Total vegetation cover soil protection Region: NRM Mackay Whitsunday QLD

This report describes vegetation protecting the soil surface from erosion during a chosen month compared to previous years. This report has been generated using MODIS fractional vegetation cover information available in Rangelands and Pasture Productivity (RAPP) map tool https://map.geo-rapp.org/#australia. The report is based on 500 metre pixel data on monthly time steps. Land use forest cover:

Results can be shown for the whole region (polygon), and separated by land use and forest cover classes which are likely to show different cover patterns and targets. Land use is divided into four broad classes: Conservation and natural environments, Agriculture, production native forests and plantation forests (no report), and other (no report). Agriculture is divided into grazing, crops and horticulture which are sub-divided into non-irrigated and irrigated. If forest is present land use is further divided into: non-forest, woodland forest and non-woodland forest. The area of each land use and forest class are shown as a map and chart. The report content is repeated for each land use and forest cover class that covers at least 1% of the area of the chosen region. Total vegetation Cover:

The total vegetation cover indicates where soil is likely to be protected from wind and or water hillslope erosion. Total vegetation cover for this month is shown on a map and chart classified into 4 classes.

- 71-100% High cover protected from wind and usually water erosion (high rainfall, steep slopes, and erodible soils may need greater than 80, 90, 95 and up to 100% cover)
 - 51-70% Moderate cover protected from wind erosion
 - 31-50% Low cover not protected
 - 0-30% Very Low cover not protected

Erosion protection: Wind erosion 50% total vegetation cover

The vegetation cover threshold required to prevent soil erosion is usually 50% to reduce wind erosion, 70% or 80% to reduce water (hillslope) erosion depending on the steepness and rainfall. Areas protected from erosion for the month:

- Map: water erosion protection (>70% cover) percentage area and hectares.
- Map: wind erosion protection (>50% cover) percentage area and hectares.

Comparison with previous years:

- Map: anomaly comparing this month to the average cover from the same month in previous years.
- Map: deciles rank of month against the same month in previous years.

Anomalies and deciles until September 2019 are calculated comparing to the same months 2001 to 2019. Extra monthly data will be used to calculate anomalies and deciles post September 2019 as they become available. Time series monthly from January 2001 to current:

Erosion protection

- Wind erosion protection time series: percentage of the area of the region with greater than 50% cover for each month (orange lines). Horizontal lines are 10th (cover target) and 50th percentiles.
- Water erosion protection time series: percentage of the area of the region with greater than 70% cover for each month (blue line). Horizontal lines are 10th (cover target) and 50th percentiles.

Rainfall

• Millimetres rainfall each month (black line).

Each time series is also stacked by year. The black line shows the current year of data.

Water erosion protection for higher rainfall and steeper slopes:

Water erosion protection on higher slopes. As slope increases, more cover is required to control water erosion. The thresholds reported are:

- the percentage area with pixels greater than 80% total cover.
- the percentage area with pixels greater than 90% total cover.
- the percentage area with pixels greater than 95% total cover.

Acknowledgment of data:

- 1. http://www.agriculture.gov.au/abares/aclump/land-use/alum-classification
- 2. http://www.agriculture.gov.au/abares/forestsaustralia/sofr/sofr-2018
- 3. https://www.dpi.nsw.gov.au/agriculture/pastures-and-rangelands/establishment-mgmt/production-management2/groundcover
- 4. MODIS Fractional cover algorithm:

https://doi.org/10.4225/08/5848a3f19a7b3













Date: April 2013

Vegetation Cover Apr 2013

Land use and forest cover

Catchment Scale

of Australia (2018)

(2018) and Forests

of Australia (2018)

Anomaly show how many percetage points each pixel is from

the mean. That

lower than the

pixel. The mean

month of the map

mean of that

is only for the

using baseline from 2001 to

2019.

is, red pixels are about 20%

Derived from

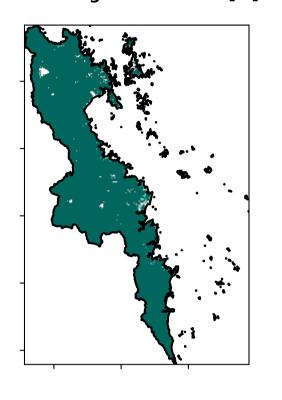
Use of Australia

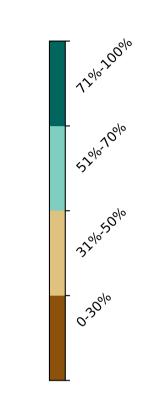
Land Use and Forests

Catchment Scale Land

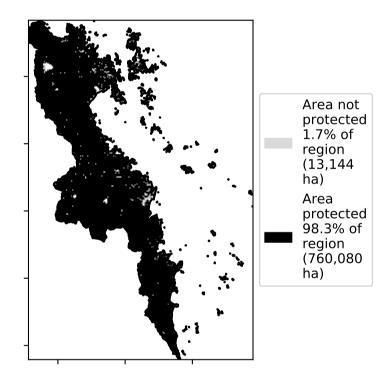
Legend with land class forest cover and number, i.e. Forests is 12 1 Conservation and natural environments -2 Conservation and natural environments -3 Conservation and natural environments -Non-Woodland forest 4 Agriculture - Grazing - Non-forest 5 Agriculture - Grazing - Woodland forest 6 Agriculture - Grazing - Non-woodland forest 7 Agriculture - Grazing - Irrigated 8 Agriculture - Cropping - Non-irrigated 9 Agriculture - Cropping - Irrigated 10 Agriculture - Horticulture - Non-irrigated 11 Agriculture - Horticulture - Irrigated 12 Production native forests and plantation 13 Other uses

Total Vegetation Cover [%]

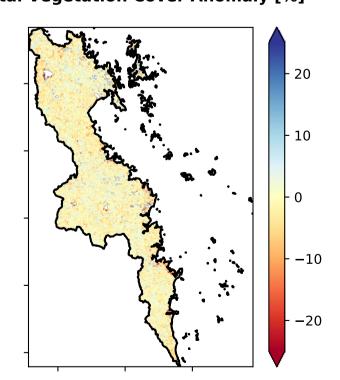




% Area protected from water erosion (>70%)

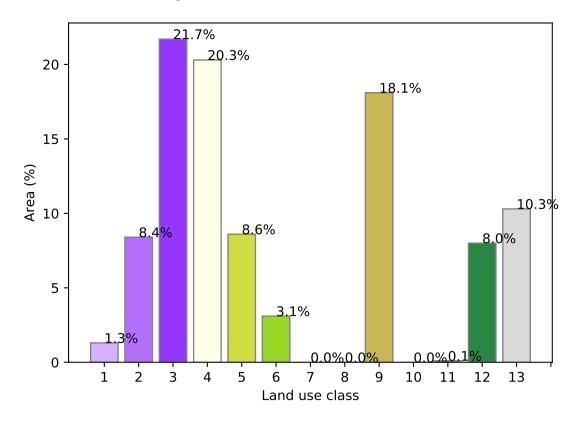


Total Vegetation Cover Anomaly [%]

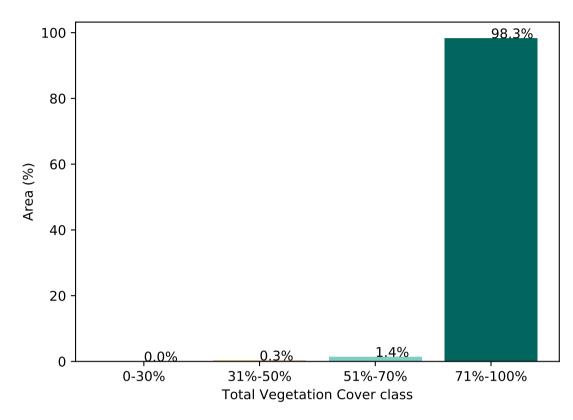


Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

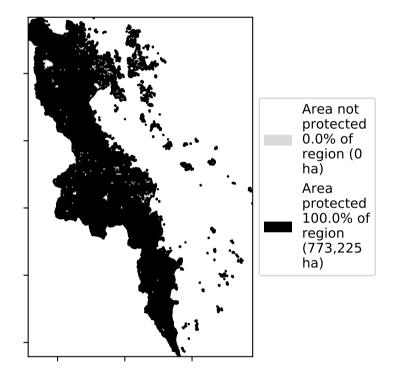
Proportion of each land class in area



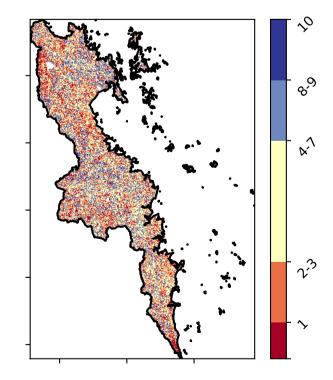
Proportion of vegetation cover class in area



% Area protected from wind erosion (>50%)



Total Vegetation Cover Decile [%]





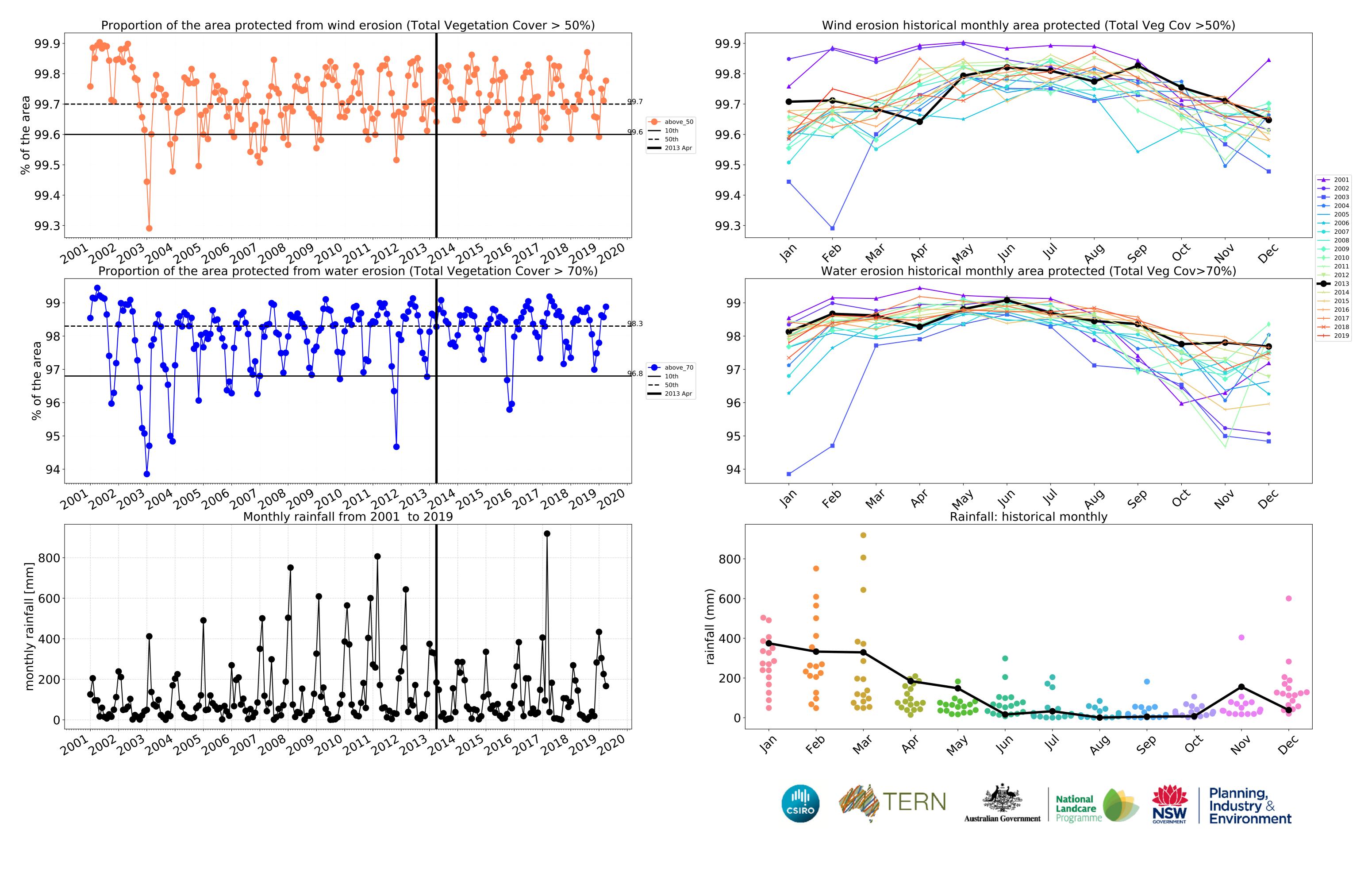


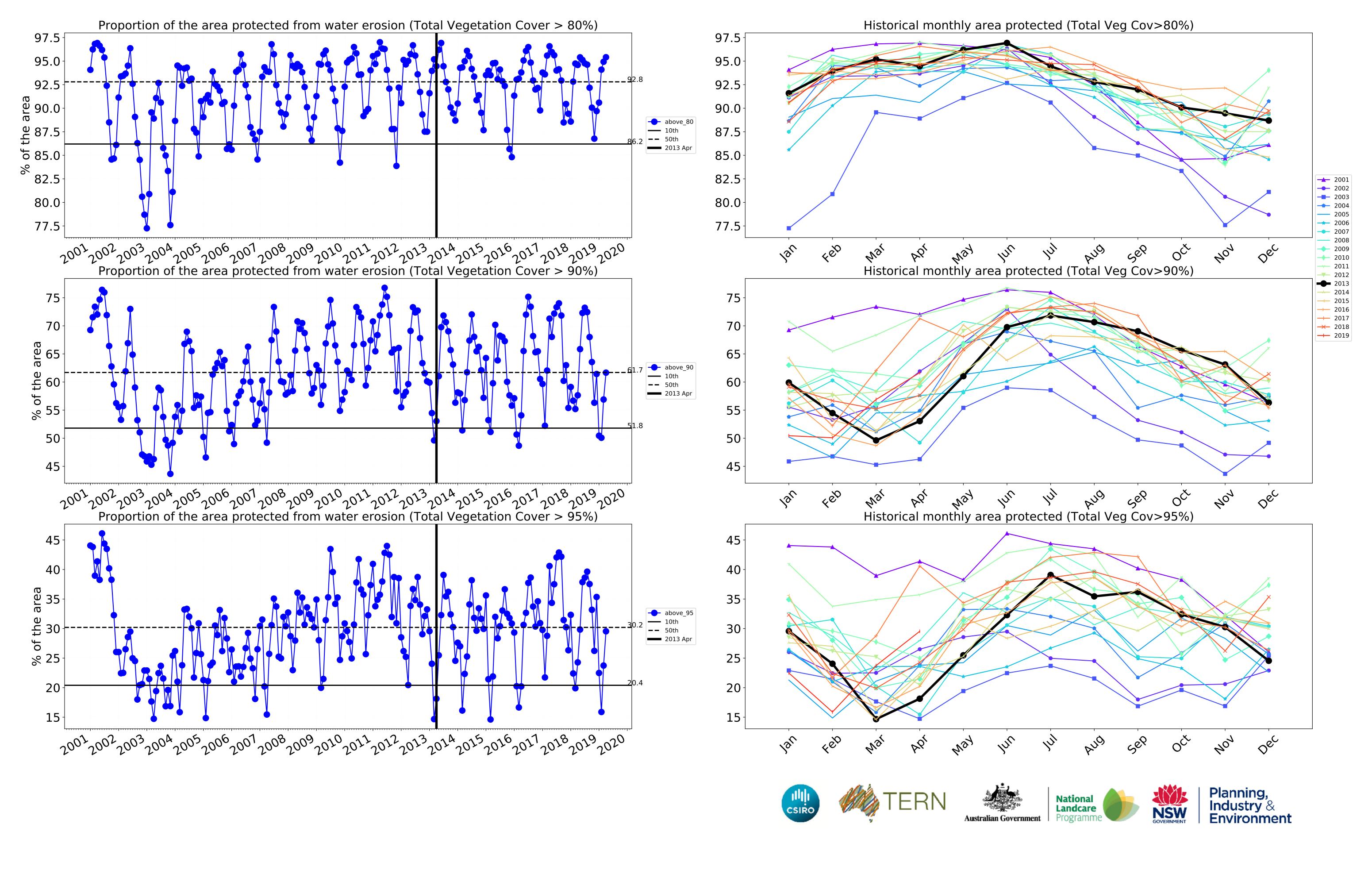












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Conservation and natural environments

Land use and forest cover

Catchment Scale Land Use and Forests

of Australia (2018)

(2018) and Forests

of Australia (2018)

Anomaly show how many percetage points each

pixel is from the mean. That

pixel. The mean

using baseline from 2001 to 2019.

is only for the month of the map

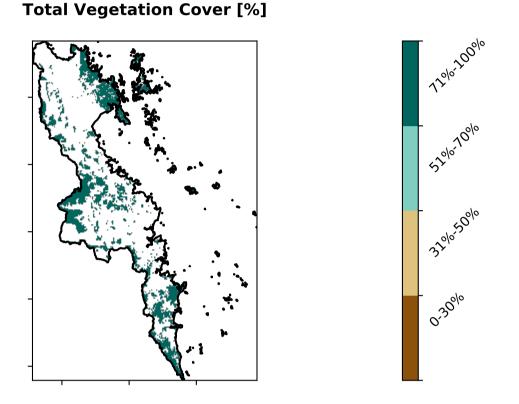
is, red pixels are about 20% lower than the mean of that

Catchment Scale Land

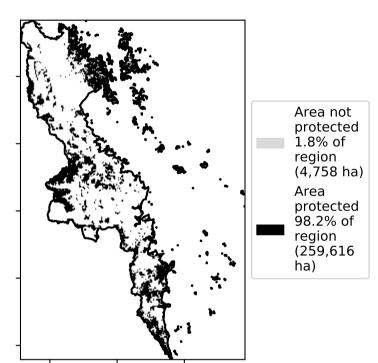
Derived from

Use of Australia

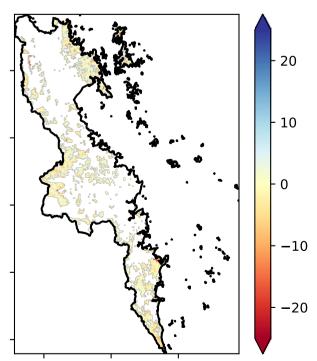
1 Conservation and natural environments - Non-2 Conservation and natural environments - Woodland 3 Conservation and natural environments - Non-woodland forest



% Area protected from water erosion (>70%)

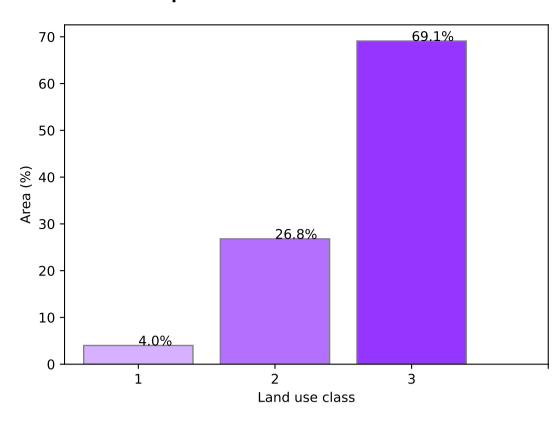


Total Vegetation Cover Anomaly [%]

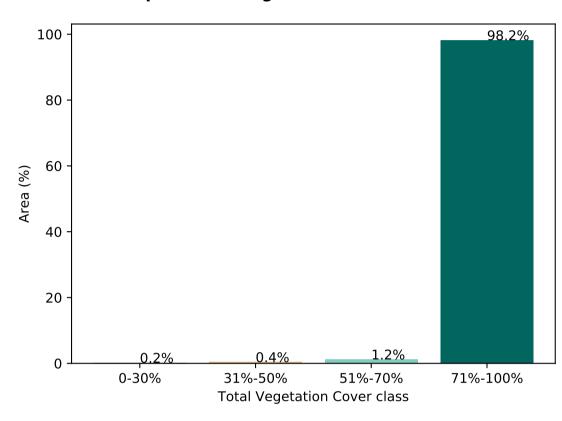


Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of

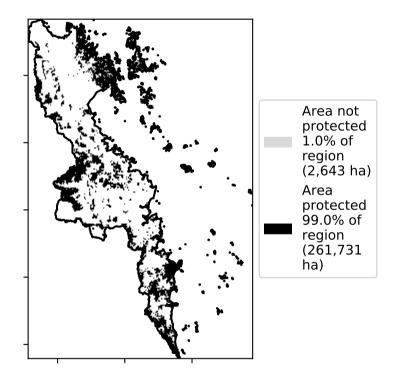
Proportion of each land class in area



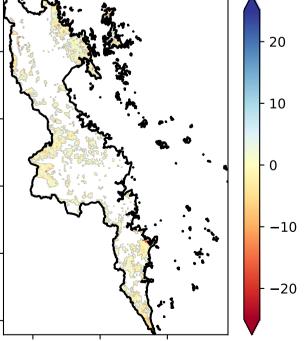
Proportion of vegetation cover class in area



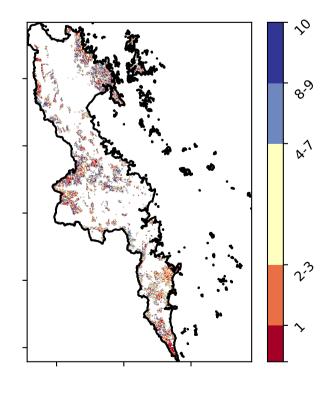
% Area protected from wind erosion (>50%)



Total Vegetation Cover Decile [%]



the map using baseline from 2001 to 2019.







