

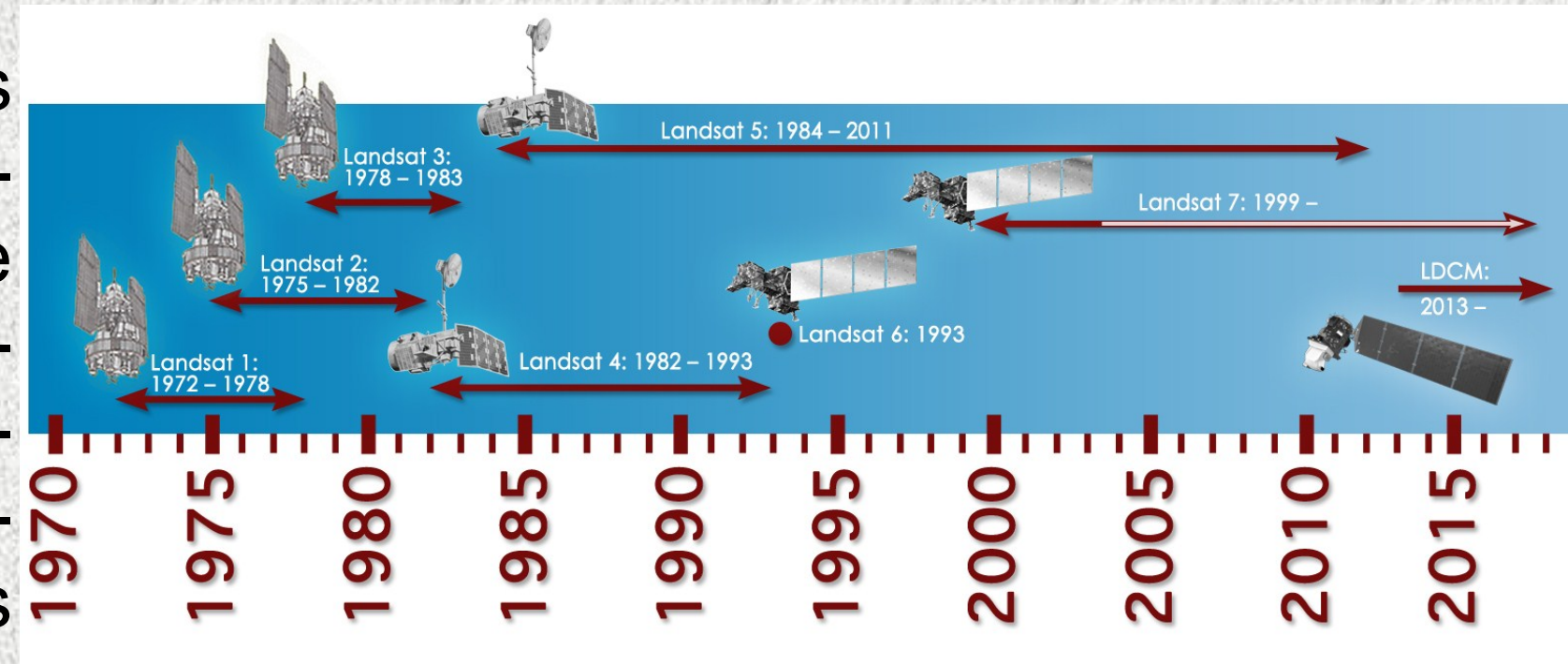
Monitoring the state of Northern Territory rangelands: past and present.

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Introduction

The Department of Land Resource Management in collaboration with the Queensland Department of Science, Information Technology and Innovation is establishing an integrated satellite monitoring program for the Northern Territory.

This monitoring program utilises both ground based measurements of land cover and the Landsat satellite archive of imagery. The Landsat image archive constitutes the longest record of the Earth's surface as seen from space.



adapted from : http://www.nasa.gov/mission_pages/landsat/news/landsat-history.html

Landsat image archive

The NT image archive consist of data captured in 1987 to present and consists of over 50,000 scenes (~150 TB). These data are stored on a high performance computer system in QLD which is accessed via remote login. New satellite imagery is captured every 16 days and regularly added to the archive.

