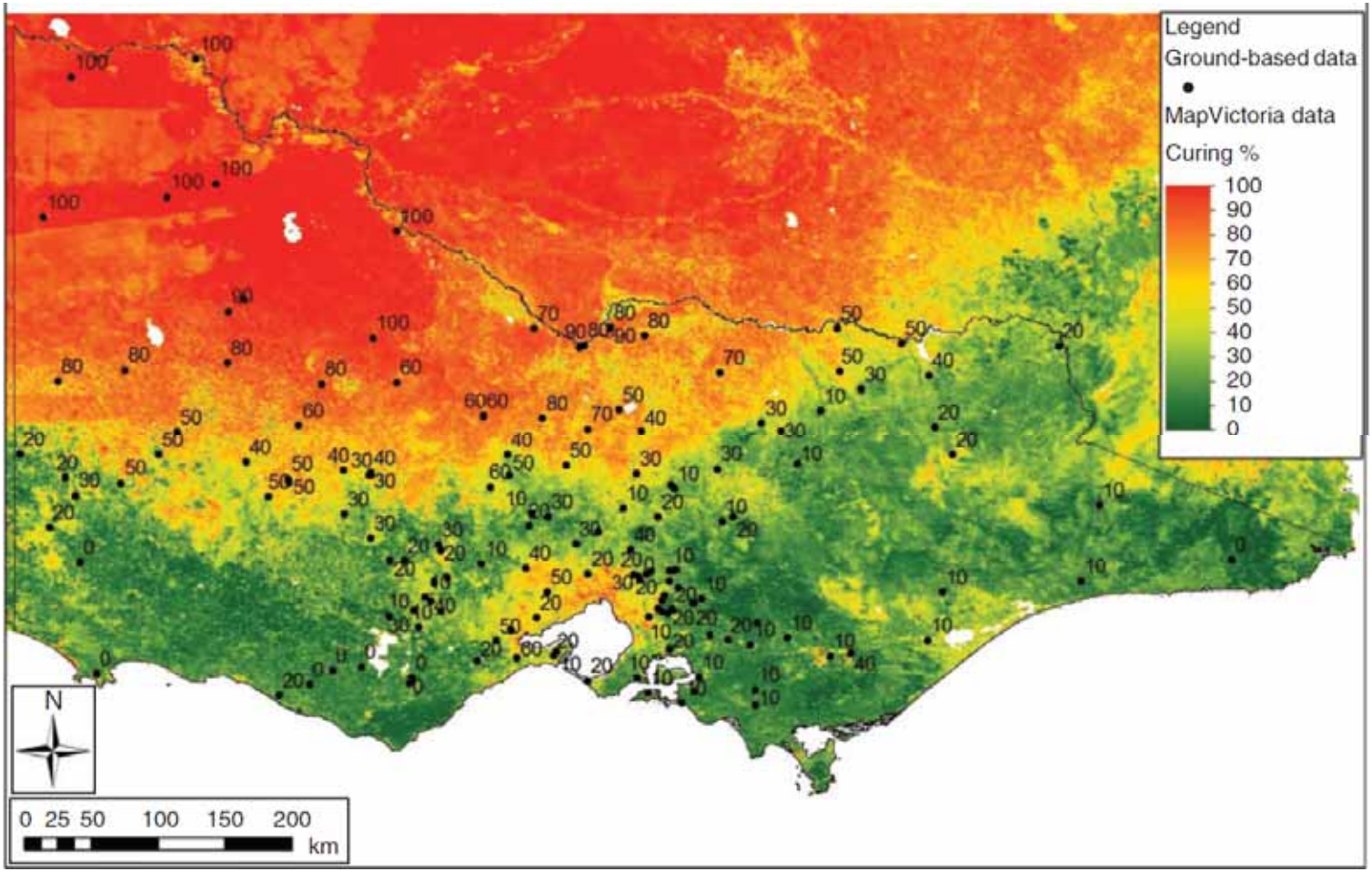
