Active Fires in the past 20 Years in the Miombo Woodlands

presented at 1st Niassa Special Reserve Science Meeting and Miombo Network Meeting, 03 and 04 June 2021

by Sylvia Thompson & Jörg Helmschrot

SASSCAL

Email: sylvia.thompson@sasscal.org

Promoting science for sustainable development

SPONSORED BY THE

Federal Ministry
of Education
and Research

SASSCAL
Southern African
Science Service Centre for
Climate Change and
Adaptive Land Management
WWW.SASSCAL.ORG

Intro

- Wildfires are **historically** part of southern African landscape
- Fire season in southern Africa tend to coincides with **agricultural burning season**
- Fire regime in southern Africa has generally **shifted to the dry season** months' preceding the rainfall season
- Controlled fire management before the rainy season through **early burning** avoids out-of-control wildfires & protects, as well as increases biodiversity
- Yet, numerous studies have also suggested **detrimental effects** of regular annual burns on the landscape biodiversity and drive landcover changes

Data

Federal Ministry of Education and Research

SASSCAL
Southern African
Science Service Centre for
Climate Change and
Adaptive Land Management
WWW.SASSCAL.ORG

Characteristic	NASA FIRMS MODIS Active Fire
Historic record	November 2000 to date
Resolution	1 km gridded
Extent	Global
Format	SHP file
Temporal Resolution	Daily

▲ Active Fire location (at least 1 km2)

