Total vegetation cover soil protection Region:LGA Mackay_(R) 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:

Date: October 2019

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













Vegetation Cover Oct 2019

Land use and forest cover

Catchment Scale

Derived from

Use of Australia

(2018) and Forests

of Australia (2018)

Anomaly show how many percetage points each

pixel is from

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

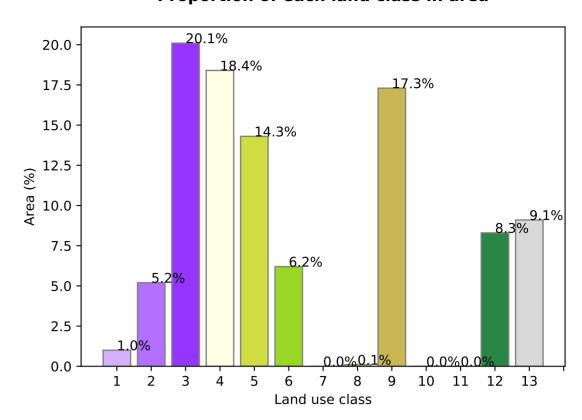
2019.

the mean. That

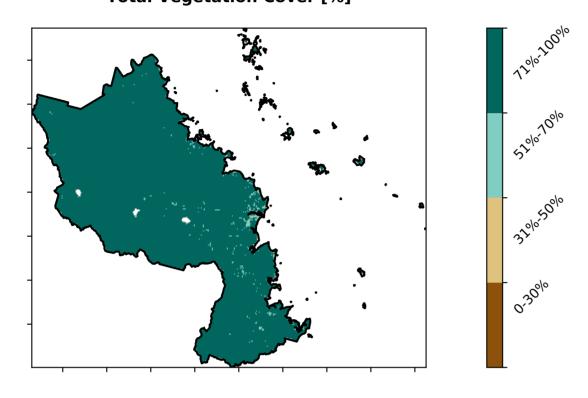
Land Use and Forests of Australia (2018)

Legend with land class forest cover and number, i.e. Forests is 12 1 Conservation and natural environments - Non-forest 2 Conservation and natural environments - Woodland forest 3 Conservation and natural environments - Non-Woodland forest 4 Agriculture - Grazing - Non-forest 5 Agriculture - Grazing - Woodland forest Catchment Scale Land 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 forests 13 Other uses

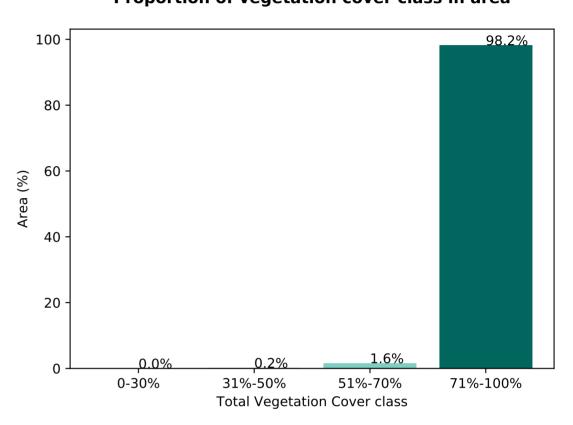
Proportion of each land class in area

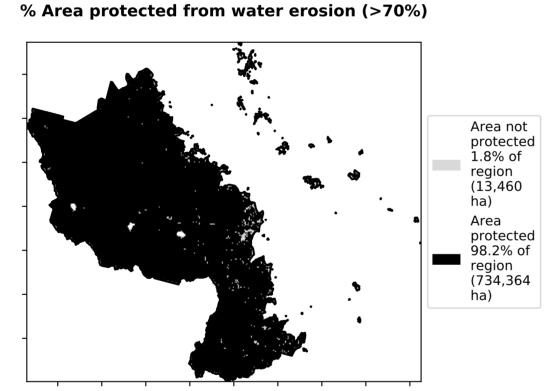


Total Vegetation Cover [%]

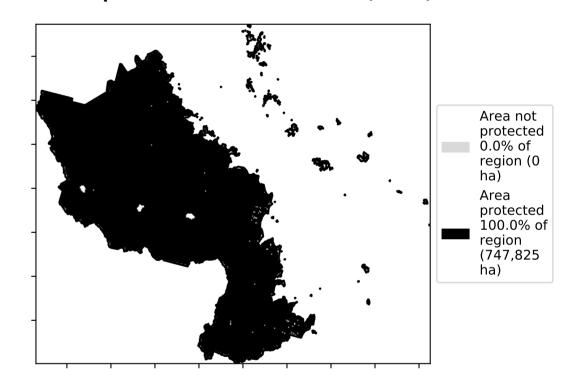


Proportion of vegetation cover class in area

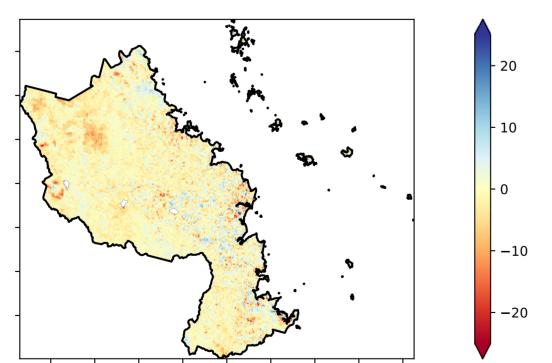




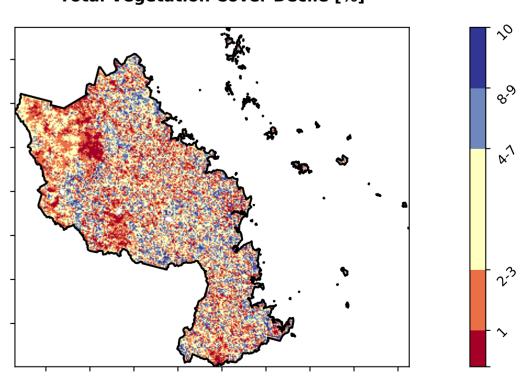
% Area protected from wind erosion (>50%)



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.





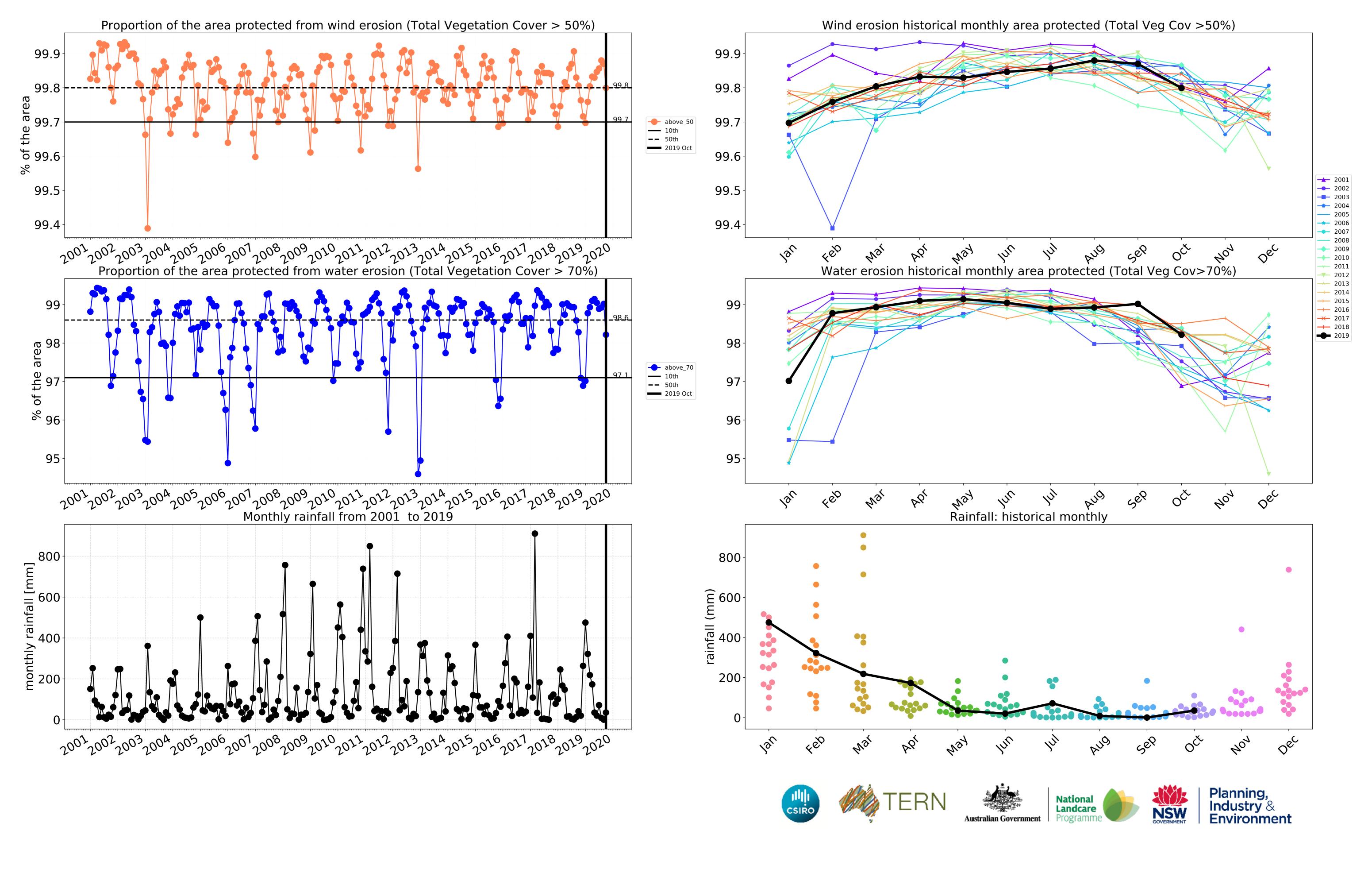


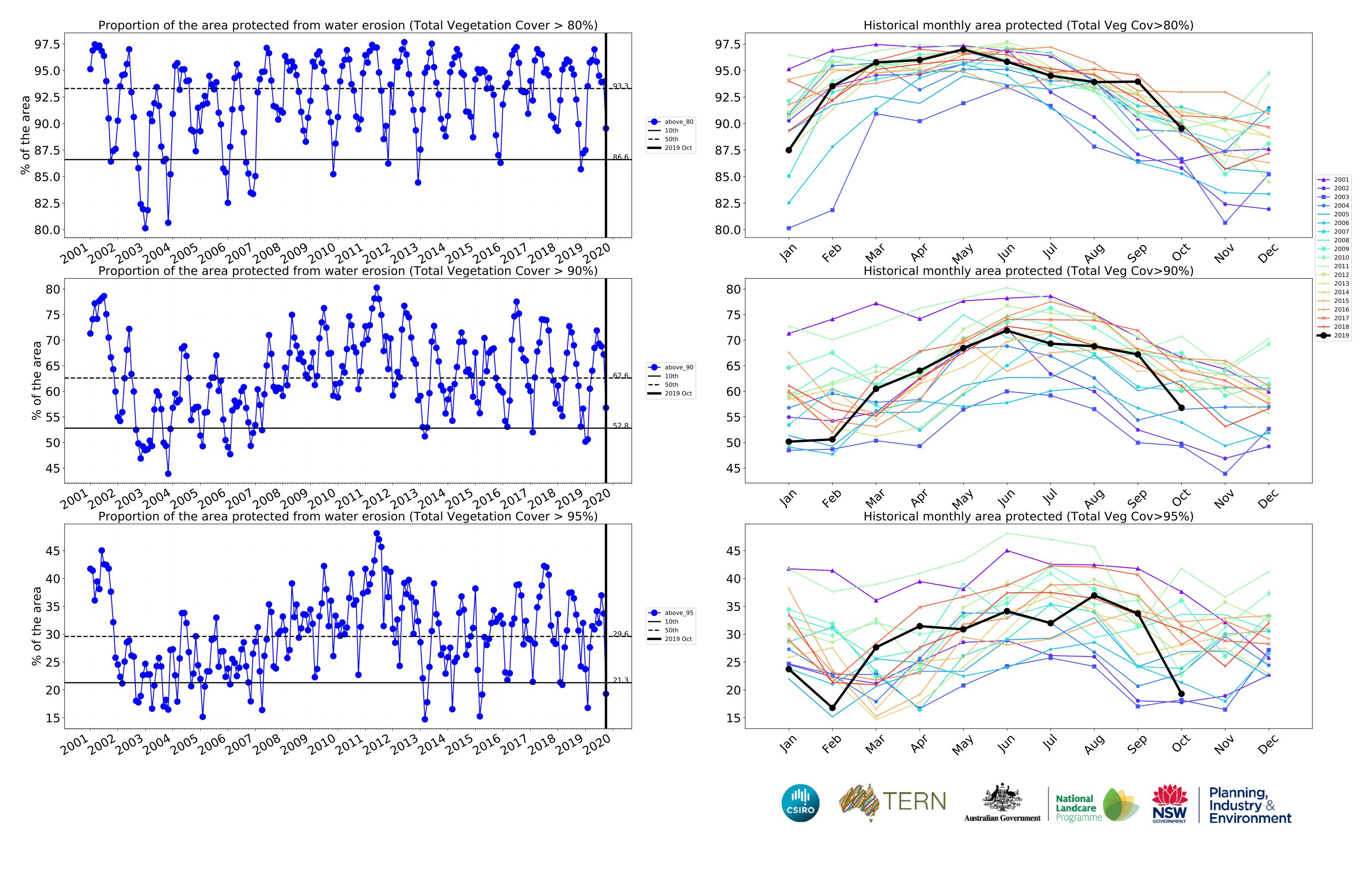








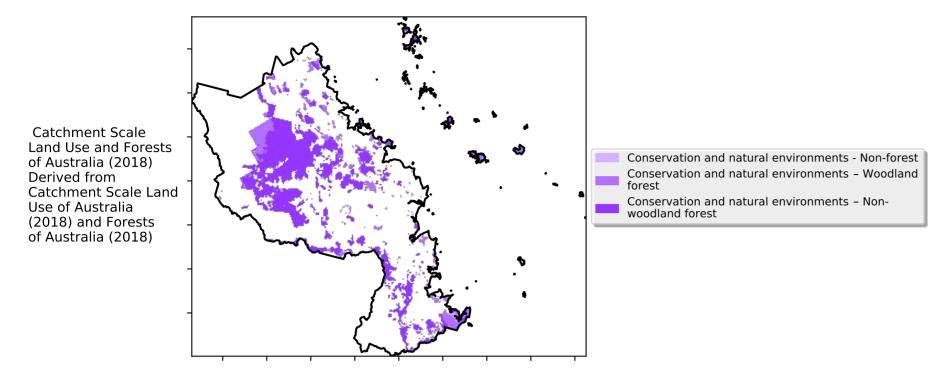




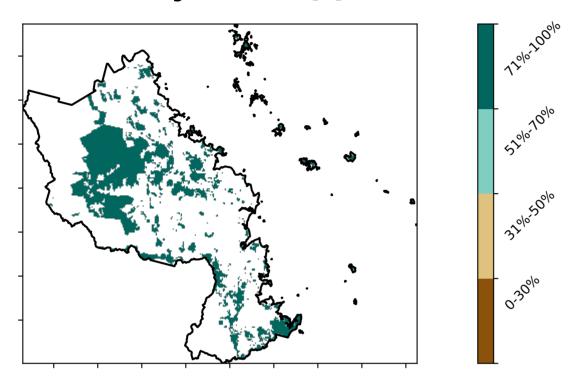
.

Conservation and natural environments

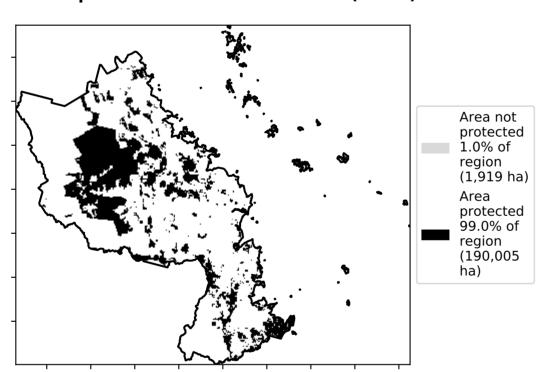
Land use and forest cover



Total Vegetation Cover [%]



% Area protected from water erosion (>70%)



Total Vegetation Cover Anomaly [%]

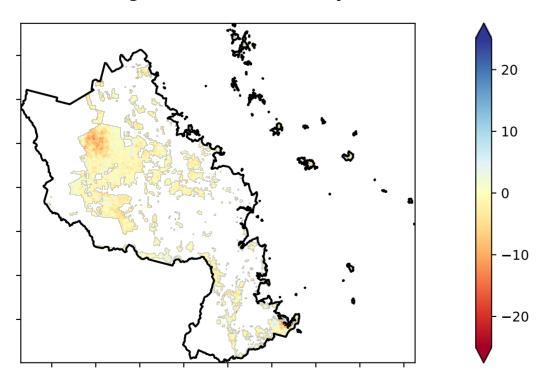
Anomaly show how many percetage points each pixel is from

the mean. That

is, red pixels are about 20% lower than the

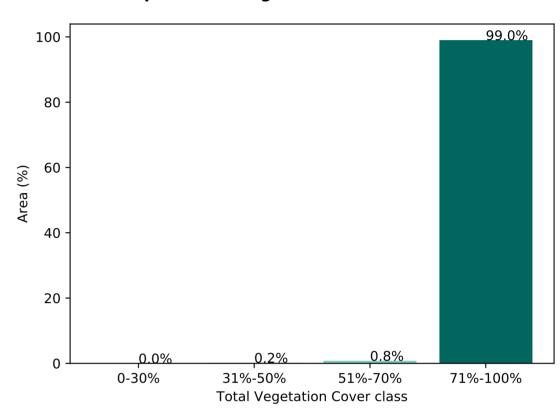
mean of that pixel. The mean is only for the month of the map

using baseline from 2001 to 2019.

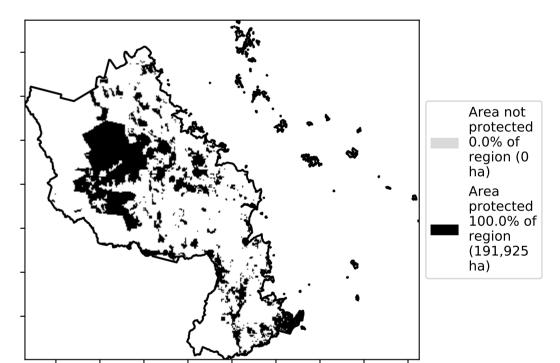


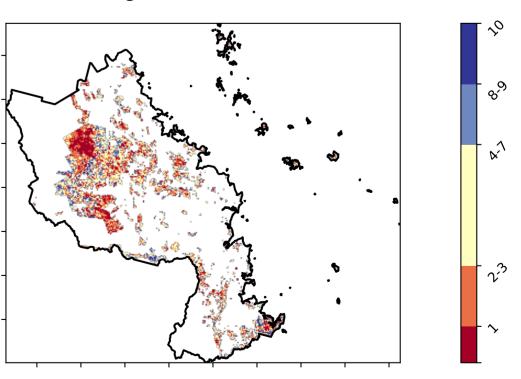
Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

Proportion of vegetation cover class in area



% Area protected from wind erosion (>50%)









