

Progress with herbaceous biomass modelling and dry season fodder flow calculations

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Introduction

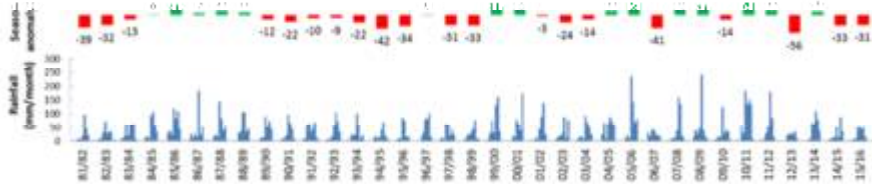
Lowest rainfall in sub-Saharan Africa



Rainfall



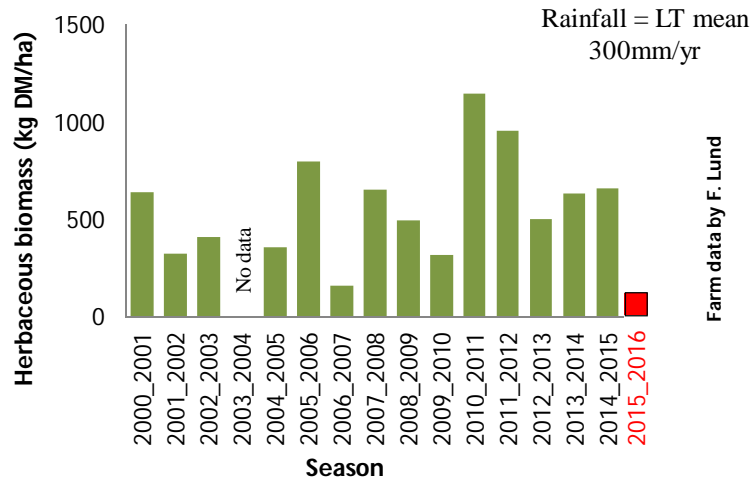
Single rainy season with long dry season



