



AFIS

ADVANCED FIRE
INFORMATION SYSTEM

CSPP/IMAPP Users Group Meeting 2017

Knysna Fire Disaster

<https://www.youtube.com/watch?v=6jwLTZQajkc>

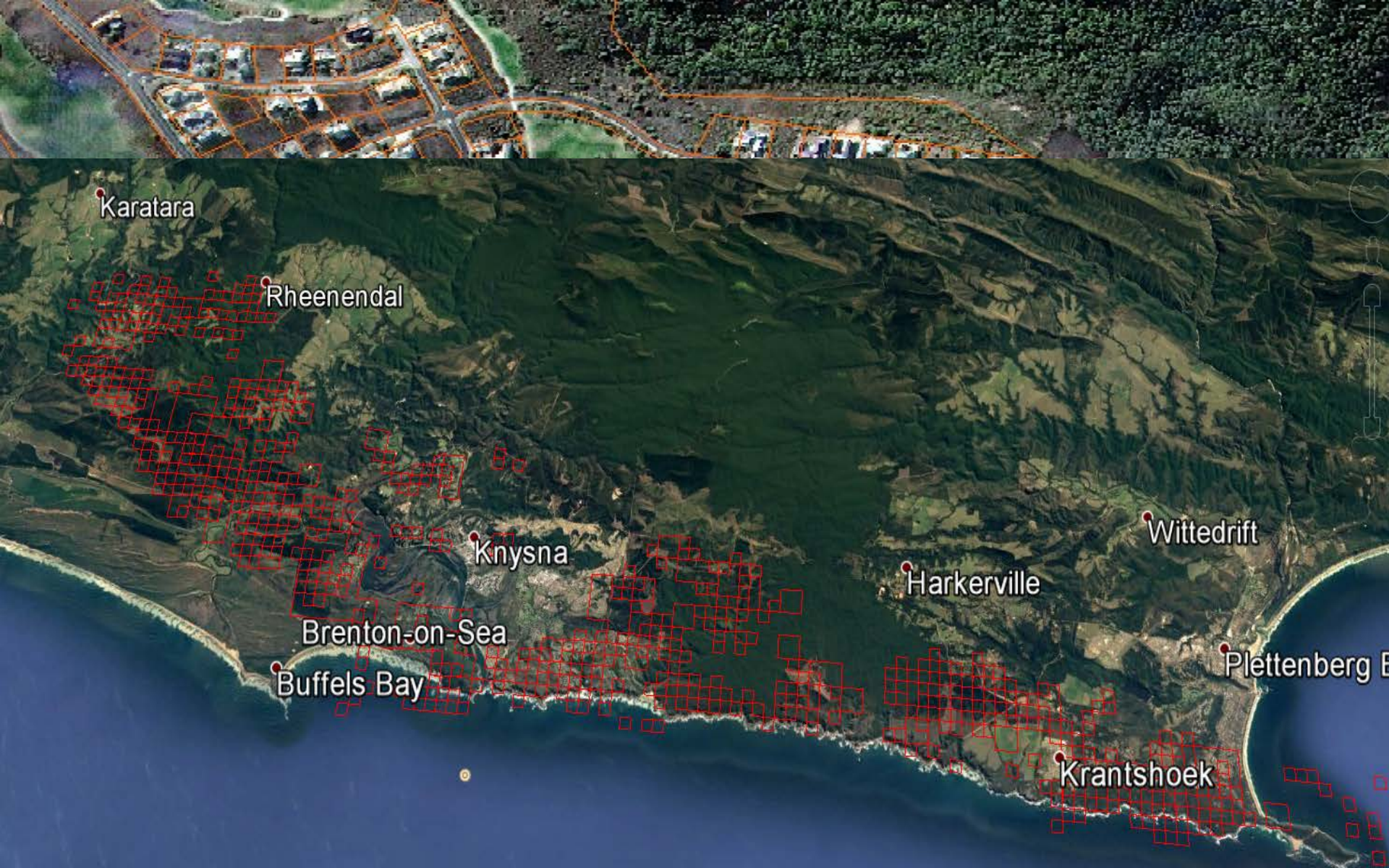
<https://www.youtube.com/watch?v=ULDXXdM9Vh0>

