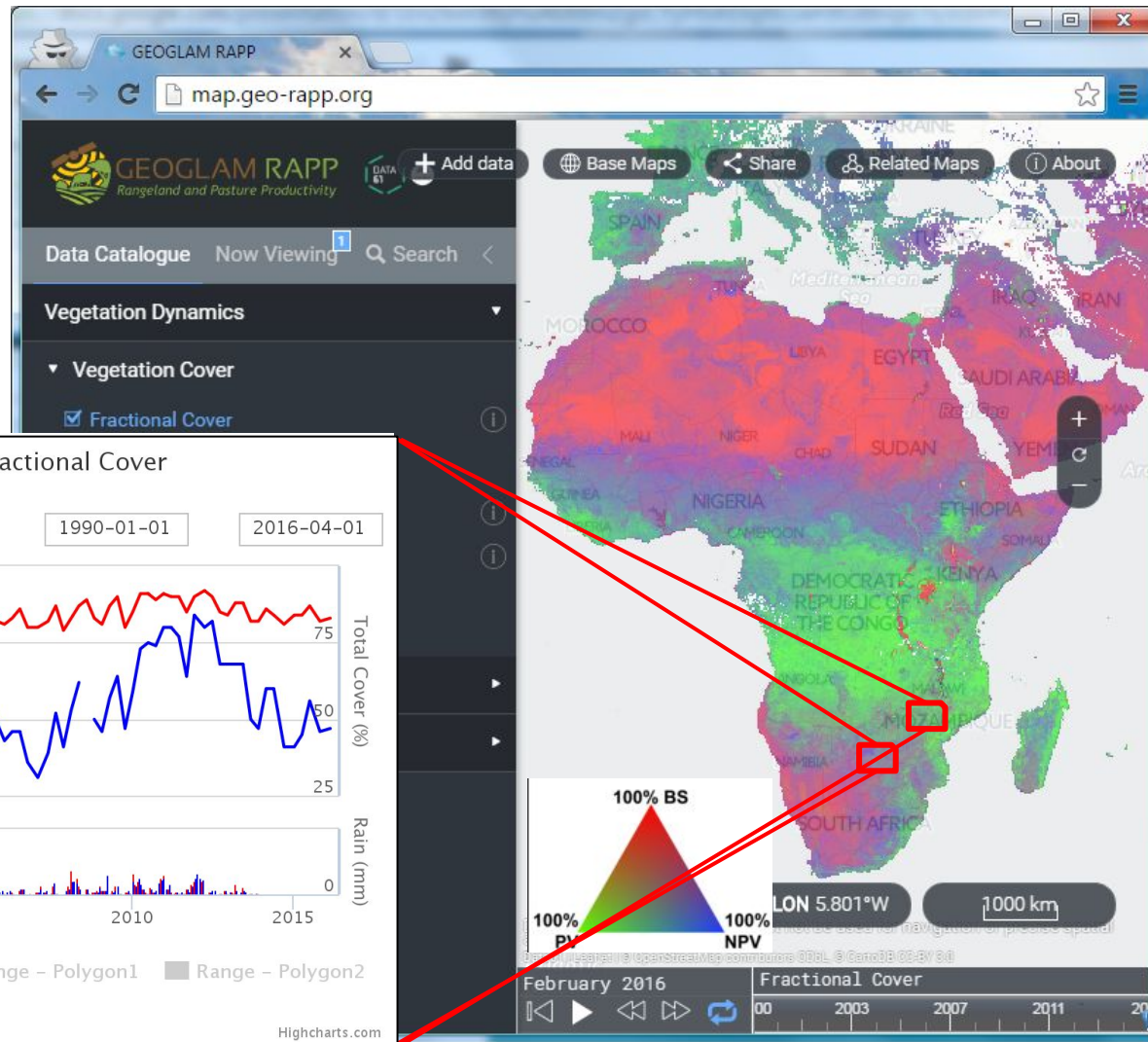
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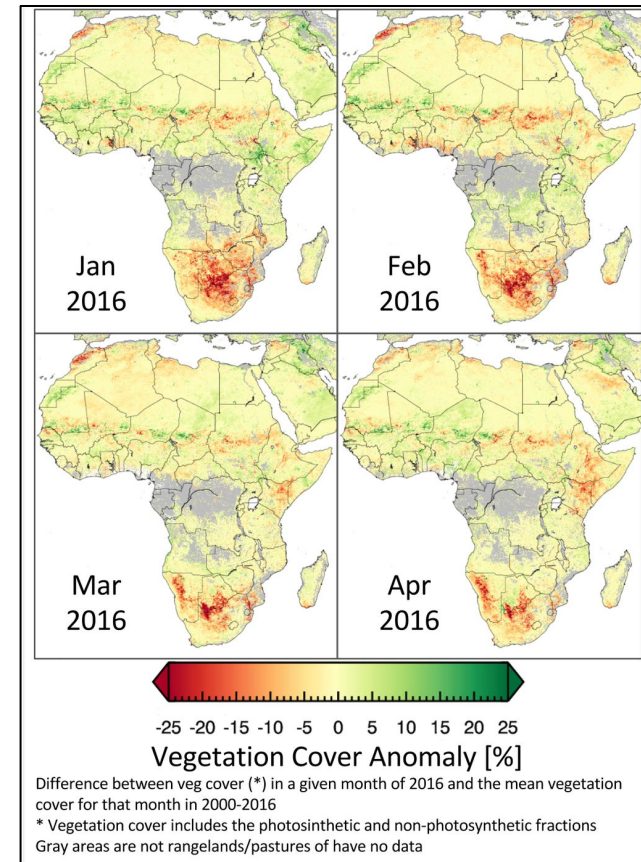
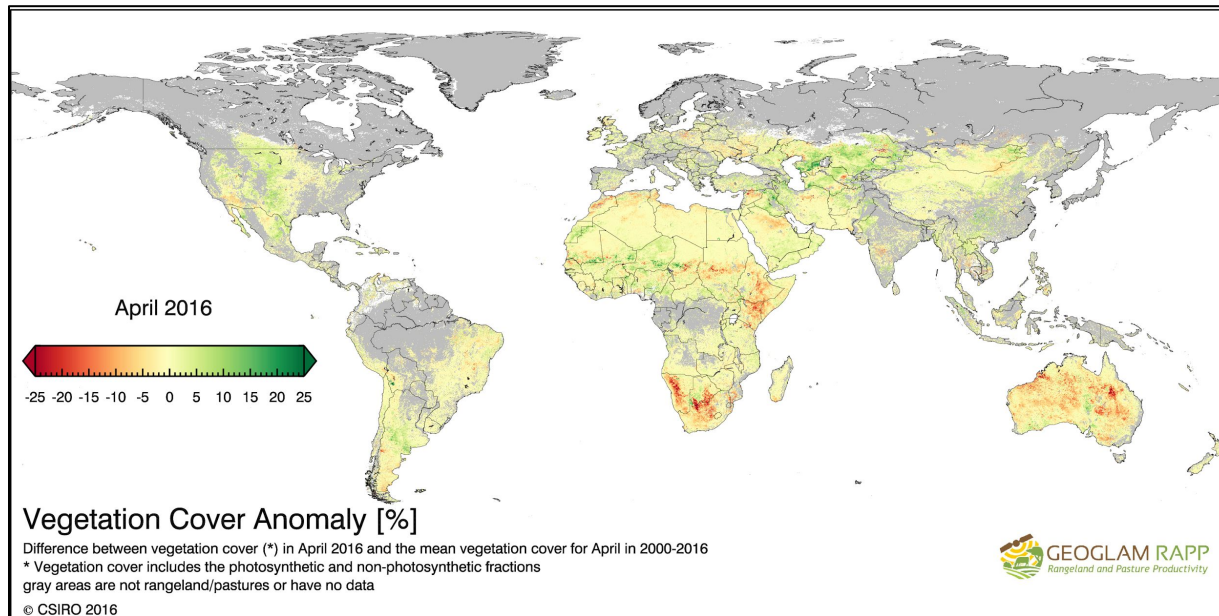
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Monitoring System (reporting)

RAPP products

- **Vegetation Cover Anomaly** (map produced every month and published on RAPP website and twitter account):





Spyglass, QLD, Australia, credits Michael Schaefer CSIRO

Thank you

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