

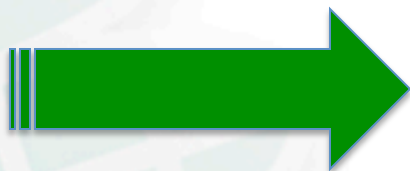
Africa Soil Information Service (AfSIS): activities and partnership opportunities

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Context

- Africa soil health crisis: healthy soils deliver key ecosystem services
- Barriers to the adoption of innovations on a larger scale: lack of reliable up-to-date information about soil health
- Solution: establish a dynamic and modern soil information system



Africa Soil Information Service

<http://AfricaSoils.net>



Five components

- Global framework: Digital Soil Map Consortium → digital soil map of Africa based on legacy data
- Cyber-Infrastructure: modern information sharing system
- Digital soil maps from newly collected land resources (soil and vegetation)
- Evidence-based soil management recommendations
- End-users, dissemination, training and capacity building



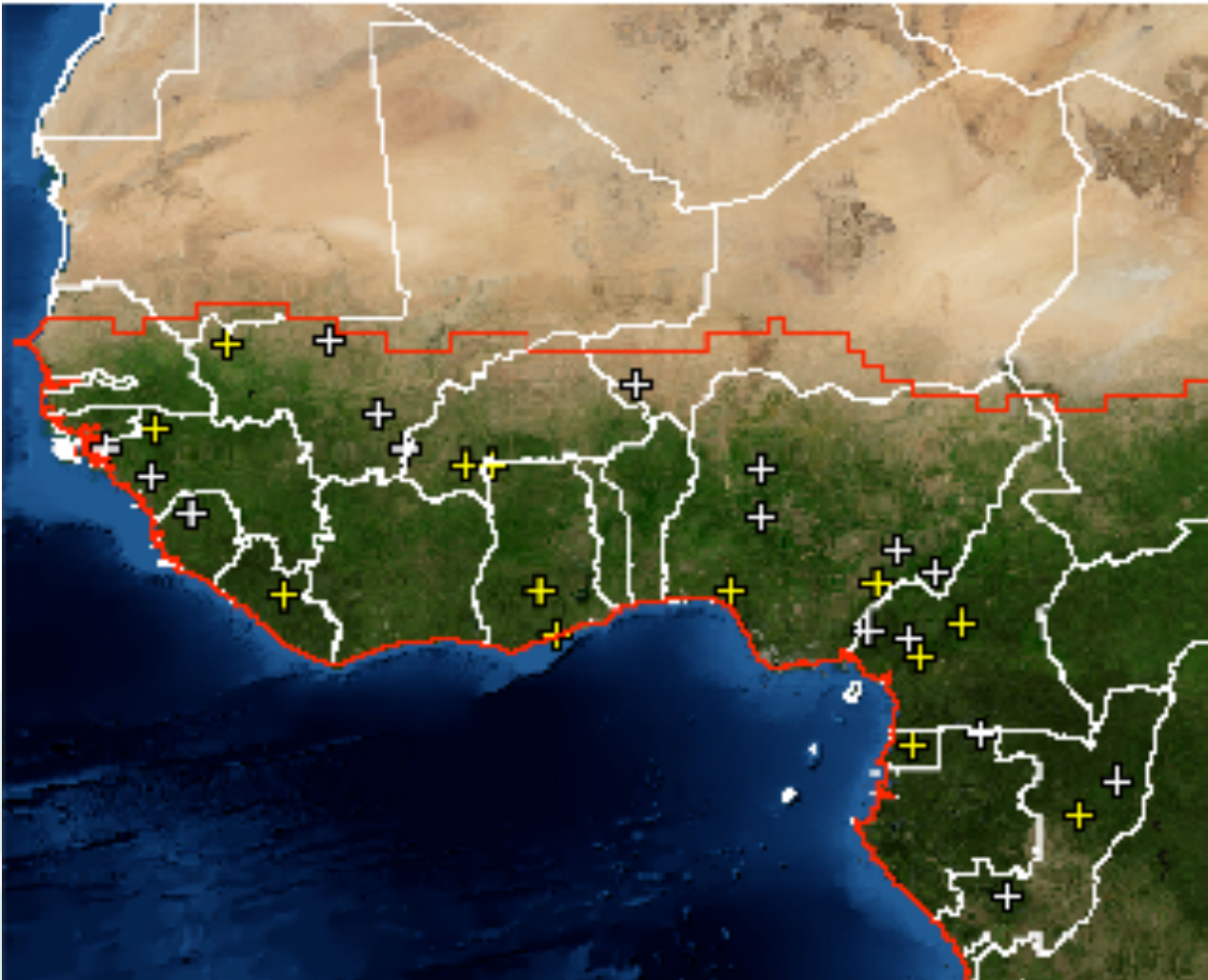
- Baseline land resources : 60 sites from 21 countries