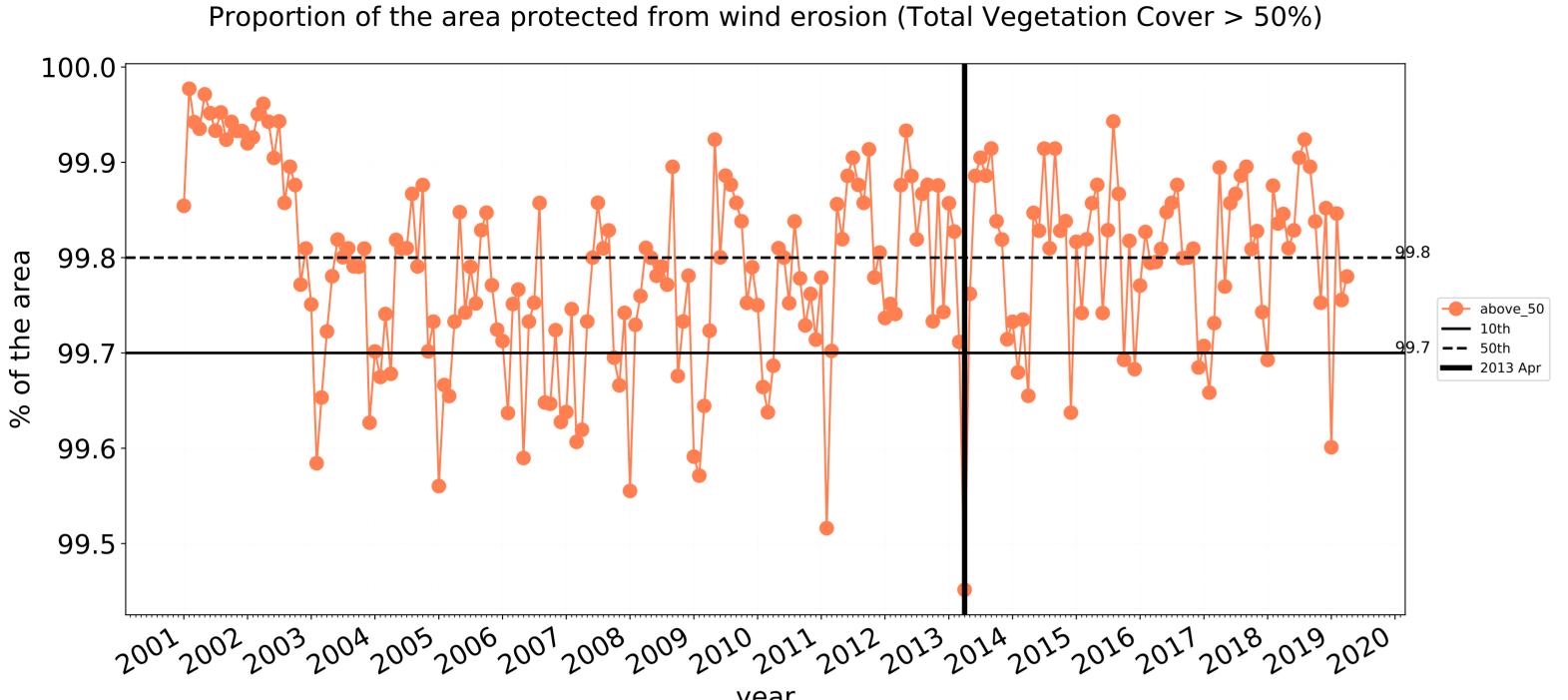


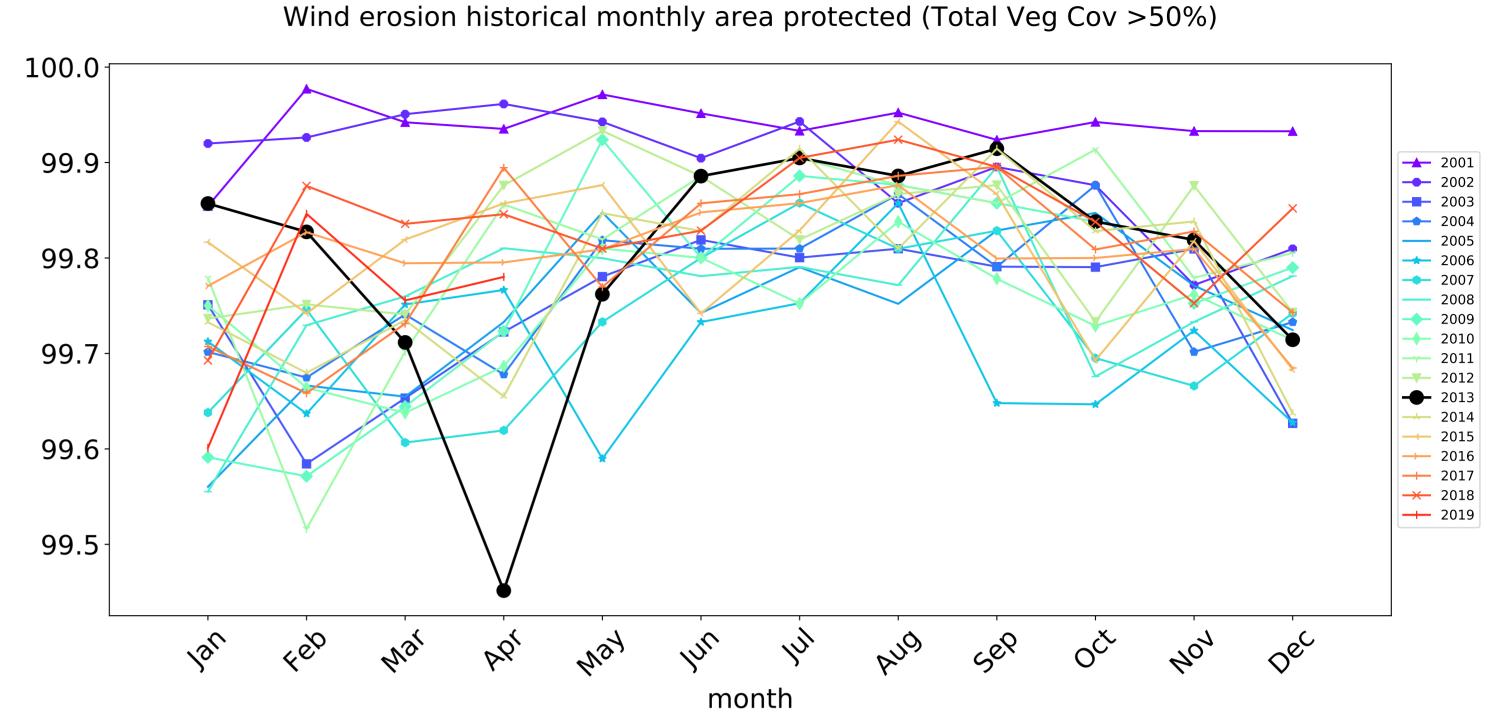


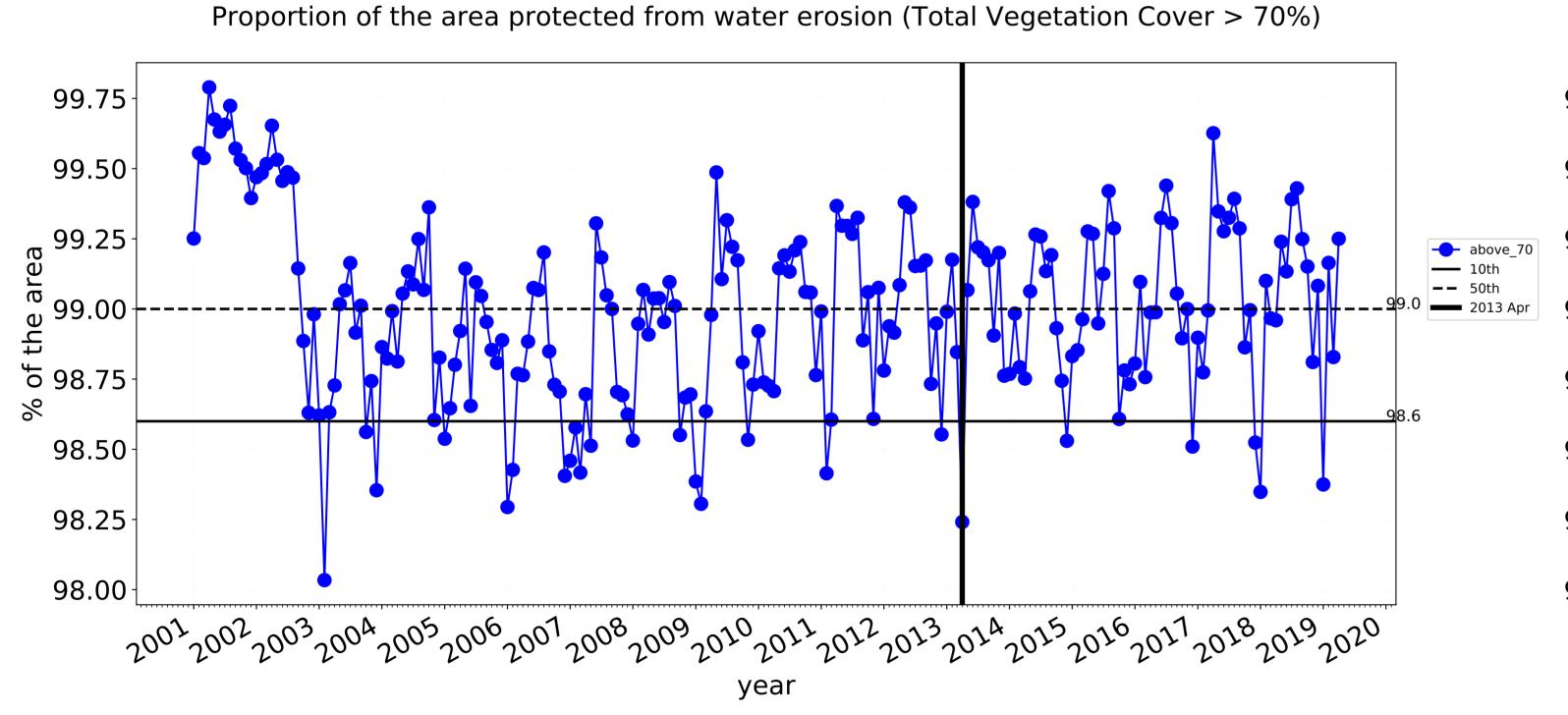


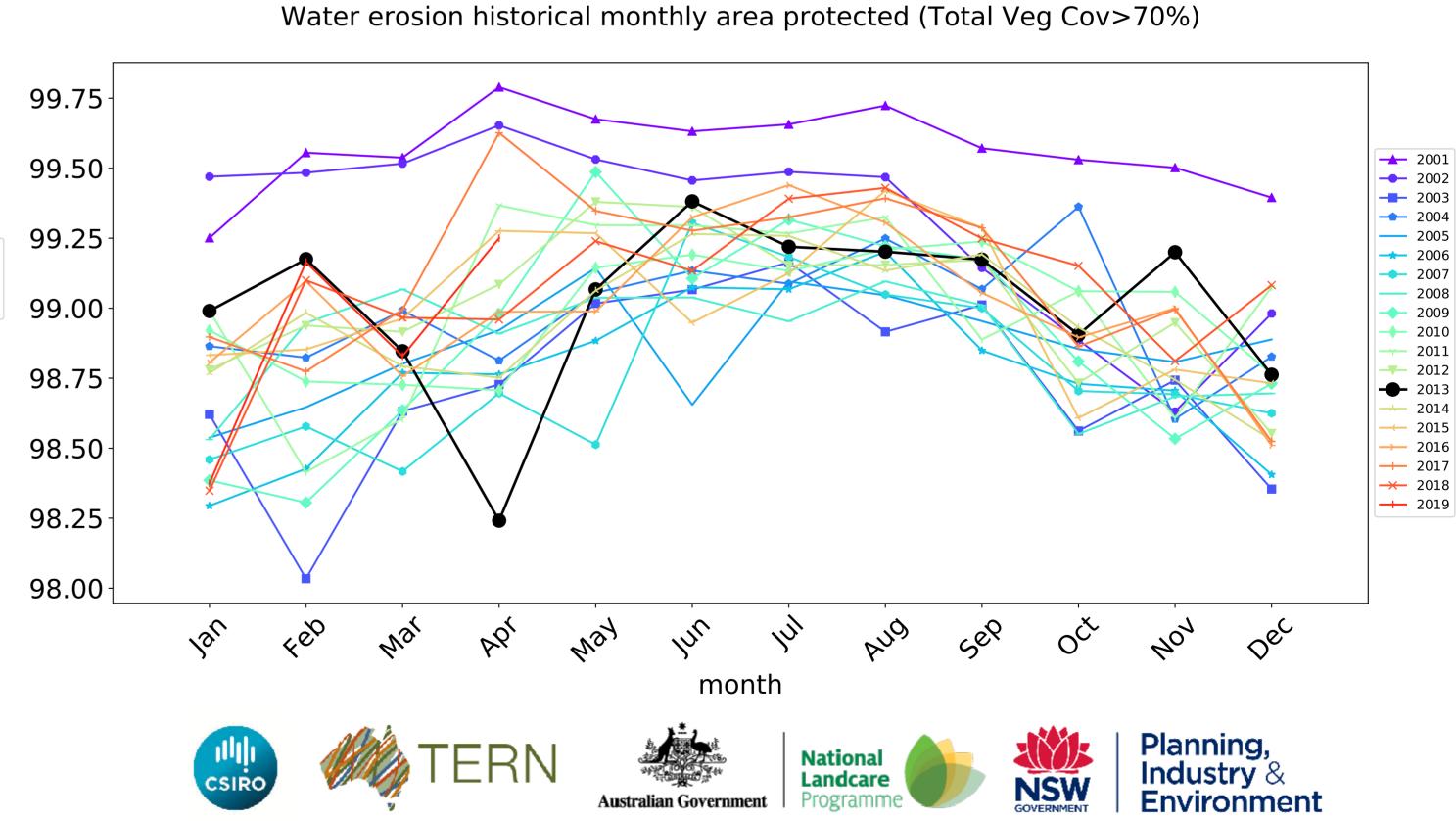


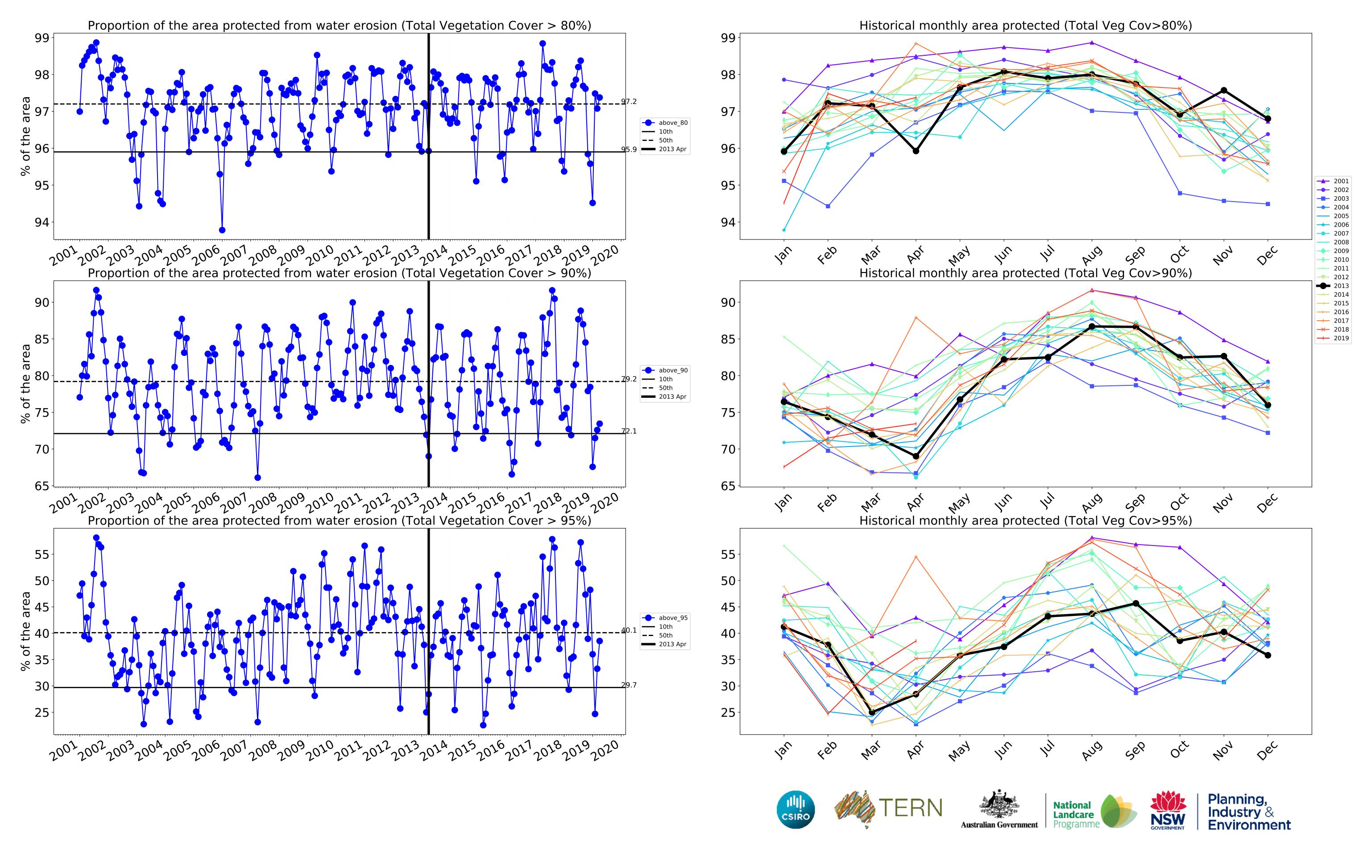
Conservation and natural environments timeseries











Conservation and natural environments non forest

Land use and forest cover

Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)

Anomaly show how many percetage points each

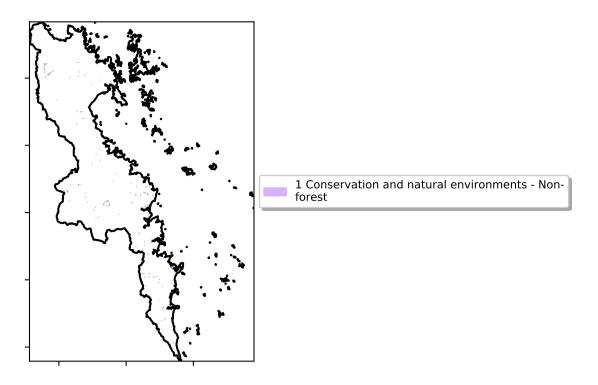
pixel is from the mean. That

pixel. The mean

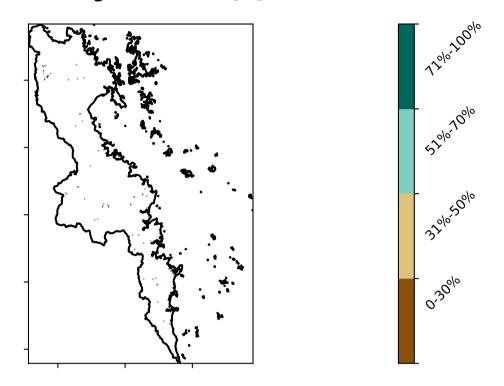
using baseline from 2001 to 2019.

is only for the month of the map

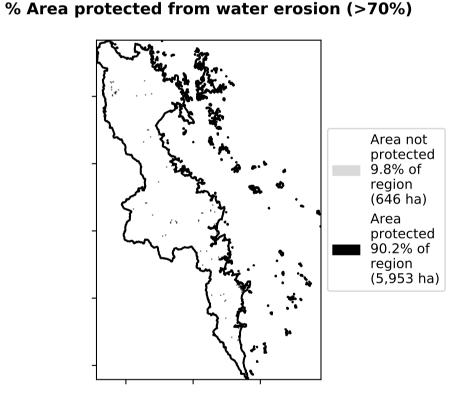
is, red pixels are about 20% lower than the mean of that



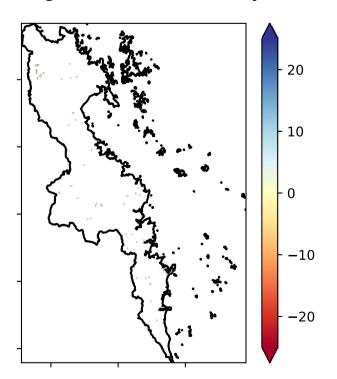
Total Vegetation Cover [%]



)/ Aver westerted from water everies (> 700/)

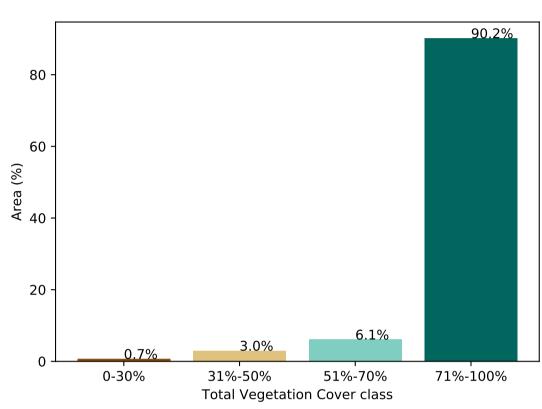


Total Vegetation Cover Anomaly [%]

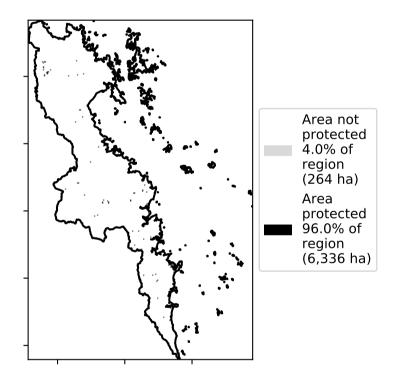


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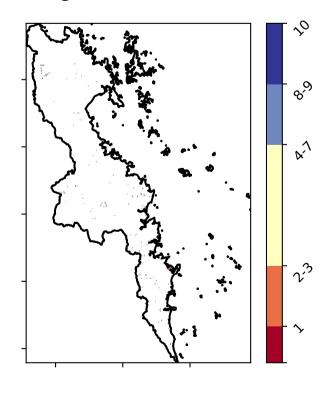
Proportion of vegetation cover class in area



% Area protected from wind erosion (>50%)



Total Vegetation Cover Decile [%]