Source: CHIRPS



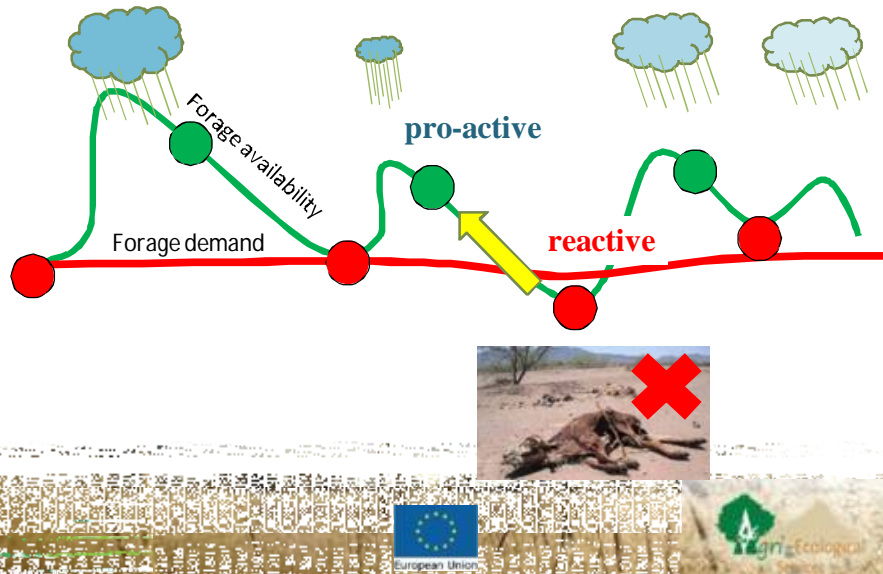
Variable grass production



Farm data by F. Lund

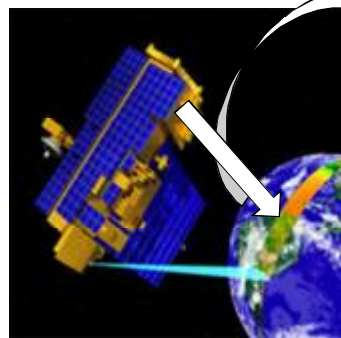


Develop and test early warning system for rangeland users



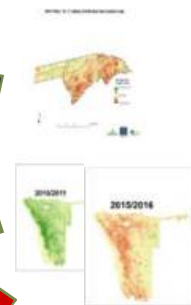
Rangeland monitoring system

eMODIS NDVI data from
USGS FEWS NET



Internet

Anomaly
products



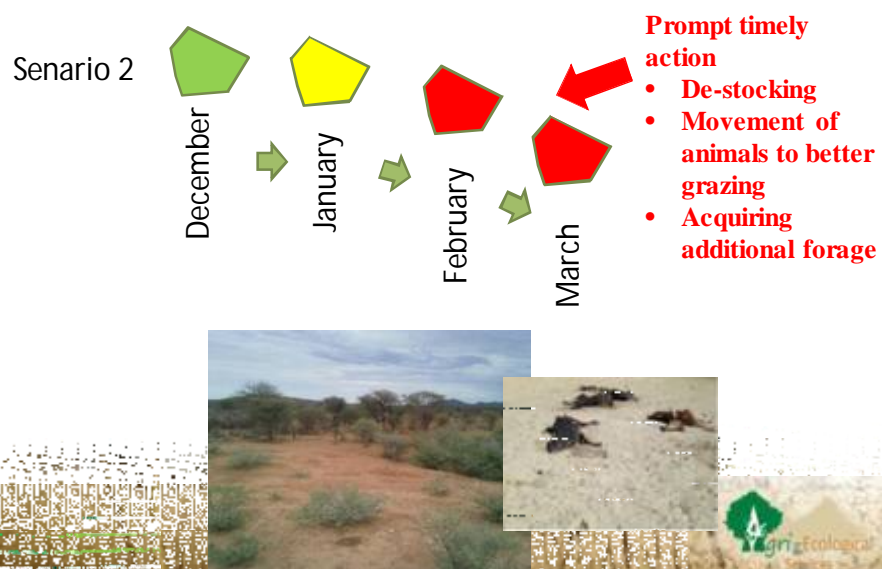
User feedback
Field calibration
& validation