▭ Miombo woodland
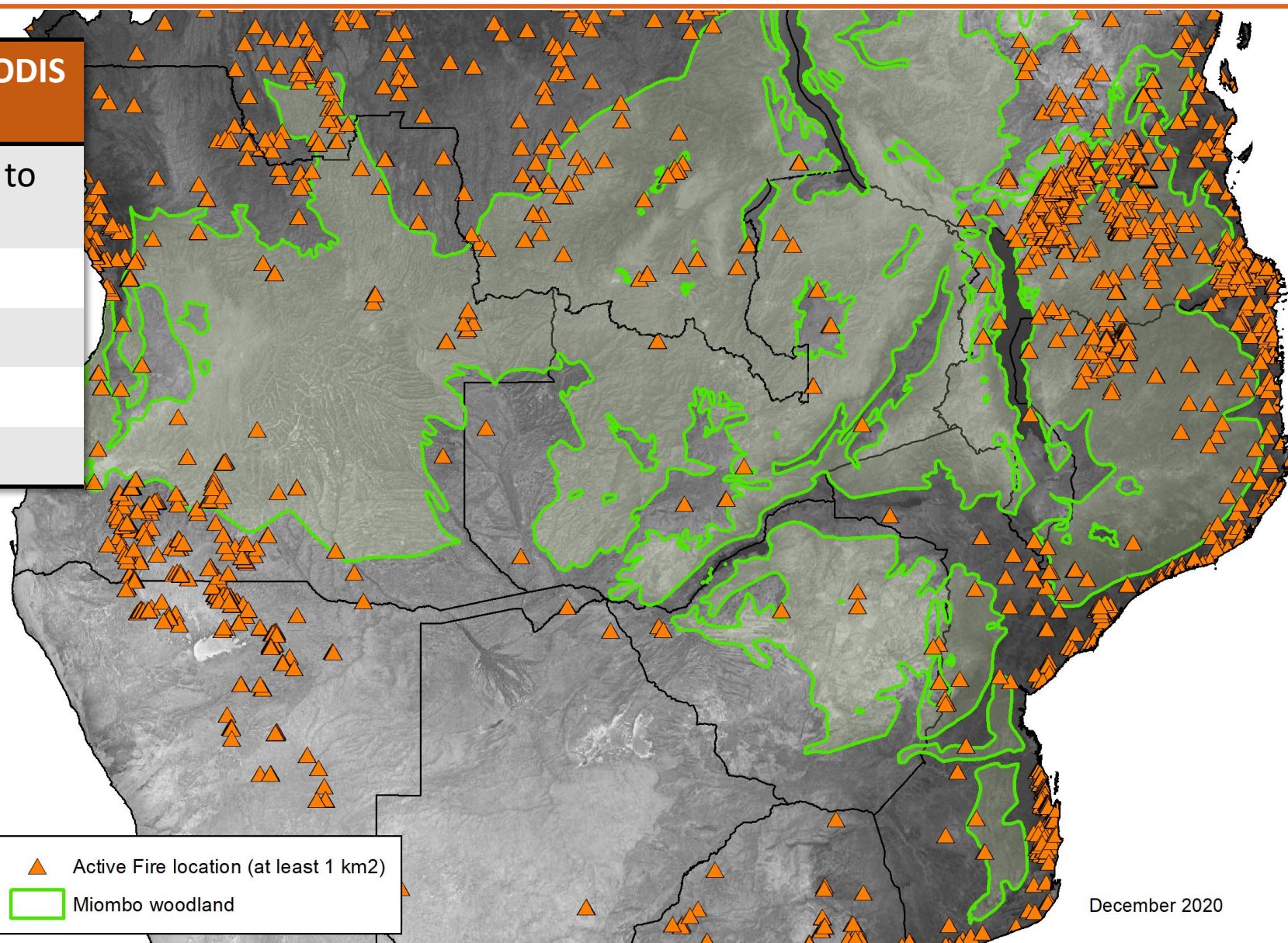
December 2020

Active fire areas & frequency in 2020

Active Fires 2020

☐ Miombo woodland

Days of active fire per year per 100 km2

- 1 - 10
- 11 - 30
- >30 days

0   260
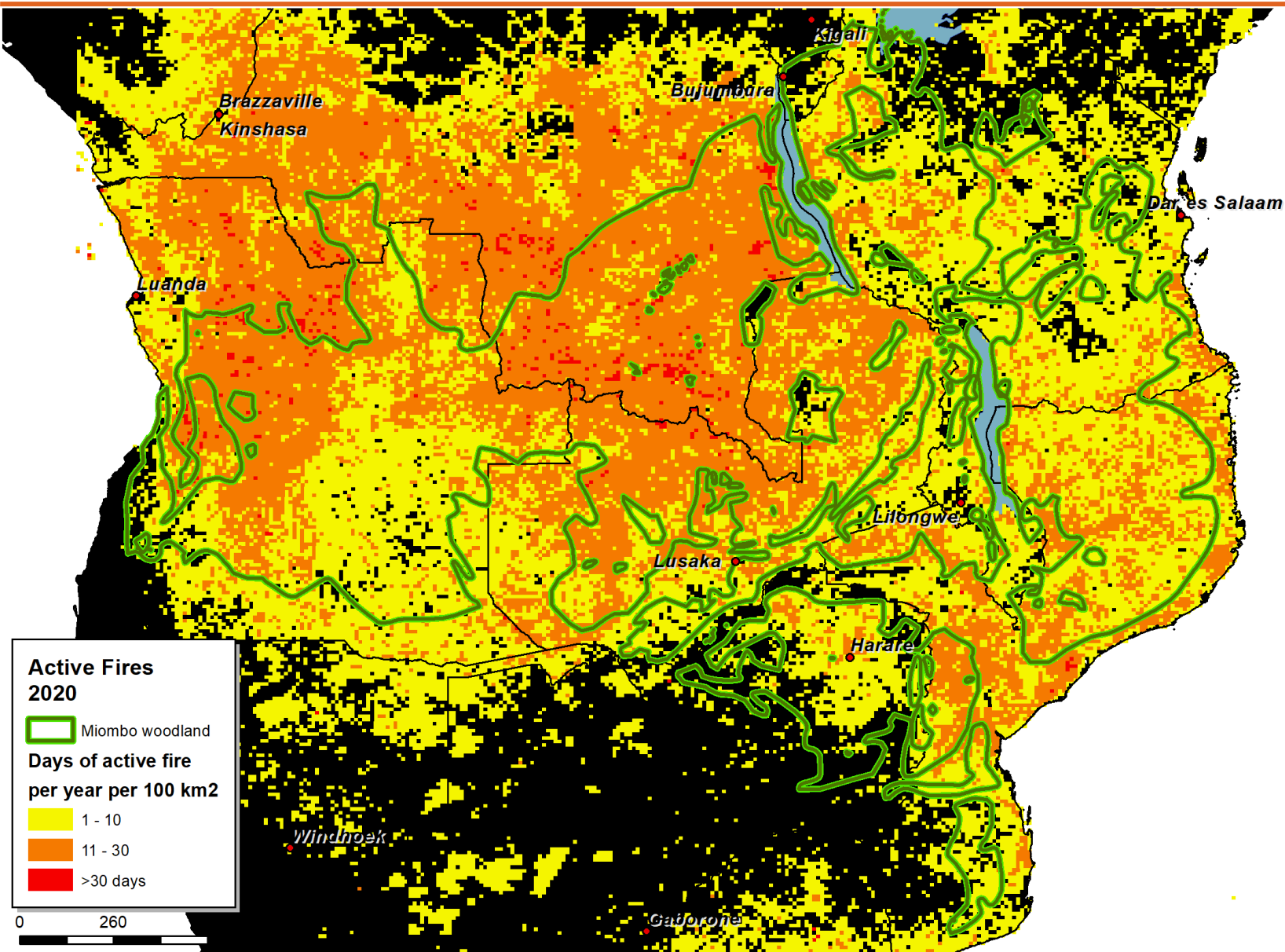
- **Per 10 km by 10 km grid cell, the number of days that active fires were detected in this area**

