

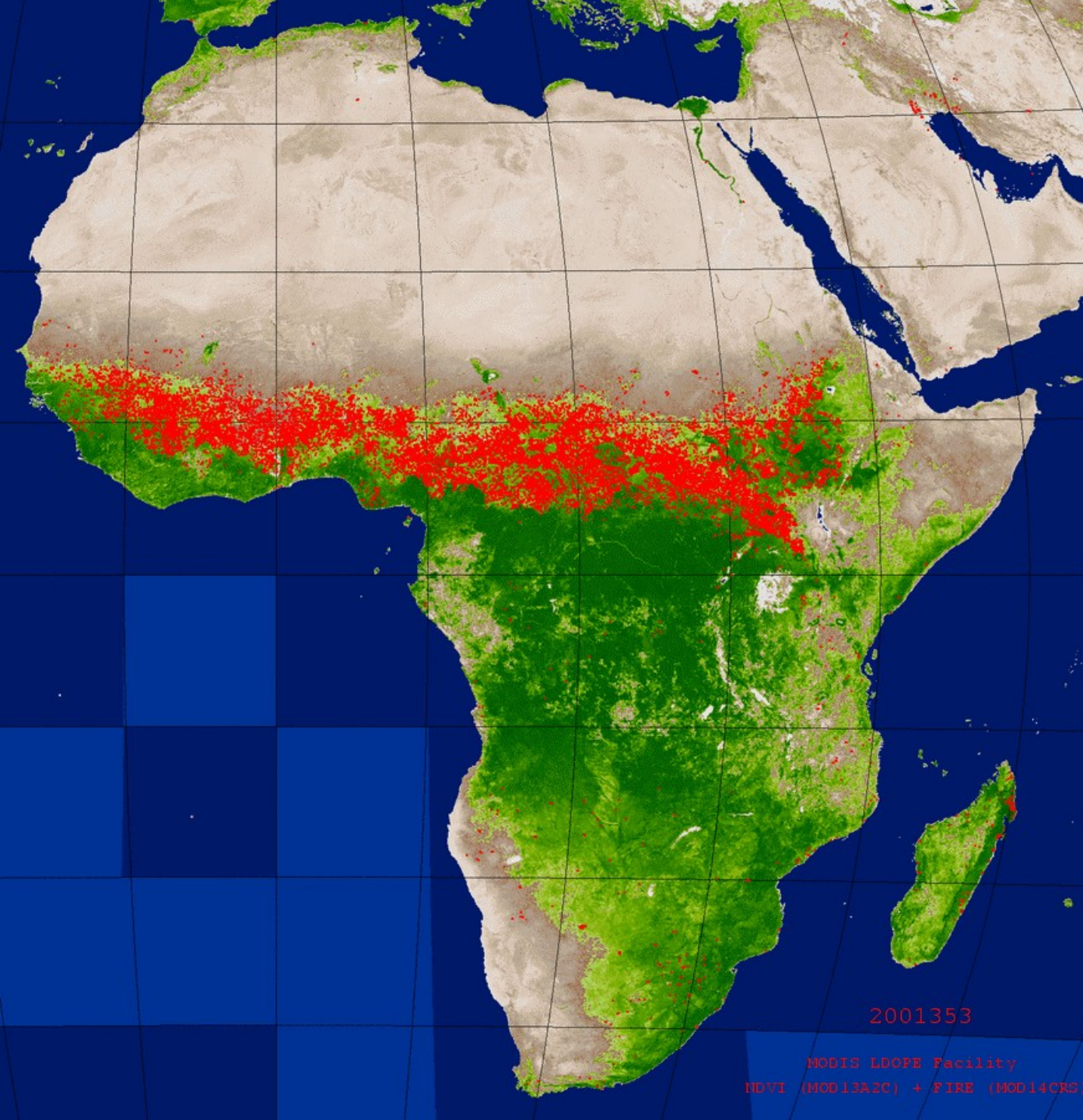
**CSIR Meraka Institute
Earth Observation Science & IT**

Remote Sensing for Fire Management

Riaan van den Dool

Overview

- 🌐 **Detecting fires from space**
- 🌐 **AFIS technology**
- 🌐 **Community participation**
- 🌐 **New developments**



ACTIVE FIRES

2001 animation
provided by Dr
David Roy

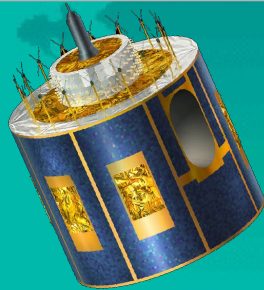
1km MODIS
active fire
detections (red)
superimposed
on MODIS 16
day NDVI
composites

2001353

MODIS LDOPE Facility
NDVI (MOD13A2C) + FIRE (MOD14C2S)

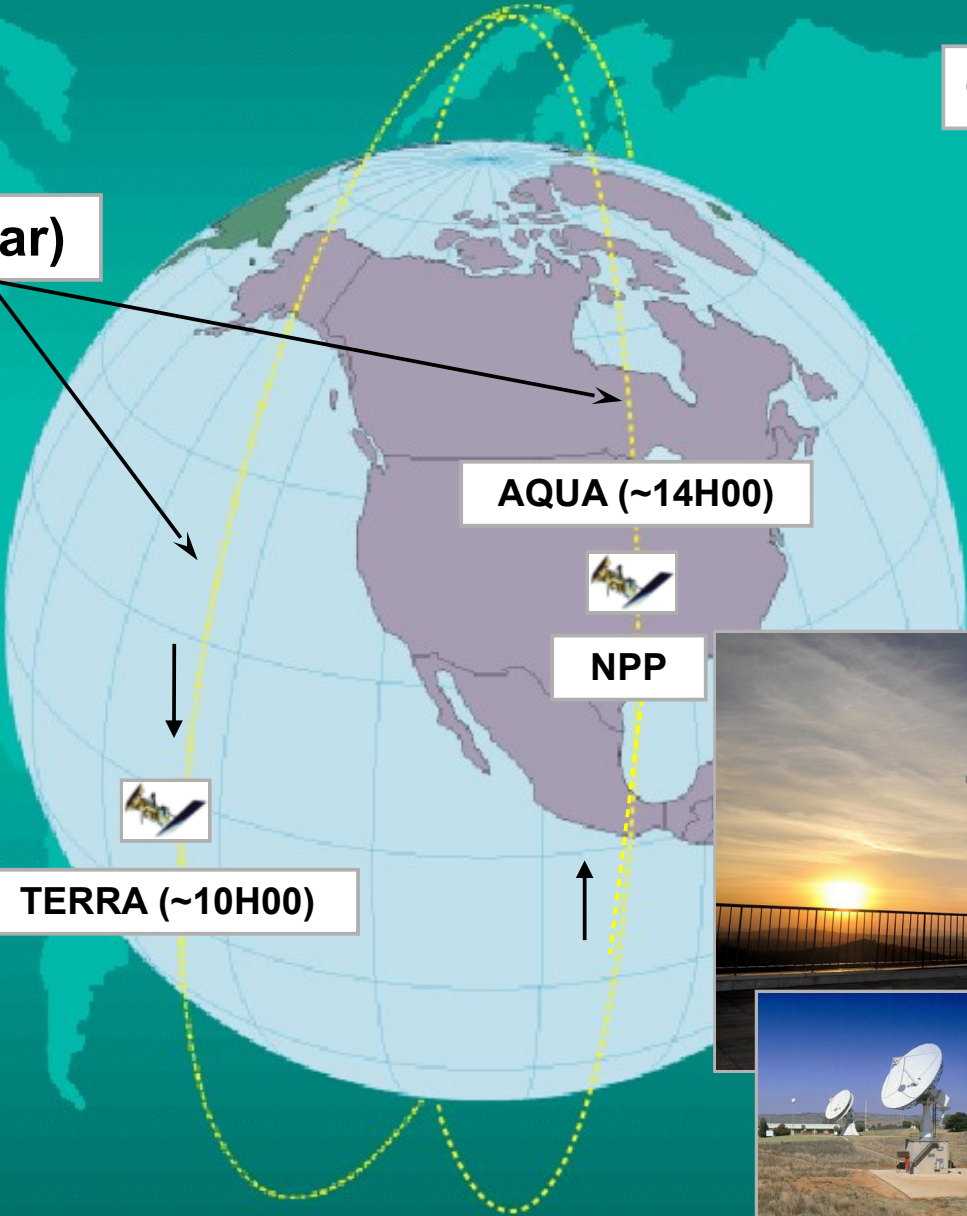
Detecting fires from space

Geostationary Orbit



MSG/GOES – every 15 minutes

LEO (Polar)