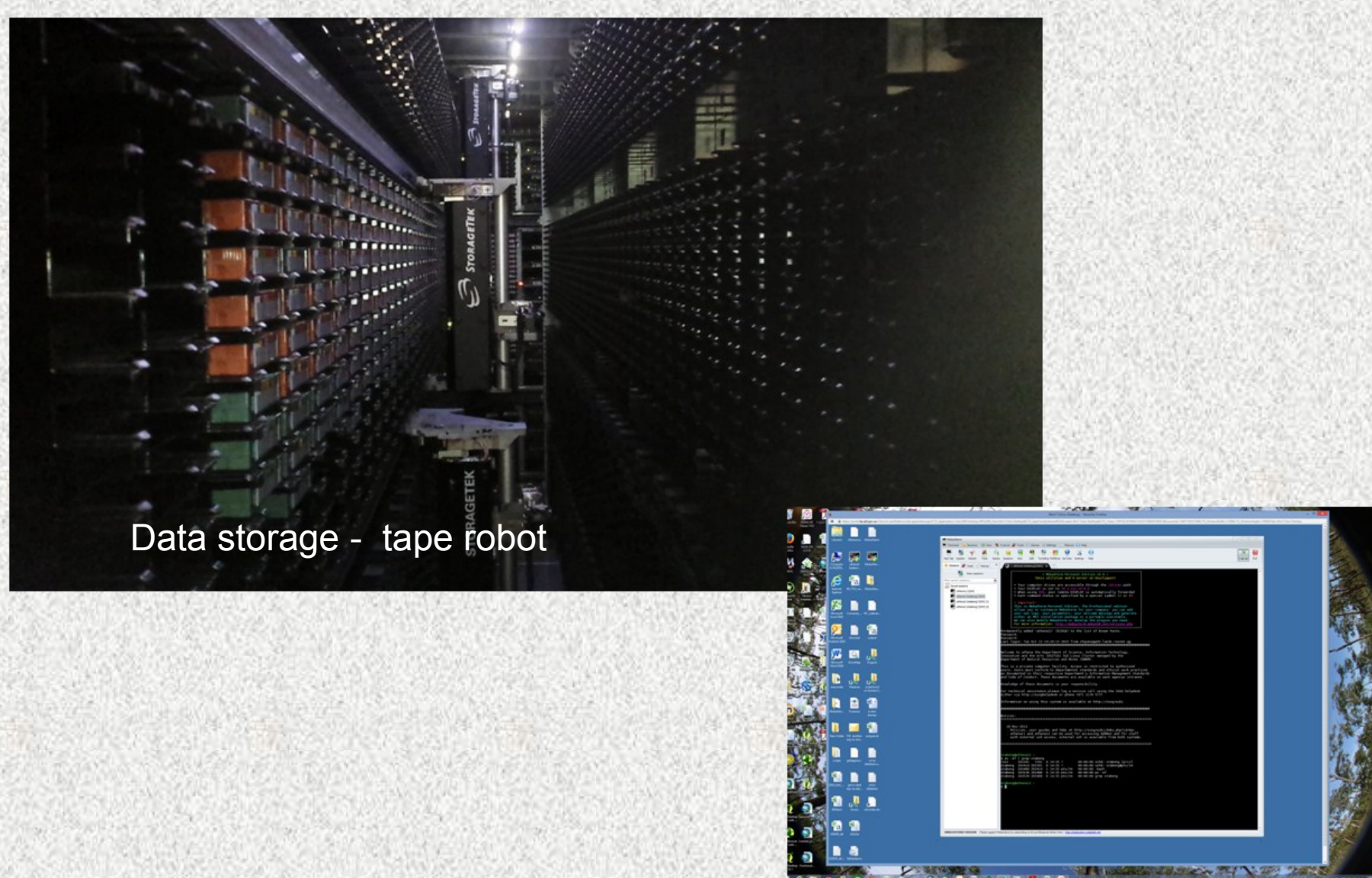
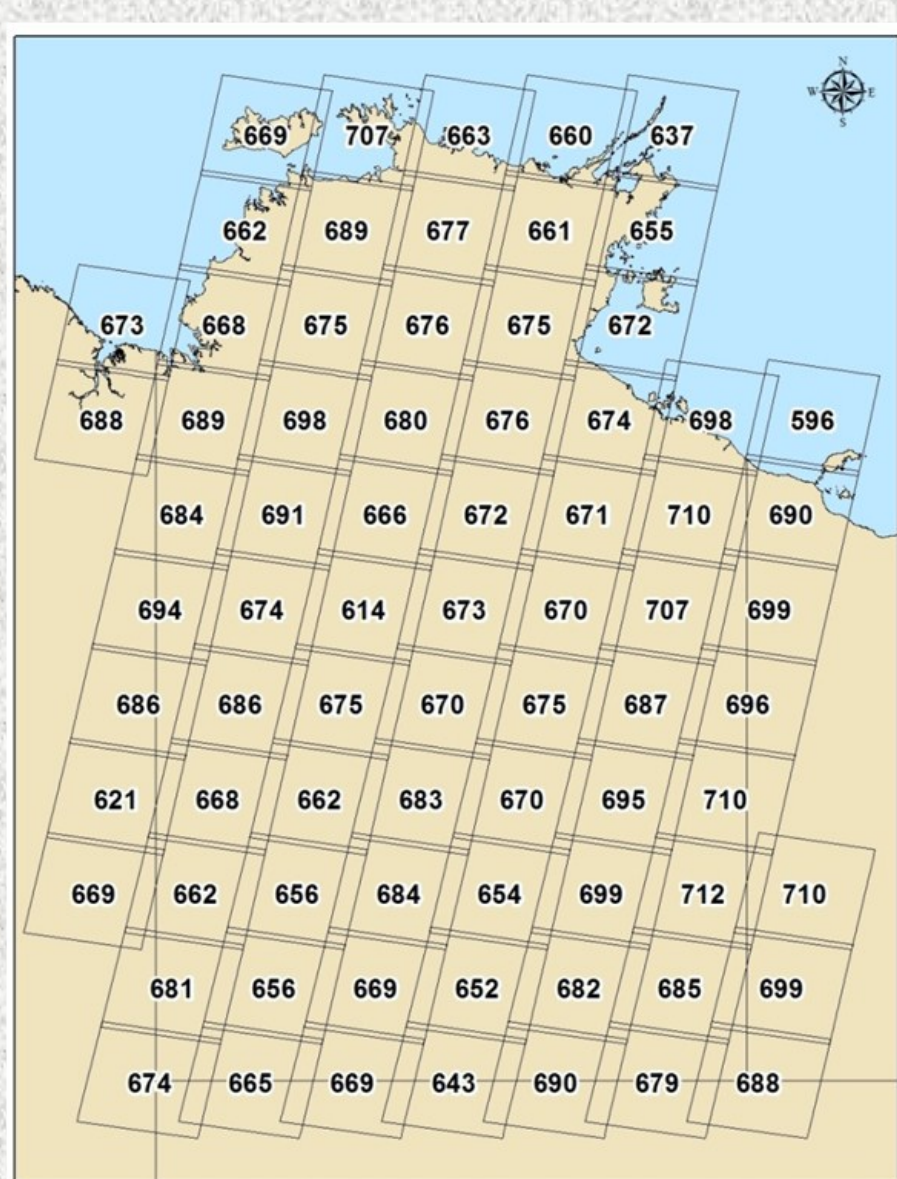
