Total vegetation cover soil protection Region:NRM Swan Region WA

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: March 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 Mar 2019

Land use and forest cover

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 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

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

using baseline from 2001 to

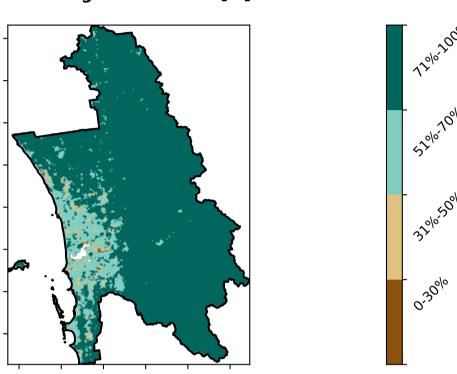
2019.

month of the map

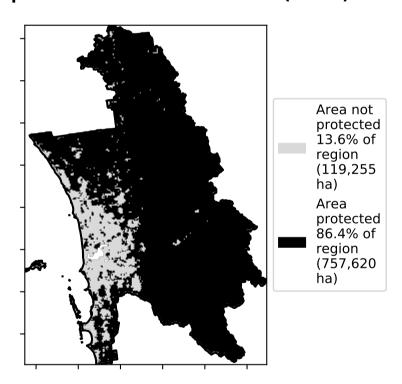
mean of that pixel. The mean is only for the

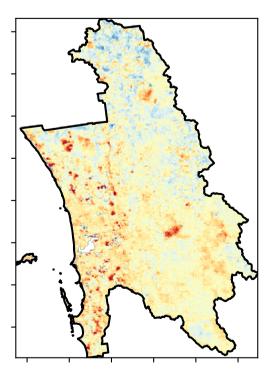
Catchment Scale

Total Vegetation Cover [%]

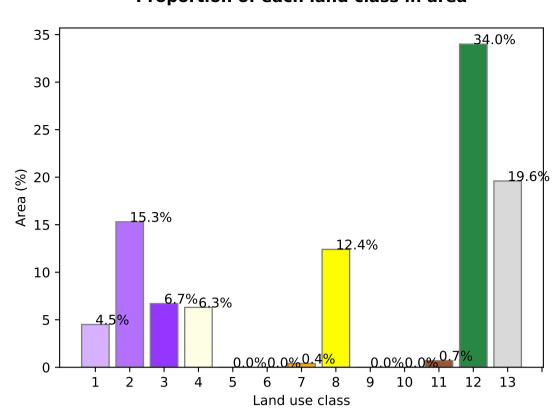


% Area protected from water erosion (>70%)

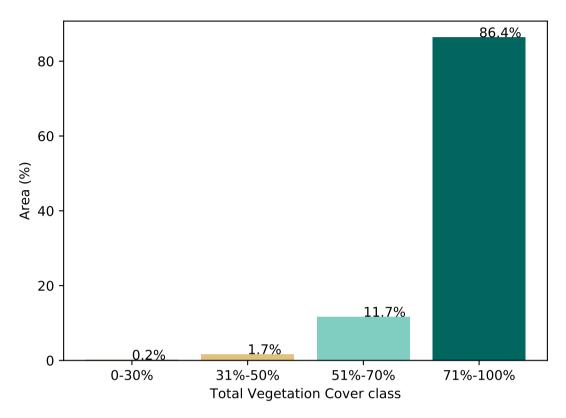




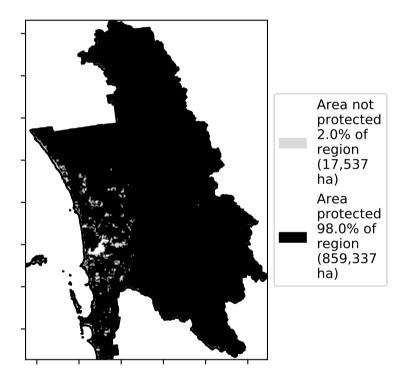
Proportion of each land class in area



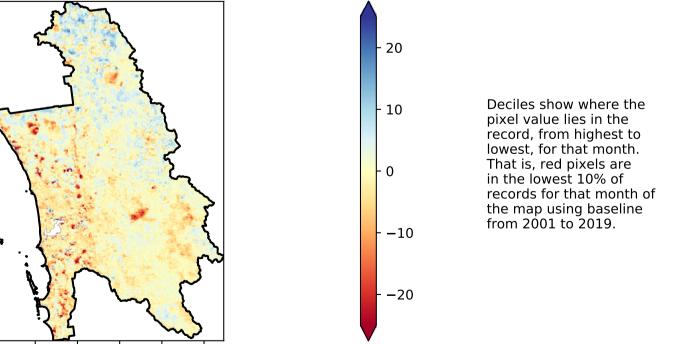
Proportion of vegetation cover class in area



% Area protected from wind erosion (>50%)



Total Vegetation Cover Anomaly [%] Total Vegetation Cover Decile [%]





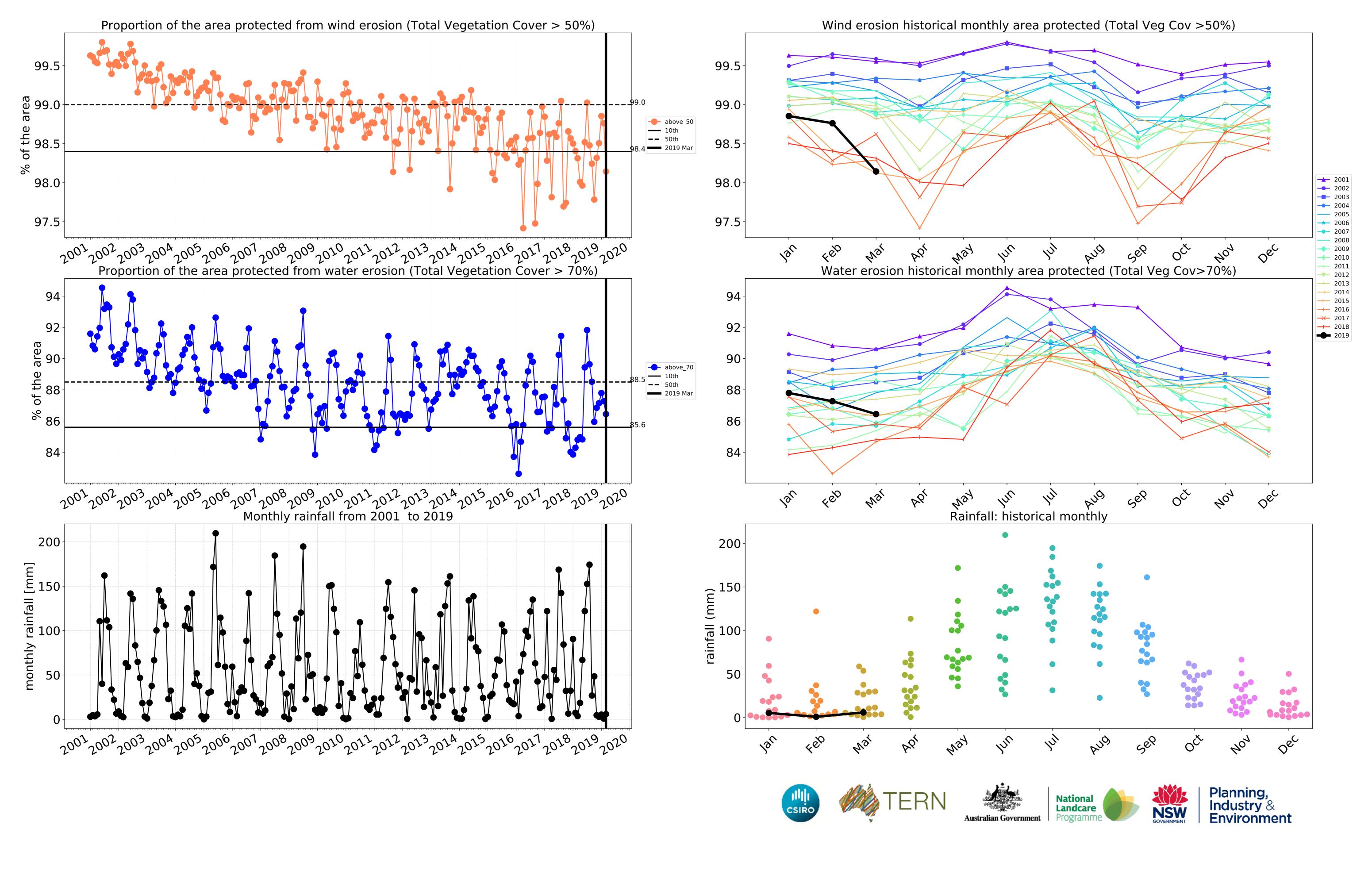




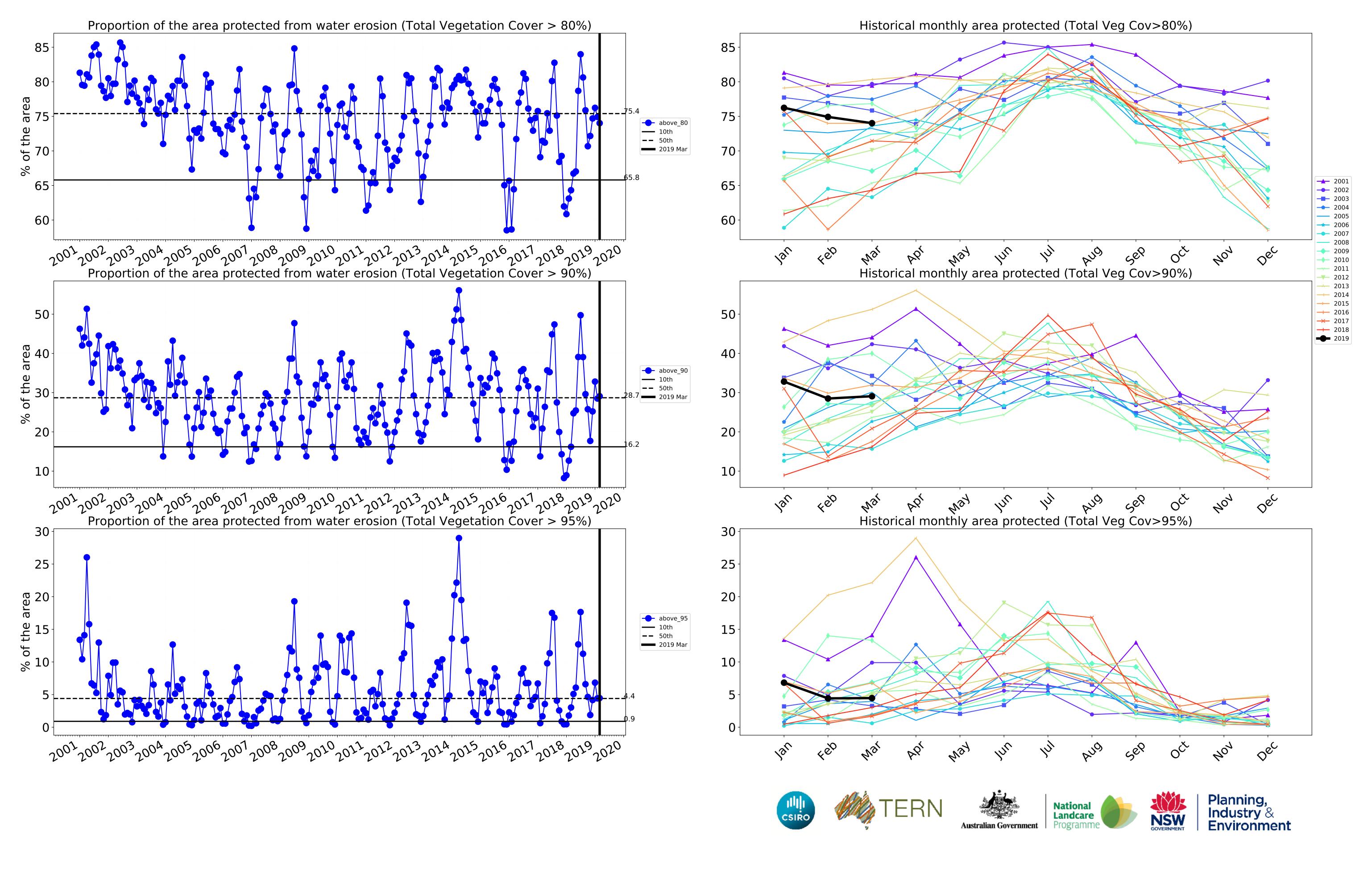








.



Conservation and natural environments

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

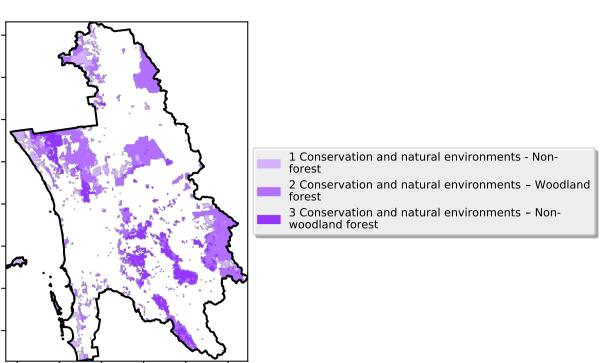
is, red pixels are about 20% lower than the mean of that

the mean. That

pixel. The mean

using baseline from 2001 to 2019.

is only for the month of the map

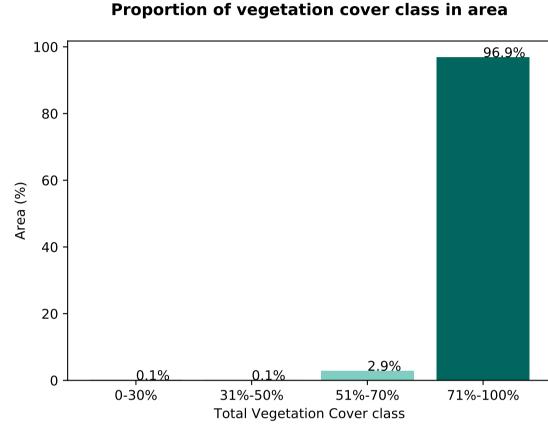


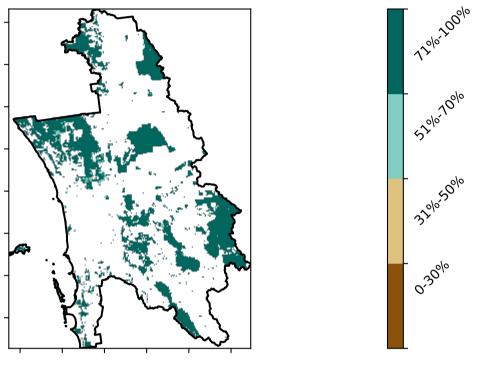
Land use and forest cover

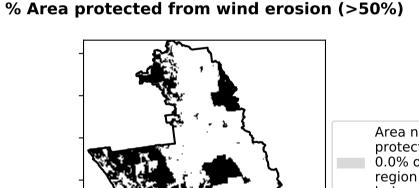
60 57.7% 50 40 Area (%) 25.2% 20 17.1% 10 2 3 Land use class

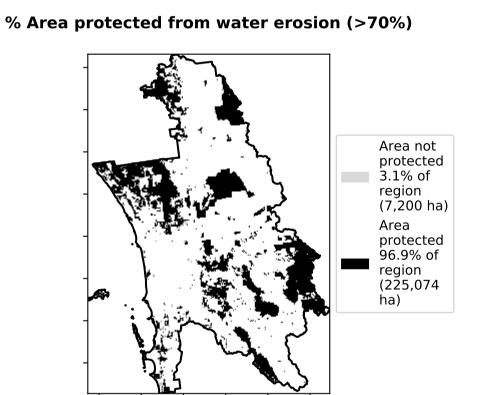
Proportion of each land class in area

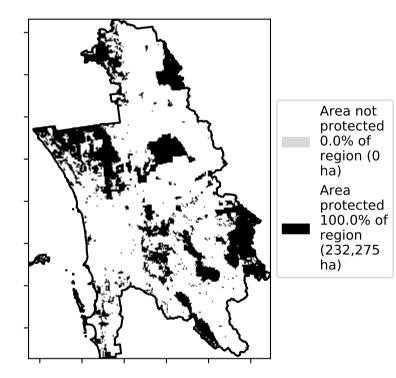
Total Vegetation Cover [%]



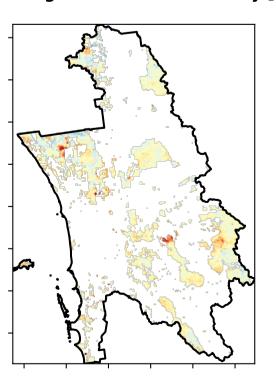


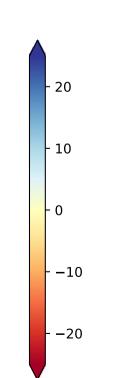




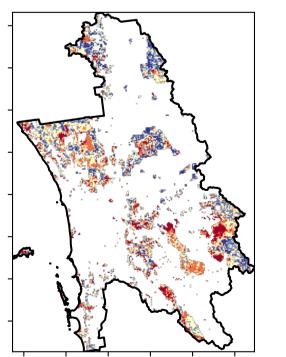


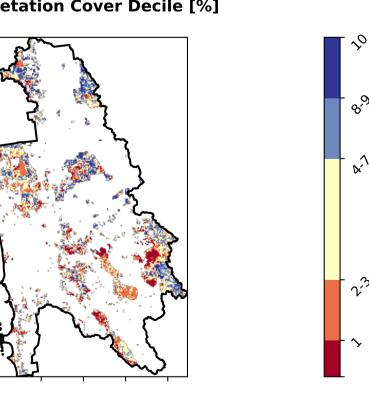
Total Vegetation Cover Anomaly [%]





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.