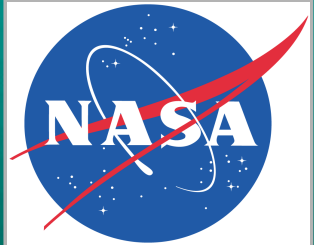
AQUA (~14H00)

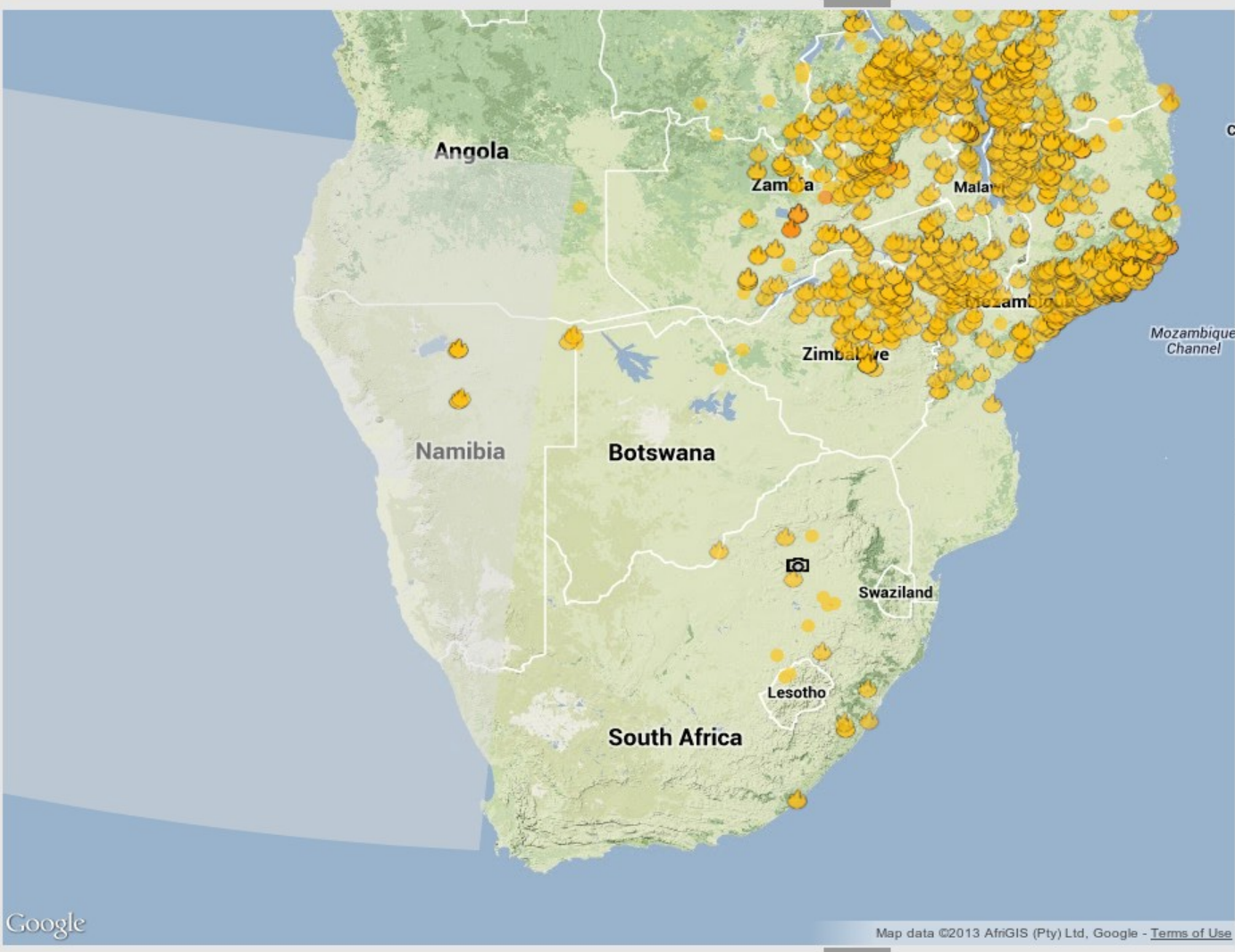


NPP



TERRA (~10H00)





Navigation icons: Home, Print, Layers, Fire, Zoom In, Zoom Out, Settings.

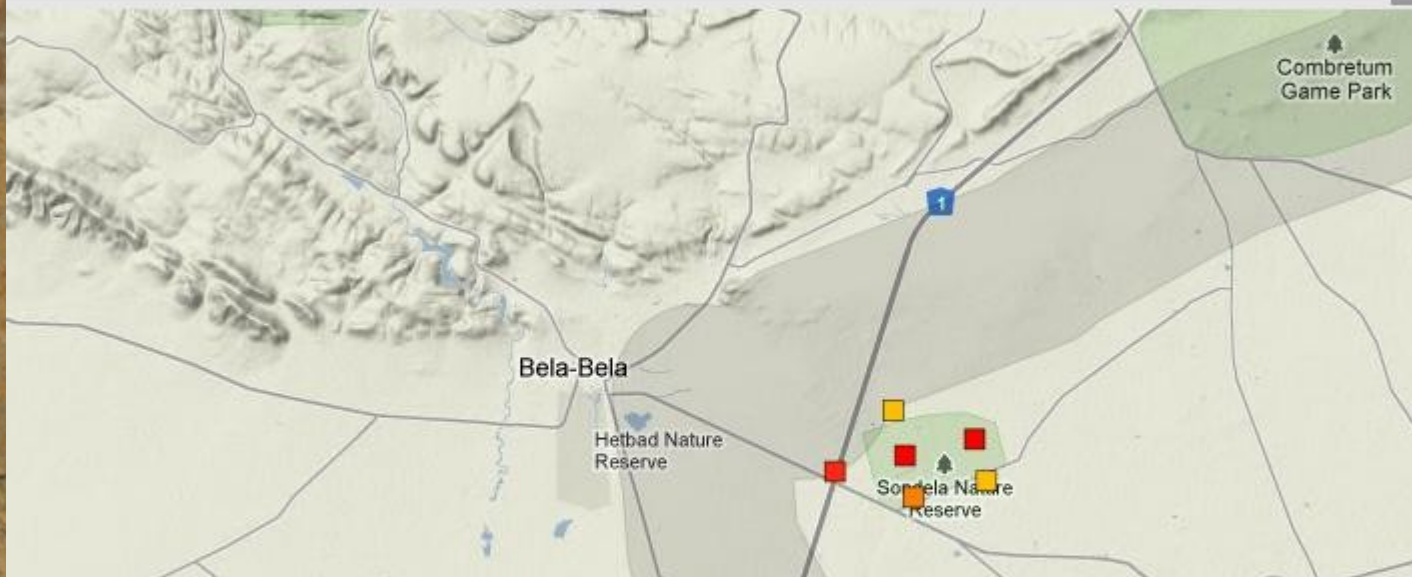
- AFIS app Geotagged Photo uploads (last 7 days)
- MODIS / VIIRS Active Fires Today
 - 🔥 Low Intensity Fire
 - 🔥 Medium Intensity Fire
 - 🔥 High Intensity Fire
 - 🔥 Extreme Intensity Fire
- MODIS / VIIRS Active Fires Last 48 Hours
 - 🔥 Low Intensity Fire
 - 🔥 Medium Intensity Fire
 - 🔥 High Intensity Fire
 - 🔥 Extreme Intensity Fire
- MSG Active Fires Today
 - Low Intensity
 - Medium Intensity
 - High Intensity
 - Extreme Intensity
- MSG Active Fires Last 48 Hours
 - Low Intensity
 - Medium Intensity
 - High Intensity
 - Extreme Intensity
- Current fire danger and wind
 - Low
 - Moderate
 - Dangerous
 - Very Dangerous
 - Extreme
- MODIS Burned Areas Last 4 Months

