Help us map ecological condition change in South Africa's savannas

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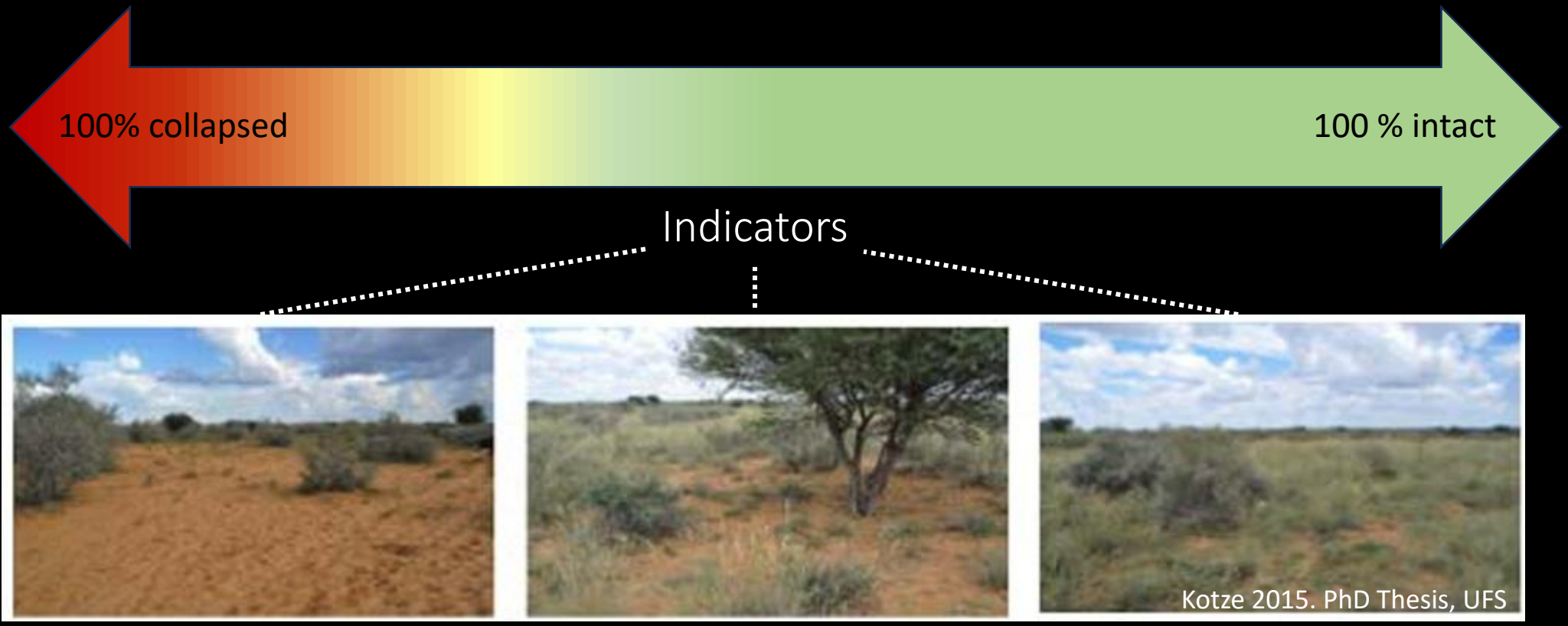
Hoffman et al. (2019) *Antropocene* 25