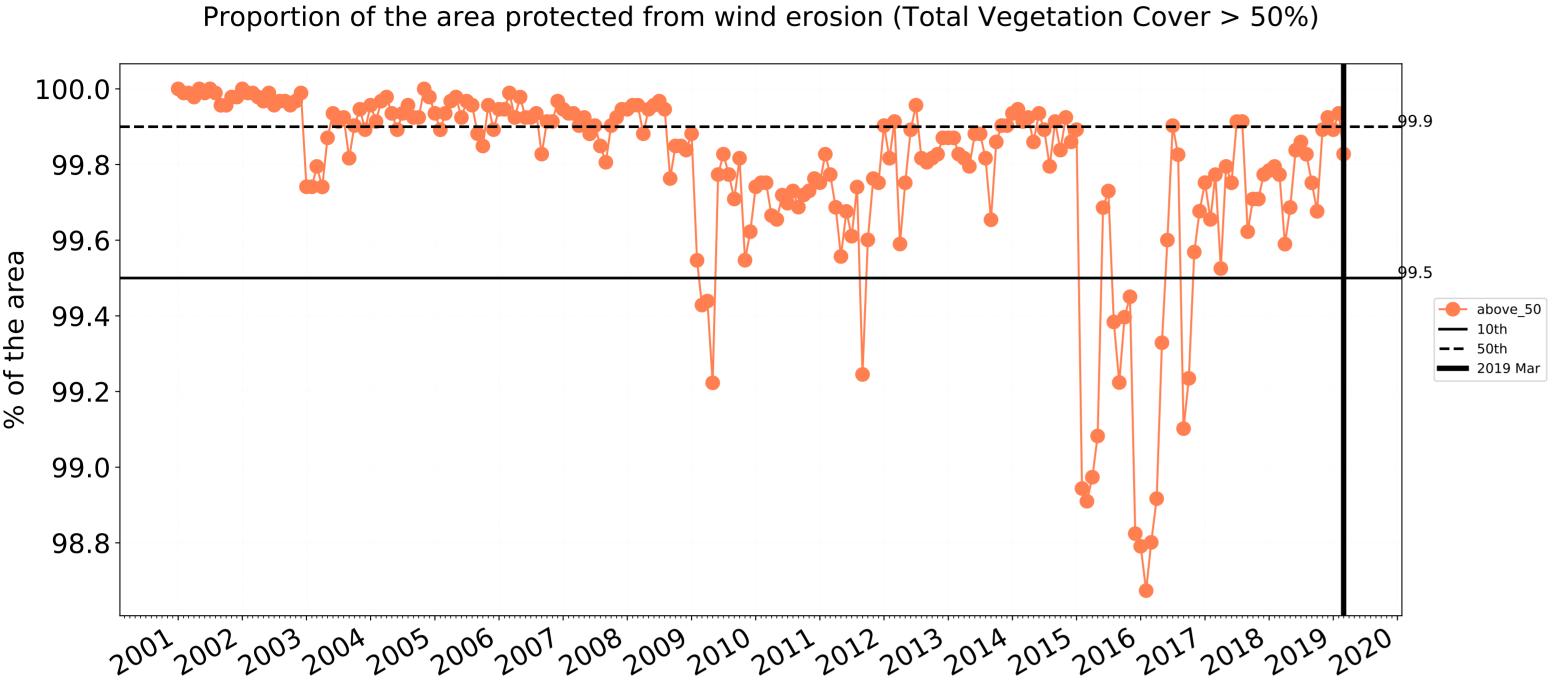


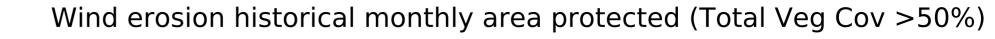


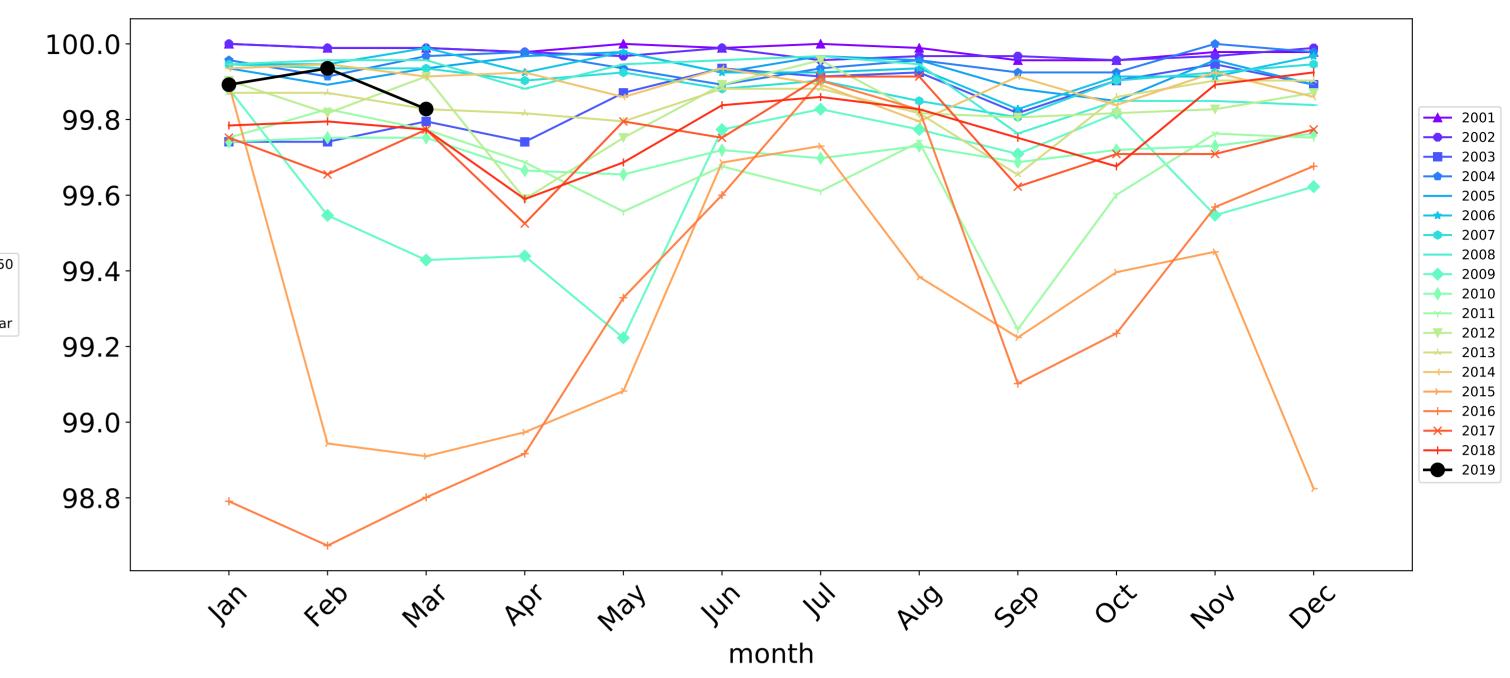


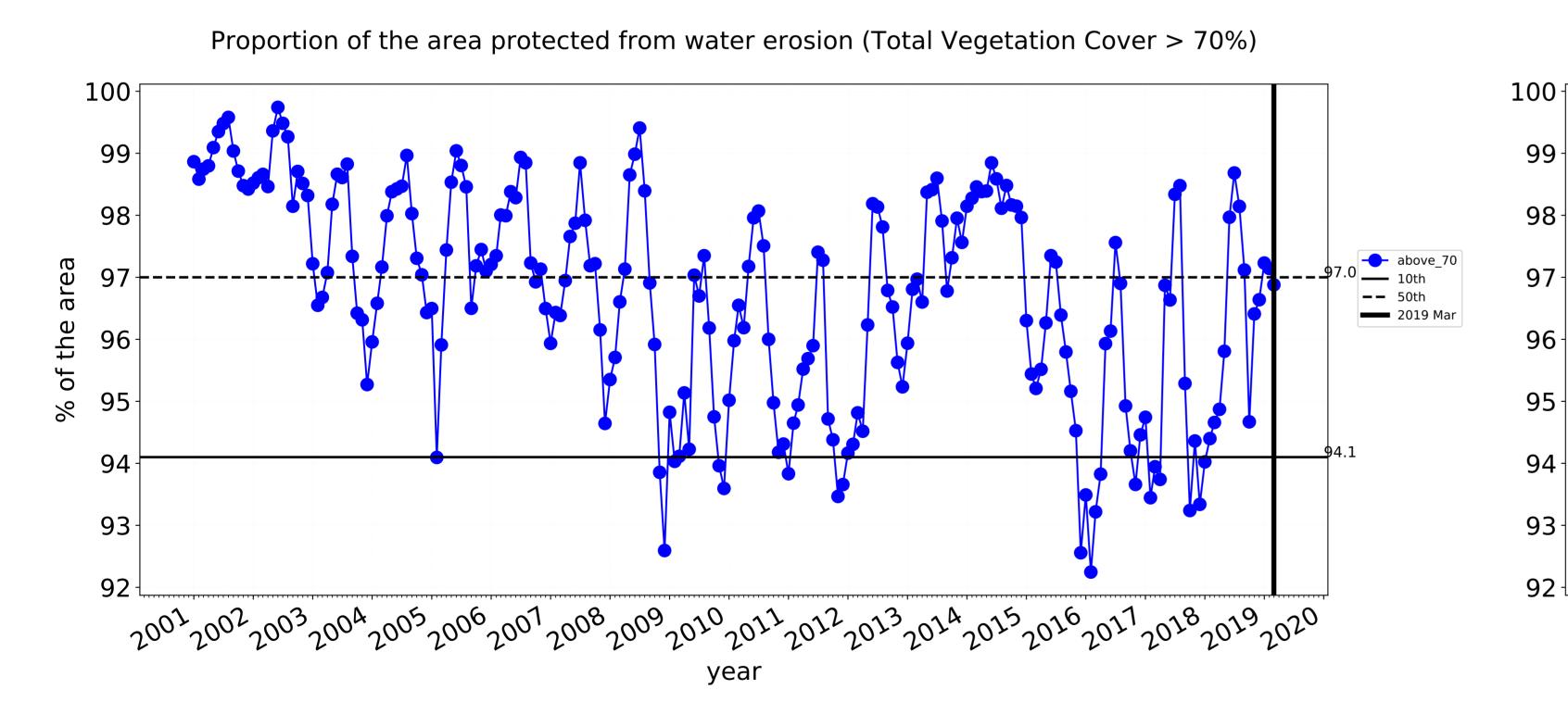


Conservation and natural environments timeseries







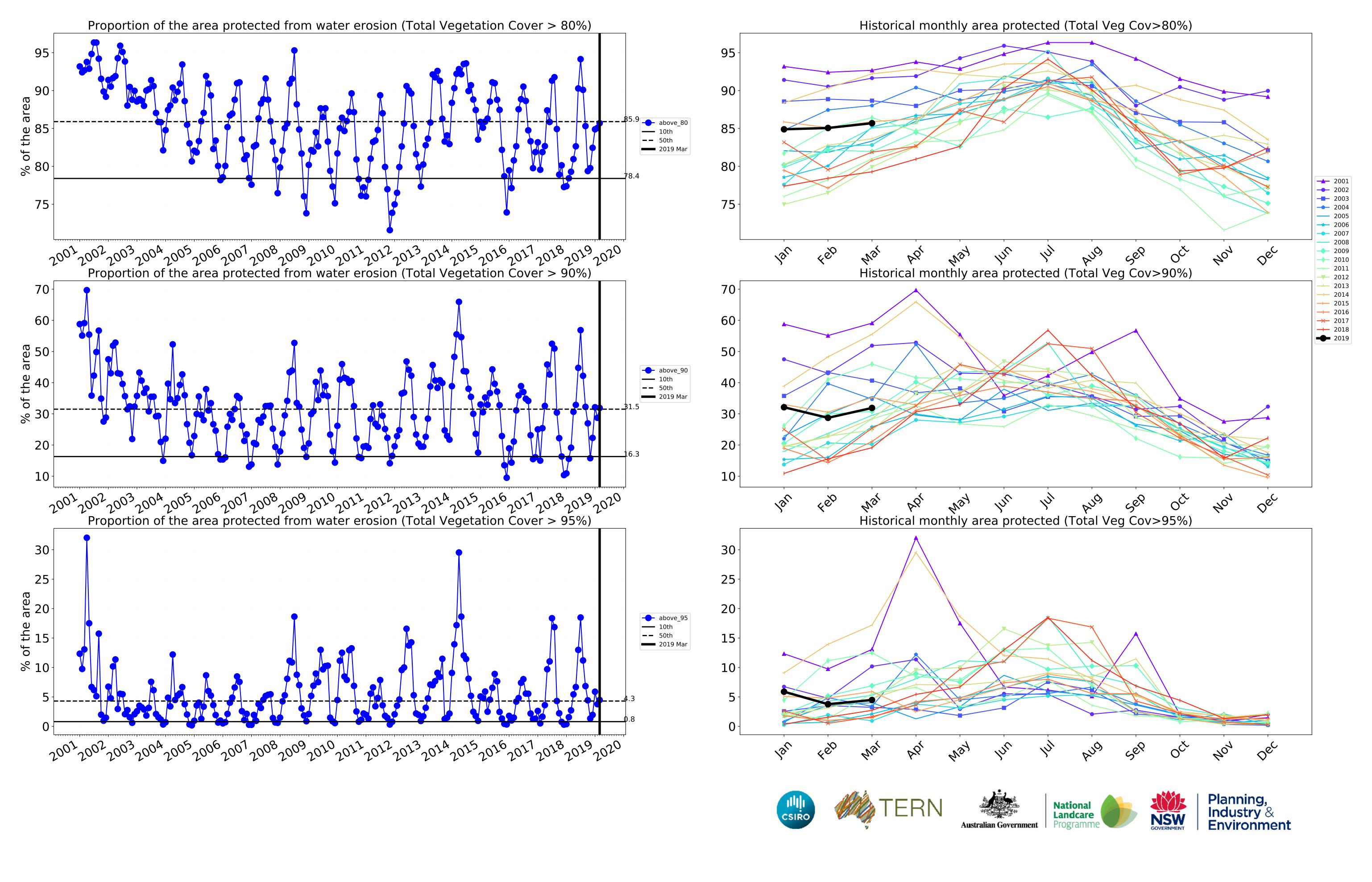


99 2001 2002 2003 2004 98 ____ 2005 97 96 → 2010 2011 2012 ---- 2013 95 ← 2014 → 2015 94 × 2017 ---- 2018 **---** 2019 93 92 month

National Landcare Planning, Industry & Environment

NSW GOVERNMENT

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



Conservation and natural environments 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

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

the mean. That

pixel. The mean

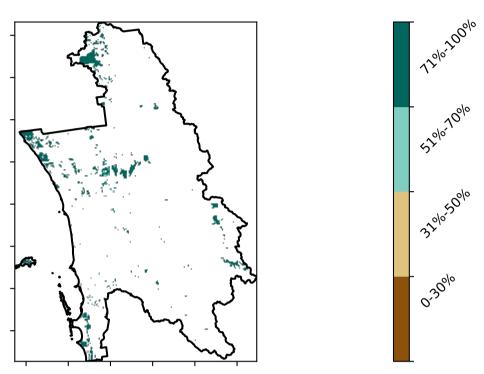
using baseline from 2001 to 2019.

is only for the month of the map

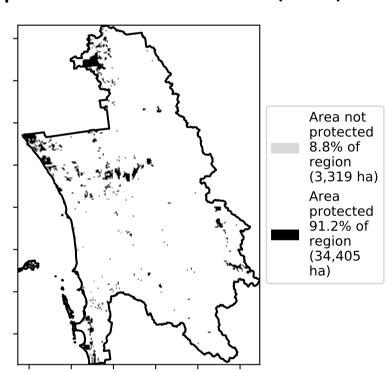
1 Conservation and natural environments - Nonforest

Total Vegetation Cover [%]

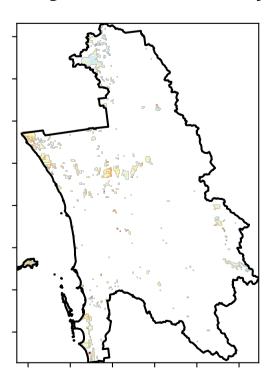
Land use and forest cover



% Area protected from water erosion (>70%)



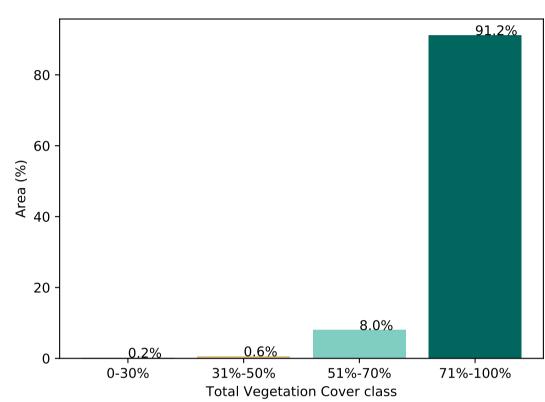
Total Vegetation Cover Anomaly [%]



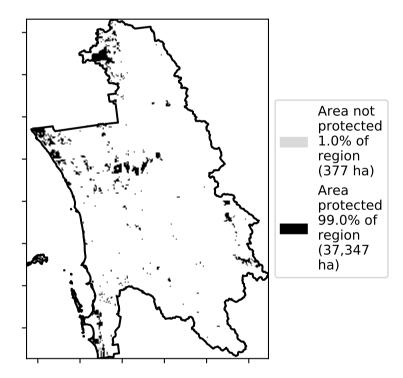
- 20 - 10 - 0 - -10 - -20

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.

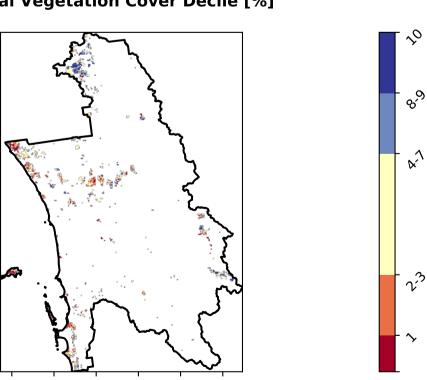
Proportion of vegetation cover class in area



% Area protected from wind erosion (>50%)



Total Vegetation Cover Decile [%]







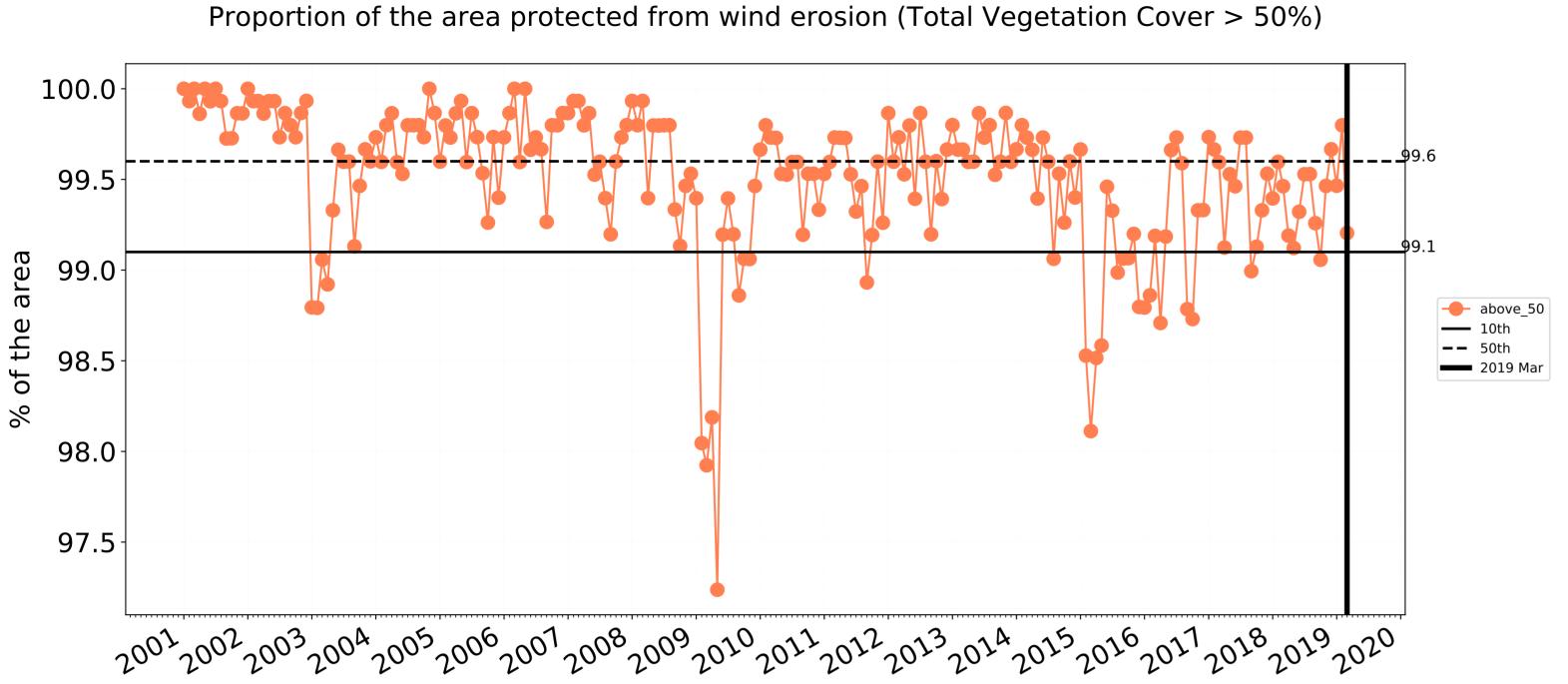


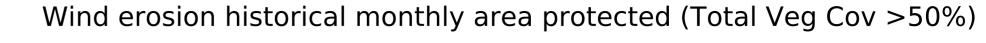


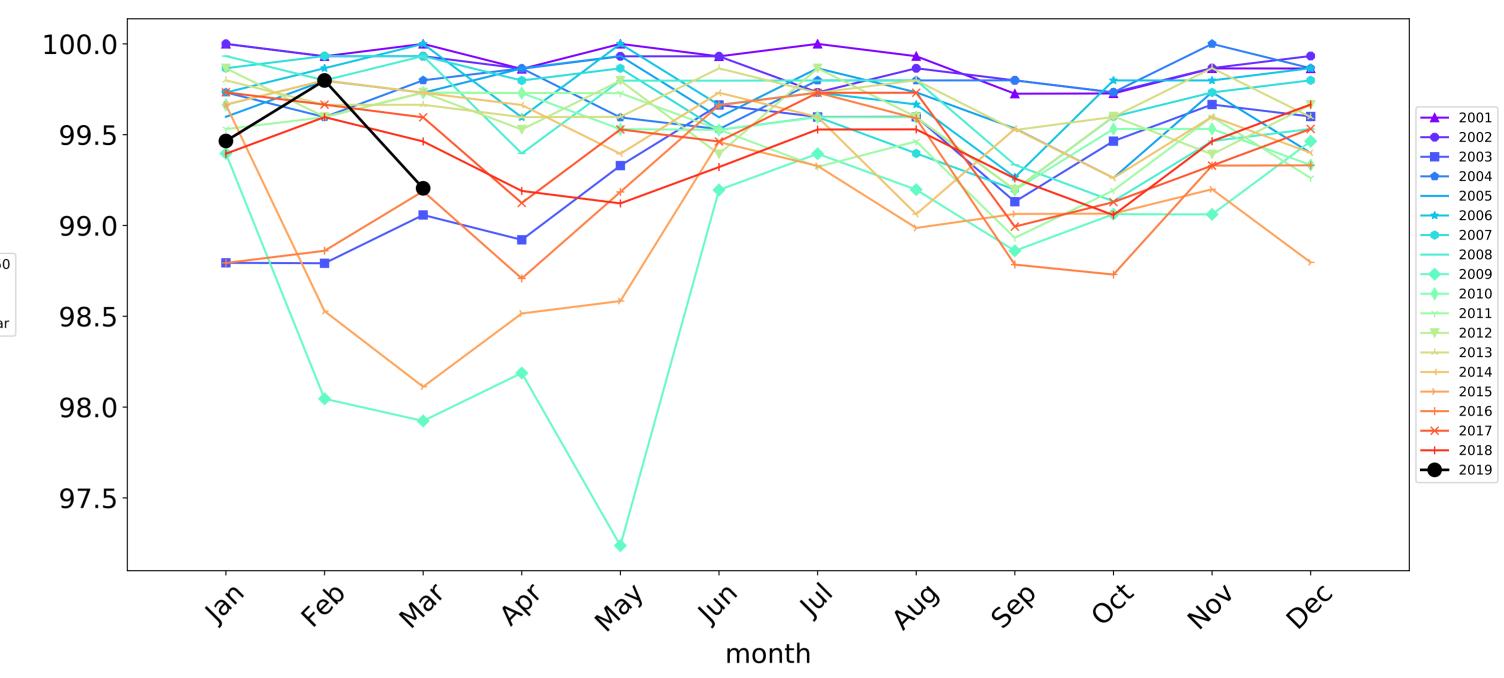


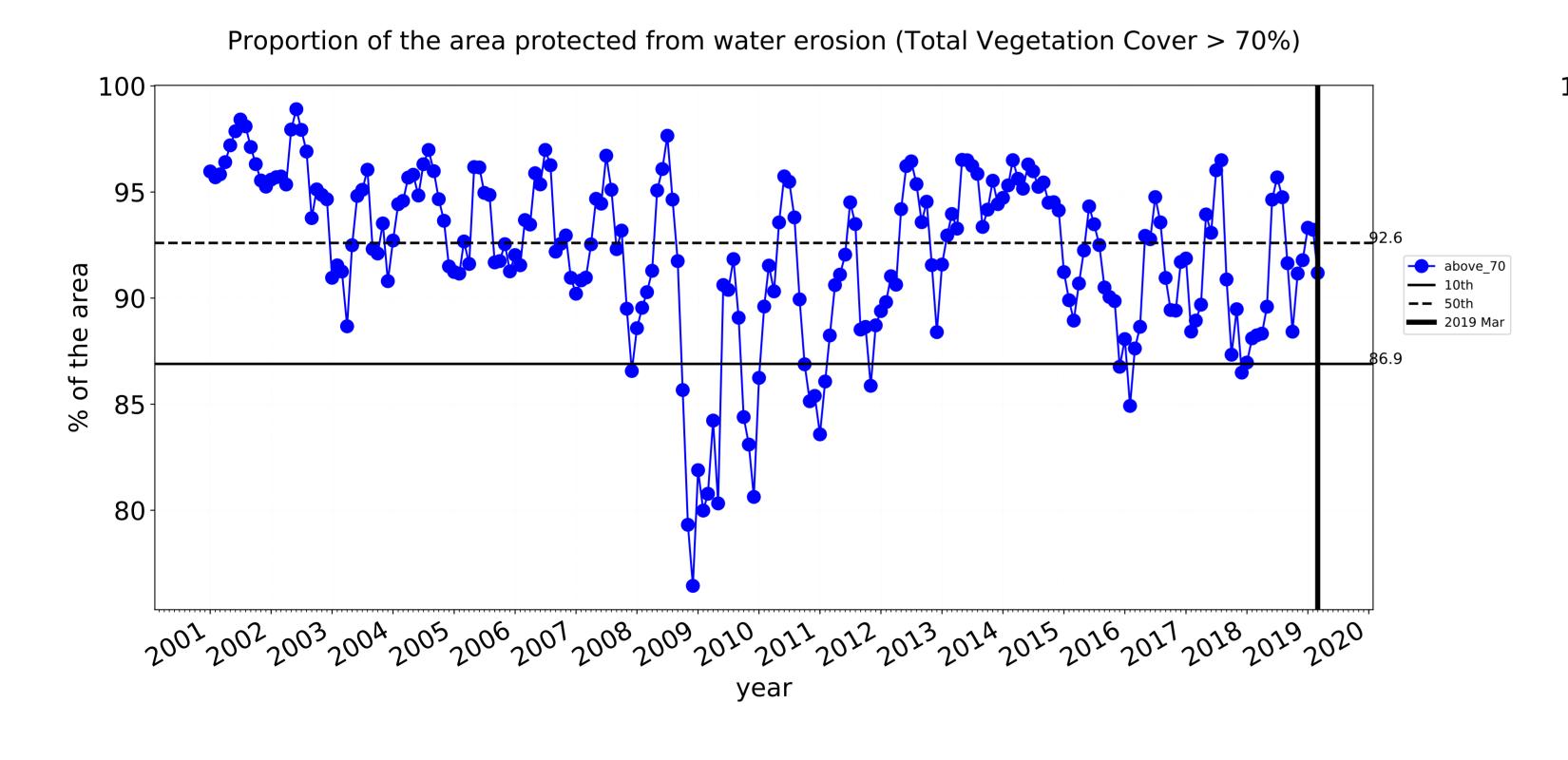


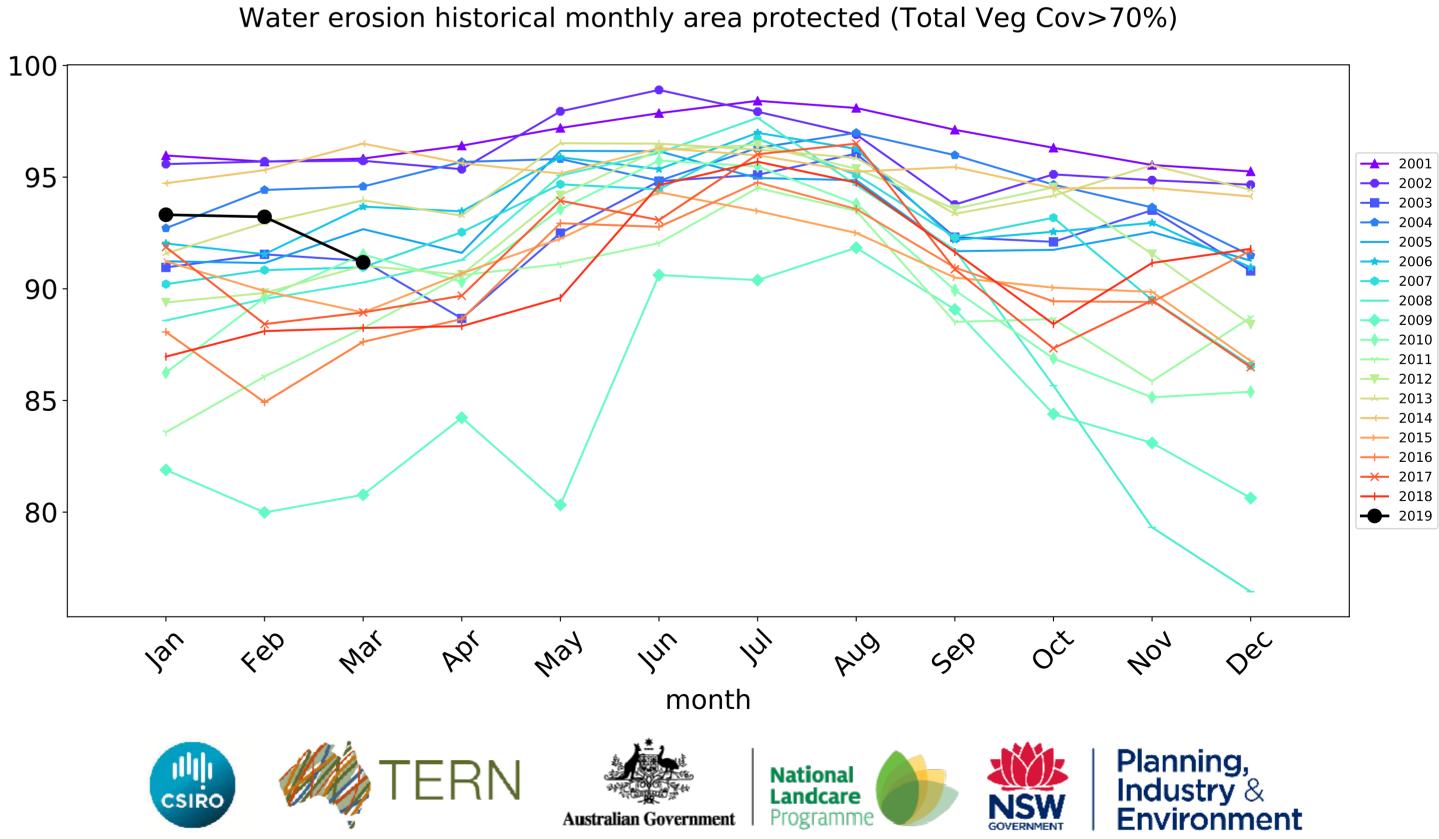
Conservation and natural environments non forest timeseries