Worst winter storm in 30 years hits Cape Town, causing at least 8 deaths

Posted by [TW](#) on June 07, 2017 in categories [Earth changes](#), [Featured articles](#), [Severe storms](#)

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International Space Station View

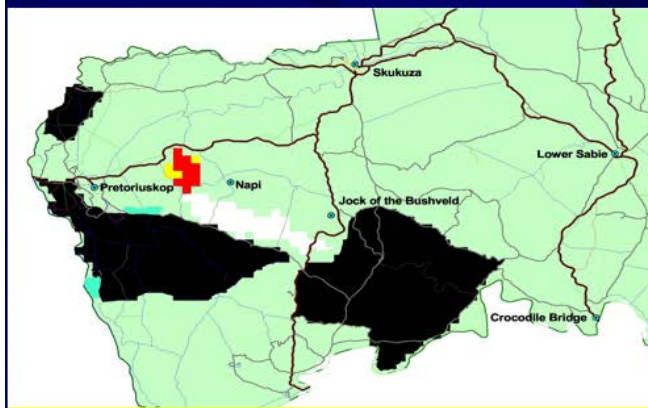
Knysna Fires



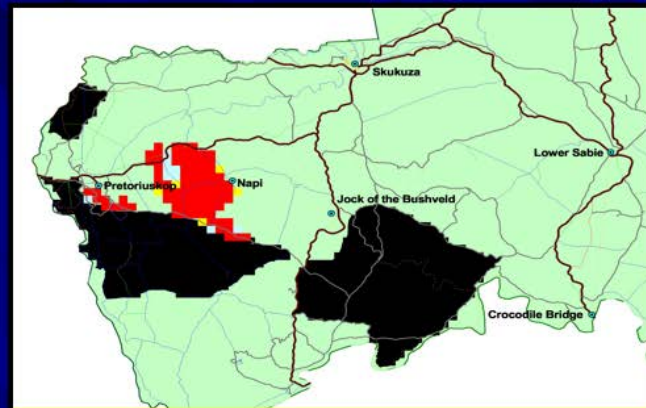
What is AFIS

- Wildfire Information Monitoring, Reporting and Visualization *framework* that was developed to directly support fire managers globally.
- Developed in *partnership* with fire managers from the forestry and utilities domain over more than 10 years
- Fully integrates satellite, crowd based as well as forest *camera detections* in to seamless detection network.
- It supports both ground based resources through *mobile solutions* and dispatch control centers with the fire dashboard and integrates with any existing GIS platforms and CMS's
- It *dynamically links* fire incidents with weather, fire danger and historical events for improved decision making
- It is a *hosted Software Solution* which provides a proactive service with out the need for specialised IT support

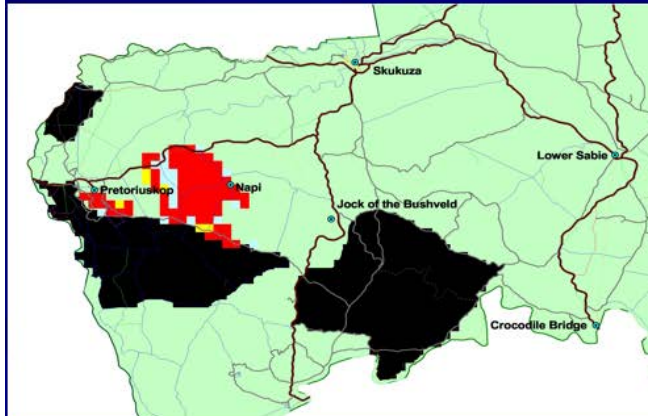
What happened.....