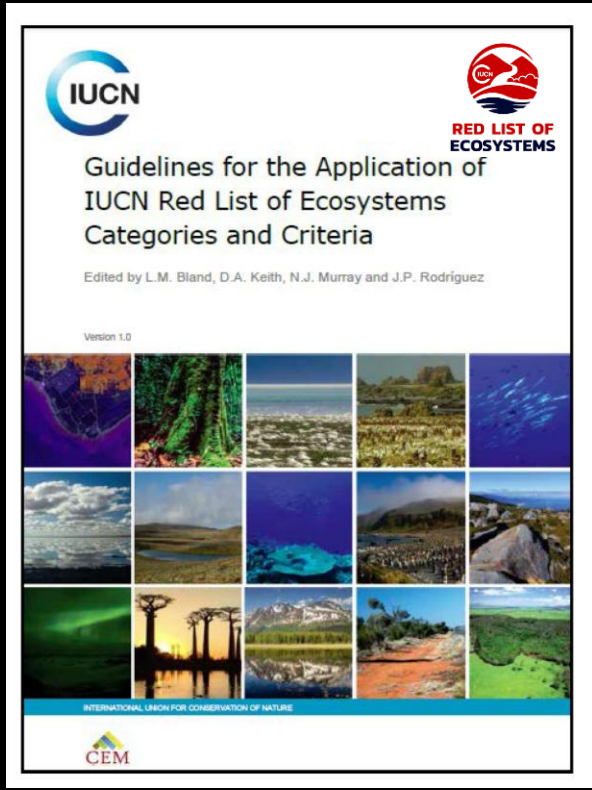
What is ecological condition?

Overall quality, measured in terms of quantitative metrics describing abiotic and biotic characteristics – UN SEEA

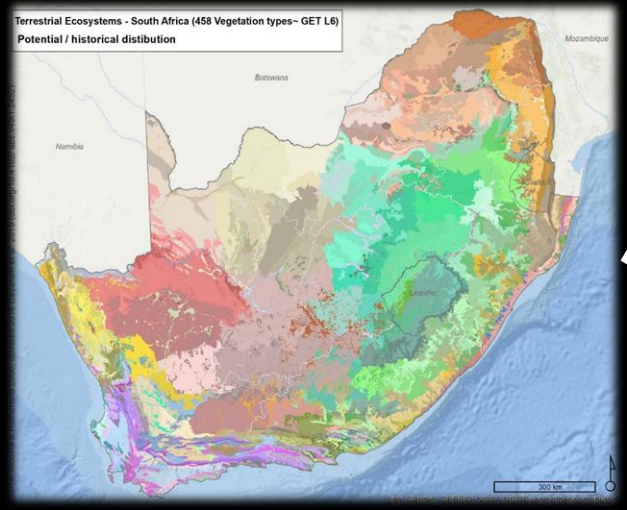
Key ecosystem components of condition: function, structure and composition



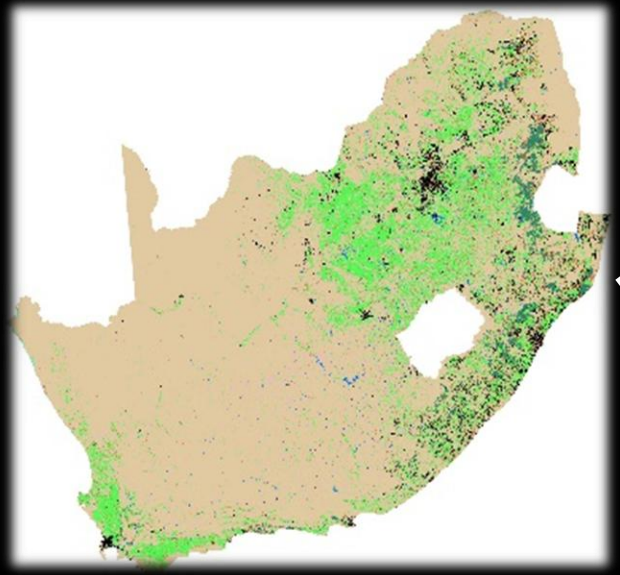
How do we currently assess ecosystem threat status?