Bella Bella



afis

Advanced Fire Information System



date	FWI	LFDI	rain_mm	rh_pct	temp_c	uwind_ms	vwind_ms	ws_kmh
2012-08-27	63	65	0.00	29.71	26.69	-4.24	-3.35	19.46
2012-08-28	54	61	0.00	33.40	26.10	-3.61	-3.22	17.41
2012-08-29	51	64	0.00	17.60	28.08	-1.87	-2.28	10.63
2012-08-30	52	66	0.00	17.15	29.69	-2.49	-1.28	10.09
2012-08-31	43	61	0.00	15.19	29.27	-0.03	-0.75	2.69
2012-09-01	76	76	0.00	12.07	32.57	4.59	1.72	17.66
2012-09-02	55	58	0.00	37.11	23.97	-3.80	-3.72	19.16

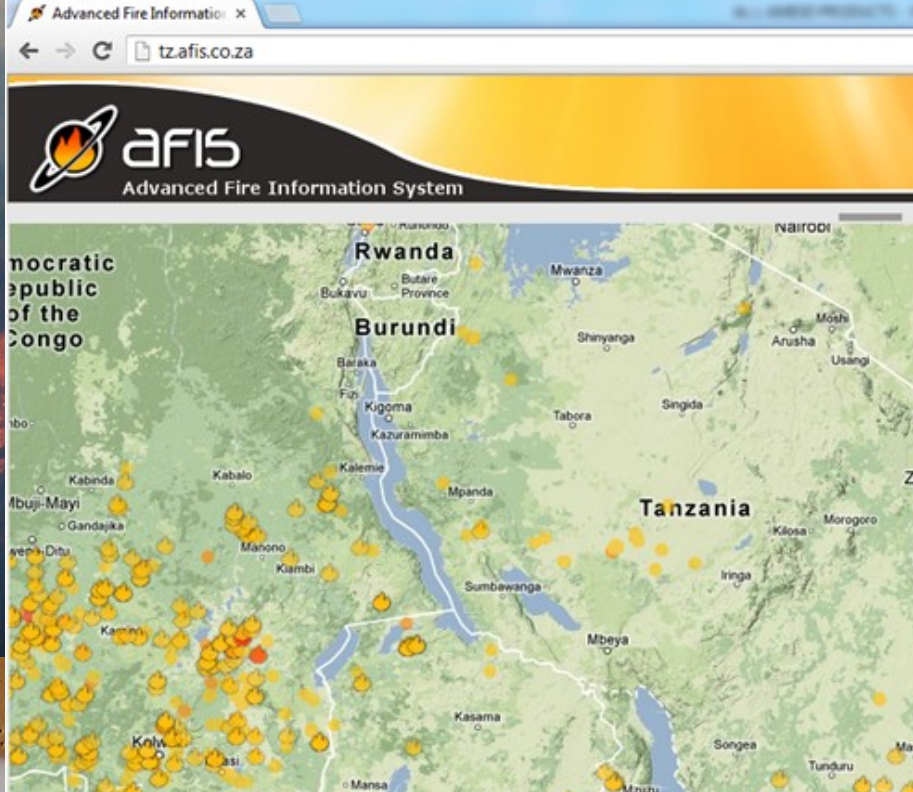


our future through science

Detecting fires from space

Global reach: Africa and beyond





AFIS Technology



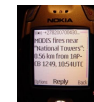
Users



Offering



Web Viewer



WAAS



Sensors



MODIS



NPP



GPS



Asset Tracking



Mobile App



MSG



Forecast Models



AWS



Smart phones



Fire Reports



Field Terminal



Community Participation

- Community participation
 - Fire management training
 - Fire-fighting teams
 - Record keeping

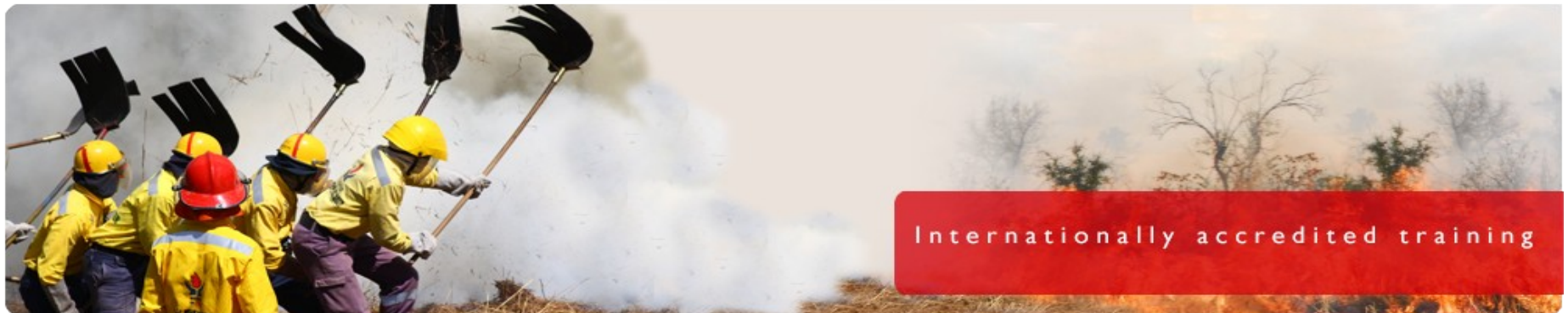


Community Participation

- Social programmes
 - Job creation
 - Training and education



Implementing the EPWP Working on Fire Programme



Internationally accredited training

New Developments

- AFIS Mobile App (iOS and Android)
- Local FDI indicators
- GeoPhoto upload: crowd sourcing / user participation
- Fire report query tool
- Next satellite overpass layer
- NPP / VIIRS: New satellite added as a feed



Sabie Park, Mpumalanga, 1260

LAT -24.883 LON 31.487

	THU 2013-07-04	FRI 2013-07-05	SAT 2013-07-06	SUN 2013-07-07	MON 2013-07-08
FDI	49	38	50	52	46
Temp.	21 °C	20 °C	23 °C	26 °C	24 °C
Humidity	51%	58%	47%	42%	48%
Wind	18 kph ↘	8 kph →	13 kph ↑	11 kph ↗	9 kph ↗