- Soil analysis with Infrared spectroscopy techniques



18 M km² SSA

AfSIS sites in West and Central Africa



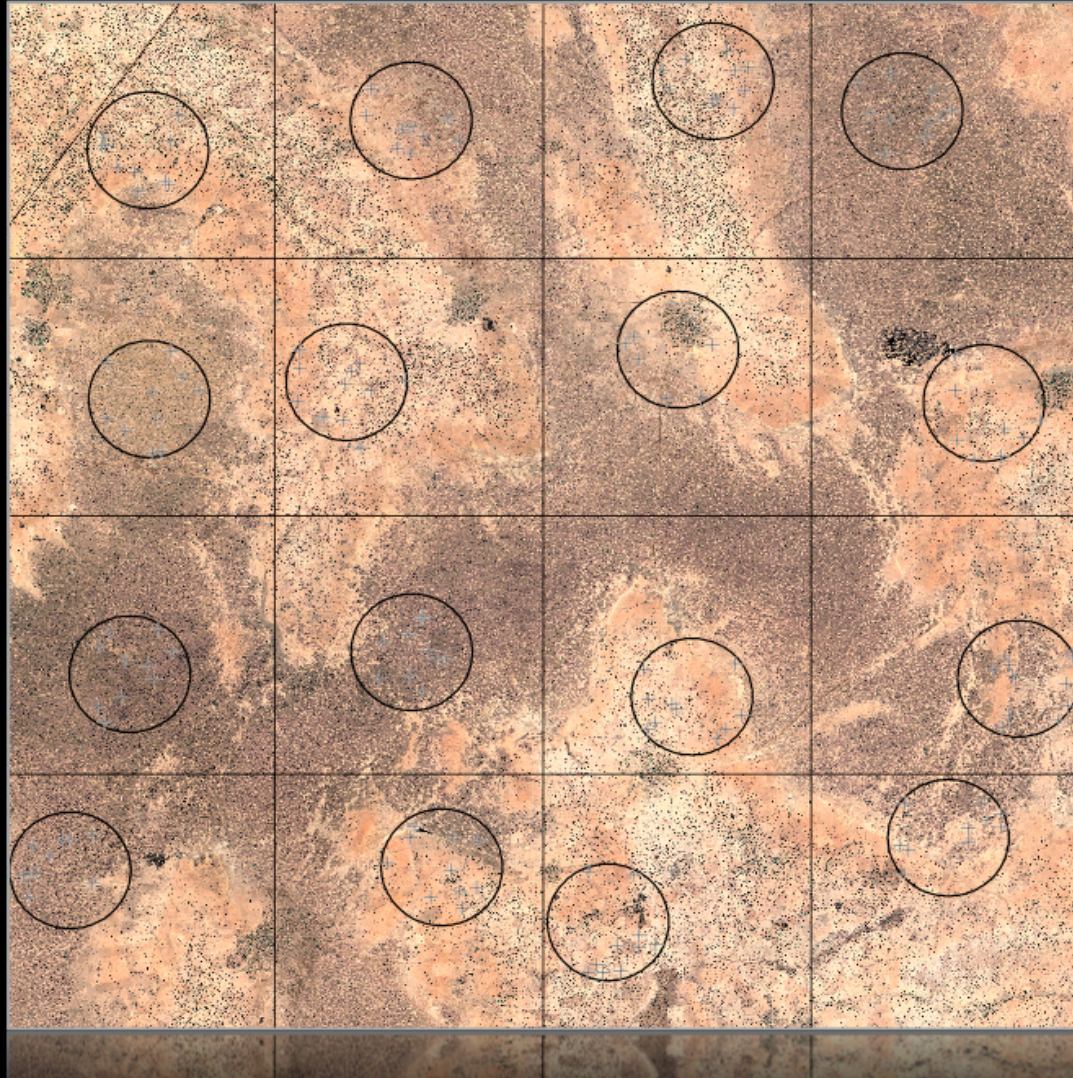
- Mali: 4
- Burkina-Faso:1
- Ghana: 3
- Nigeria: 5
- Niger: 1
- Guinee-Conakry: 2
- Cameroon: 2