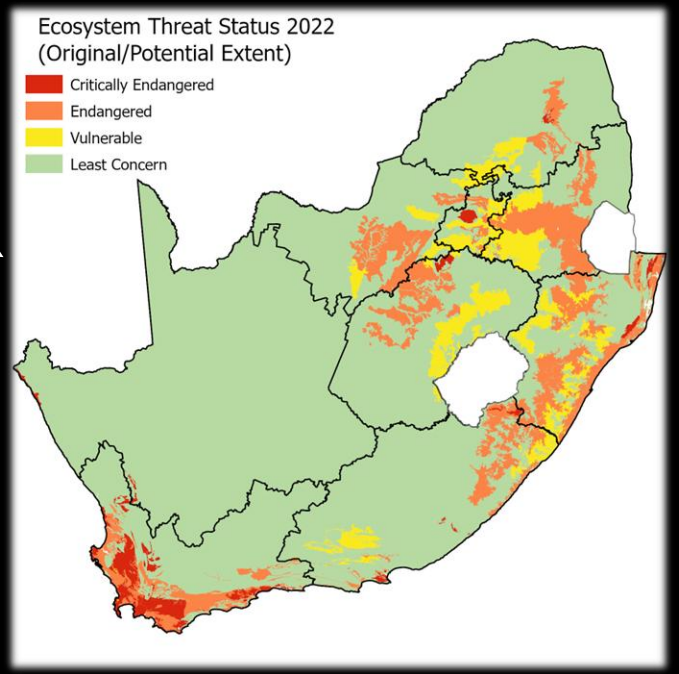
Vegetation map (potential extent)



National Land Cover (current extent)