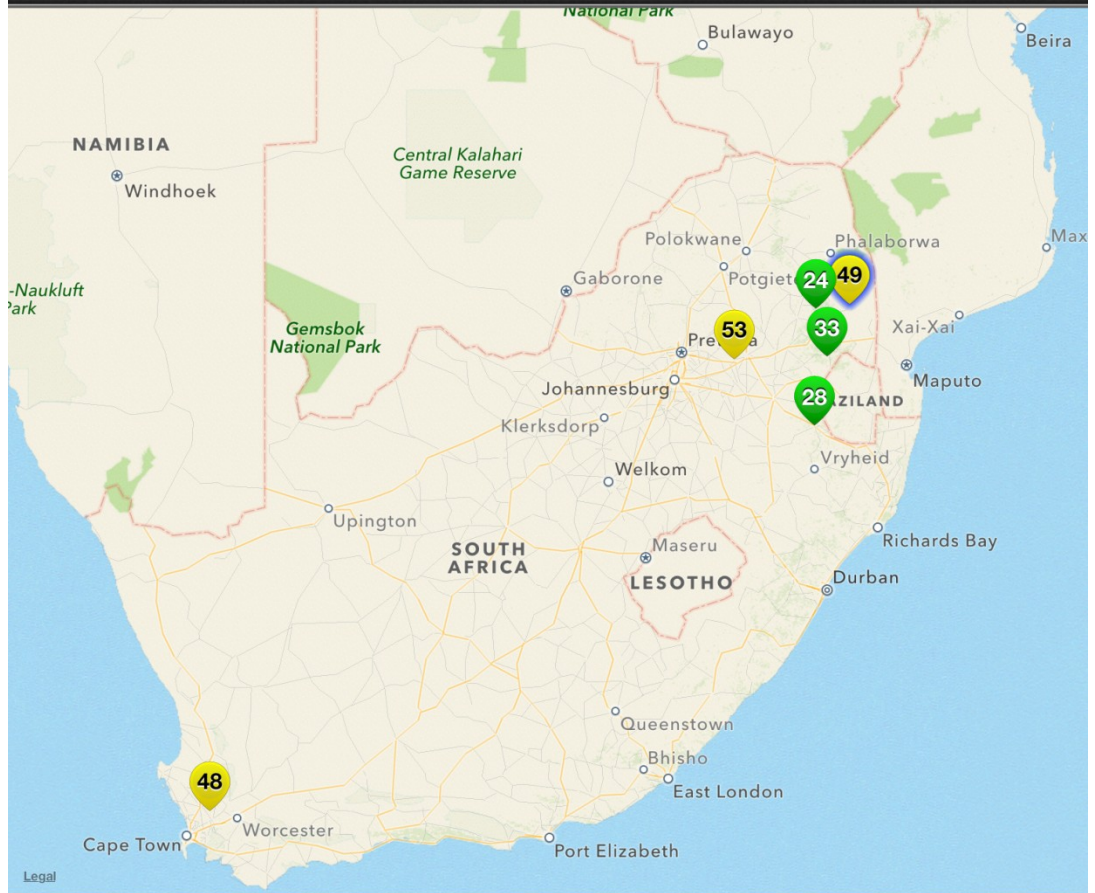
Land cover **Woodland**

Last burned **2.8 years ago**

Fire frequency **1.5 / decade**

Curing **57%**

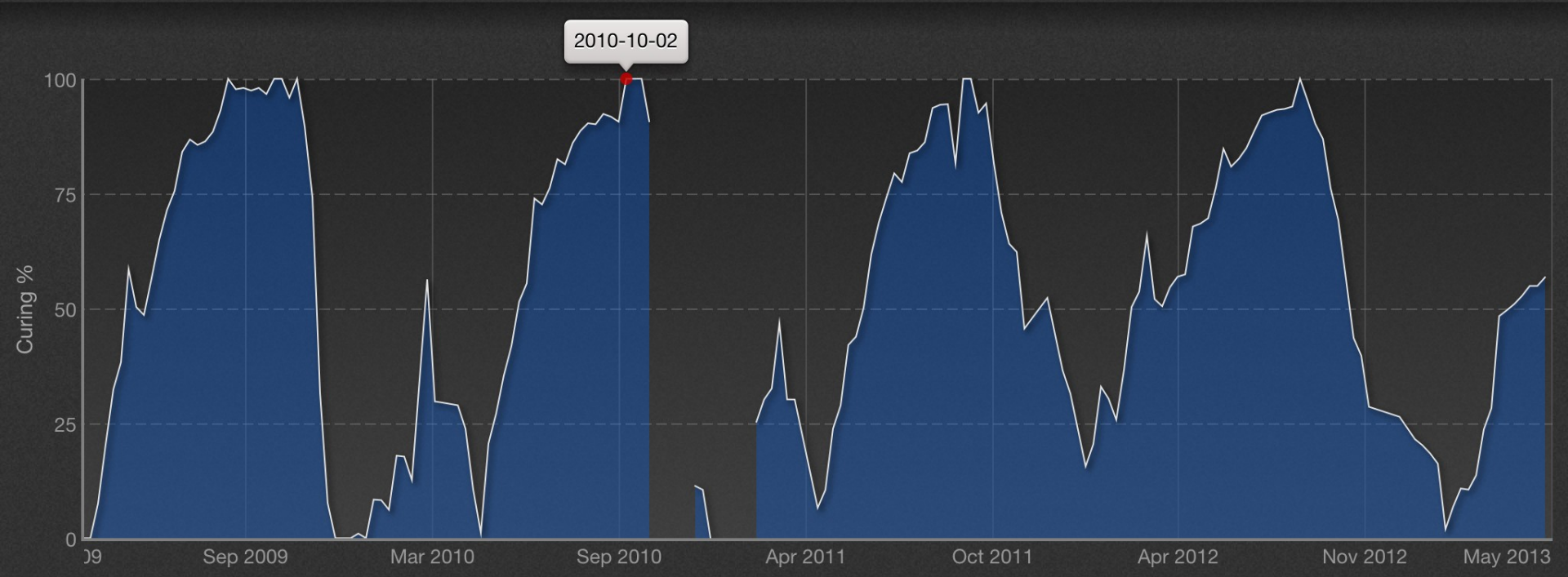
[View fire history](#)



Close

Fire History

Sabie Park, Mpumalanga, 1260



2

fires

57%

cured

Land cover

Woodland

— EVI

— Curing

1.5

fires per decade

2.8 years

since last fire



Sabie Park, Mpumalanga, 1260

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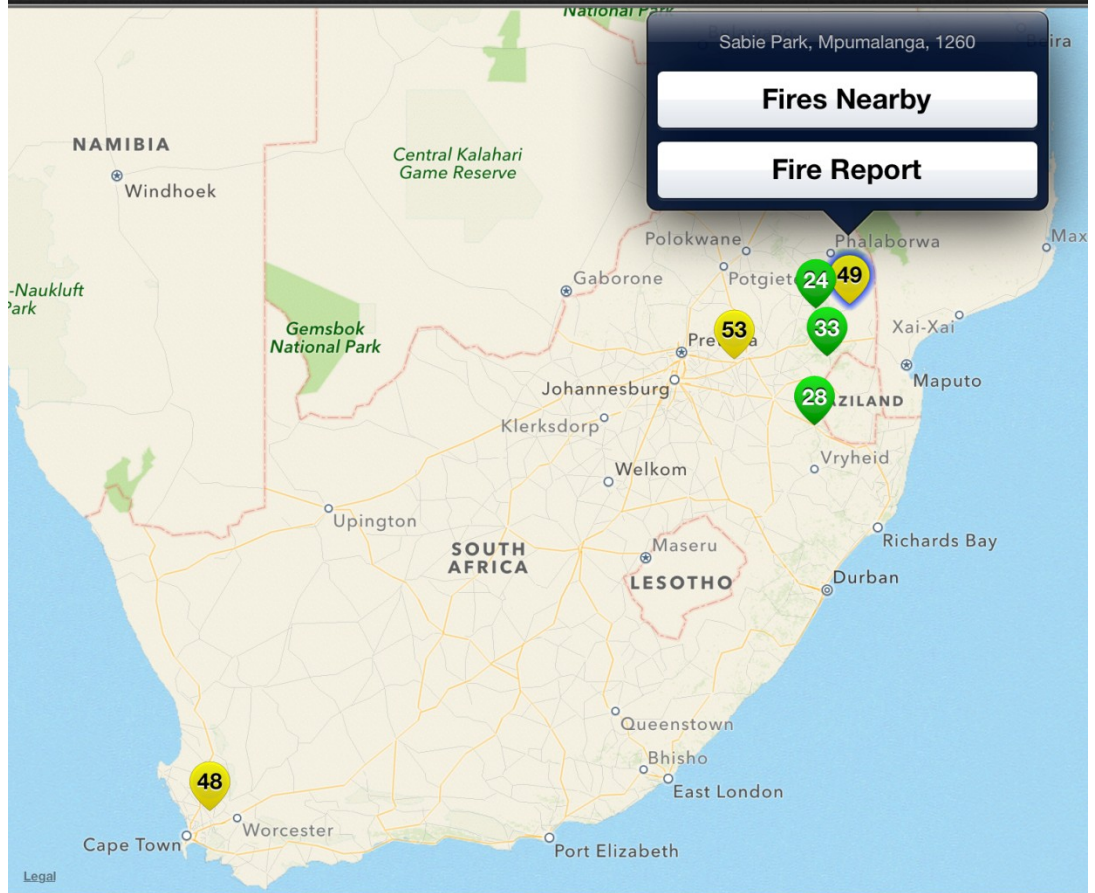
Land cover **Woodland**