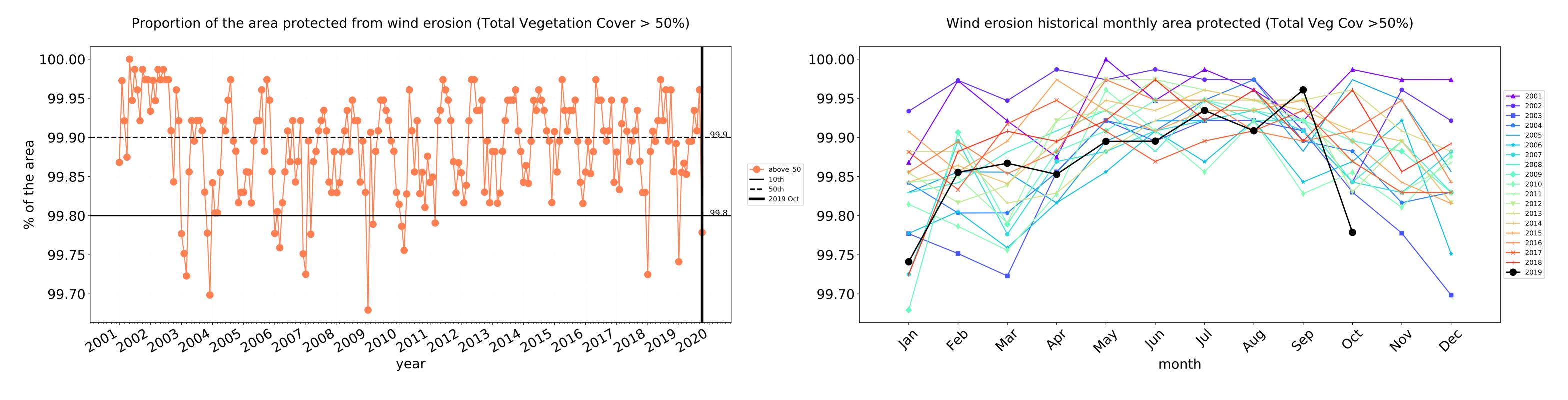


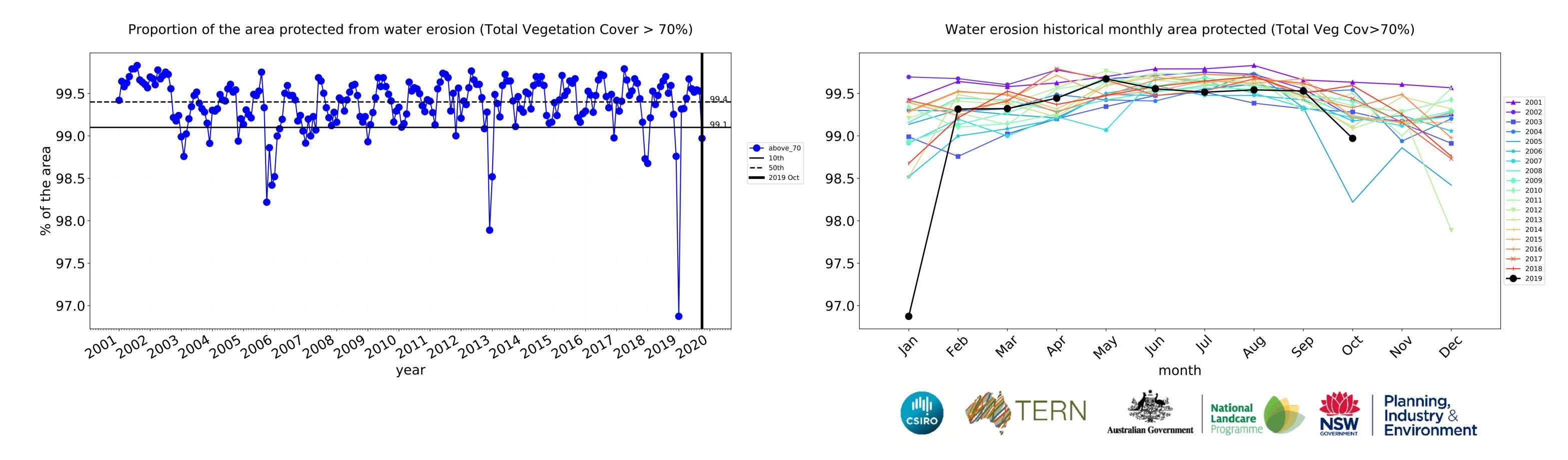


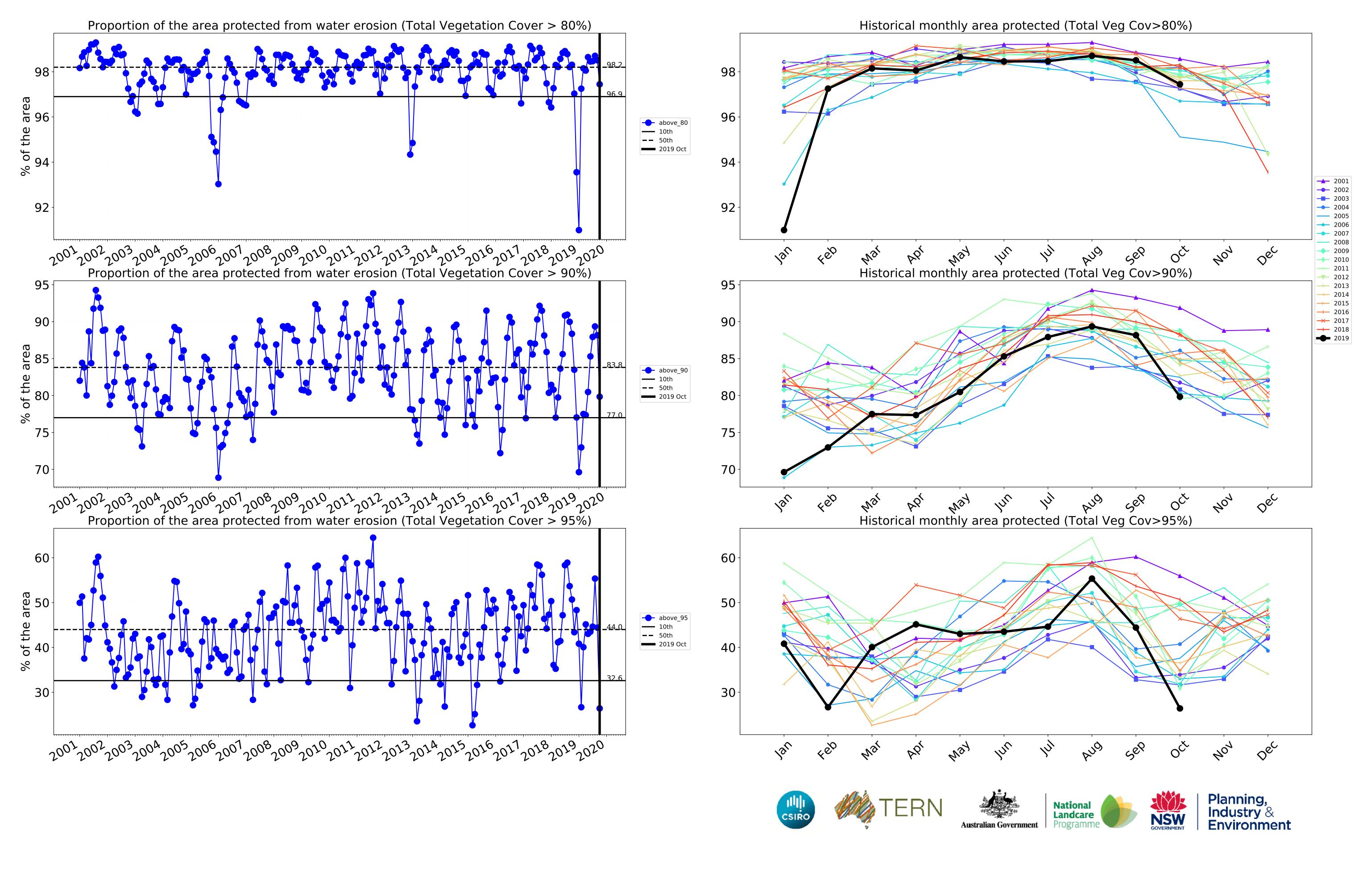




Conservation and natural environments timeseries







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

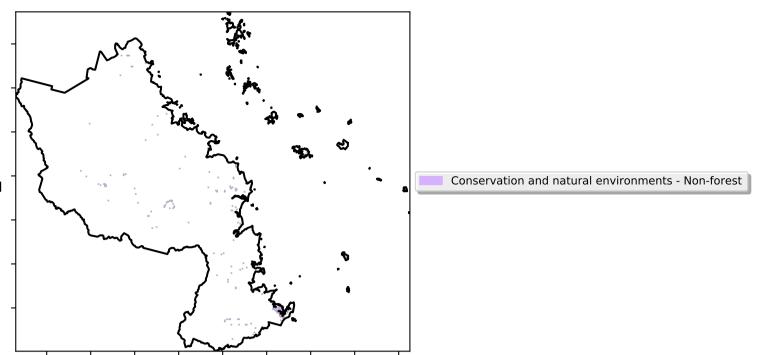
is, red pixels are about 20% lower than the

mean of that

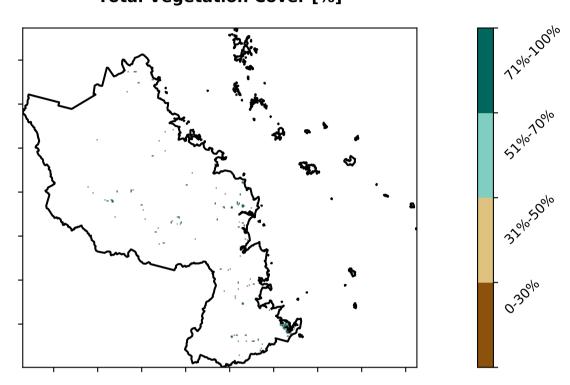
pixel. The mean

using baseline from 2001 to 2019.

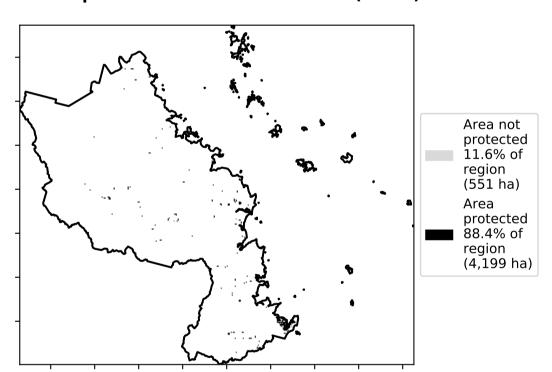
is only for the month of the map



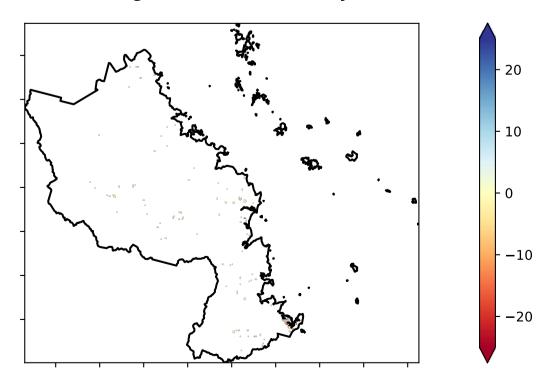
Total Vegetation Cover [%]



% Area protected from water erosion (>70%)

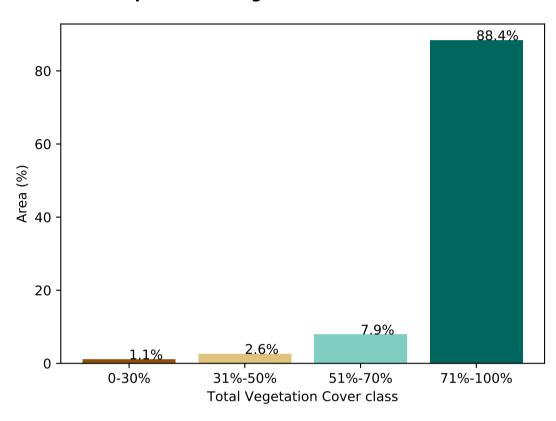


Total Vegetation Cover Anomaly [%]

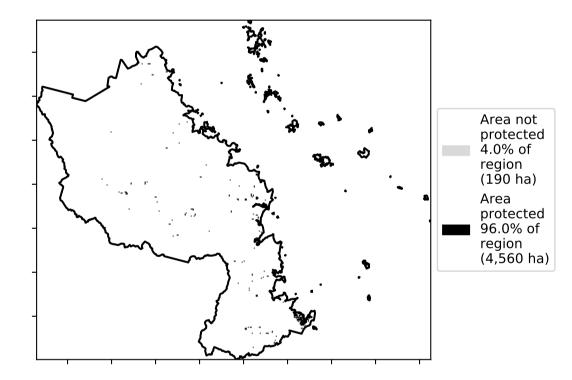


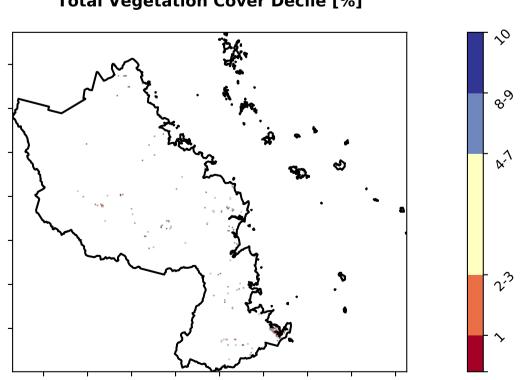
Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

Proportion of vegetation cover class in area



% Area protected from wind erosion (>50%)









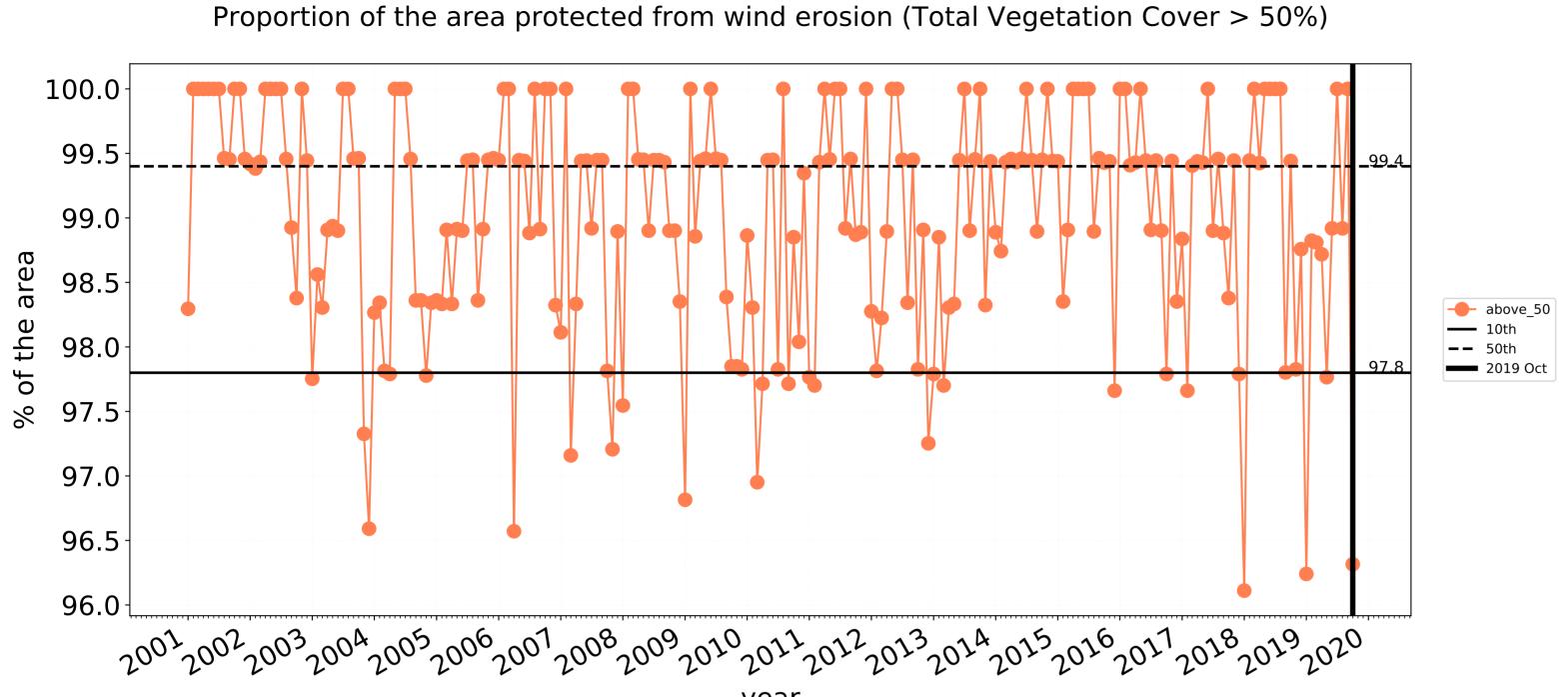


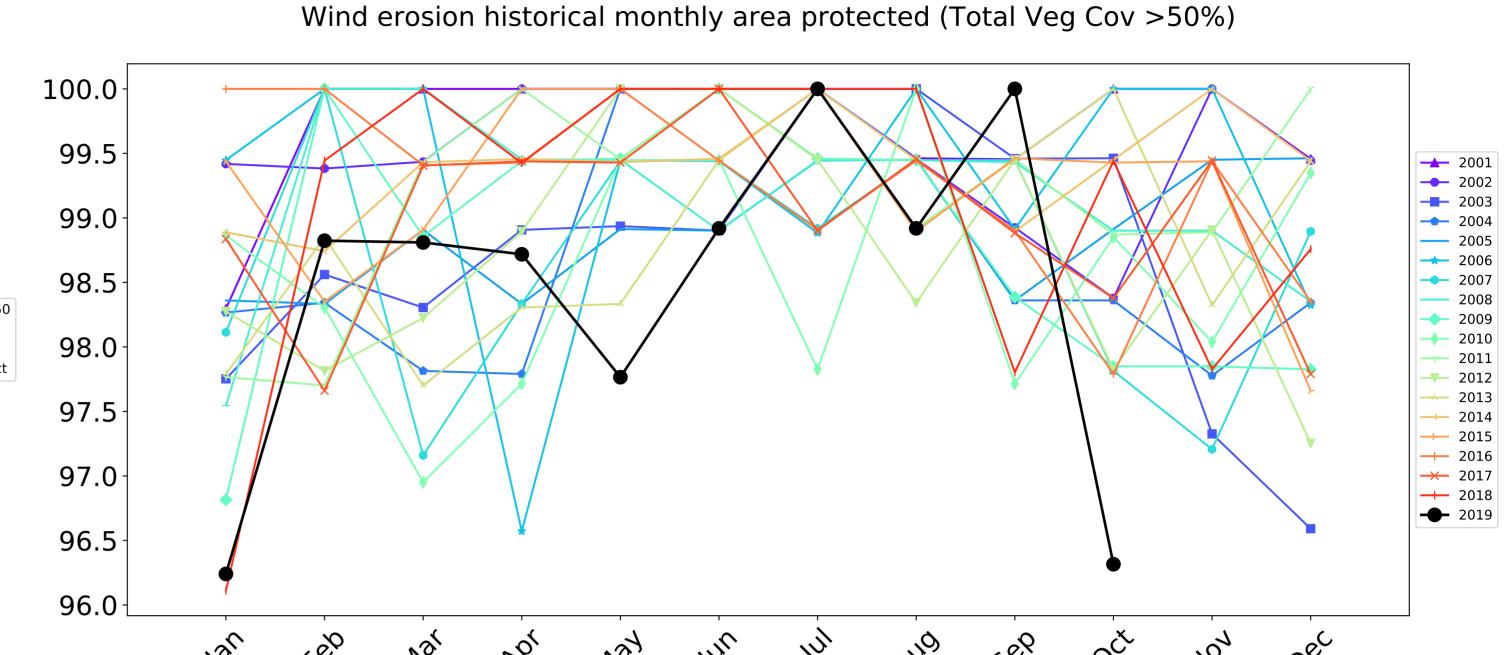




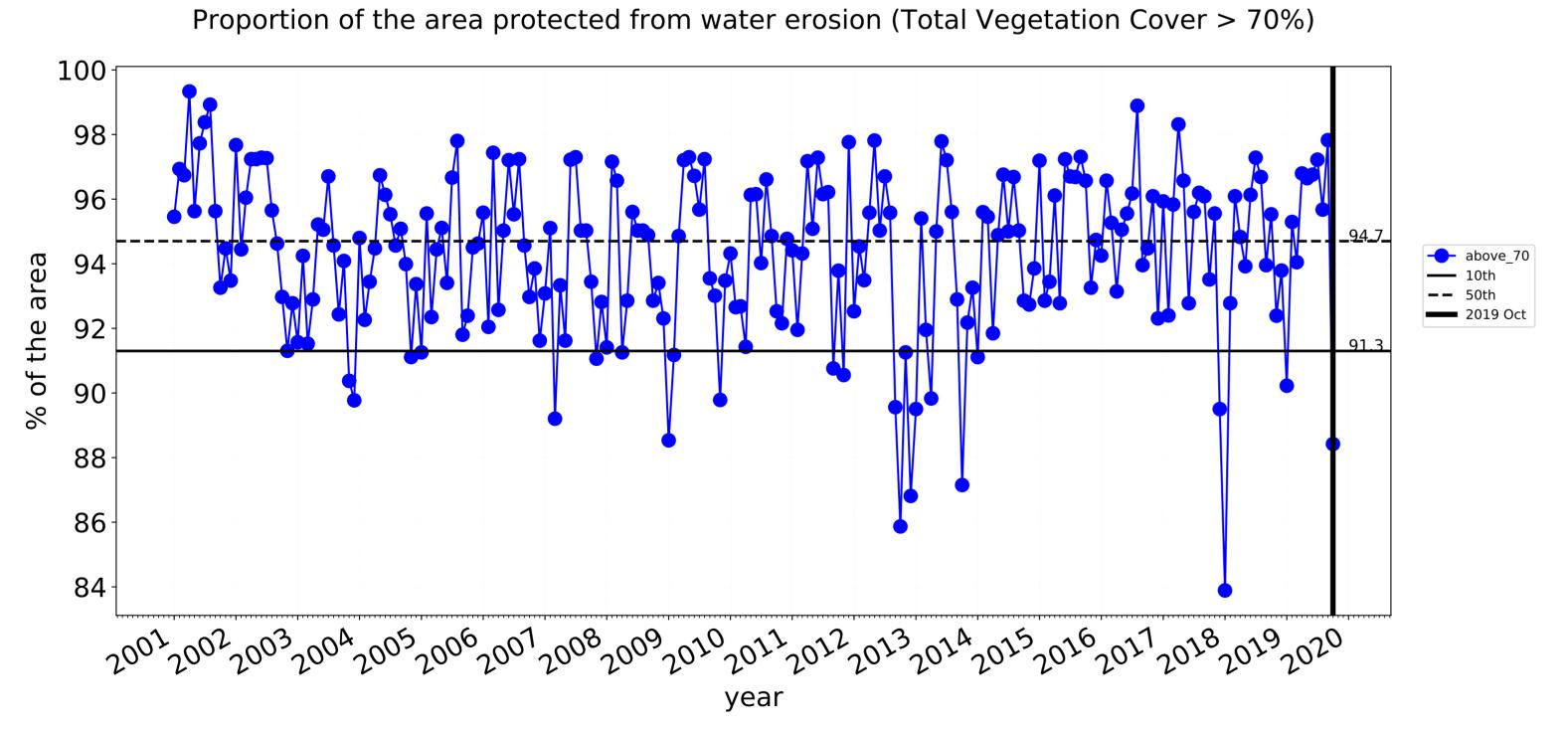


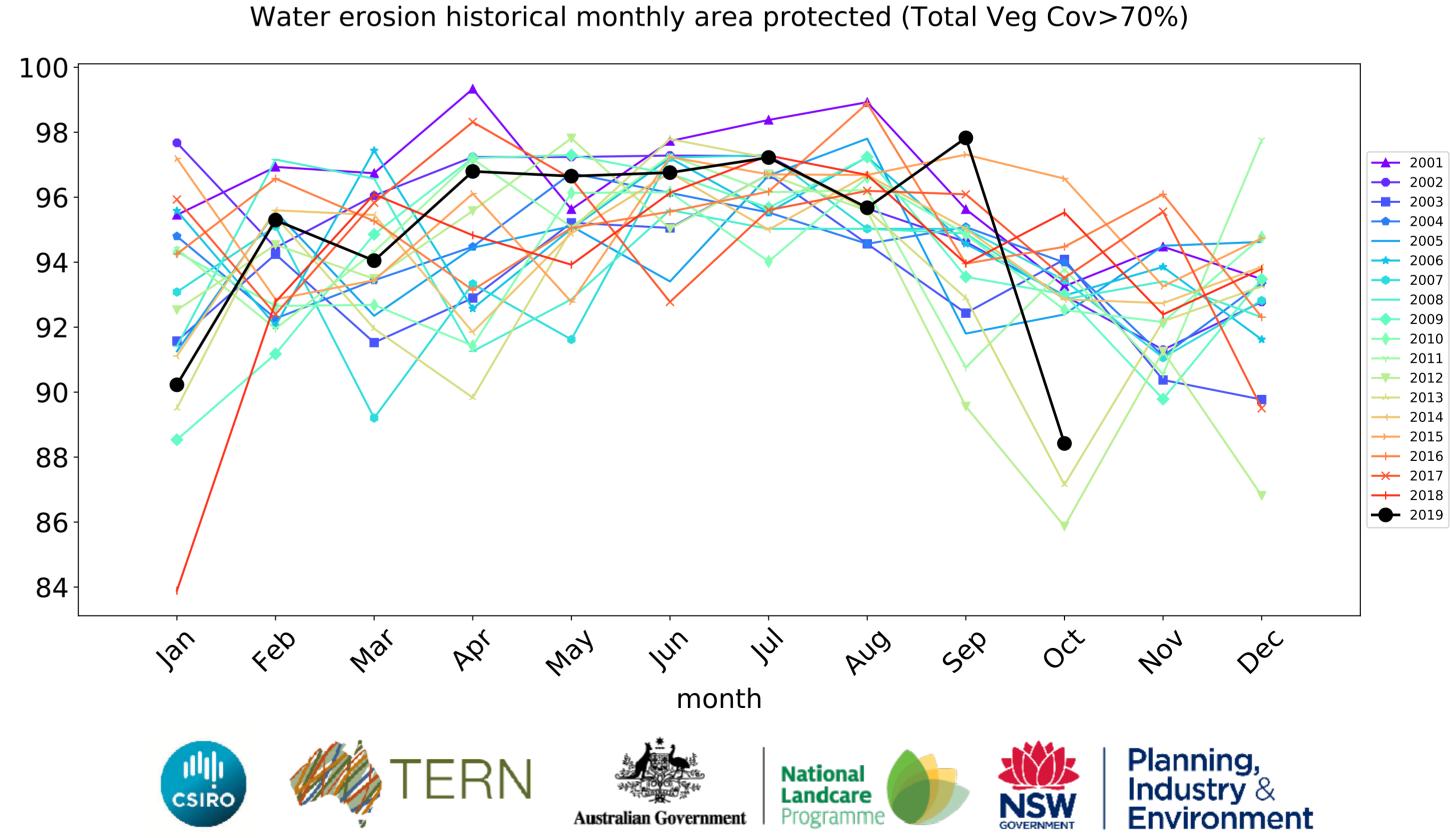
Conservation and natural environments non forest timeseries