RLE threat status



There's a big problem with only using land cover – underestimating threat status

Current RLE uses extent remaining

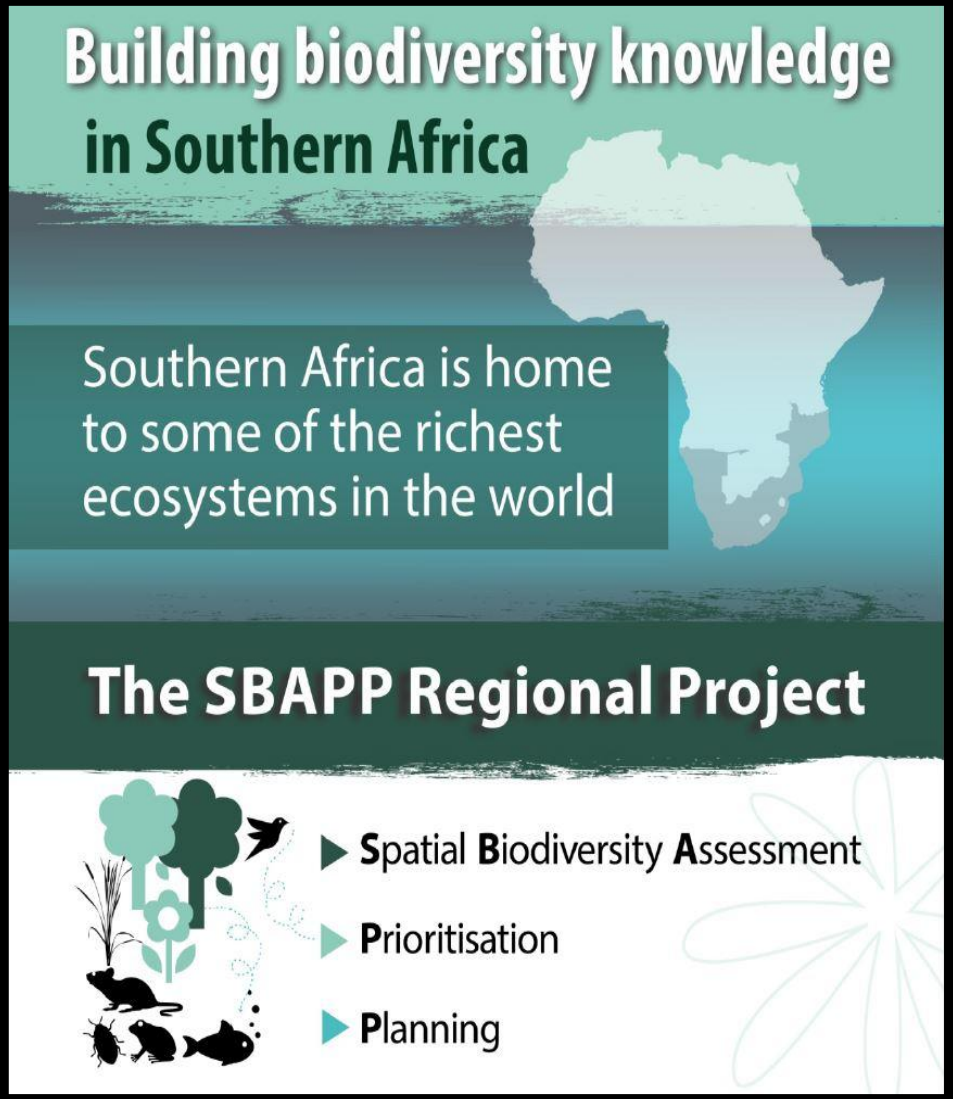
Continuum of ecological condition

100% collapsed

100 % intact

Spatial Biodiversity Assessment Planning and Prioritisation (SBAPP)

- Regional project (South Africa, Namibia, Mozambique and Malawi)
- Aim: to develop national spatial databases on ecological condition
- Inform biodiversity assessment and planning



How do we plan to measure ecological condition?

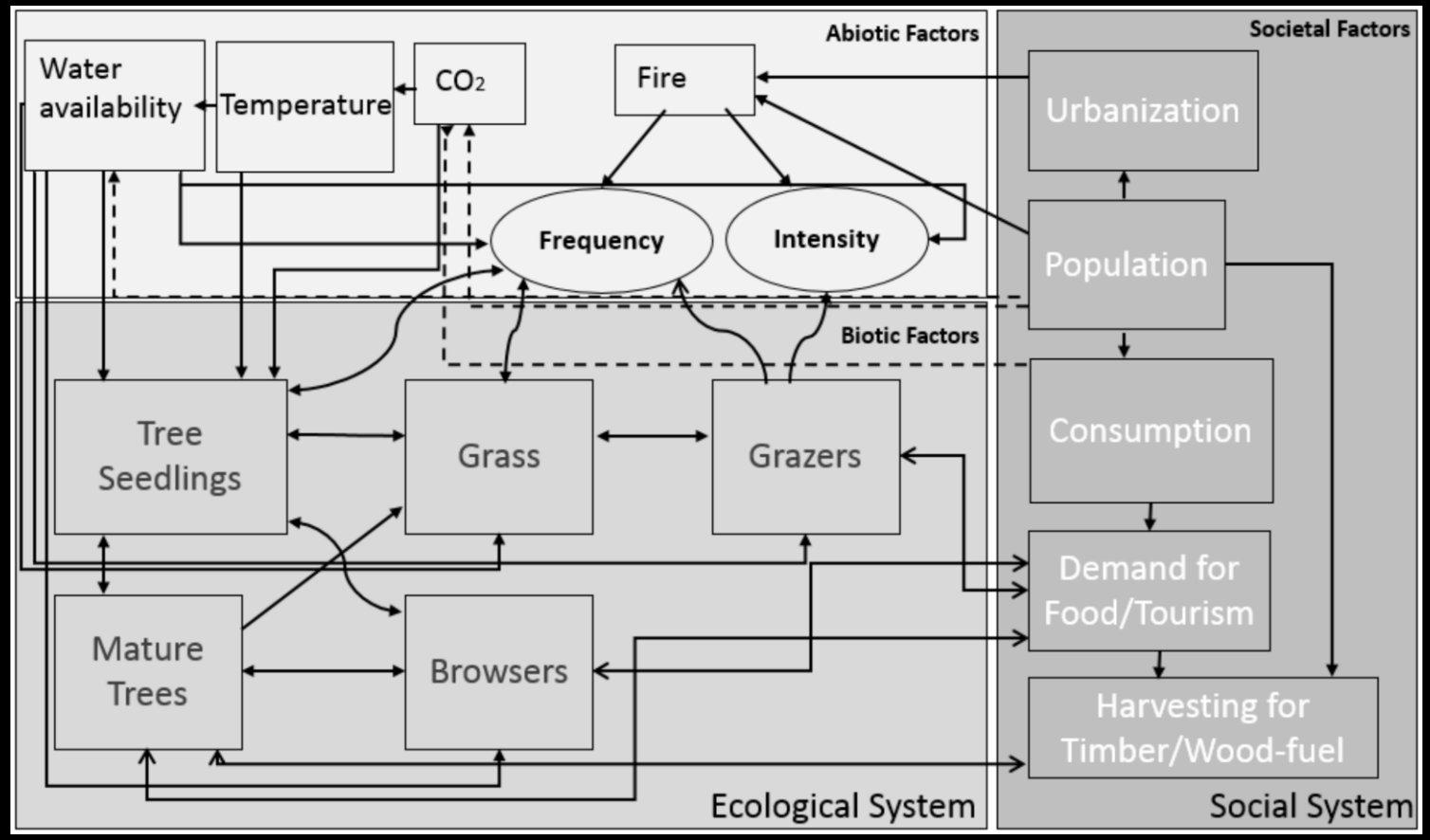
By mapping the processes that cause a decline in ecosystem function or structure = **pressures**