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[View fire history](#)





Sabie Park, Mpumalanga, 1260

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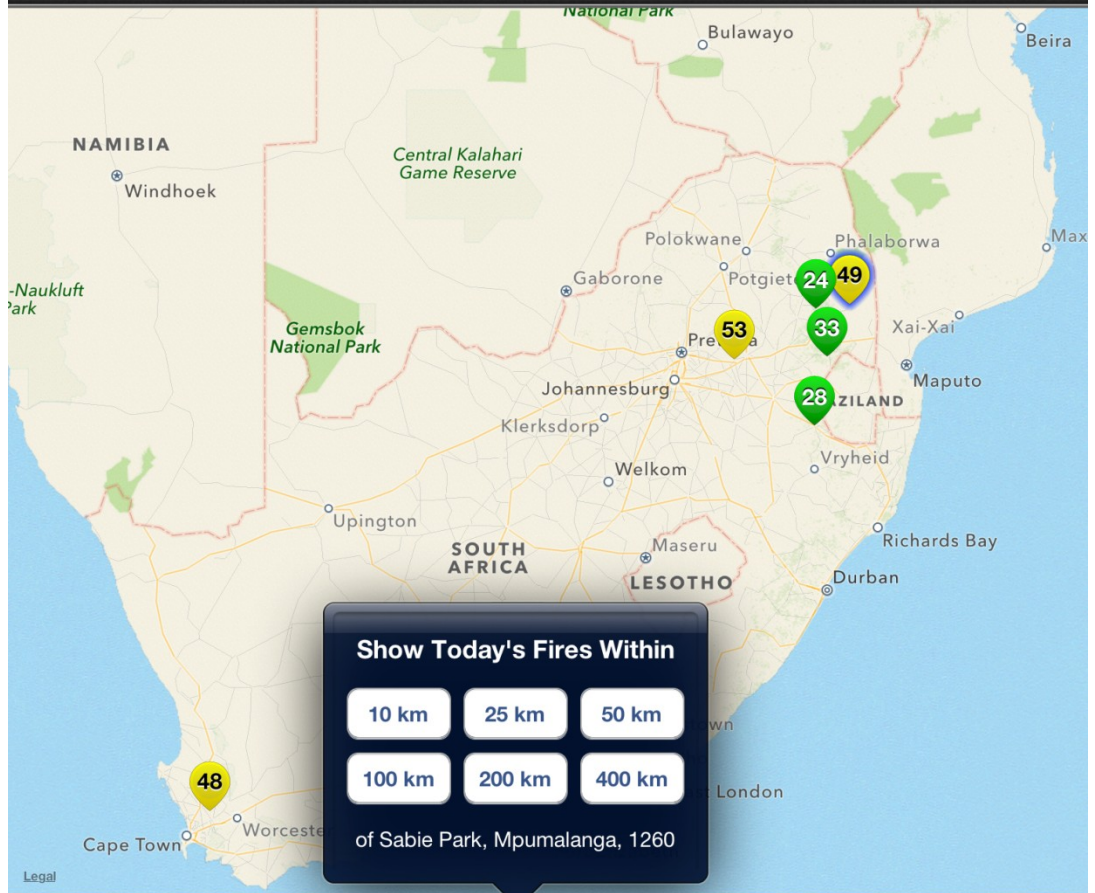
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Sabie Park, Mpumalanga, 1260

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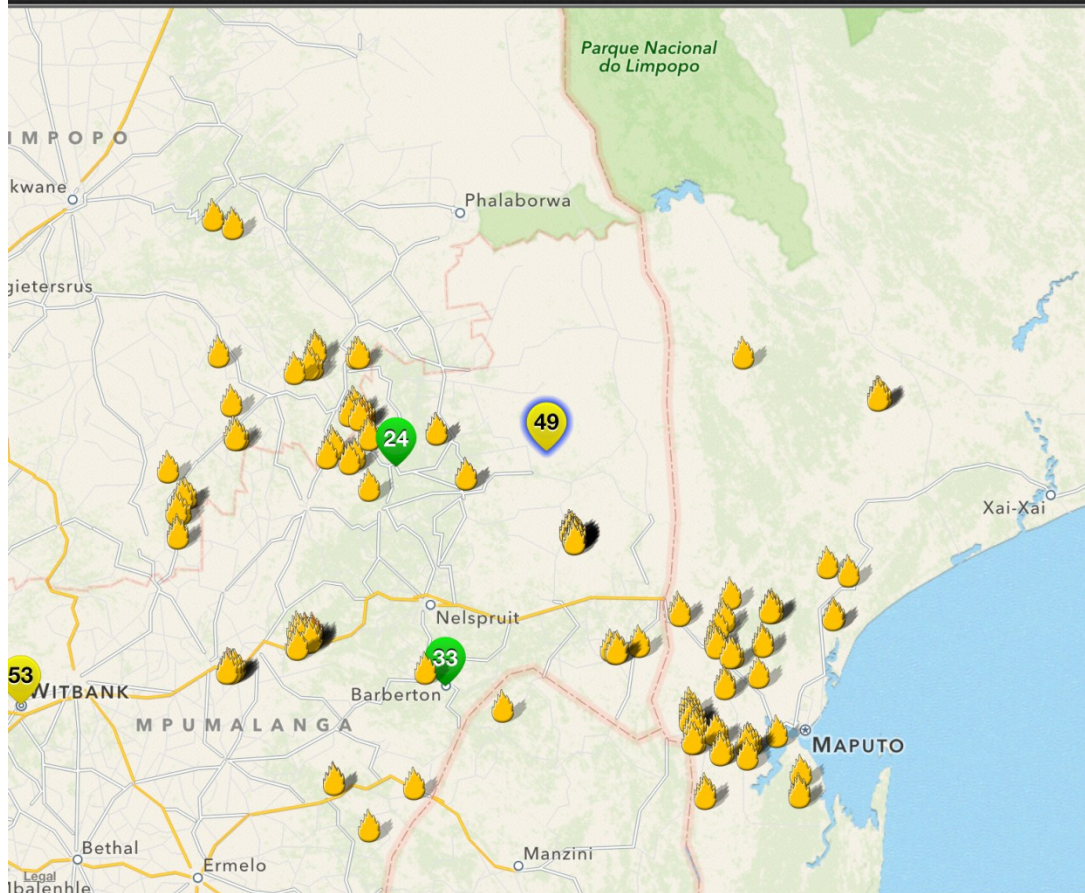
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[View fire history](#)