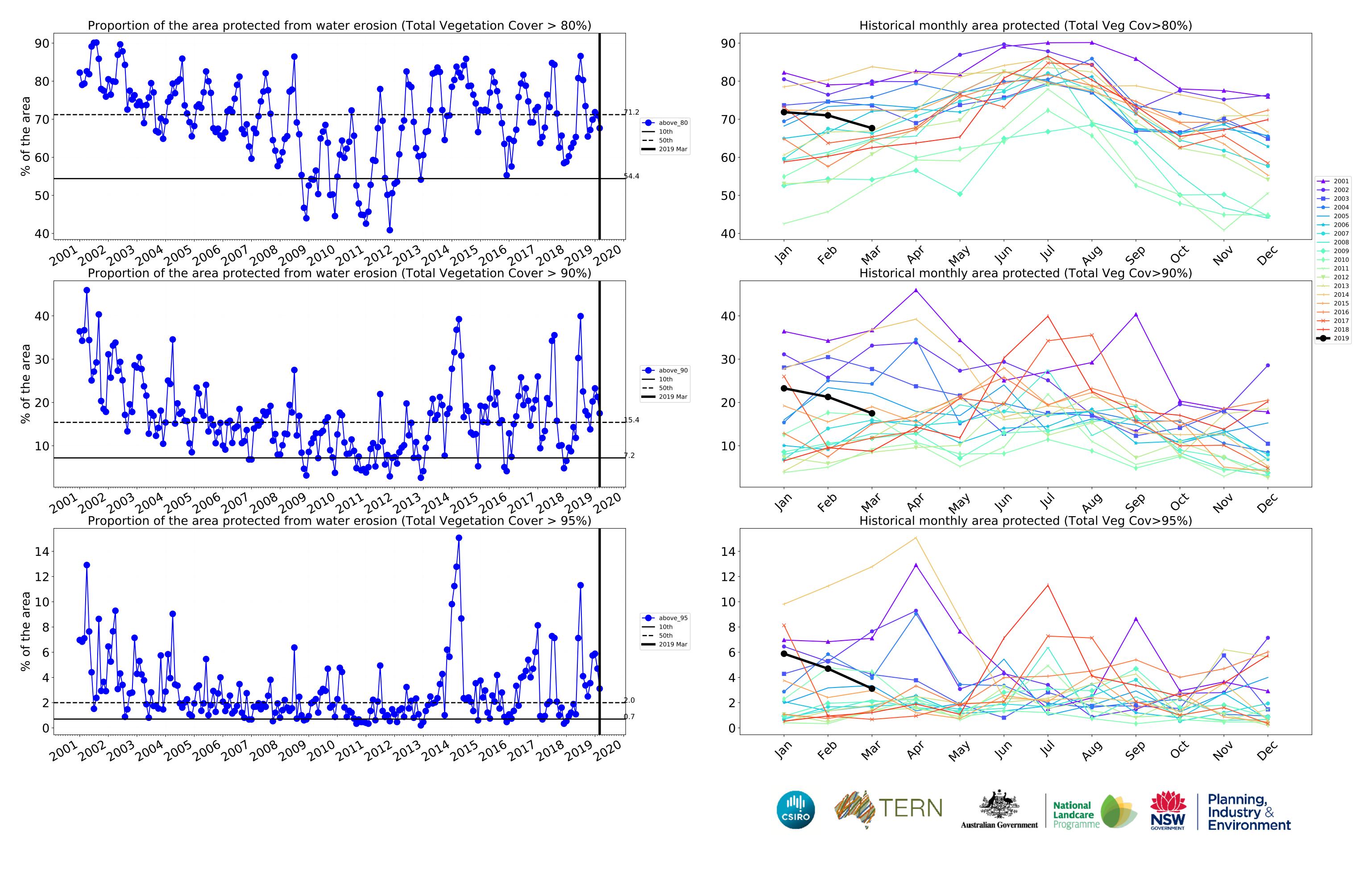












Conservation and natural environments Woodland forest

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

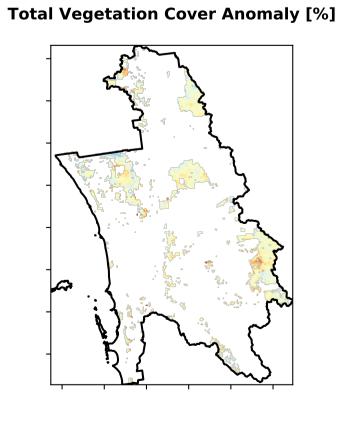
of Australia (2018)

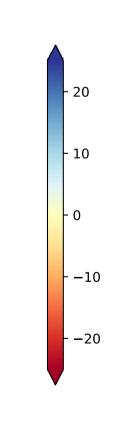
Land use and forest cover 1 Conservation and natural environments – Woodland

Total Vegetation Cover [%]

% Area protected from water erosion (>70%) Area not protected 1.4% of region (1,896 ha) Area protected 98.6% of region (133,578 ha)

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.

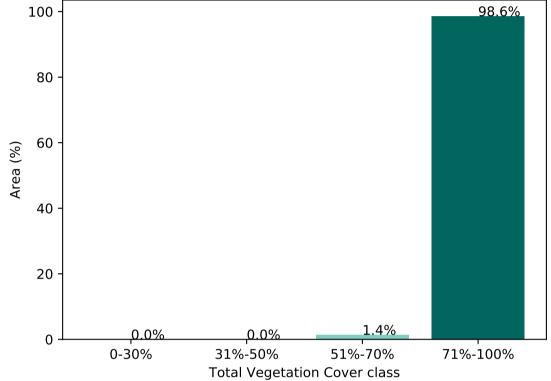




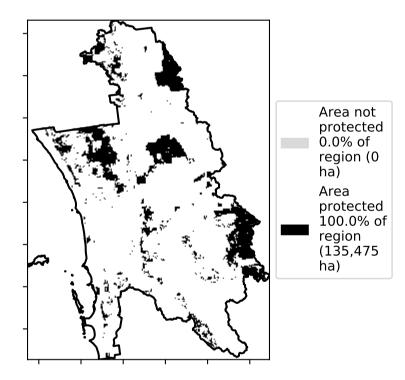
Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

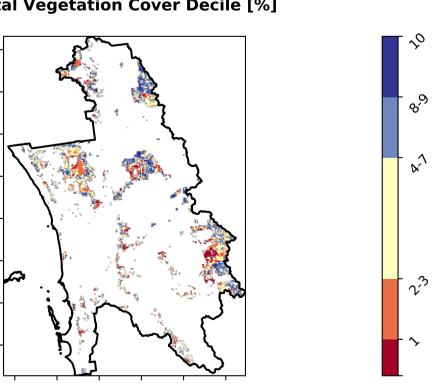
98.6%

Proportion of vegetation cover class in area



% Area protected from wind erosion (>50%)







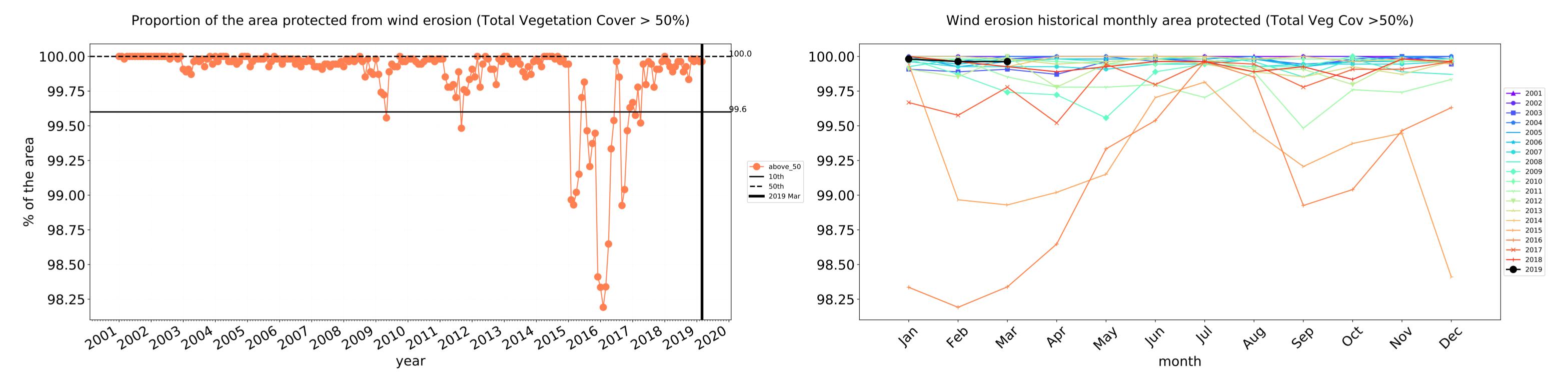


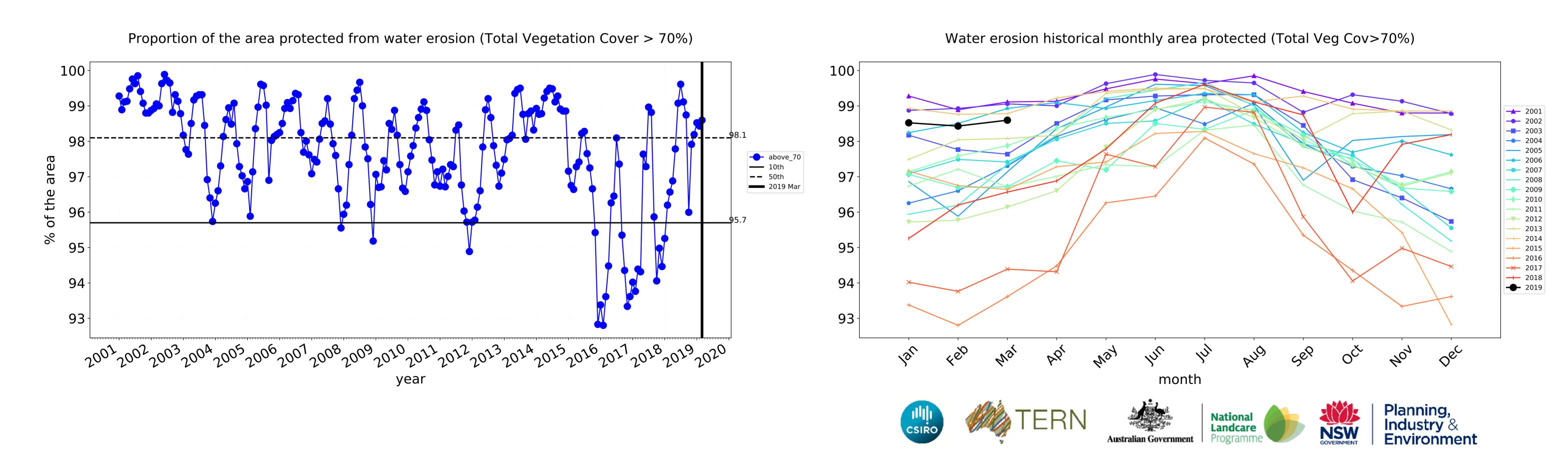


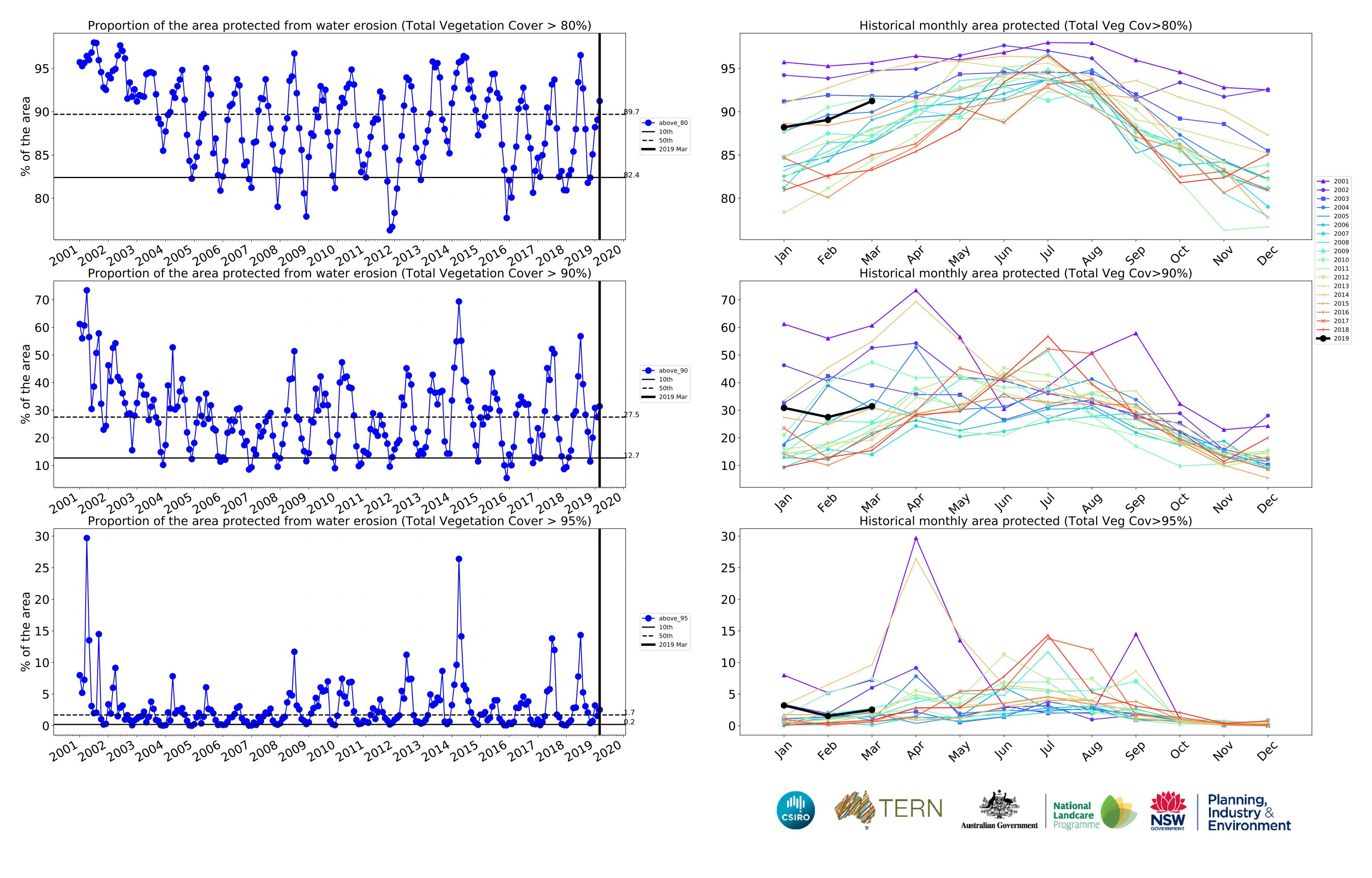






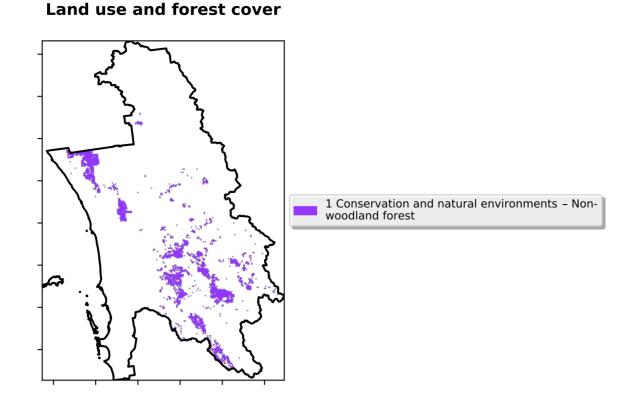


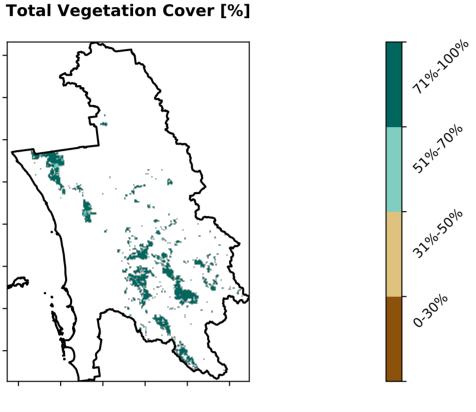




Conservation and natural environments Forest (non woodland)

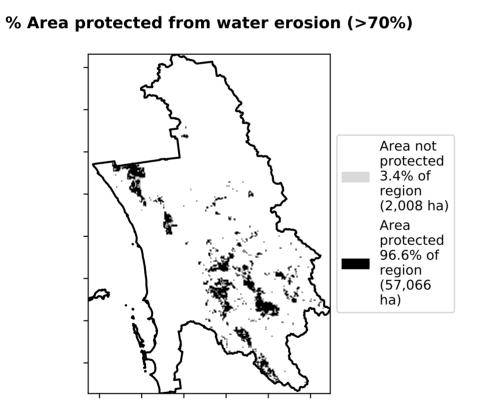
Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)

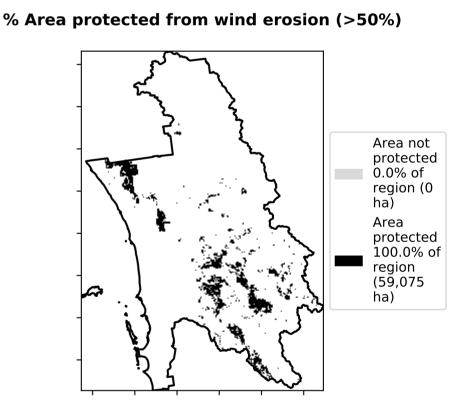


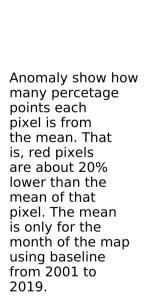


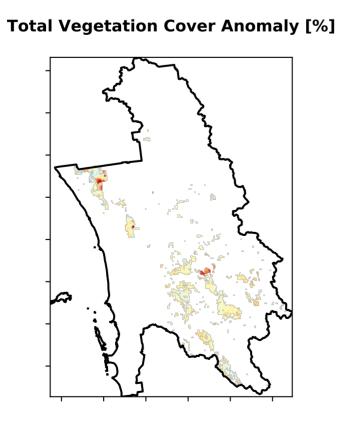
100 96.6% 80 Area (%) 20 0.0% 0.1% 0-30% 31%-50% 51%-70% 71%-100% **Total Vegetation Cover class**

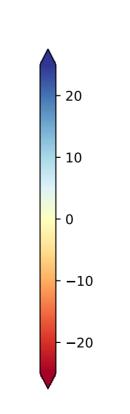
Proportion of vegetation cover class in area



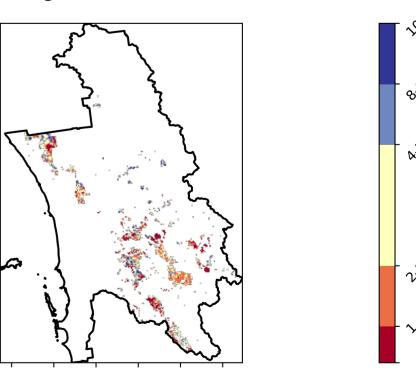








Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.