Biome	Over-grazing	Bush encroachment	Fire regime disruption	IAP (Woody)	IAP (Herb)	Soil erosion	Climate Change	Over-harvesting	Groundwater abstraction	Pollution
Albany Thicket	2	4	4	3	3	3	4	3	5	4
Desert	1	5	5	3	5	2	2	3	5	3
Forest	5	5	4	4	4	5	4	3	4	4
Fynbos	3	5	1	1	3	4	3	3	4	4
Grassland	1	1	2	2	3	3	3	4	4	3
IOCB	1	2	2	2	3	4	3	4	3	4
Nama Karoo	1	3	4	3	4	3	4	4	5	4
Savanna	1	2	2	3	4	4	3	4	4	4
Succulent Karoo	1	5	5	3	4	3	3	3	5	3

Summary of key pressures per biome.
1 represents the highest impact, 5 represents little to no impact.

Savannas are complex

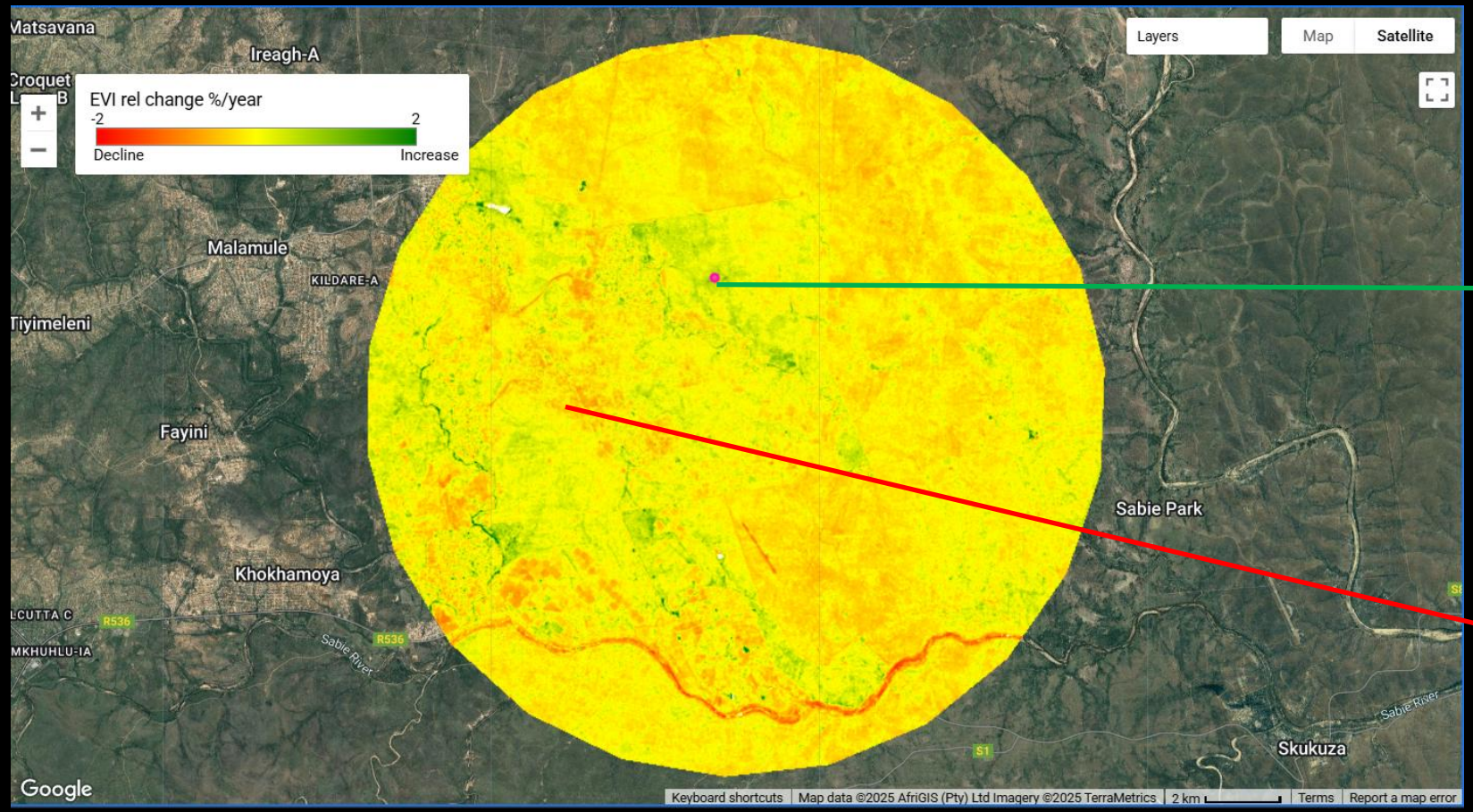
We realise that determining condition in savannas is going to be especially difficult – so many interacting factors AND pressures