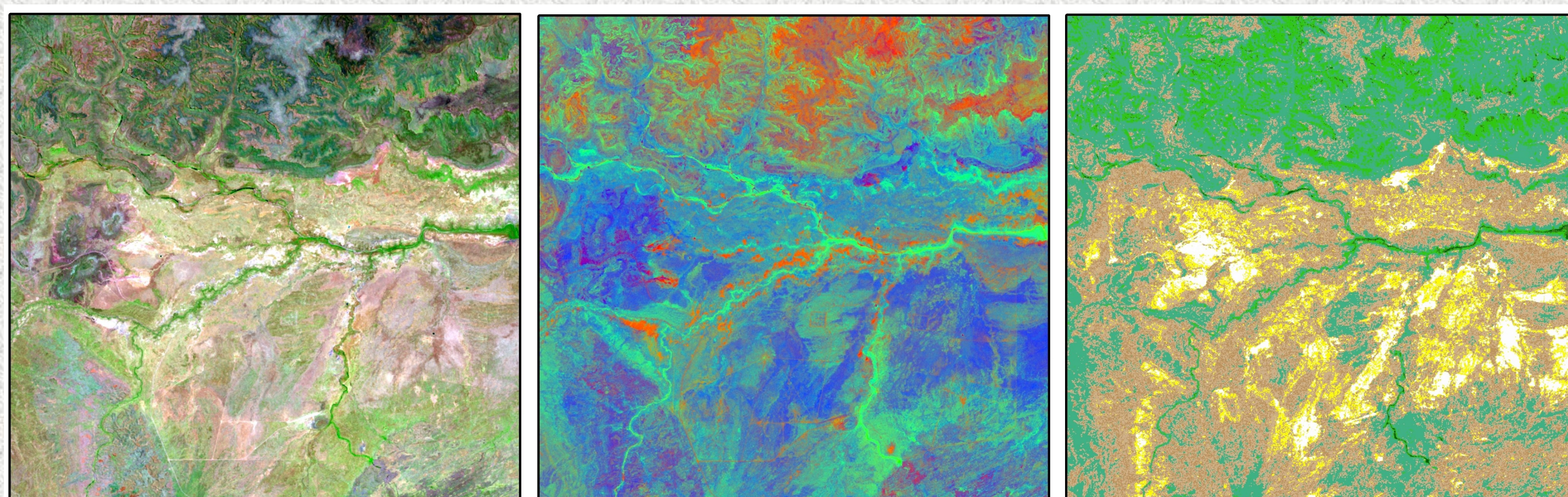