2020 Hotspots

SPONSORED BY THE
Federal Ministry of Education and Research

SASSCAL
Southern African Science Service Centre for Climate Change and Adaptive Land Management
WWW.SASSCAL.ORG
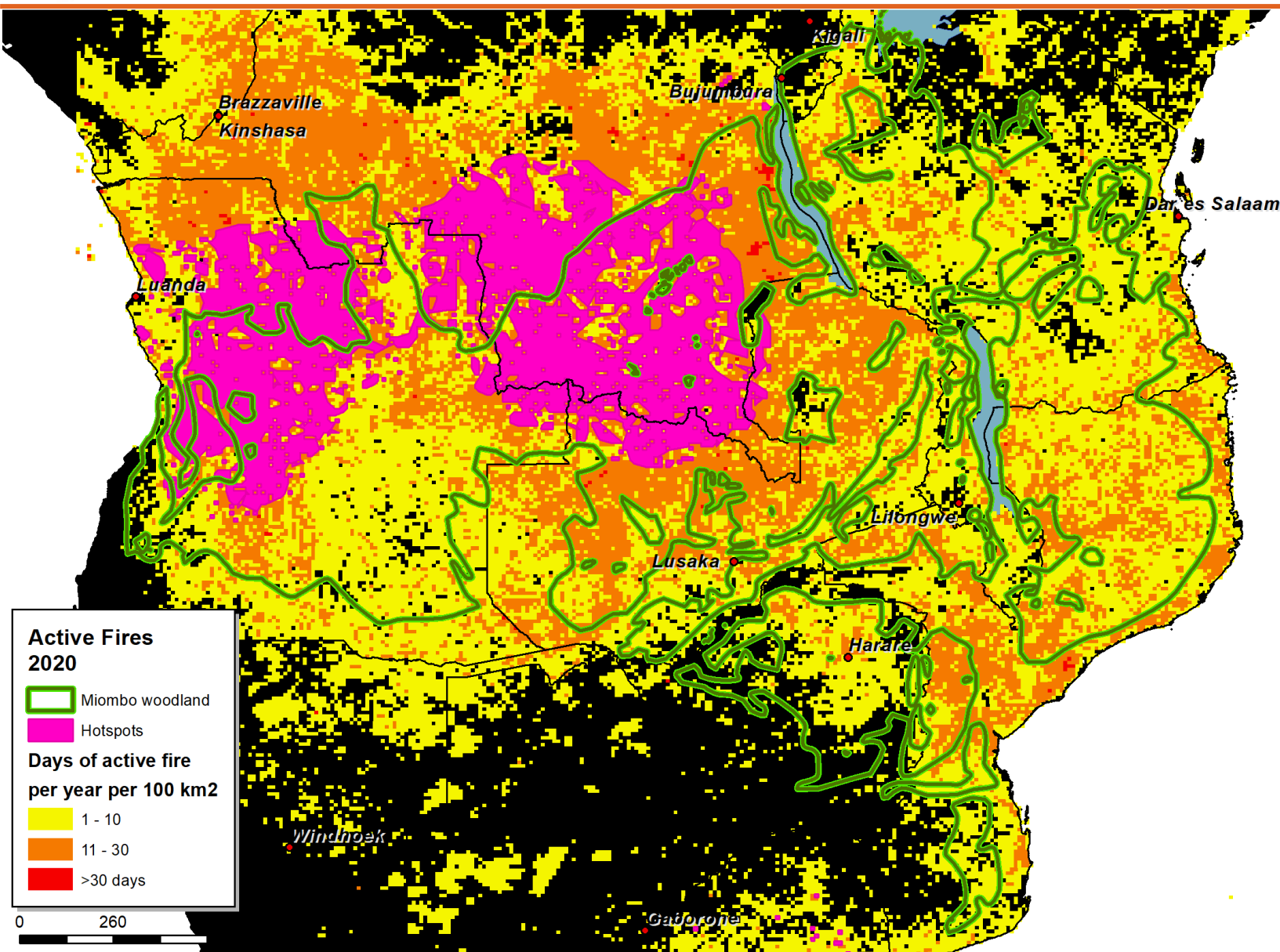
- **Statistically significant hot spots using the Getis-Ord Gi* statistic**
- **Statistical significance with a > 90 % confidence level**