Sabie Park, Mpumalanga, 1260

LAT -24.883 LON 31.487

	THU	FRI	SAT	SUN	MON
	2013-07-04	2013-07-05	2013-07-06	2013-07-07	2013-07-08
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Humidity	51%	58%	47%	42%	48%
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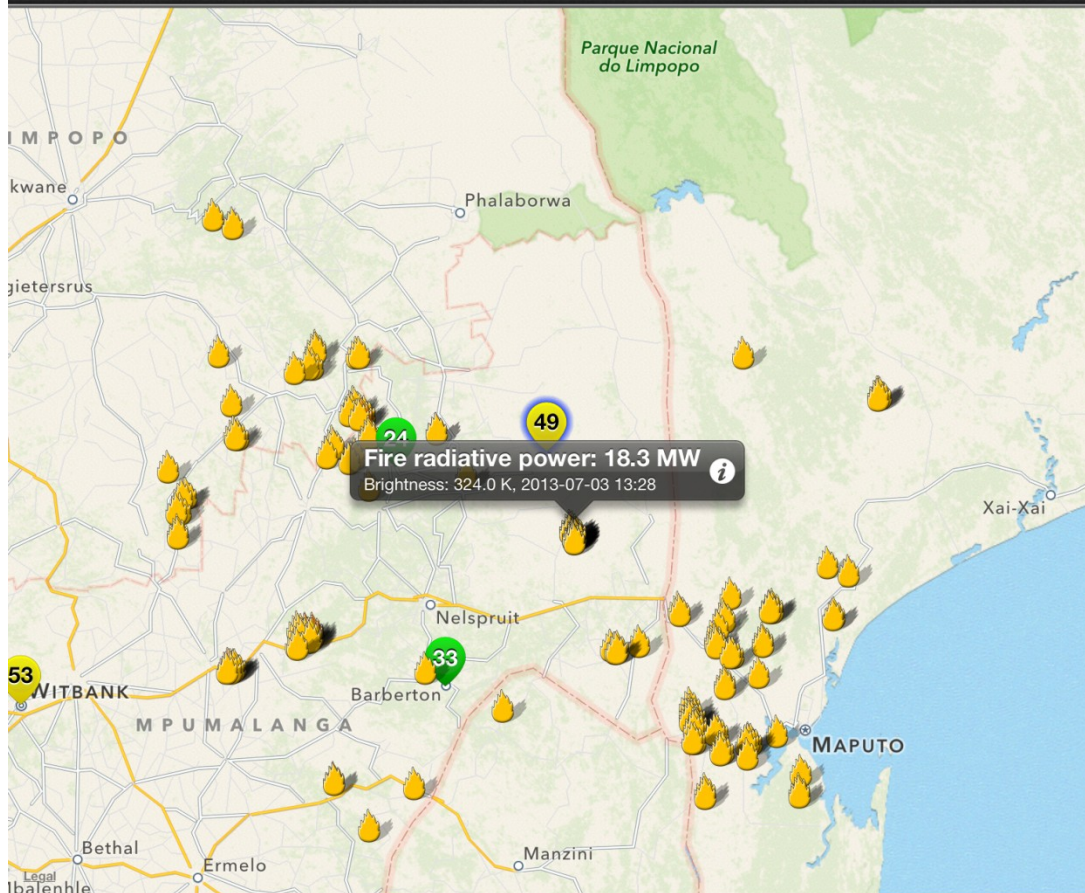
Land cover **Woodland**

Last burned **2.8 years ago**

Fire frequency **1.5 / decade**

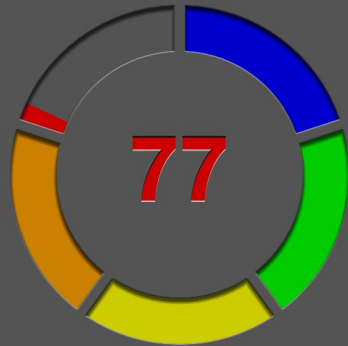
Curing **57%**

View fire history



Lowveld Fire Danger Index Calculator

Done



EXTREMELY DANGEROUS

Temperature	<input type="text" value="27"/> °C	-	+
Wind Speed	<input type="text" value="30"/> kph	-	+
Humidity	<input type="text" value="20"/> %	-	+
Rainfall (last event)	<input type="text"/> mm	-	+
Days since rainfall	<input type="text"/> days	-	+
Curing	<input type="text"/> %	-	+

Too dangerous and unsuitable for prescribed burning.





Sabie Park, Mpumalanga, 1260

LAT -24.883 LON 31.487

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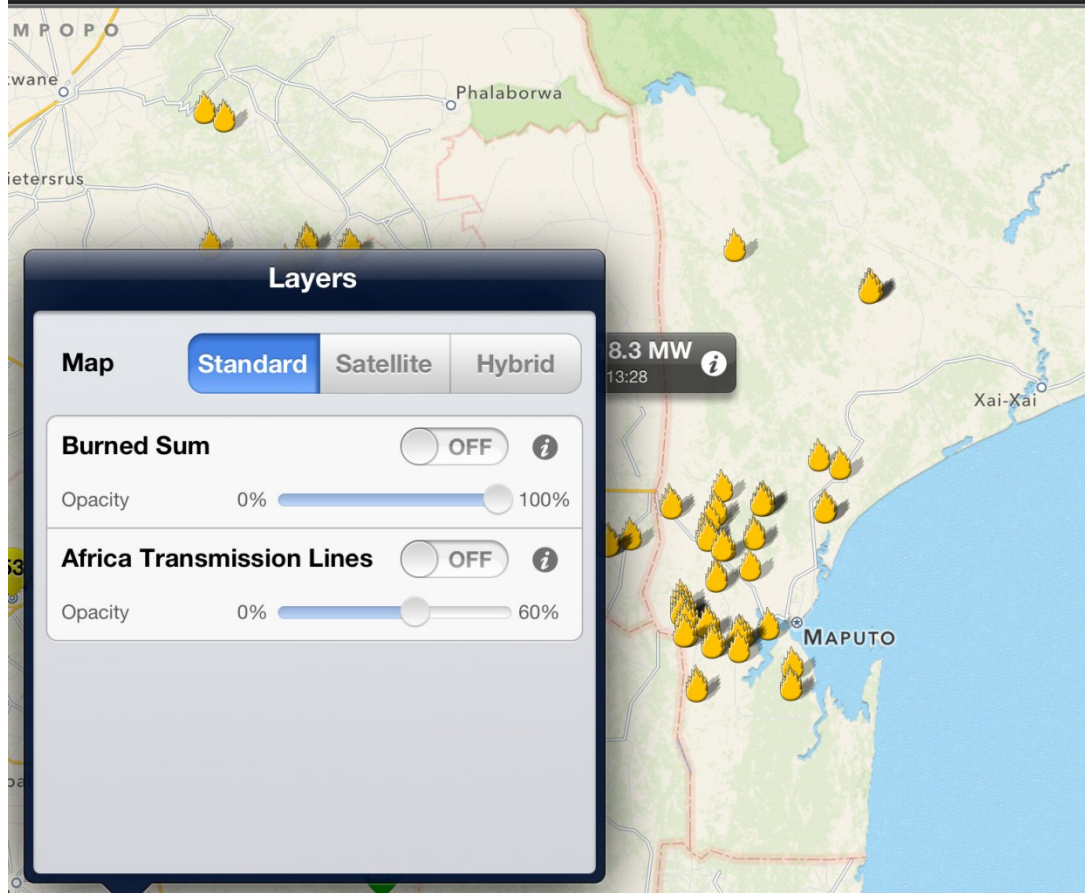
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Curing **57%**