Image processing

An automated processing chain is used to produce mapping products from Landsat imagery to measure biophysical parameters such as; Woody cover and fractional cover cross the landscape.



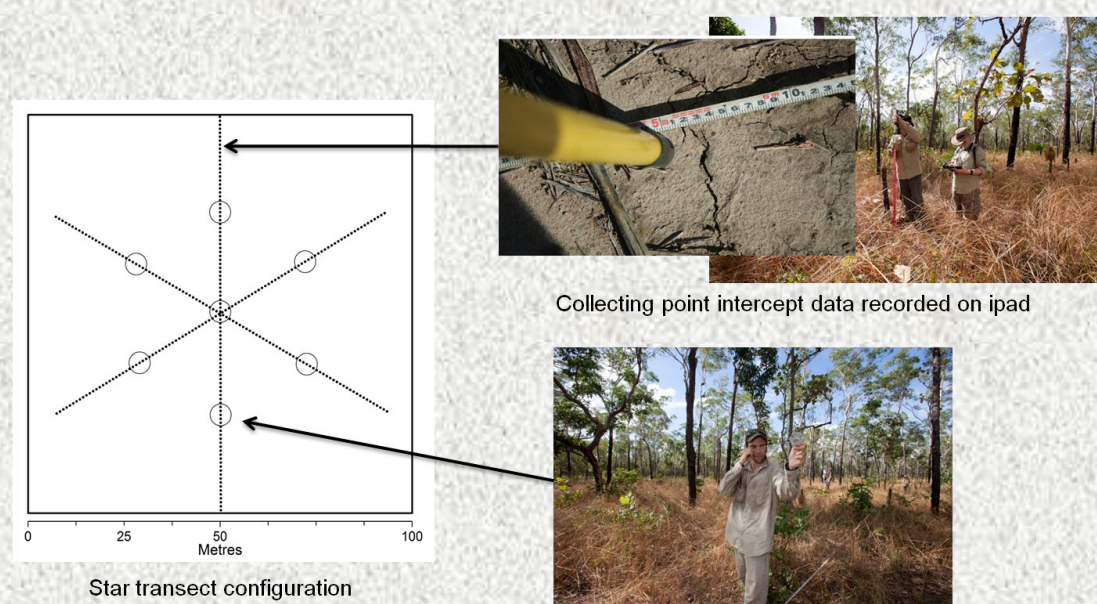
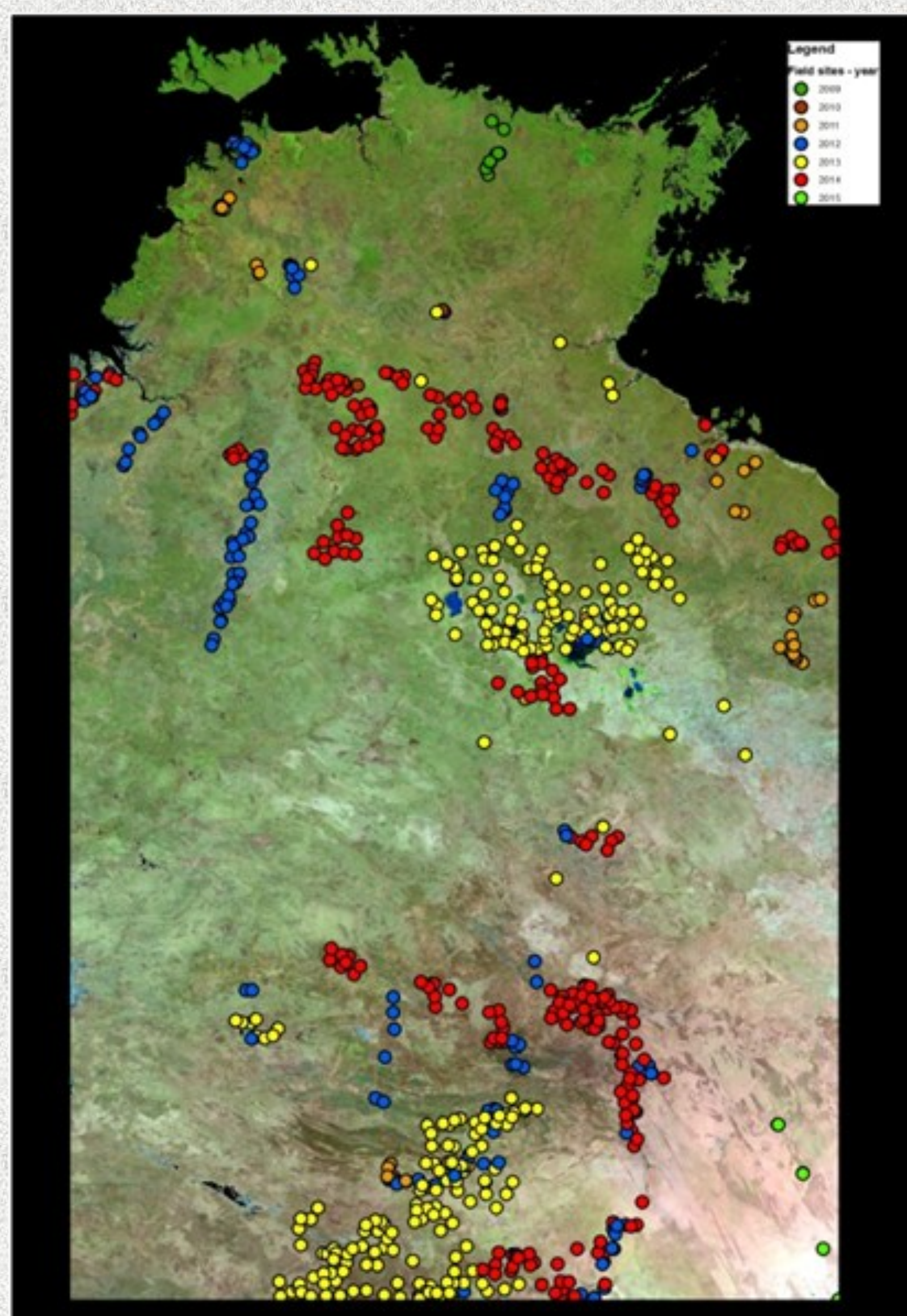
False colour composite Landsat 8 captured 08/10/2014