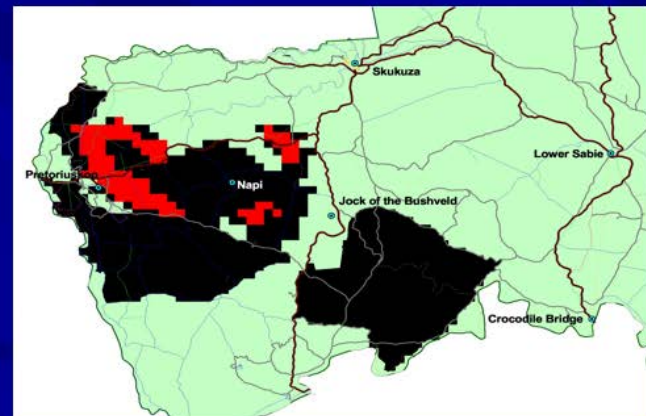
NOAA 16 – 13:53



NOAA 12 – 16:57



NOAA 14 – 17:23



NOAA 16 – 00:51

AFIS Predict proactive

- Fire Weather/Danger Forecast: Multi-model hourly
- Fire Weather/Danger Nowcasting: from Weather stations
- Fire Risk mapping: fuel age, fuel moisture
- Vegetation condition estimates
- Fire Spread Modeling

AFIS Detect multi-mode

- MODIS, VIIRS, MSG, GOES, Landsat 8, Sentinel 2, FireBird satellite sensors
- Crowd sourcing detection: AFIS app
- Integration with Forest Camera detections
- Alert – SMS/email/internet push notification
- Real time Lightning detection

AFIS Assess rapid

- Landsat 8 and Sentinel 2 automated Burn Scar mapping
- 30 Year Burn Scar Landsat history
- Post fire forensic analysis from high resolution satellites
- Fire Incident reporting system

• Real time lightning detection



Development of NOAA-AVHRR processing system at ARC-ISCW



18 Nov 2001
Carte Blanche reported on the Kruger Park fire disaster



2003
Met up with Hein Vosloo from Eskom who become a champion for AFIS



2004
Visit Norway for inception testing of the 1st MODIS receiving station. Sponsored by Dept of Agriculture



2006
AFIS was integrated in to the SABC Weather Report



2008
Eskom funded the acquisition of a 2nd MODIS receiving station . Willem Marais appointed

2000

2001

2003

2004

2006

2008

2001

2002

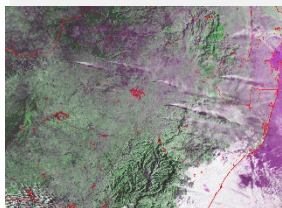
2003

2004

2006

4 Sept 2001

Kruger Park Fire Disaster in which 23 people died.



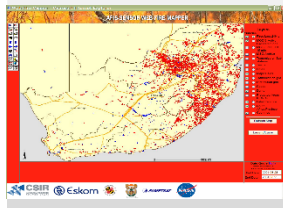
Nov 2002

Appointed as Junior researcher at the CSIR SAC.



2003

Subcontracted the University of Maryland (\$80 000) to Develop AFIS version 1



2004

Inauguration of the 1st MODIS receiving station by the deputy Minister

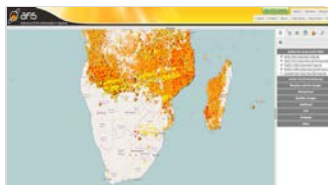


2006

National Geographic Documentary 'Naked Earth' featured AFIS



AFIS Timeline: 2001 - 2008



New Viewer

Launch of the in house developed (ICT4EO) AFIS viewer based on OGC standards



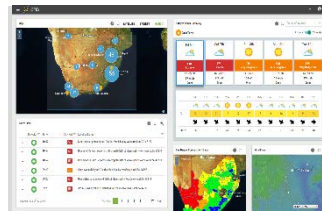
Alert Platform

Development of the Wide Area Alert Platform by Graeme Mcferren.