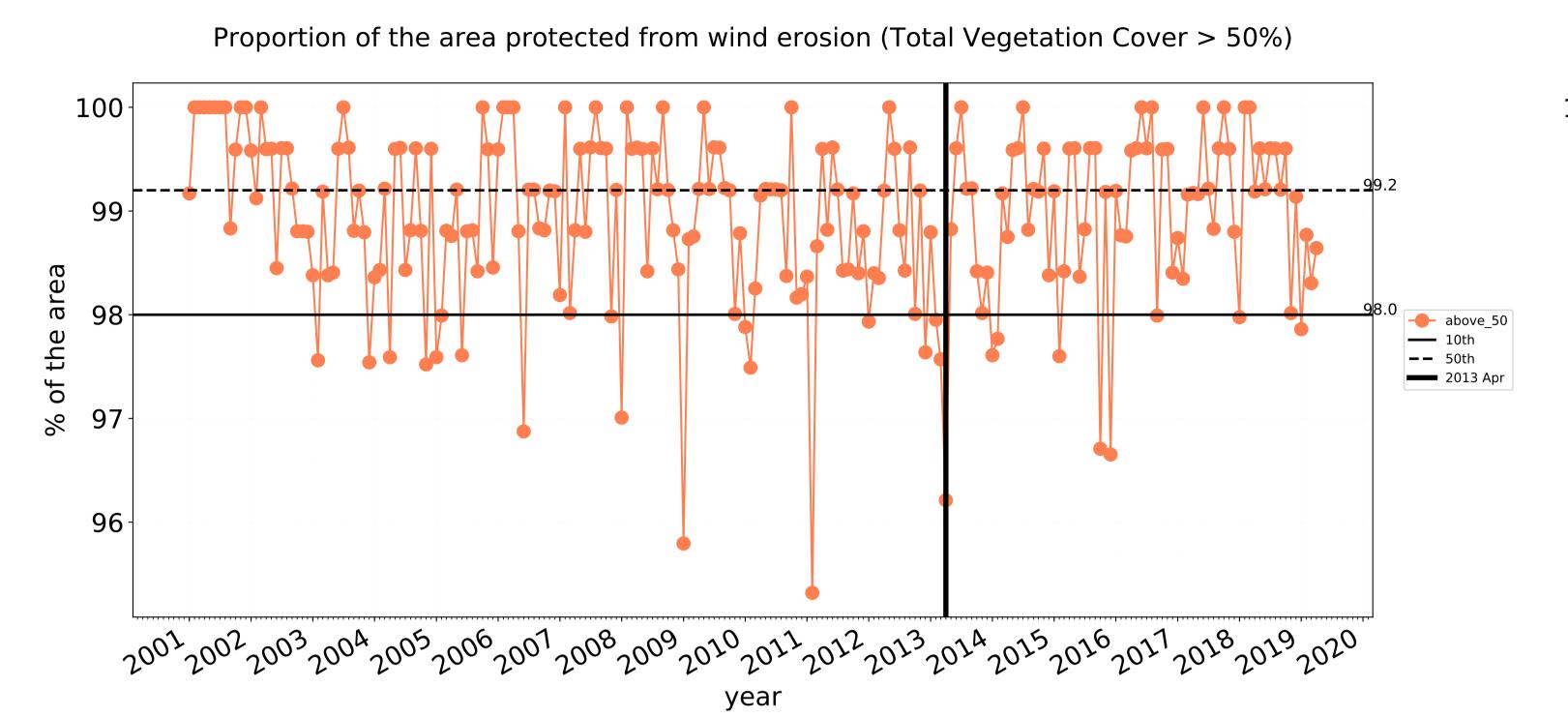


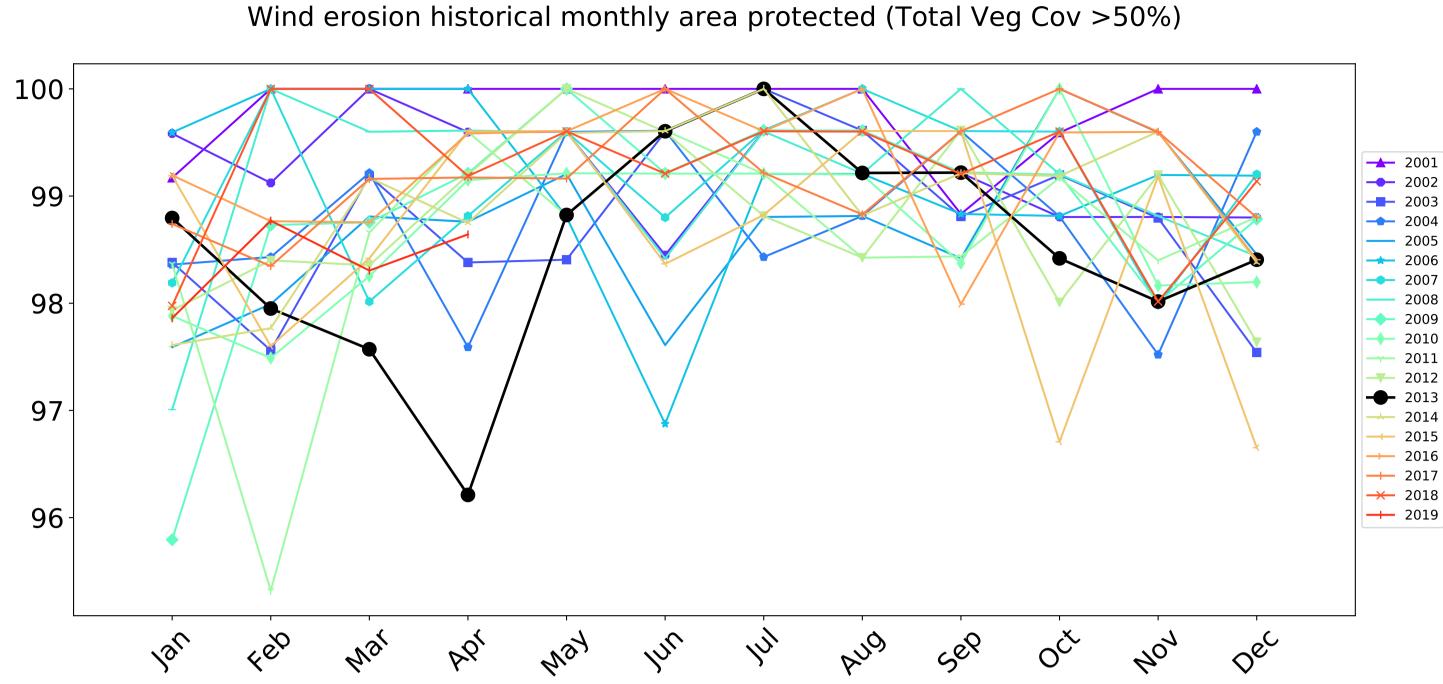




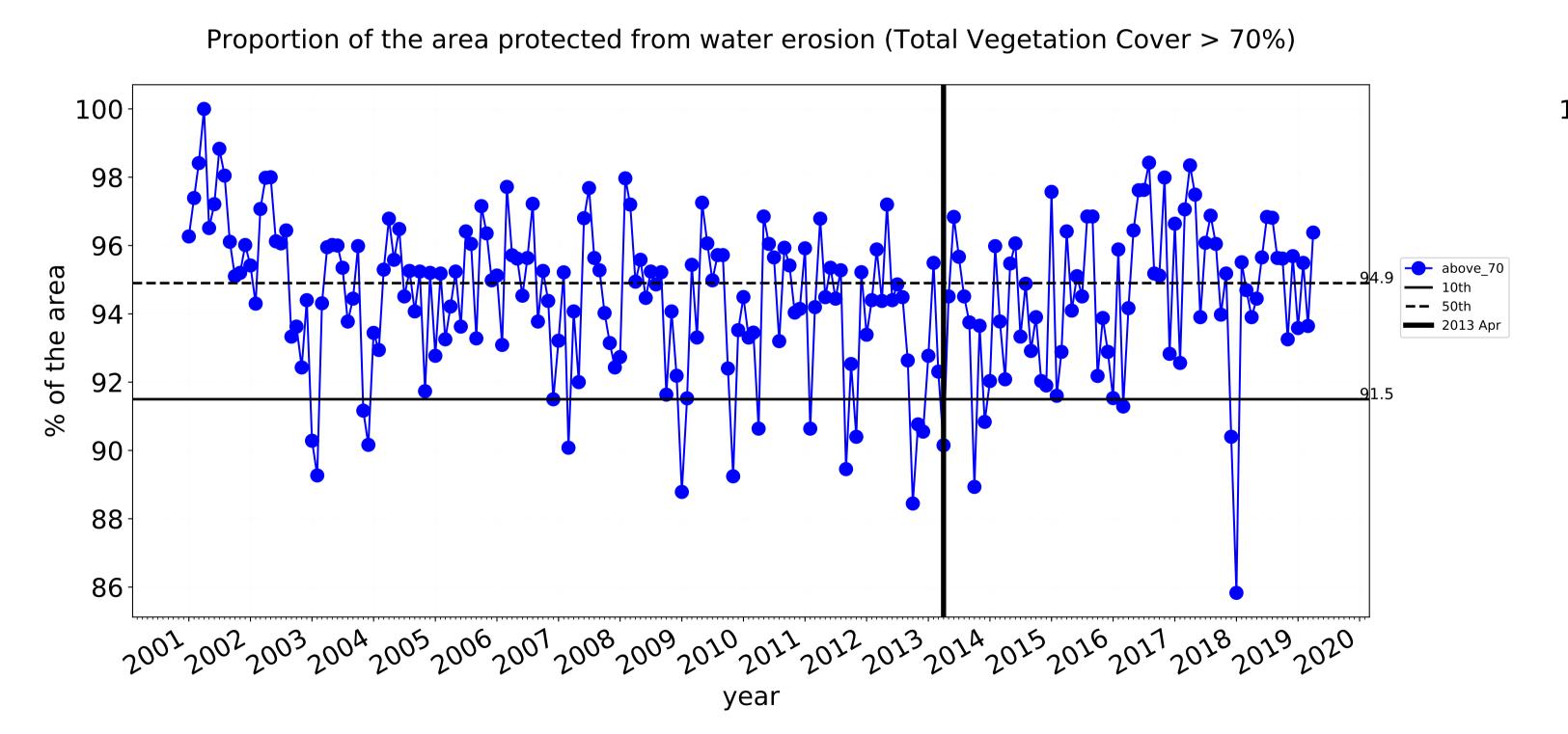


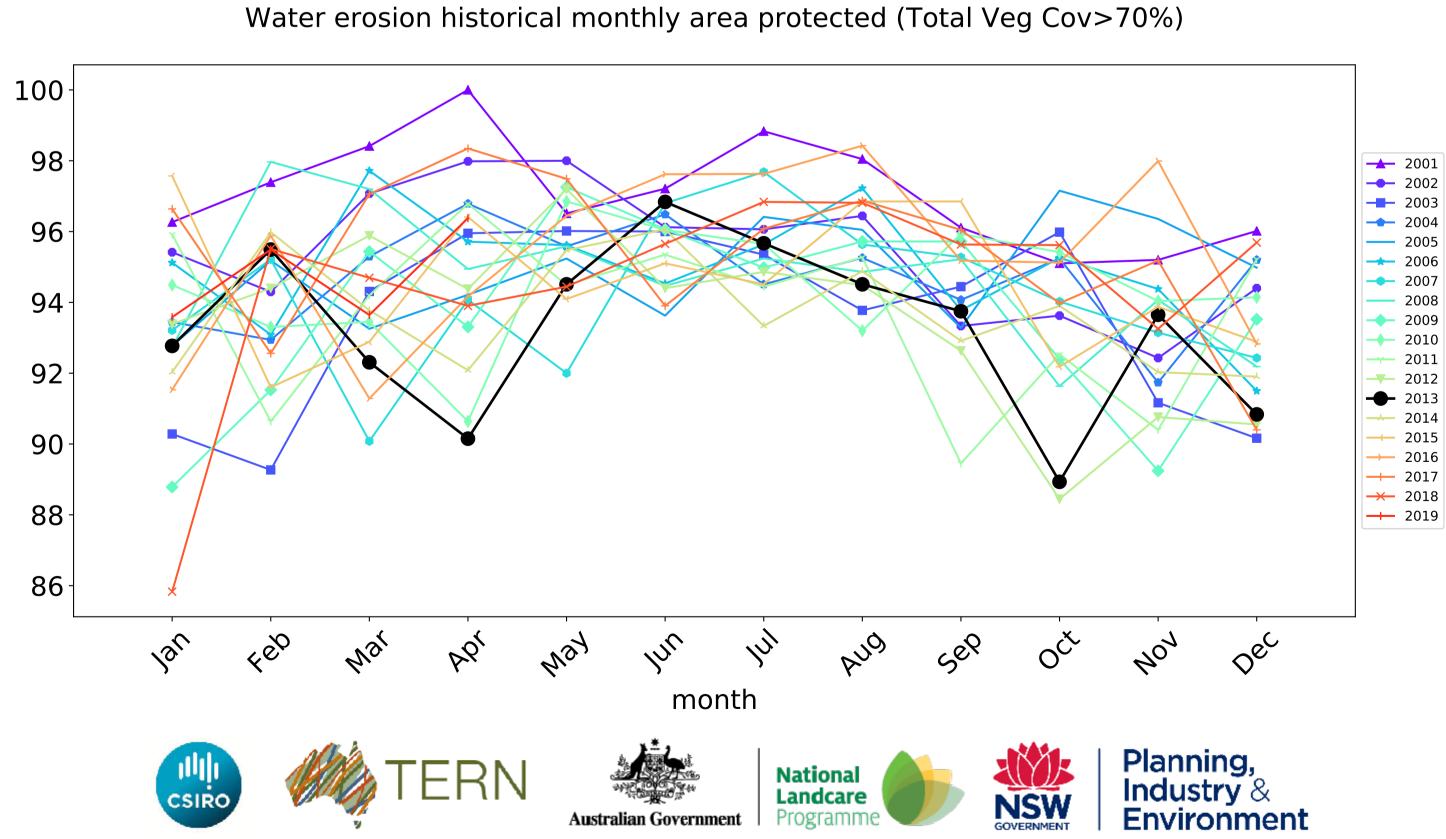
Conservation and natural environments non forest timeseries

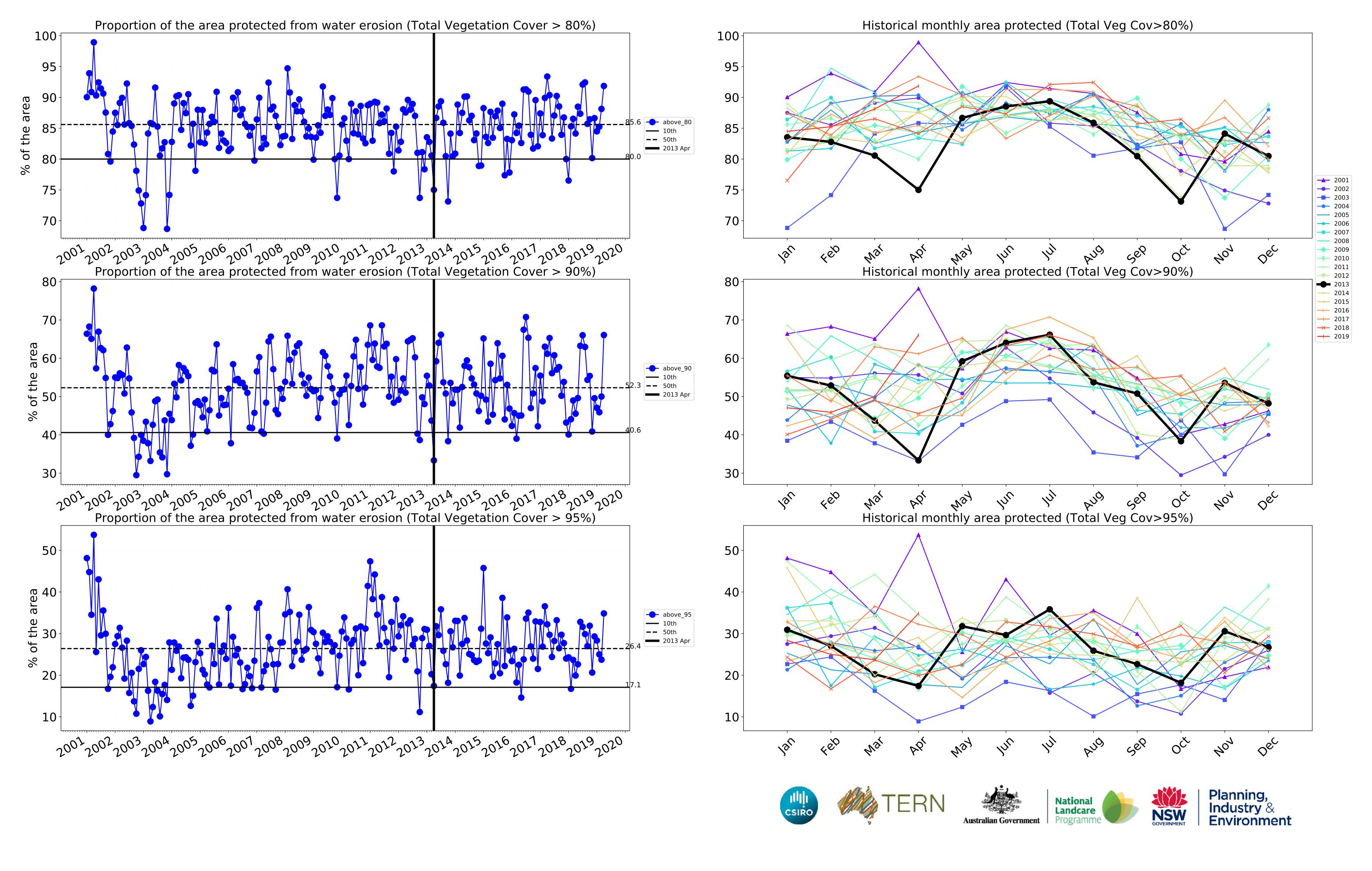




month



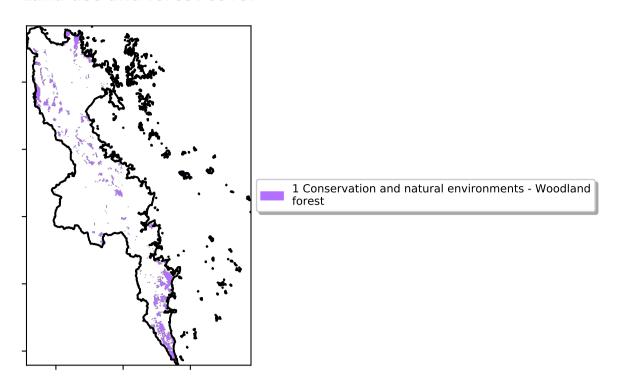




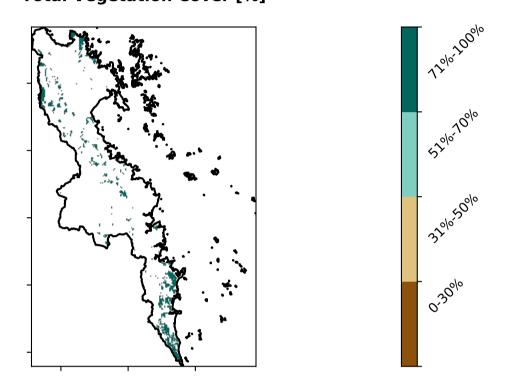
Conservation and natural environments Woodland forest

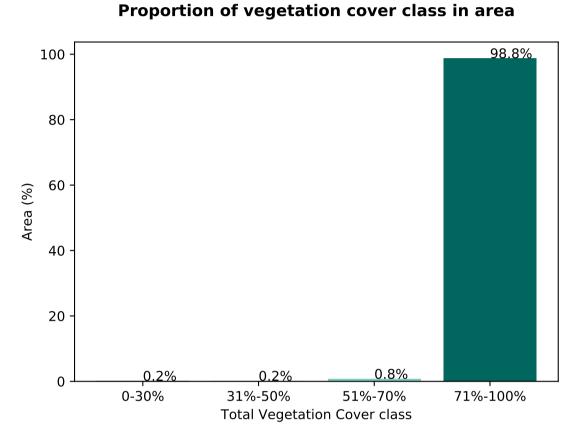
Land use and forest cover

Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)

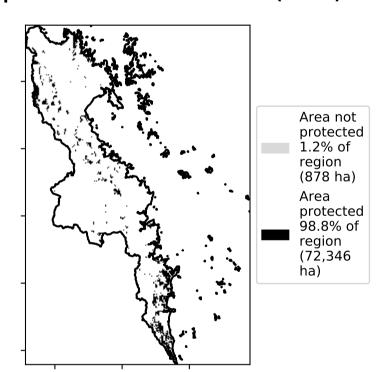


Total Vegetation Cover [%]

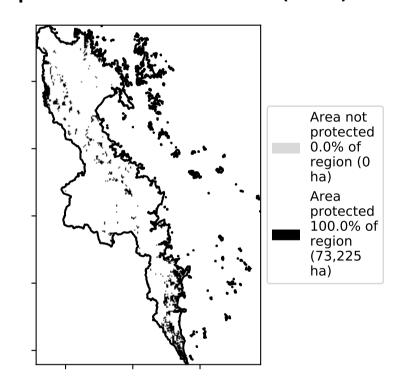




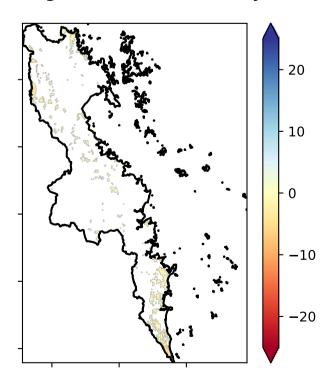
% Area protected from water erosion (>70%)



% Area protected from wind erosion (>50%)

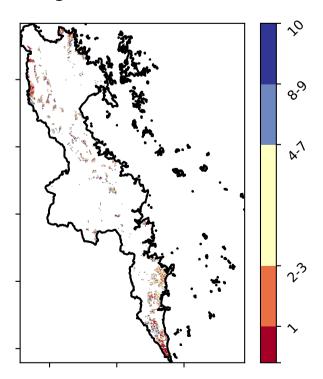


Total Vegetation Cover Anomaly [%]



Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

Total Vegetation Cover Decile [%]



is only for the month of the map using baseline from 2001 to 2019.

Anomaly show how many percetage points each

pixel is from the mean. That

pixel. The mean

is, red pixels are about 20% lower than the mean of that



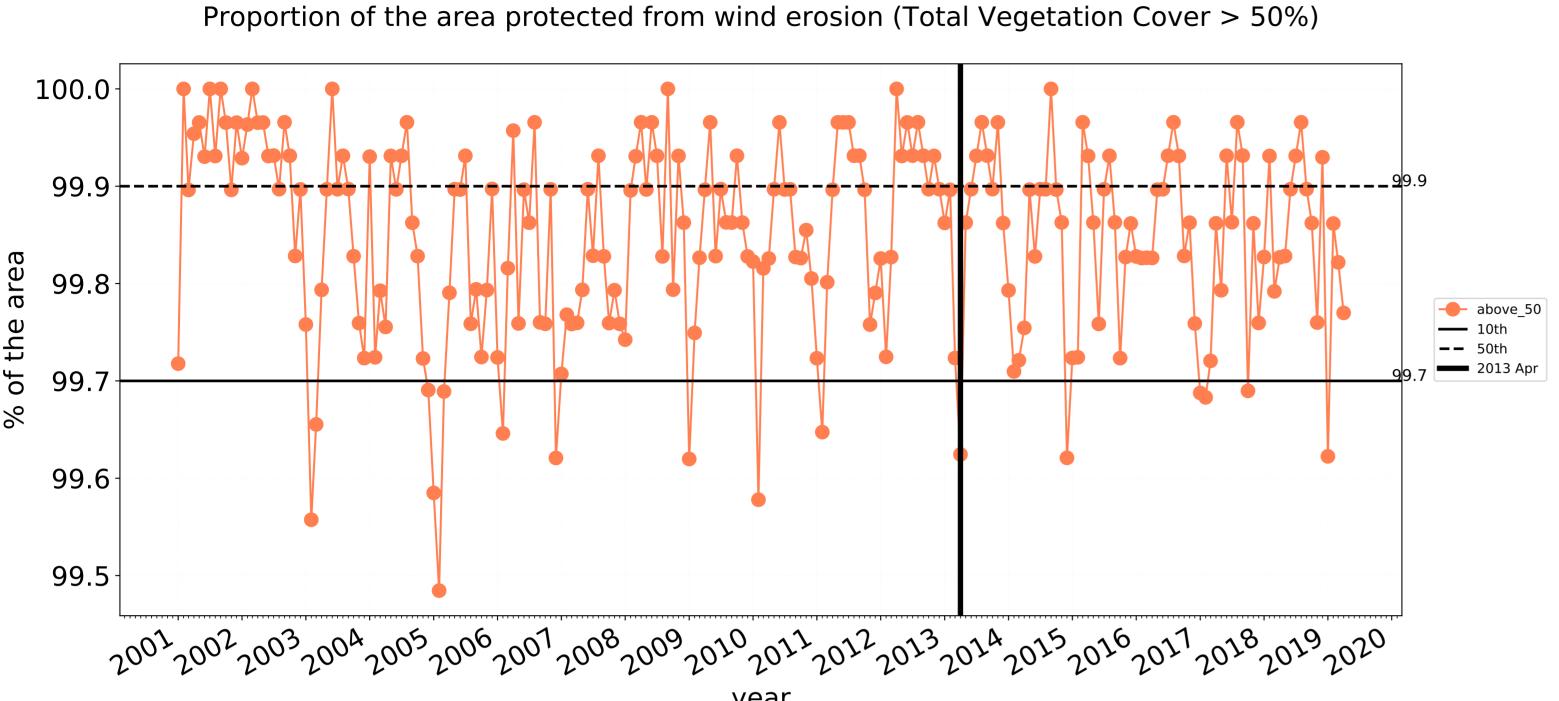


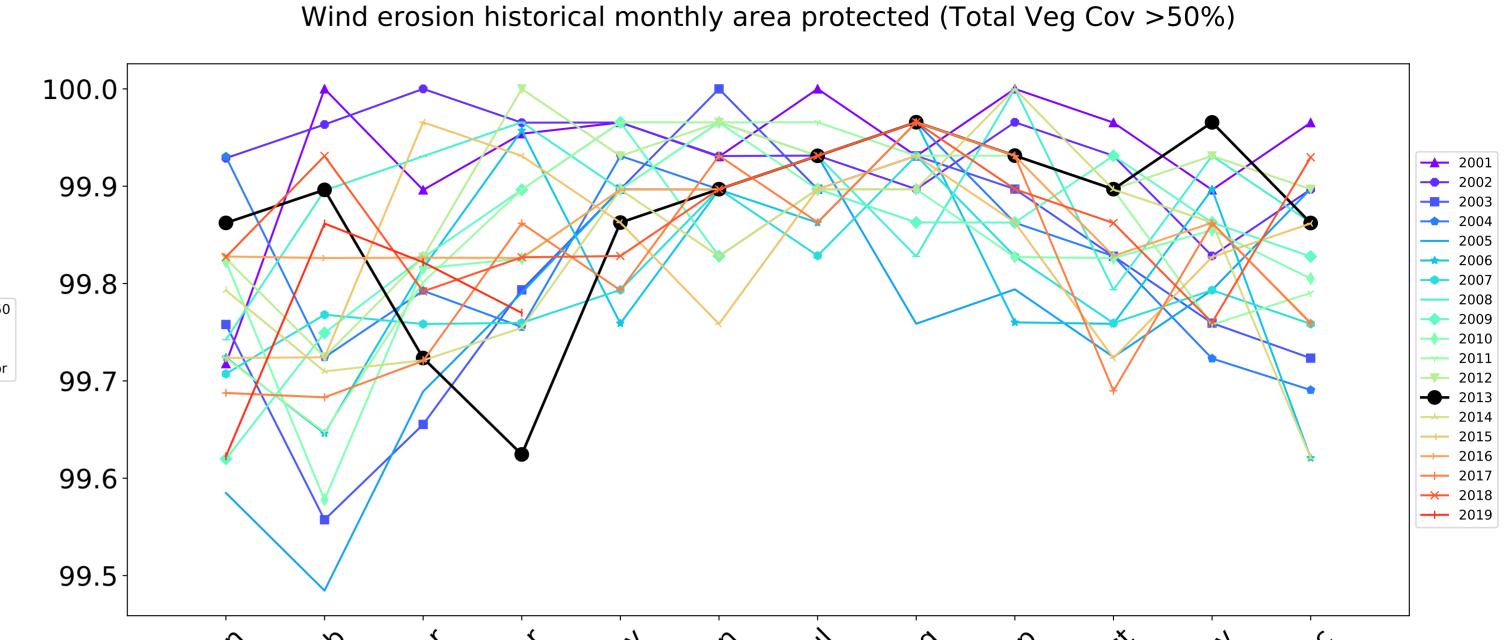






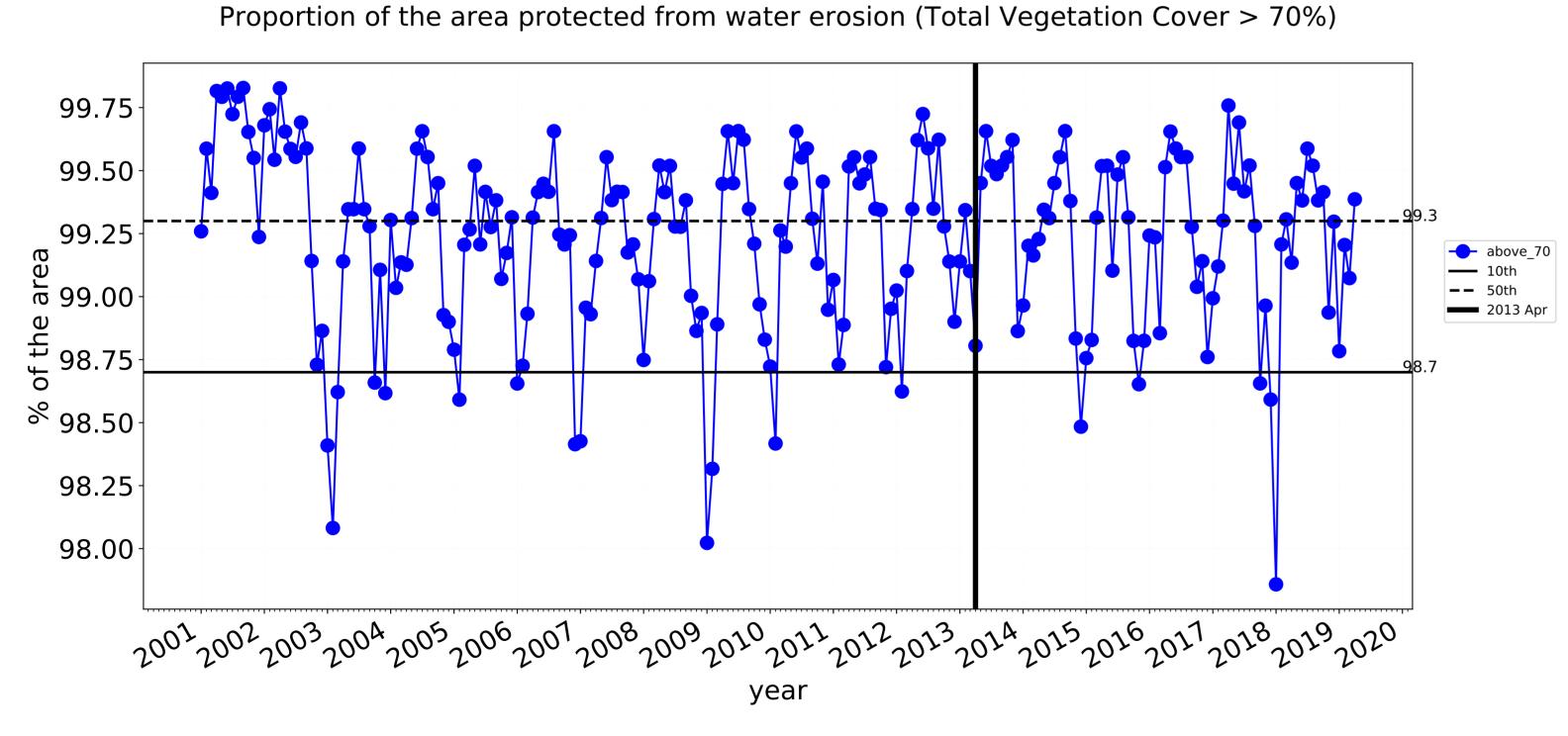
Conservation and natural environments Woodland forest timeseries