Fractional cover product - Landsat 8 captured 08/10/2014

Woody cover product - Landsat 8 captured 08/10/2014

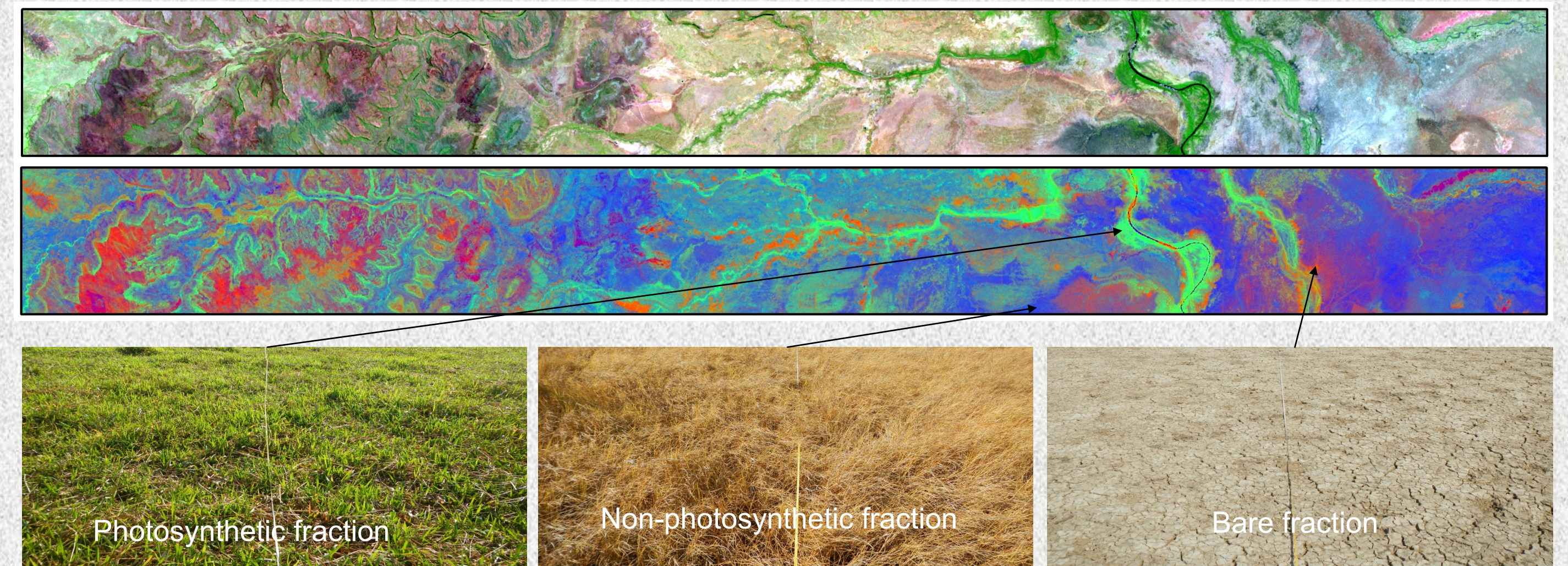
Field Data

To validate and calibrate the satellite imagery field data is collected using a point intercept method, representing different Land types across the NT. These field sites are also used for ground based rangeland monitoring program.