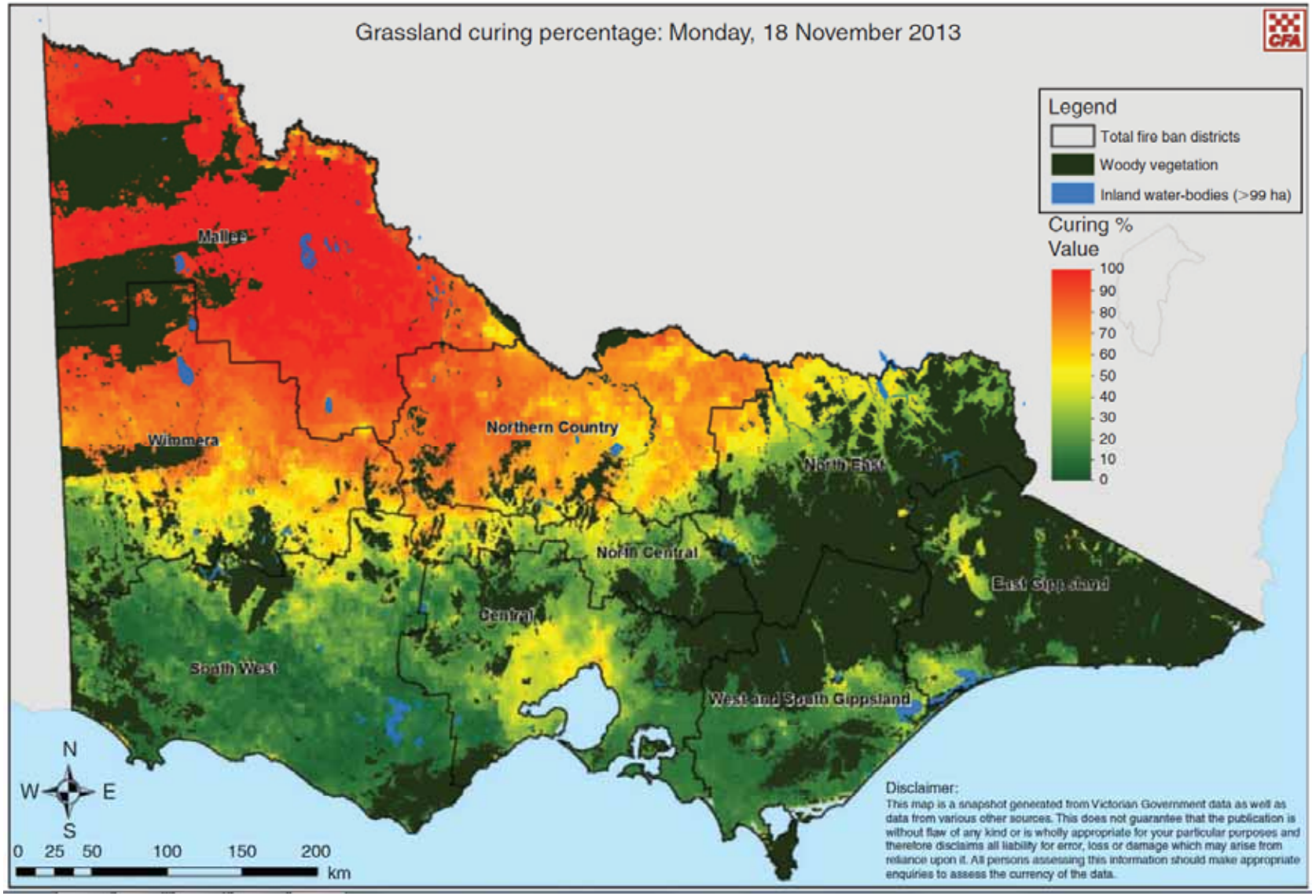
CURING