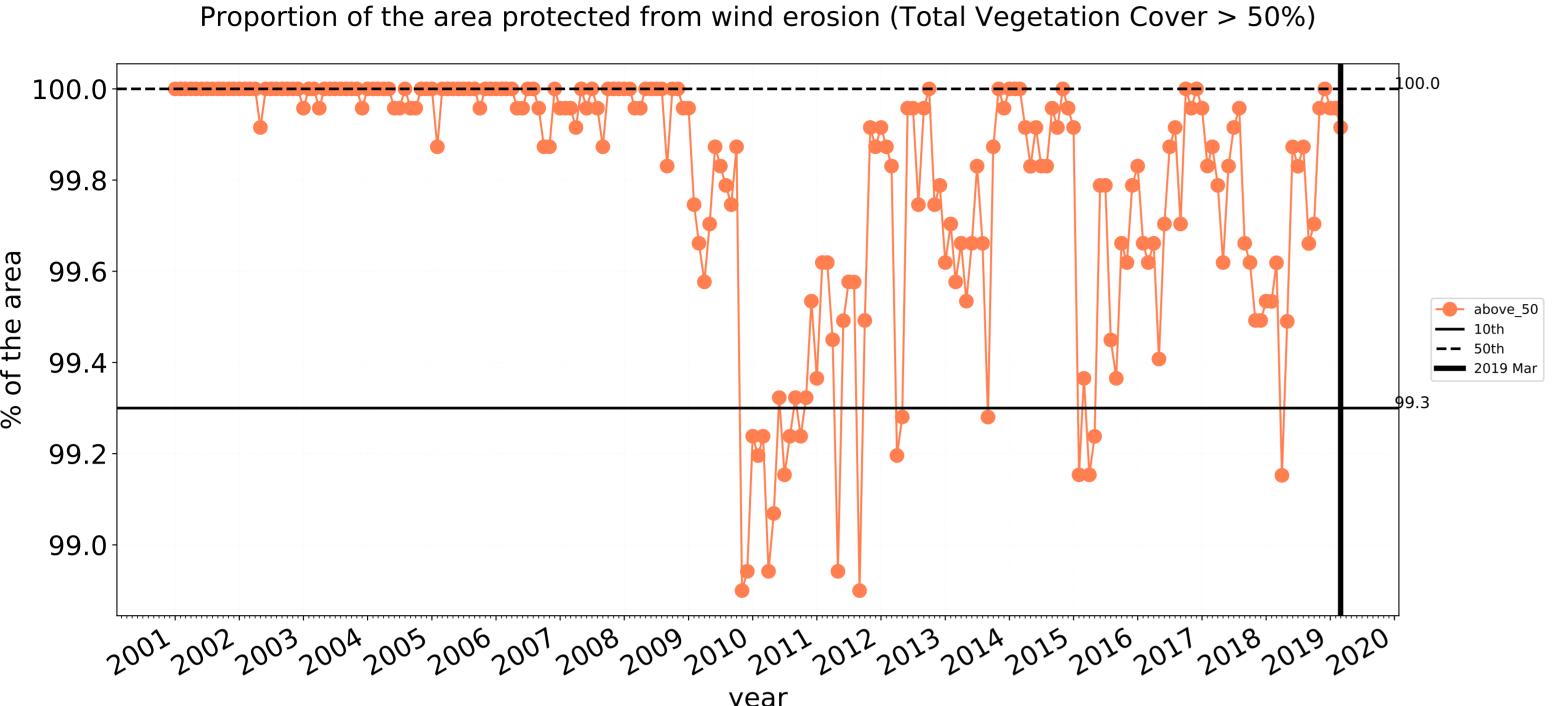


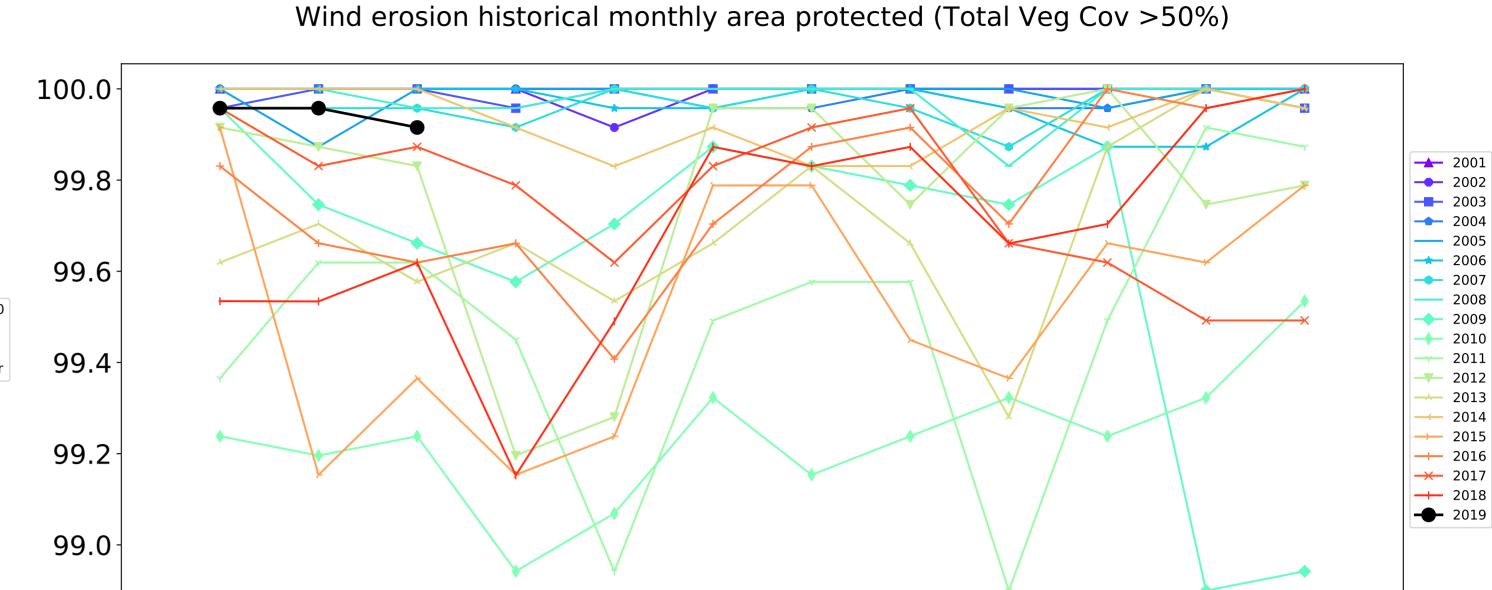




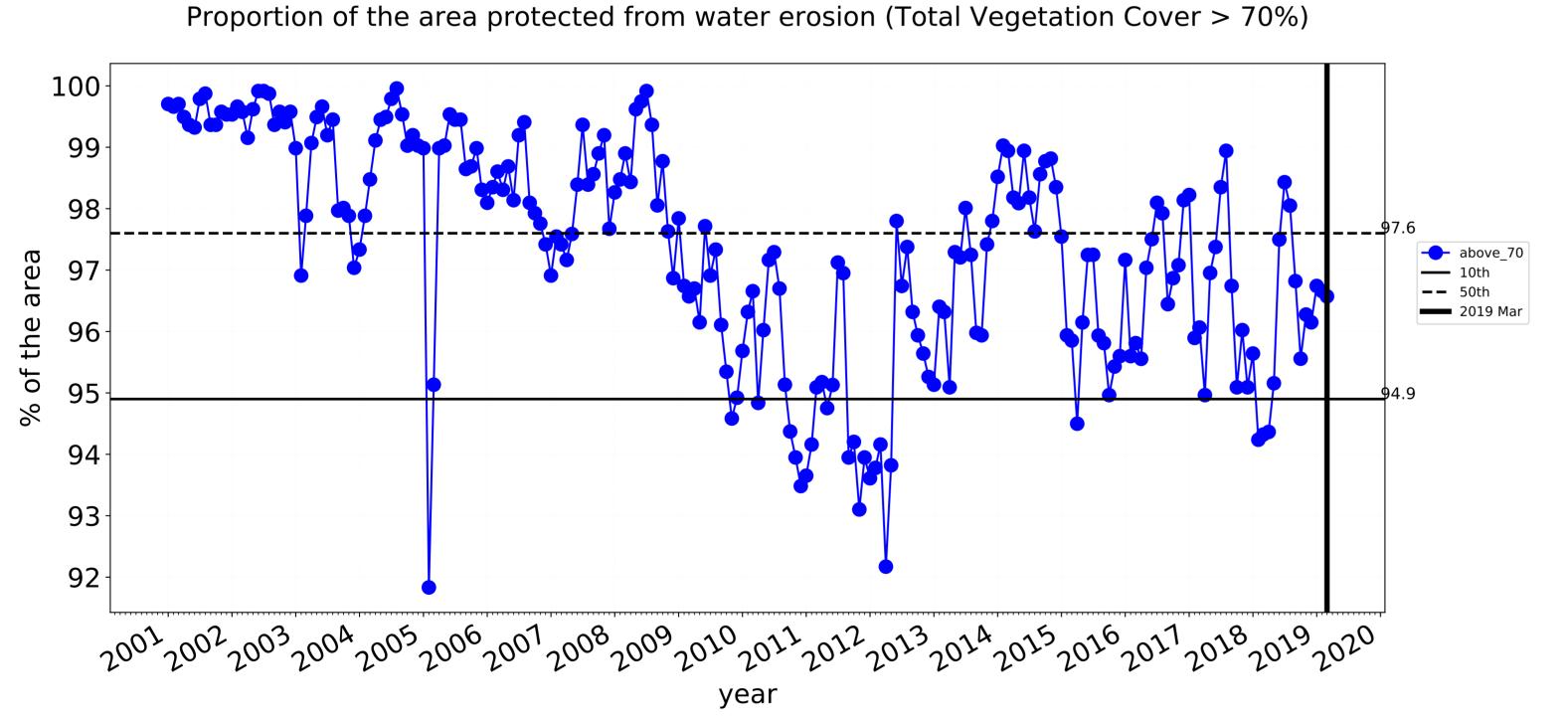


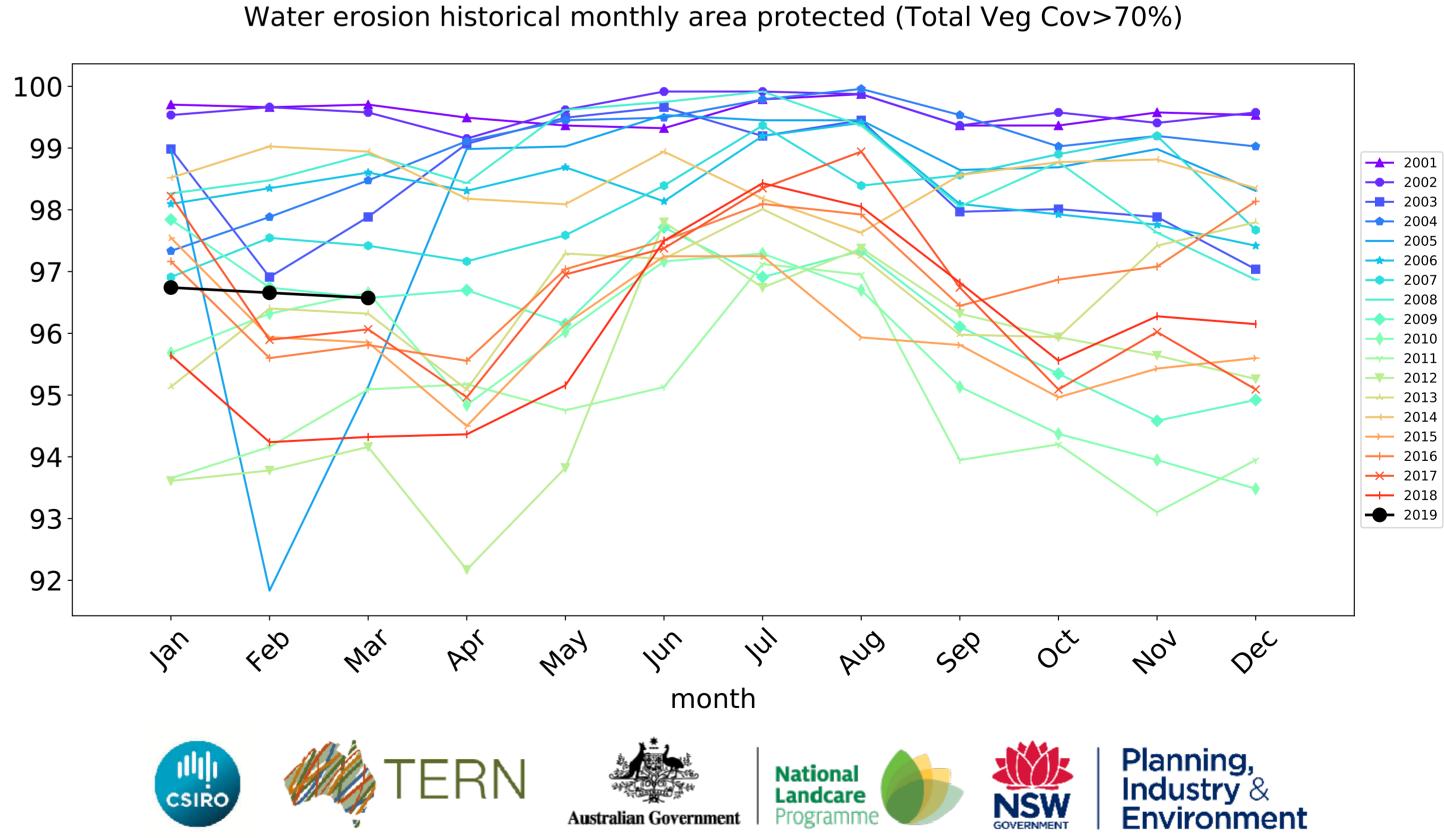


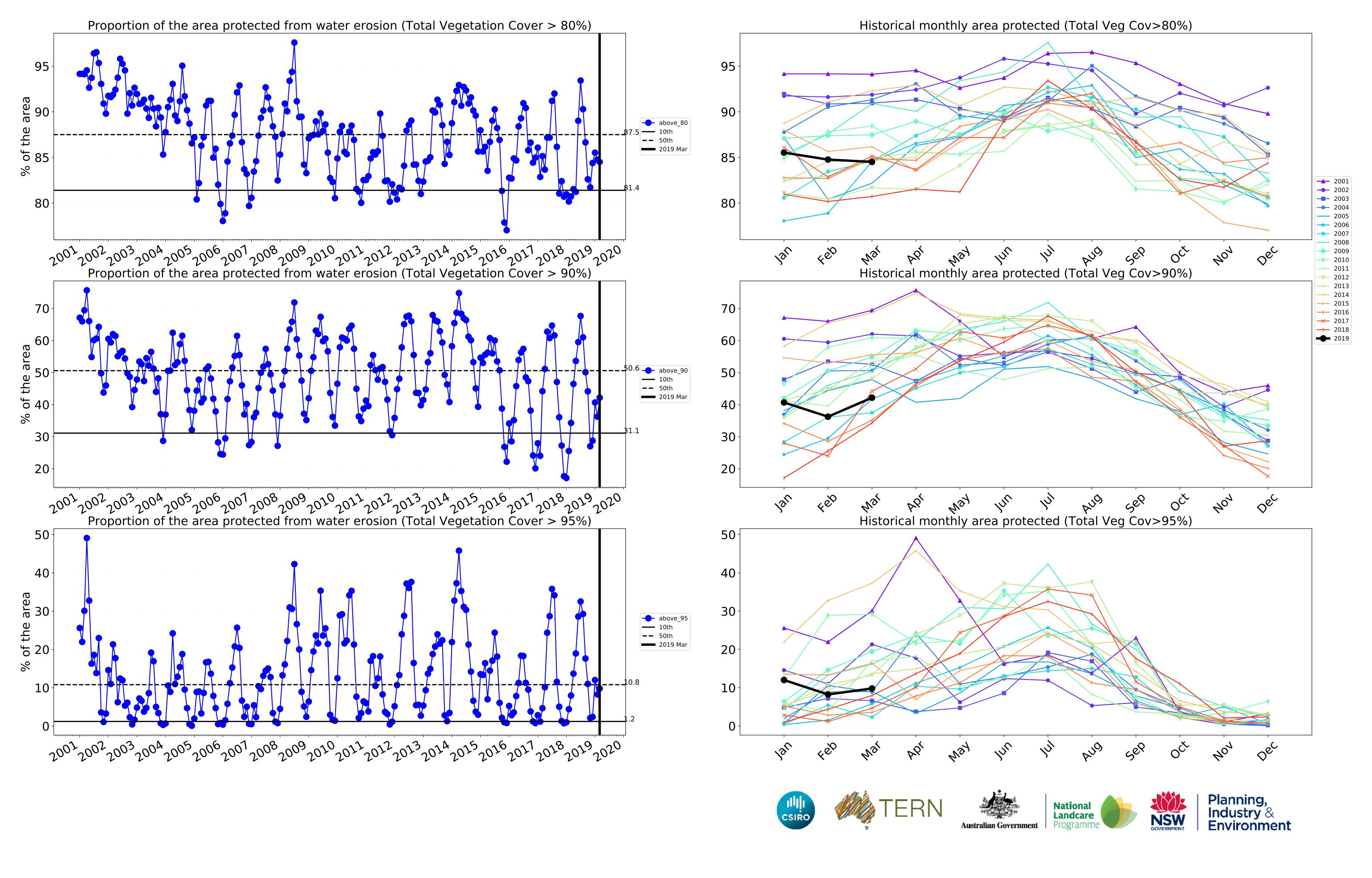




month

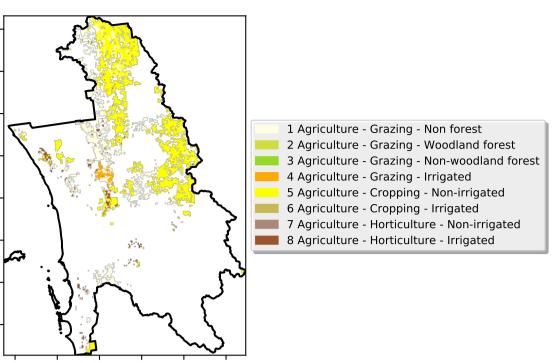




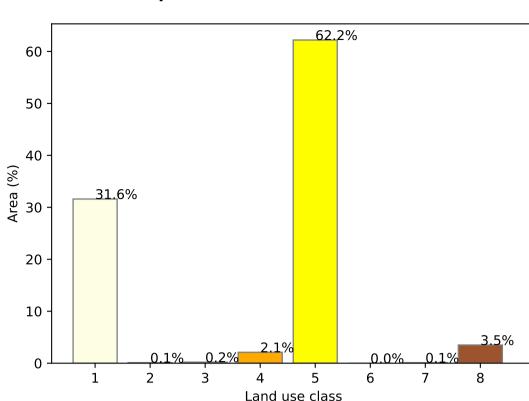


Agriculture

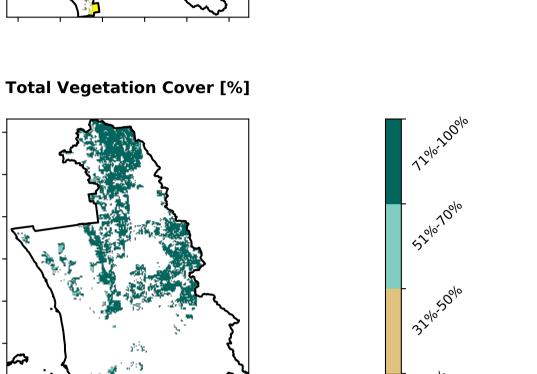
Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)

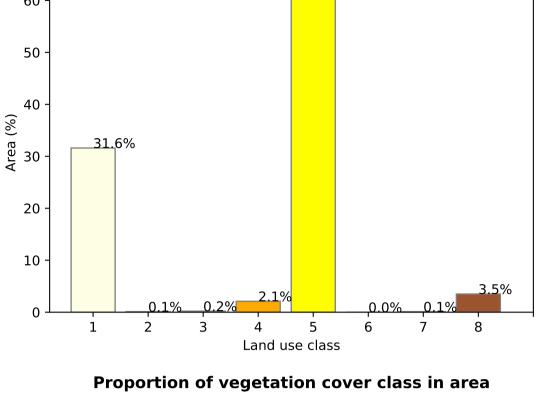


Land use and forest cover

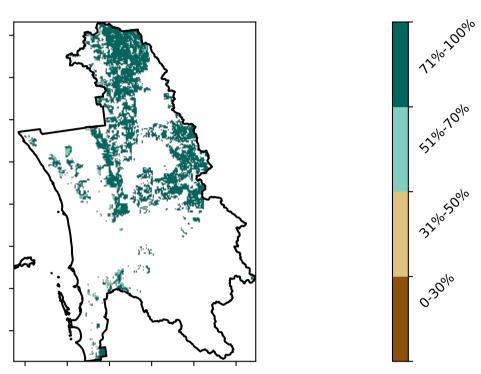


Proportion of each land class in area

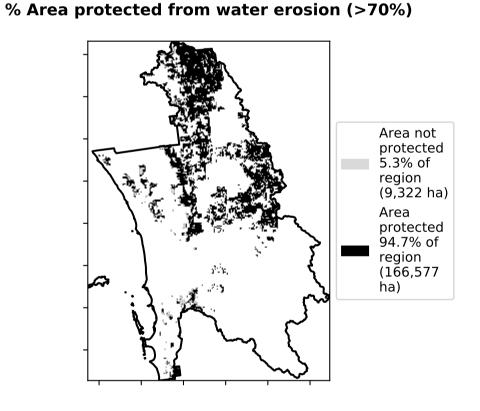


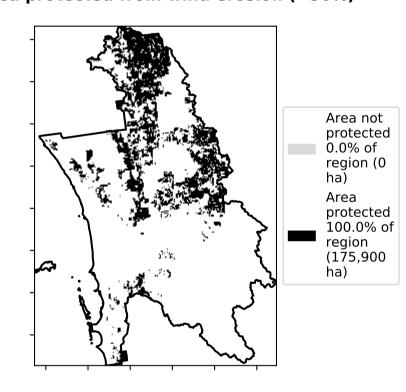


94.7% 80 Area (%) 0 20 5.1% 0.0% 0-30% 31%-50% 51%-70% 71%-100% **Total Vegetation Cover class**



% Area protected from wind erosion (>50%)





Total Vegetation Cover Anomaly [%]

Anomaly show how many percetage points each

pixel is from

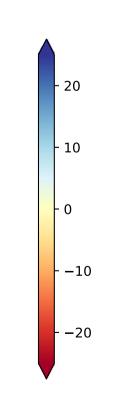
is, red pixels are about 20% lower than the mean of that

the mean. That

pixel. The mean

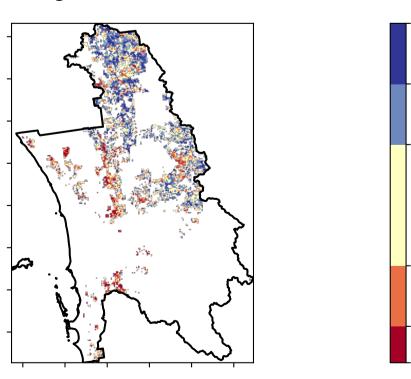
using baseline from 2001 to 2019.

is only for the month of the map



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 [%]