Fire Danger Reports

Operational FDI reporting to FPA's. Ndumiso and Lufuno joined



Fire Dashboard

1st dashboard of its kind in the world. Linda joined the group



Nanosat Launch

Our K-line detection camera system launch on a nanosat

2010

2011

2013

2015

2017

2010

2012

2014

2016

Field Terminal

Development of the AFIS Field Terminal within the AMESD Wildfire service. Cheewai Lai joined



AFIS Mobile app

Development of the AFIS mobile app by Derick Swanepoel. Riaan v.d Dool joined



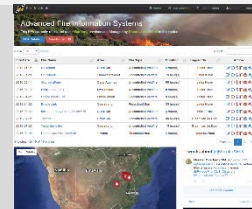
Automated BA mapping

Mapping of all Cape fires during 2014/2015. Werner joined and build an android version of the AFIS app

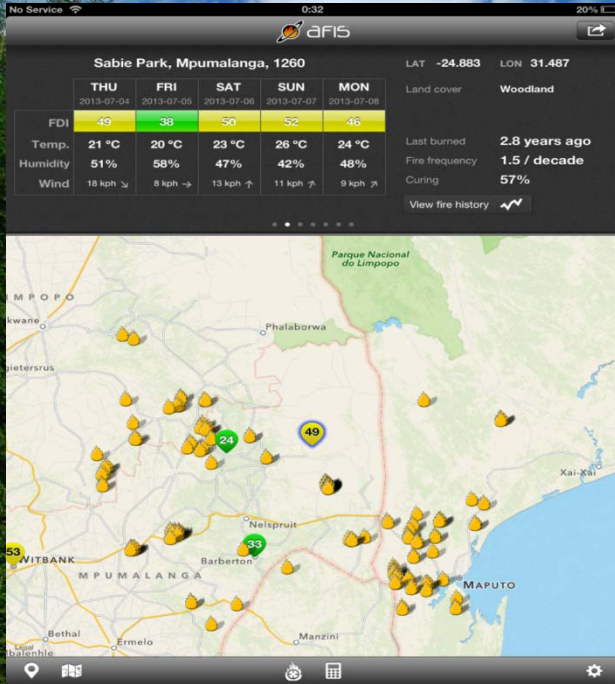


Incident Reporting

Online Incident reporting and Statistics system linked to the AFIS database



AFIS Timeline: 2009 - 2017



"Kruger MODIS Fires; 5.64 km NE of Reference Point ; 28.33E -25.88S At 2013-06-06 T13:45:00 +02:00"

"Kruger MODIS Fires; 5.64 km NE of Reference Point ; 28.33E -25.88S At 2013-06-06 T13:45:00 +02:00"