Ground truth curing data versus MODIS 250metre (Landgate) and MODIS 500metre (CFA) algorithms

In the Kimberley Regions (Broome, Derby and Wyndham)

- Curing is the process of most grass species life cycle where they annually dry out and die or become dormant.
- The amount of dead material in a grassland can have dramatic effect on the fire danger.


Legend
Ground-based data
MapVictoria data
Curing %
100
90
80
70
60
50
40
30
20
10
0
N
0 25 50 100 150 200
km


Grassland curing percentage: Monday, 18 November 2013
CFA
Legend
Total fire ban districts
Woody vegetation
Inland water-bodies (>99 ha)
Curing %
Value
100
90
80
70
60
50
40
30
20
10
0
Mallee
Wimmera
Northern Country
North East
North Central
East Gippsland
Central
South West
West and South Gippsland
N
W
E
S
0 25 50 100 150 200
km
Disclaimer:
This map is a snapshot generated from Victorian Government data as well as data from various other sources. This does not guarantee that the publication is without flaw of any kind or is wholly appropriate for your particular purposes and therefore disclaims all liability for error, loss or damage which may arise from reliance upon it. All persons assessing this information should make appropriate enquiries to assess the currency of the data.

Curing data derived from MODIS

- Satellite derived curing data
  - Landgate (250m resolution) – 2 algorithms
  - CFA (500m and 6000m resolution) - 5 algorithms
- Ground truth derived curing data
  - Wyndham – East Kimberley (26 to 28 April 2016)
  - Derby – West Kimberley (5 to 8 May 2016)
  - Broome (9 May 2016)

- Landgate algorithms (from 250m MODIS)

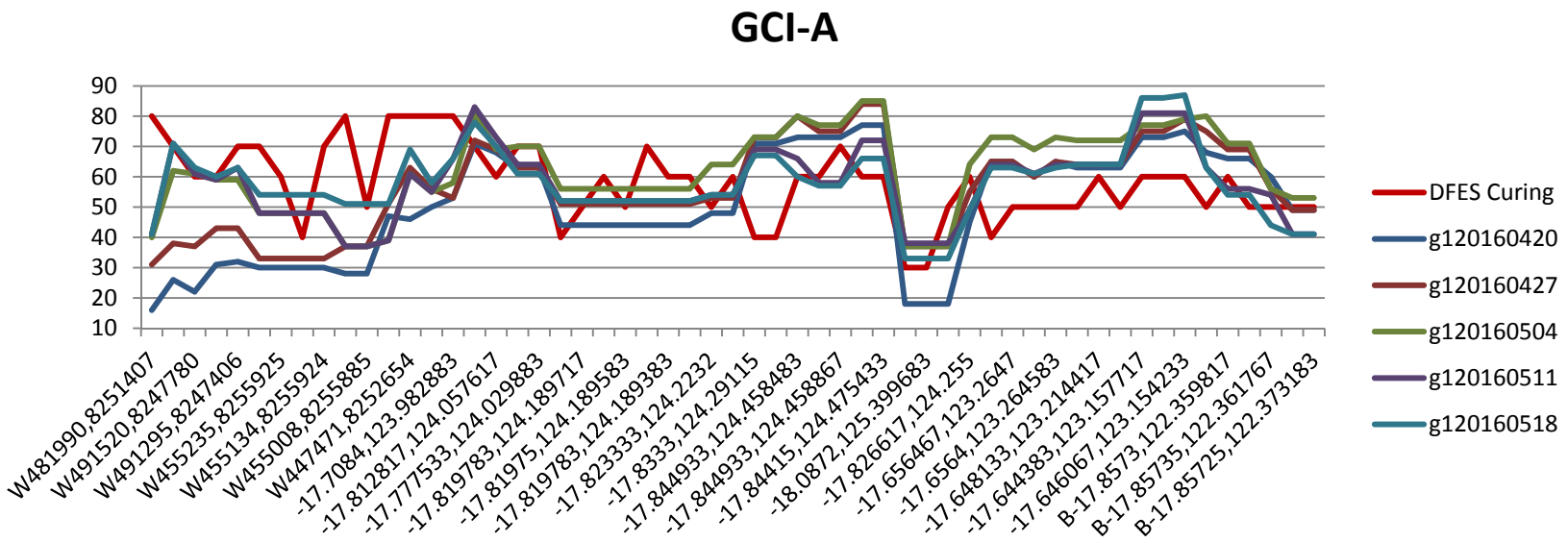
  Algorithm A = 124.71 – 121.4 x NDVI

  Algorithm C = 100 - (100×(NDVI-NDVImin)/(NDVImax-NDVImin))