Active Fires 2020

Miombo woodland
Hotspots

Days of active fire per year per 100 km2

1 - 10
11 - 30
>30 days

0   260

2020 Area Summaries
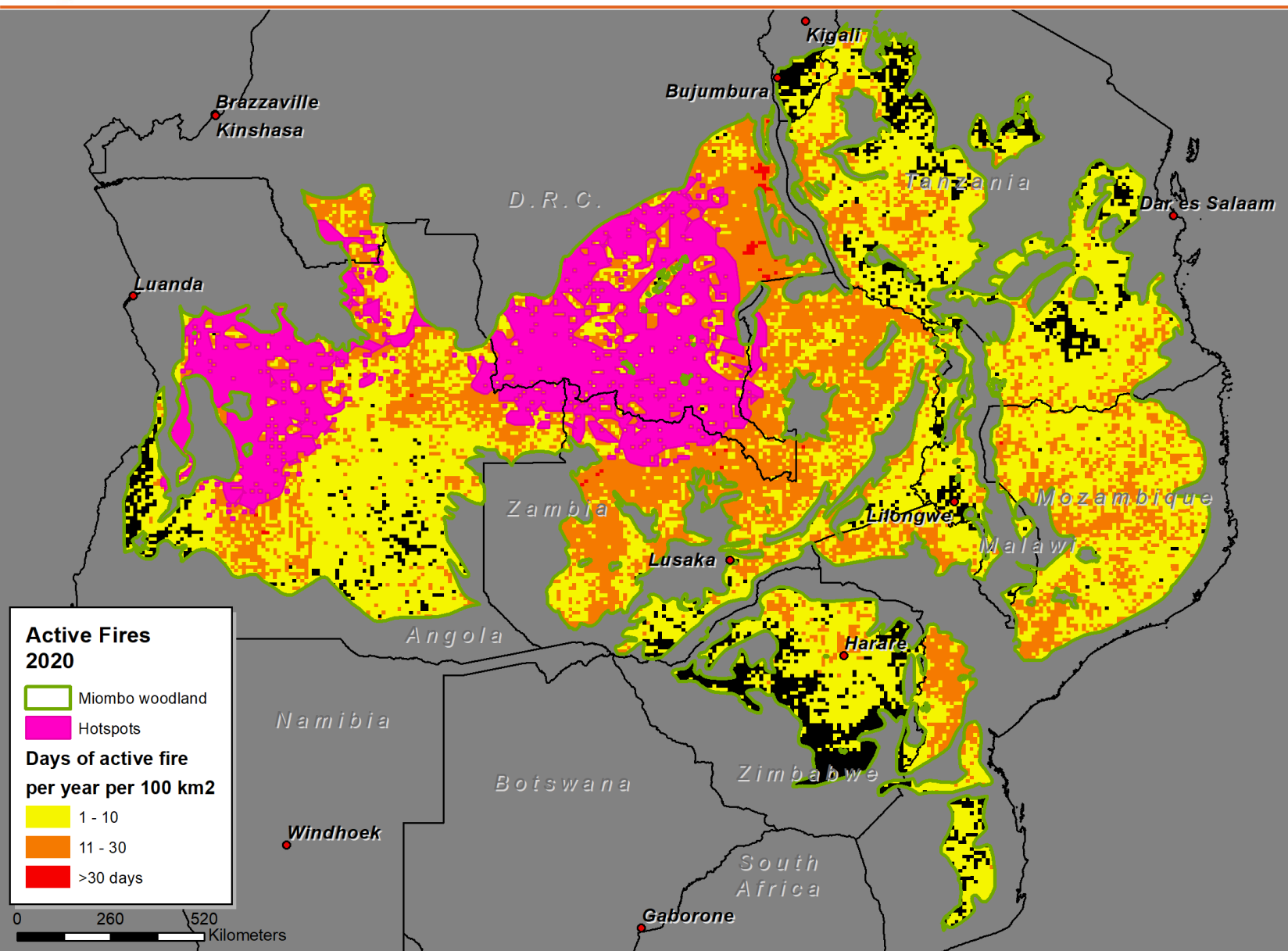
Miombo woodlands ~
2,709,000 km²

Areas of active fires
~ 487,000 km²

Areas of hot spots
~ 153,000 km²

**Active Fires
2020**

☐ Miombo woodland

🟪 Hotspots

**Days of active fire
per year per 100 km2**

🟨 1 - 10
🟧 11 - 30
🟥 >30 days

Active fire areas & frequency in past 20 years
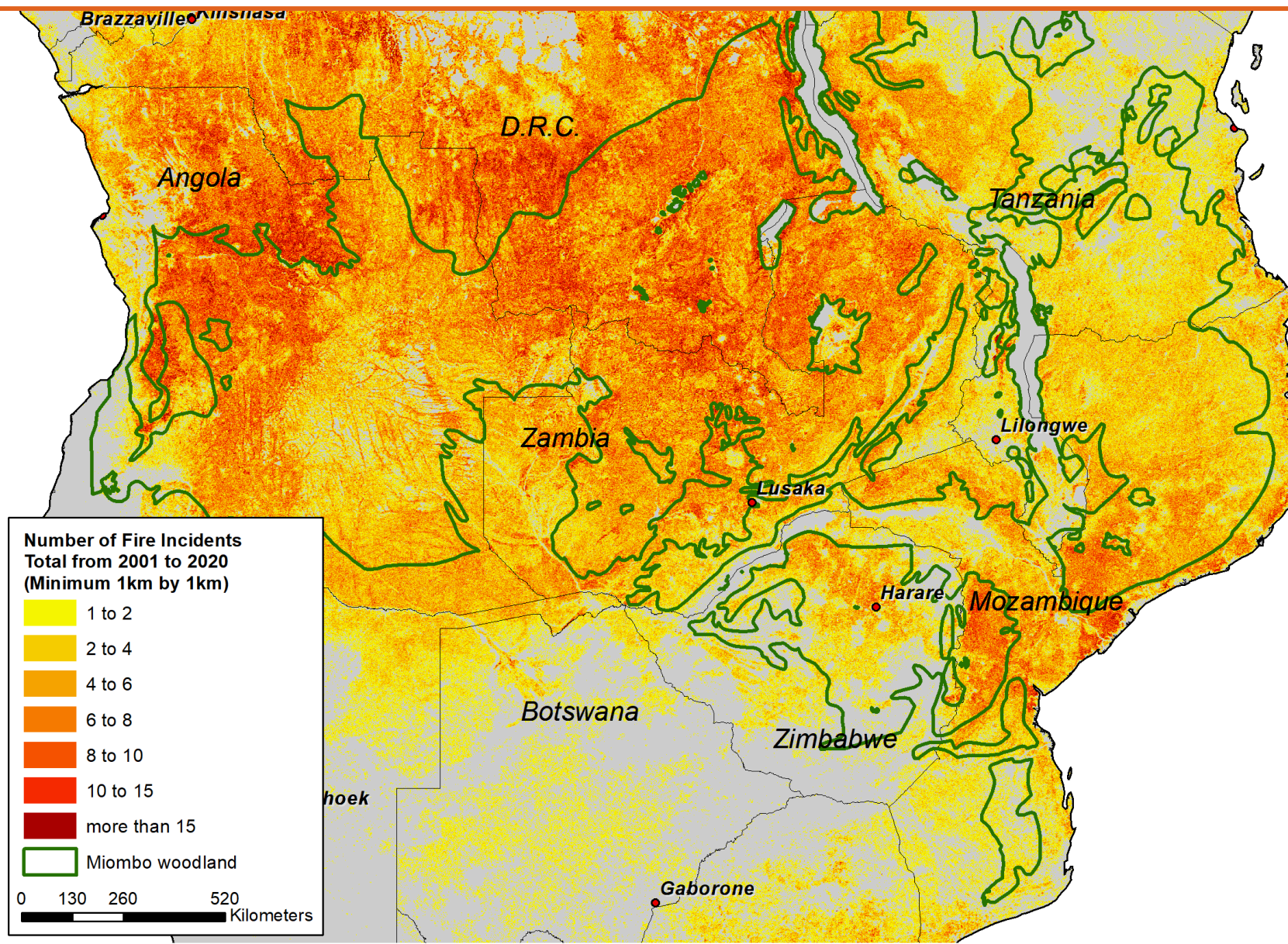
Annual fires in past 20 years