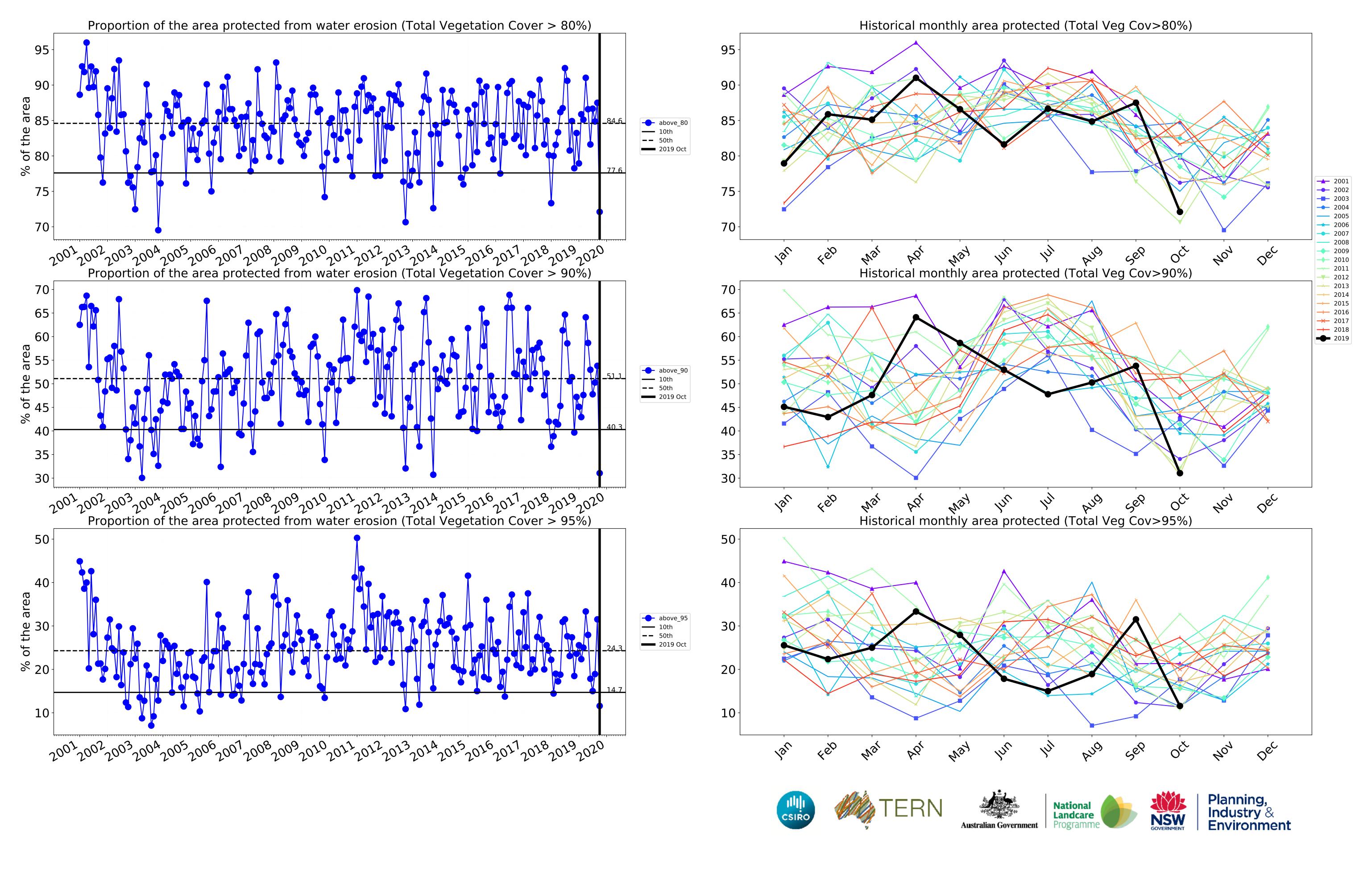




month



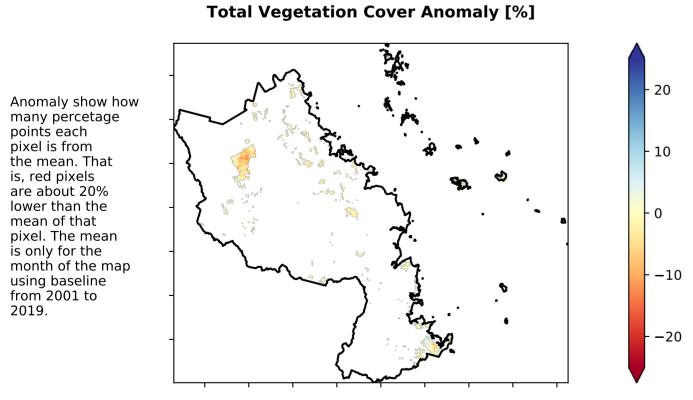


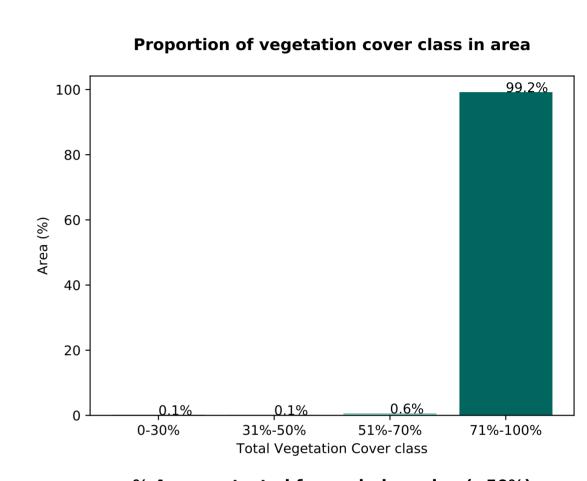


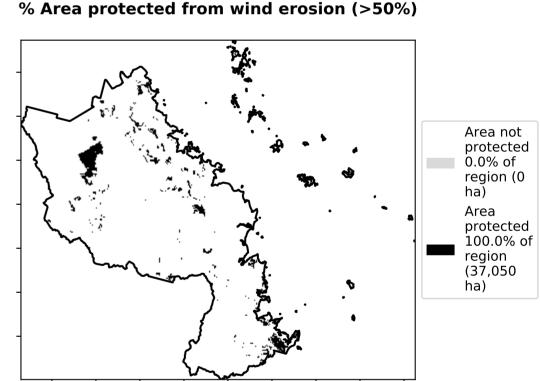
Conservation and natural environments Woodland forest

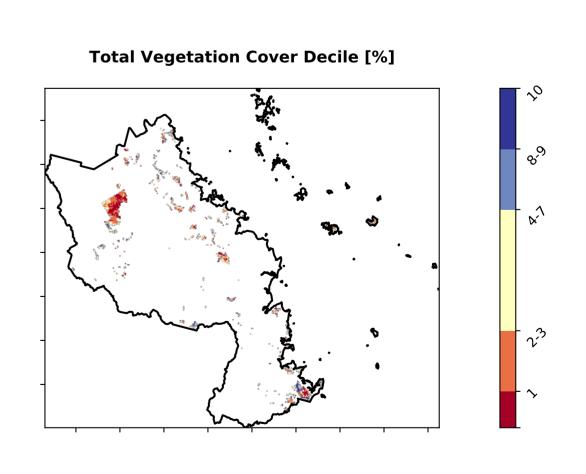
Land use and forest cover Land Use and Forests of Australia (2018) Conservation and natural environments - Woodland Catchment Scale Land

Area not protected 0.8% of region (296 ha) Area protected 99.2% of region (36,753 ha)













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.



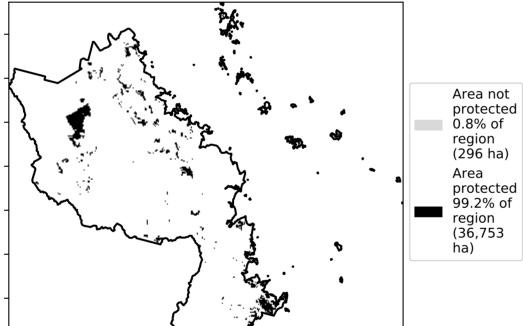


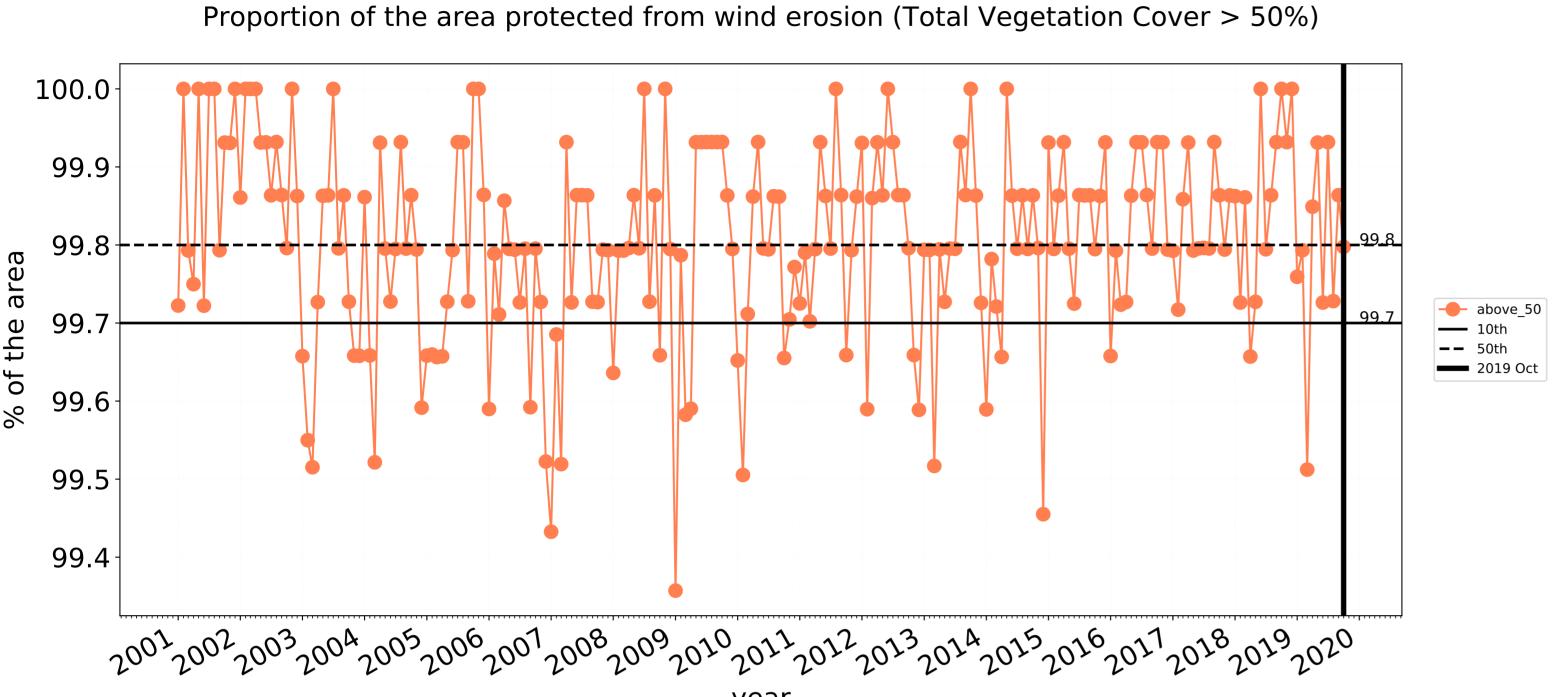
Catchment Scale

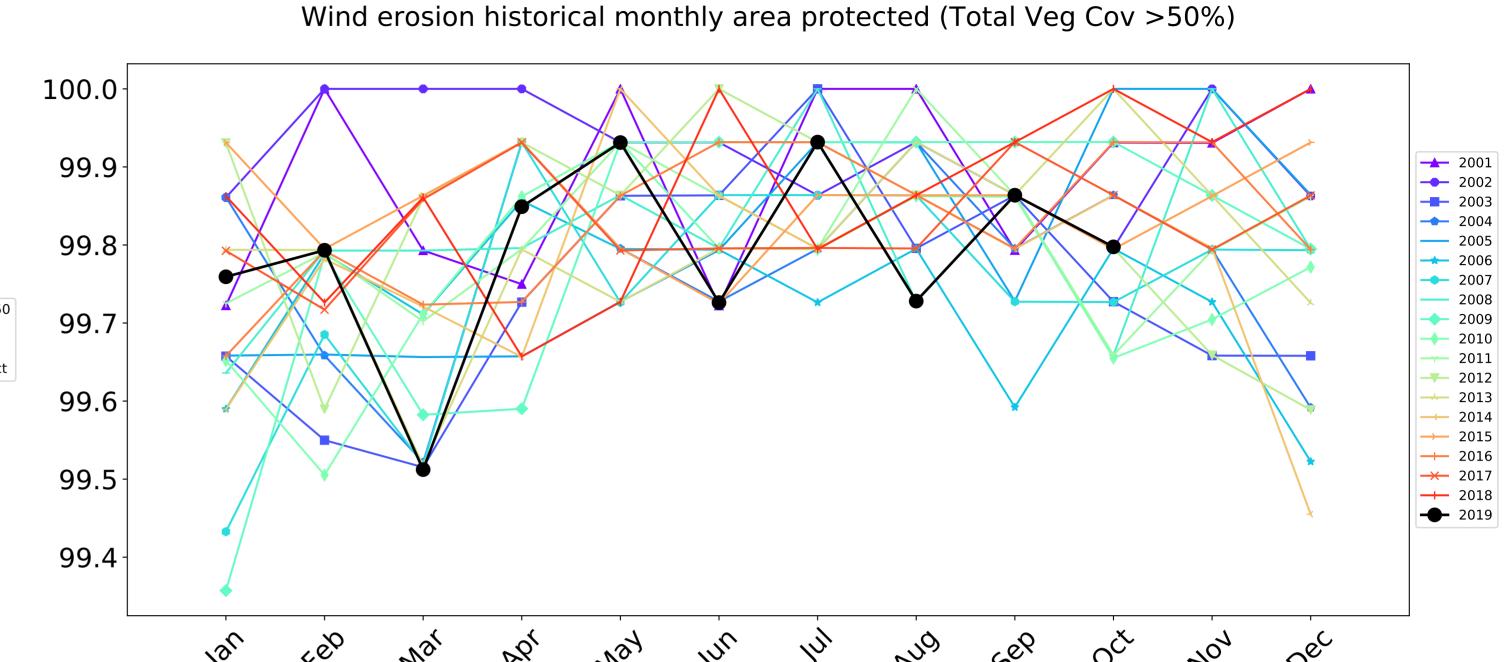
Derived from

Use of Australia (2018) and Forests of Australia (2018)

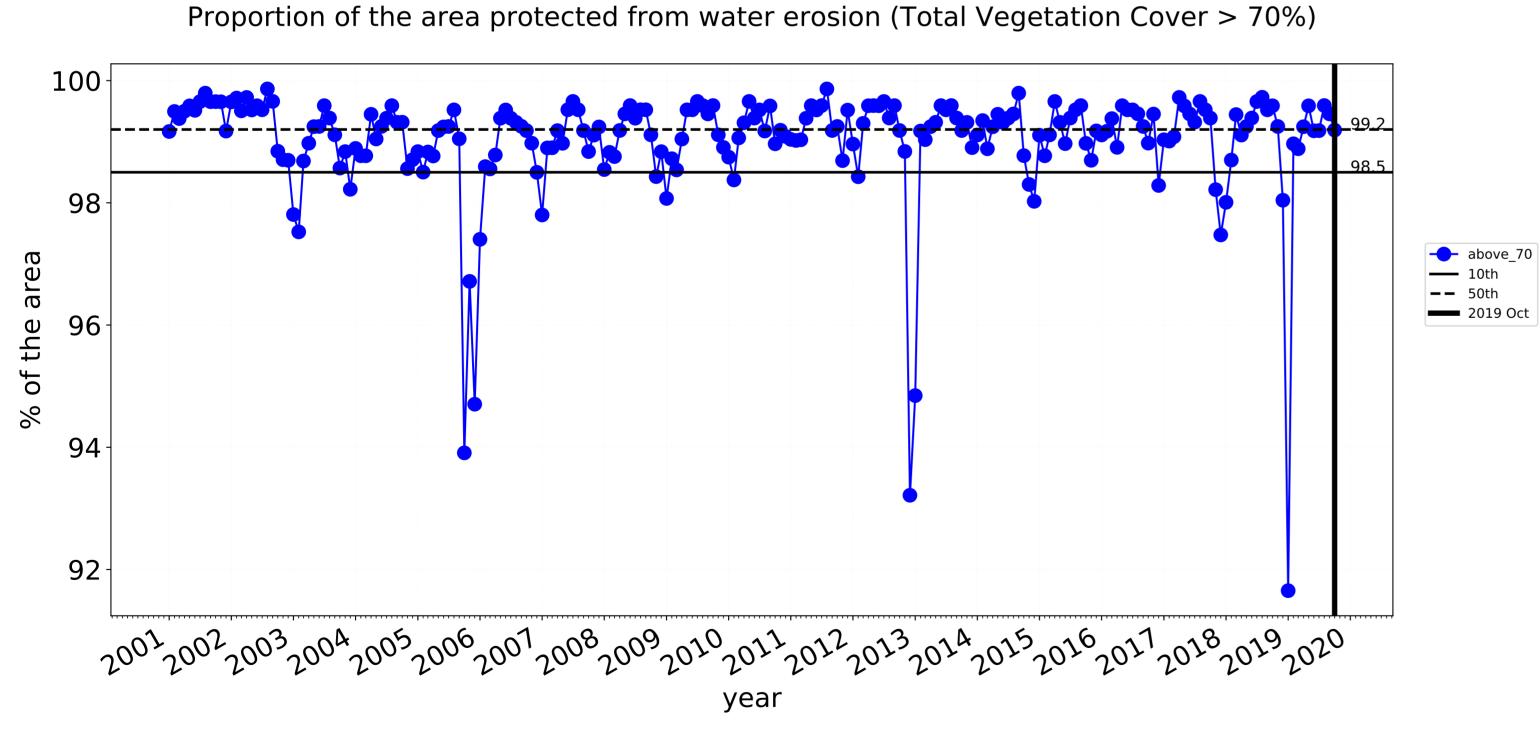
% Area protected from water erosion (>70%)