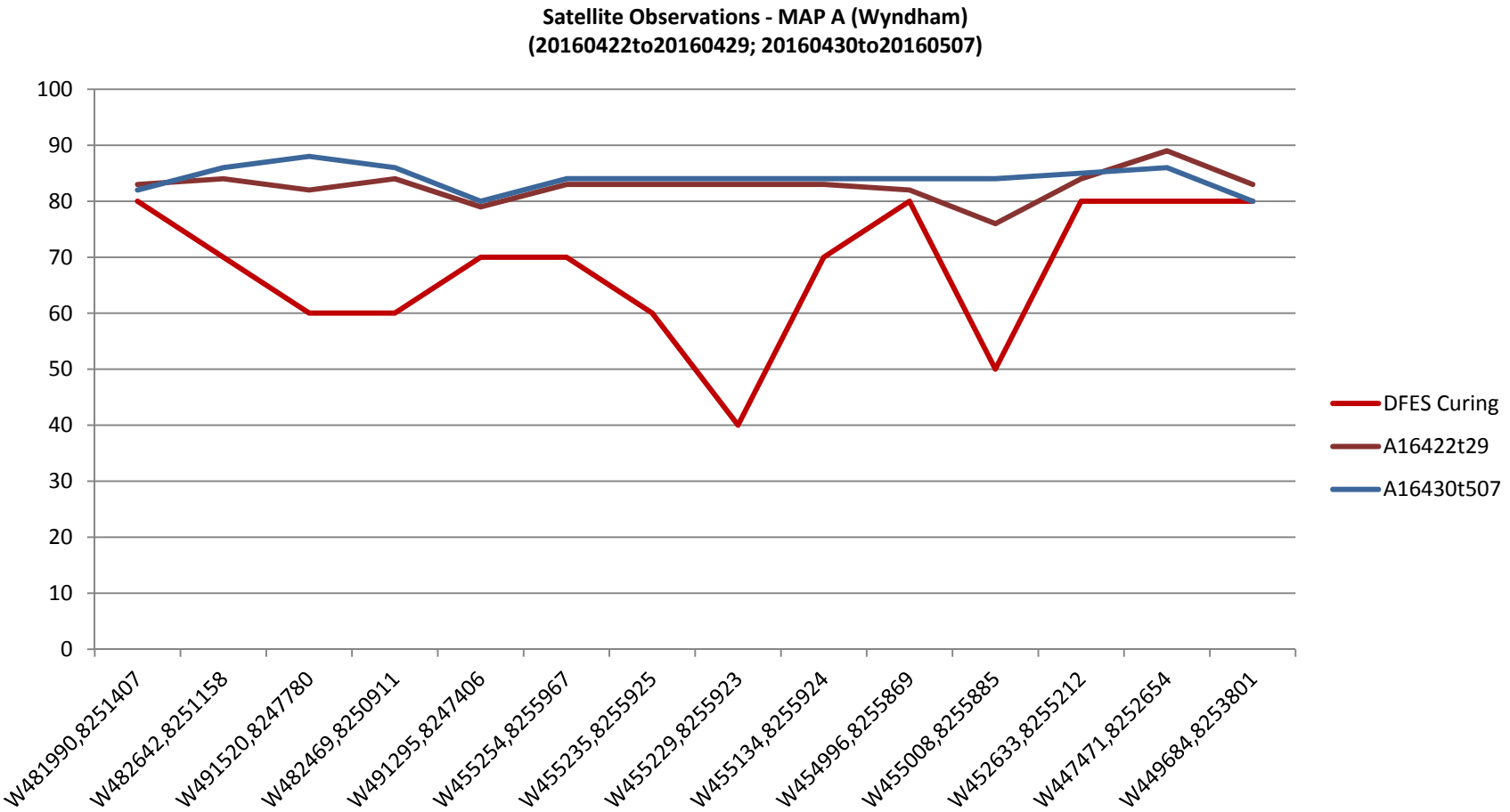
  Where:

  NDVI = 250 m resolution maximum value MODIS NDVI composite for the week of interest.
  NDVImax = maximum detected NDVI value at a location since 2004.
  NDVImin = minimum detected NDVI value at a location since 2004