Burned annually from 2001 to 2005
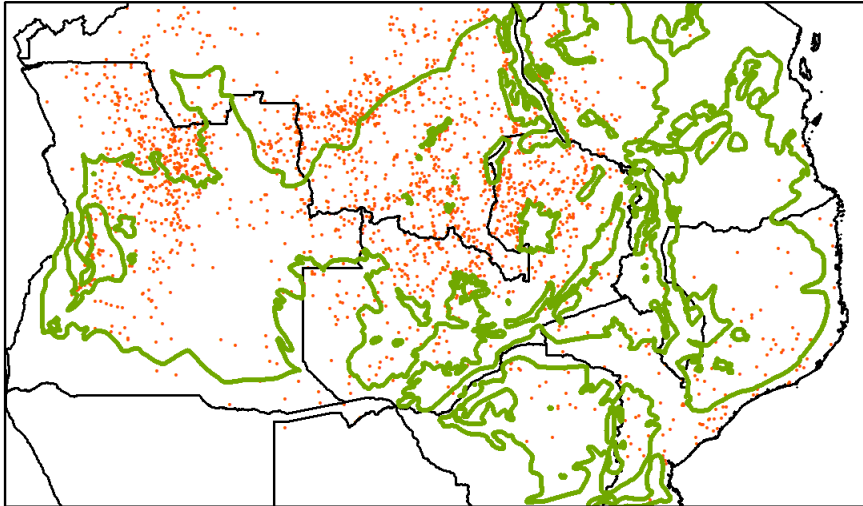
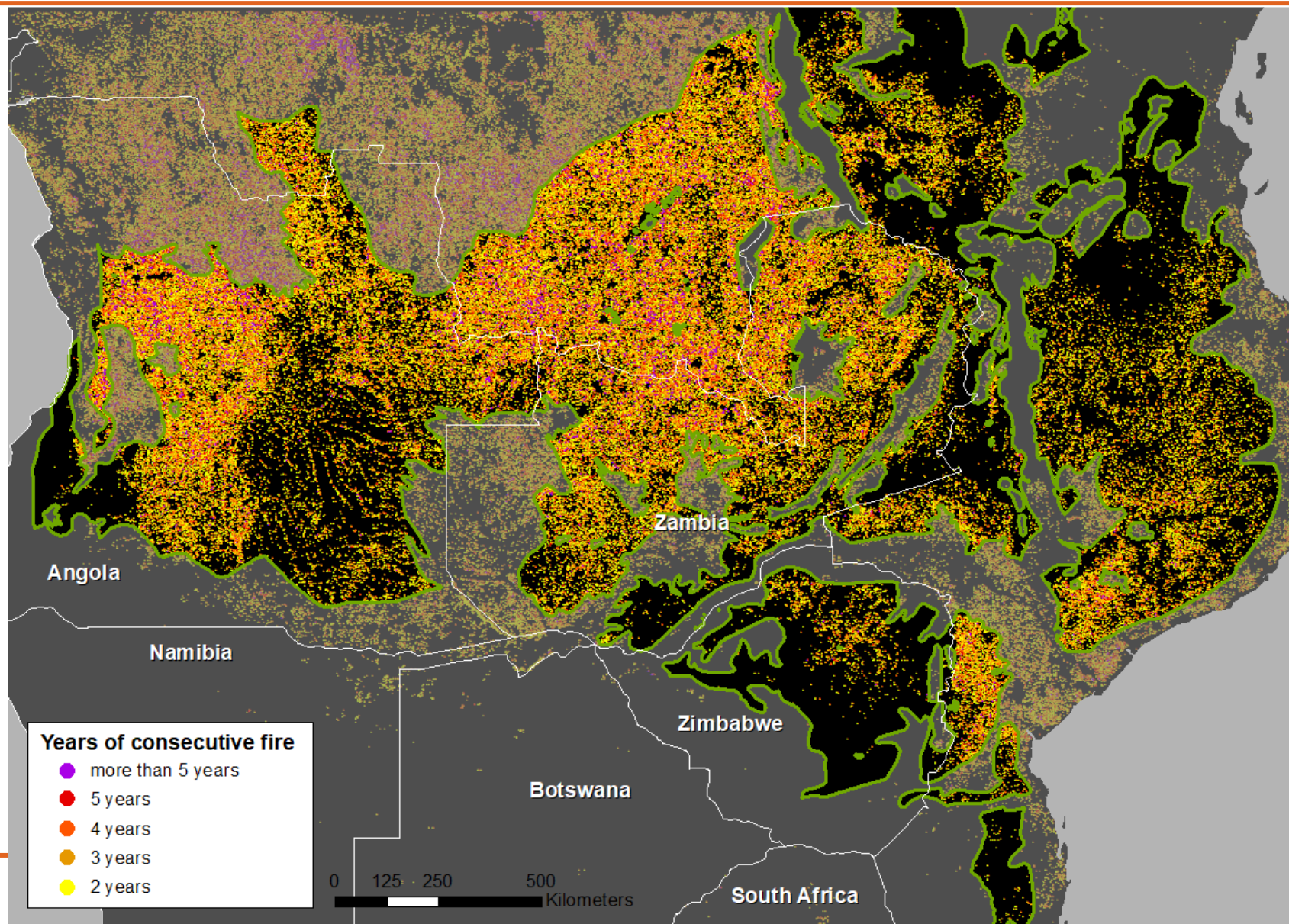Burned annually from 2006 to 2010
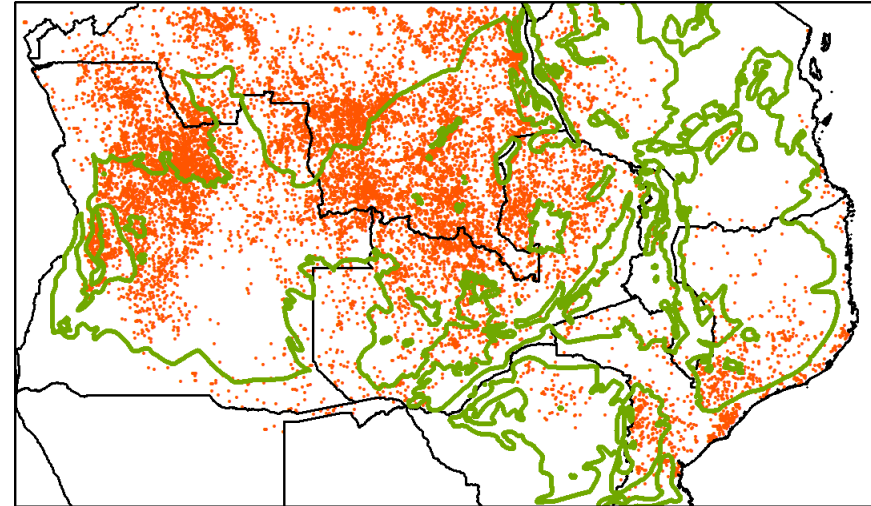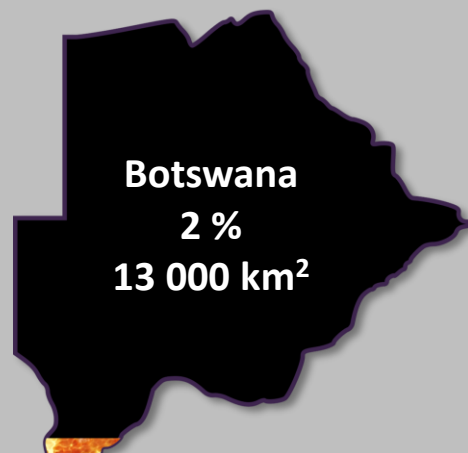