18 sentinel sites across
7 countries

Land Degradation Surveillance Framework (LDSF)

QuickBird image of a 100 km² "Sentinel Site", Zebougou, Mali (2006)
(black circles indicate spatially stratified locations of 1 km² sample "Clusters")



Sentinel site (100 km²)



Clusters (16)



Plots (10)



Sub-plots (4)

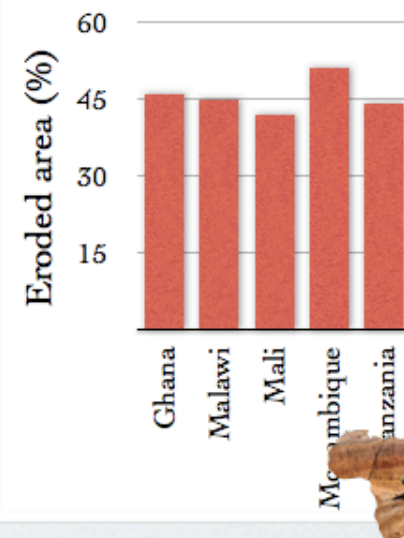
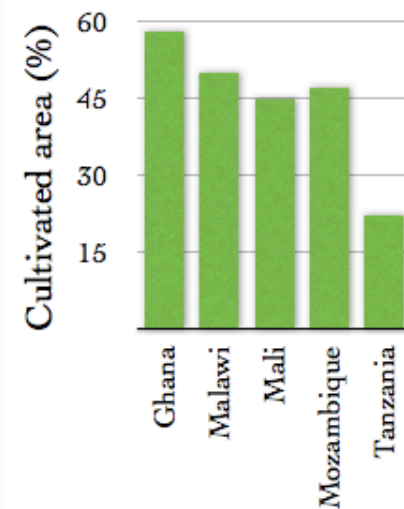
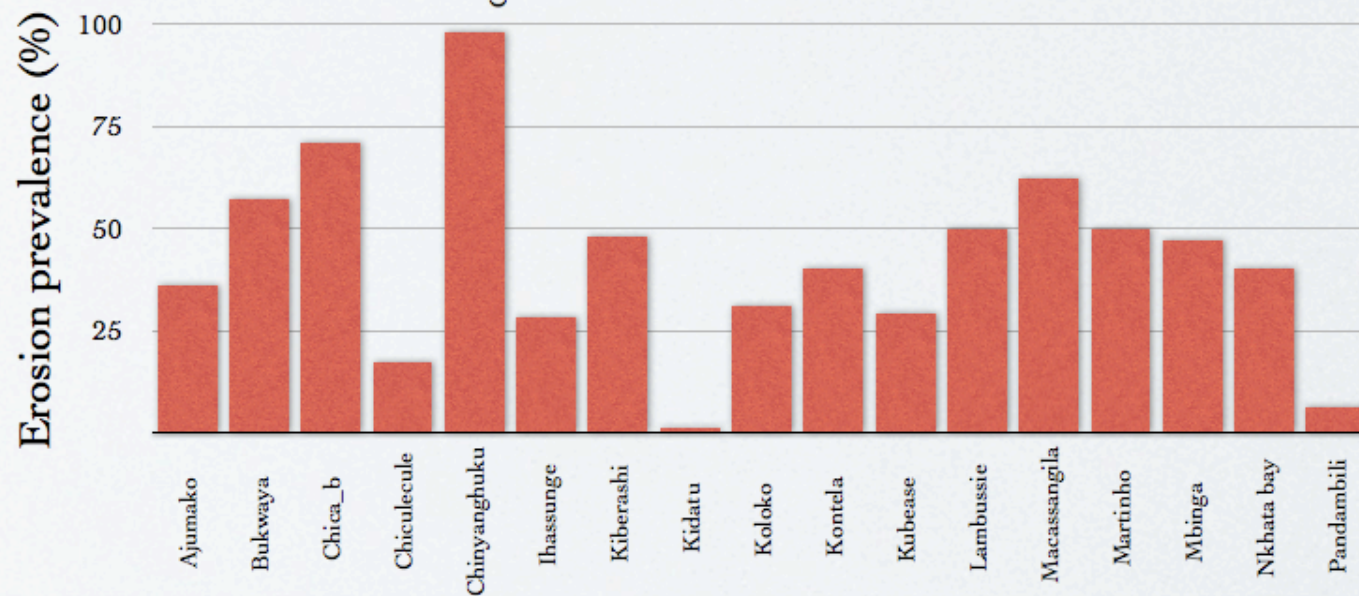
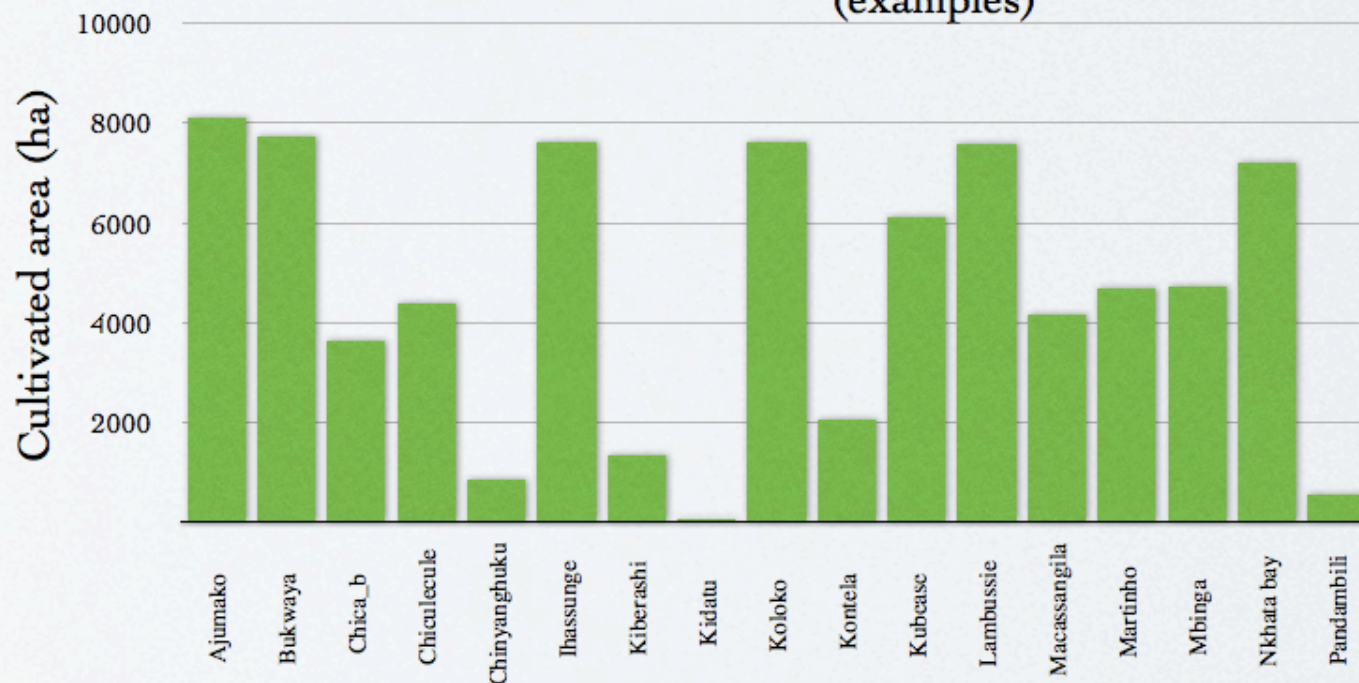
- Nested sampling design
- Systematic, Landscape-level assessment