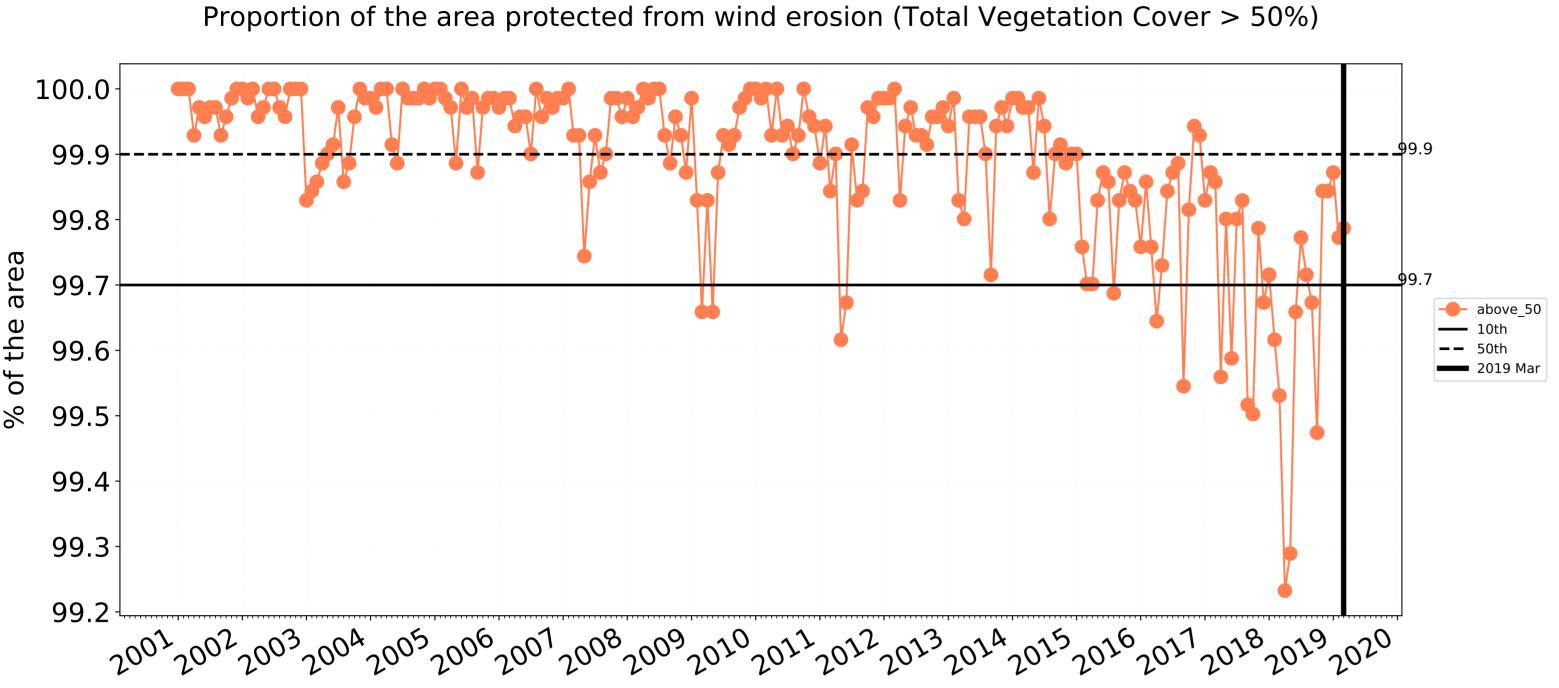




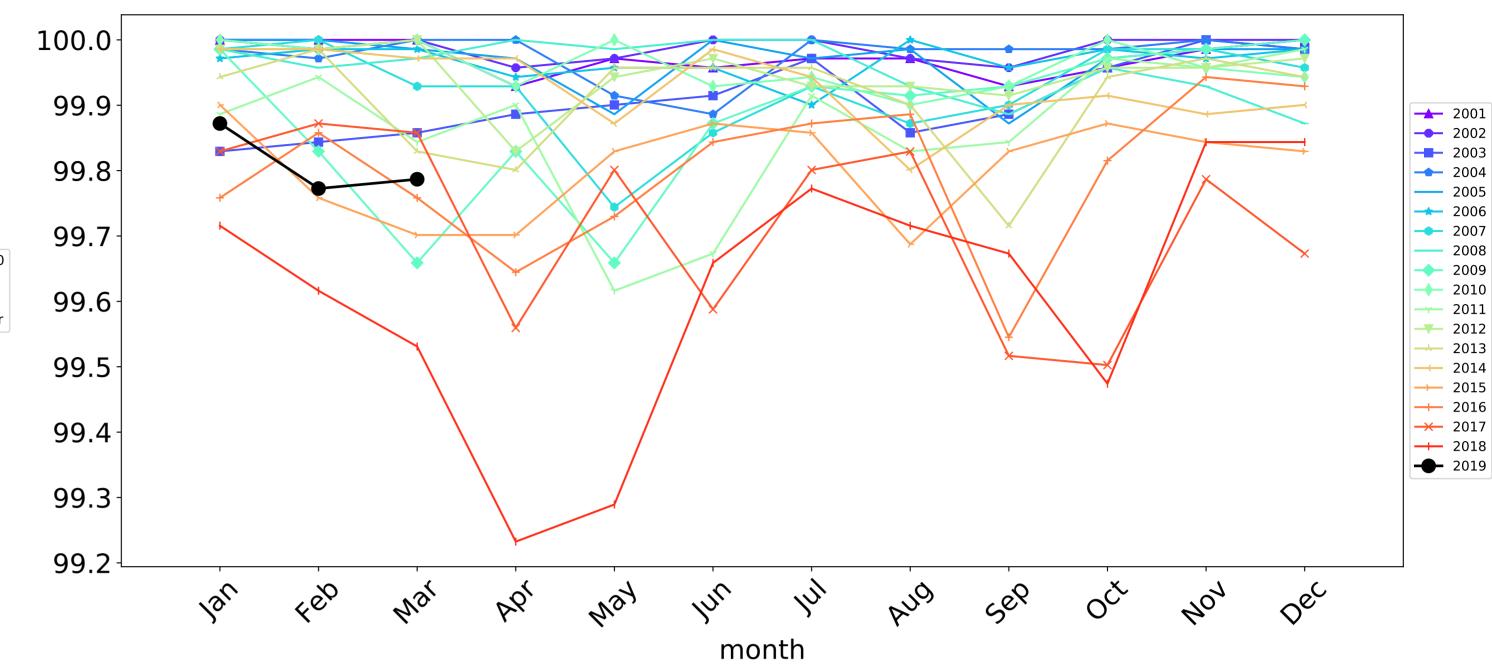


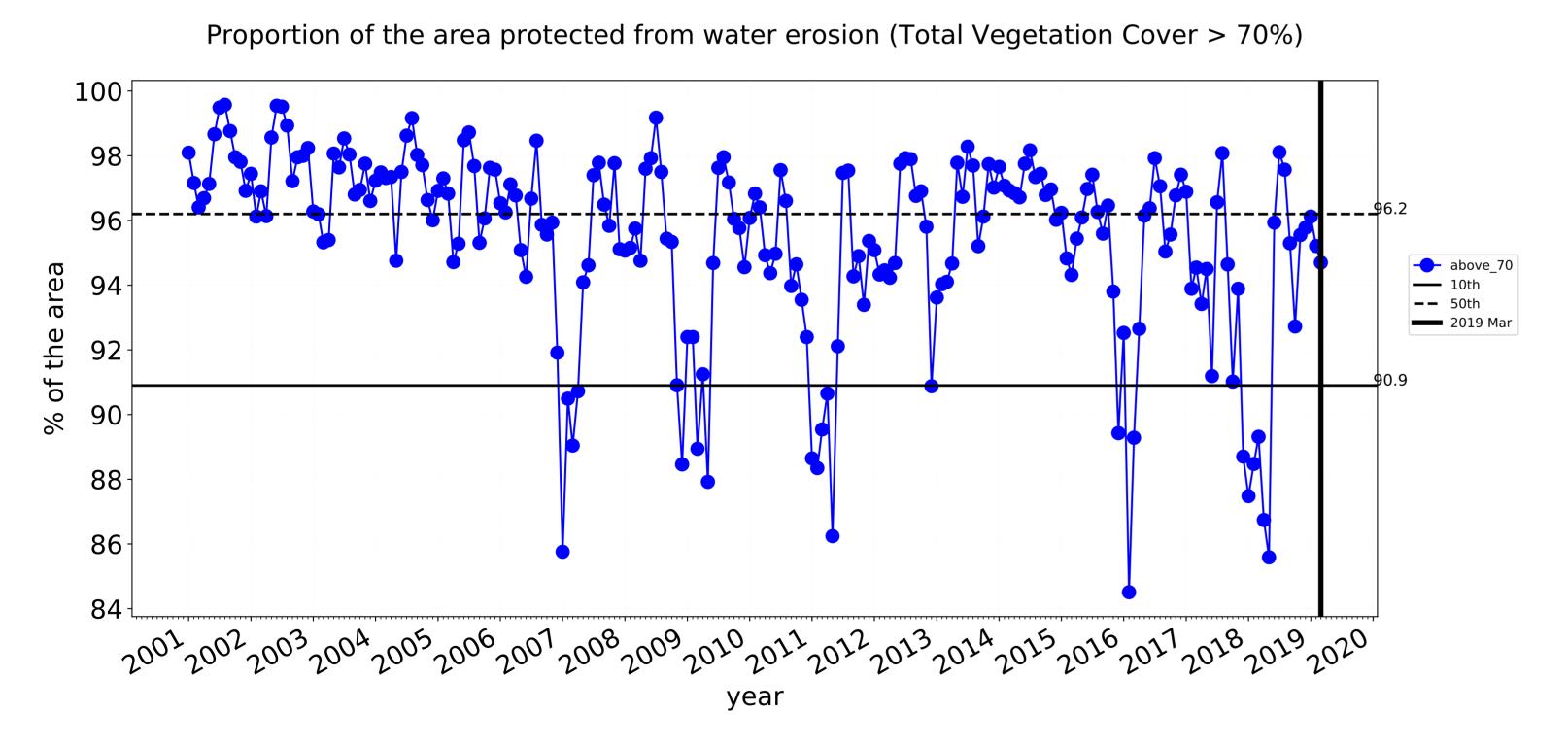


Agriculture timeseries

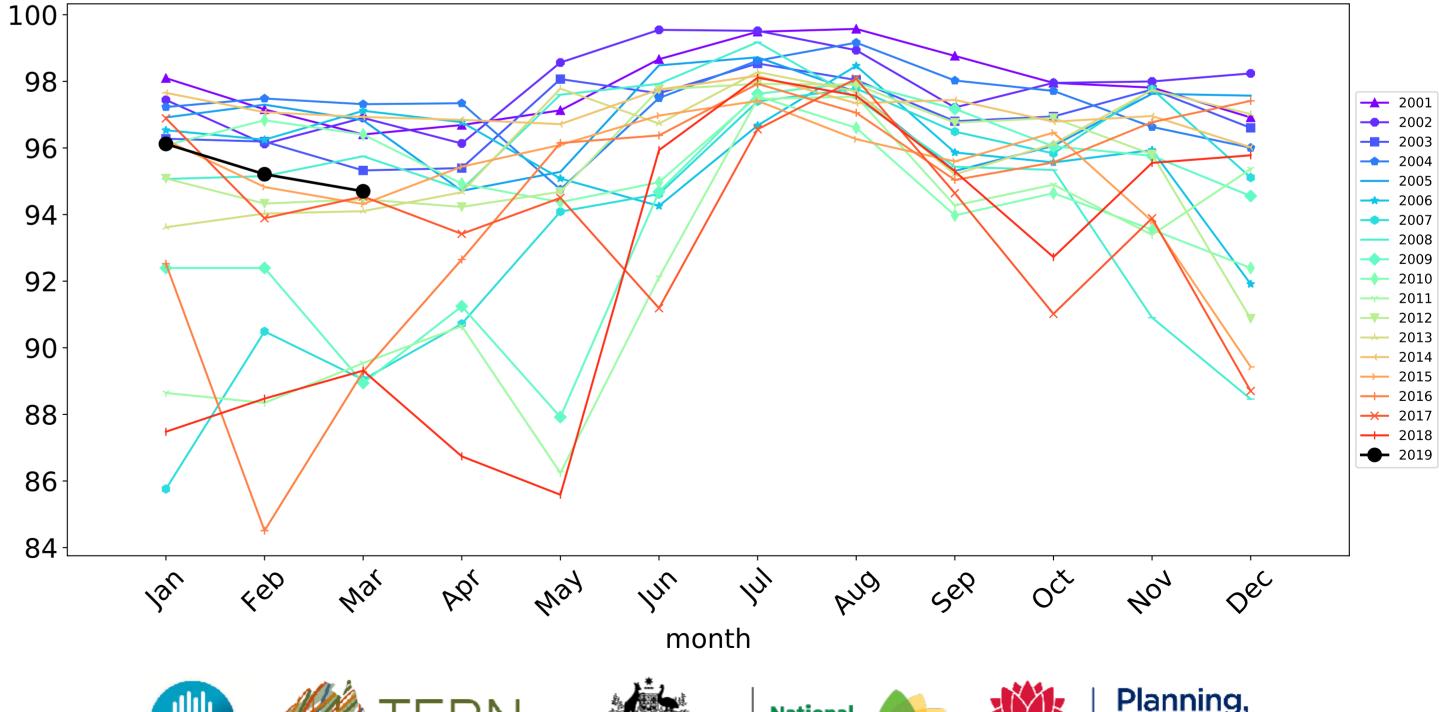


Wind erosion historical monthly area protected (Total Veg Cov >50%)





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

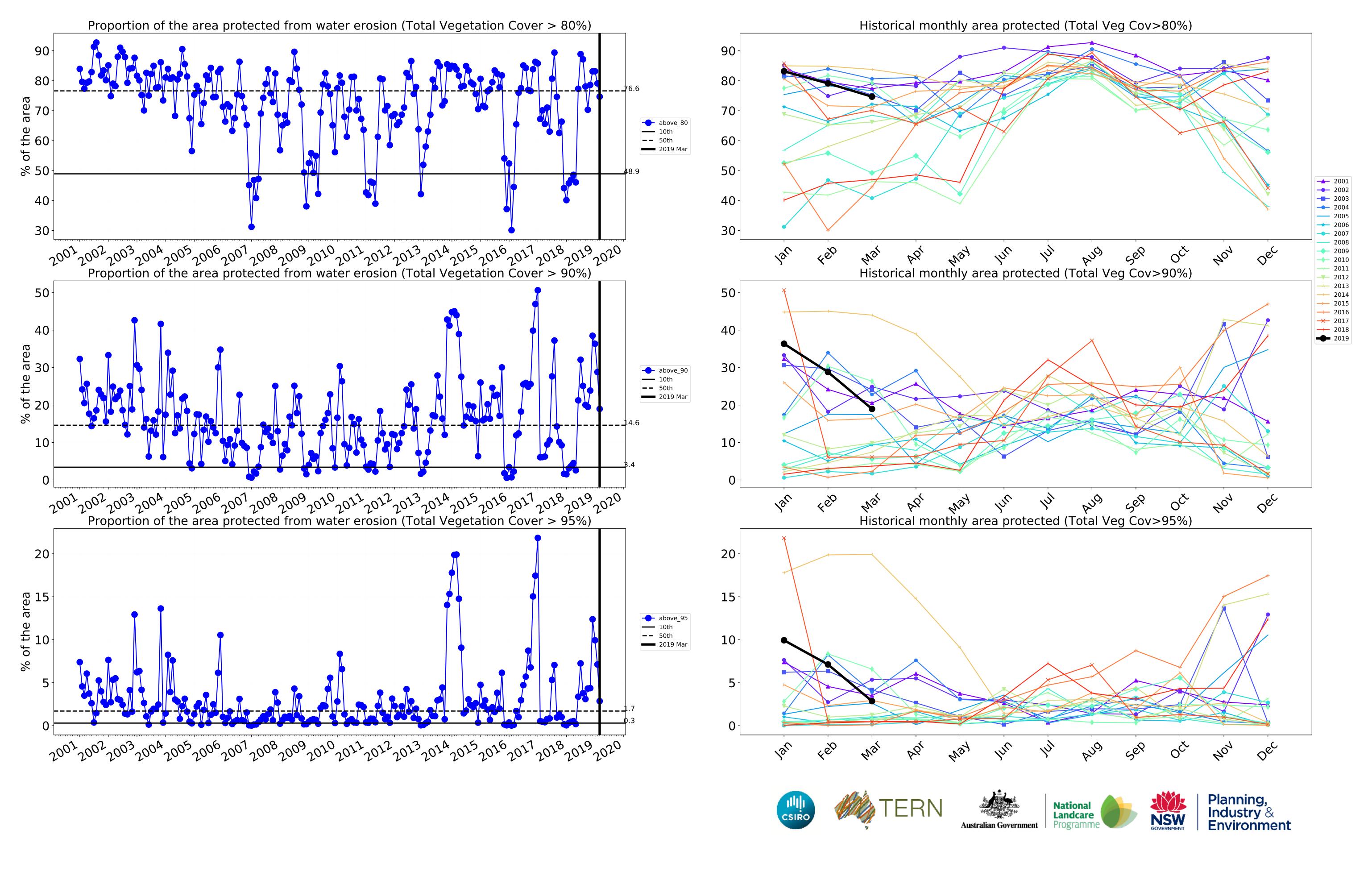






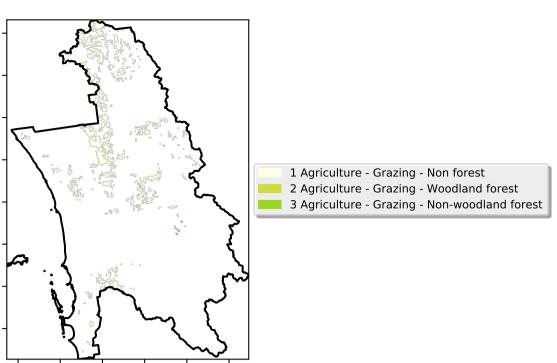




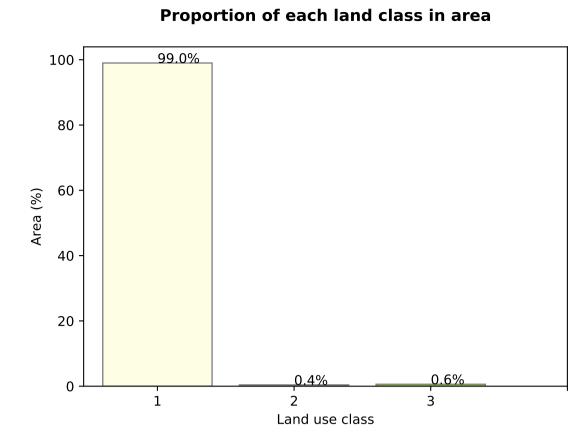


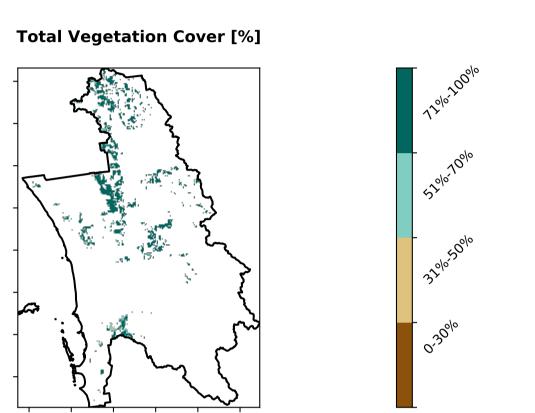
Grazing

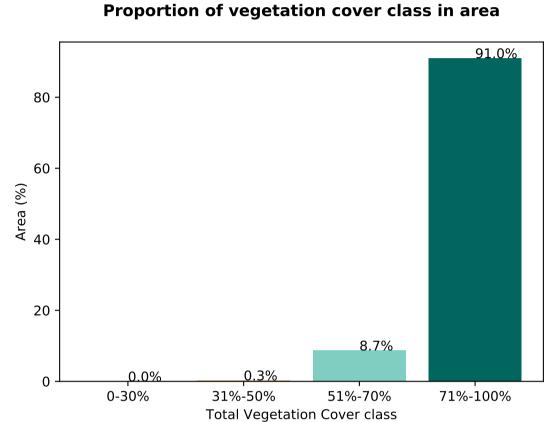
Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)

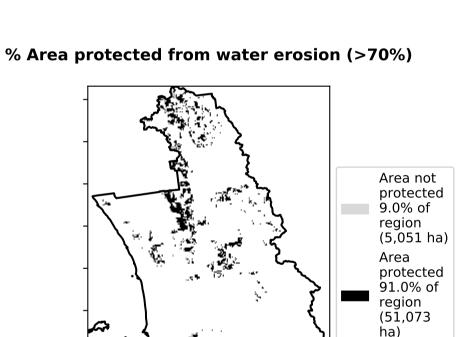


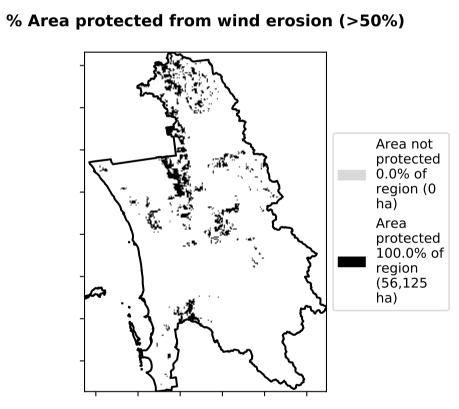
Land use and forest cover

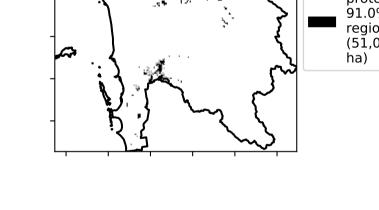




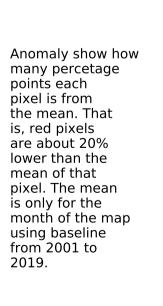


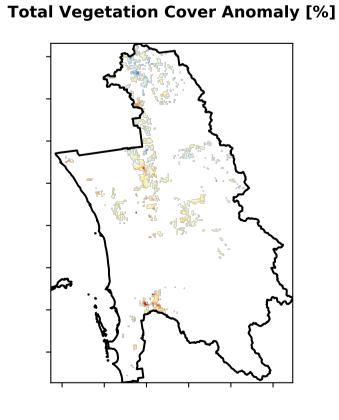


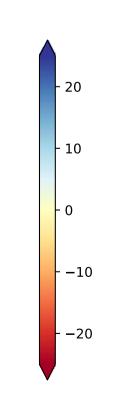




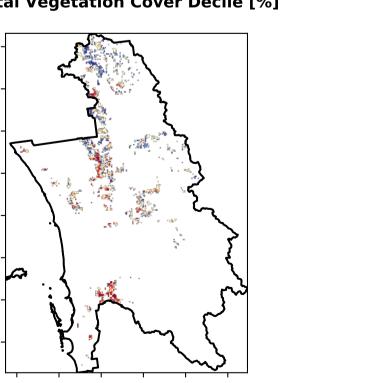
Total Vegetation Cover Decile [%]







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.