Monitoring tool – risk reduction



Early warning – risk reduction

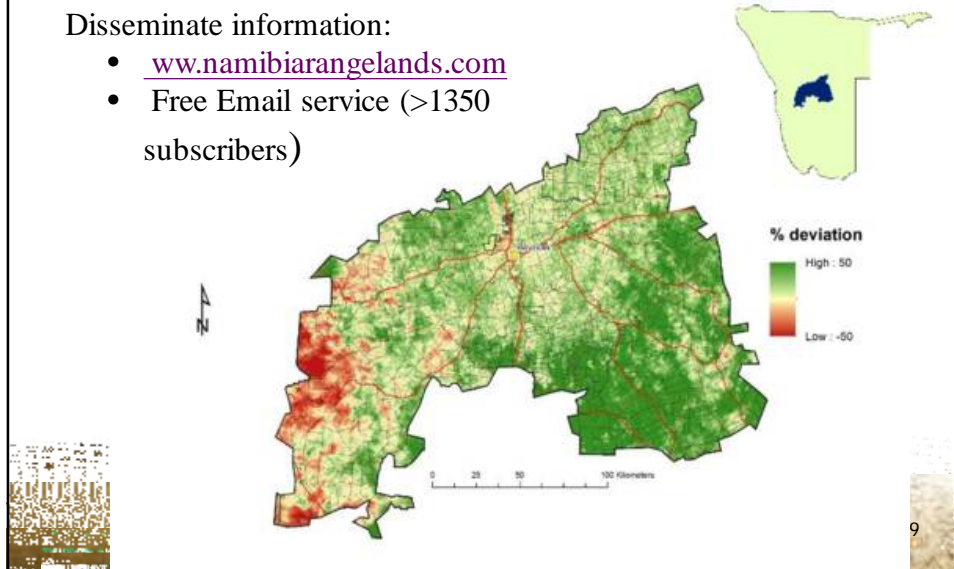


Services: Map products updated every 2 weeks during growing season

Deviation of the 1 to 15 March 2017 period's vegetation index (NDVI) from the long-term average (since 2001)

Disseminate information:

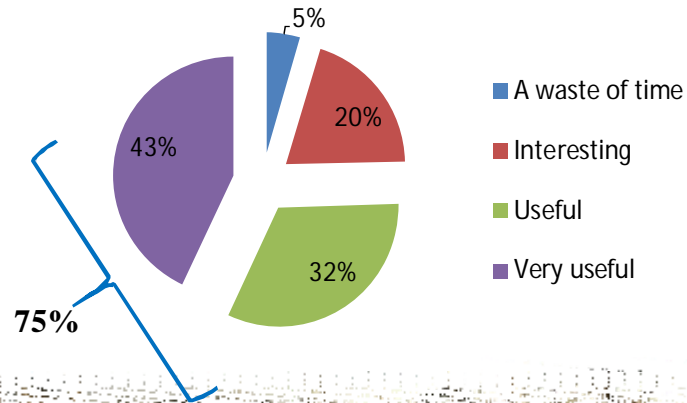
- www.namibiarangelands.com
- Free Email service (>1350 subscribers)



Vegetation type	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	
Grassland and open grassland open savanna	Good indicator of green herbaceous vegetation								
	status of								
Flood seasons and woodland	evergreen and				Good indicator of		Good indicator of		
	late deciduous				leaving out		vegetation		
woody vegetation								browning	
pattern									

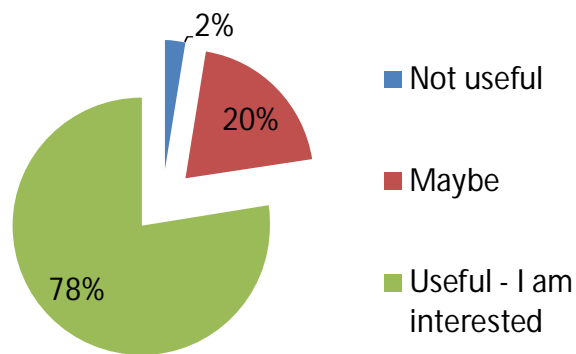


Feedback from 89 users: Satellite rangeland status maps



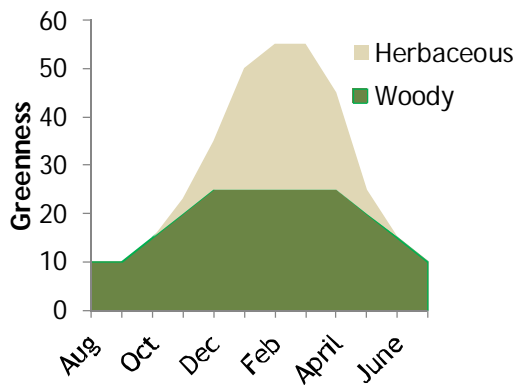
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Would information about forage availability at the end of growing season be useful to you?