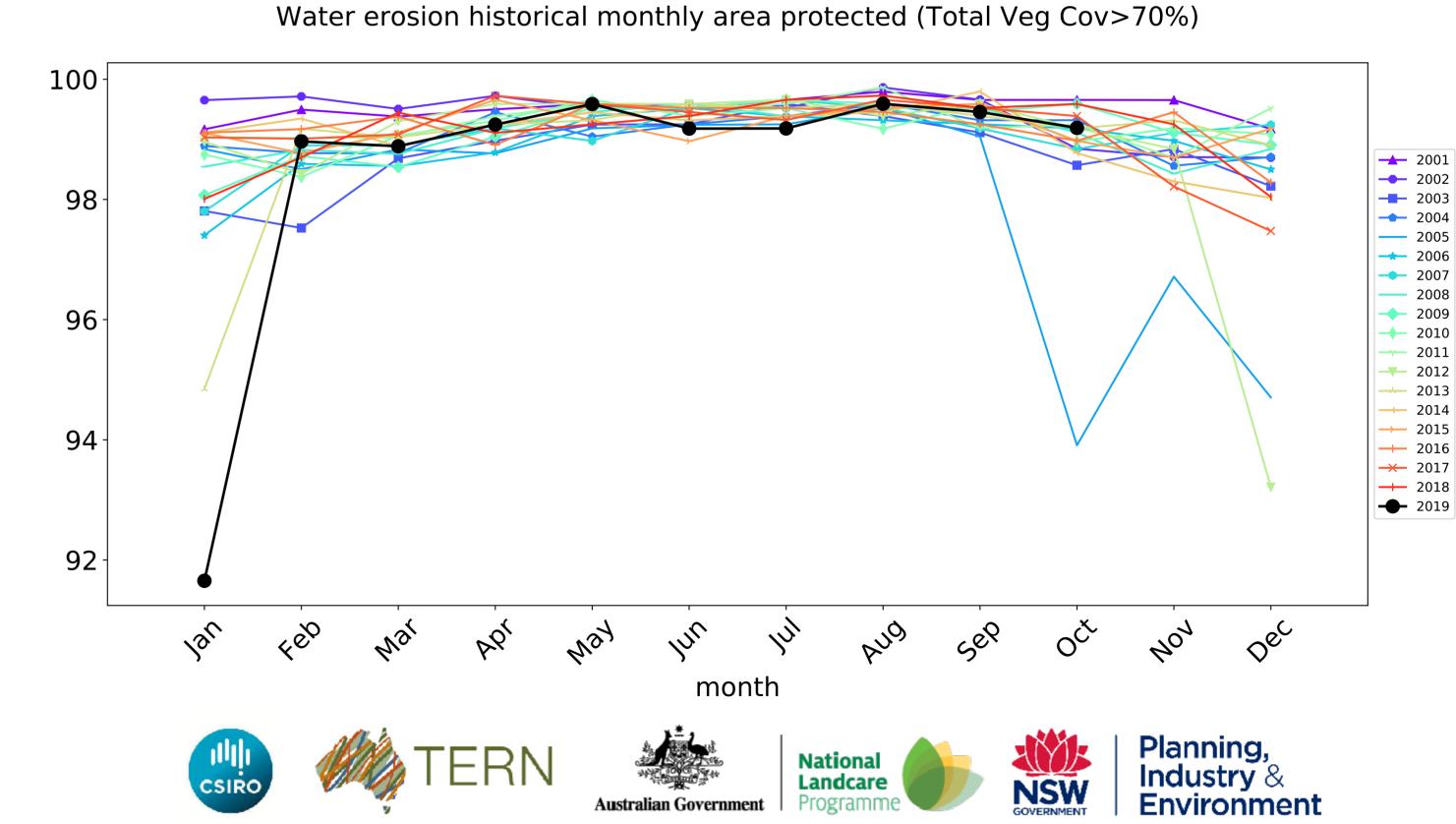


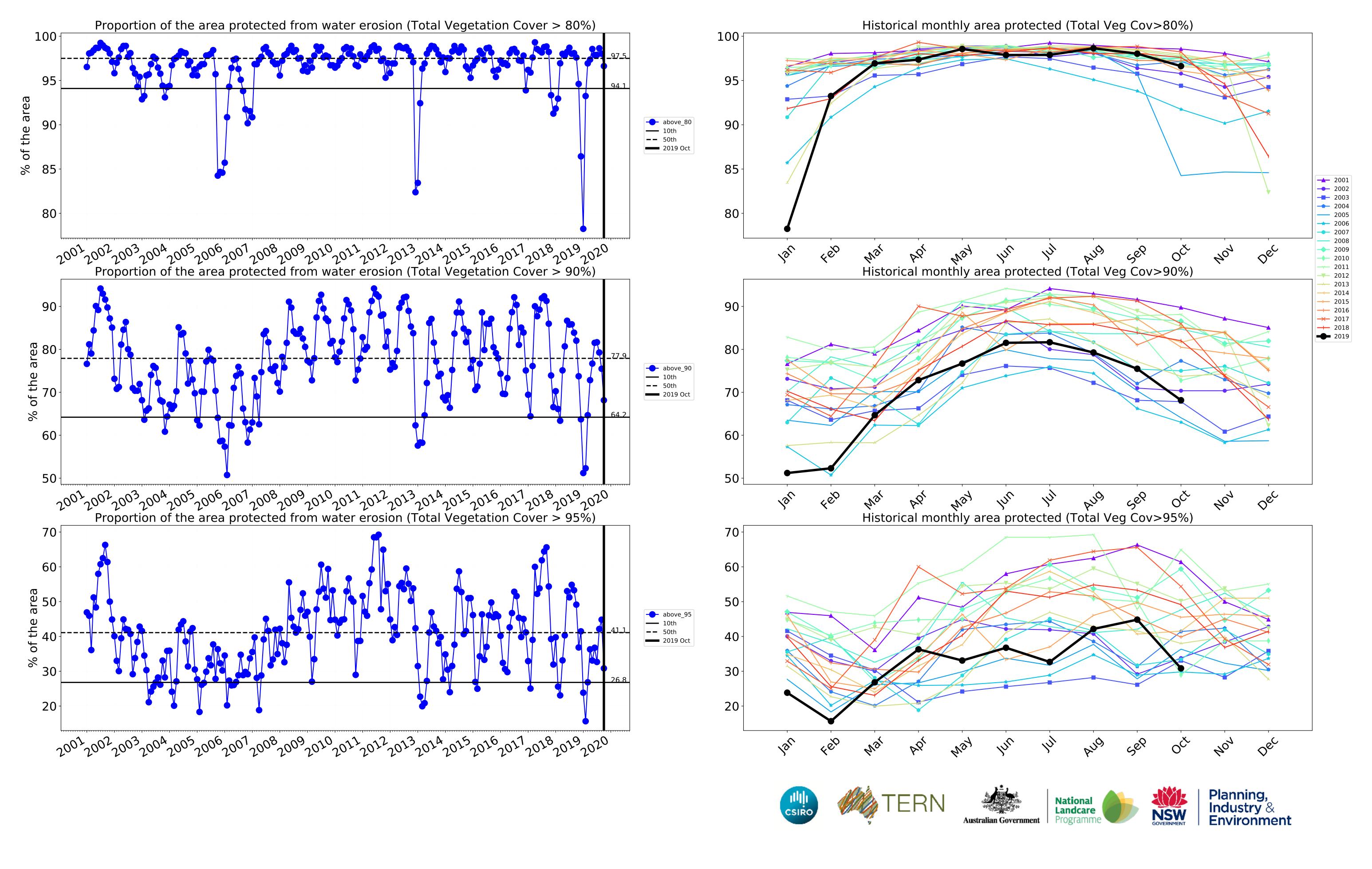




month



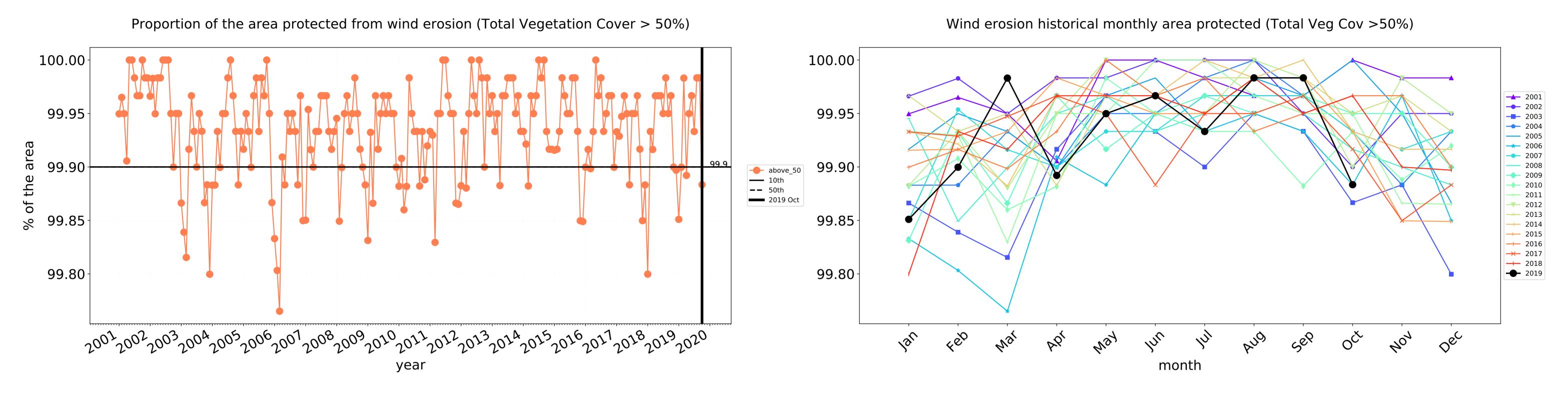


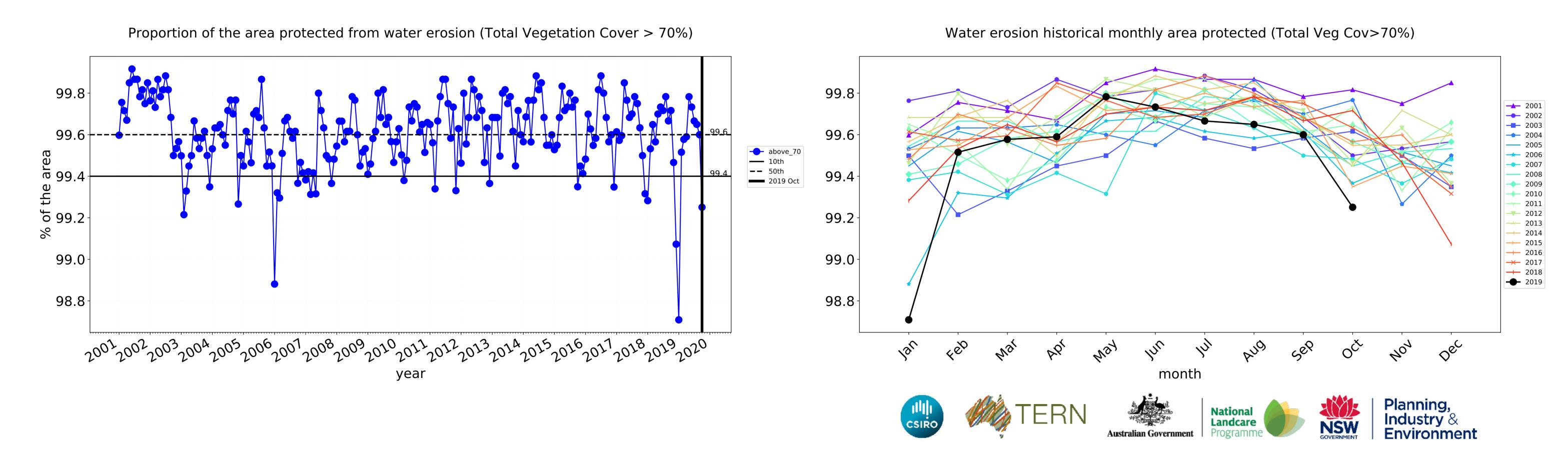


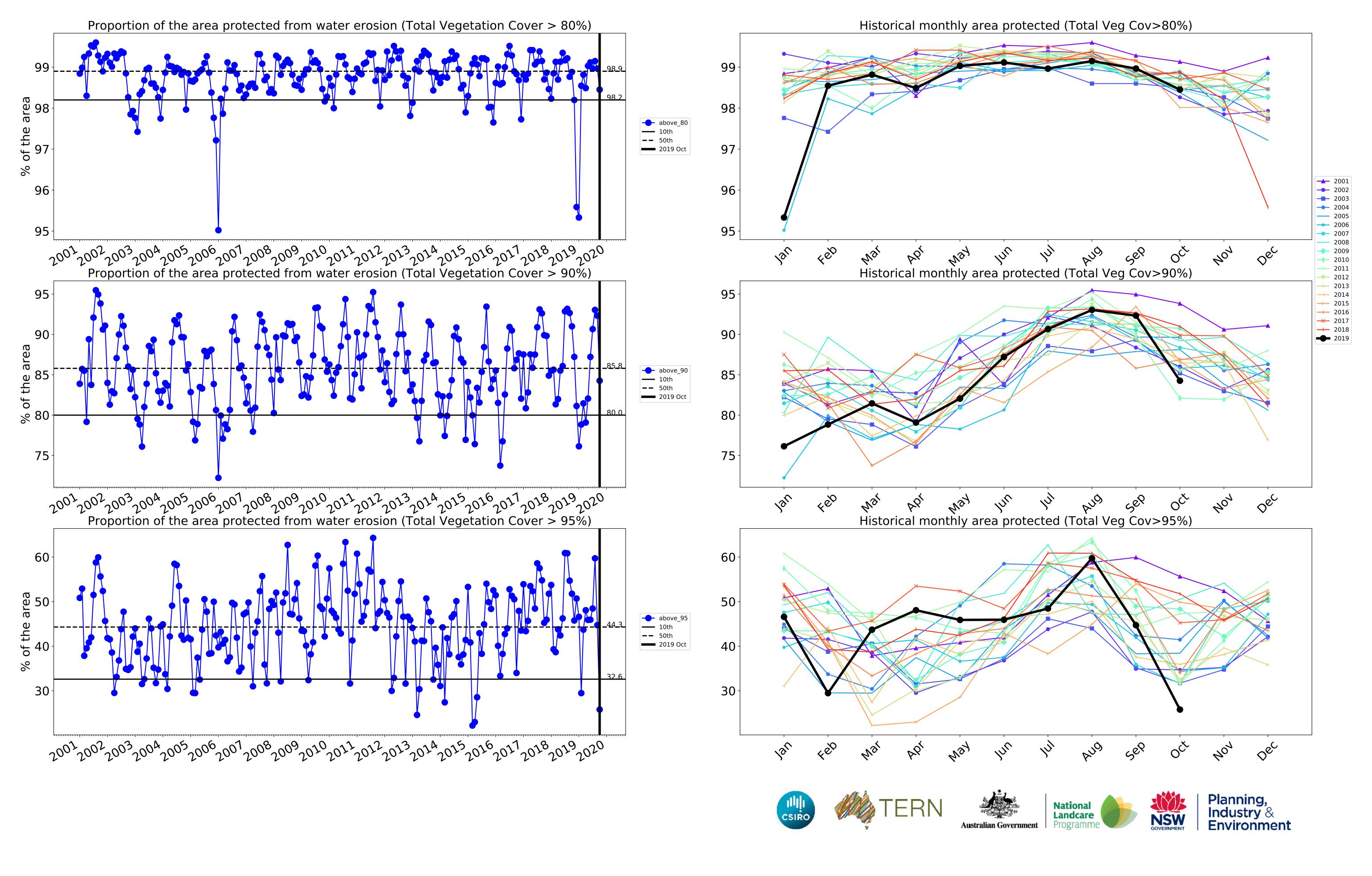
Land use and forest cover Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests Conservation and natural environments - Nonof Australia (2018) **Total Vegetation Cover [%]** Proportion of vegetation cover class in area 99.3% 100 80 20 0-30% 31%-50% 51%-70% 71%-100% **Total Vegetation Cover class** % Area protected from wind erosion (>50%) % Area protected from water erosion (>70%) Area not protected 0.7% of Area not protected 0.0% of region (0 ha) region (1,050 ha) Area Area protected 99.3% of protected 100.0% of region (149,074 region (150,125 ha) ha) **Total Vegetation Cover Decile [%] Total Vegetation Cover Anomaly [%]** - 20 Anomaly show how many percetage points each pixel is from the mean. That 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 man using baseline. - 10 is, red pixels are about 20% lower than the 0 mean of that pixel. The mean is only for the month of the map the map using baseline from 2001 to 2019. using baseline from 2001 to 2019. -10**-**20 Planning, Industry & Environment National Landcare

Australian Government

Programme







Agriculture

Land use and forest cover

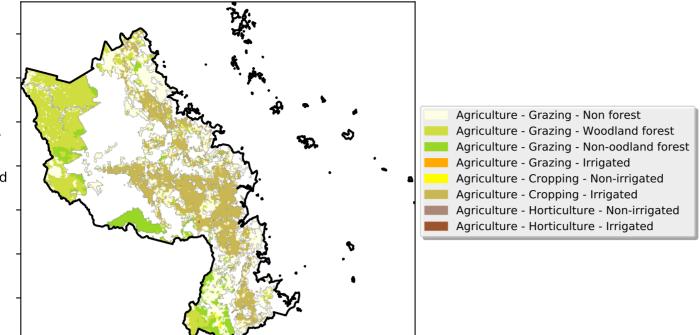


the mean. That

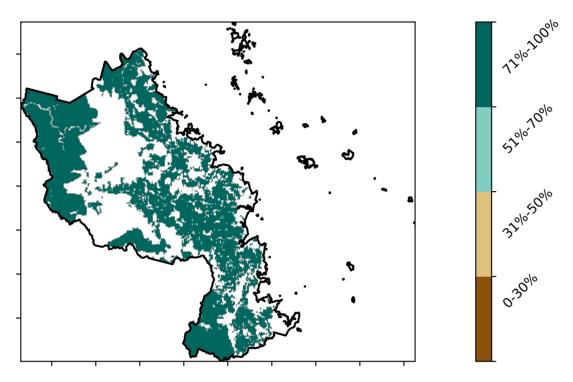
is, red pixels are about 20% lower than the

mean of that pixel. The mean is only for the month of the map

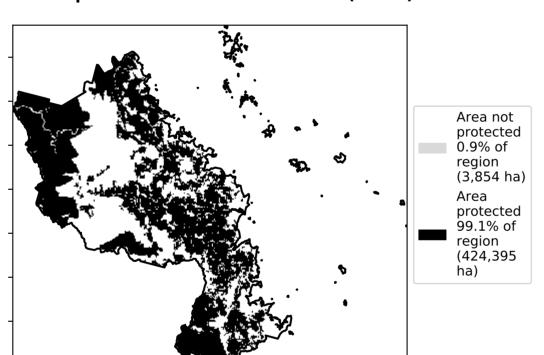
using baseline from 2001 to 2019.



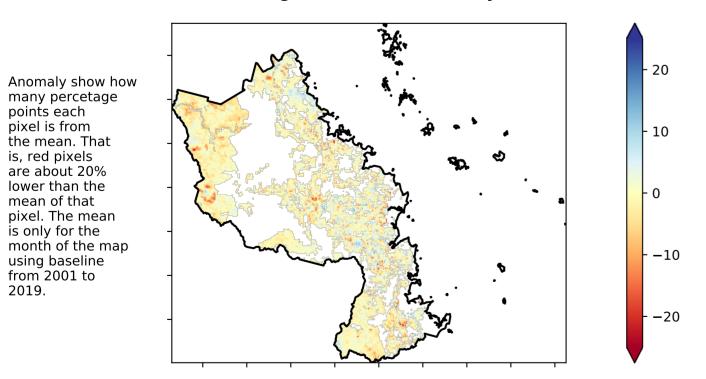
Total Vegetation Cover [%]



% Area protected from water erosion (>70%)

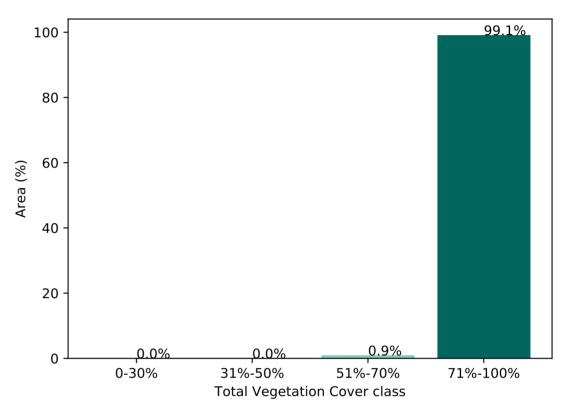


Total Vegetation Cover Anomaly [%]

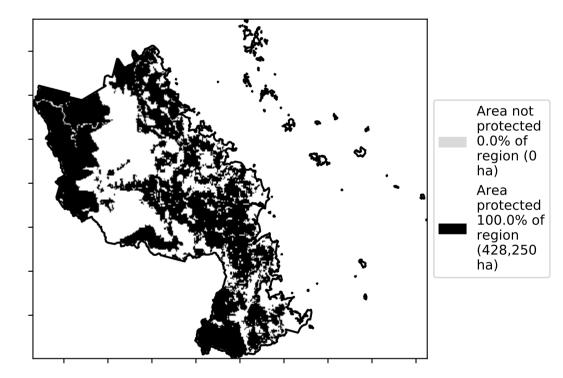


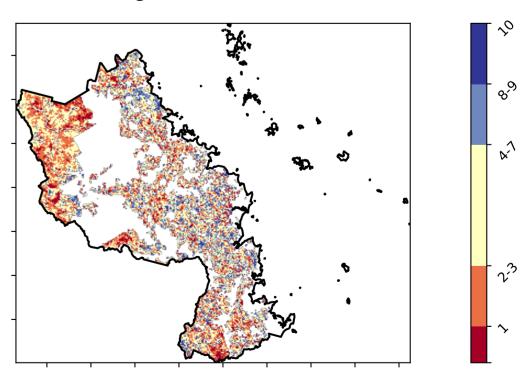
Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

Proportion of vegetation cover class in area



% Area protected from wind erosion (>50%)









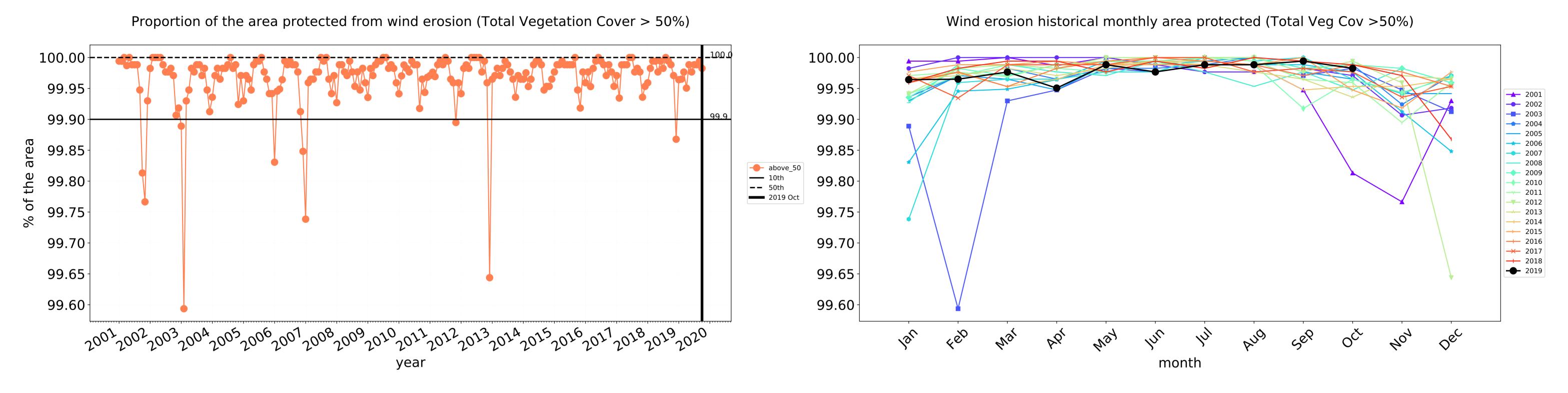


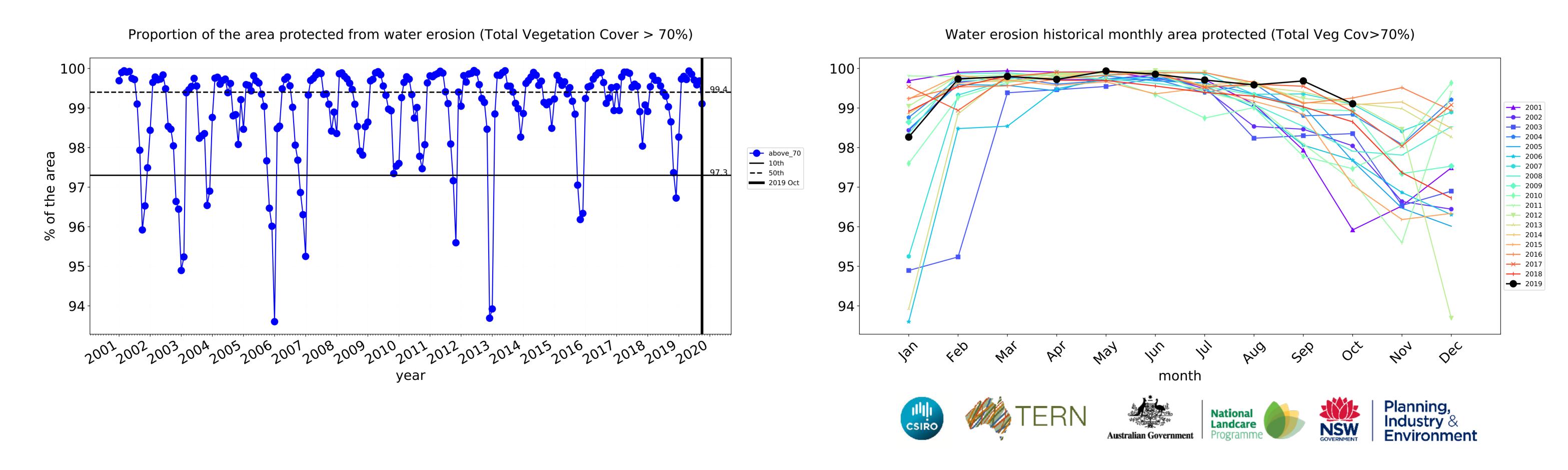


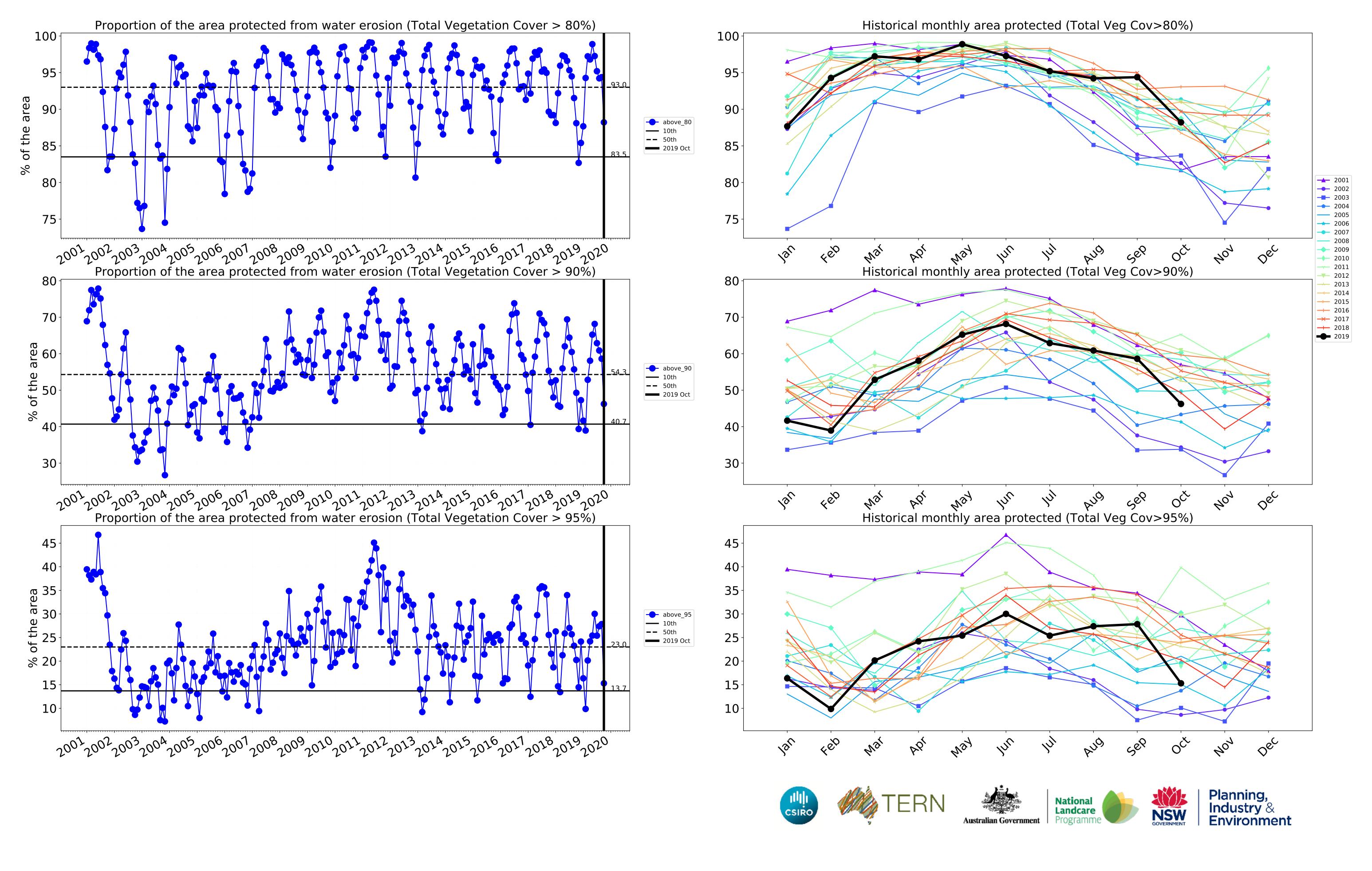




Agriculture timeseries







Grazing

Land use and forest cover

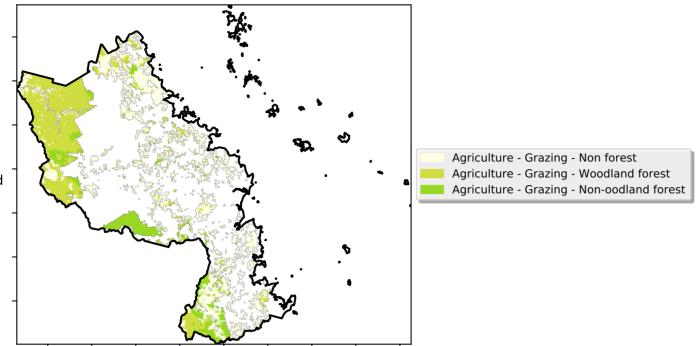


Anomaly show how many percetage points each pixel is from the mean. That is, red pixels are about 20%

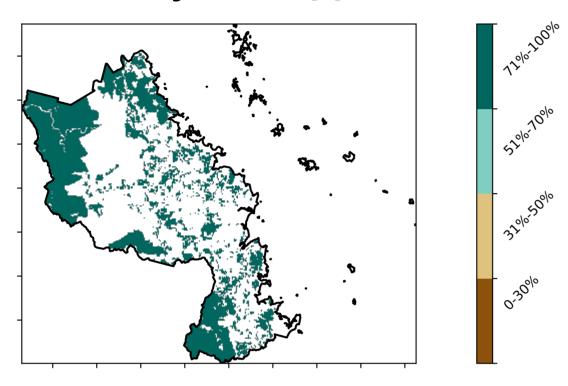
lower than the

using baseline from 2001 to 2019.