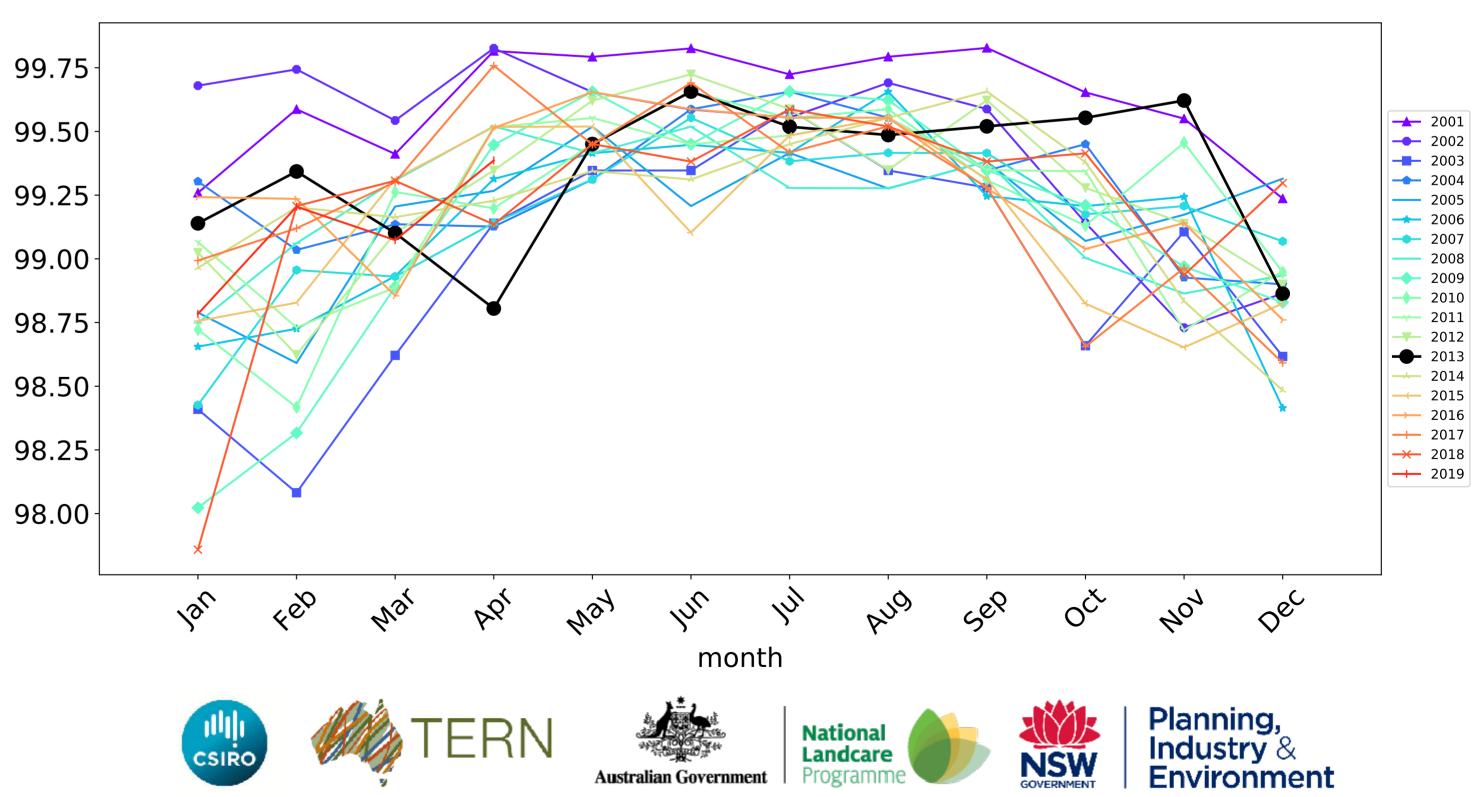


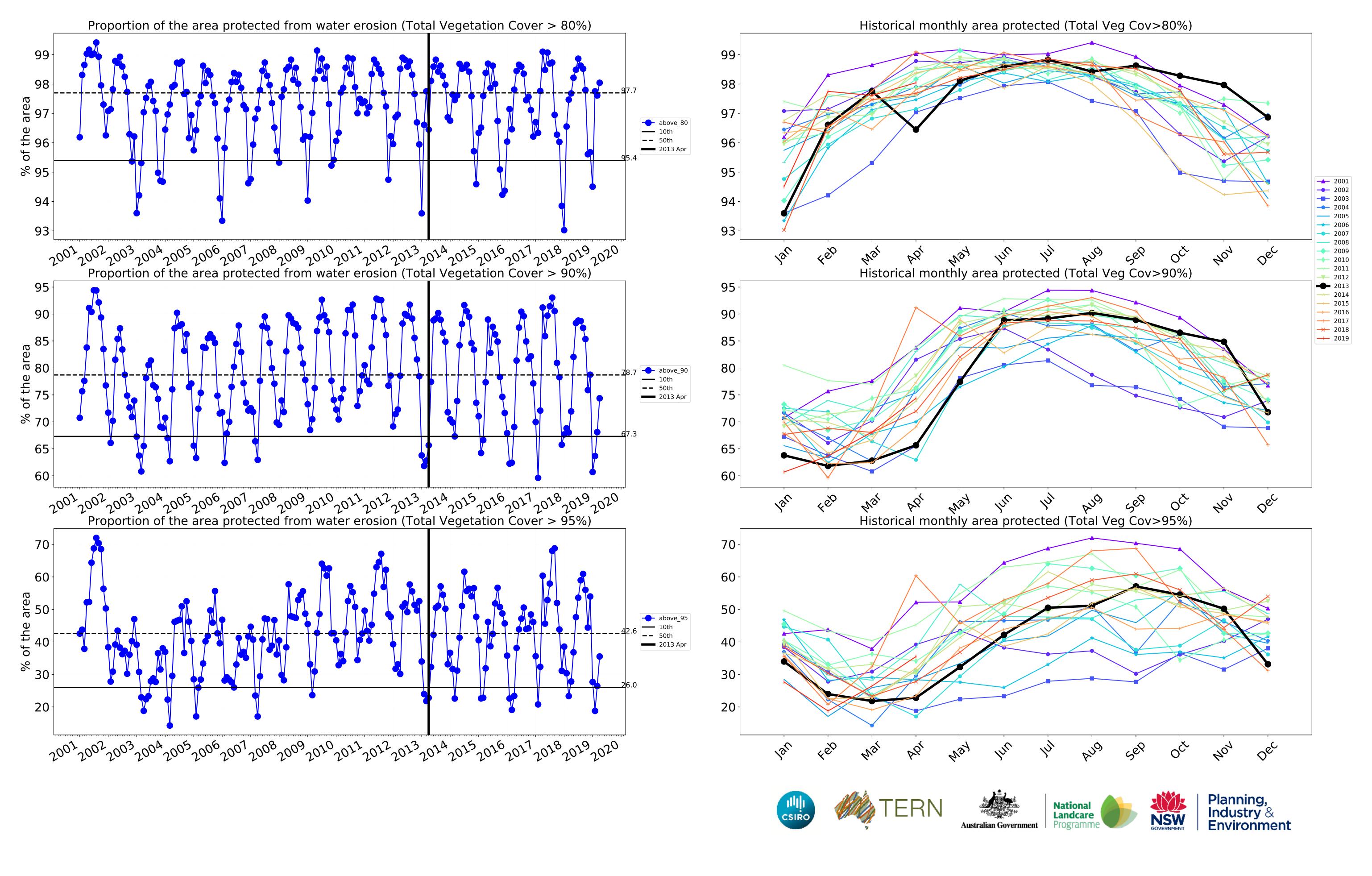


month

Water erosion historical monthly area protected (Total Veg Cov>70%)



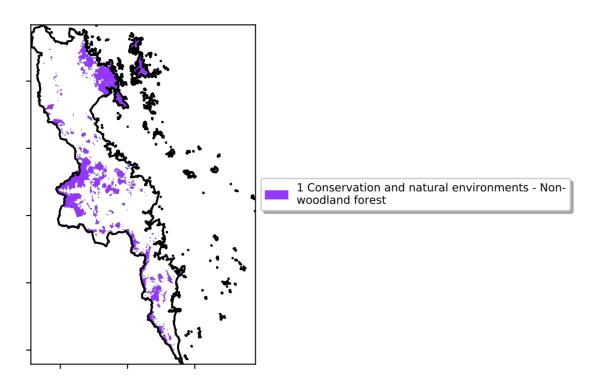




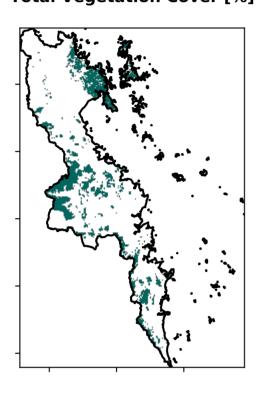
Conservation and natural environments Forest (non woodland)

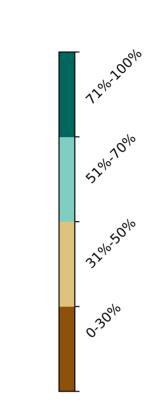
Land use and forest cover

Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)

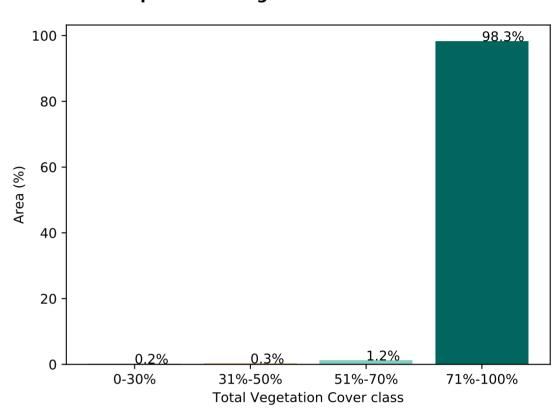


Total Vegetation Cover [%]

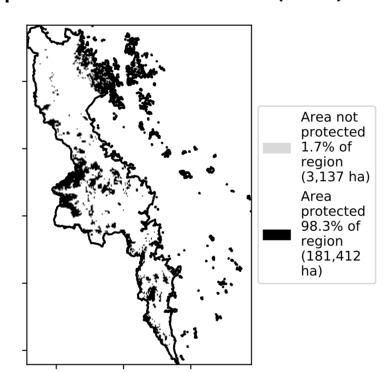




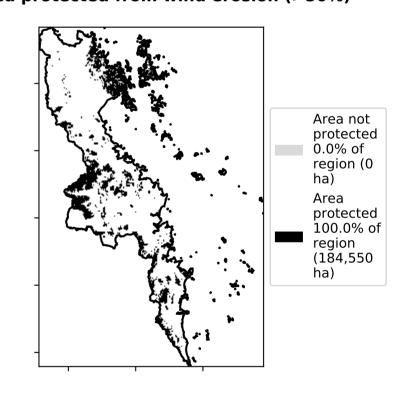
Proportion of vegetation cover class in area



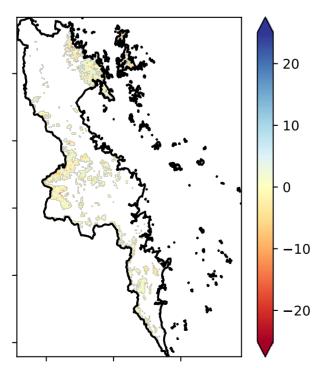
% Area protected from water erosion (>70%)



% Area protected from wind erosion (>50%)

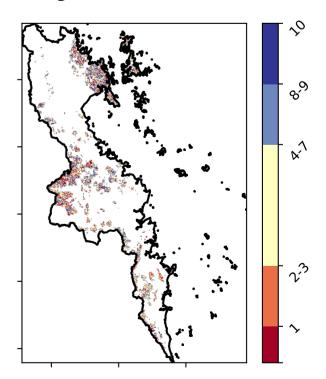


Total Vegetation Cover Anomaly [%]

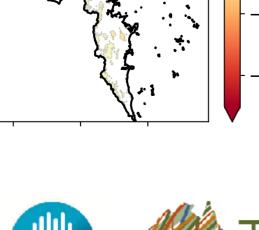


Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

Total Vegetation Cover Decile [%]



Anomaly show how many percetage points each pixel is from the mean. That is, red pixels are about 20% lower than the mean of that pixel. The mean is only for the month of the map using baseline from 2001 to 2019.

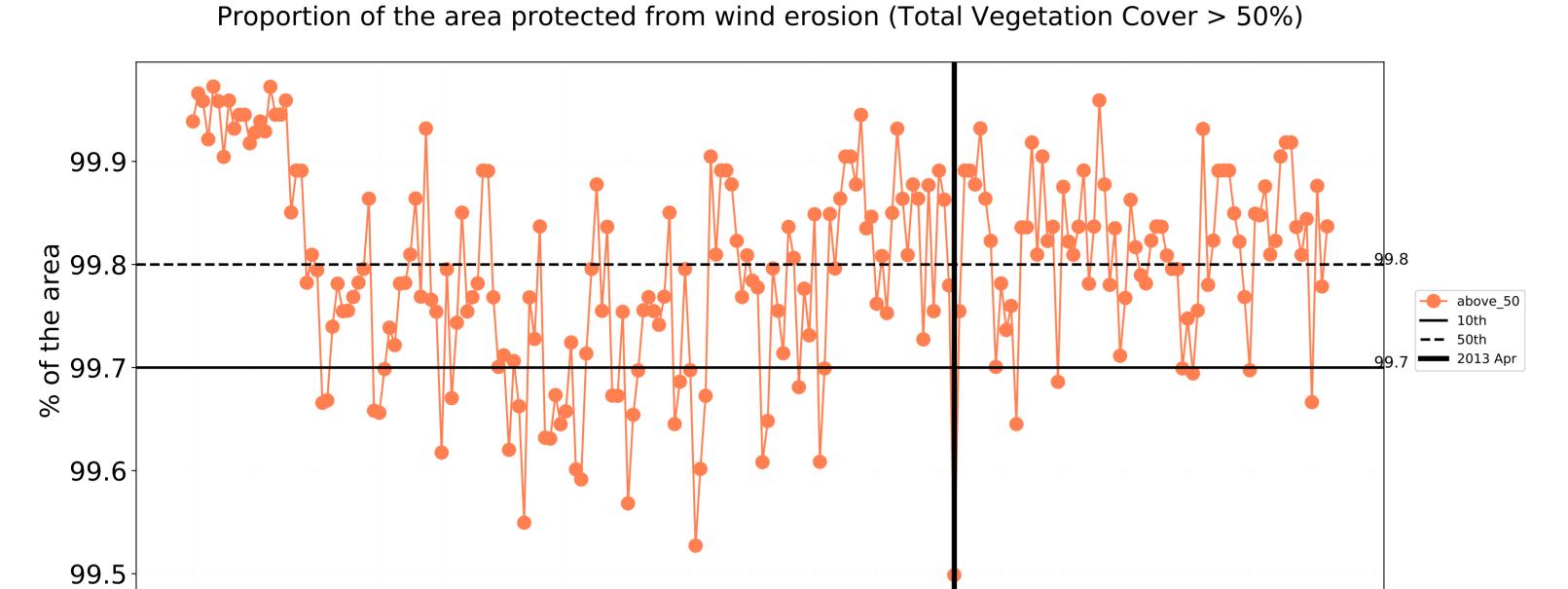




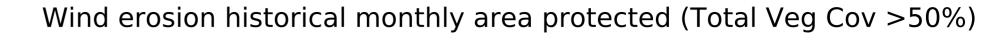


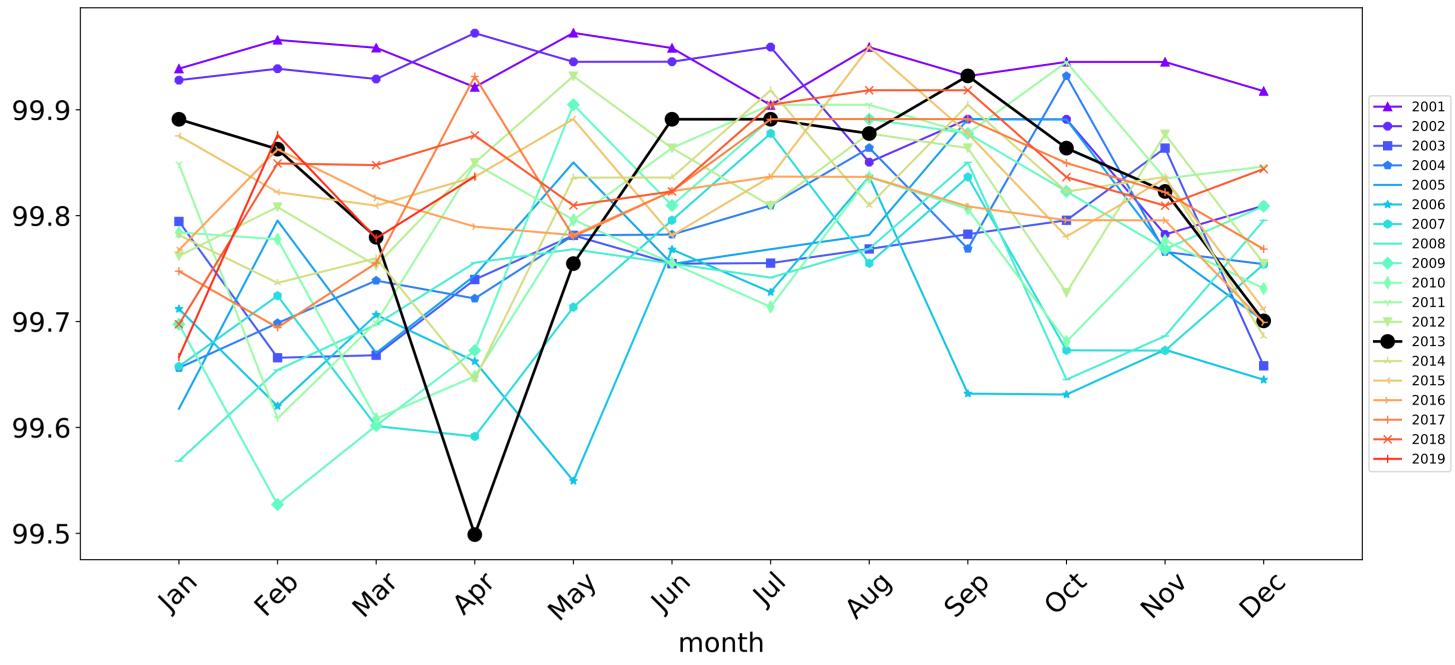


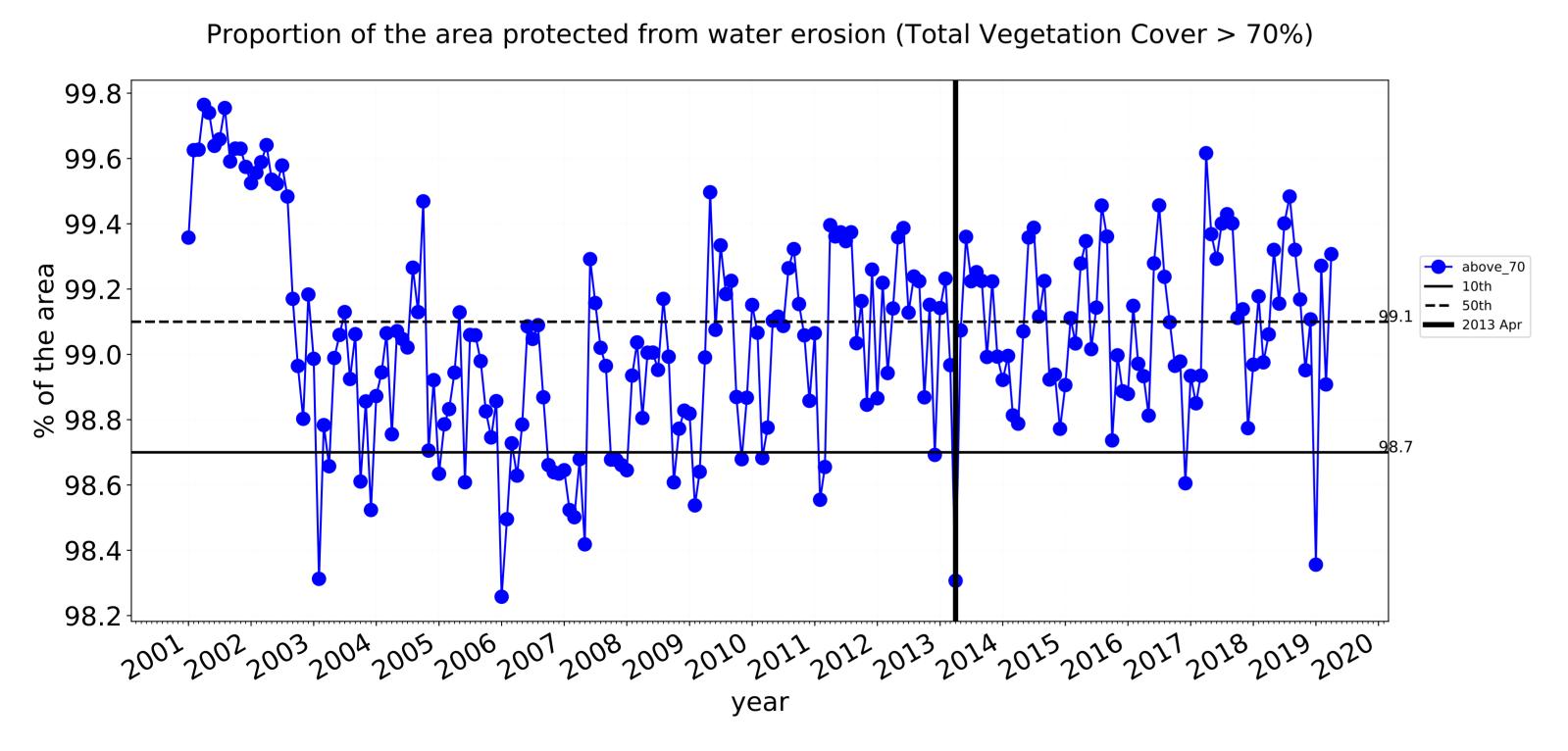




20012002200320042005200620012008200920102011201220132014201520162011201820192020







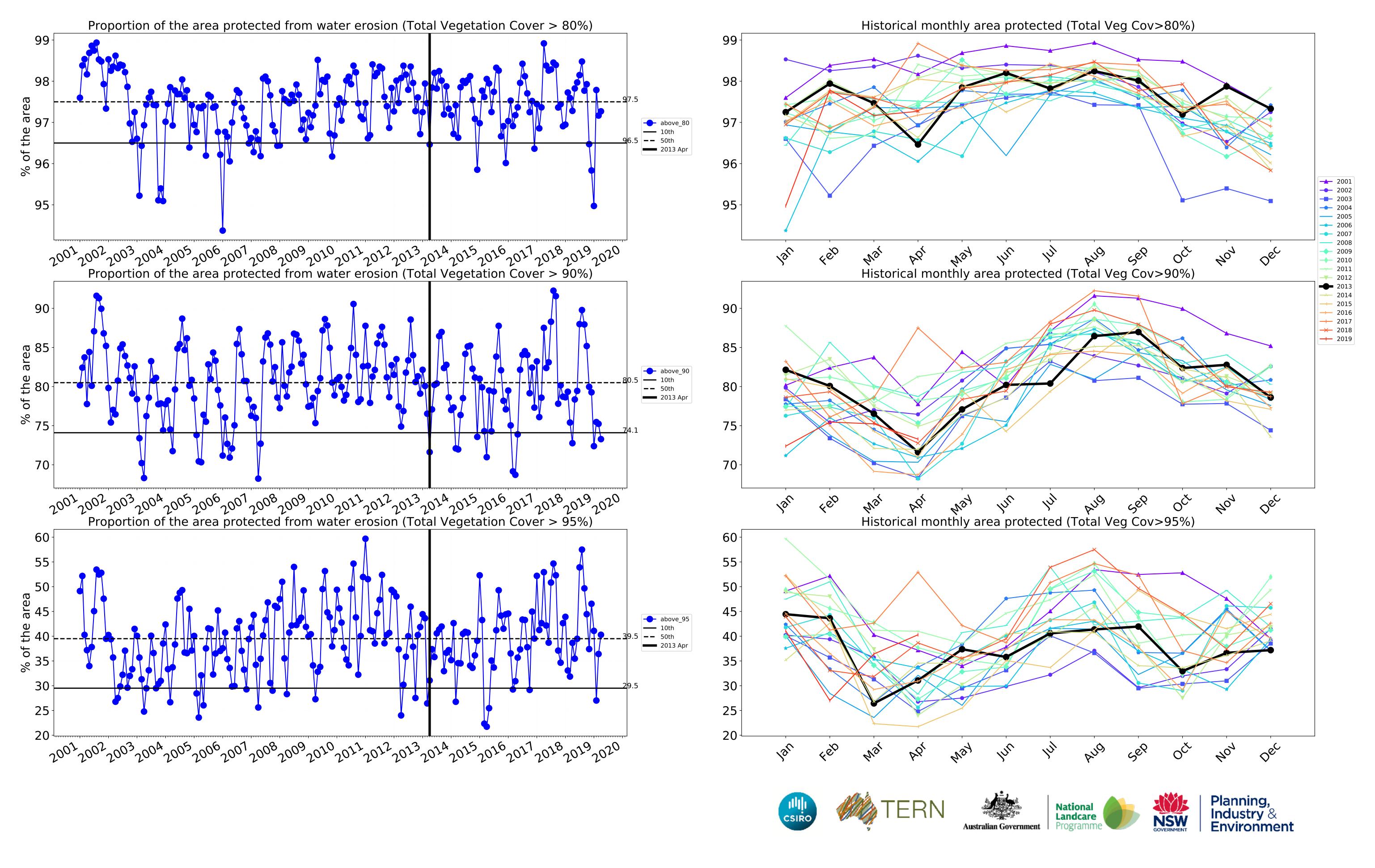
99.8 99.6 2001 2002 99.4 ___ 2005 99.2 99.0 2011 2012 2013 2014 98.8 ← 2015 **→** 2016 98.6 ---- 2017 × 2018 ---- 2019 98.4 98.2 month Planning, Industry & Environment

National Landcare

NSW GOVERNMENT

Water erosion historical monthly area protected (Total Veg Cov>70%)

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Agriculture

Land use and forest cover

Catchment Scale

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(2018) and Forests

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Derived from

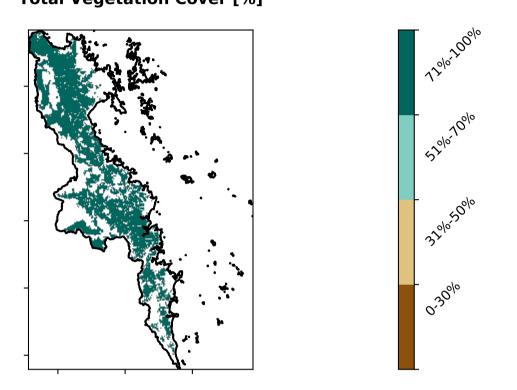
Use of Australia

Land Use and Forests

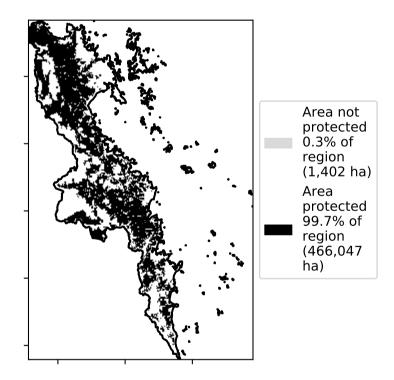
Catchment Scale Land

1 Agriculture - Grazing - Non forest 2 Agriculture - Grazing - Woodland forest 3 Agriculture - Grazing - Non-woodland forest 4 Agriculture - Grazing - Irrigated 5 Agriculture - Cropping - Irrigated 6 Agriculture - Horticulture - Non-irrigated 7 Agriculture - Horticulture - Irrigated

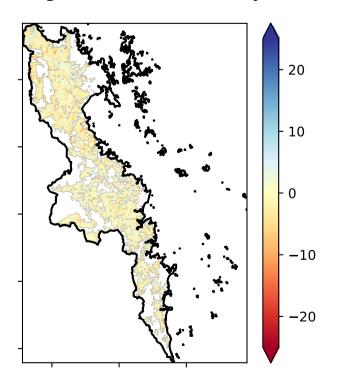
Total Vegetation Cover [%]



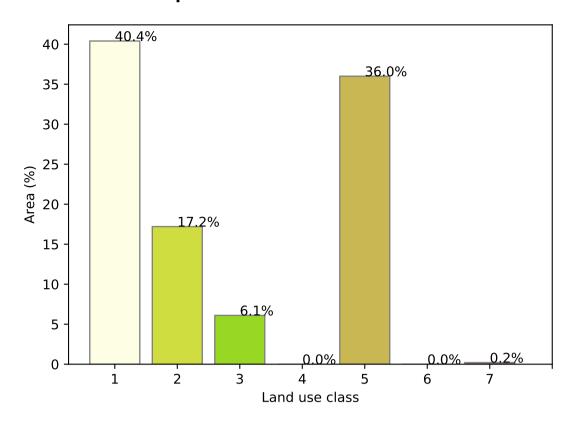
% Area protected from water erosion (>70%)



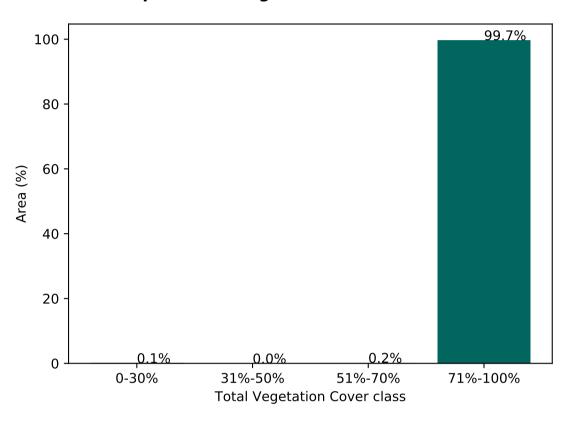
Total Vegetation Cover Anomaly [%]



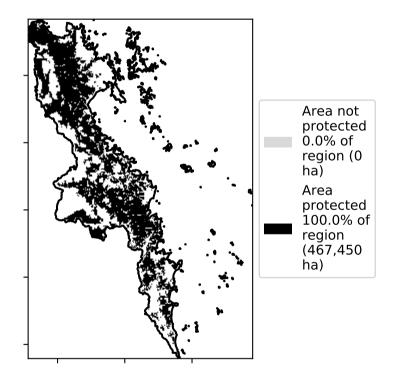
Proportion of each land class in area



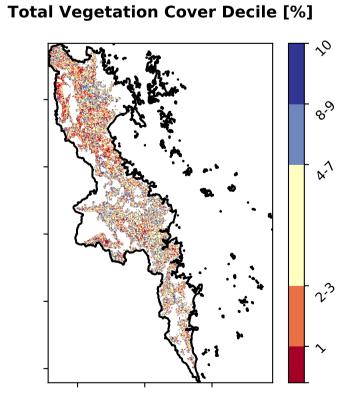
Proportion of vegetation cover class in area



% Area protected from wind erosion (>50%)



Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.