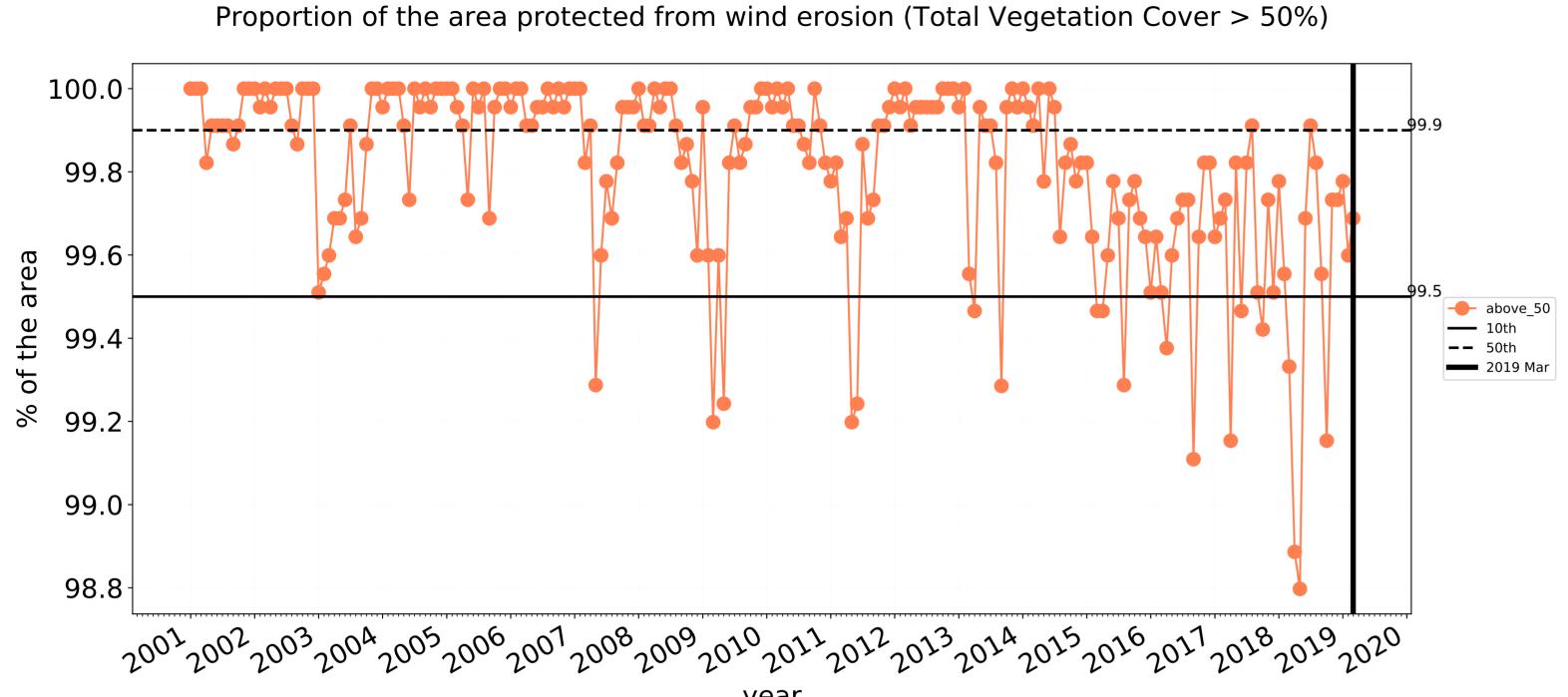


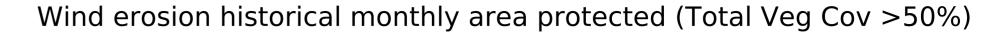


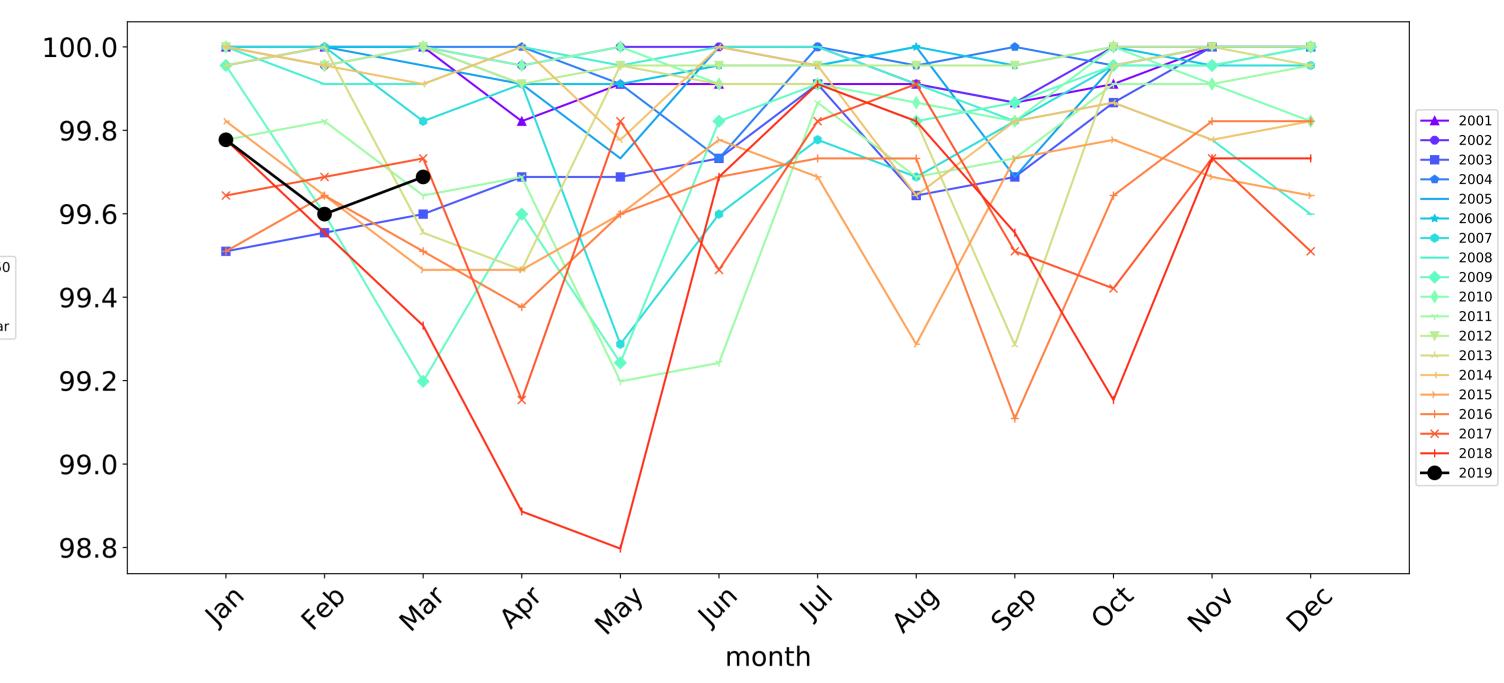


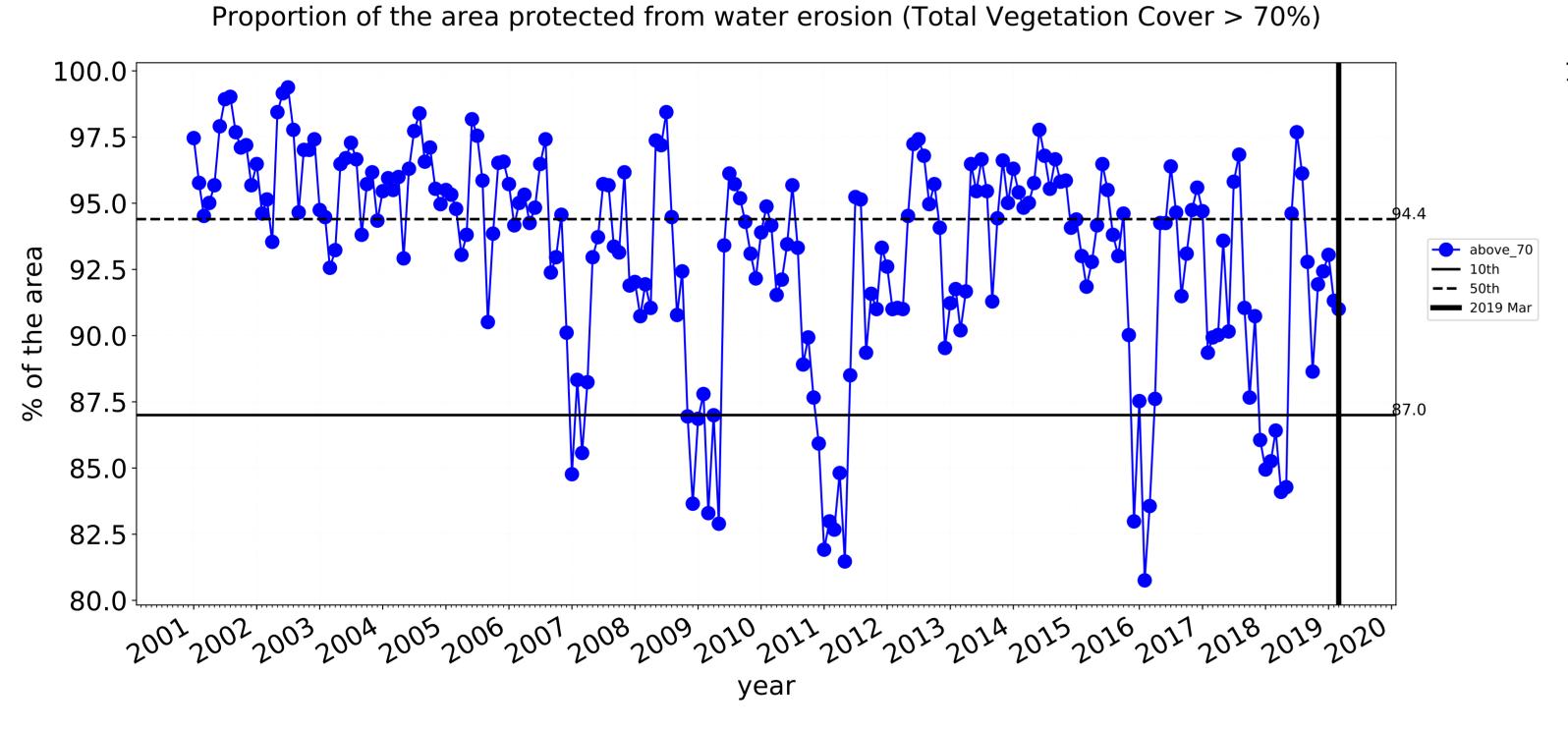


Grazing timeseries

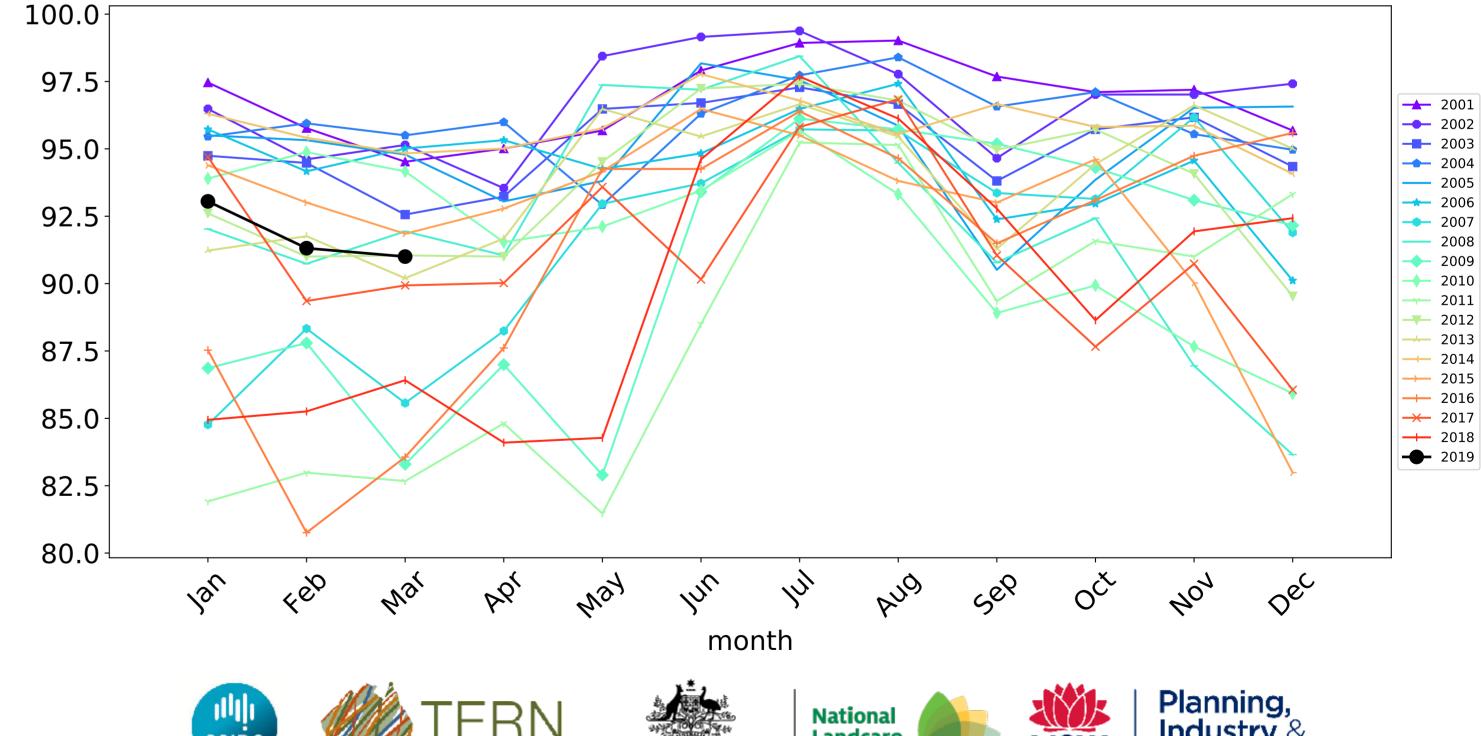








Water erosion historical monthly area protected (Total Veg Cov>70%)

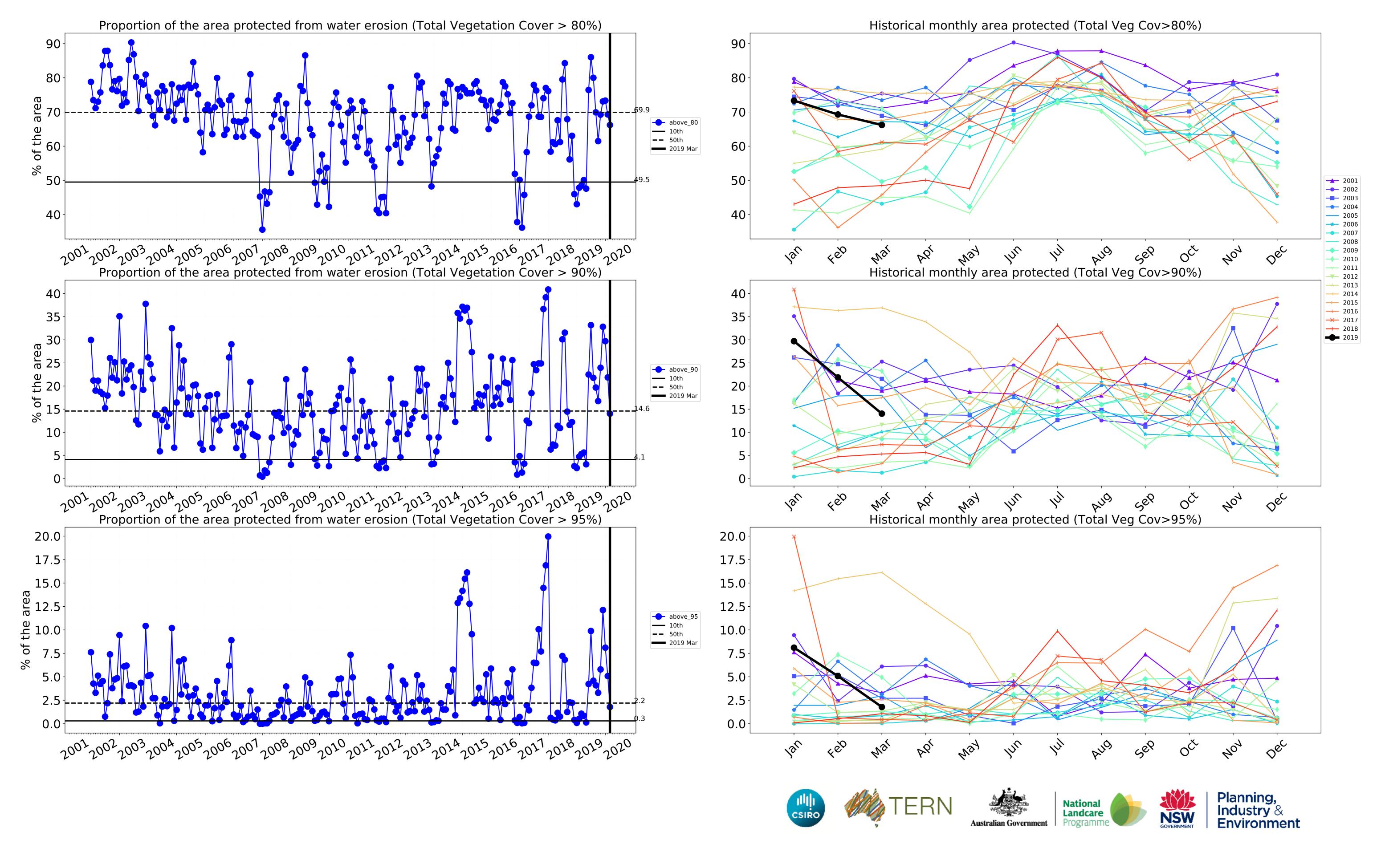












Grazing non forest

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)

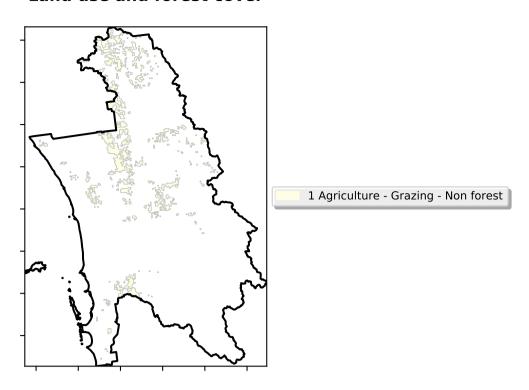
Anomaly show how many percetage points each

pixel is from

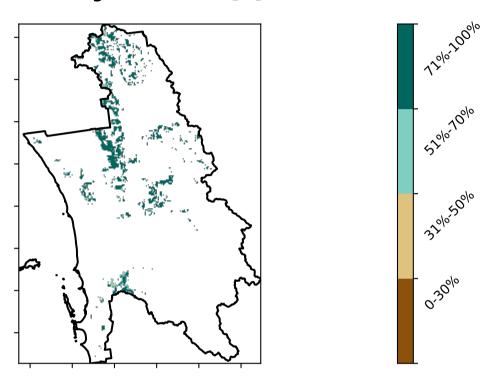
is, red pixels are about 20% lower than the mean of that

the mean. That

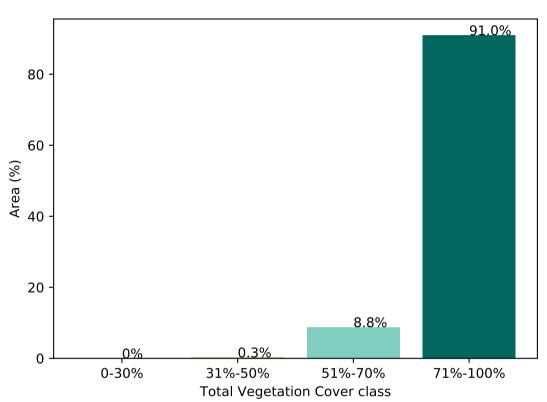
pixel. The mean is only for the month of the map using baseline from 2001 to 2019.



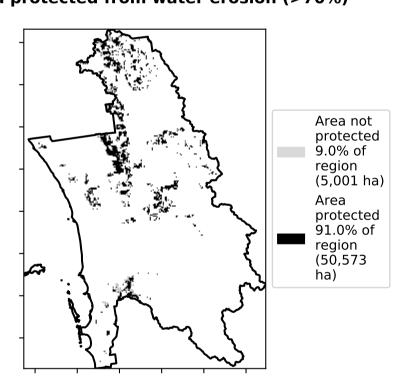
Total Vegetation Cover [%]



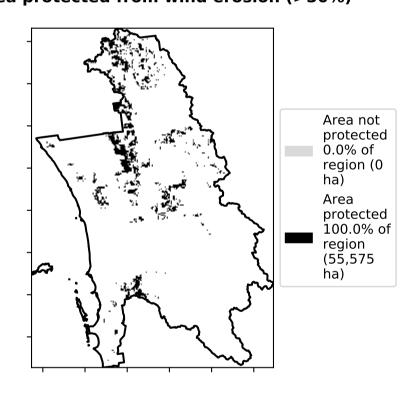
Proportion of vegetation cover class in area



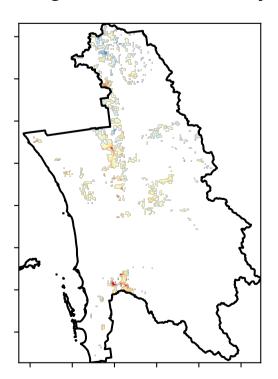
% Area protected from water erosion (>70%)

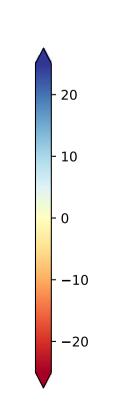


% Area protected from wind erosion (>50%)

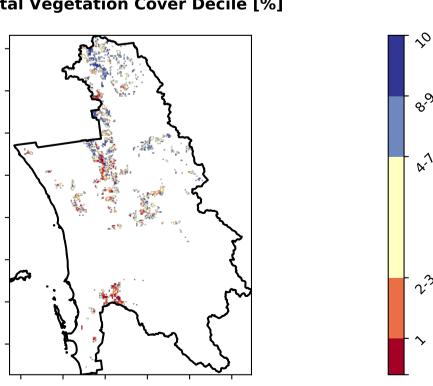


Total Vegetation Cover Anomaly [%]





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.