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Herbaceous vs. Woody signal



Modelling herbaceous biomass

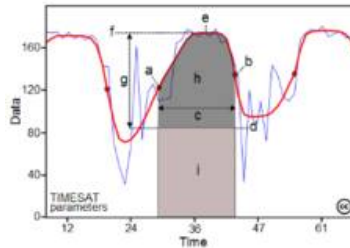
- » Conducted fieldwork end of 2015/2016 growing season – clipped 10 x 1 m² quadrates per site
- » Correct biomass for previous season dead material and removed biomass > 1500kg DM/ha
- » **Goal: simple yet robust model for operational use**



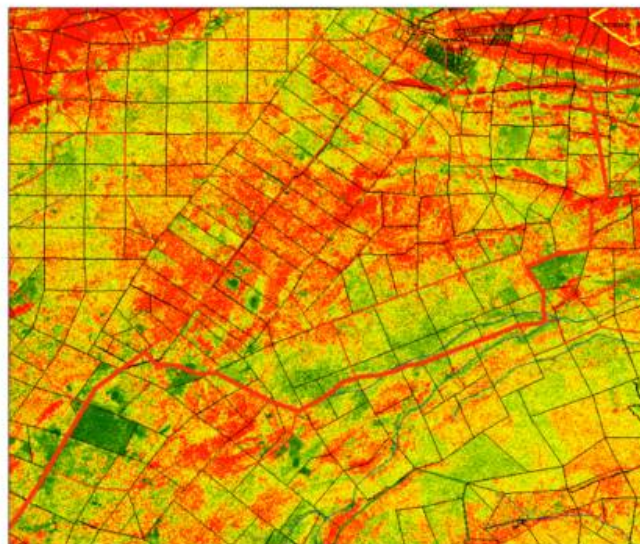
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Different approaches to separate woody and Herbaceous components

- » De-compositioning of Vegetation Index time series (phenological differences of herbaceous vs. woody) (Diouf et al. 2015)
- » ALOS Palsar SAR L-Band (HV polarization)