Mixed-models for prediction and estimates

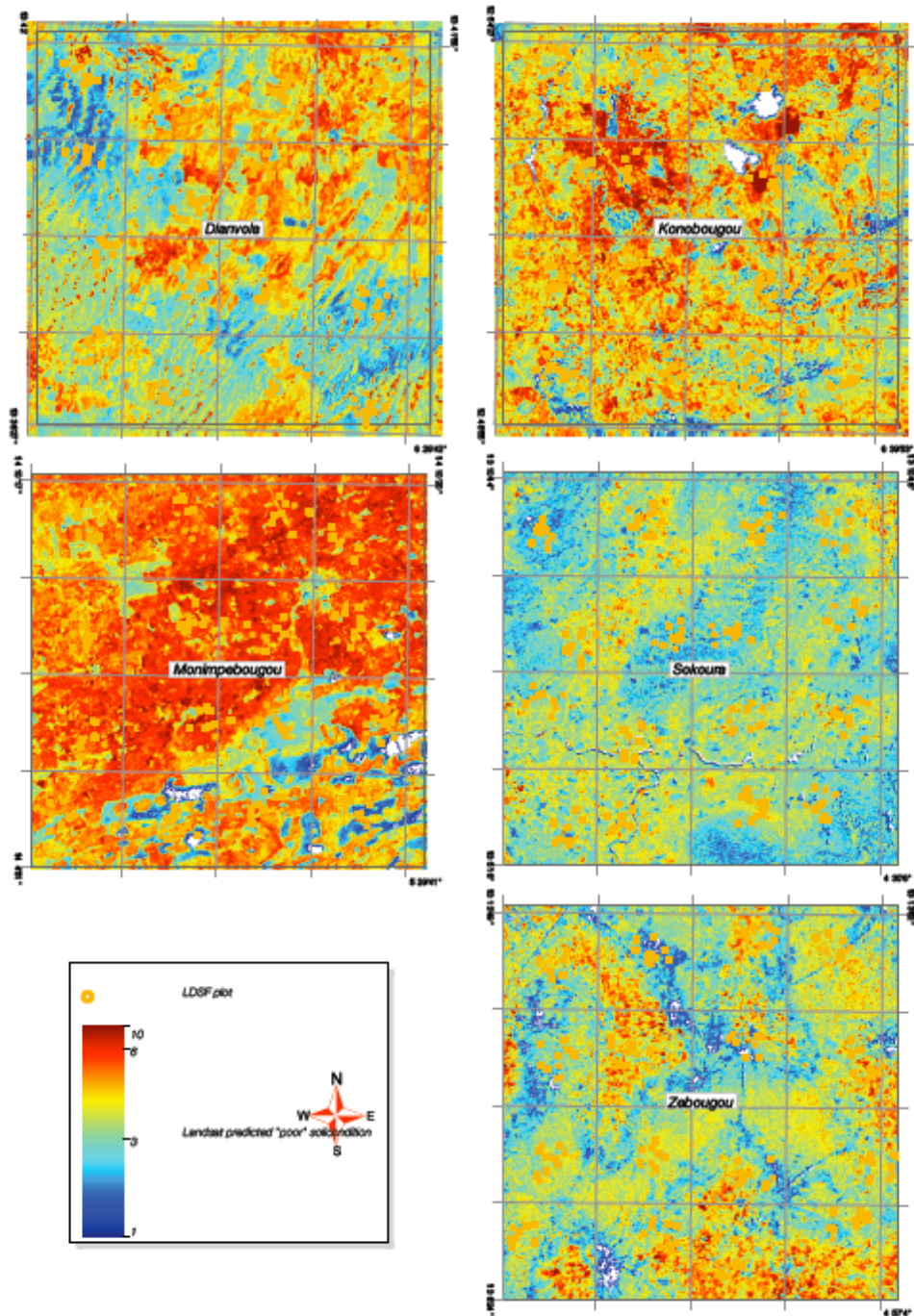
AfSIS Sentinel Site baseline information