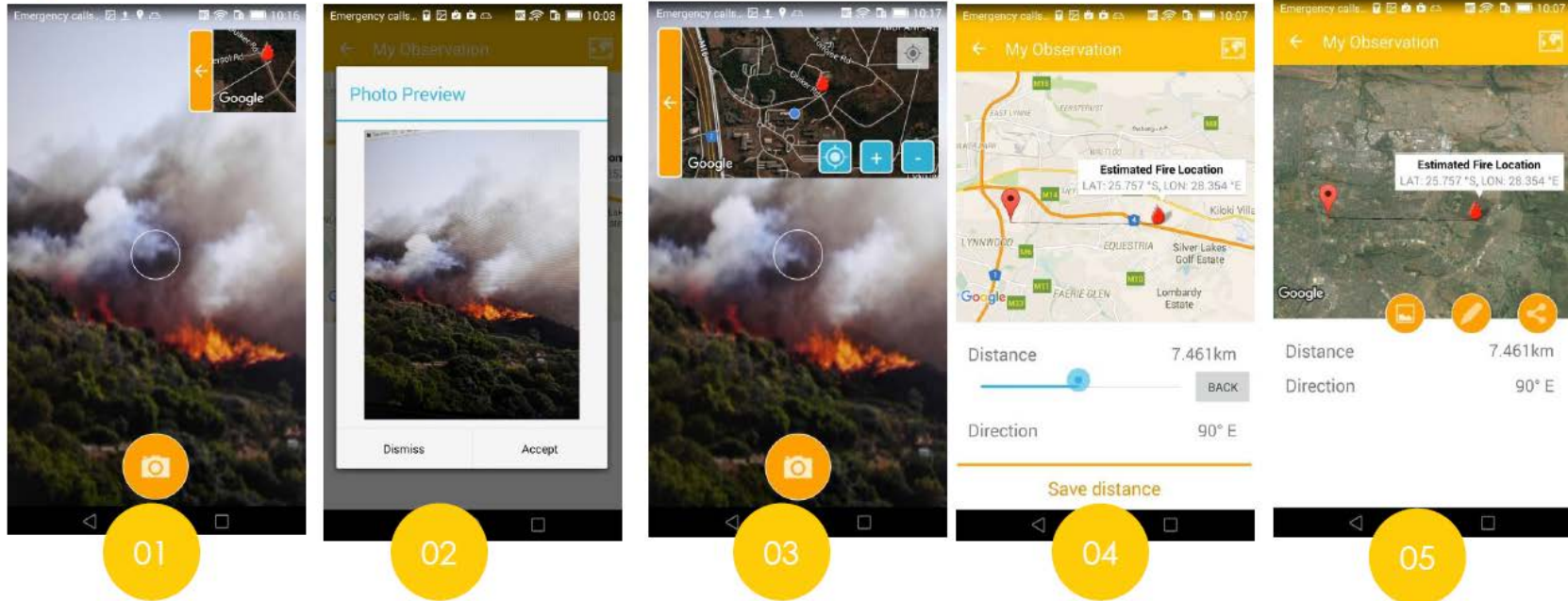
AFIS Services

AFIS Pro App Launch early 2017



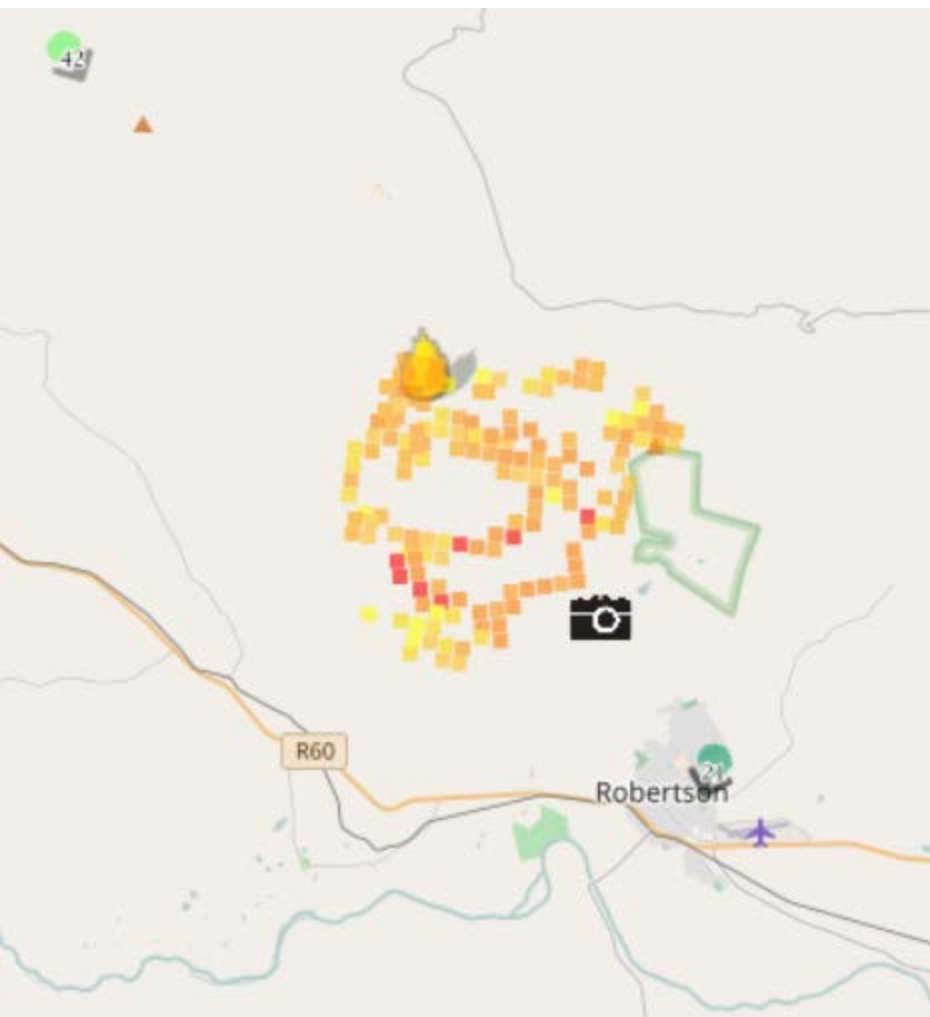
Crowd Sourced Fire detection and reporting