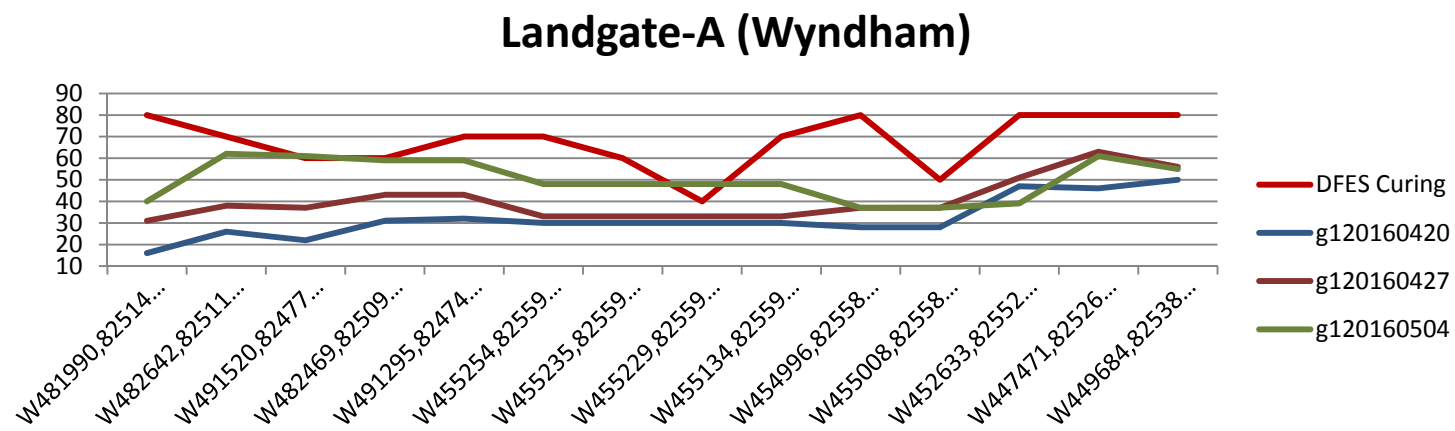
Landgate - Algorithm A

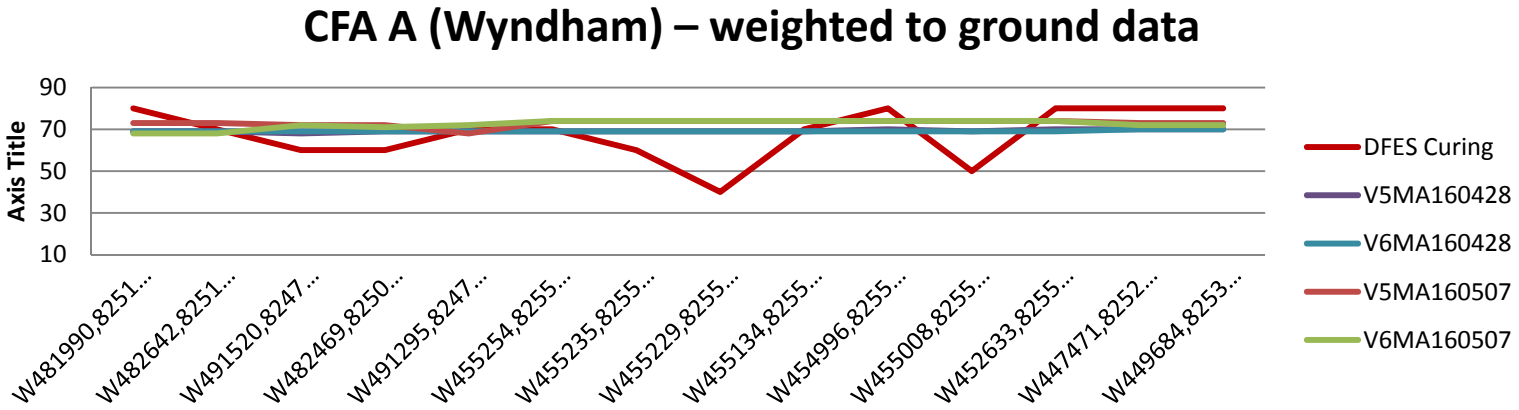


CFA Algorithm A – not weighted to the ground data

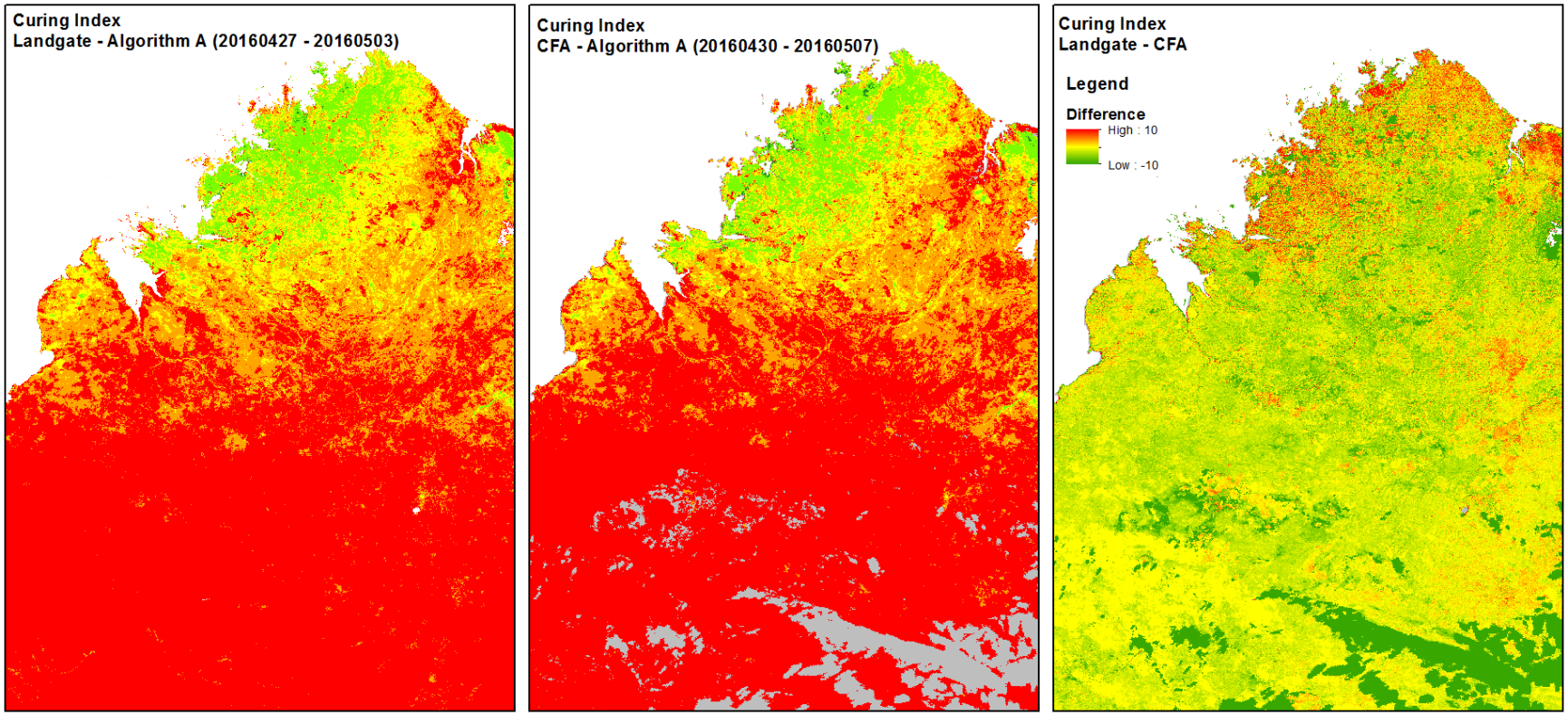


Algorithm A (Wyndham)





Landgate VS CFA
Algorithm A differences for the Kimberley



Additional ground truthing

- SRS (Spectral Reflectance Sensors)

Two- band radiometers that measure either incident or reflected radiation in wavelengths appropriate for calculating the Normalised Difference Vegetation Index (NDVI)

Consisting of 2 types of SRS-NDVI sensors

  - NDVI – Hemispherical sensor
  - NDVI – Field stop sensor

- The field stop is designed for pointing downward to measure canopy reflected radiation in NDVI wavelengths.
- The hemispherical sensor is designed for up looking measurements of incident radiation.