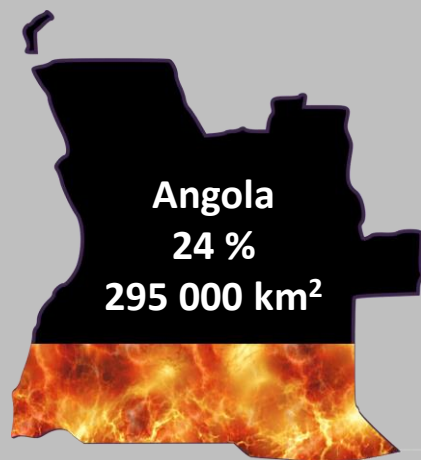Burned annually from 2011 to 2015
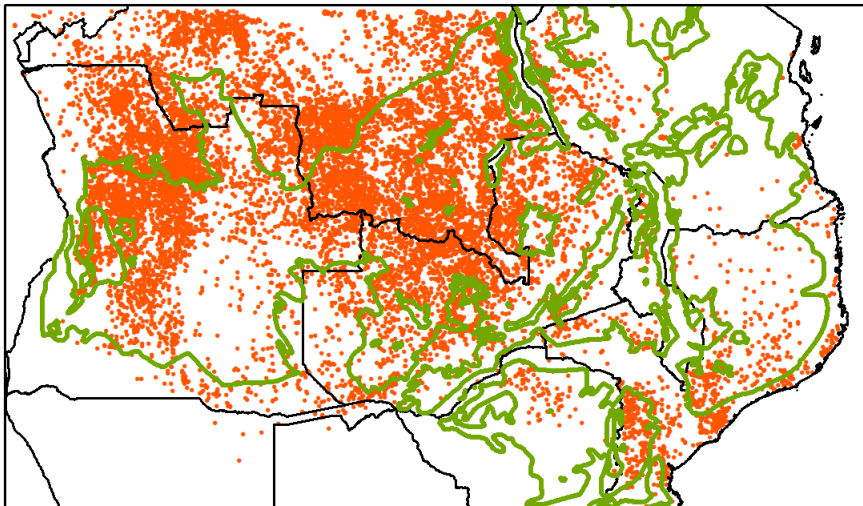
Burned annually from 2016 to 2020
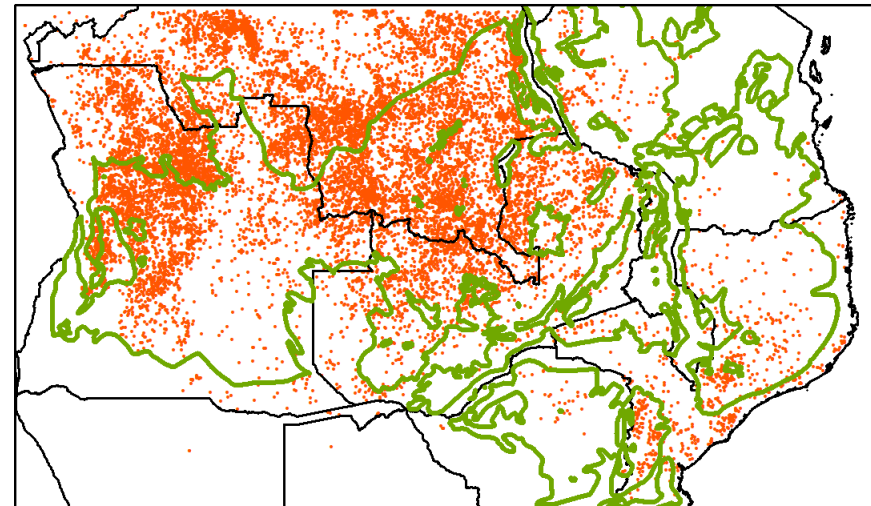
Consecutive burning in past 20 years