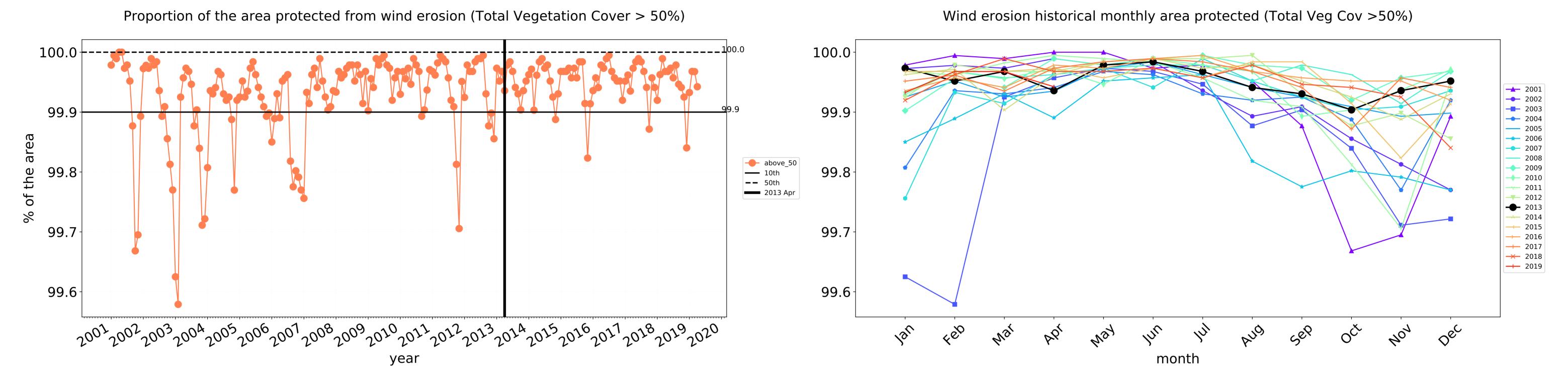


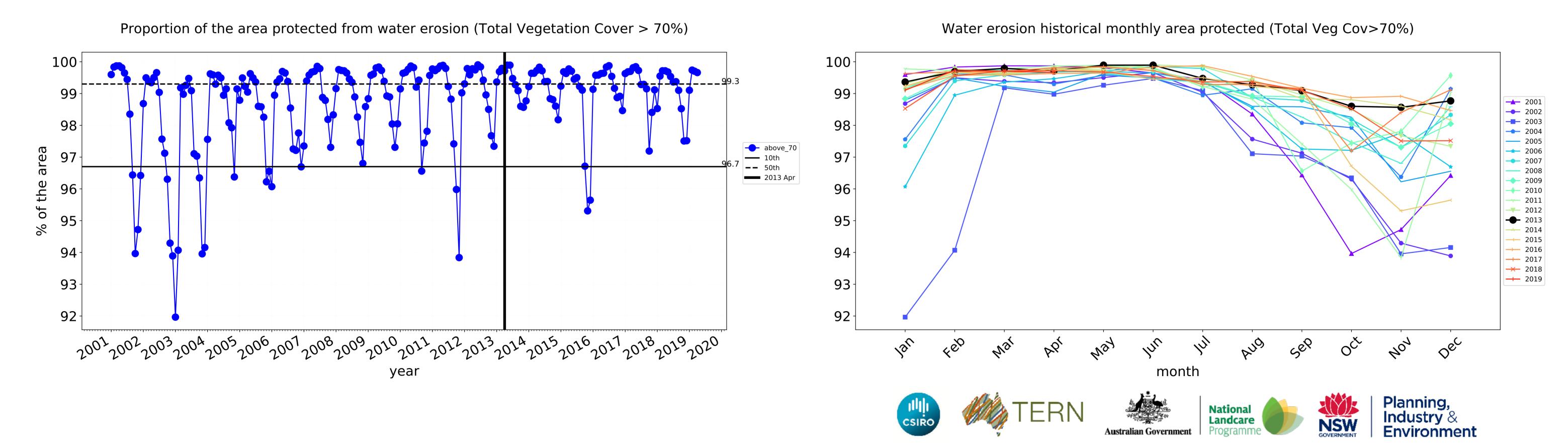


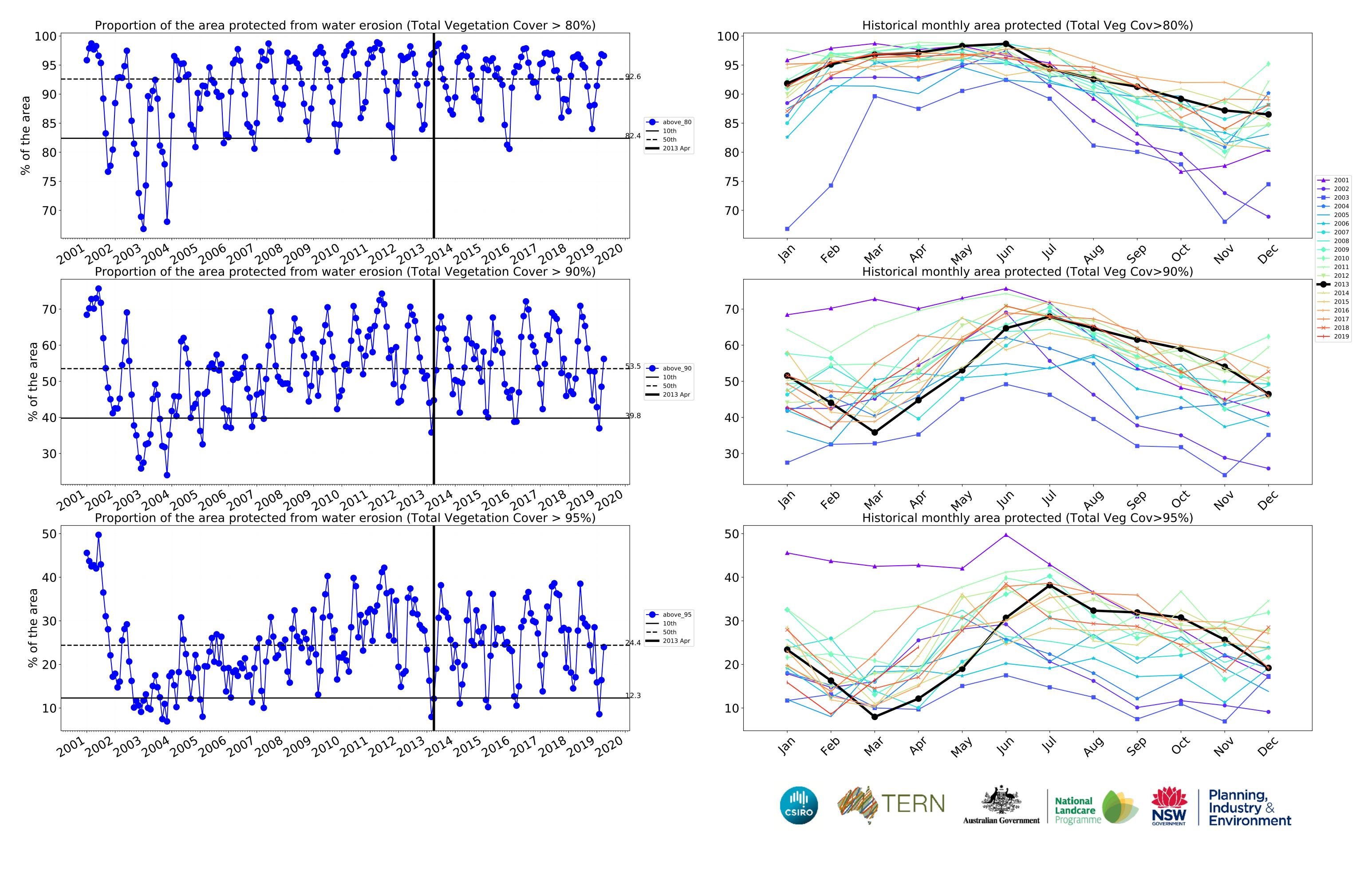




Agriculture timeseries







Grazing

Land use and forest cover

Catchment Scale Land Use and Forests of Australia (2018)

Catchment Scale Land

Derived from

Use of Australia

(2018) and Forests of Australia (2018)

Anomaly show how many percetage points each

pixel is from the mean. That

pixel. The mean

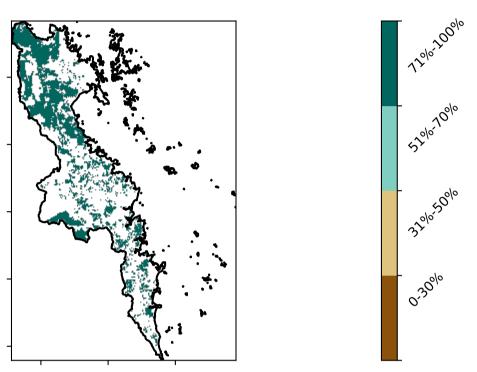
using baseline from 2001 to 2019.

is only for the month of the map

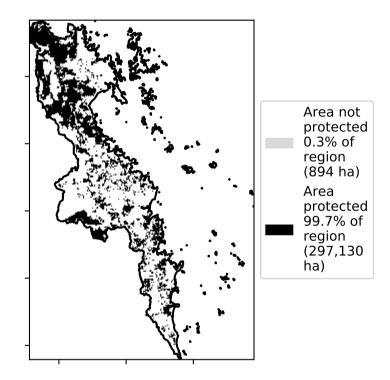
is, red pixels are about 20% lower than the mean of that

1 Agriculture - Grazing - Non forest 2 Agriculture - Grazing - Woodland forest 3 Agriculture - Grazing - Non-woodland forest

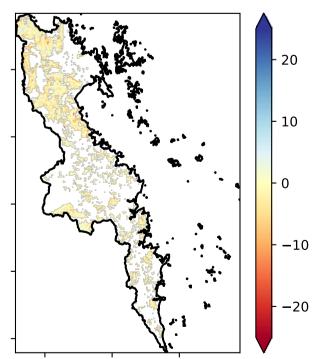
Total Vegetation Cover [%]



% Area protected from water erosion (>70%)

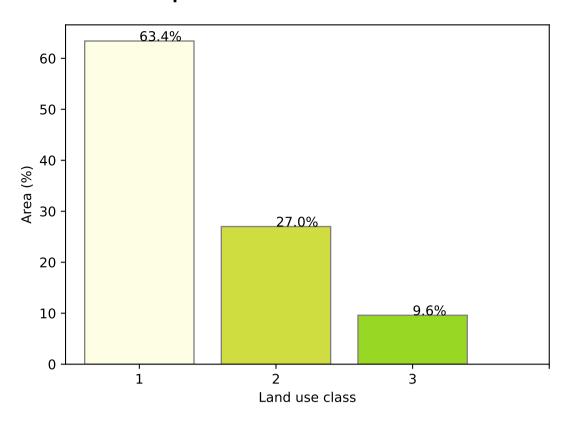


Total Vegetation Cover Anomaly [%]

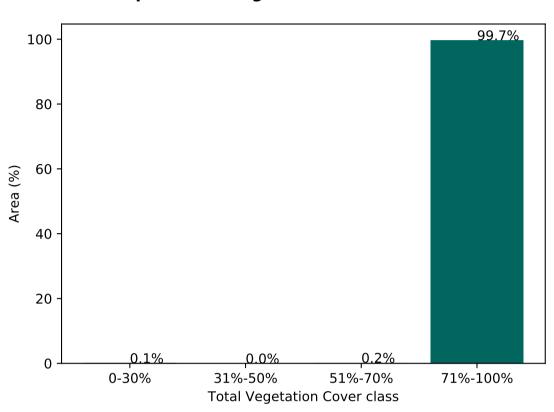


Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of

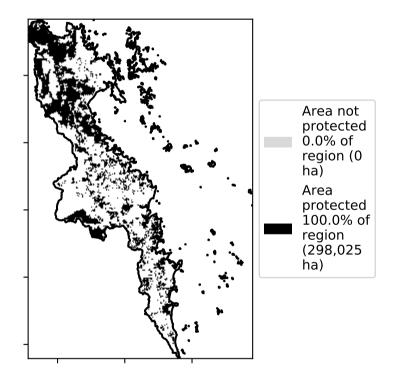
Proportion of each land class in area



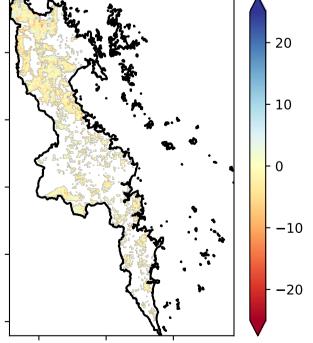
Proportion of vegetation cover class in area



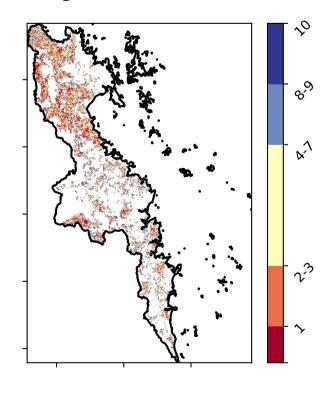
% Area protected from wind erosion (>50%)



Total Vegetation Cover Decile [%]



the map using baseline from 2001 to 2019.







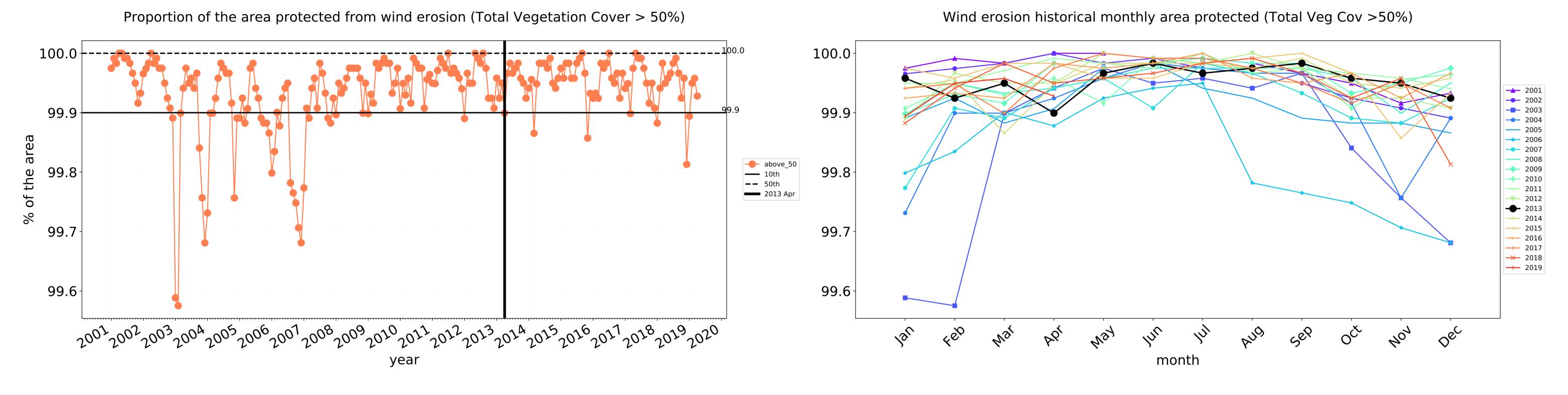


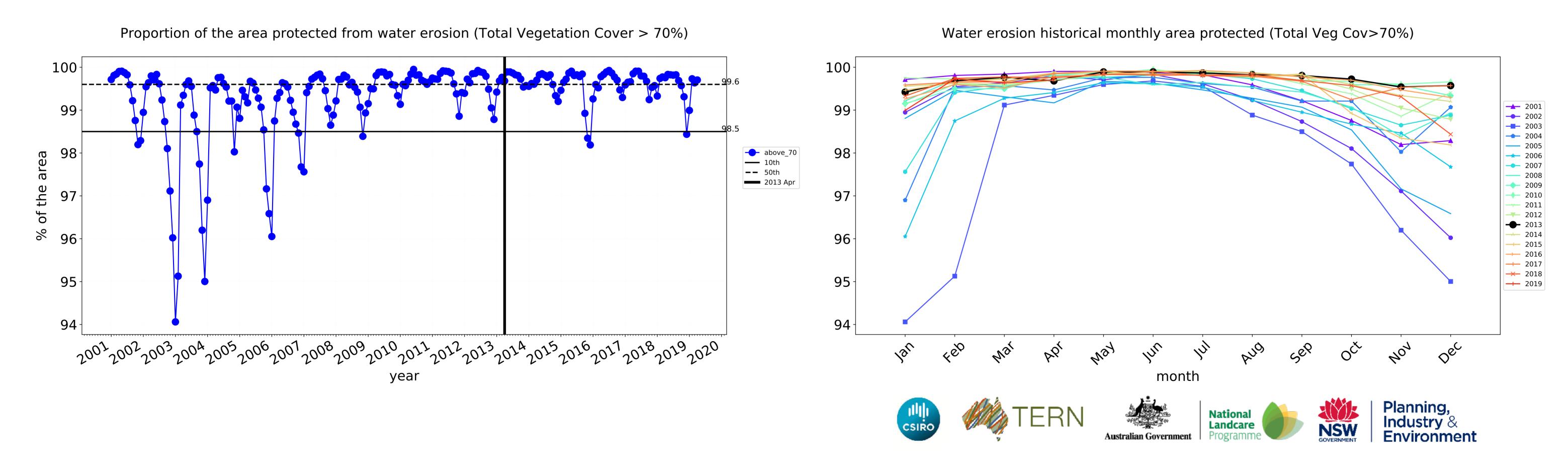


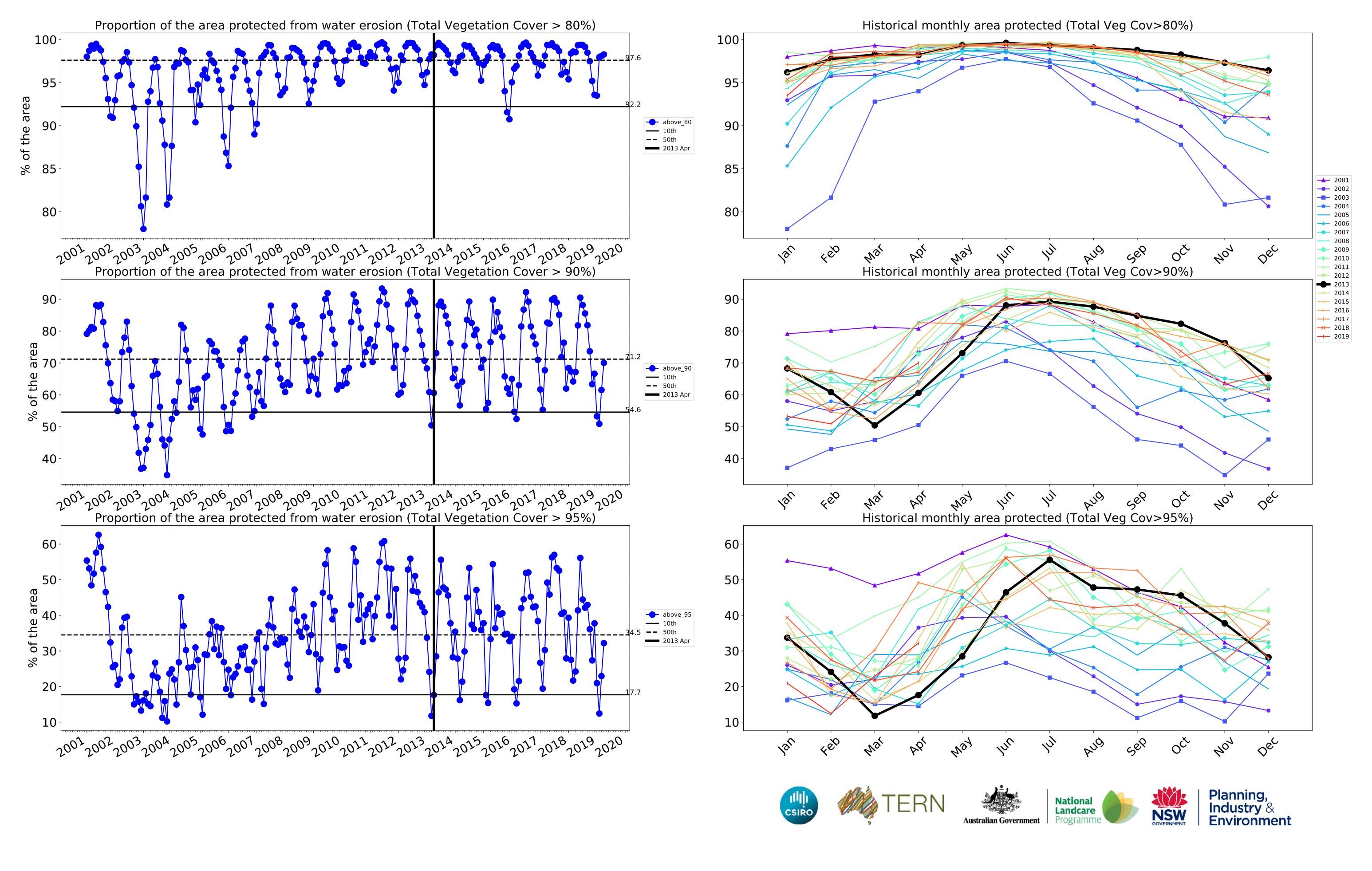




Grazing timeseries







Grazing non forest

Land use and forest cover

1 Agriculture - Grazing - Non forest

Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)

Anomaly show how many percetage points each

pixel is from the mean. That

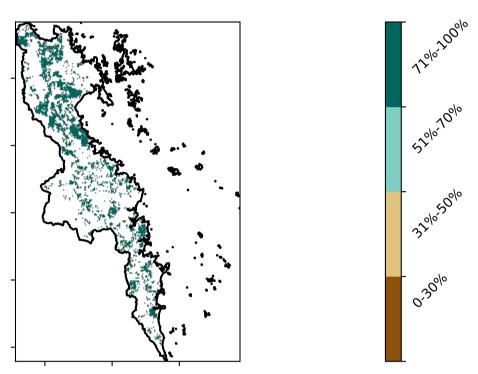
is, red pixels are about 20% lower than the mean of that

pixel. The mean

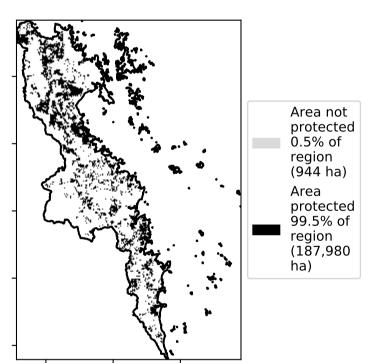
using baseline from 2001 to 2019.