Spatially linked and controlled public reporting

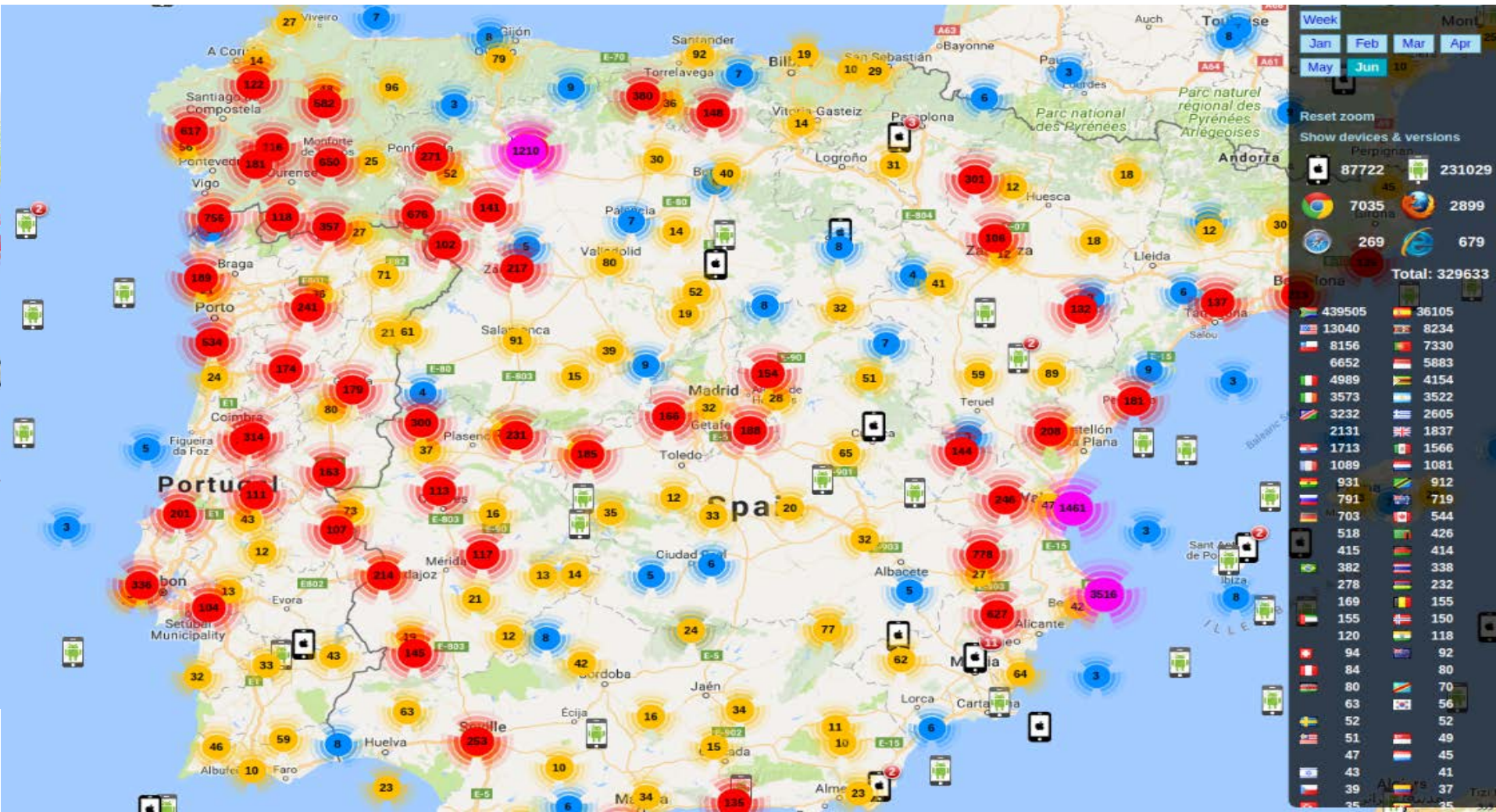


The **AFIS Watchtower** app allows users to report the location of fires by pointing the Watchtower app in the direction of the fire through the phone camera. Both distance and direction to the fire is recorded and a latitude and longitude coordinate is produced and sent to the AFIS viewer

Geotagged fire: Robertson: Western Cape 22 March 2017



Global utilisation of AFIS.....



NASA WORLDVIEW

Layers Events Data

OVERLAYS