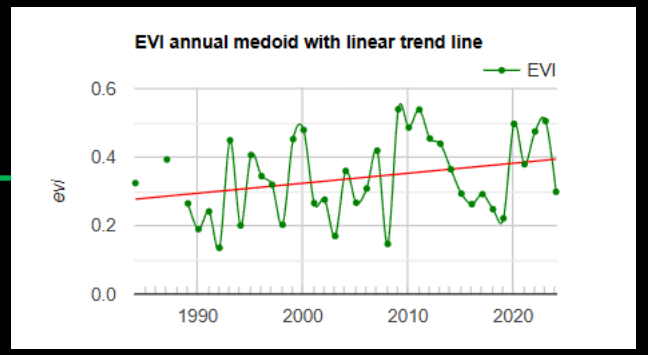


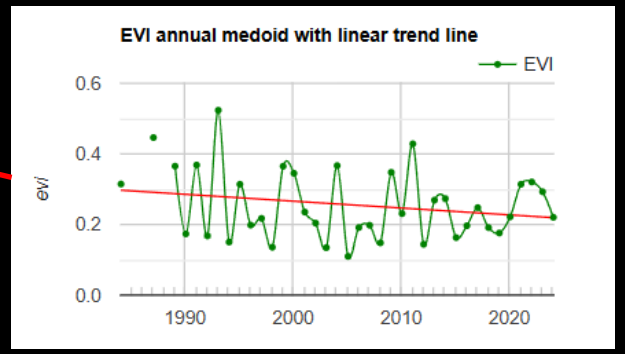
Luvuno et al. (2018) *Sustainability* 10

An example for savannas

Change over time in vegetation indices as an indicator of…?