- NDVI wavebands – 650 and 810 nm central wavelengths, with 10 nm full width half maximum band widths

Additional ground truthing

- Red Edge (by MicaSense)

  Multispectral camera captures five discrete spectral bands

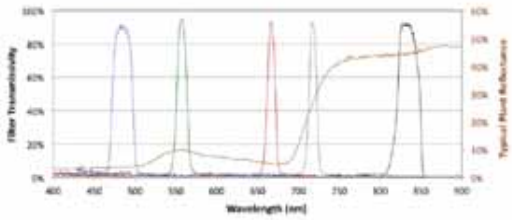
  – Narrow spectral bands – allow higher sensitivity than wide bands by capturing the most relevant segments of the spectral curve

  – Red edge band – sensitive to chlorophyll level

  – 8 cm/pixel at 400 ft

Basic Specifications	
Weight	14 g
Dimensions	3.3 cm x 3.3 cm x 1.5 cm (1.3" x 1.3" x 0.6")
Spectral Bands	Narrowband: Blue, Green, Red, Red Edge, Near IR
Capture Speed	1 capture per second (all bands)

Spectral Bands (Standard Configuration)



Band Number	Band Name	Center Wavelength (nm)	Bandwidth FWHM (nm)
1	Blue	475	20
2	Green	560	20
3	Red	668	10
4	Near IR	840	40
5	Red Edge	717	10