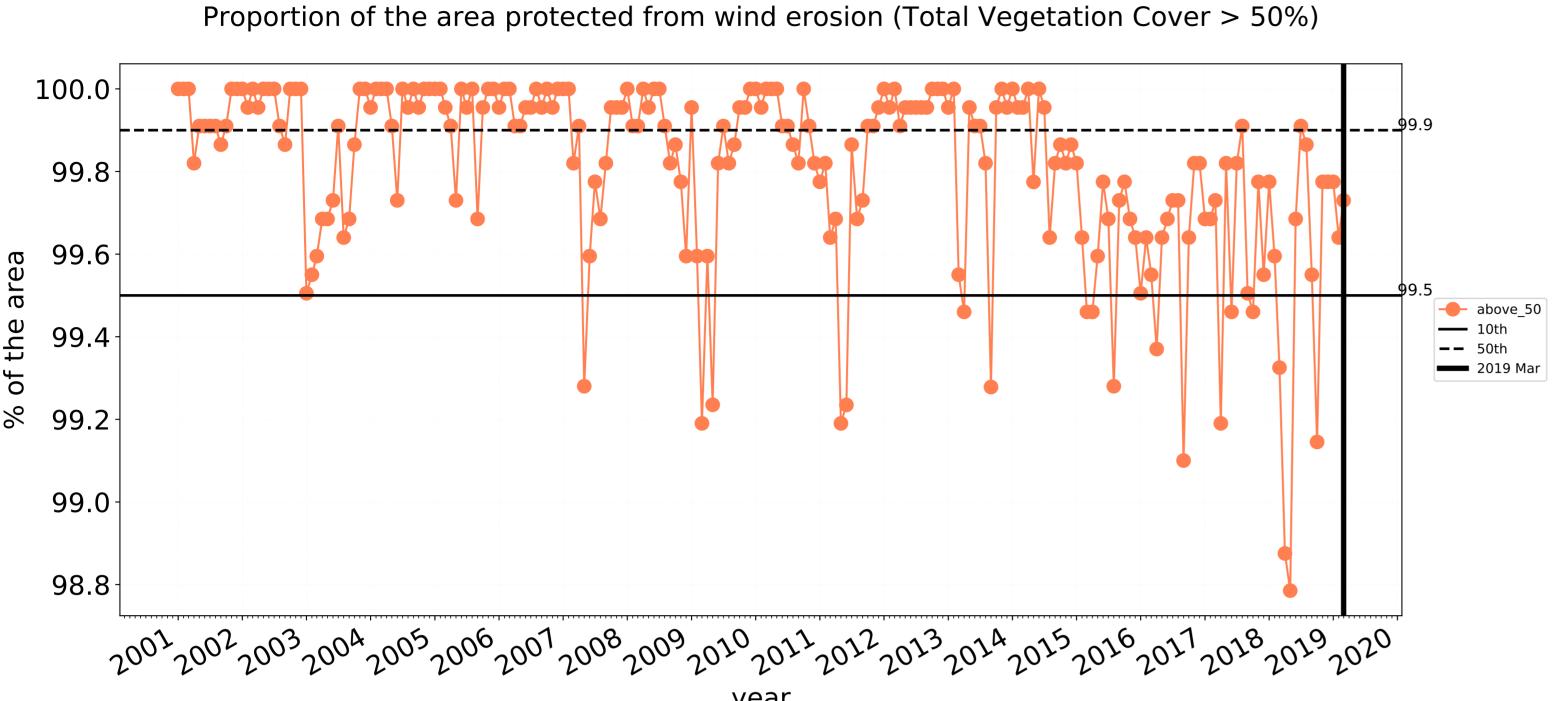


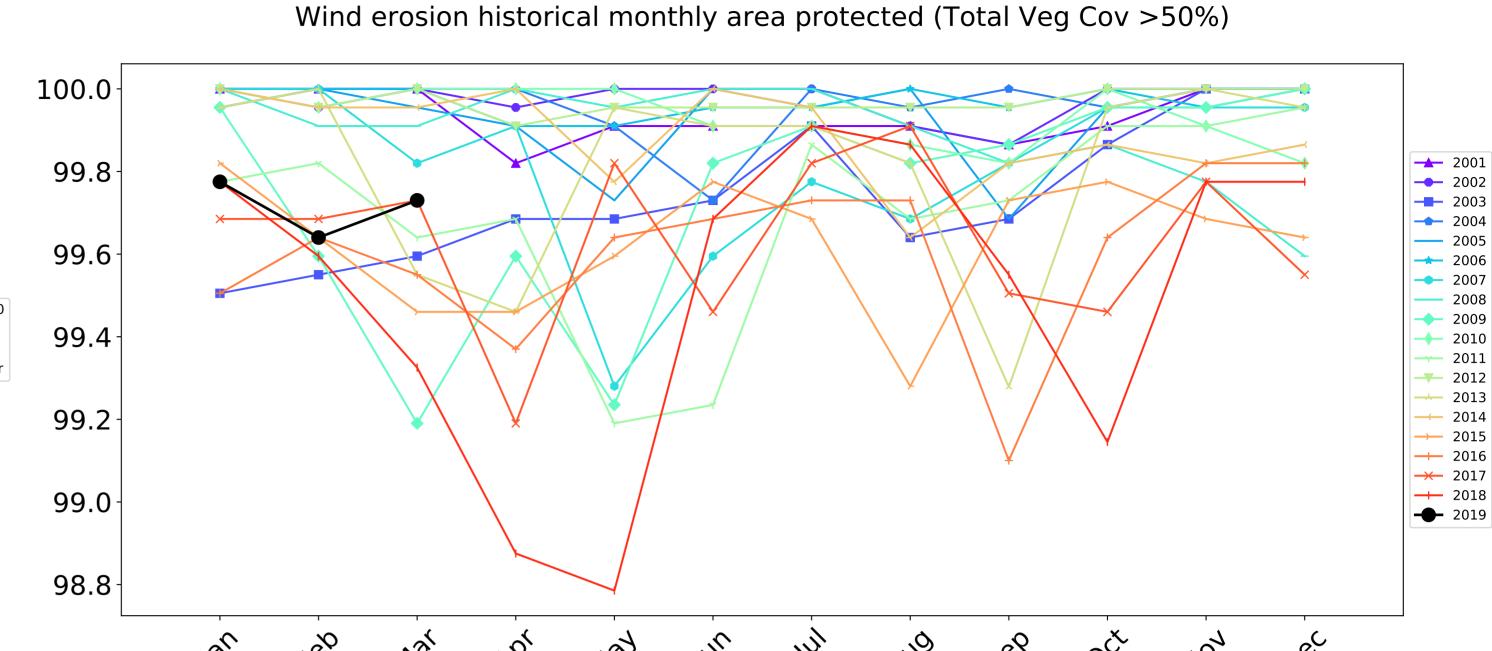




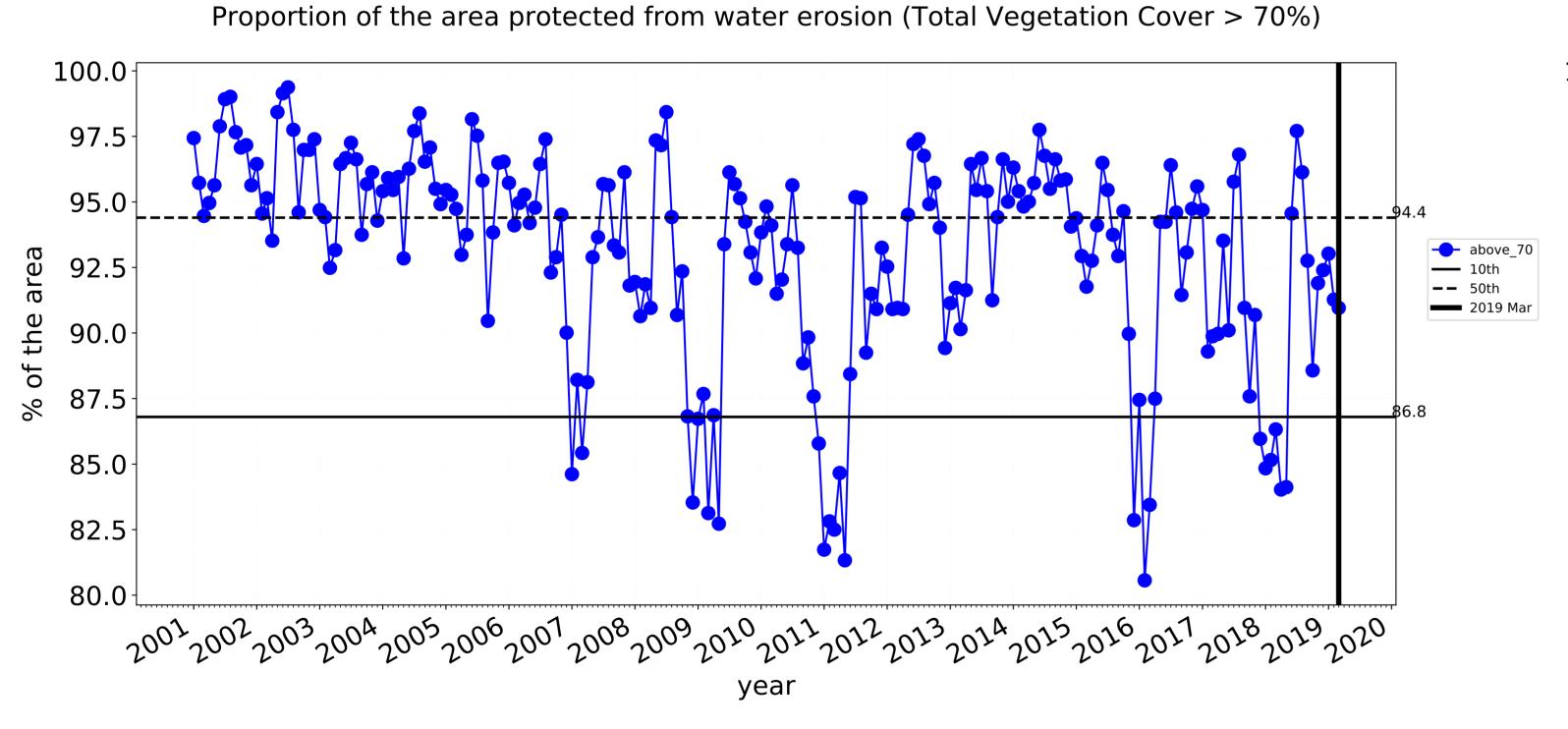


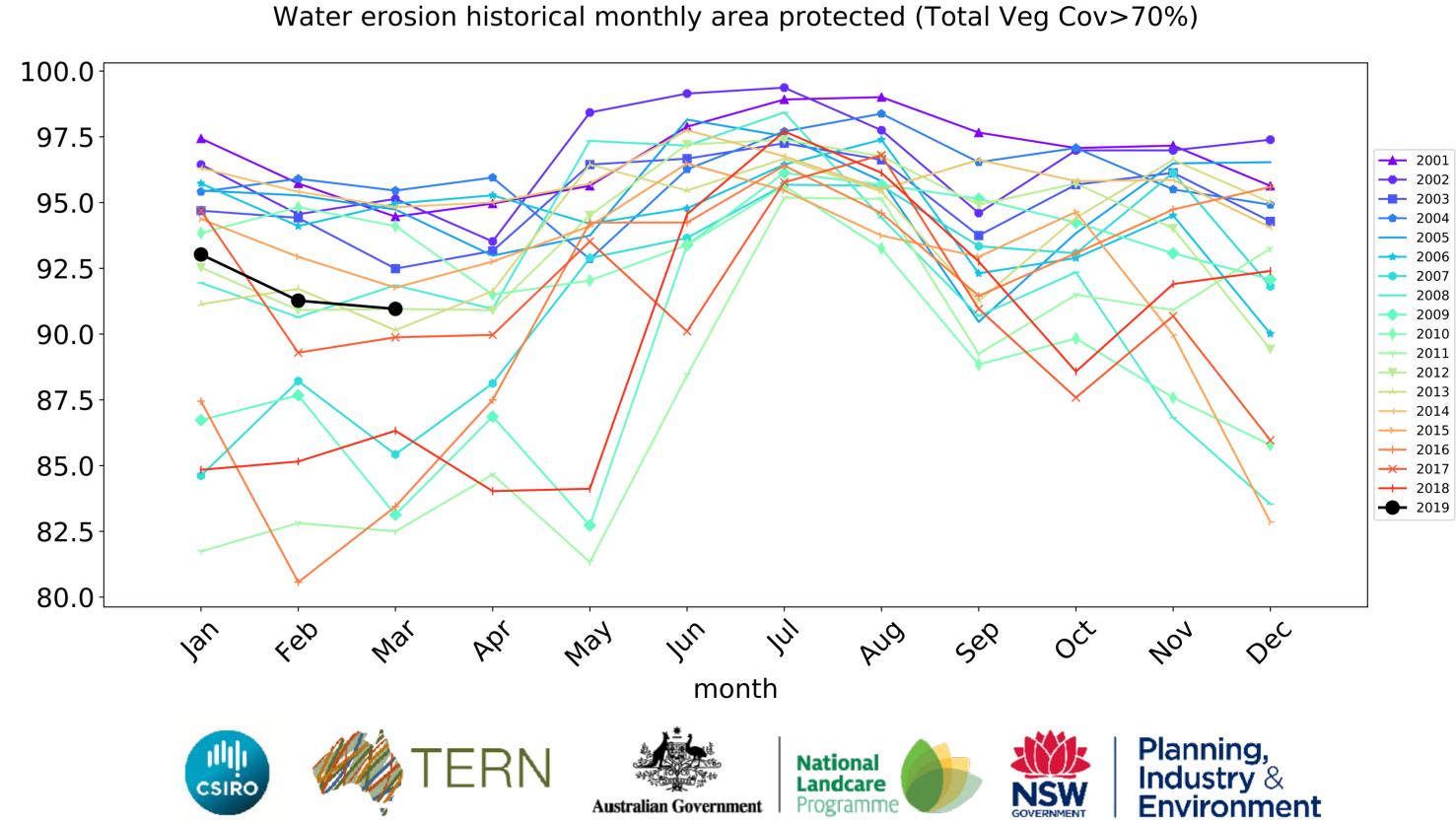
Grazing non forest timeseries

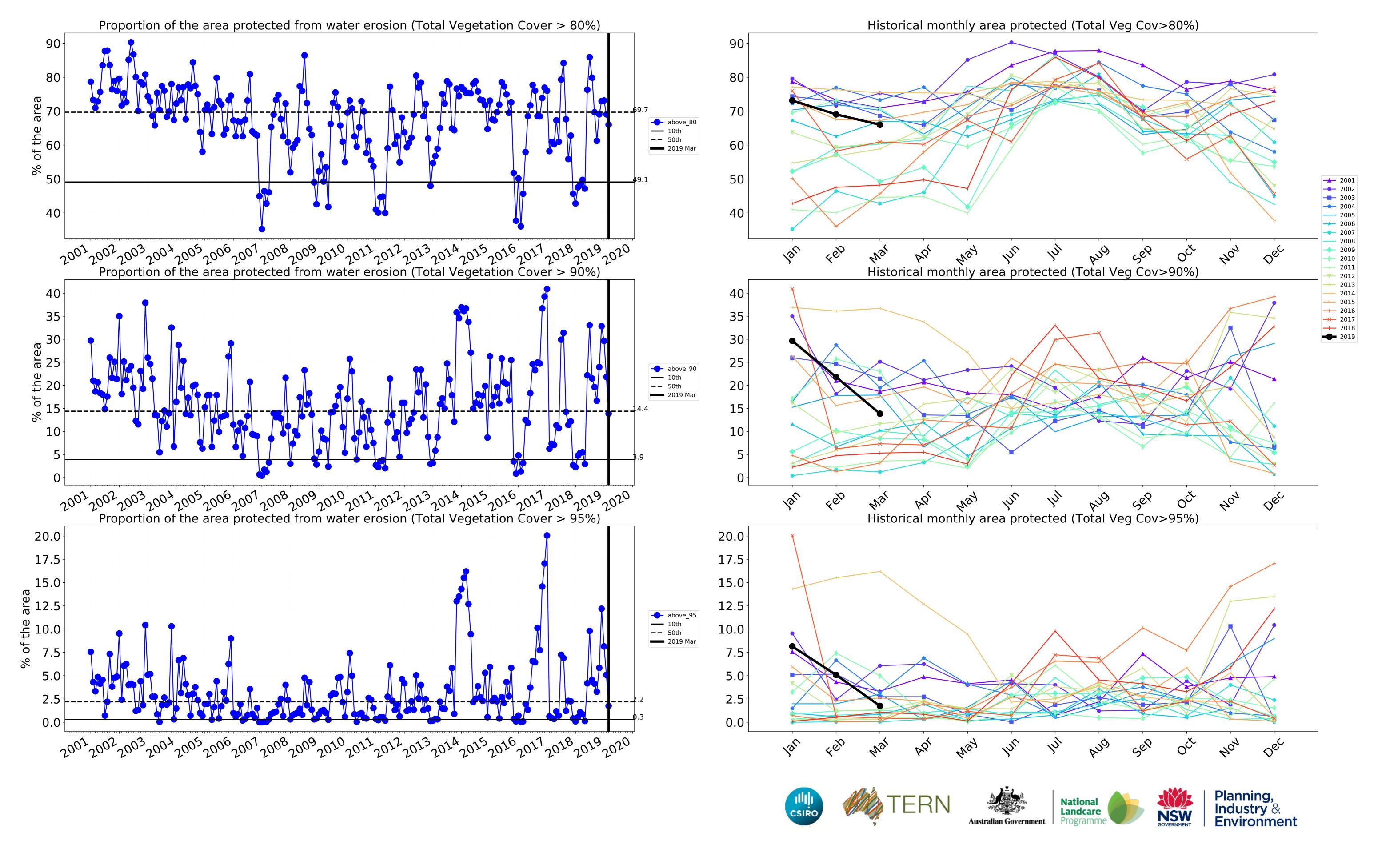




month







Cropping

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

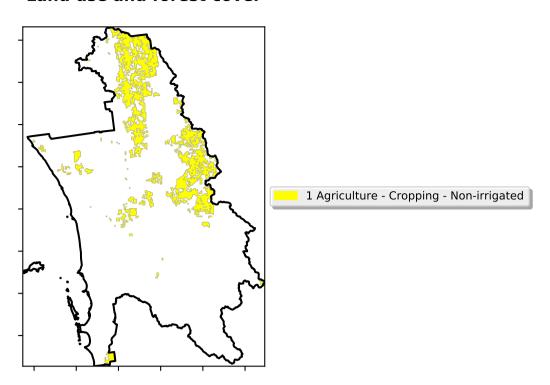
pixel is from

is, red pixels are about 20% lower than the

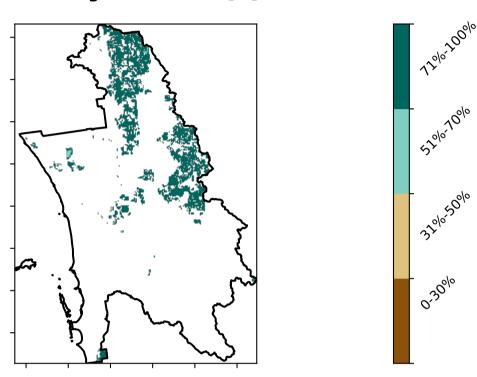
mean of that pixel. The mean

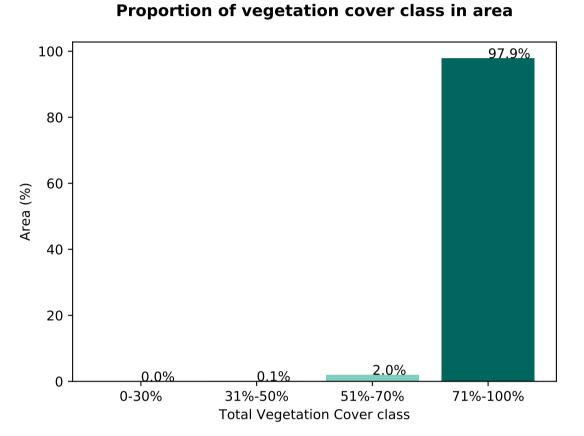
is only for the month of the map using baseline from 2001 to 2019.

the mean. That

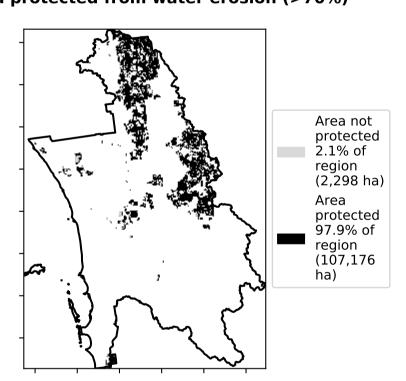


Total Vegetation Cover [%]

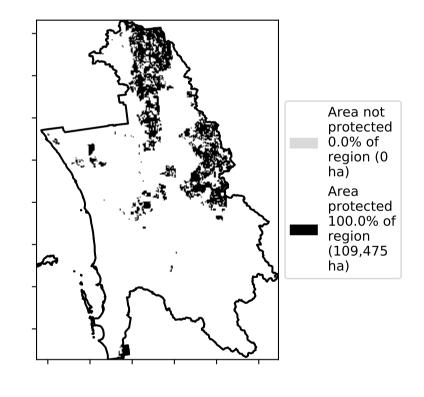




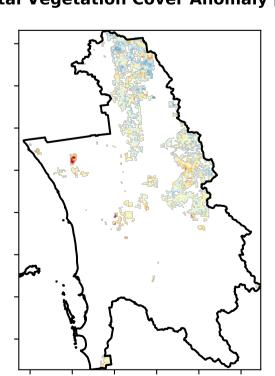
% Area protected from water erosion (>70%)

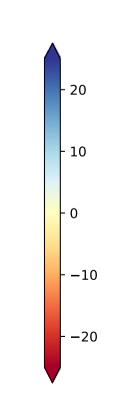


% Area protected from wind erosion (>50%)

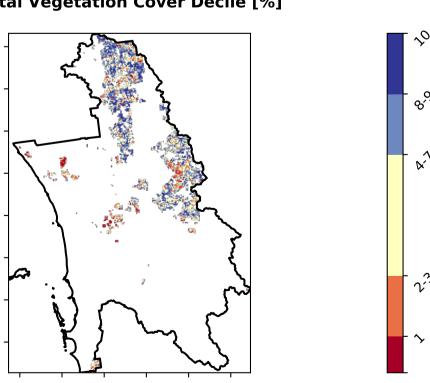


Total Vegetation Cover Anomaly [%]





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.







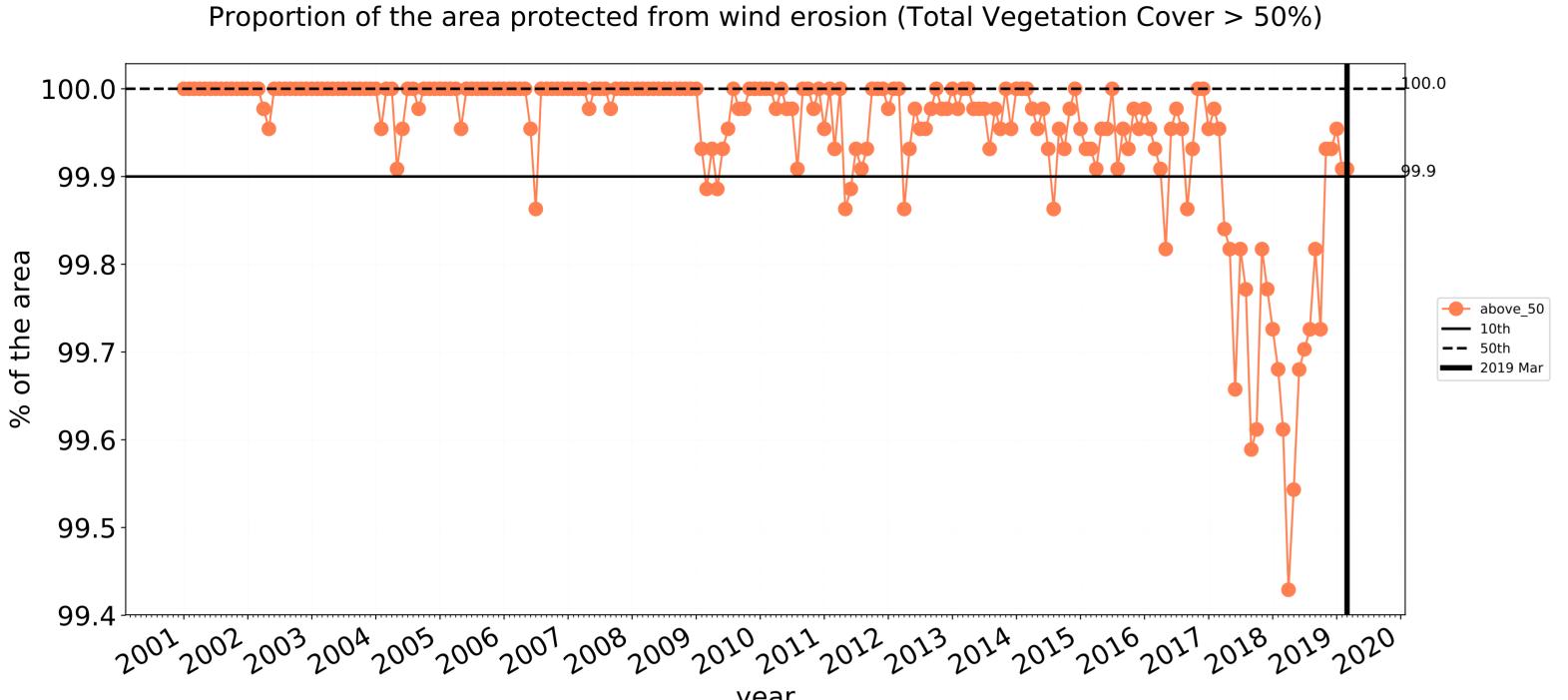


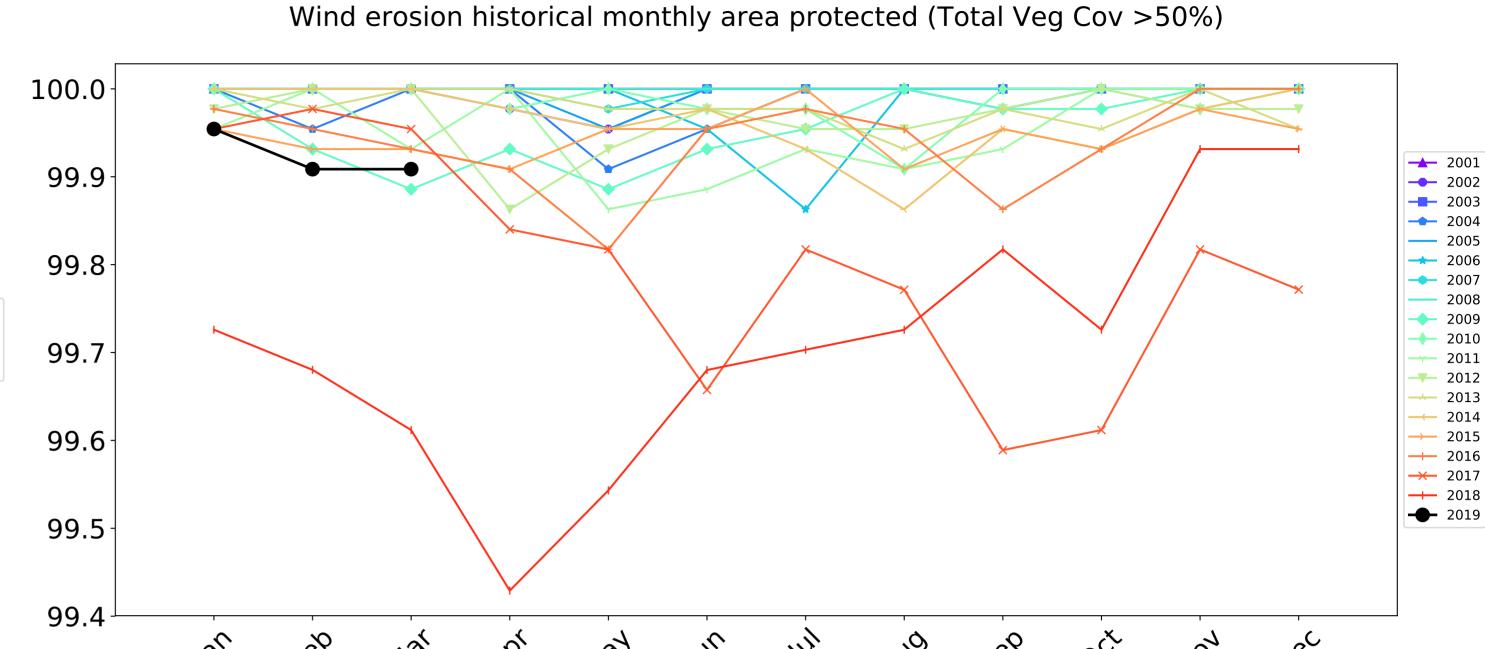




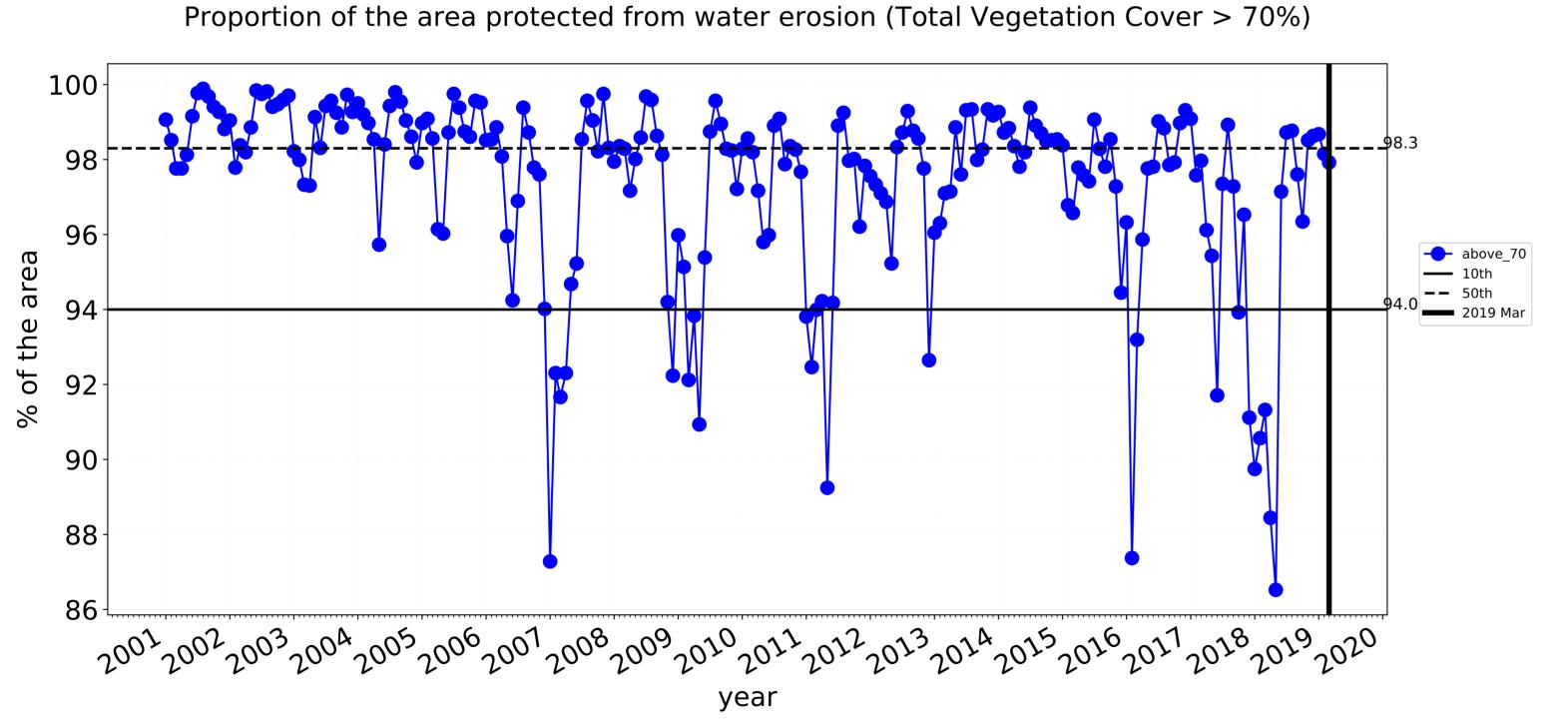


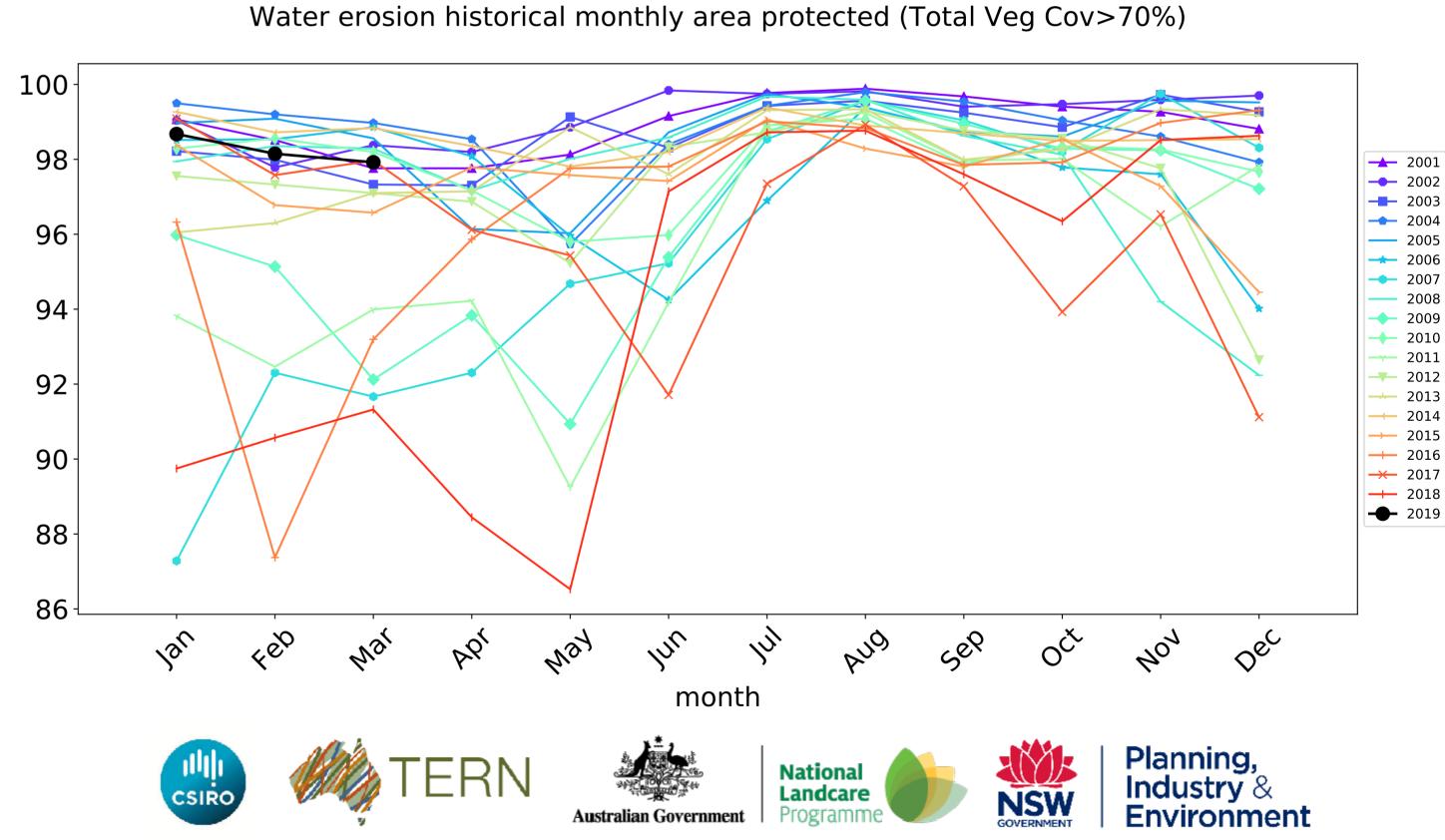
Cropping timeseries

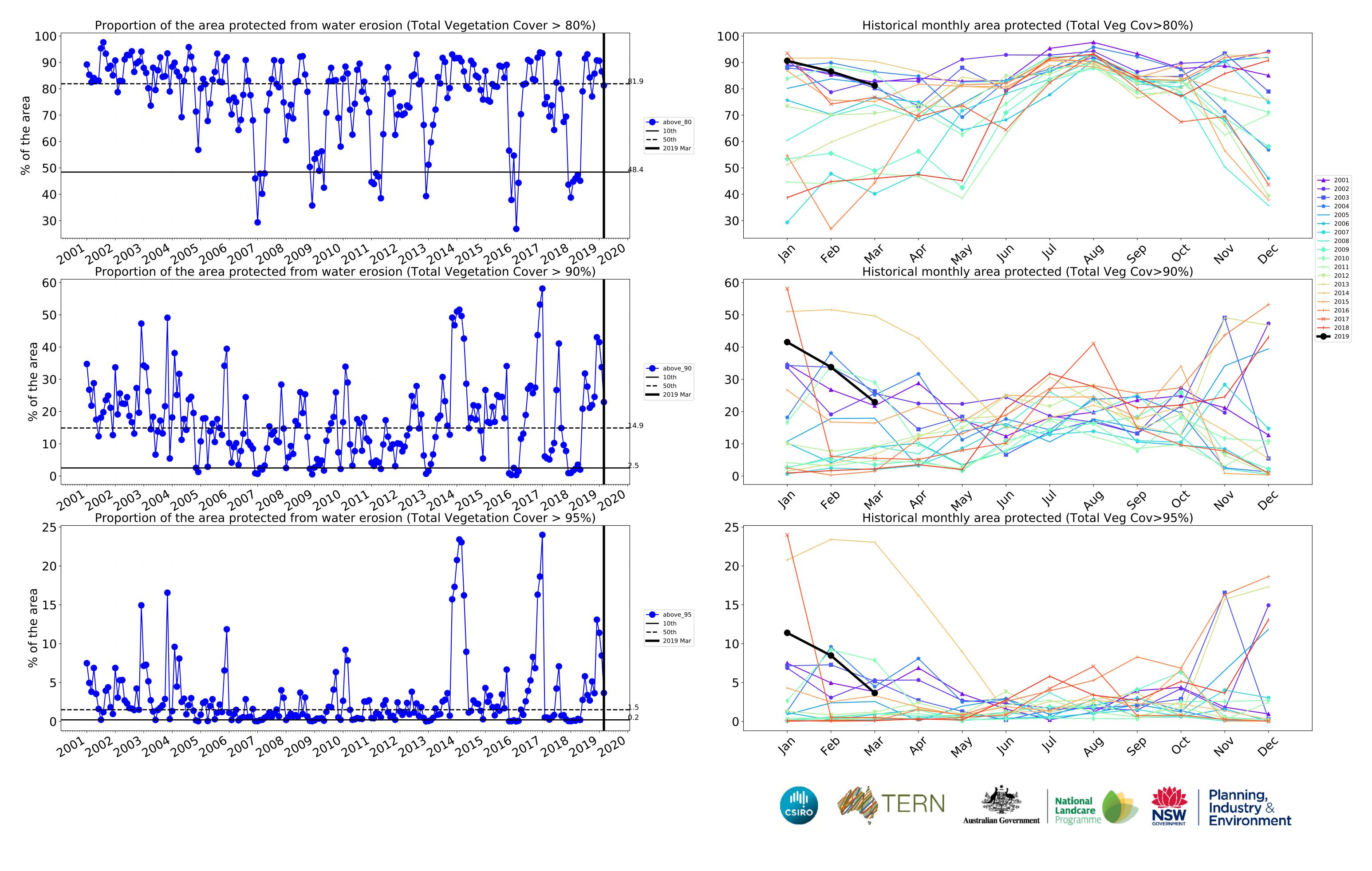




month







Irrigation

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

is, red pixels are about 20% lower than the

mean of that

pixel. The mean

using baseline from 2001 to 2019.