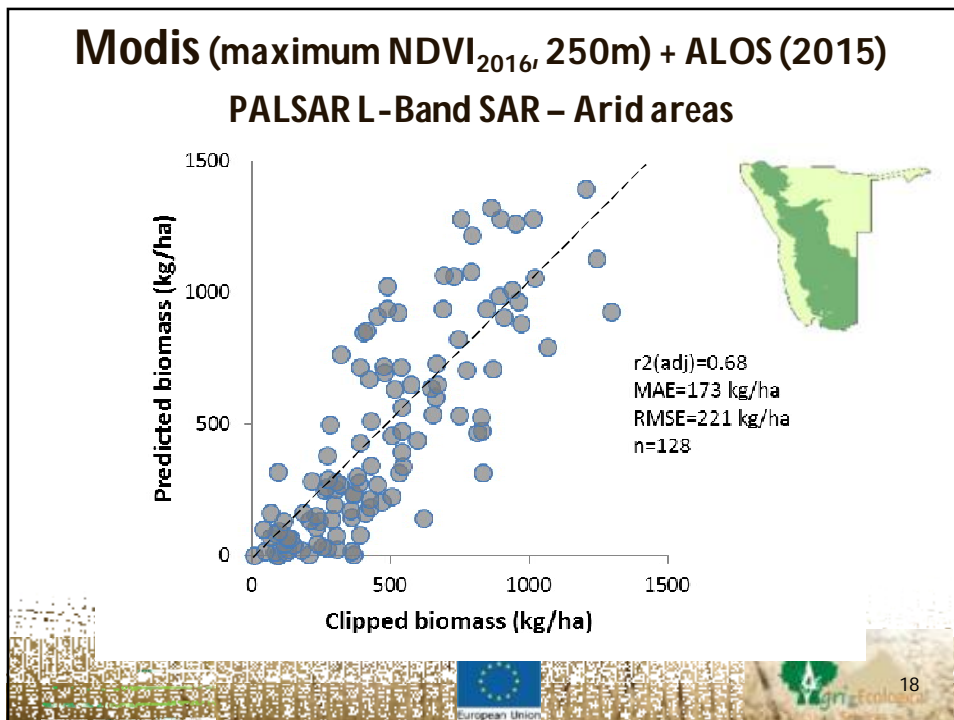
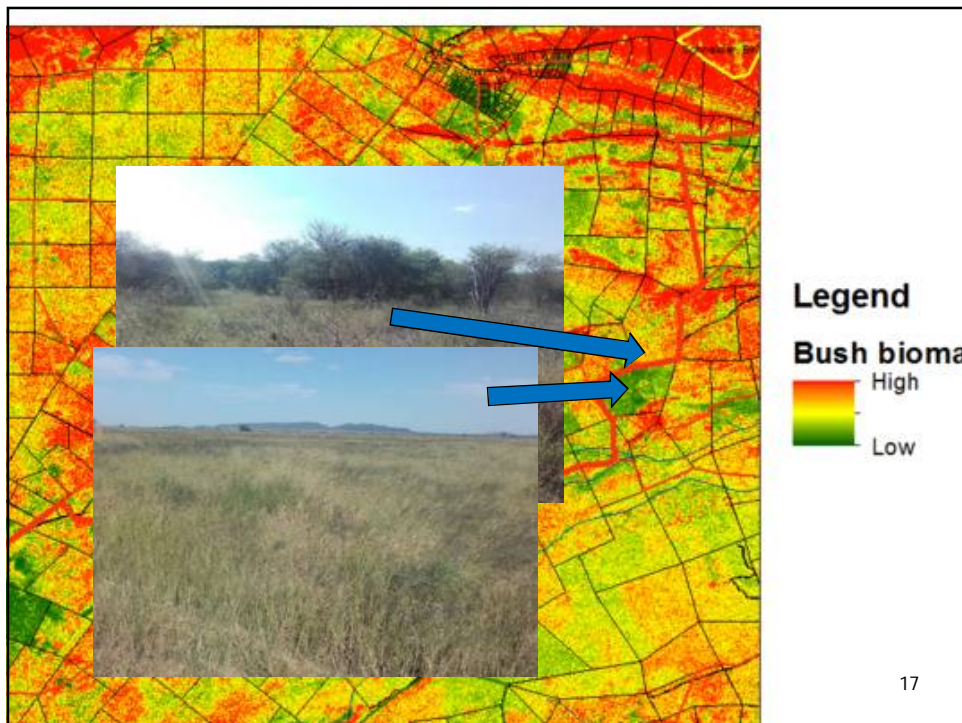
Radar - L-Band



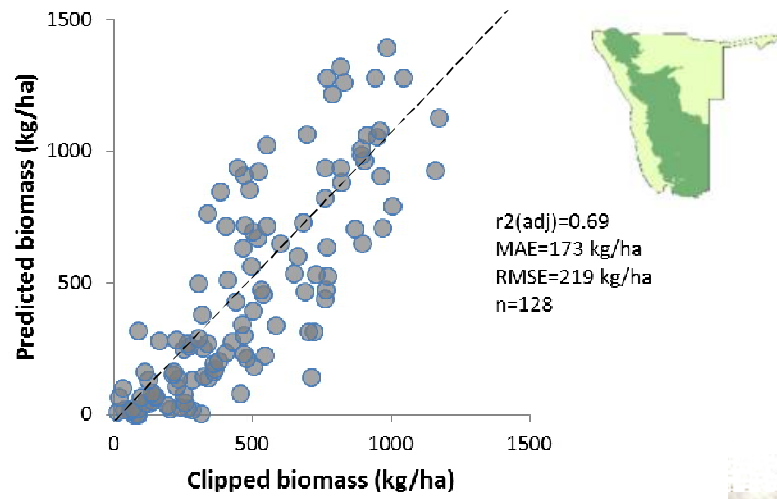
Legend
Bush biomass
 High
 Low

Data:
 ALOS 2015
 HV from
 JAXA





Proba-V (maximum NDVI₂₀₁₆, 333m) + ALOS (2015) PALSAR L-band SAR – Arid areas



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