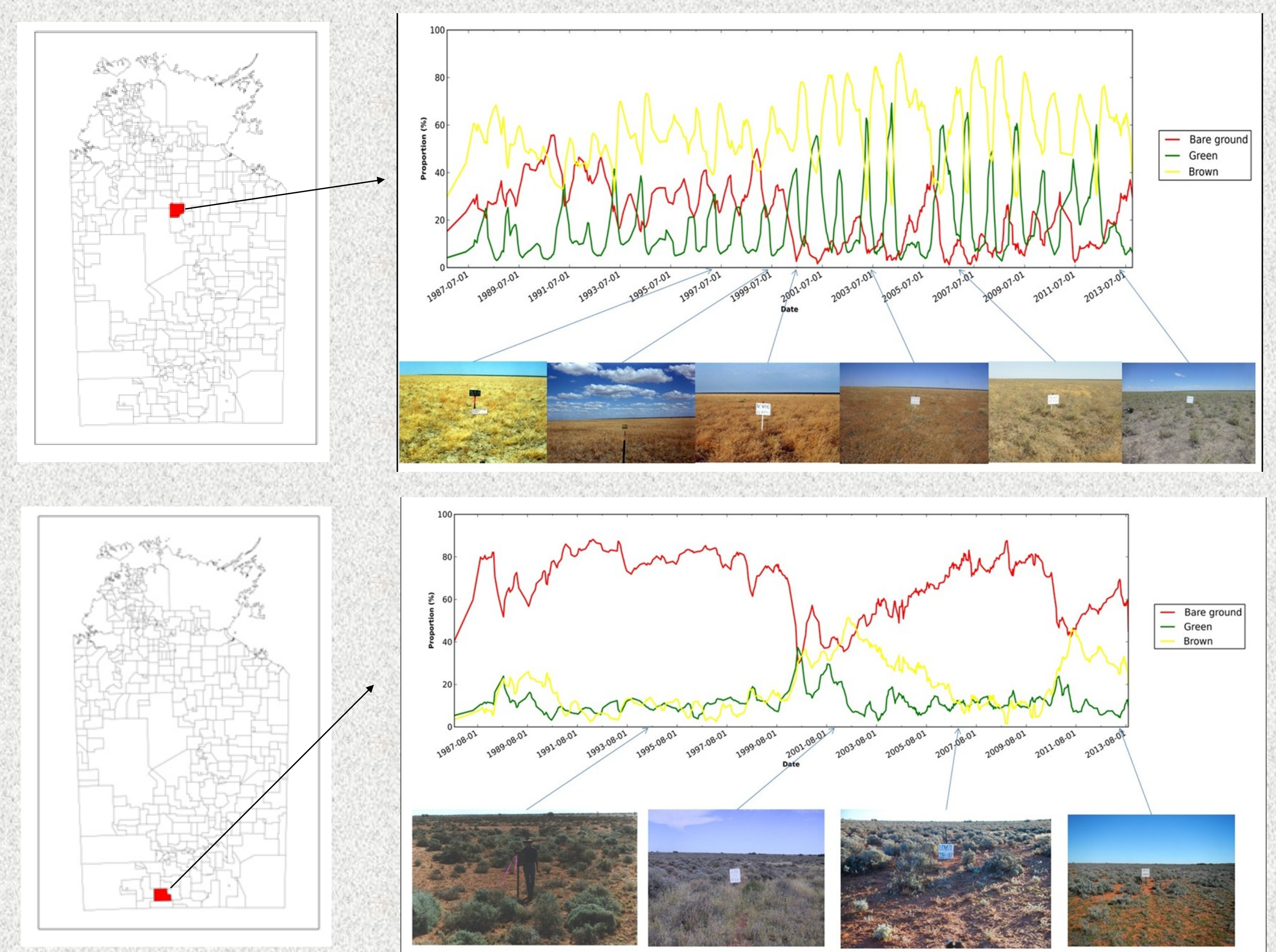
Fractional Cover product

The fractional cover product derived from Landsat imagery is the core product used for rangeland monitoring in the NT. This product estimate the fractions of green (photosynthetic) and dry (non-photosynthetic) vegetation cover, and bare soil for each pixel (900m²) in the imagery.