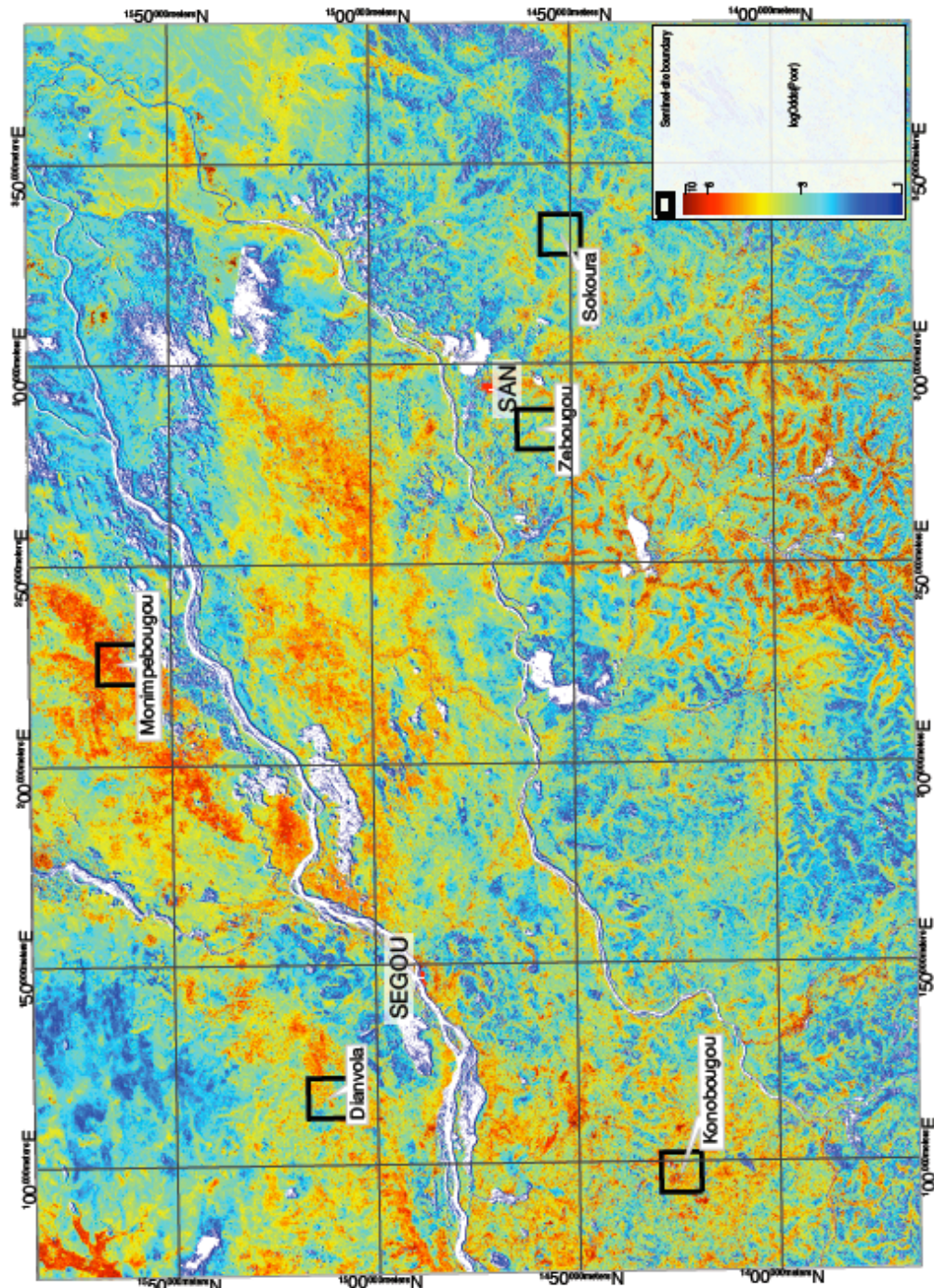
Tor et al. (2011)

(examples)