View fire history



No Service 0:43 Not Charging

afis

Sabie Park, Mpumalanga, 1260 LAT -24.883 LON 31.487

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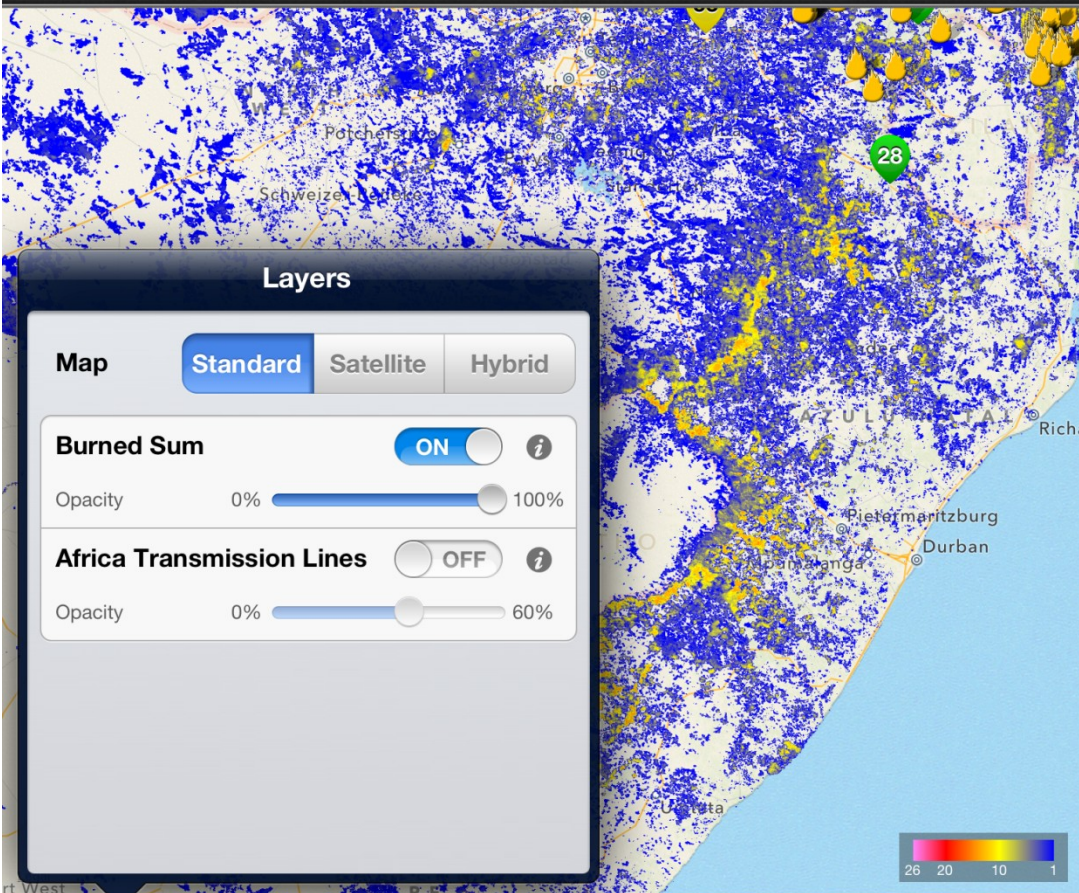
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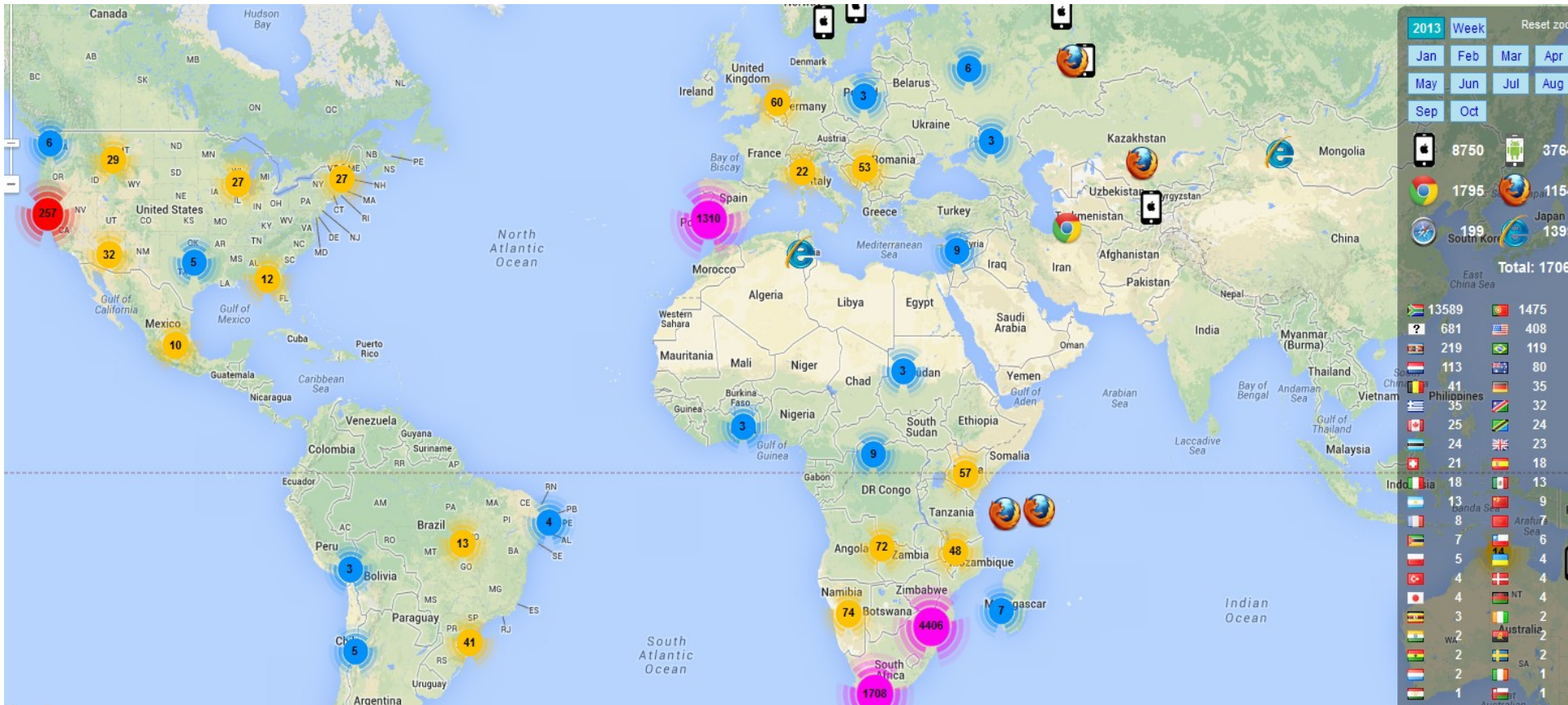
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Curing **57%**