SPONSORED BY THE

Federal Ministry
of Education
and Research

SASSCAL
Southern African
Science Service Centre for
Climate Change and
Adaptive Land Management
WWW.SASSCAL.ORG

Some other interesting statistics

Average Areas with detected Active Fires (2001 to 2020)
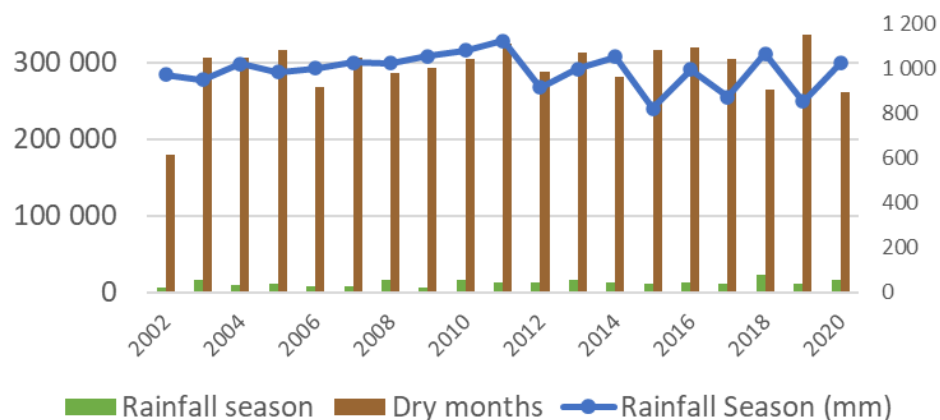
Angola
24 %
295 000 km²

Botswana
2 %
13 000 km²

Zambia
25 %
186 000 km²

Zimbabwe
10 %
41 000 km²

Some other interesting statistics

SPONSORED BY THE

**Federal Ministry
of Education
and Research**

Outlook

SASSCAL
Southern African
Science Service Centre for
Climate Change and
Adaptive Land Management
WWW.SASSCAL.ORG
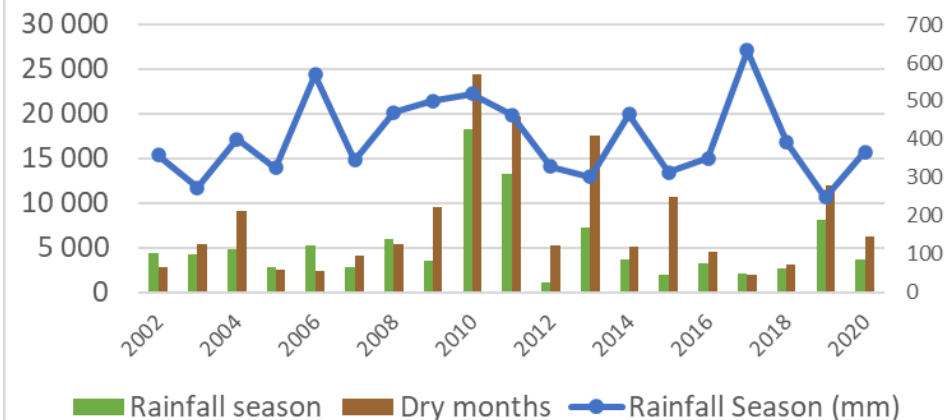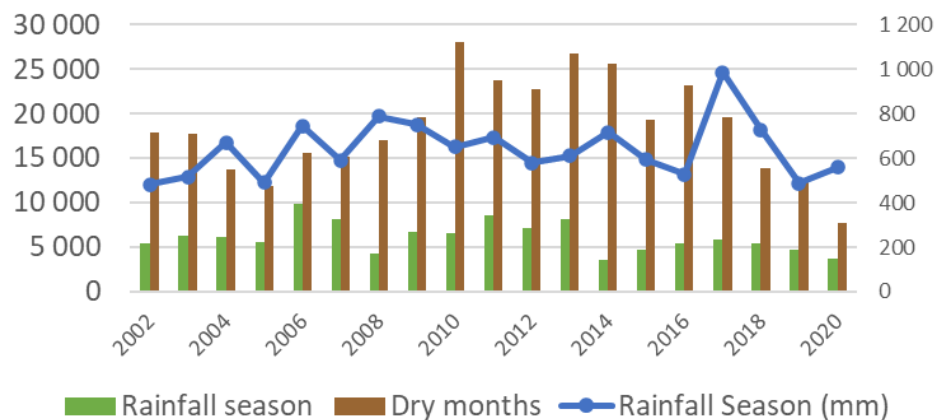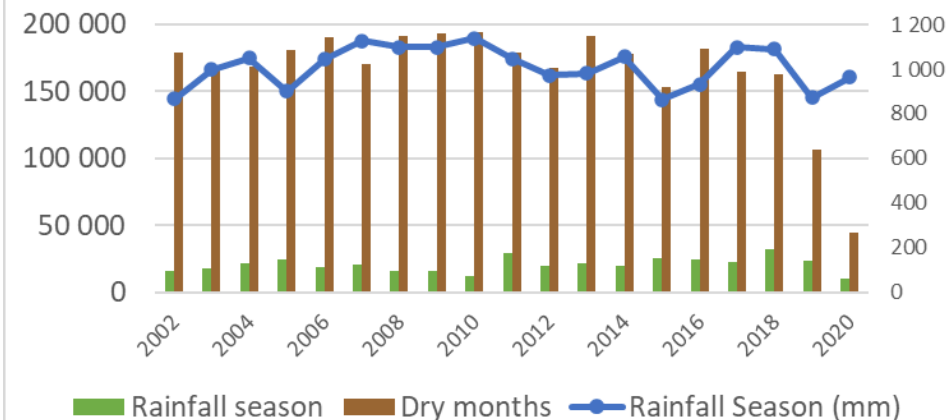
SASSCAL Info Map
Deforestation in southern Africa