- Fires and Thermal Anomalies (Night, 375m)
Suomi NPP / VIIRS
- Fires and Thermal Anomalies (Day, 375m)
Suomi NPP / VIIRS
- Fires and Thermal Anomalies (Day and Night)
Terra and Aqua / MODIS
- Fires and Thermal Anomalies (Day and Night)
Terra / MODIS
- False Color
Sentinel 2
- Lower-res Fires
AFIS MODIS Lower Resolution Fires
- Higher-res Fires
AFIS High Resolution Fires

BASE LAYERS

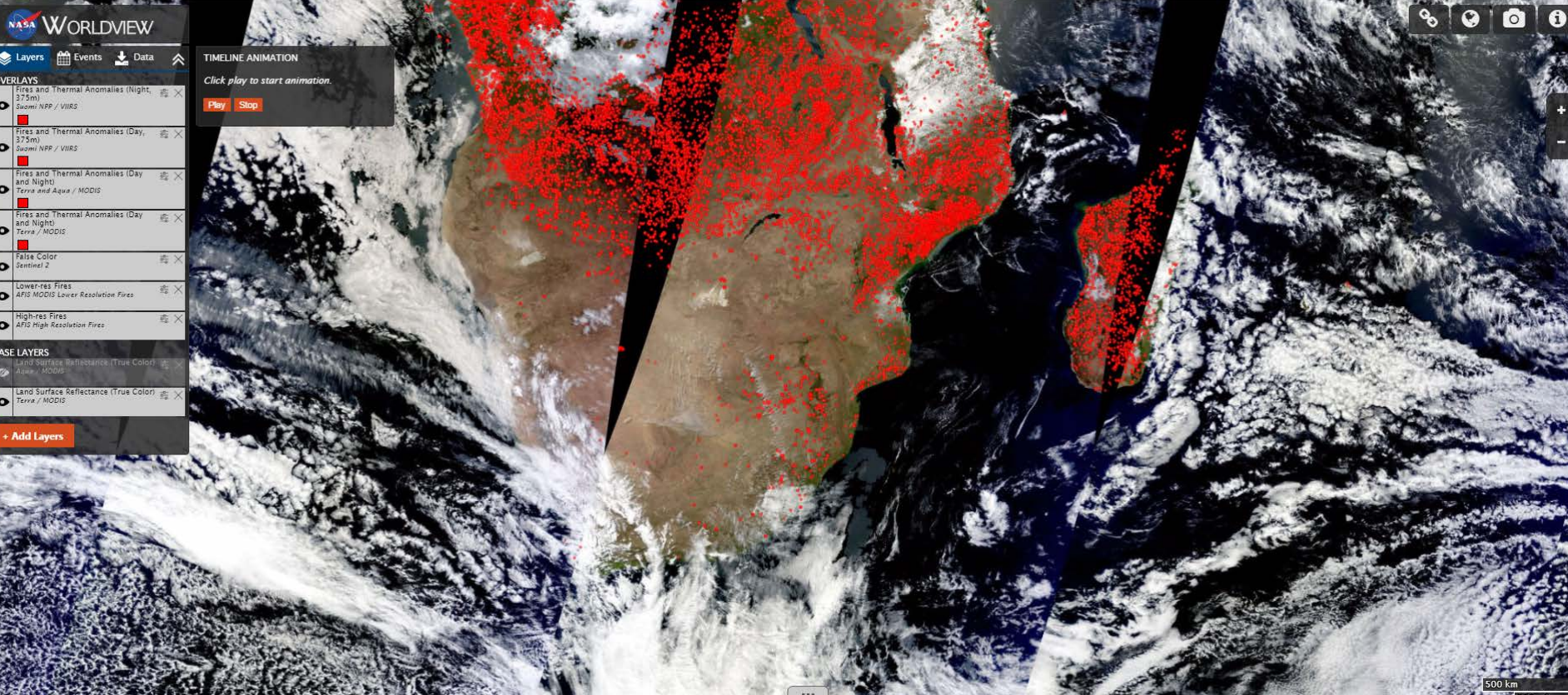
- Land Surface Reflectance (True Color)
Aqua / MODIS
- Land Surface Reflectance (True Color)
Terra / MODIS