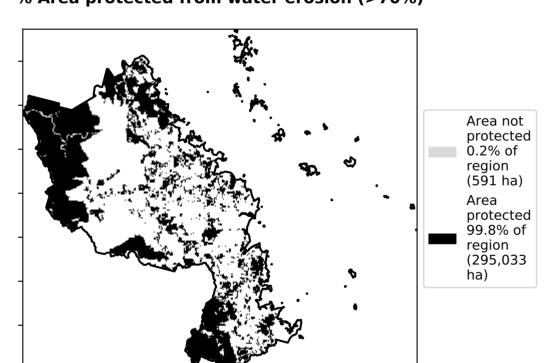
mean of that pixel. The mean is only for the month of the map



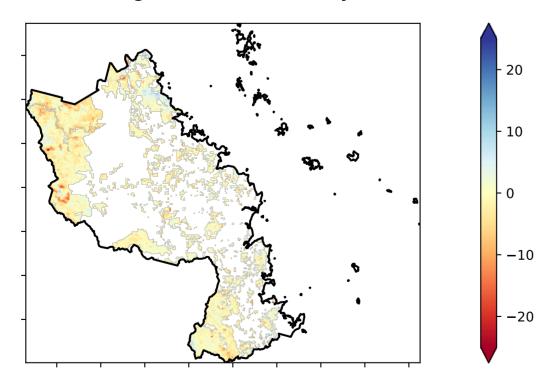
Total Vegetation Cover [%]



% Area protected from water erosion (>70%)

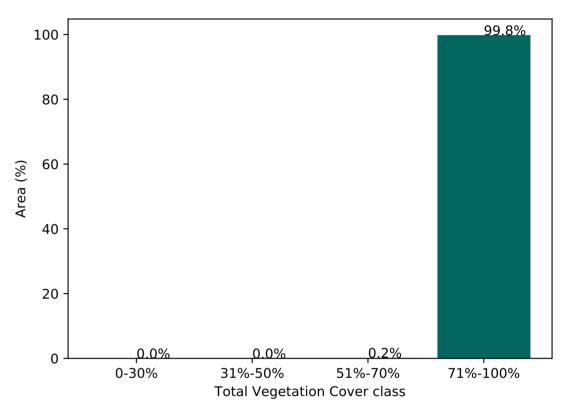


Total Vegetation Cover Anomaly [%]

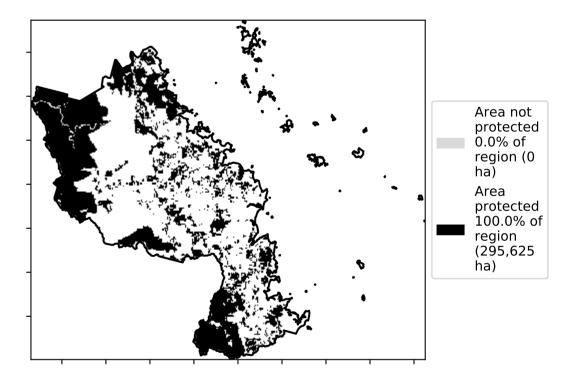


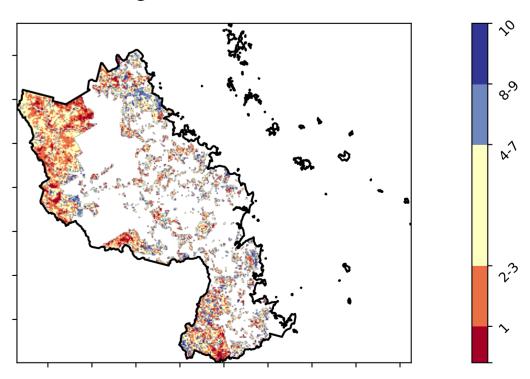
Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

Proportion of vegetation cover class in area



% Area protected from wind erosion (>50%)









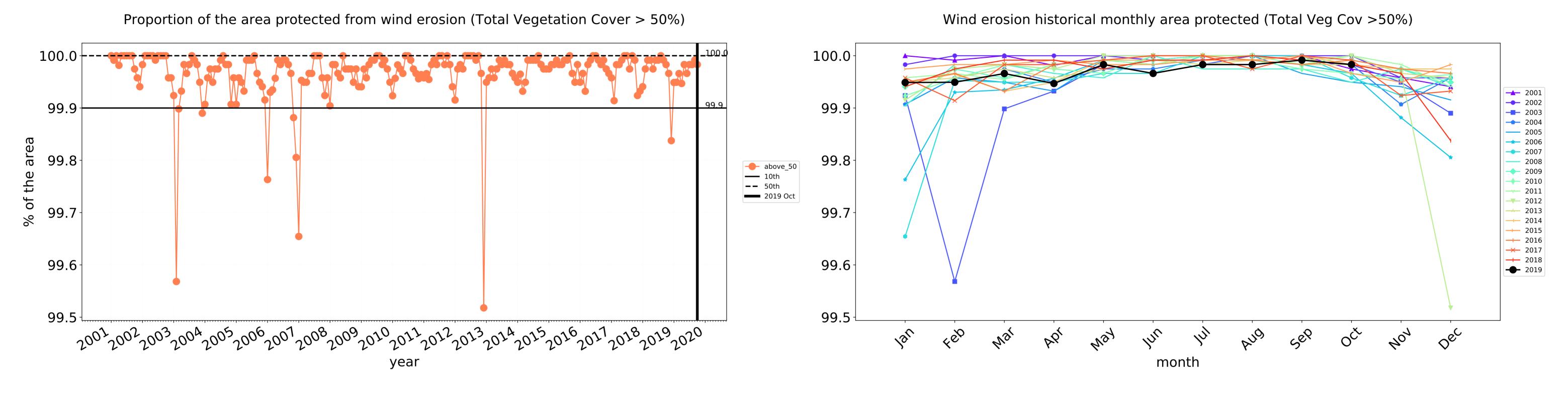


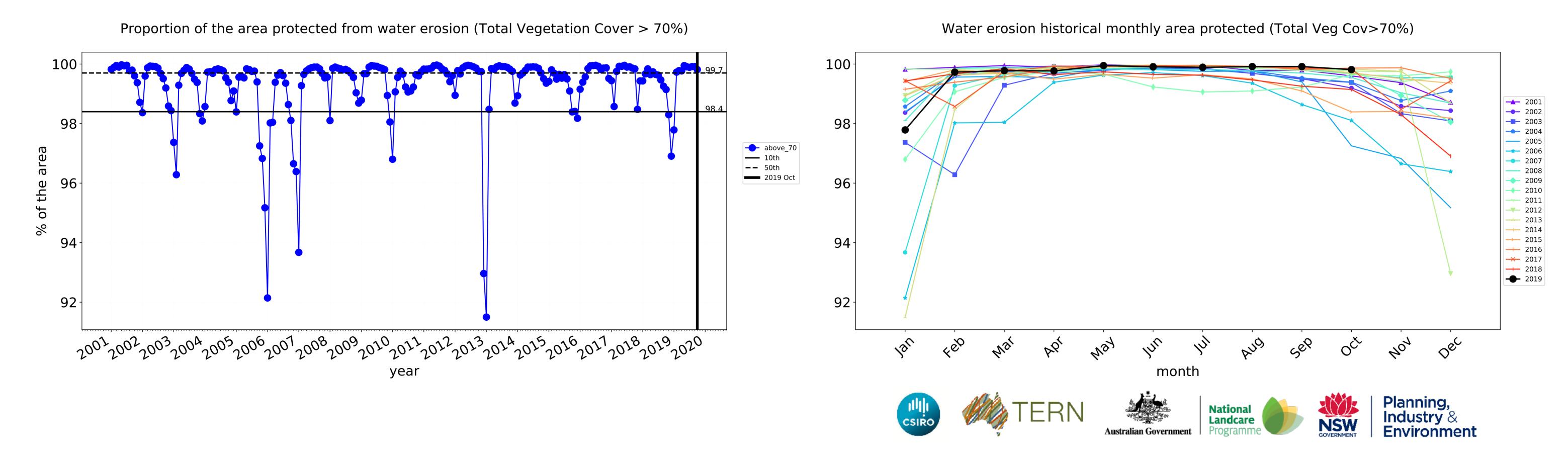


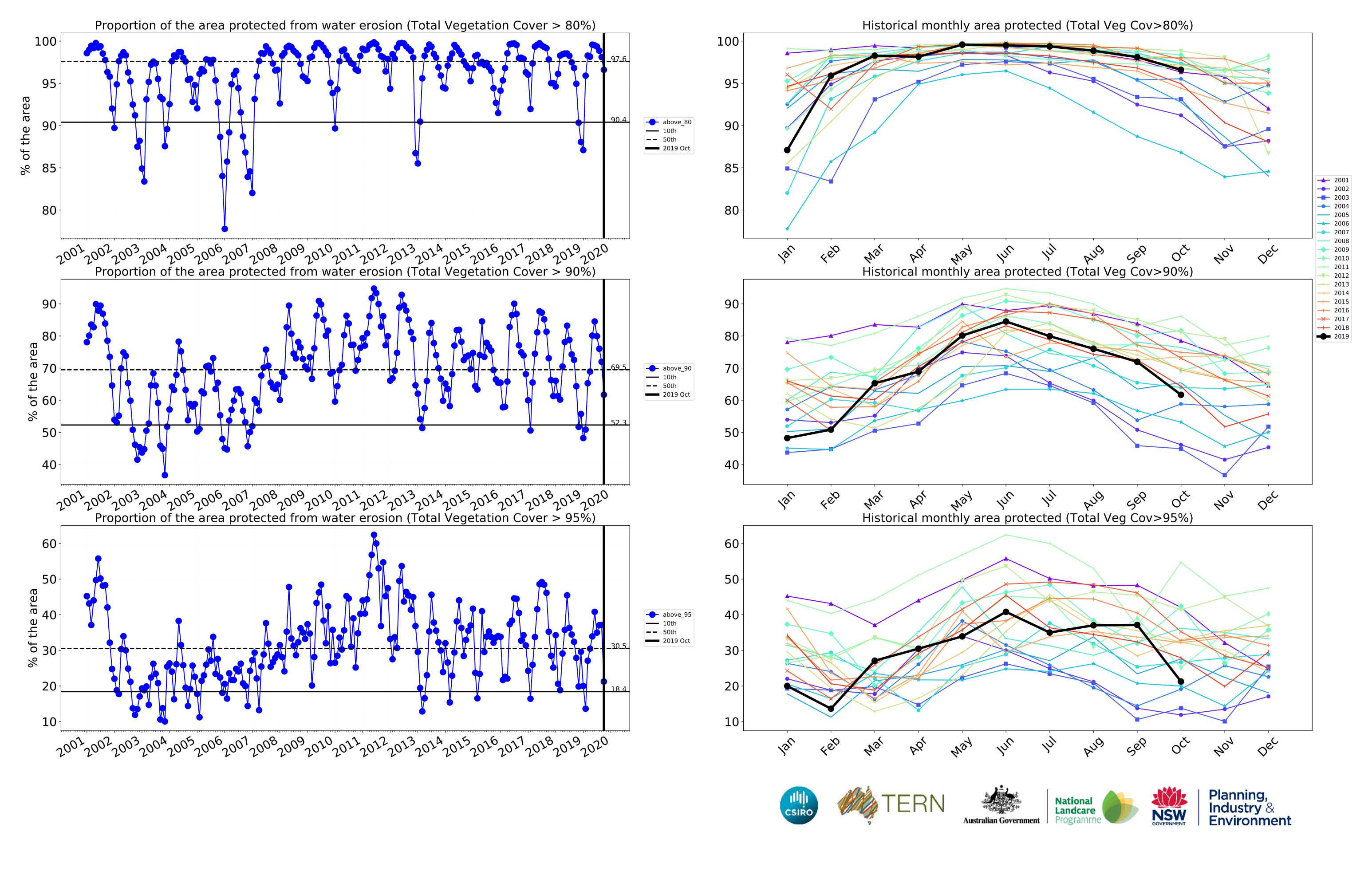




Grazing timeseries







Grazing non forest

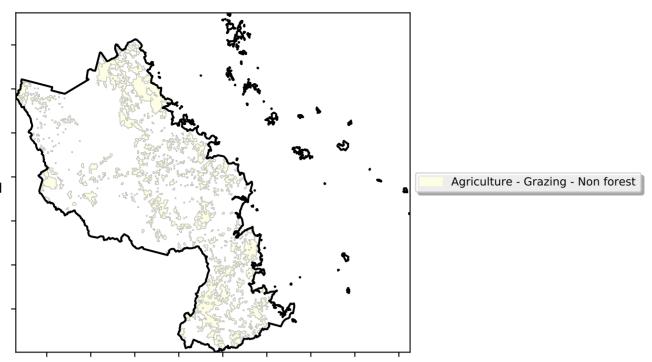
Land use and forest cover

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

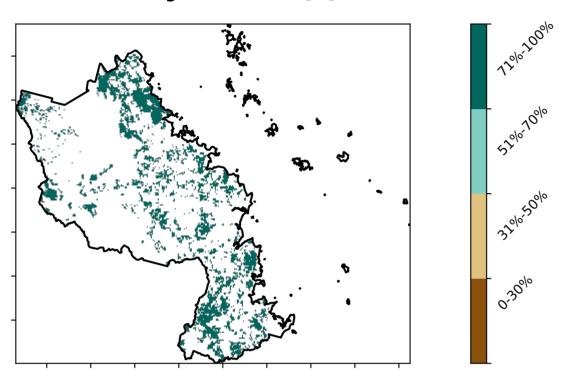
Anomaly show how many percetage points each pixel is from the mean. That is, red pixels are about 20%

lower than the mean of that pixel. The mean is only for the month of the map

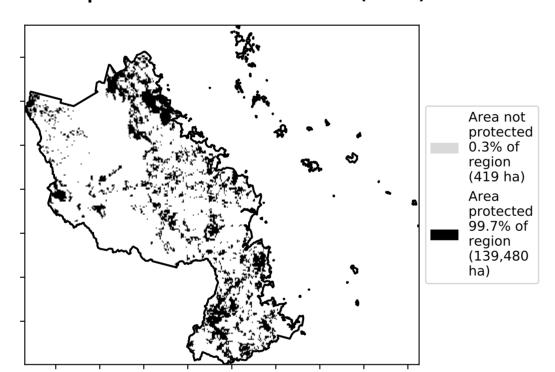
using baseline from 2001 to 2019.



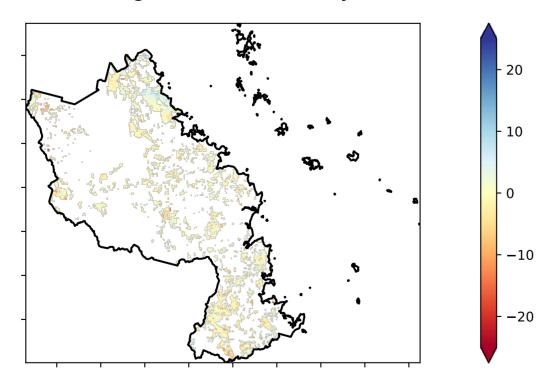
Total Vegetation Cover [%]



% Area protected from water erosion (>70%)

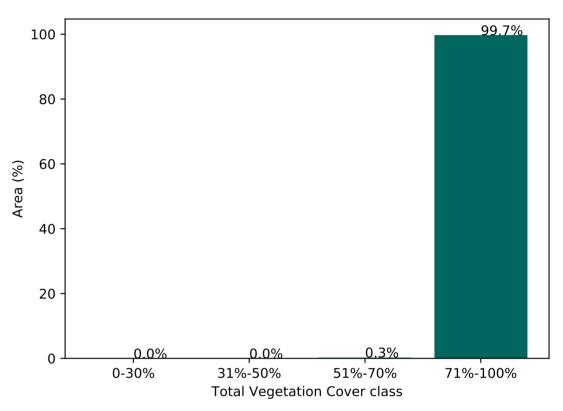


Total Vegetation Cover Anomaly [%]

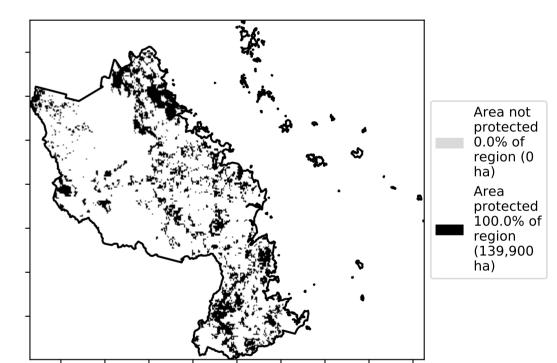


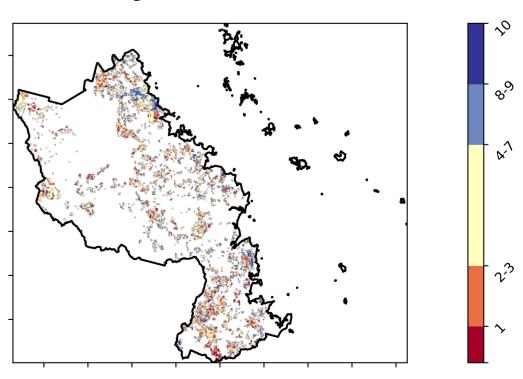
Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

Proportion of vegetation cover class in area



% Area protected from wind erosion (>50%)