SPONSORED BY THE

Federal Ministry
of Education
and Research

SASSCAL
Southern African
Science Service Centre for
Climate Change and
Adaptive Land Management
WWW.SASSCAL.ORG
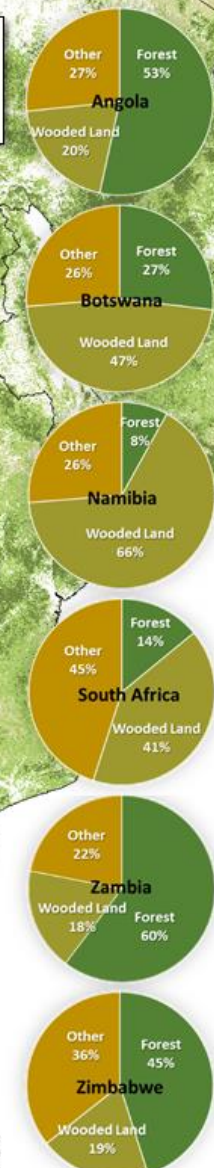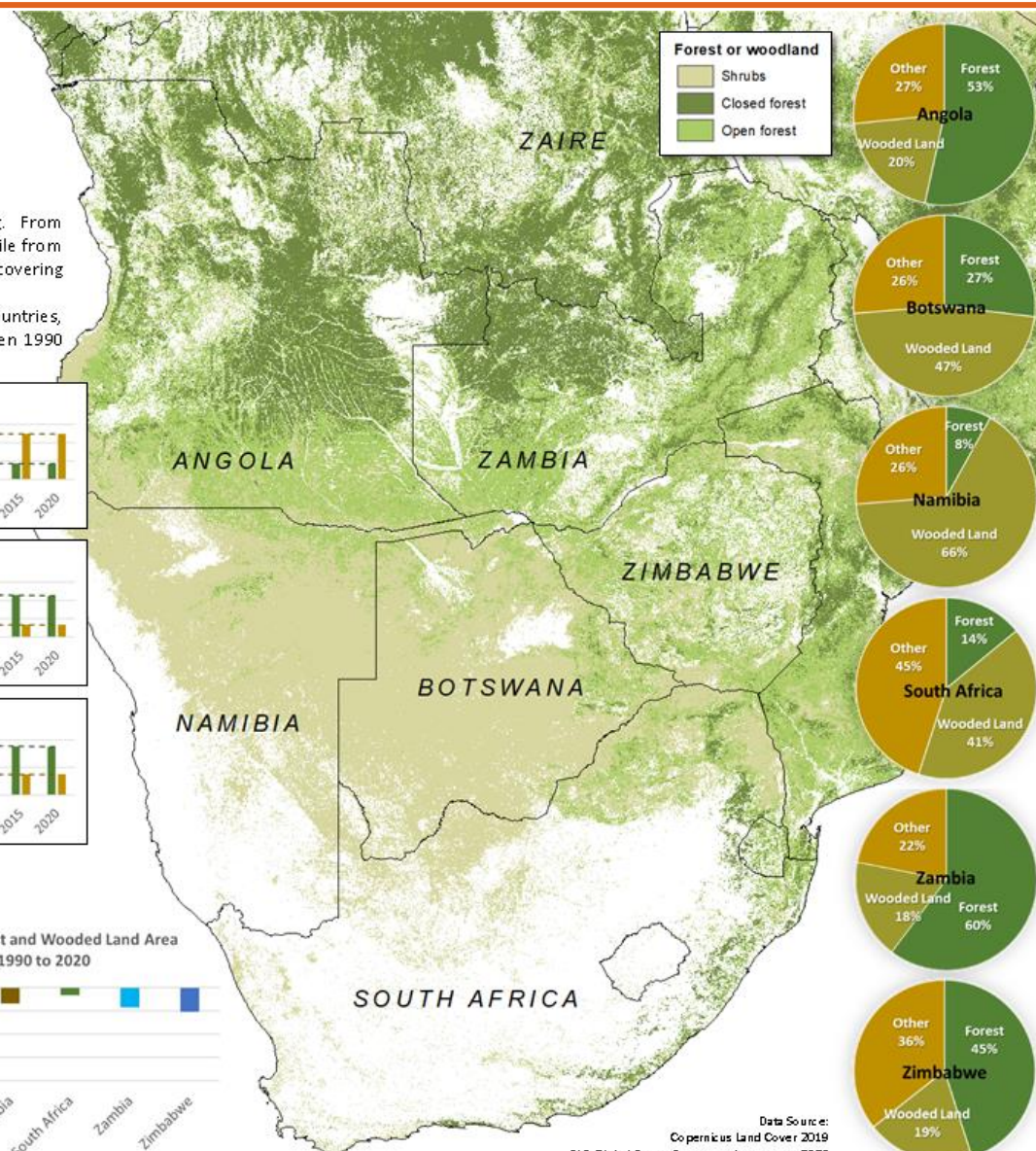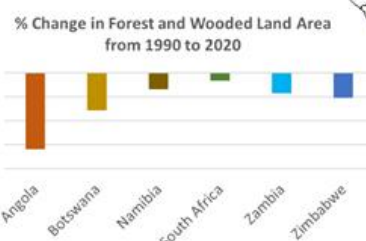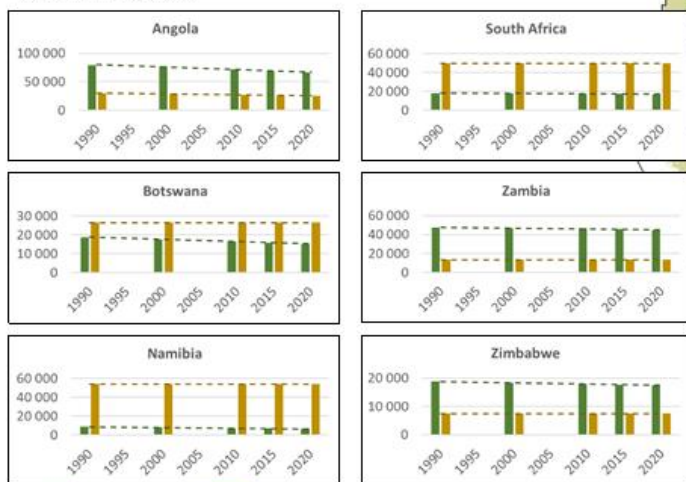
Thank you for your attention!

Email:
sylvia.Thompson@sasscal.org