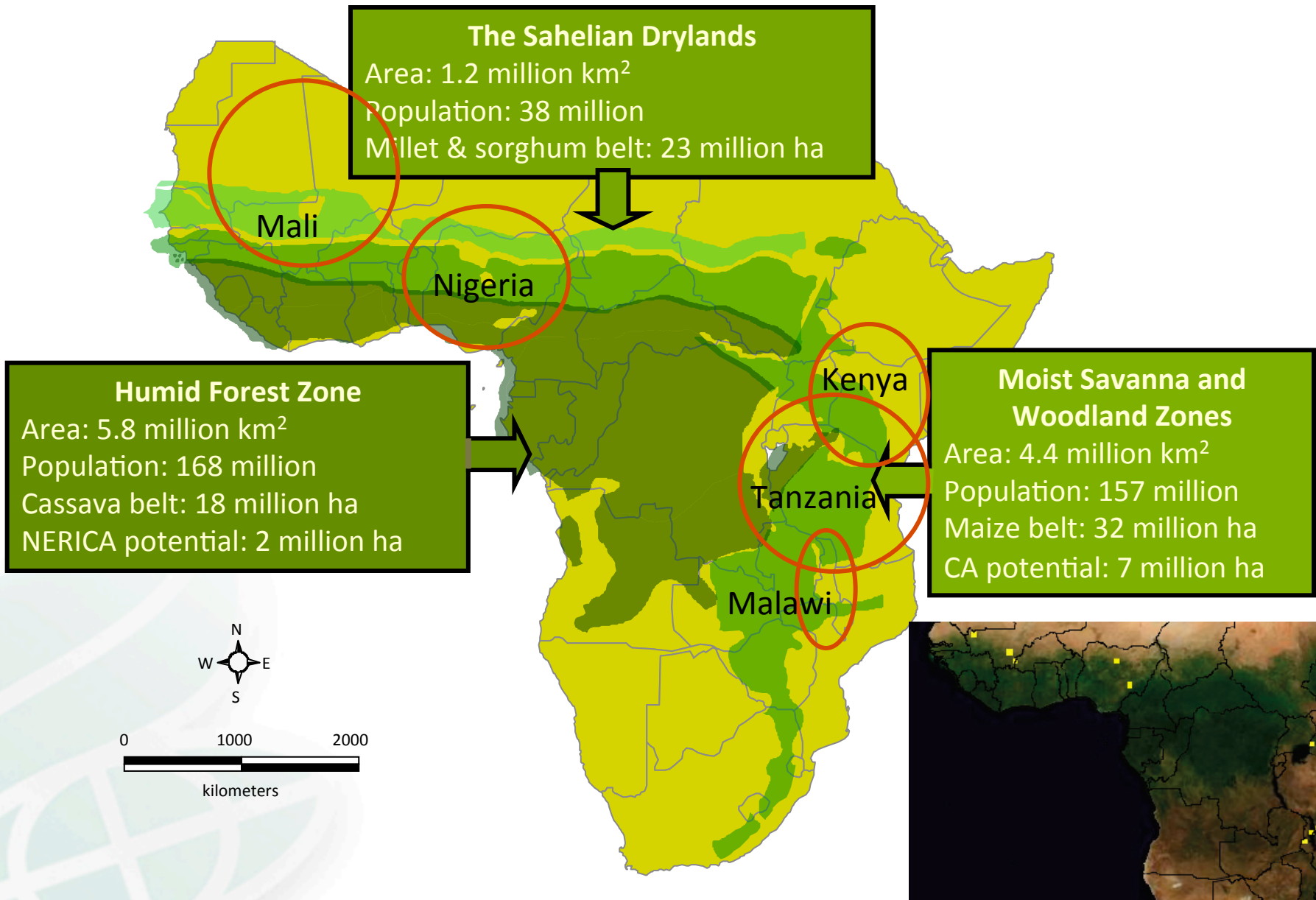
Estimated risk of soil being in poor “condition class” based on Landsat (ETM+) reflectance. Spatial resolution 2.5 m
Tor et al. (2006)





Maps of Segou (Mali) showing areas with > 75% probability of being in poor soil condition class. Red areas==very high risk of soil degradation Tor et al. (2006)

Evidence-based soil management recommendations: targeted areas



Diagnostic trials to diagnose soil health related problems

- Diagnosis of factors limiting crop growth (nutrient deficiencies, chemical imbalance, physical constraints)
- Prediction of crop growth, yield and nutrient uptake and plant response to fertilizers



Integrated Soil Fertility Management (ISFM)

- Innovation to address the issue of sustainable
- Co-location with sentinel sites



Partnership opportunities

- Baseline surveys of soil health/Land resources (soil and vegetation) in action sites to map soil degradation hotspots and provide recommendation for specific interventions
- Diagnostic trials co-located with baseline survey sentinel sites to collect data for crop modeling (Opportunity to extend the area of intervention??)
- Opportunity to partner with AfSIS 2 (Nigeria, Ghana in West Africa)????