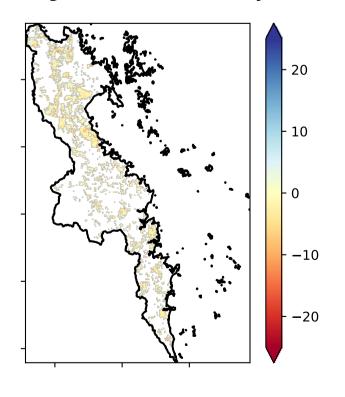
is only for the month of the map

Total Vegetation Cover [%]



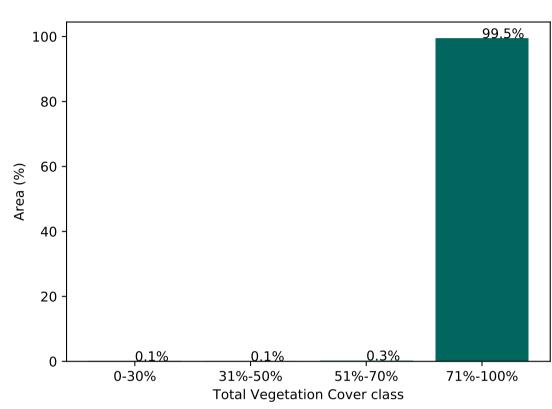
% Area protected from water erosion (>70%)



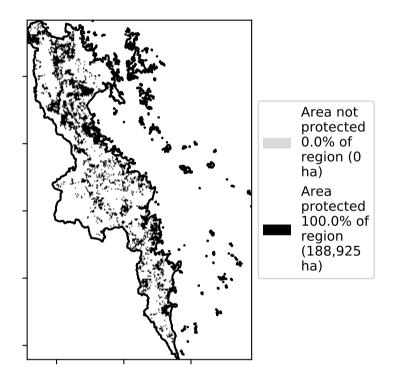


pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

Proportion of vegetation cover class in area

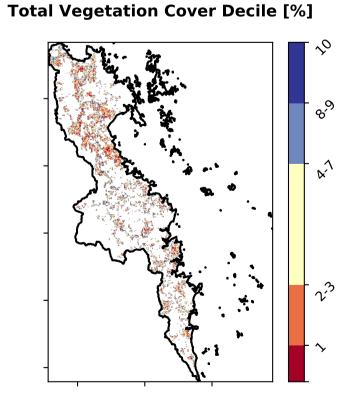


% Area protected from wind erosion (>50%)



Total Vegetation Cover Anomaly [%]

Deciles show where the







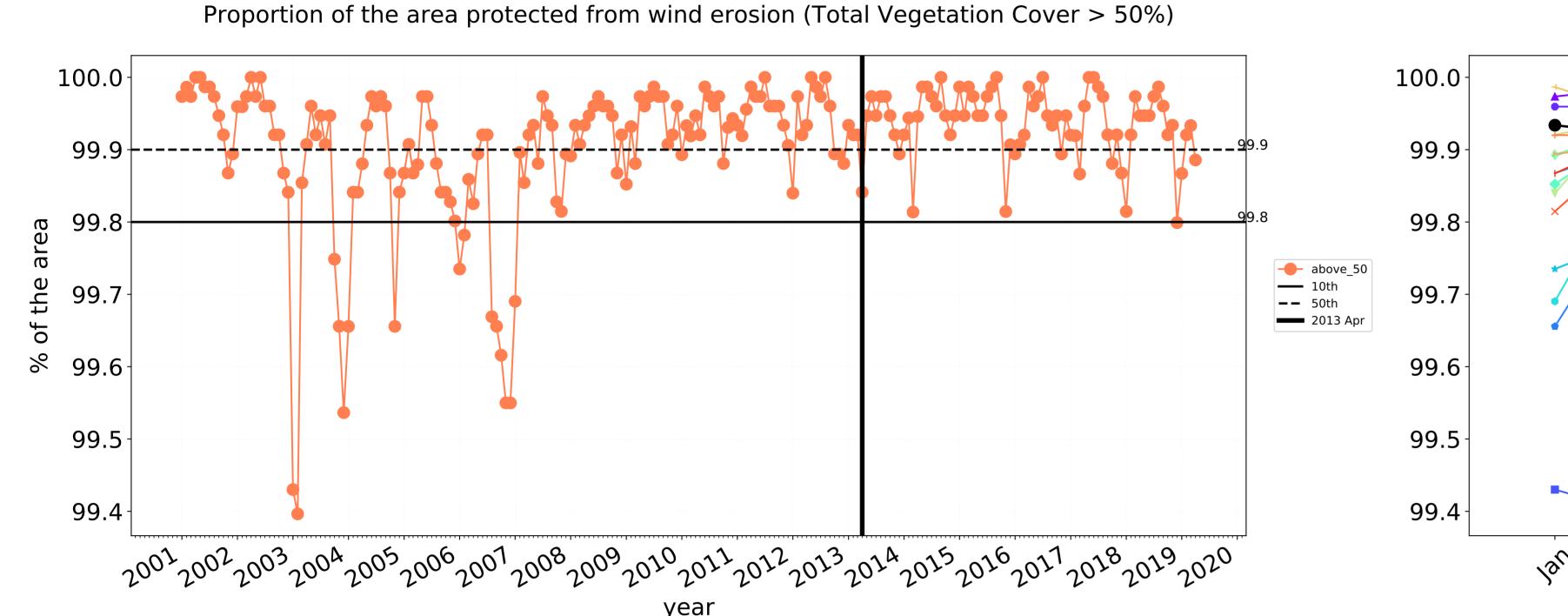


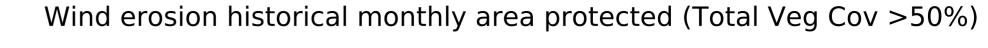


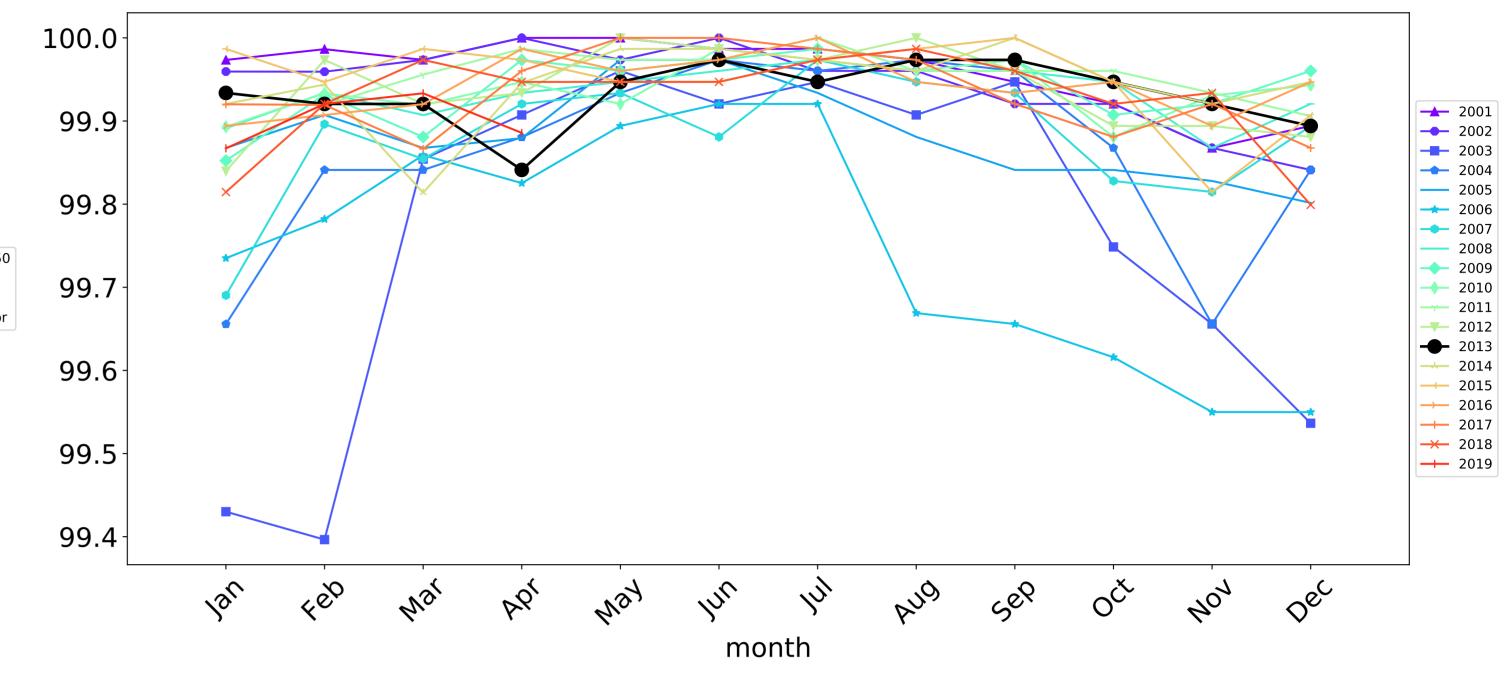


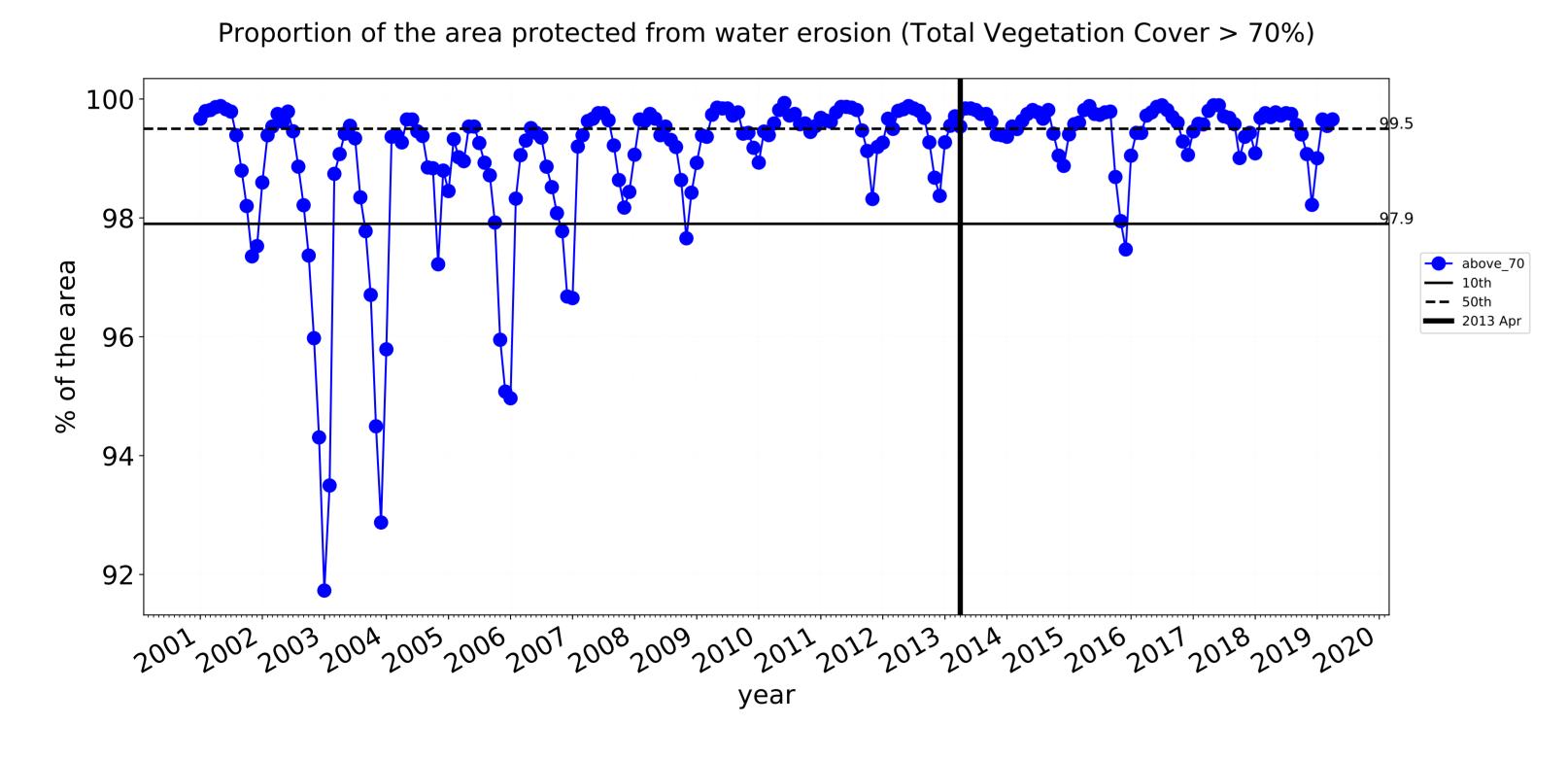


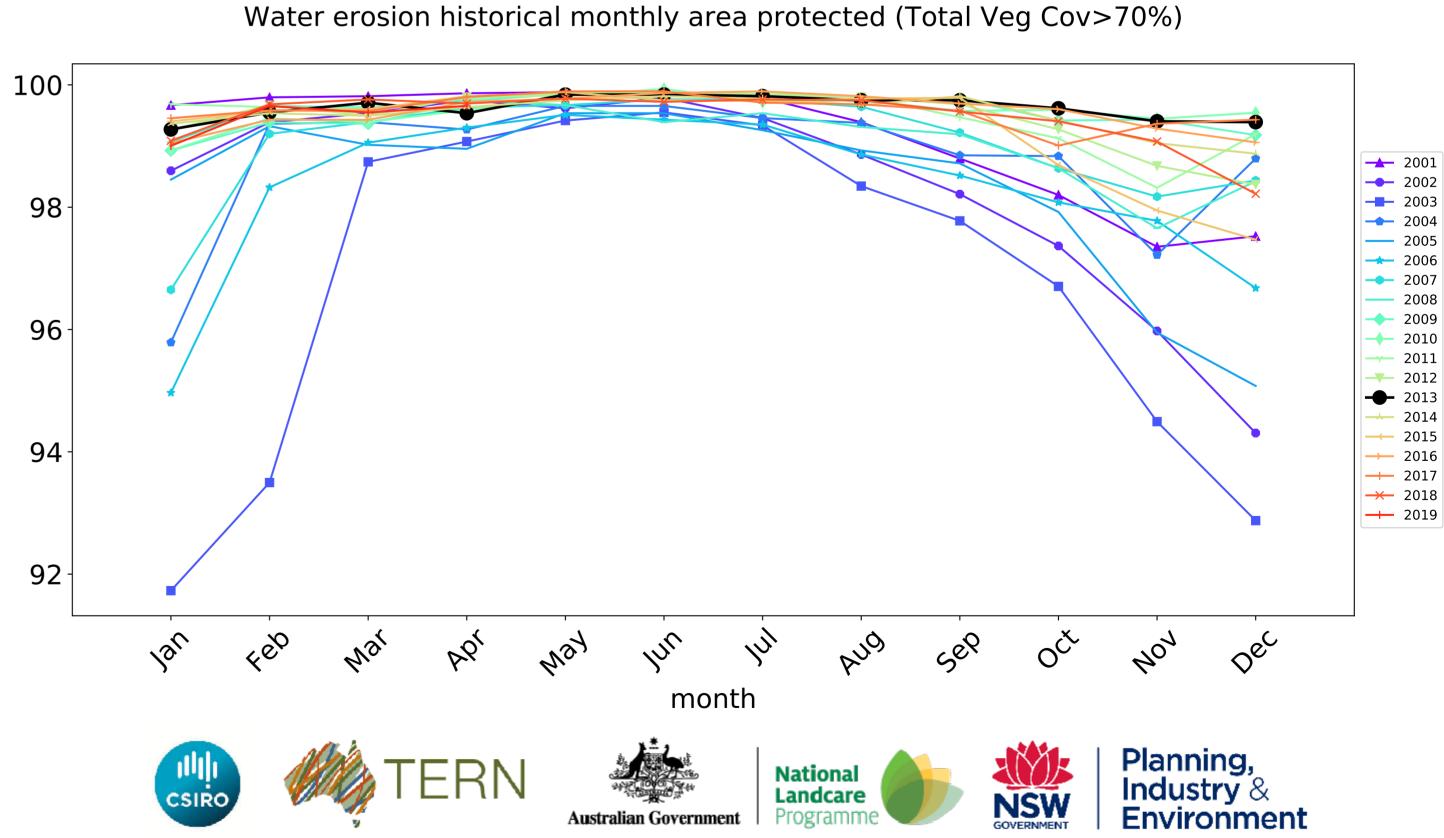
Grazing non forest timeseries

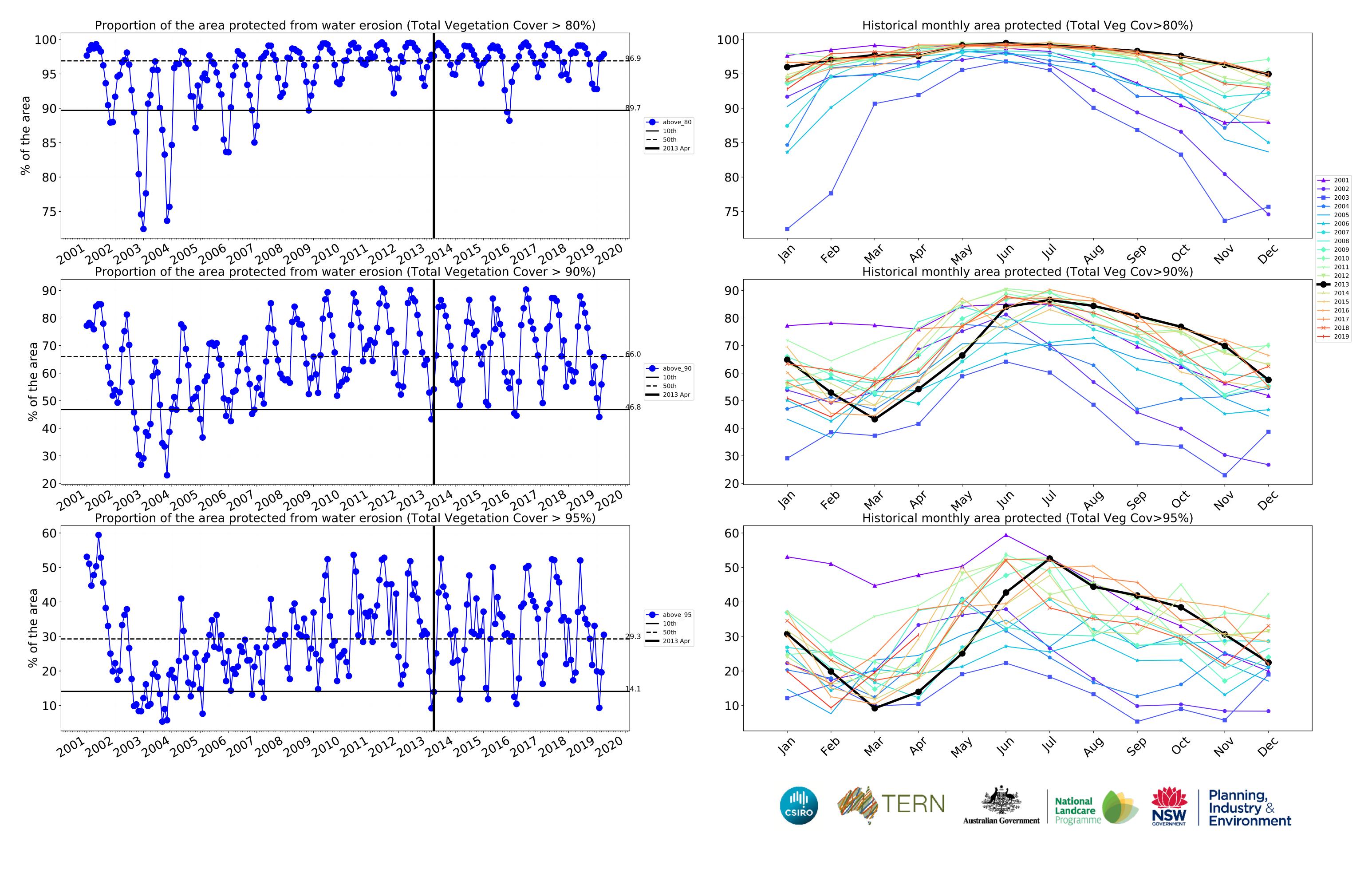












Grazing Woodland forest

Land use and forest cover

📕 1 Agriculture - Grazing - Woodland forest 🛭

Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)

Anomaly show how many percetage points each

pixel is from the mean. That

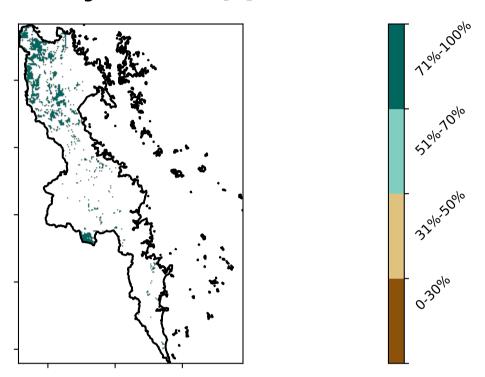
pixel. The mean

using baseline from 2001 to 2019.

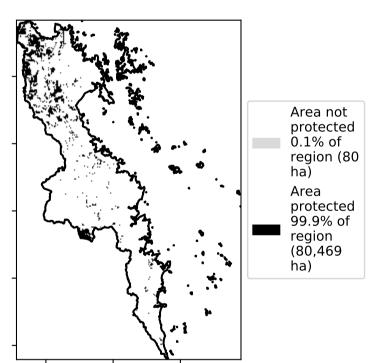
is only for the month of the map

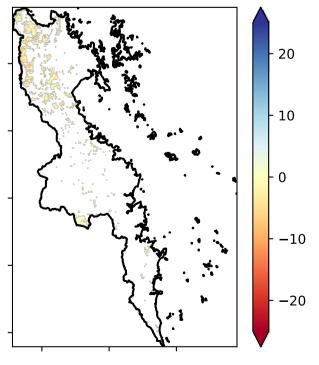
is, red pixels are about 20% lower than the mean of that

Total Vegetation Cover [%]



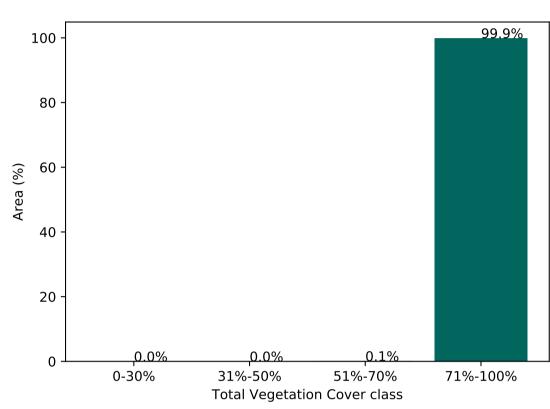
% Area protected from water erosion (>70%)



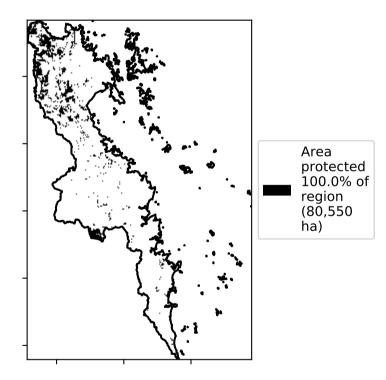


pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

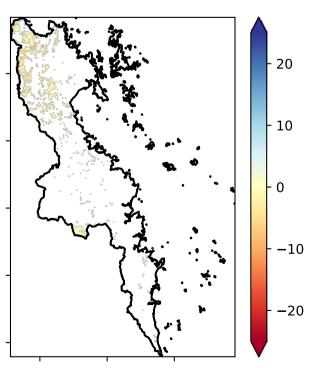
Proportion of vegetation cover class in area



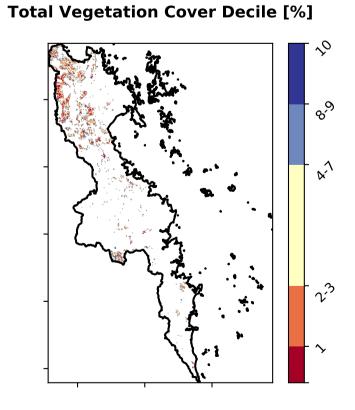
% Area protected from wind erosion (>50%)



Total Vegetation Cover Anomaly [%]



Deciles show where the







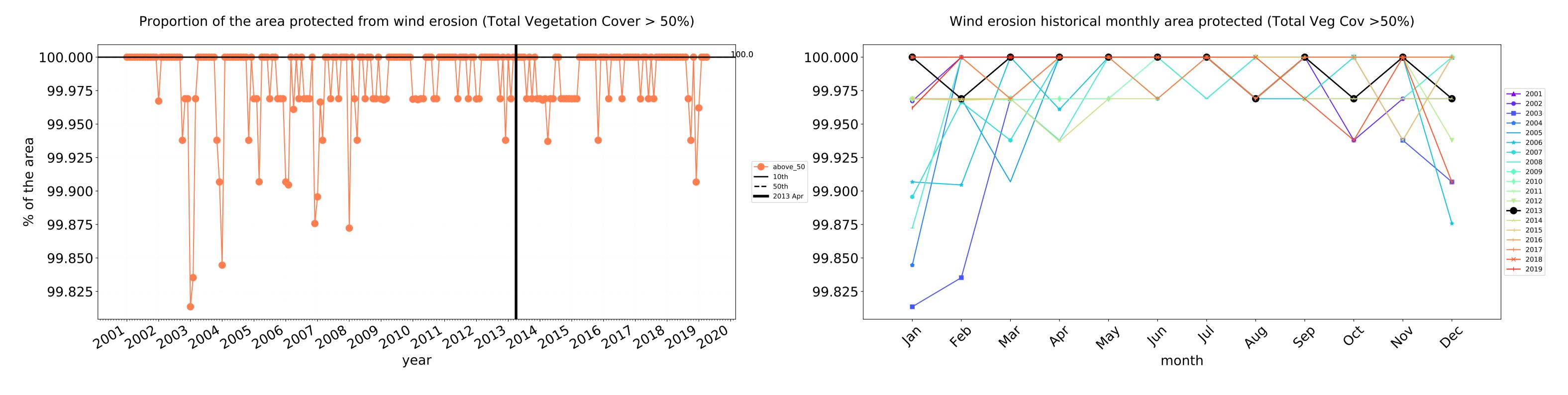


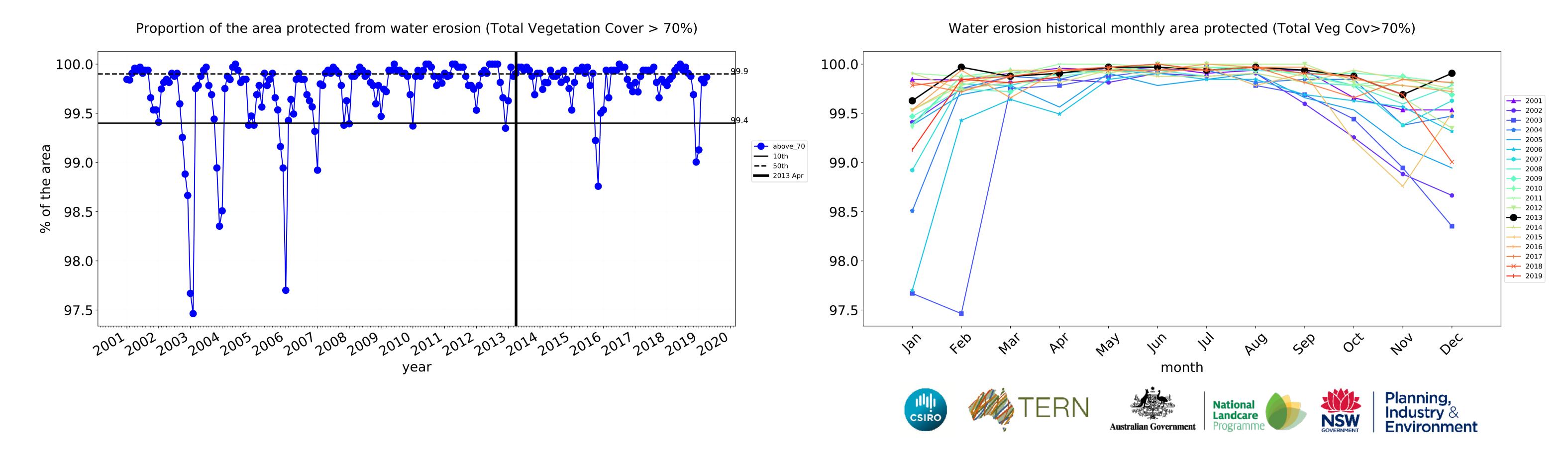


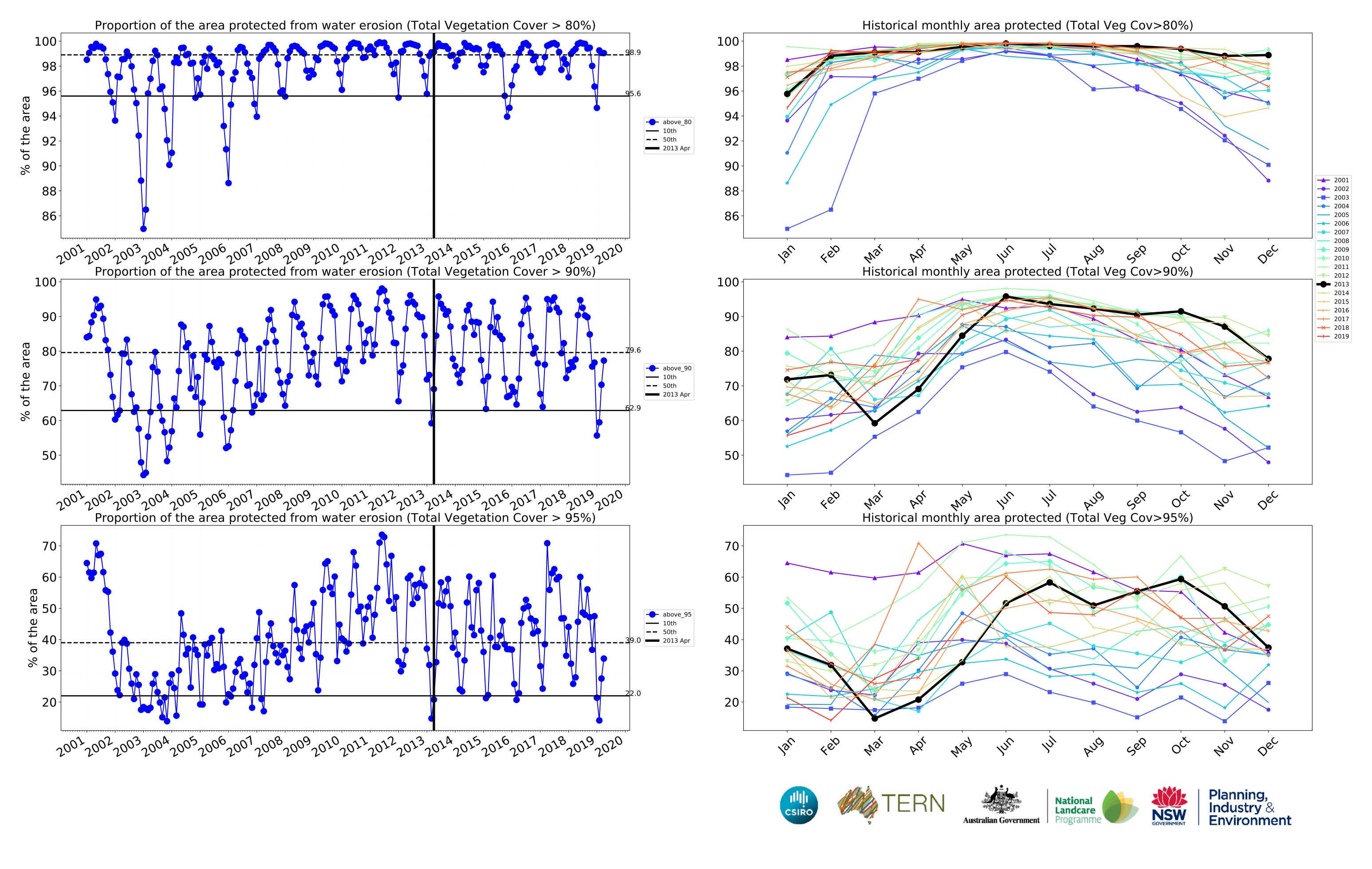




Grazing Woodland forest timeseries







Grazing - Forest (non woodland)