Fractional Cover time series analysis

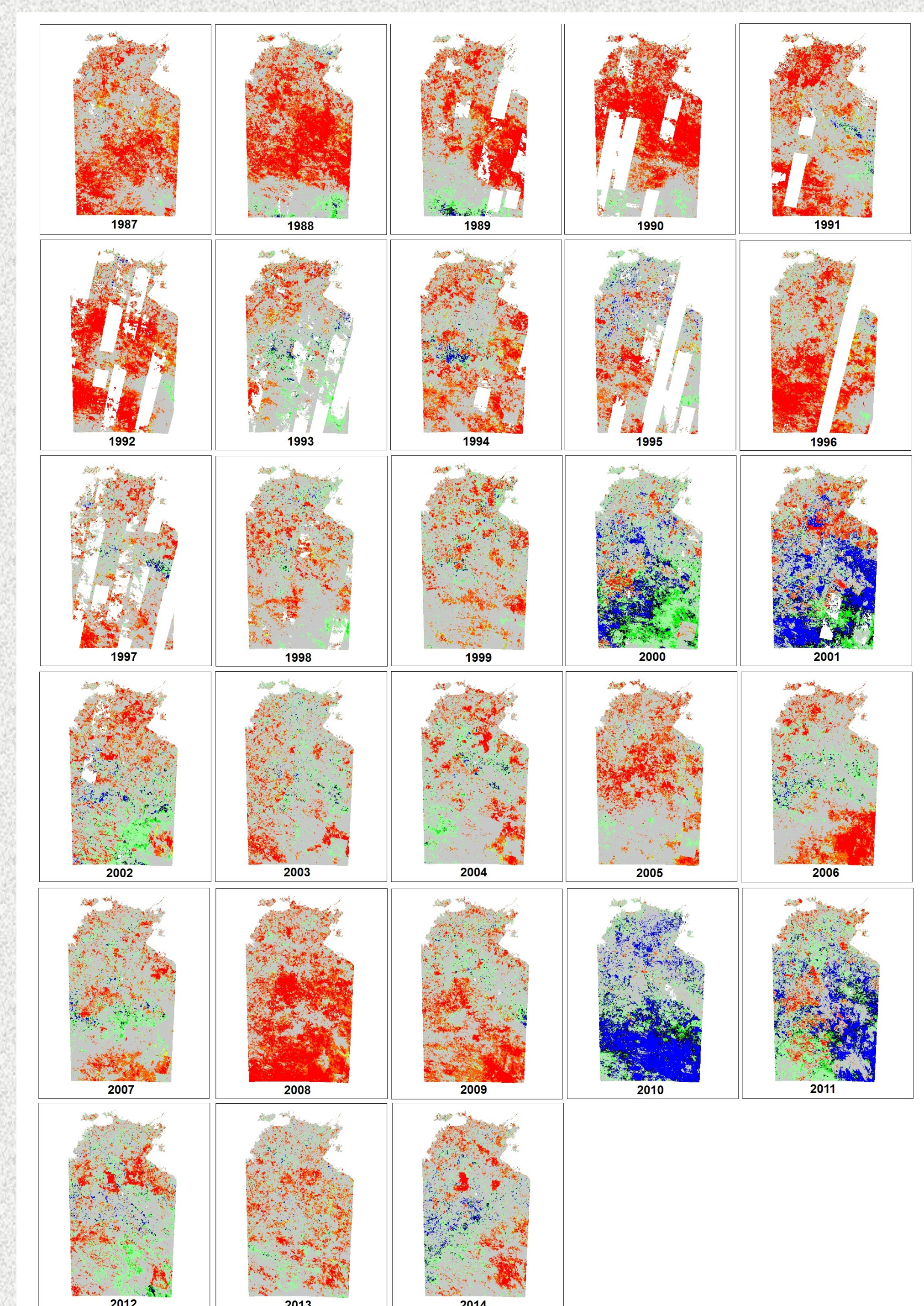
Time series plots are produced for monitoring sites that show the dynamic nature of cover over the last 28 years.



Seasonal fractional cover time series

Fractional cover over a three month period is used to produce a seasonal fractional cover product to look at the change in vegetation cover in time and space. These data are then used to produce a decile ranking map which compares the current seasonal median cover with the median value over 28 years; enabling the past to be compared with the present.

Decile ranking of vegetation cover for Spring (Sep—Nov) 1987 to 2014



Rank	Rating
1	Lowest
2	Very Much Below Average
3	Below Average
4-7	Average
8	Above Average
9	Very Much Above Average
10	Highest