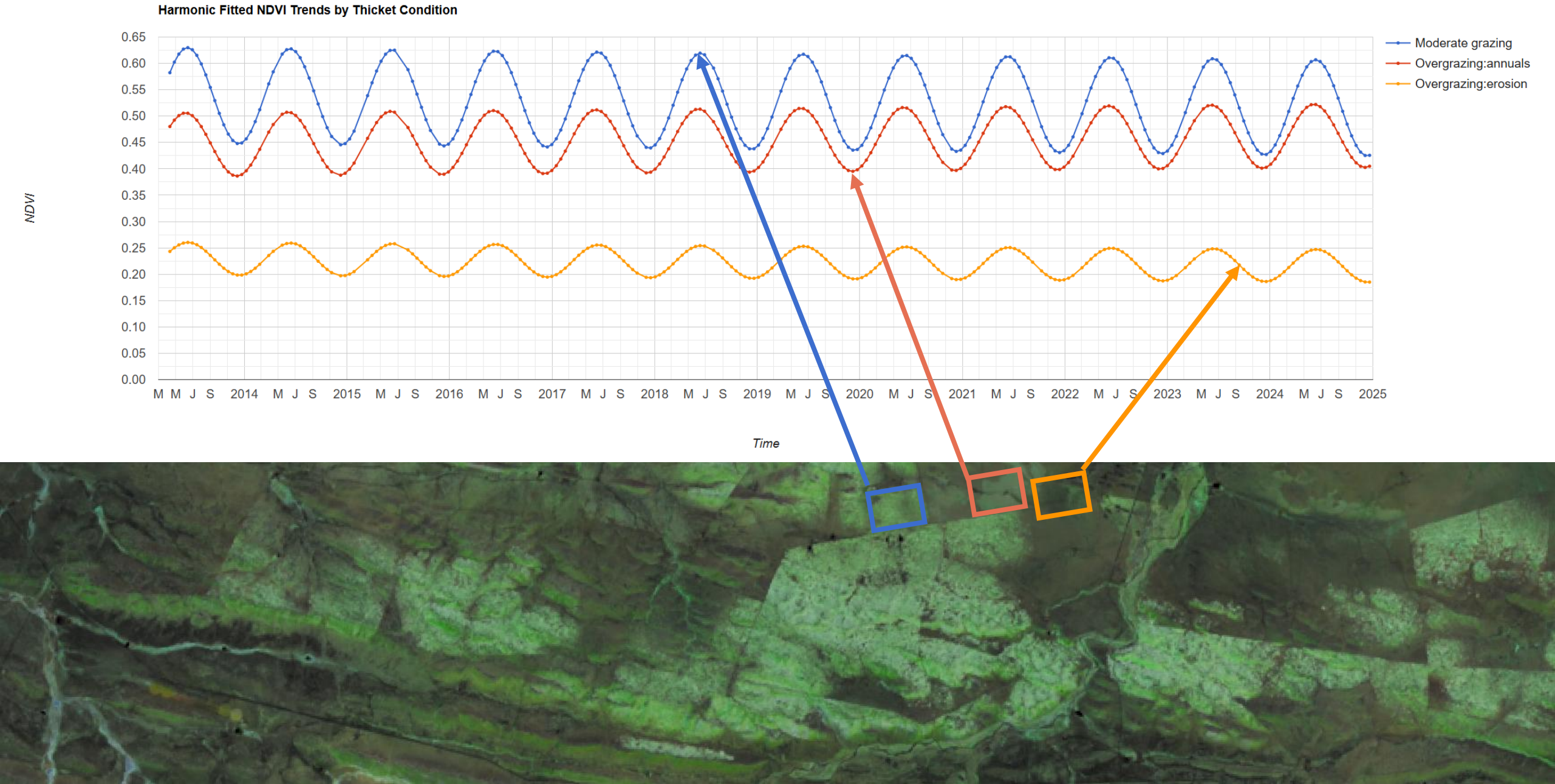






https://zandersamuel.users.earthengine.app/view/evi-trend-inspector

How we plan to tackle this complexity – “phenocommunities”



How you can contribute:

1 Collaborative expertise

2 Data contributions

3 Connect us with similar projects

Thank you!

Special thanks to the postdocs, students and intern who are making this work possible:
Stephni van der Merwe, Wataru Tokura, Curtley Tonkin, Wesley Bell and Tim Kirsten

https://science.uct.ac.za/seec/sbapp-ecological-condition

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