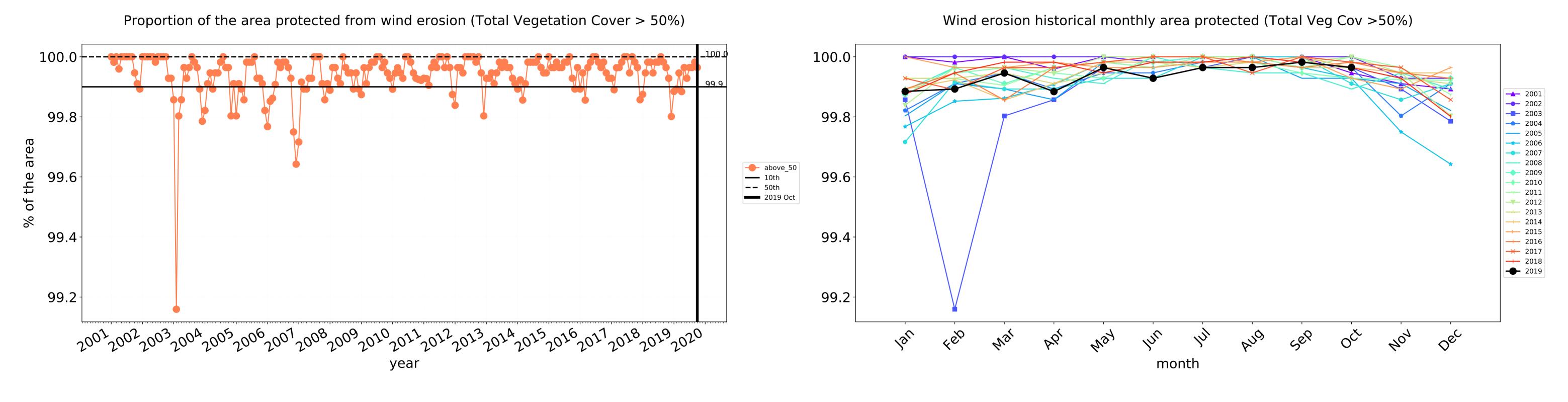


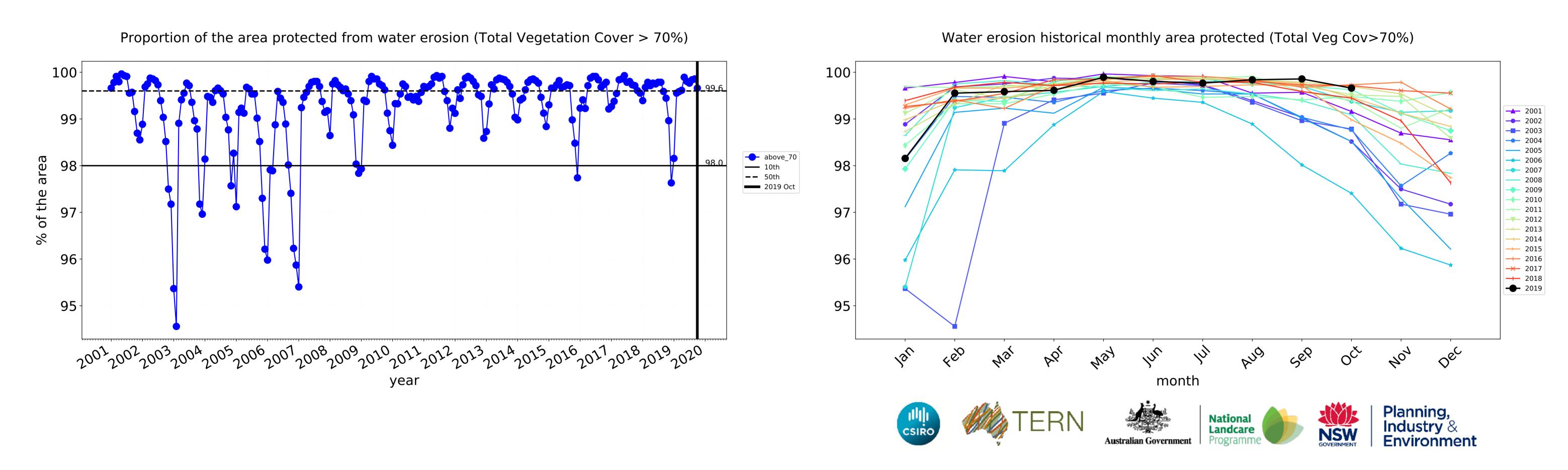


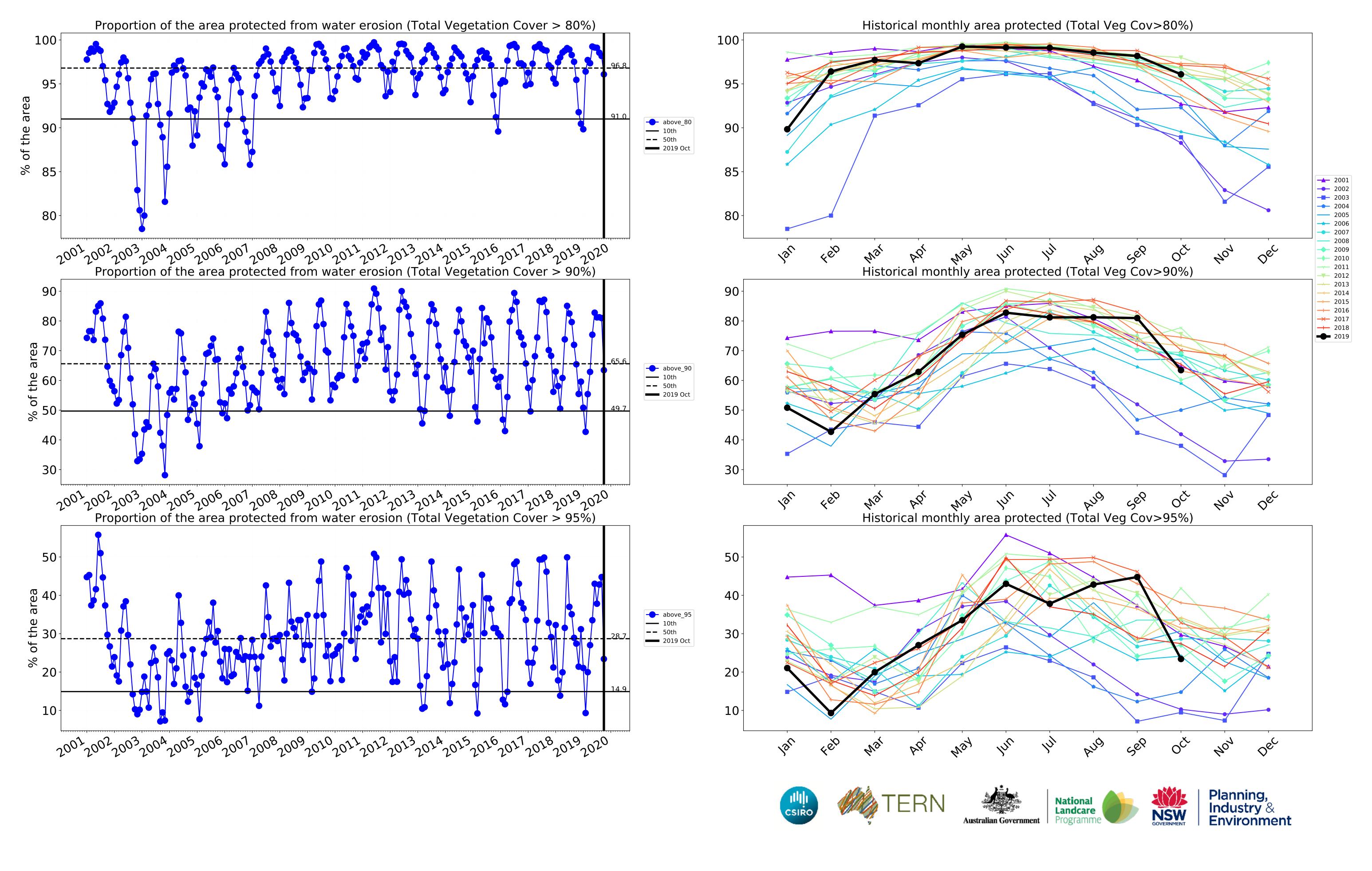




Grazing non forest timeseries







Grazing Woodland forest

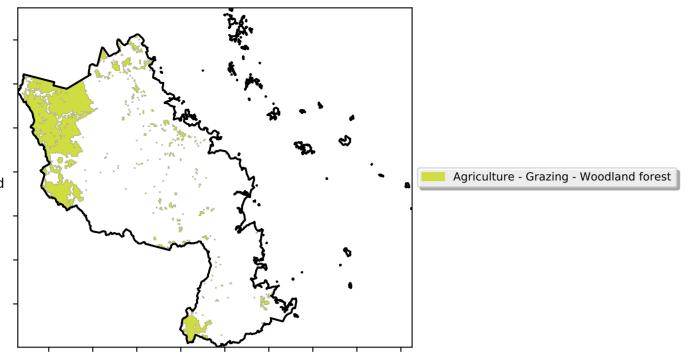
Land use and forest cover

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

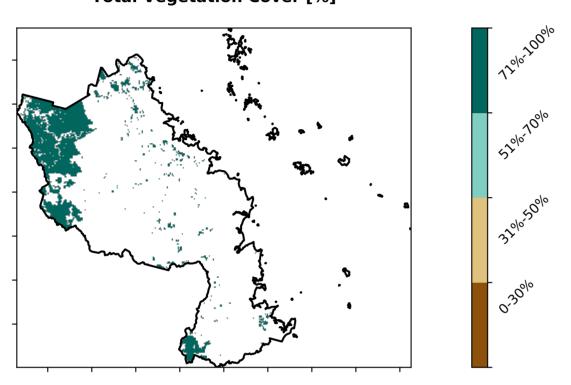
Anomaly show how many percetage points each pixel is from the mean. That

is, red pixels are about 20% lower than the mean of that pixel. The mean is only for the month of the map

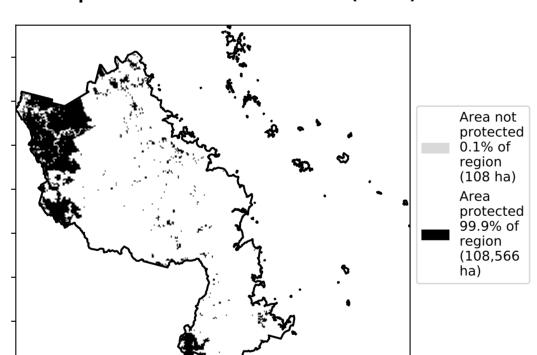
using baseline from 2001 to 2019.



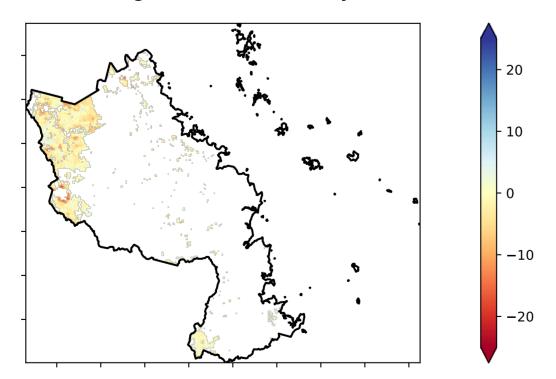
Total Vegetation Cover [%]



% Area protected from water erosion (>70%)

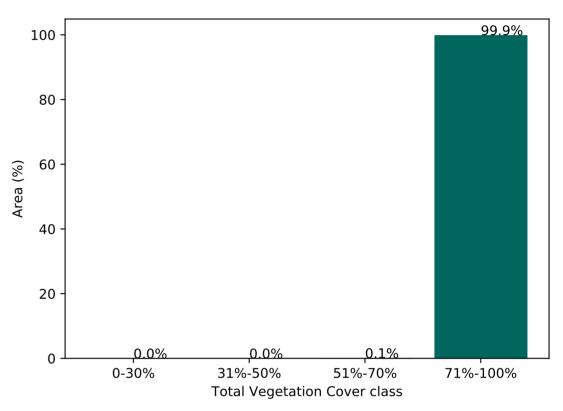


Total Vegetation Cover Anomaly [%]

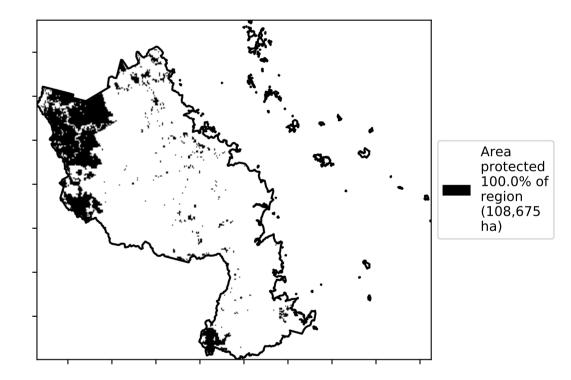


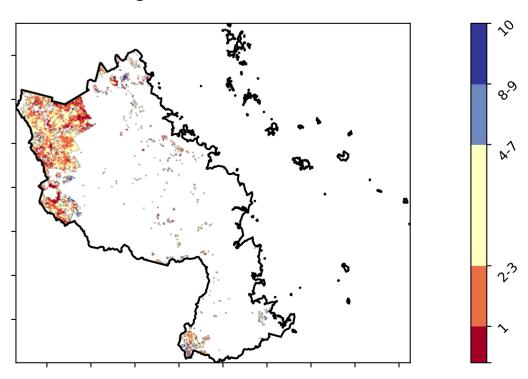
Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

Proportion of vegetation cover class in area



% Area protected from wind erosion (>50%)









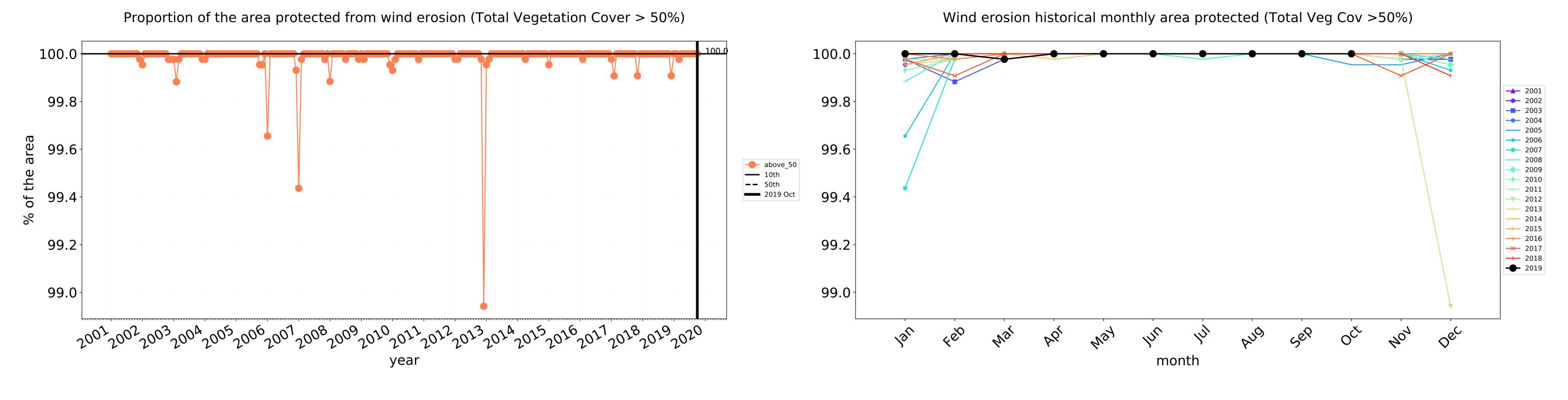


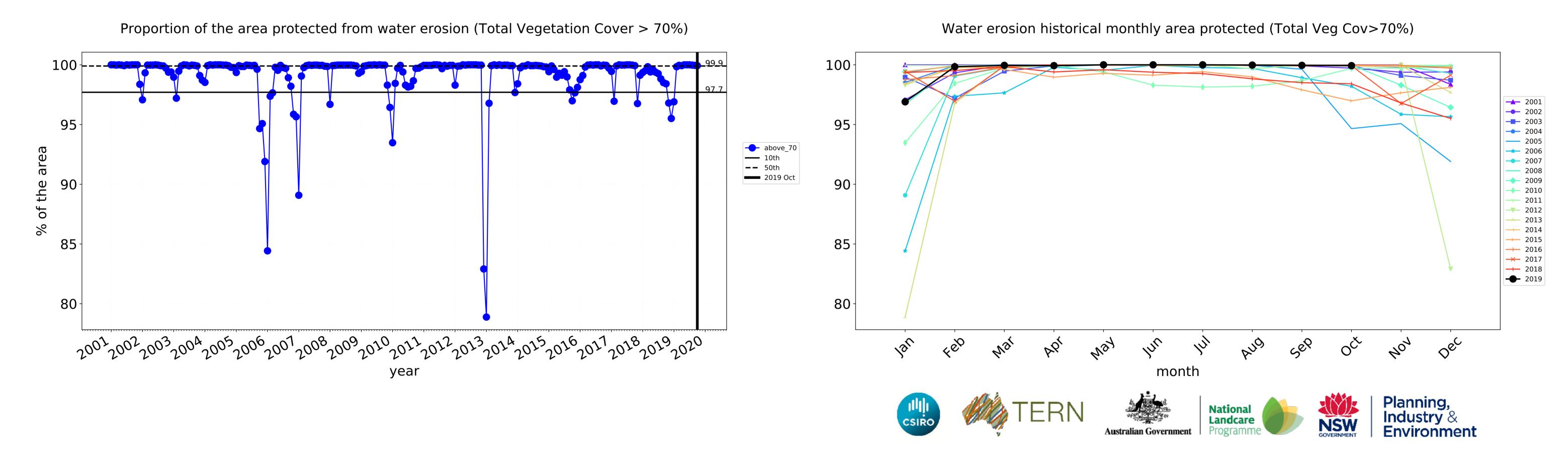


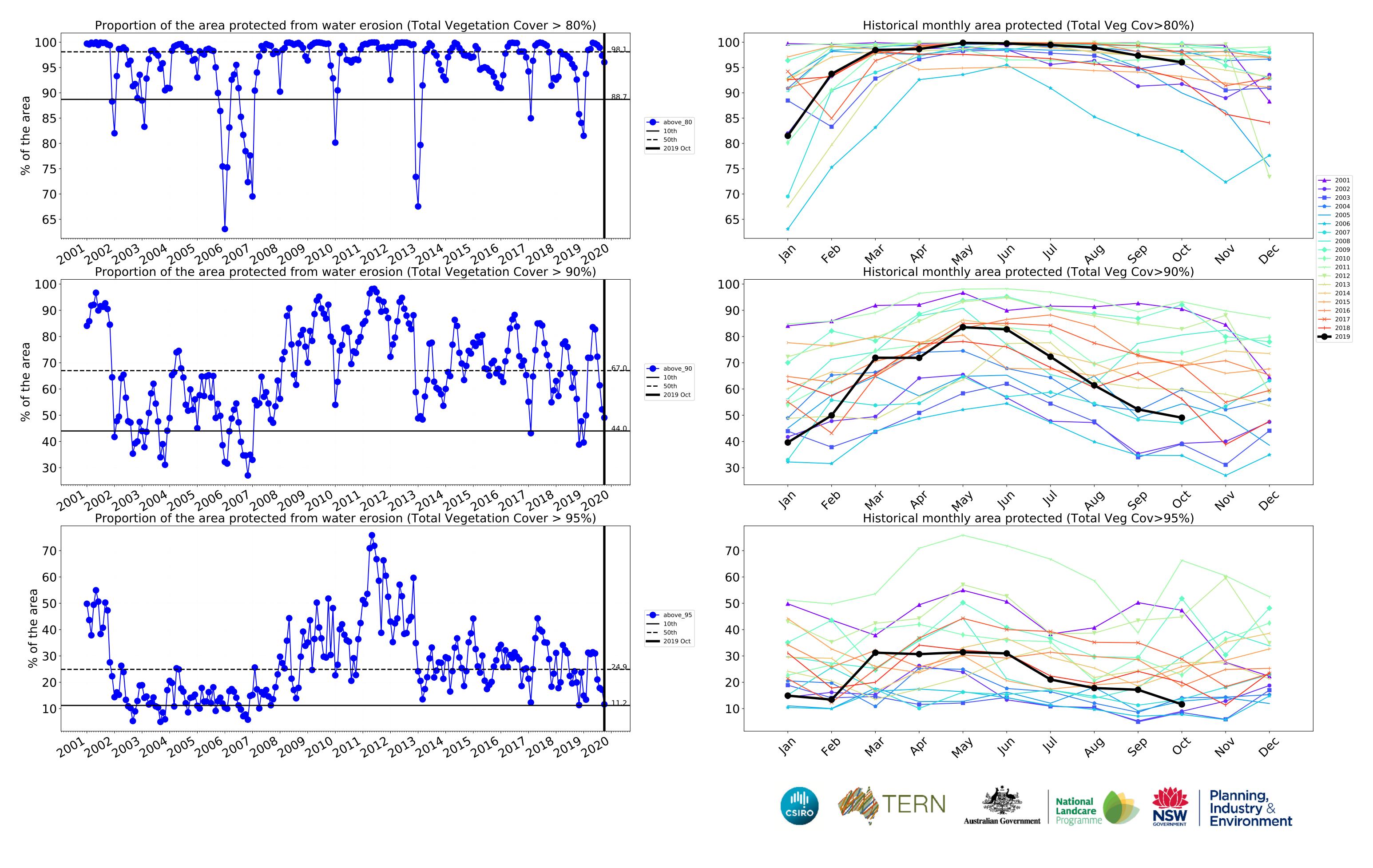




Grazing Woodland forest timeseries







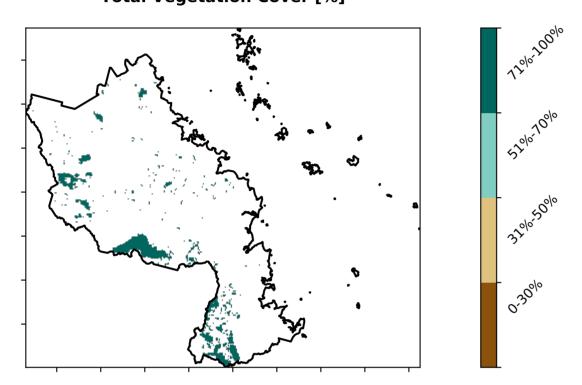
Grazing - Forest (non woodland)

Land use and forest cover

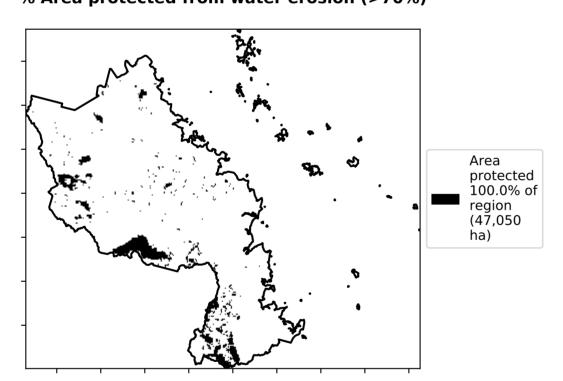
Catchment Scale
Land Use and Forests
of Australia (2018)
Derived from
Catchment Scale Land
Use of Australia
(2018) and Forests
of Australia (2018)

Agriculture - Grazing - Non-oodland forest

Total Vegetation Cover [%]



% Area protected from water erosion (>70%)

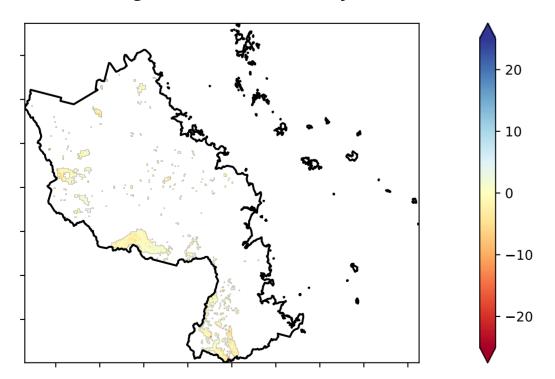


Total Vegetation Cover Anomaly [%]

Anomaly show how many percetage points each pixel is from the mean. That is, red pixels are about 20%

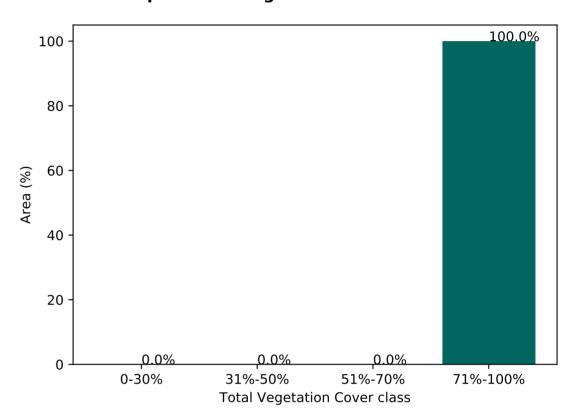
lower than the mean of that pixel. The mean is only for the month of the map

using baseline from 2001 to 2019.