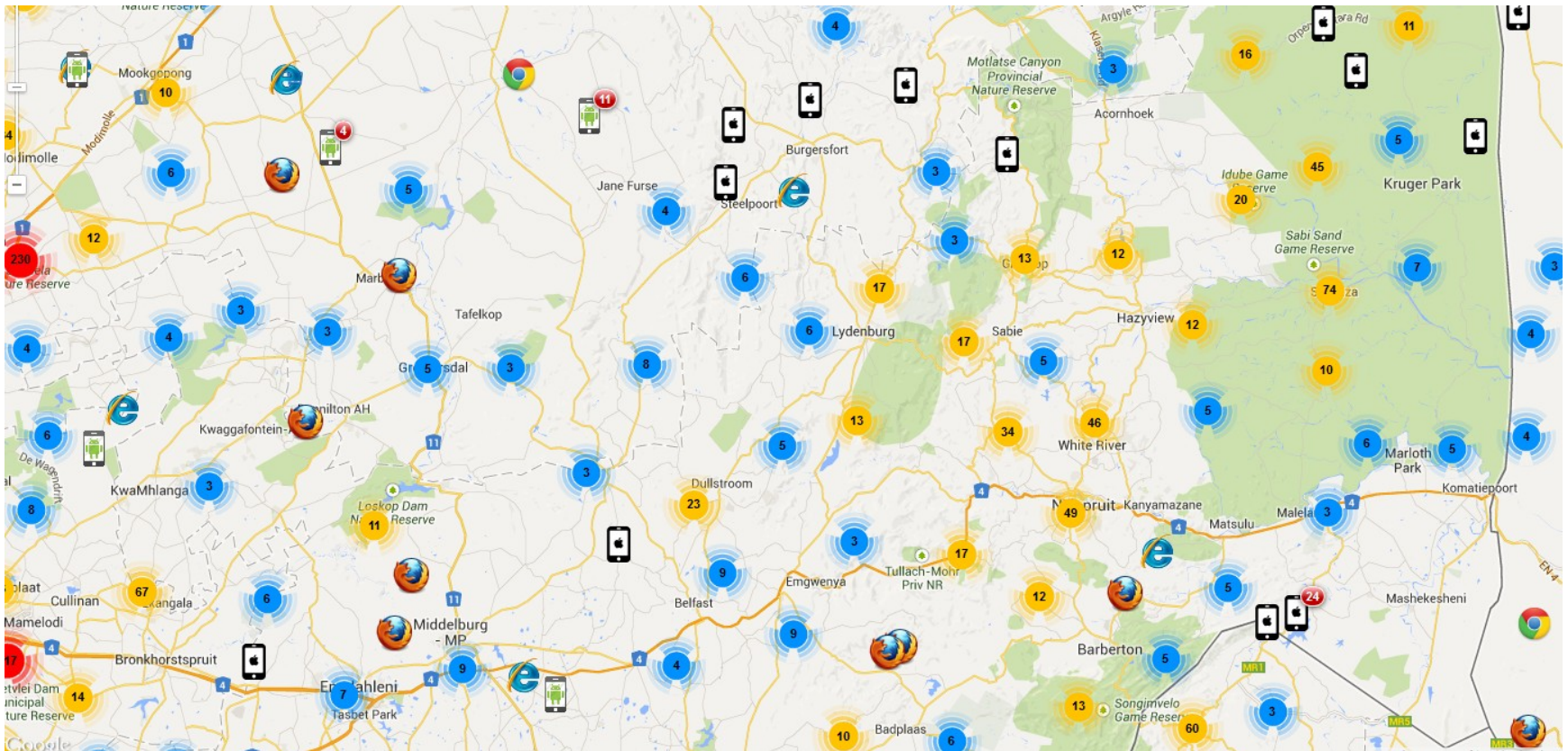
[View fire history](#)



Mobile app data requests



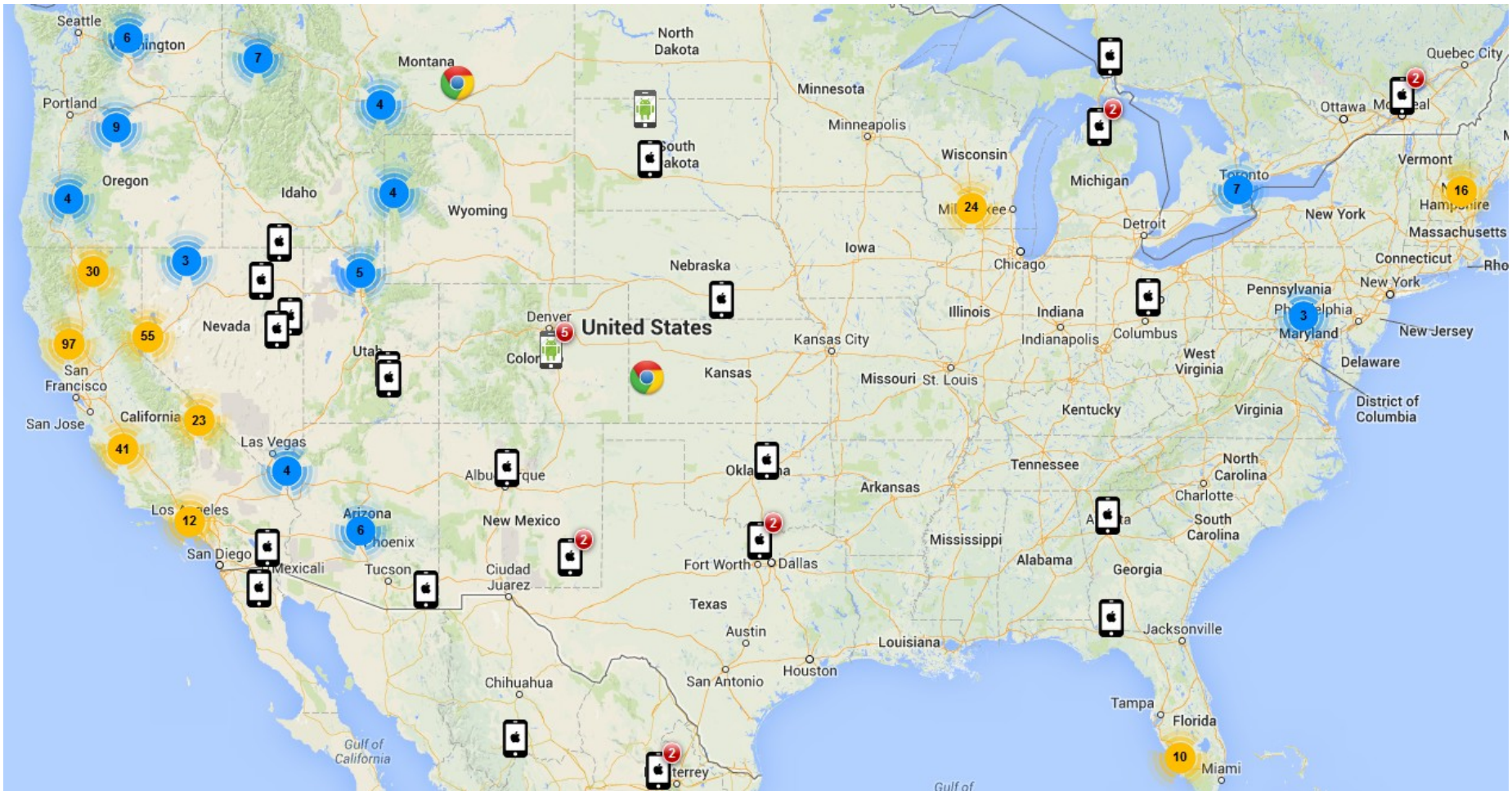
Mpumalanga Data requests



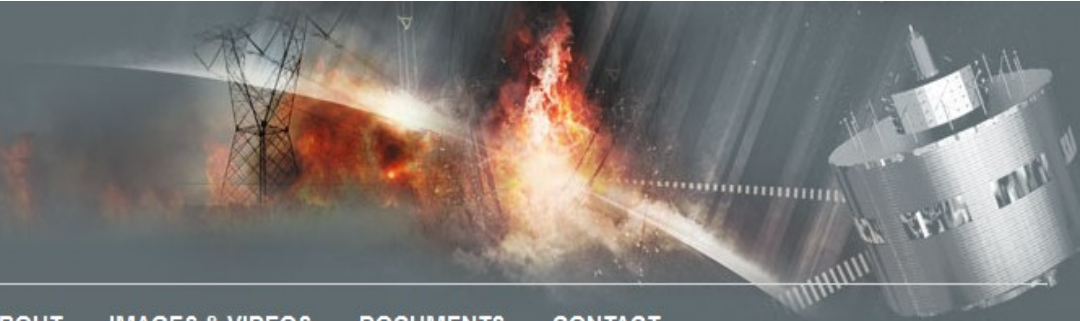
Southern Europe data requests



Data requests: North America



AFIS Website



[HOME](#) [LIVE FIRE VIEWERS](#) [ABOUT](#) [IMAGES & VIDEOS](#) [DOCUMENTS](#) [CONTACT](#)

The Advanced Fire Information System

The Advanced Fire Information System (AFIS) is a satellite-based fire information tool that provides near real time fire information to users across the globe.



[More about AFIS](#)



[AFIS in the Media](#)

<http://www.afis.co.za>

Acknowledgements

The continued success of the
Advanced Fire Information System
is possible because of
strong partnerships

Queries:
rvddool@csir.co.za