Land use and forest cover

1 Agriculture - Grazing - Non-woodland forest

Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)

Anomaly show how many percetage points each

pixel is from the mean. That

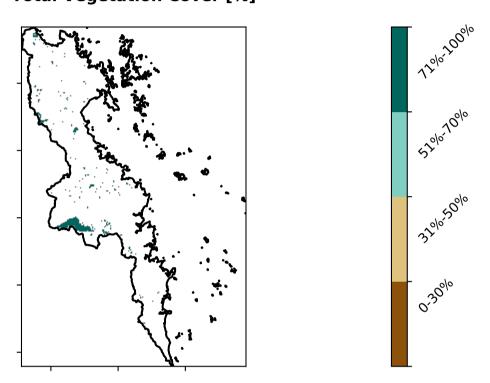
pixel. The mean

using baseline from 2001 to 2019.

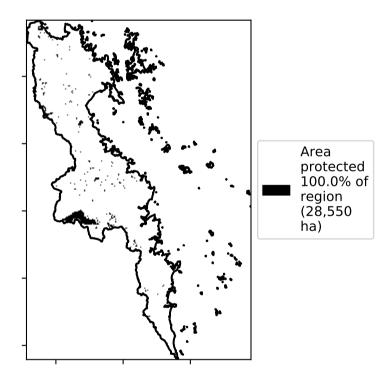
is only for the month of the map

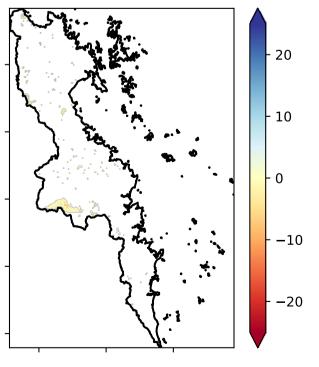
is, red pixels are about 20% lower than the mean of that

Total Vegetation Cover [%]



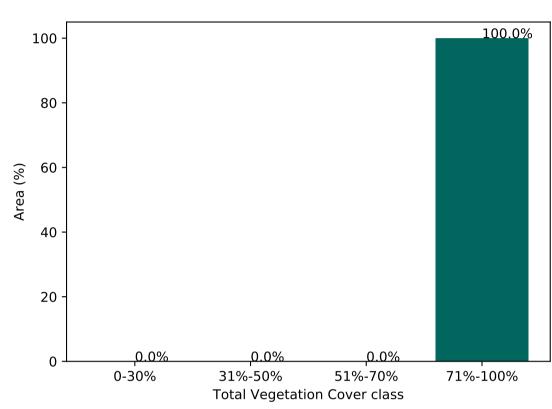
% Area protected from water erosion (>70%)



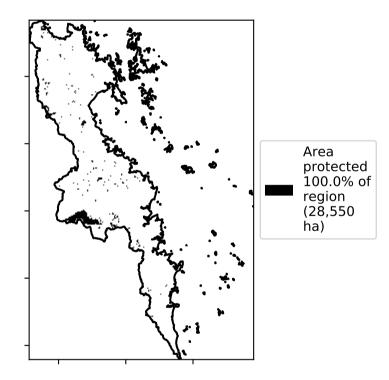


Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

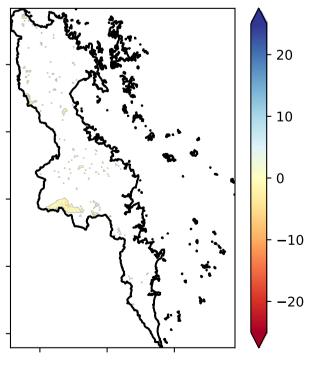
Proportion of vegetation cover class in area

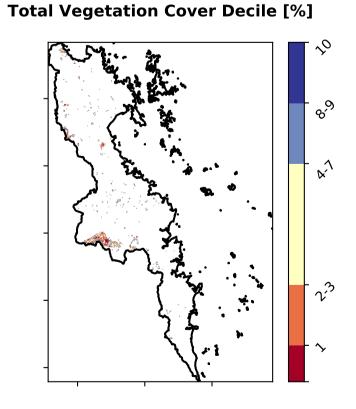


% Area protected from wind erosion (>50%)



Total Vegetation Cover Anomaly [%]







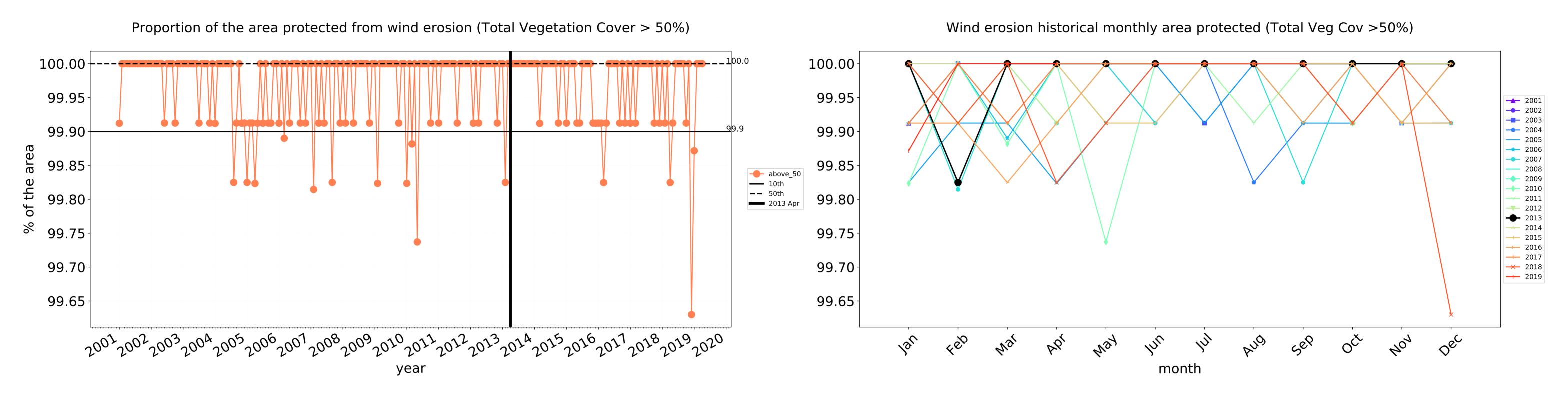


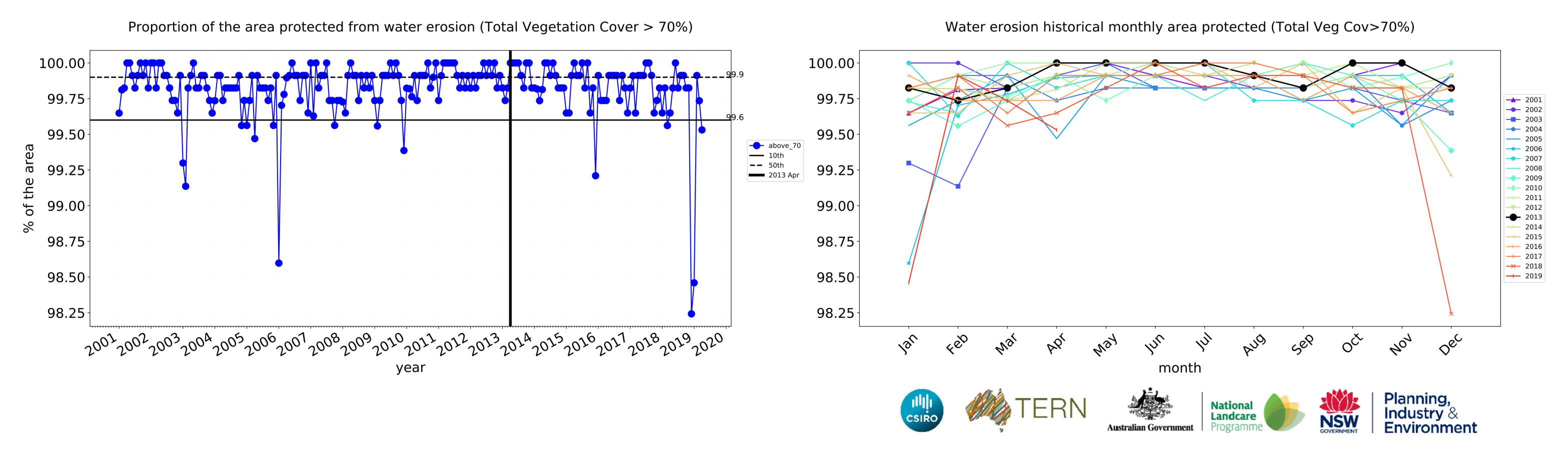


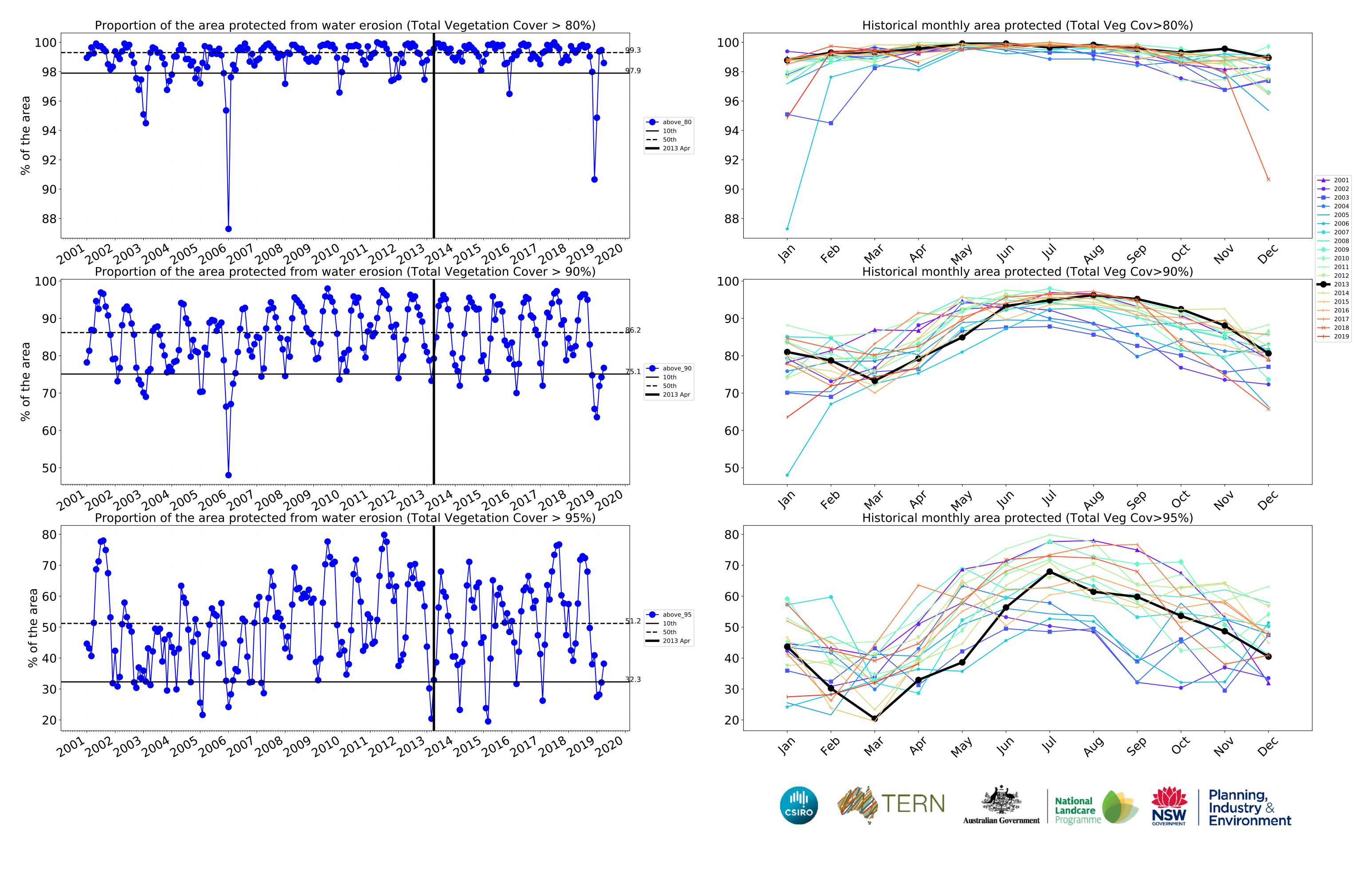












Irrigation

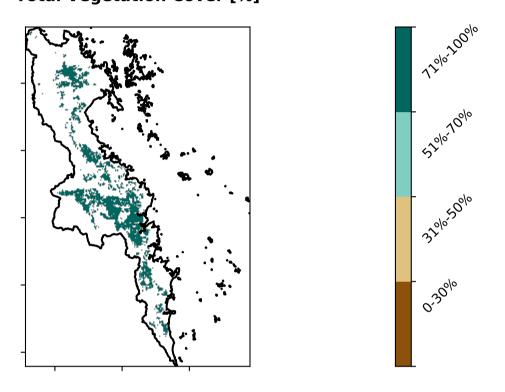
Land use and forest cover

1 Agriculture - Grazing - Irrigated 2 Agriculture - Cropping - Irrigated 3 Agriculture - Horticulture - Irrigated

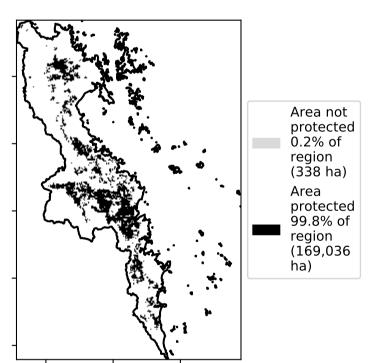
Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)

Catchment Scale

Total Vegetation Cover [%]

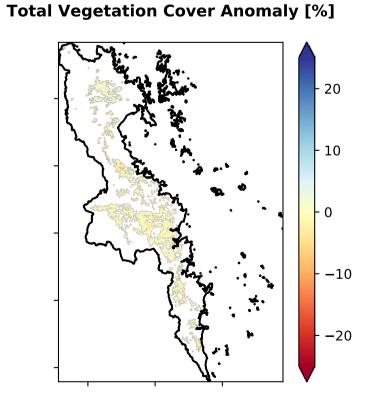


% Area protected from water erosion (>70%)



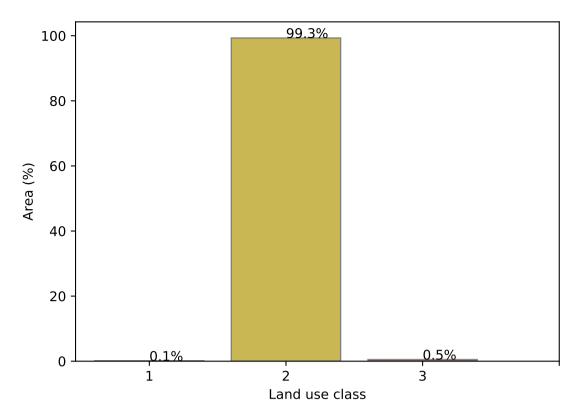
Anomaly show how many percetage points each pixel is from the mean. That is, red pixels are about 20% lower than the mean of that pixel. The mean is only for the month of the map

using baseline from 2001 to 2019.

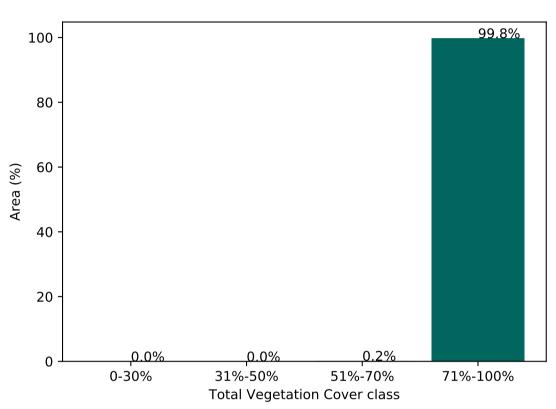


Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

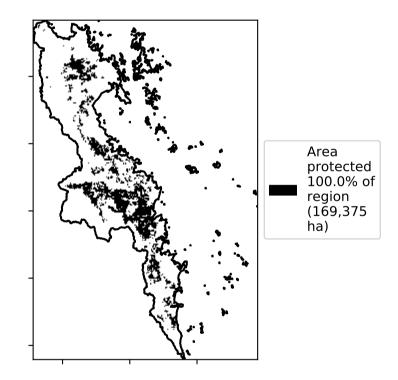
Proportion of each land class in area



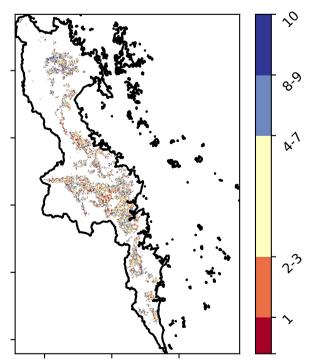
Proportion of vegetation cover class in area



% Area protected from wind erosion (>50%)



Total Vegetation Cover Decile [%]