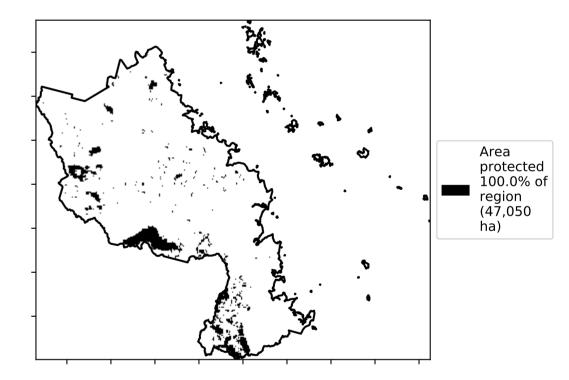


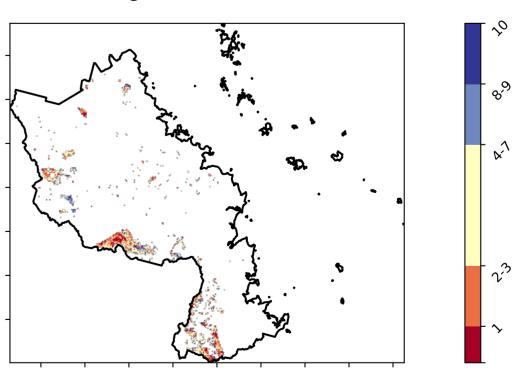
Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

Proportion of vegetation cover class in area



% Area protected from wind erosion (>50%)







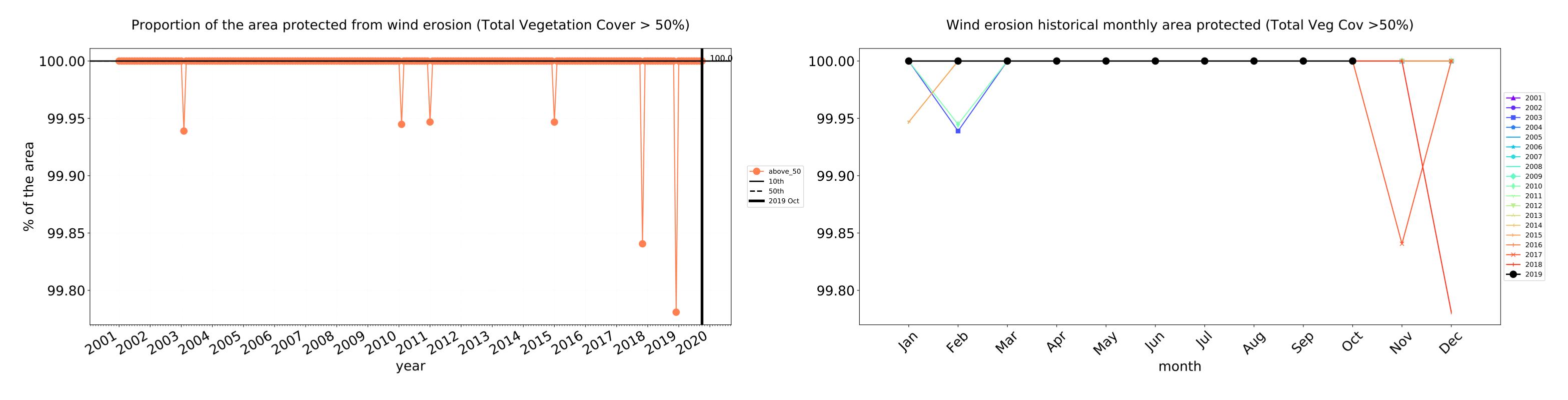


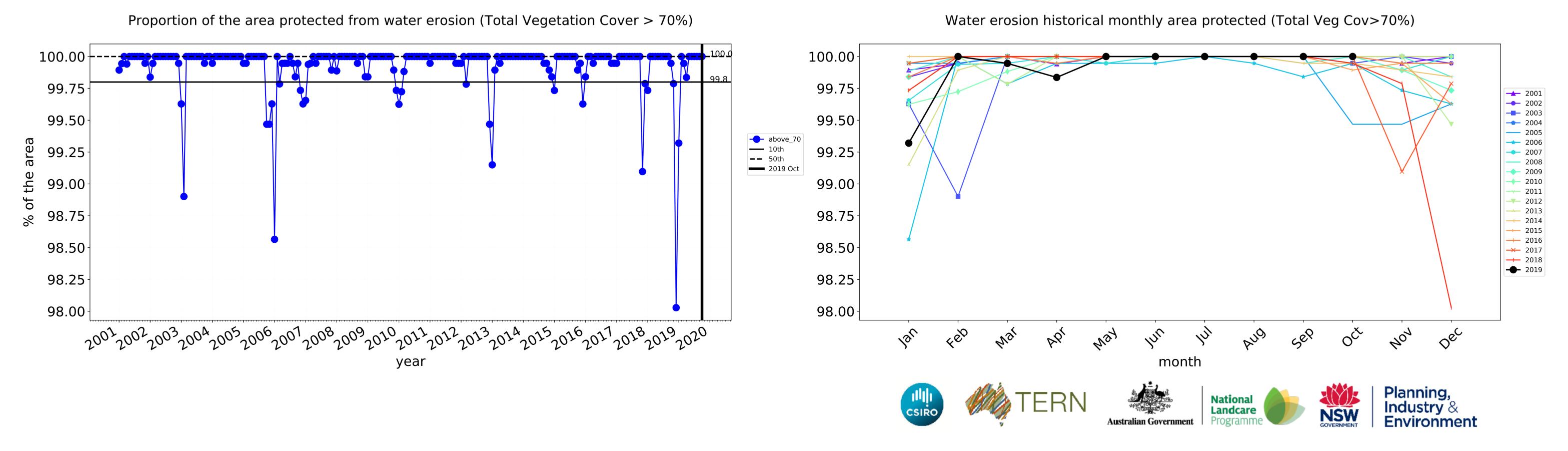


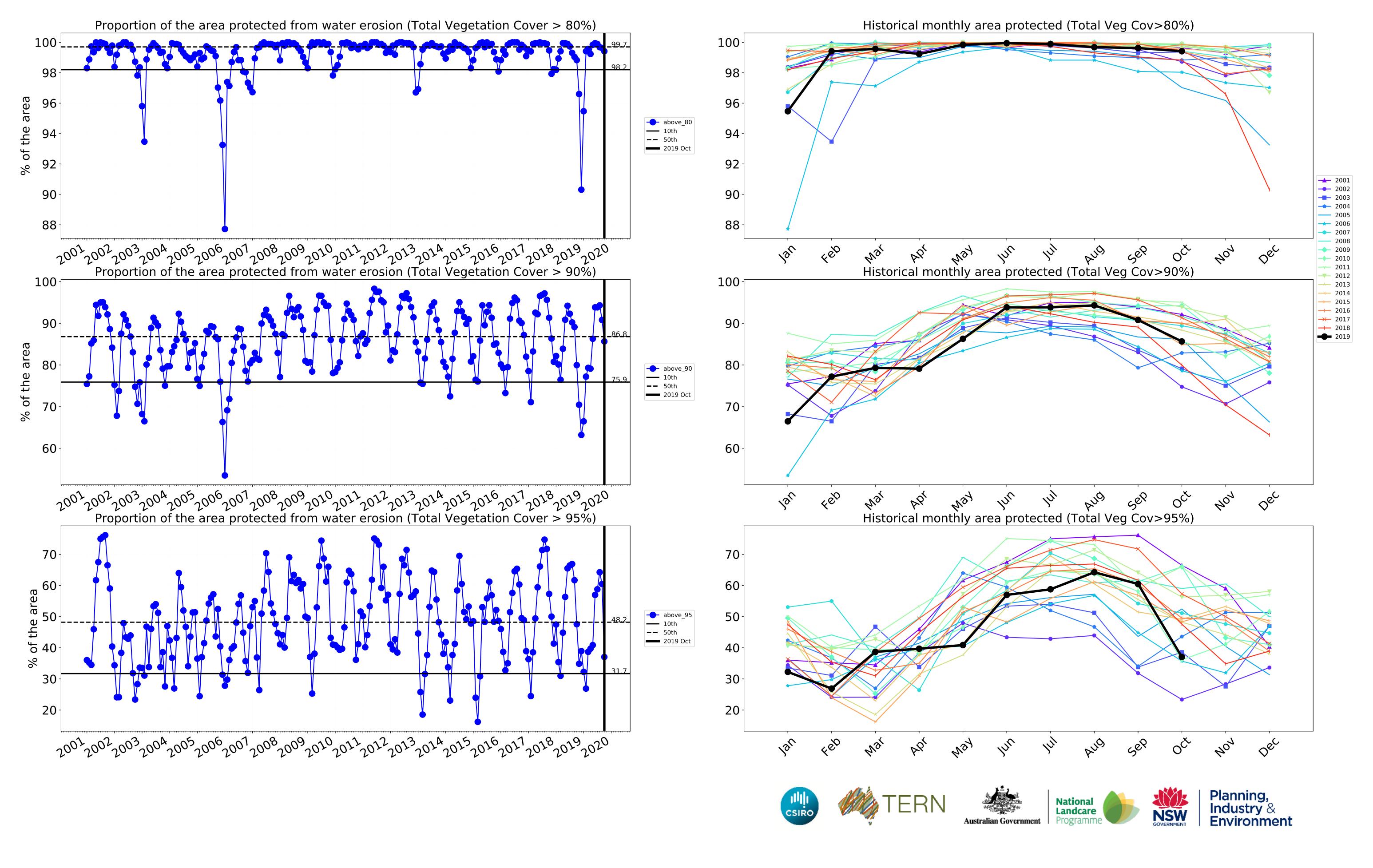












Irrigation

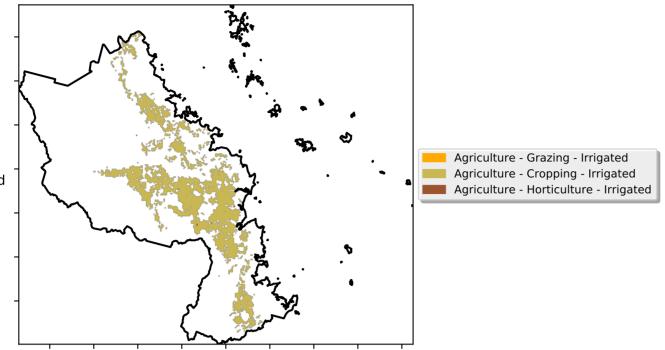
Land use and forest cover



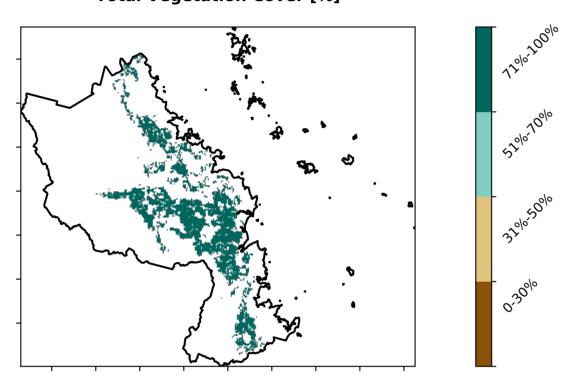
are about 20% lower than the

mean of that pixel. The mean is only for the month of the map

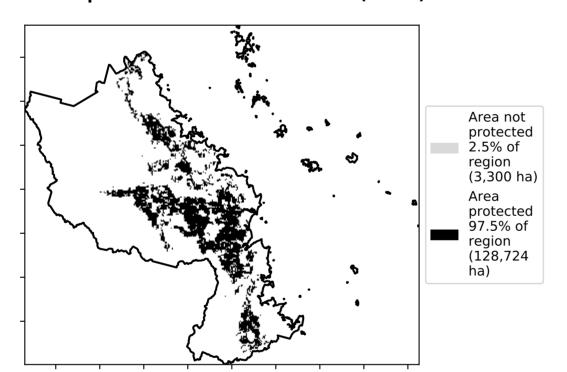
using baseline from 2001 to 2019.



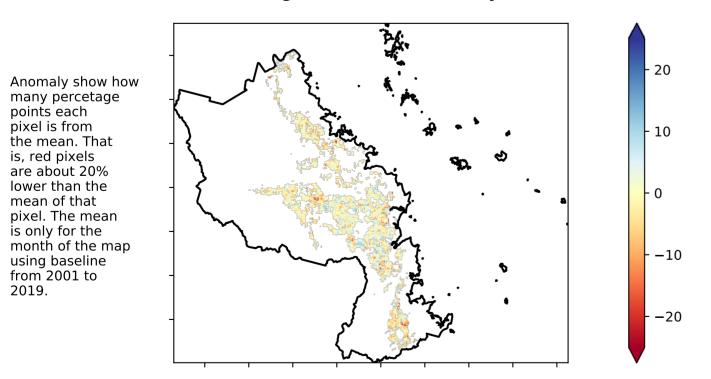
Total Vegetation Cover [%]



% Area protected from water erosion (>70%)

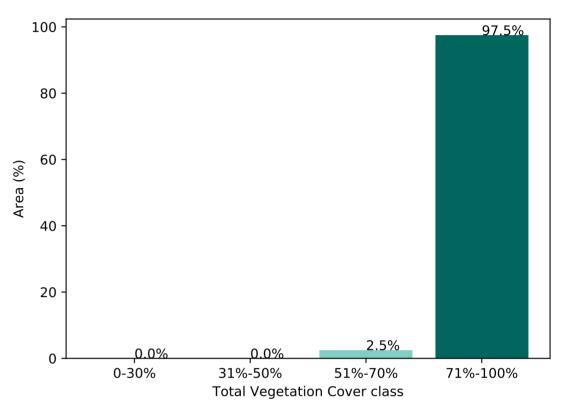


Total Vegetation Cover Anomaly [%]

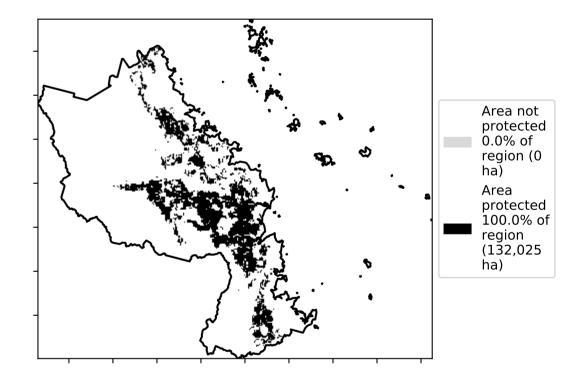


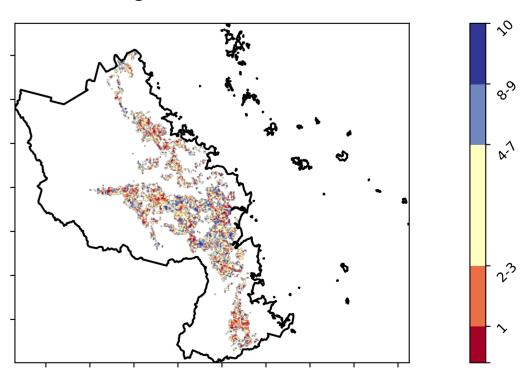
Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

Proportion of vegetation cover class in area



% Area protected from wind erosion (>50%)