+ Add Layers

TIMELINE ANIMATION

Click play to start animation.

Play Stop



AFIS Fire Dashboard



Eldorado Brazil



Value to Fire Managers...

1. Designed for an operational environment such as a Fire Protection Agency
2. Dynamically integrates any data set relevant to a fire managers needs in to a single dashboard layout
3. Dashboard and mobile app provides synchronised data streaming
4. System is scalable and can be modified to users needs



US Data Partners



Meet our Team

Business and Technical skills that drive the AFIS development



CAM EO

Lee Annamalai

Competence Area
Manager
Earth Observation
Systems and ICT

14 years of experience in technology & business management. Internationally recognised in the Space and Geospatial domain.



Head of AFIS

Philip Frost

Product Manager
Innovation and R & D

14 years of involvement in Fire information system. Internationally recognised Deeply embedded in the fire management and response domain



Senior Developer

Cheewai Lai

Sys Admin
Satellite Product Production
Front End and User Admin
System Security

18 years of experience in hosted ICT System Administration and Geo-spatial and Satellite Product production systems



System Analyst

Linda Klein

System and
Requirements analysis
Remote Sensing,
Innovation and R & D

20 years of experience in Remote Sensing, Geo-spatial and Satellite Product production systems

Meet our Team

Passionate team of Developers and R&D Remote Sensing Scientists



UI Developer

Werner Raath

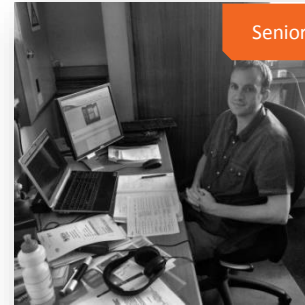
Frontend and Android
app developer
User Support



Report Engine
Developer

Ndumiso Boo

Report and Stats Engine
developer
User Pilot Projects



Senior Developer

Riaan vd Dool

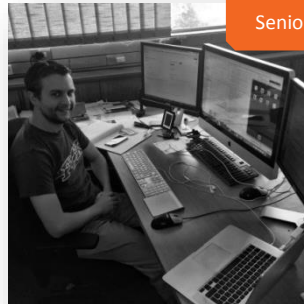
AFIS Backend Db and
Web Front End
User Support



R&D Analytics
Developer

Melissa Henkel

Remote Sensing
modelling, Algorithm
development



Senior Developer

Derrick Swanepoel

High performance Back
End software, cube
server. iOS app



R&D Analytics
Developer

Lufuno Vhengani

Remote Sensing
modelling, Burn area
algorithm development

Contact details

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