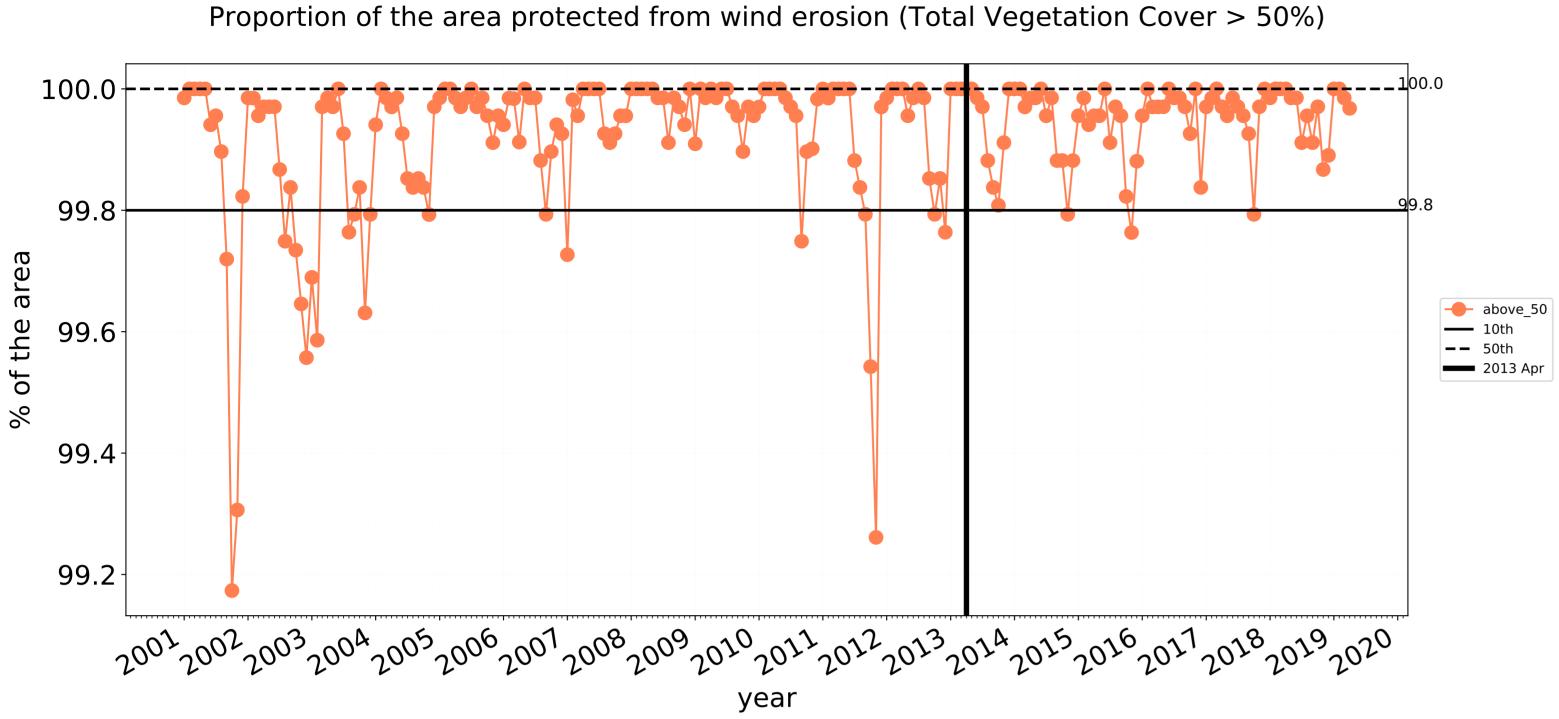


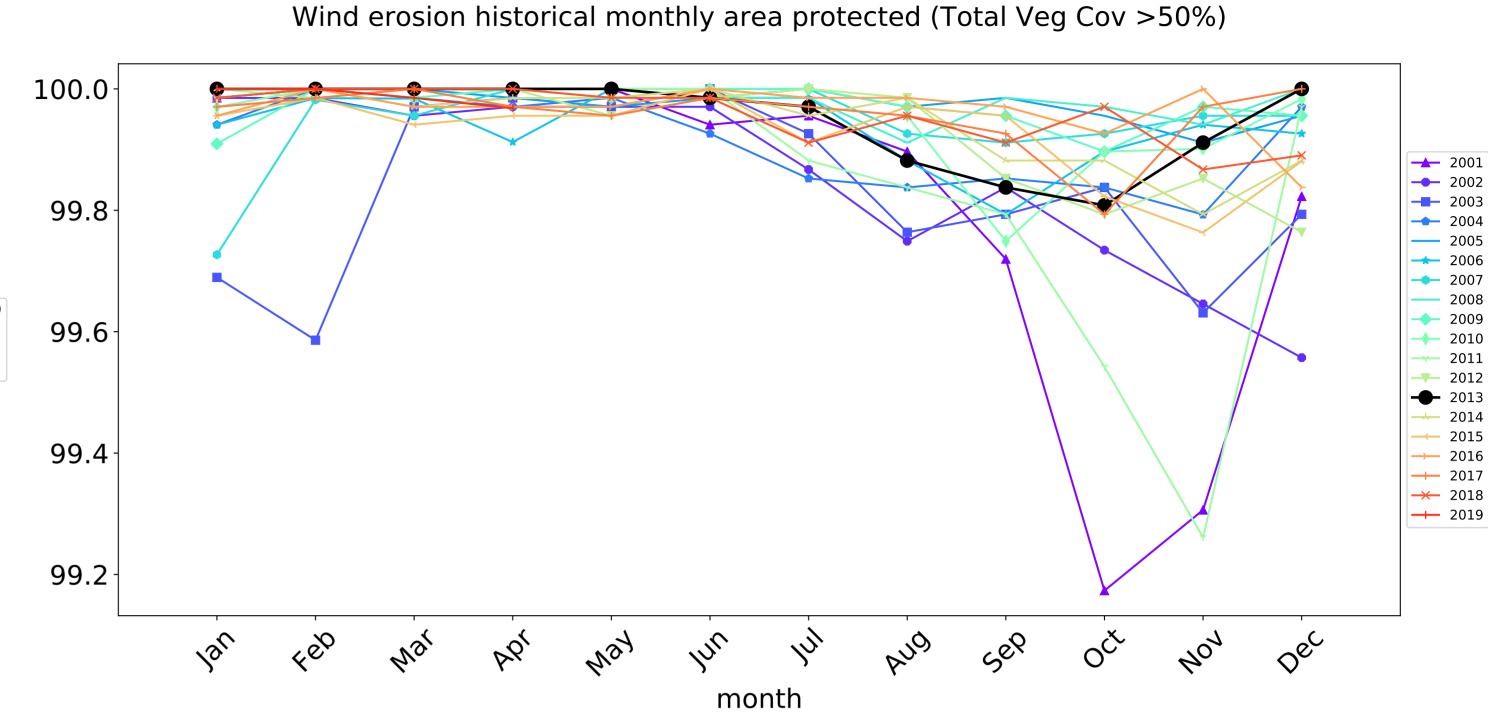


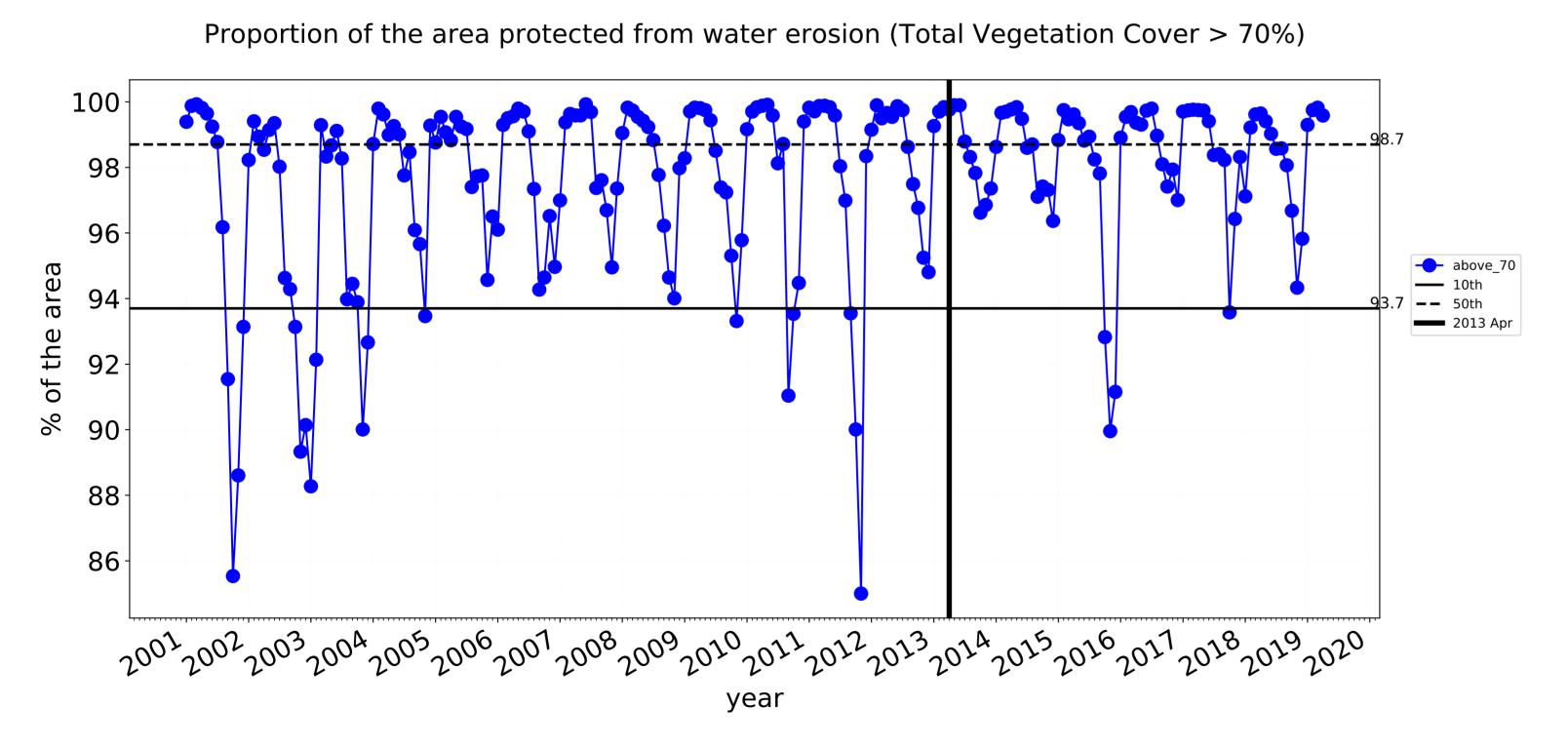


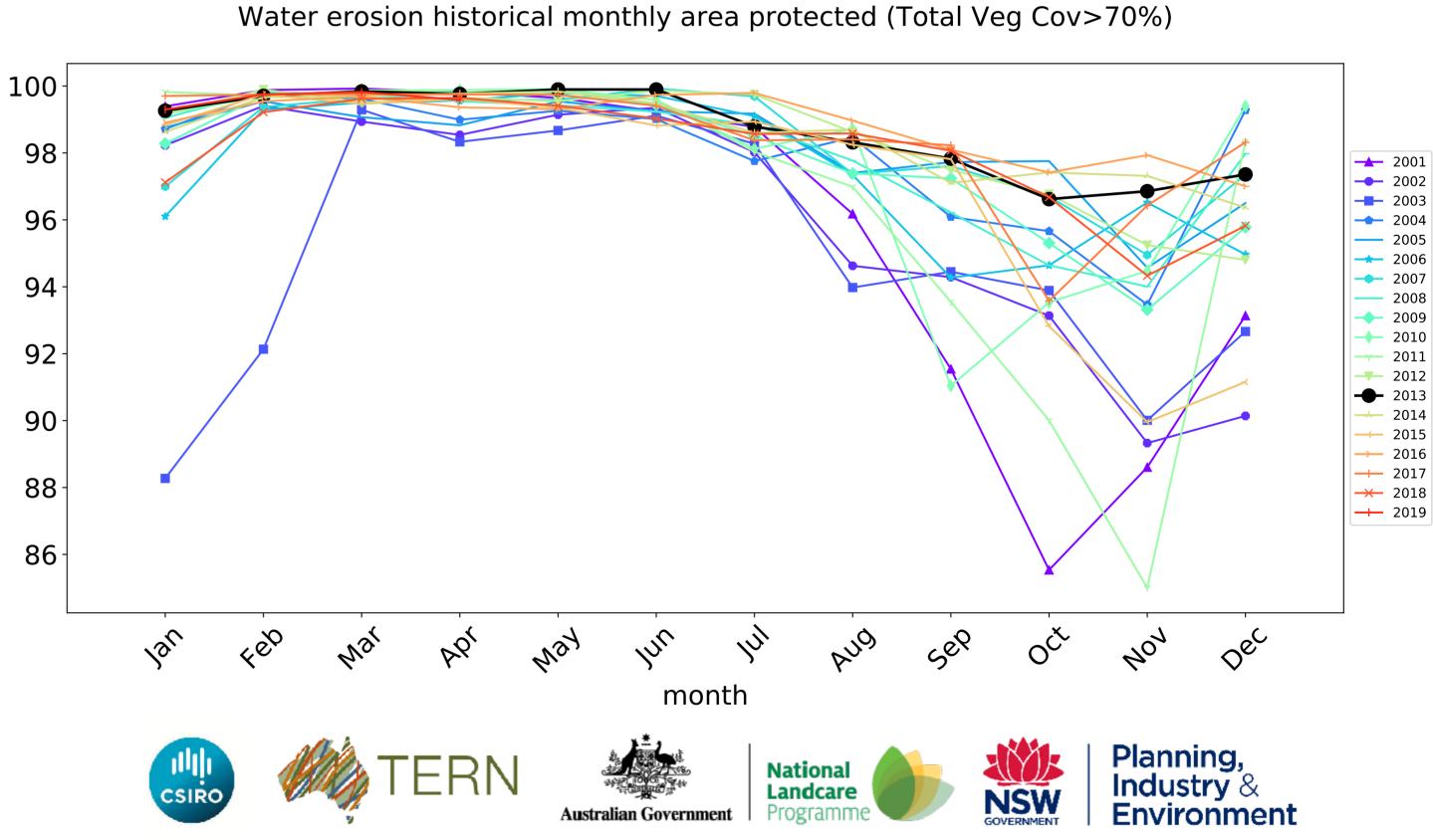


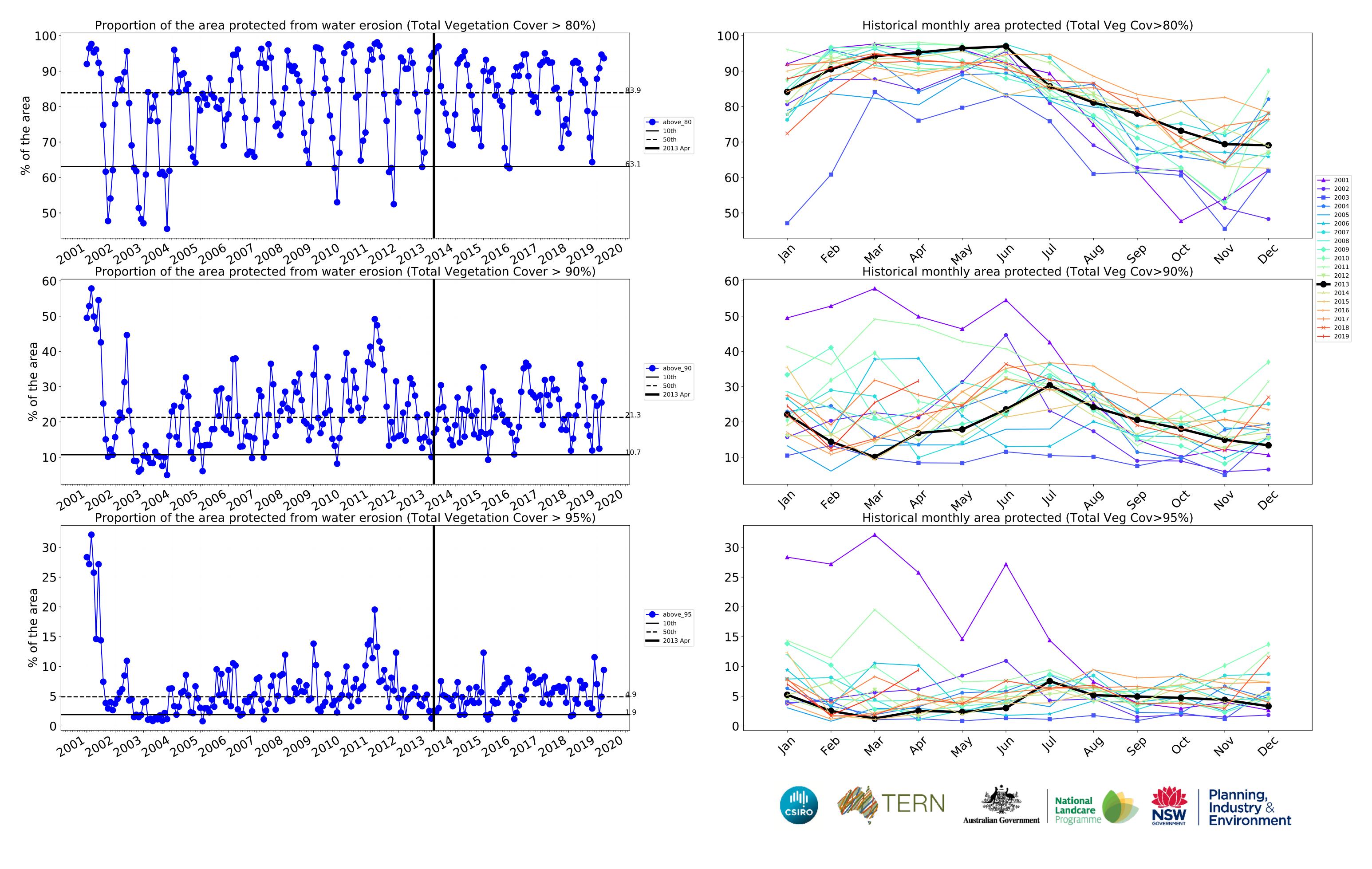
Irrigation timeseries







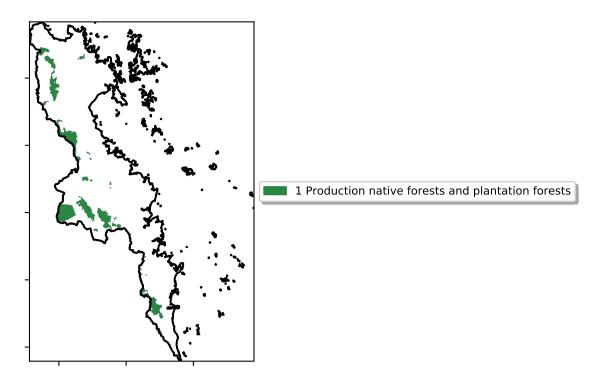




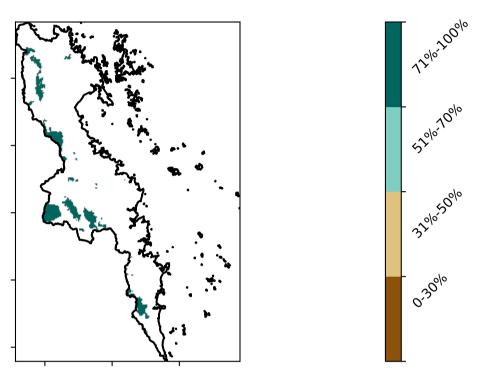
Production native forests and plantation forests

Land use and forest cover

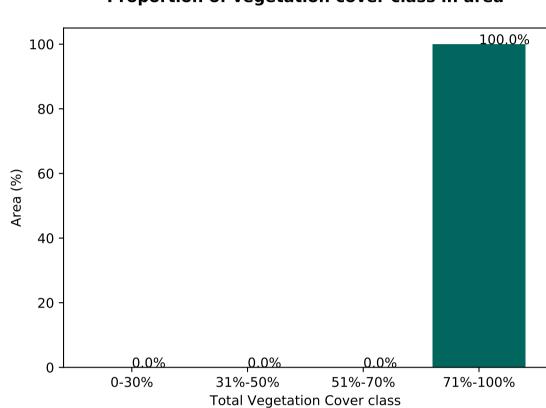
Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)



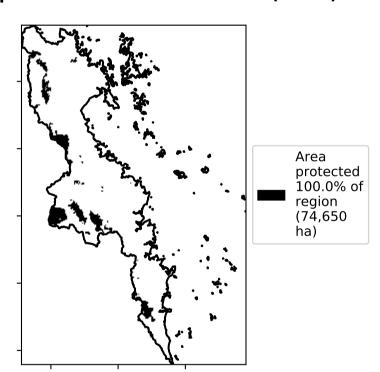
Total Vegetation Cover [%]



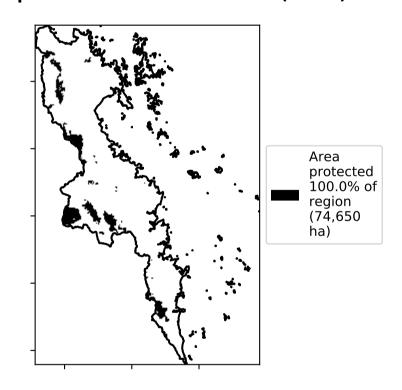
Proportion of vegetation cover class in area



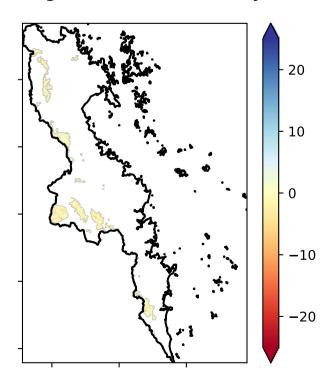
% Area protected from water erosion (>70%)



% Area protected from wind erosion (>50%)

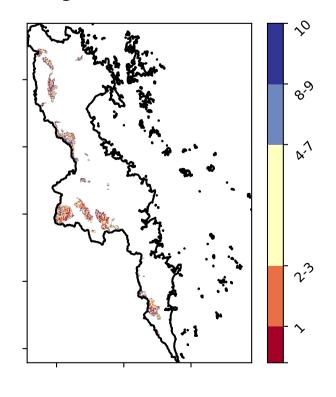


Total Vegetation Cover Anomaly [%]



Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

Total Vegetation Cover Decile [%]



Anomaly show how many percetage points each pixel is from the mean. That is, red pixels are about 20% lower than the mean of that pixel. The mean is only for the month of the map using baseline from 2001 to 2019.





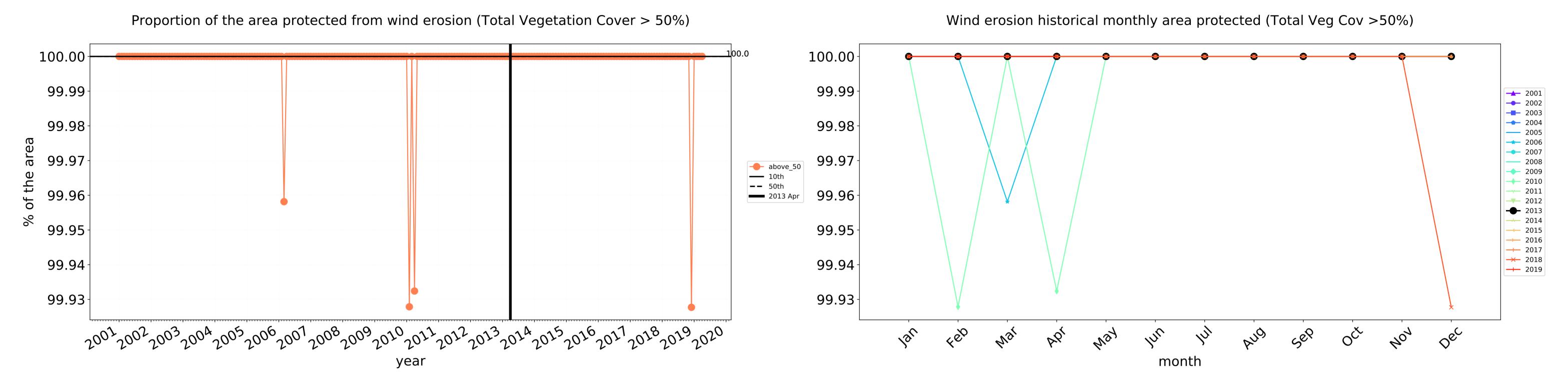


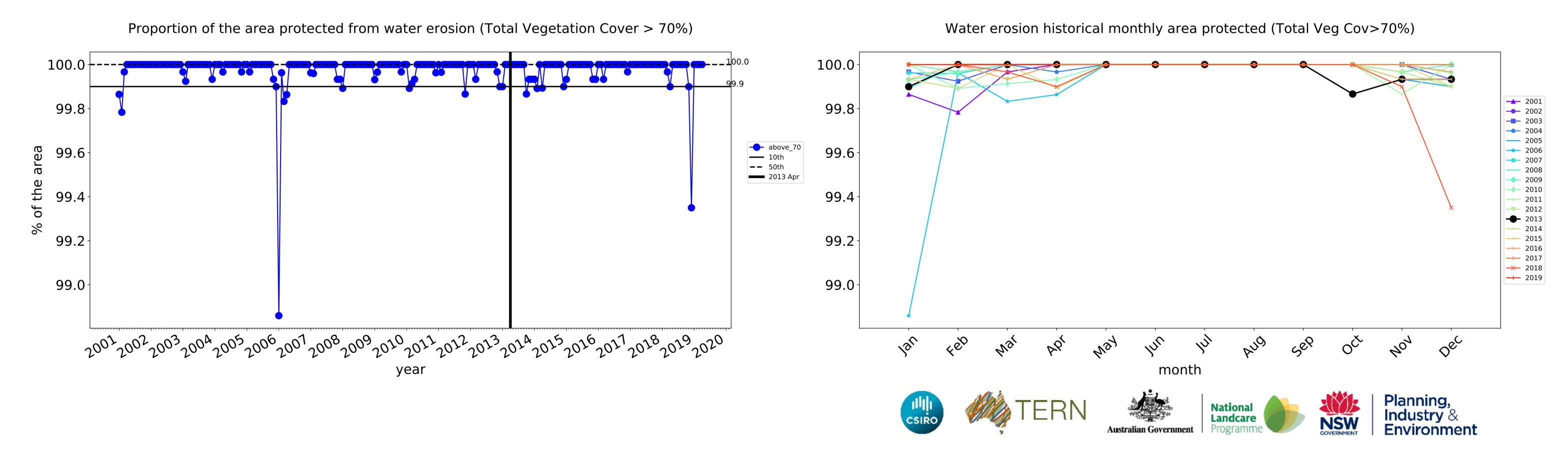


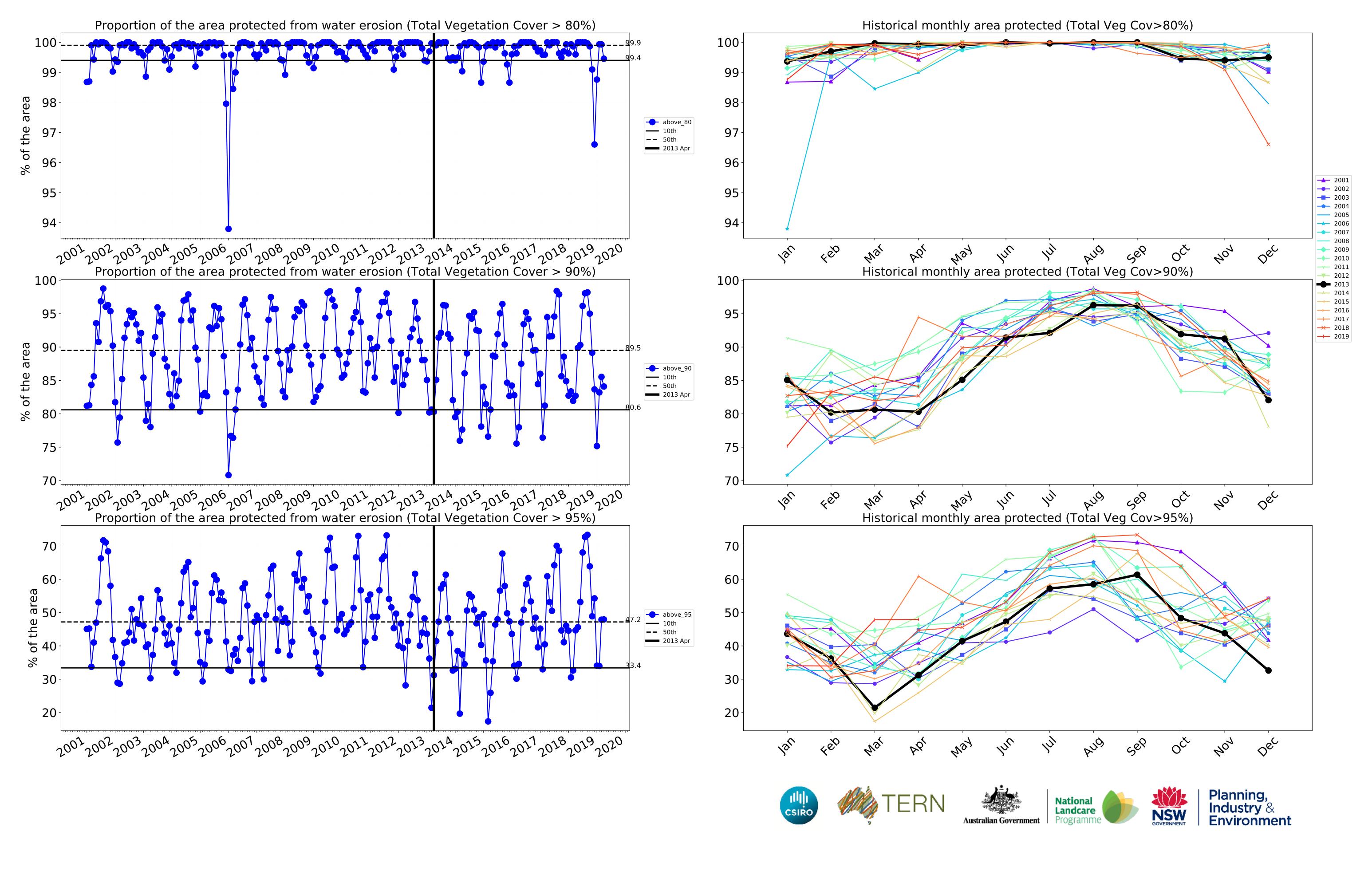




Production native forests and plantation forests timeseries







Mackay Whitsunday (773,225 ha and no data 159,835 ha) Percentage area and hectares protected with TVC threshold 30,50,70,80,90 and 95%

Land use and forest cover Class	area(ha)	above_30	above_50	above_70	above_80	above_90	above_95
Entire region	773,225	99.9% 772,424	99.6% 770,455	98.3% 759,918	94.5% 730,426	53.1% 410,196	18.1% 140,187
Conservation and natural environments	264,375	99.8% 263,875	99.5% 262,925	98.2% 259,725	95.9% 253,600	69.0% 182,450	28.4% 75,175
Conservation and natural environments non forest	6,600	99.2% 6,550	96.2% 6,350	90.2% 5,950	75.0% 4,950	33.3% 2,200	17.4% 1,150
Conservation and natural environments Woodland forest	73,225	99.8% 73,100	99.6% 72,950	98.8% 72,350	96.4% 70,625	65.7% 48,075	22.8% 16,700
natural environments Forest (non woodland)	184,550	99.8% 184,225	99.5% 183,625	98.3% 181,425	96.5% 178,025	71.6% 132,175	31.1% 57,325
Agriculture	467,450	100.0% 467,275	99.9% 467,150	99.7% 466,100	97.1% 454,075	44.8% 209,250	12.2% 56,825
Grazing	298,025	99.9% 297,850	99.9% 297,725	99.7% 297,075	98.2% 292,675	60.6% 180,650	17.6% 52,525
Grazing non forest	188,925	99.9% 188,750	99.8% 188,625	99.5% 188,050	97.6% 184,400	54.2% 102,375	14.0% 26,375
Grazing Woodland forest	80,550	100.0% 80,550	100.0% 80,550	99.9% 80,475	99.1% 79,850	69.1% 55,650	20.8% 16,750
Grazing - Forest (non woodland)	28,550	100.0% 28,550	100.0% 28,550	100.0% 28,550	99.6% 28,425	79.2% 22,625	32.9% 9,400
Irrigation	169,375	100.0% 169,375	100.0% 169,375	99.8% 168,975	95.3% 161,350	16.9% 28,575	2.5% 4,300
Production native forests and plantation forests	74,650	100.0% 74,650	100.0% 74,650	100.0% 74,650	99.9% 74,600	80.3% 59,950	31.2% 23,300