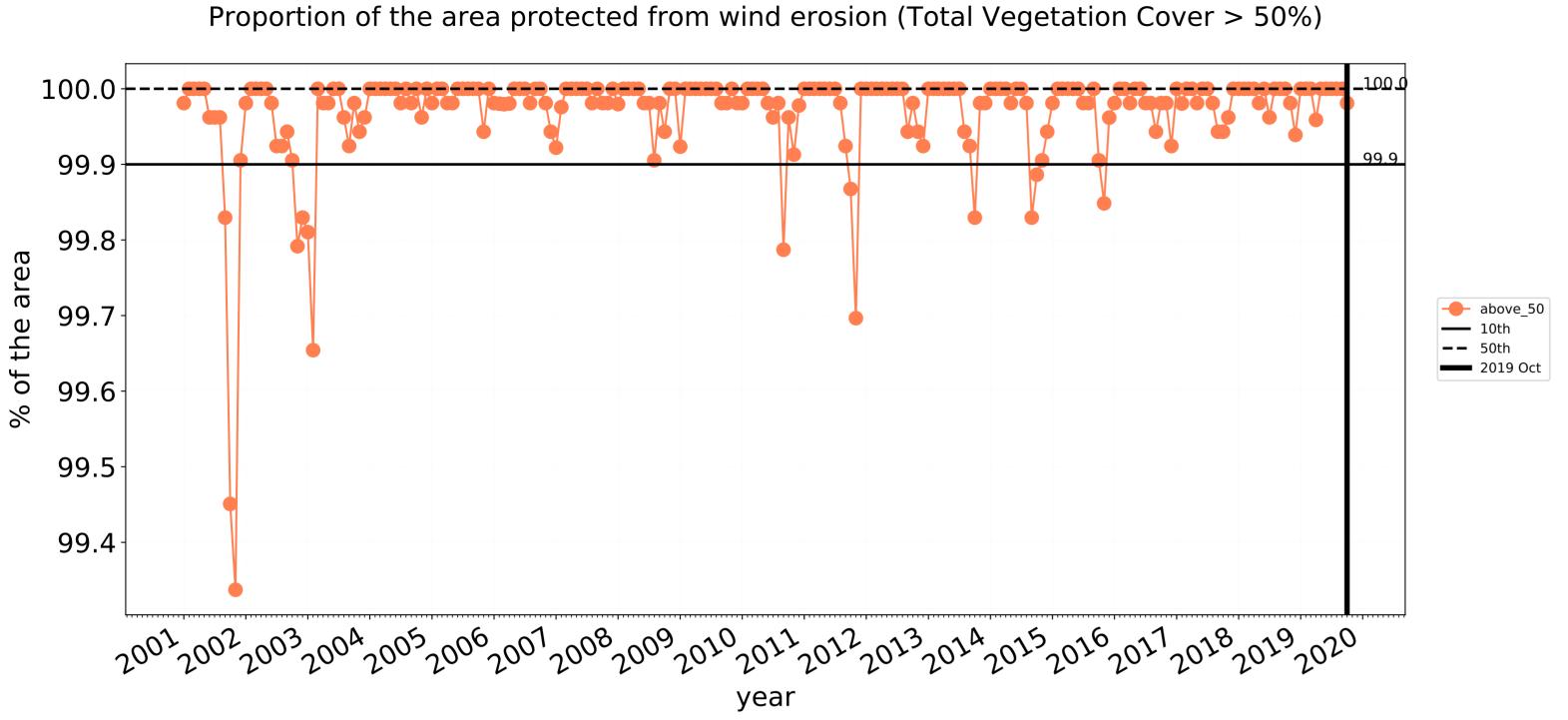


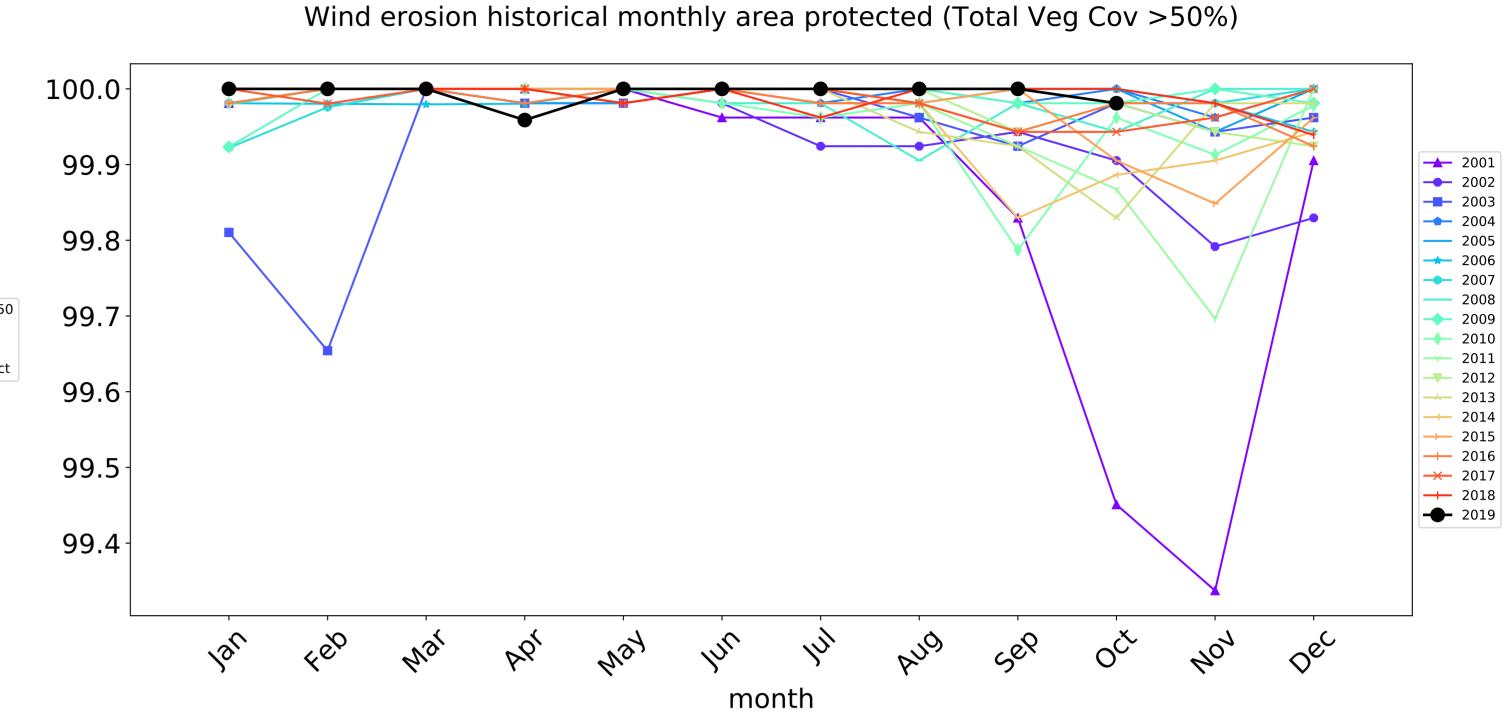


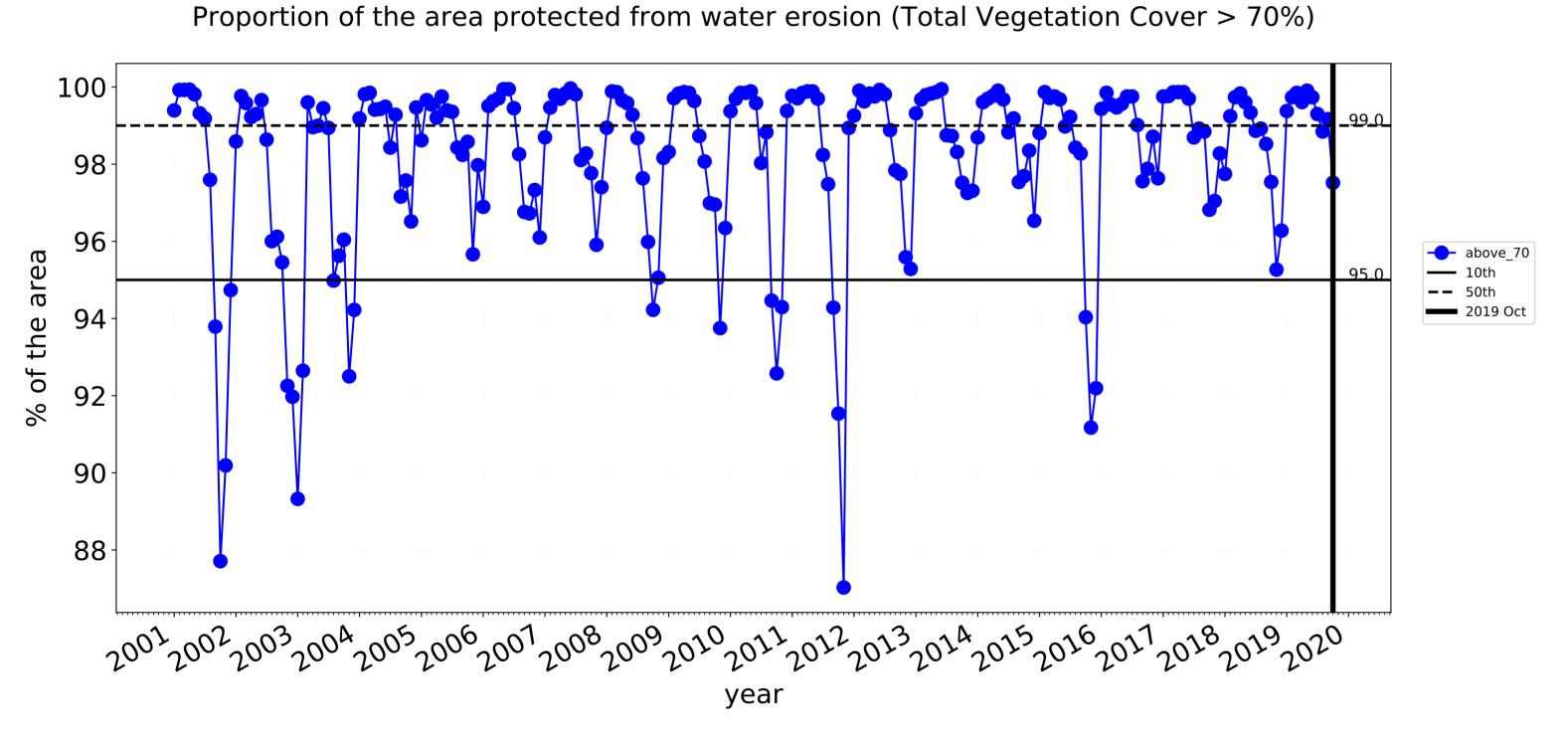


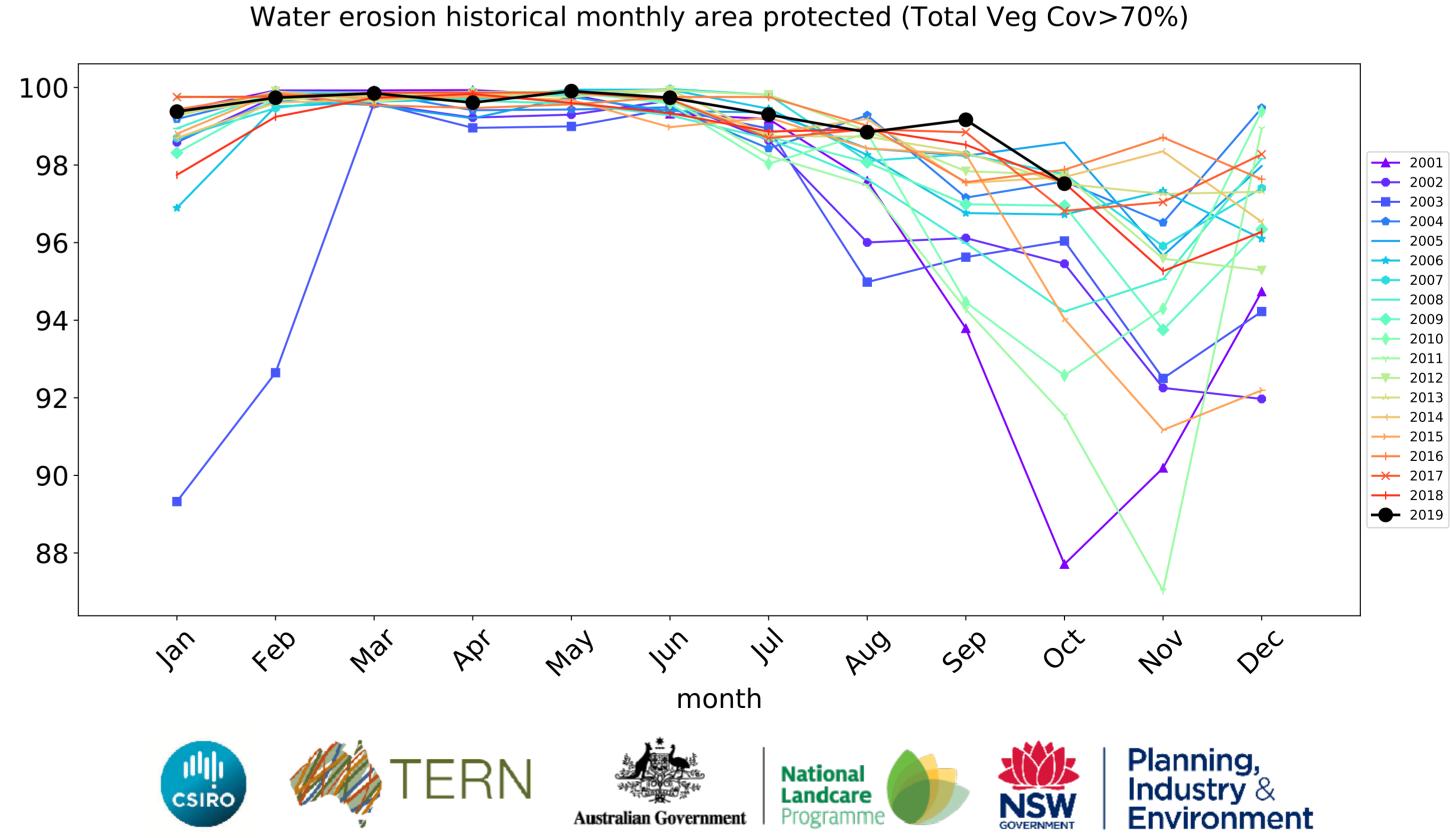


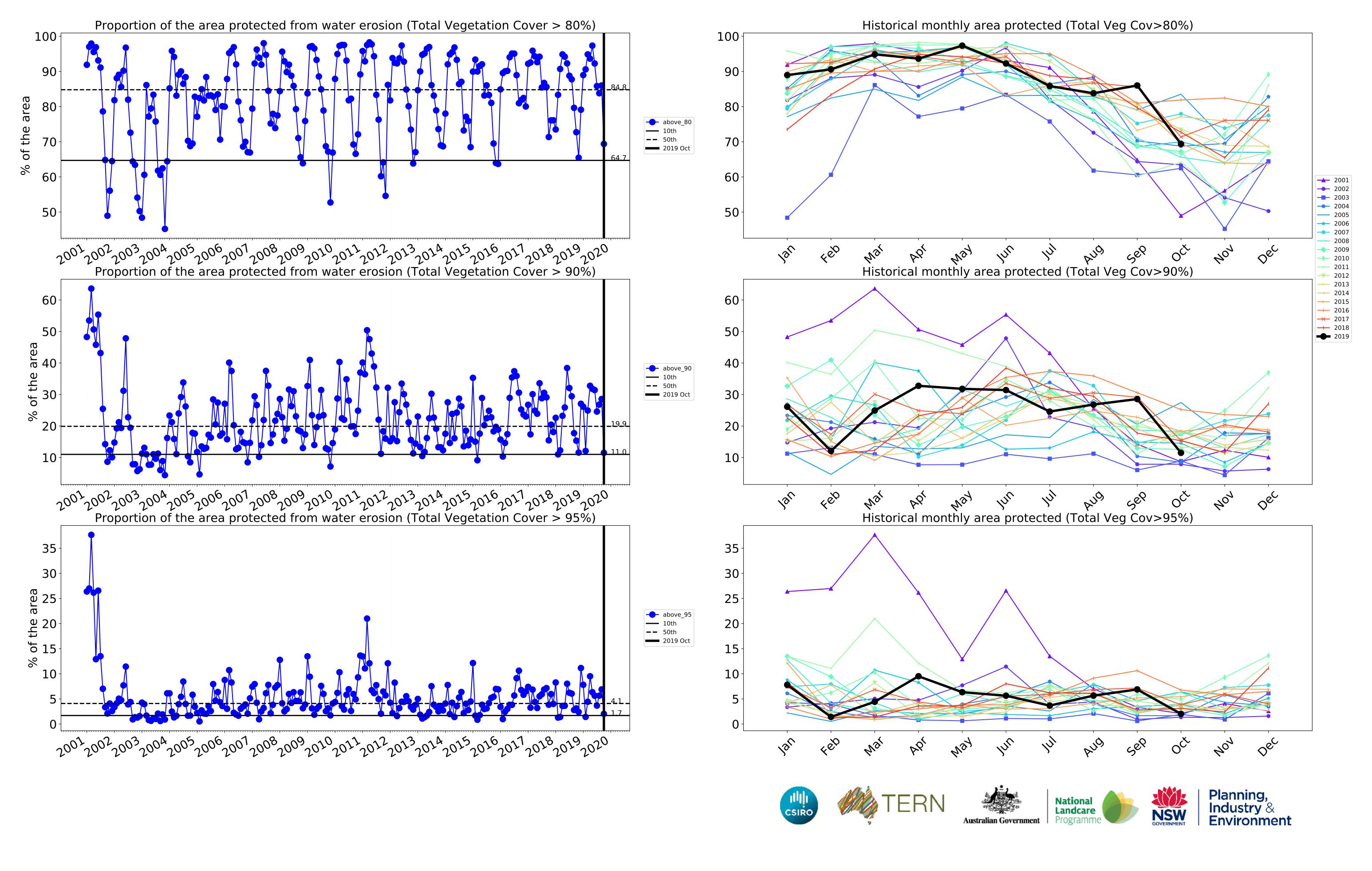
Irrigation timeseries











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)

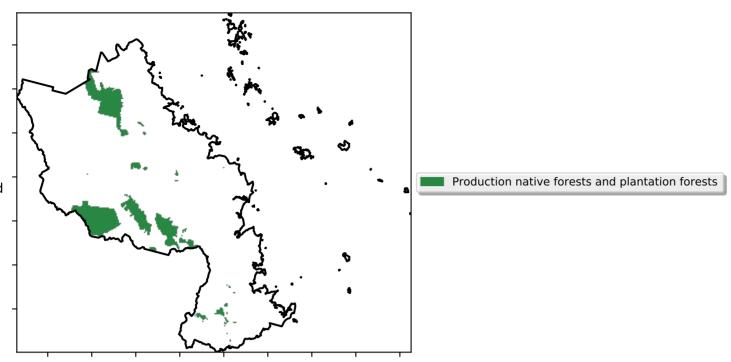
the mean. That

pixel. The mean

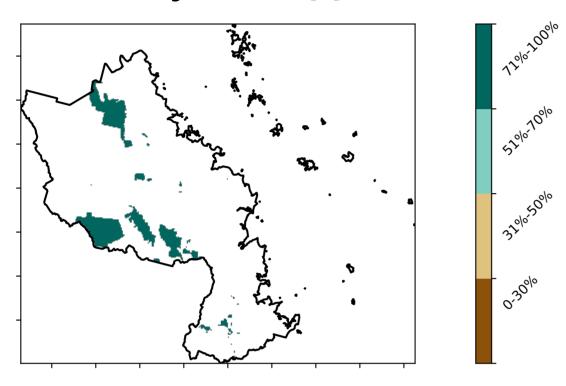
using baseline from 2001 to 2019.

is only for the month of the map

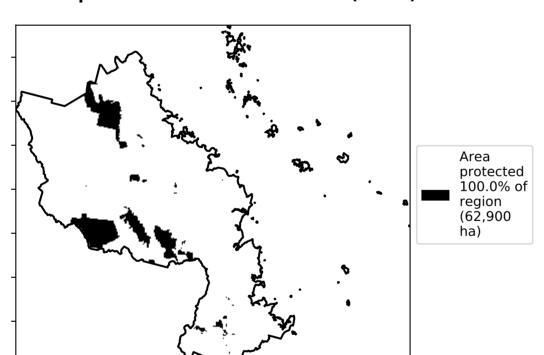
is, red pixels are about 20% lower than the mean of that



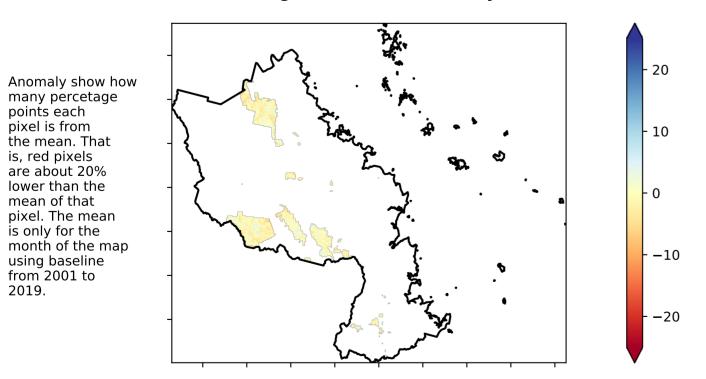
Total Vegetation Cover [%]



% Area protected from water erosion (>70%)

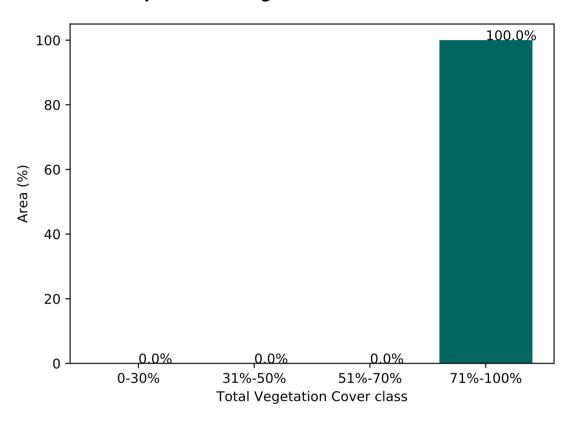


Total Vegetation Cover Anomaly [%]

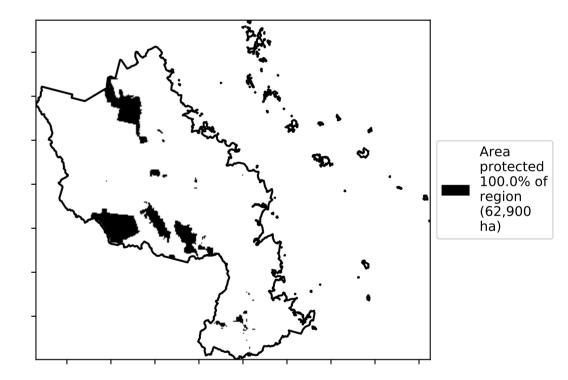


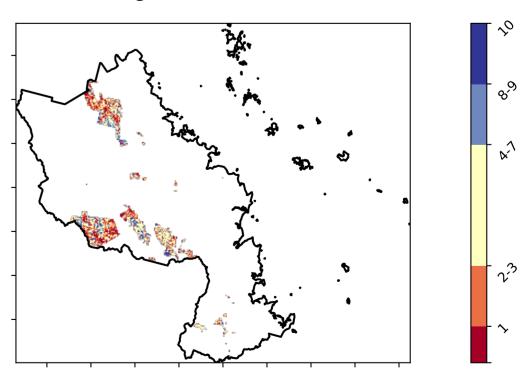
Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

Proportion of vegetation cover class in area



% Area protected from wind erosion (>50%)









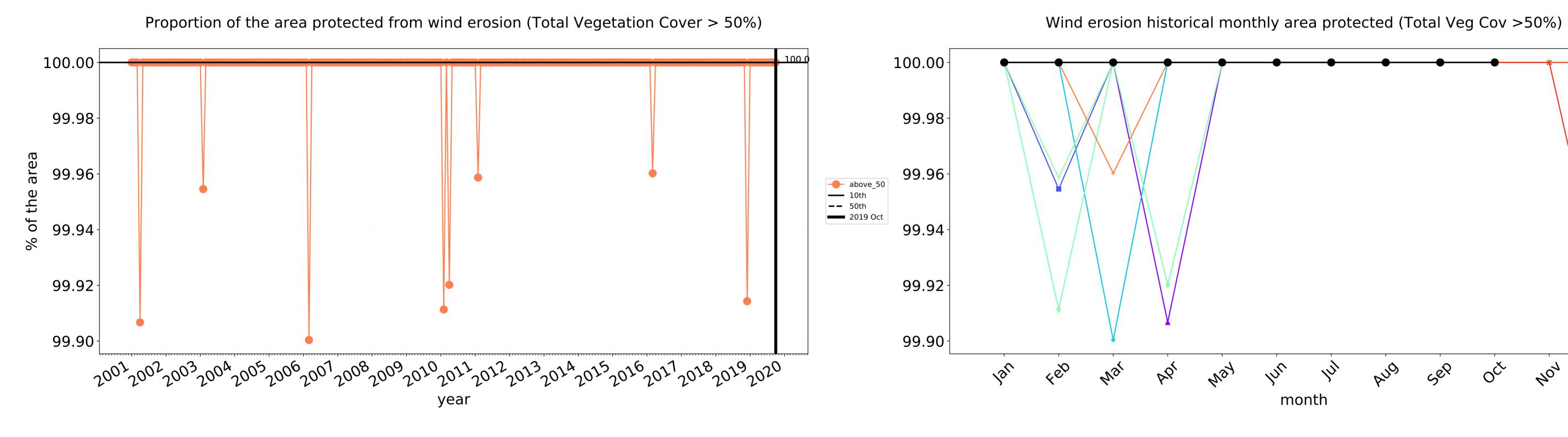


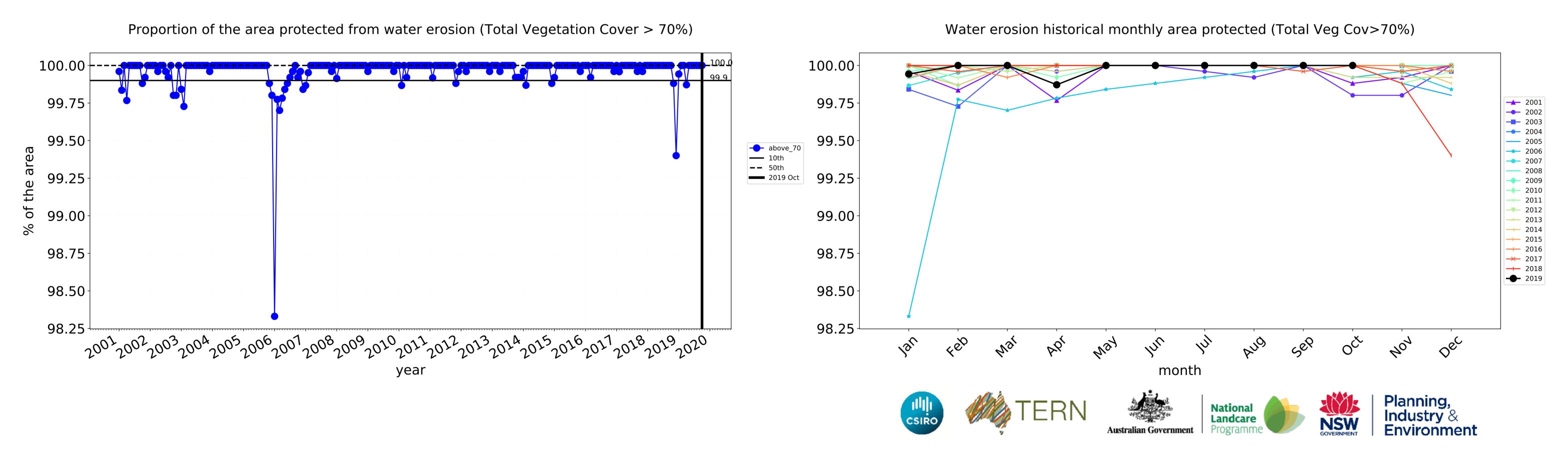






Production native forests and plantation forests timeseries





2001 2002

2003

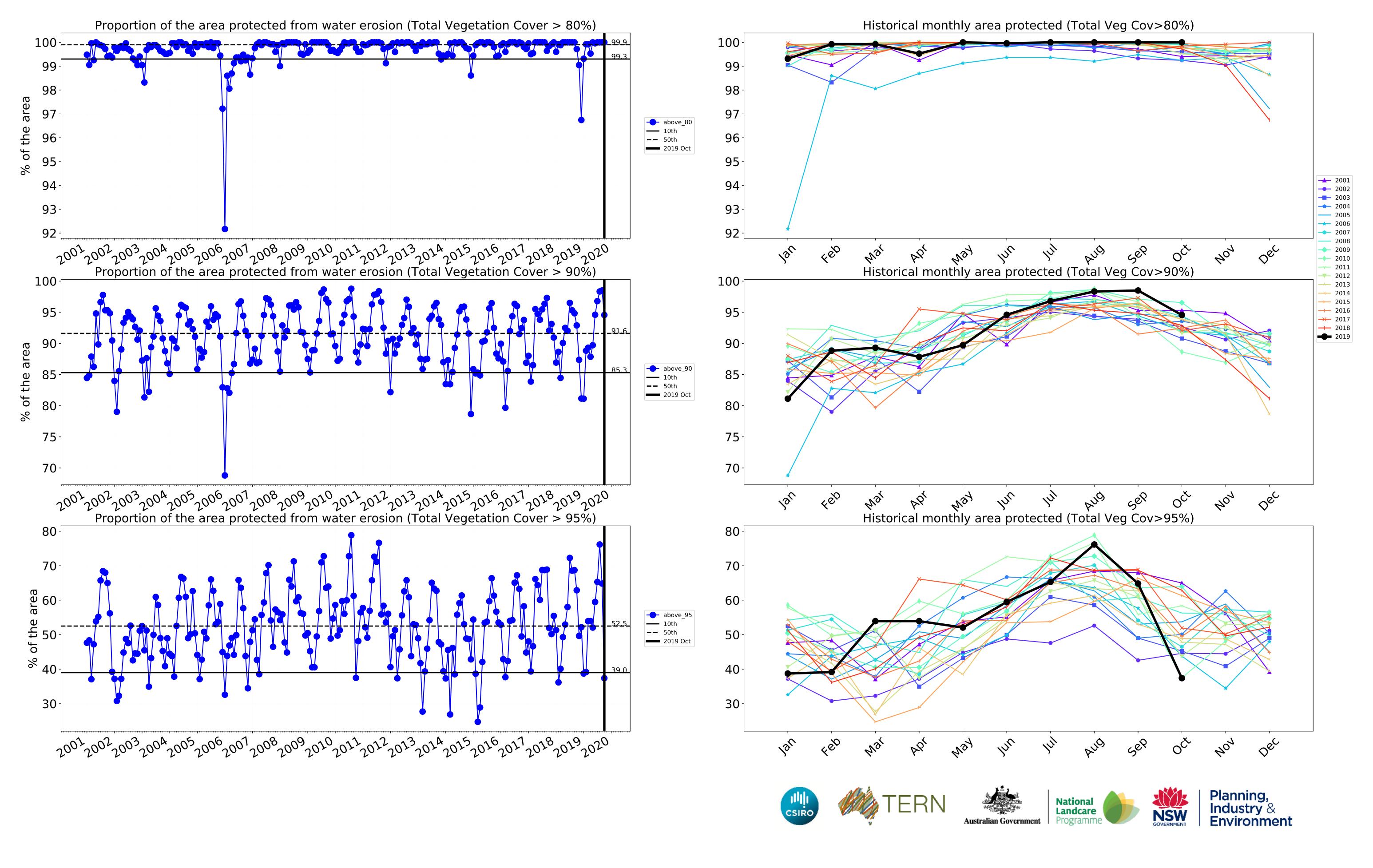
---- 2007

→ 2010

2011

→ 2013 → 2014 → 2015 → 2016 → 2017

2018 2019



Mackay_(R) (747,825 ha and no data 13,486 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	747,825	100.0% 747,550	99.8% 746,325	98.2% 734,500	89.5% 669,625	56.8% 424,700	19.3% 144,300
Conservation and natural environments	191,925	100.0% 191,850	99.8% 191,500	99.0% 189,950	97.4% 187,025	79.8% 153,225	26.4% 50,675
Conservation and natural environments non forest	4,750	98.9% 4,700	96.3% 4,575	88.4% 4,200	72.1% 3,425	31.1% 1,475	11.6% 550
Conservation and natural environments Woodland forest	37,050	99.9% 37,025	99.8% 36,975	99.2% 36,750	96.6% 35,800	68.2% 25,250	30.8% 11,425
natural environments Forest (non woodland)	150,125	100.0% 150,125	99.9% 149,950	99.3% 149,000	98.5% 147,800	84.3% 126,500	25.8% 38,700
Agriculture	428,250	100.0% 428,250	100.0% 428,175	99.1% 424,425	88.2% 377,775	46.2% 198,000	15.3% 65,525
Grazing	295,625	100.0% 295,625	100.0% 295,575	99.8% 295,075	96.6% 285,575	61.7% 182,400	21.2% 62,800
Grazing non forest	139,900	100.0% 139,900	100.0% 139,850	99.7% 139,425	96.1% 134,425	63.5% 88,775	23.4% 32,750
Grazing Woodland forest	108,675	100.0% 108,675	100.0% 108,675	99.9% 108,600	96.0% 104,375	49.1% 53,325	11.6% 12,625
Grazing - Forest (non woodland)	47,050	100.0% 47,050	100.0% 47,050	100.0% 47,050	99.4% 46,775	85.7% 40,300	37.0% 17,425
Irrigation	132,025	100.0% 132,025	100.0% 132,000	97.5% 128,750	69.4% 91,600	11.5% 15,175	2.0% 2,675
Production native forests and plantation forests	62,900	100.0% 62,900	100.0% 62,900	100.0% 62,900	100.0% 62,900	94.6% 59,475	37.4% 23,525