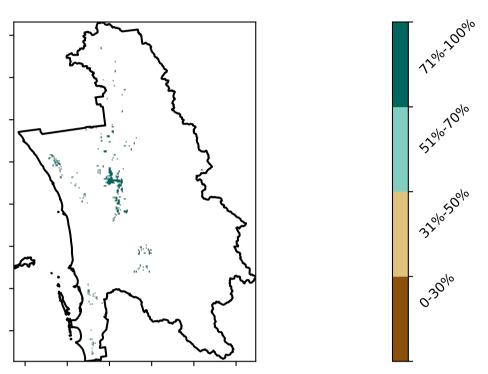
is only for the month of the map

the mean. That

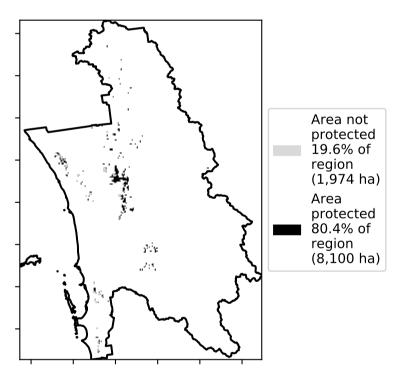
1 Agriculture - Grazing - Irrigated 2 Agriculture - Cropping - Irrigated 3 Agriculture - Horticulture - Irrigated

Total Vegetation Cover [%]

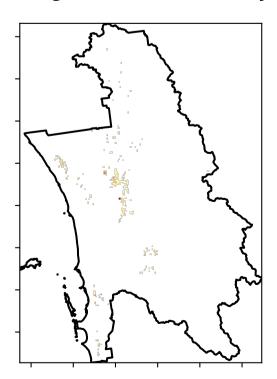
Land use and forest cover



% Area protected from water erosion (>70%)



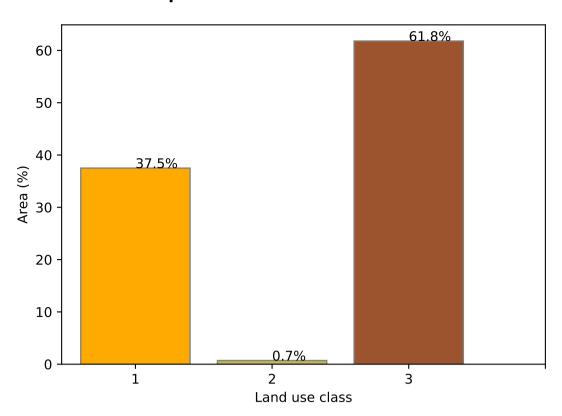
Total Vegetation Cover Anomaly [%]



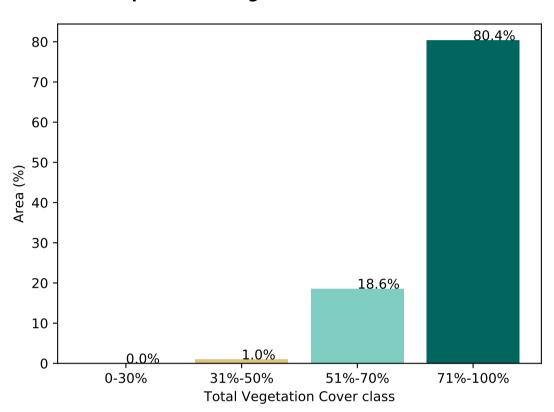
- 20 - 10 - 0 - -10 - -20

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.

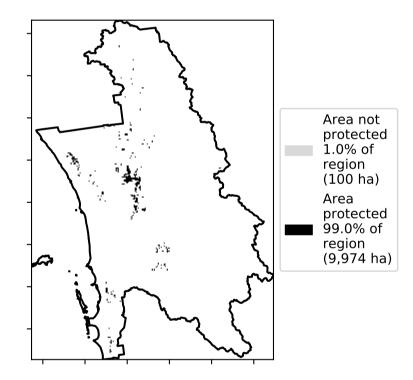
Proportion of each land class in area



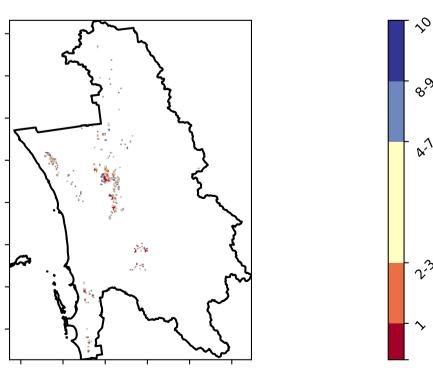
Proportion of vegetation cover class in area



% Area protected from wind erosion (>50%)



Total Vegetation Cover Decile [%]







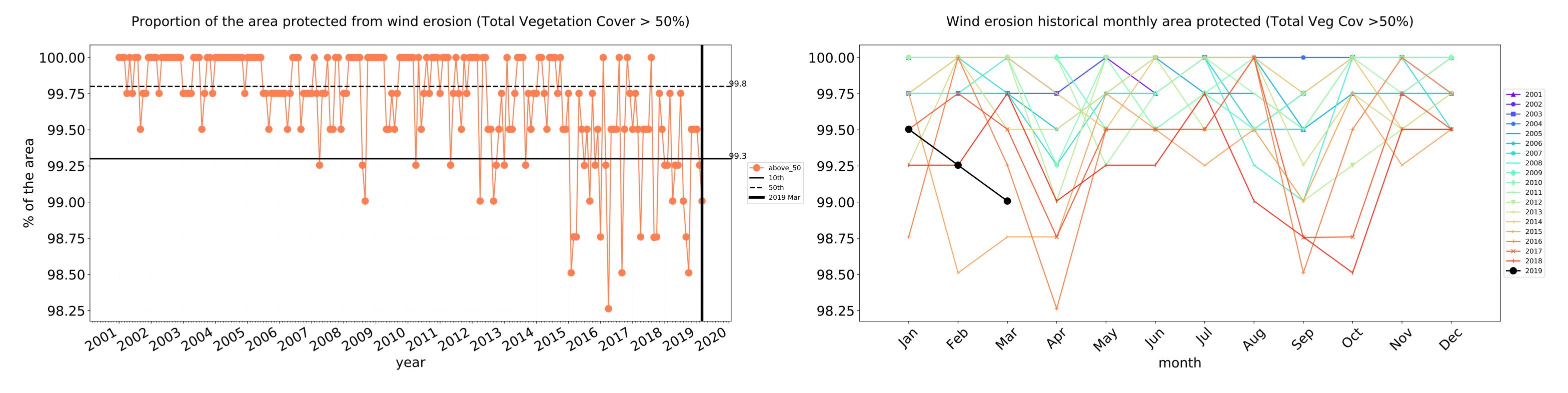


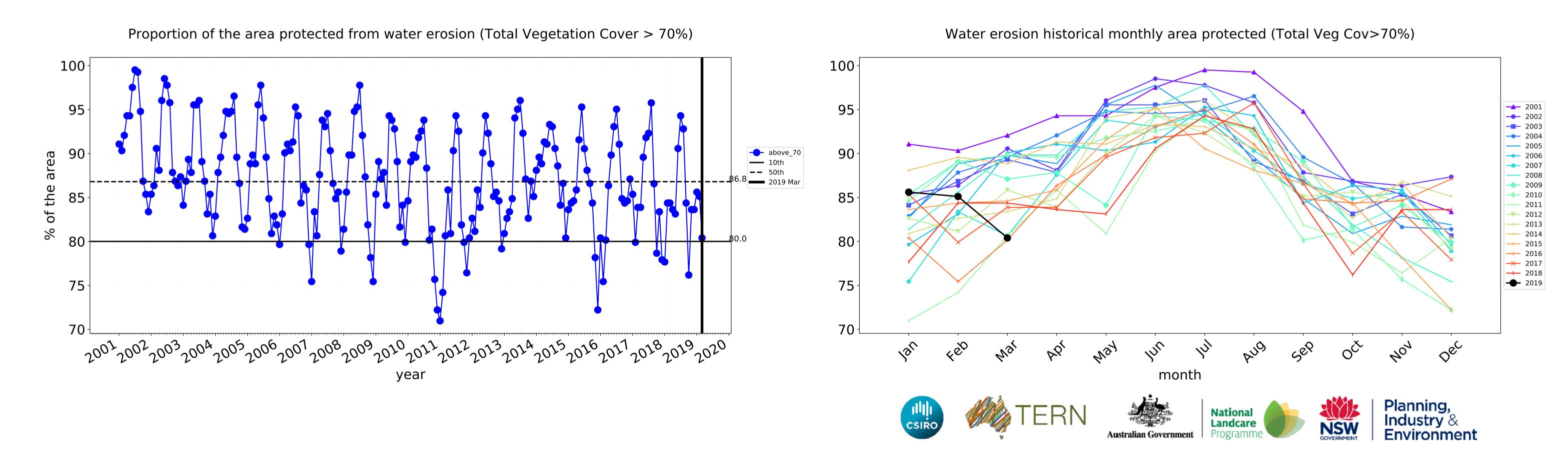


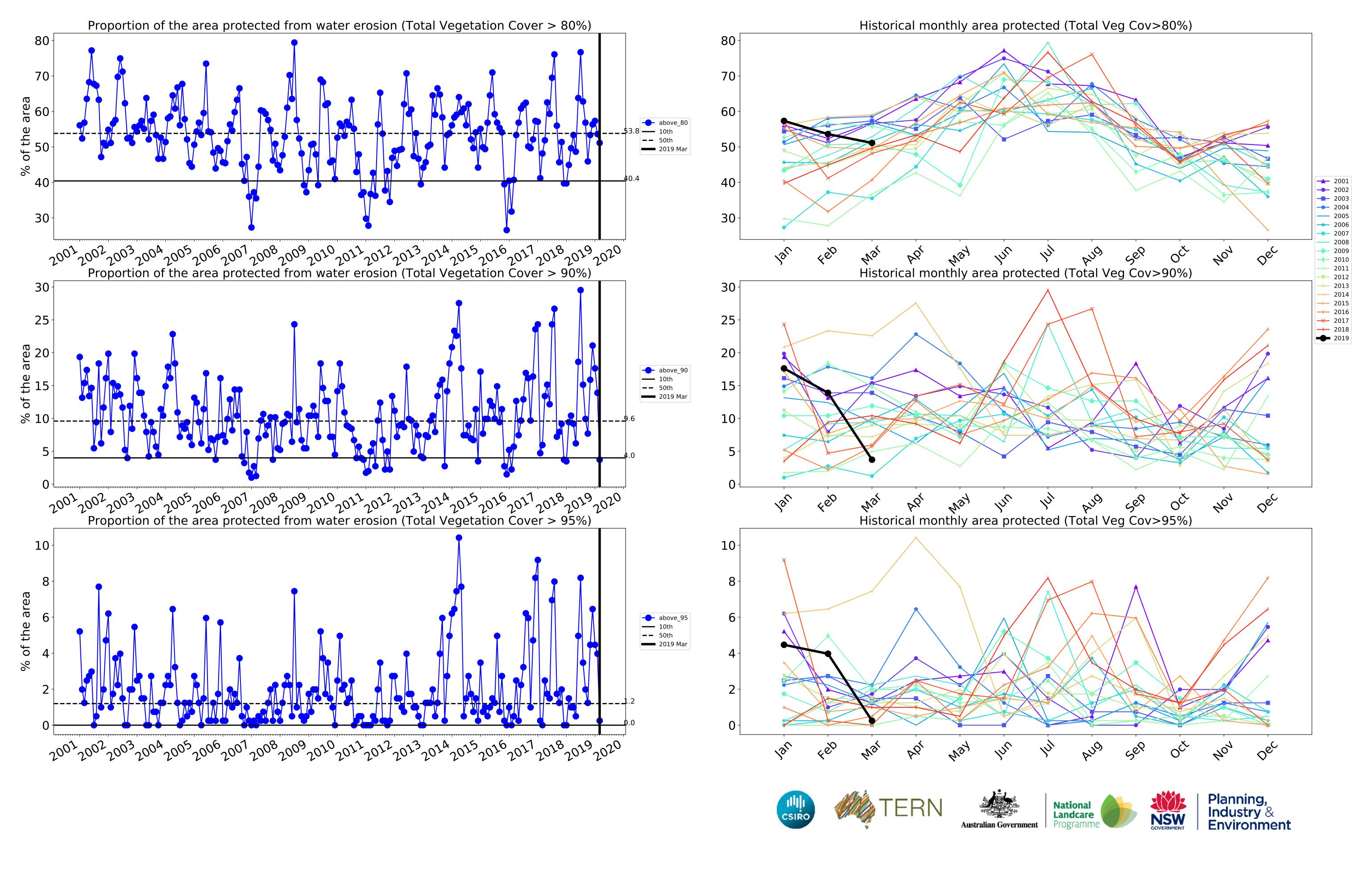




Irrigation timeseries







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)

Anomaly show how many percetage points each

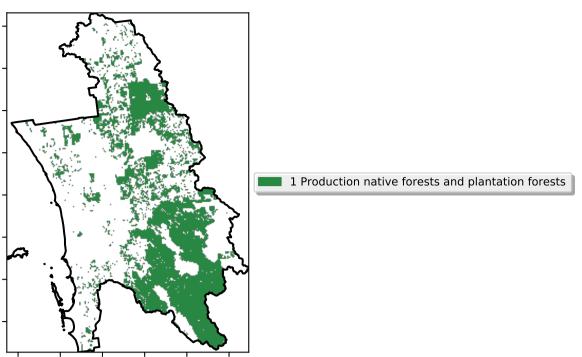
pixel is from

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

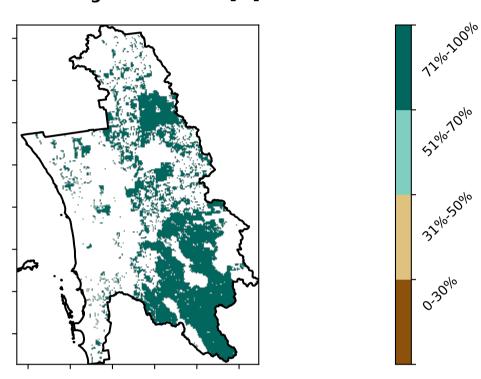
the mean. That

is only for the month of the map

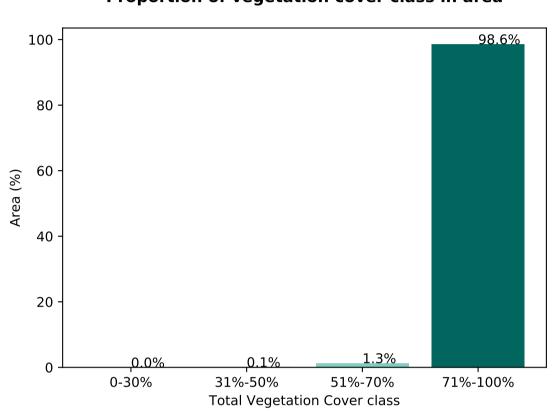
using baseline from 2001 to 2019.



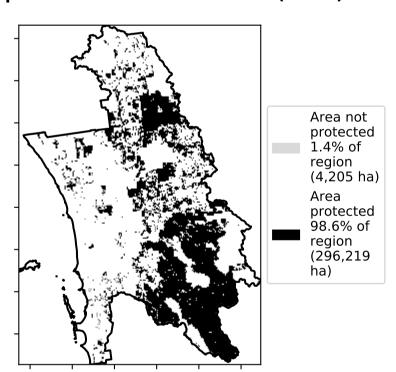
Total Vegetation Cover [%]



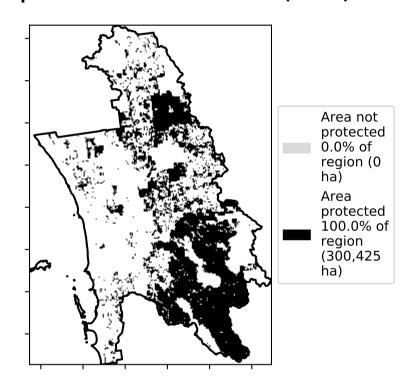
Proportion of vegetation cover class in area



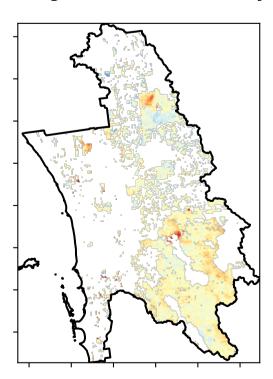
% Area protected from water erosion (>70%)

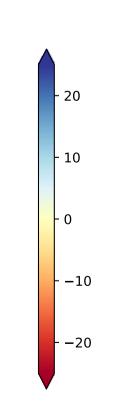


% Area protected from wind erosion (>50%)

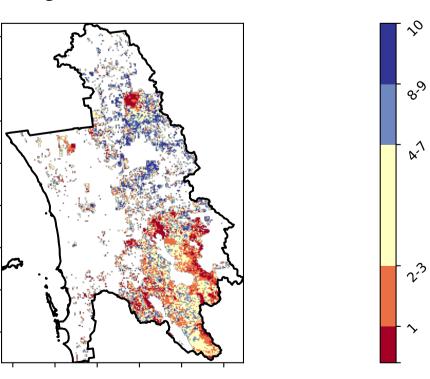


Total Vegetation Cover Anomaly [%]





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.







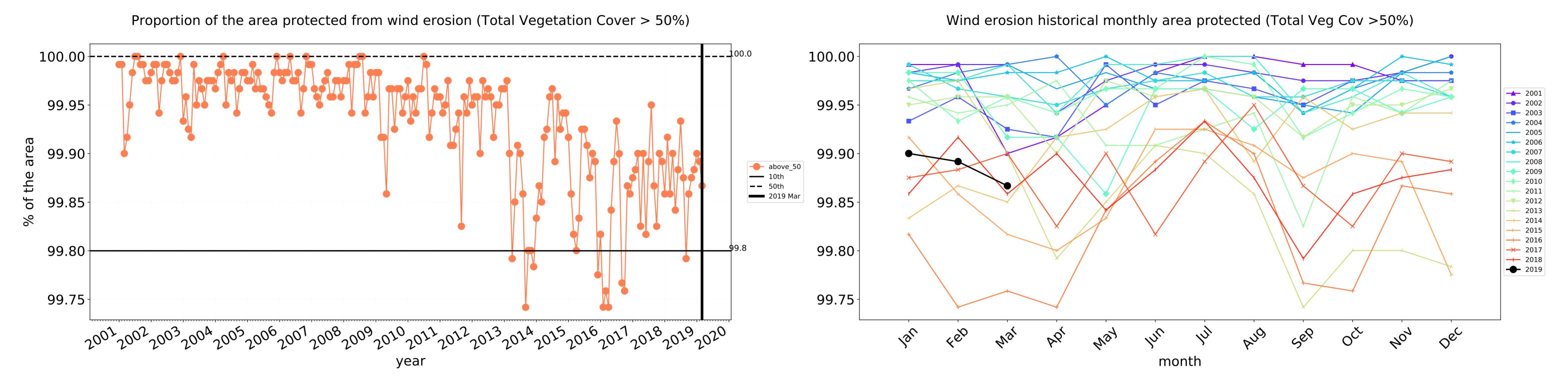


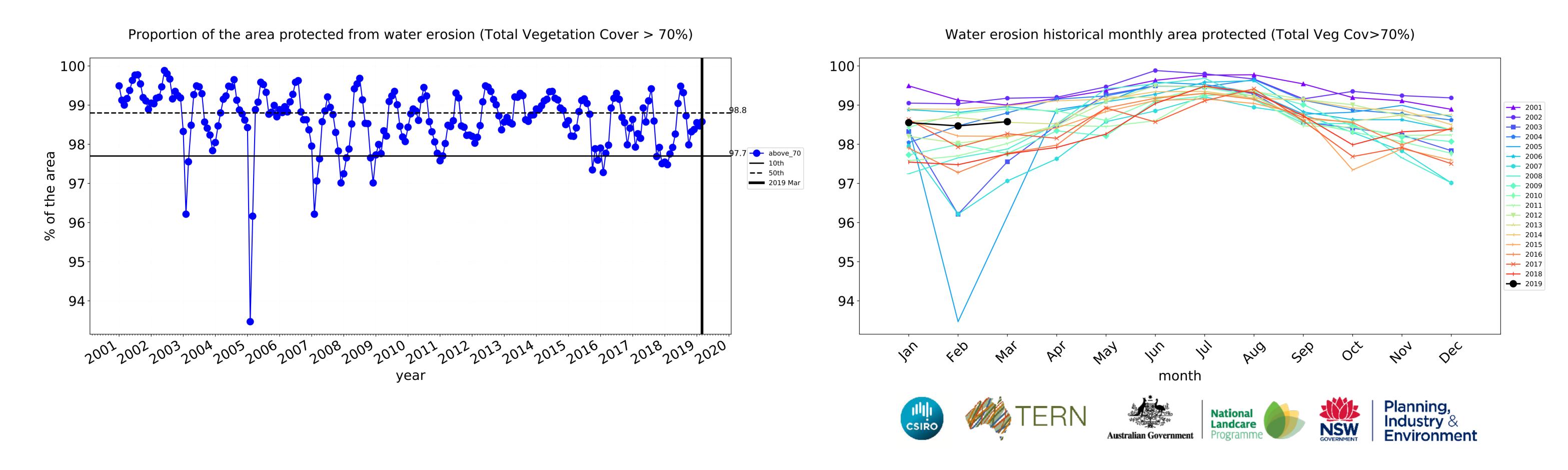


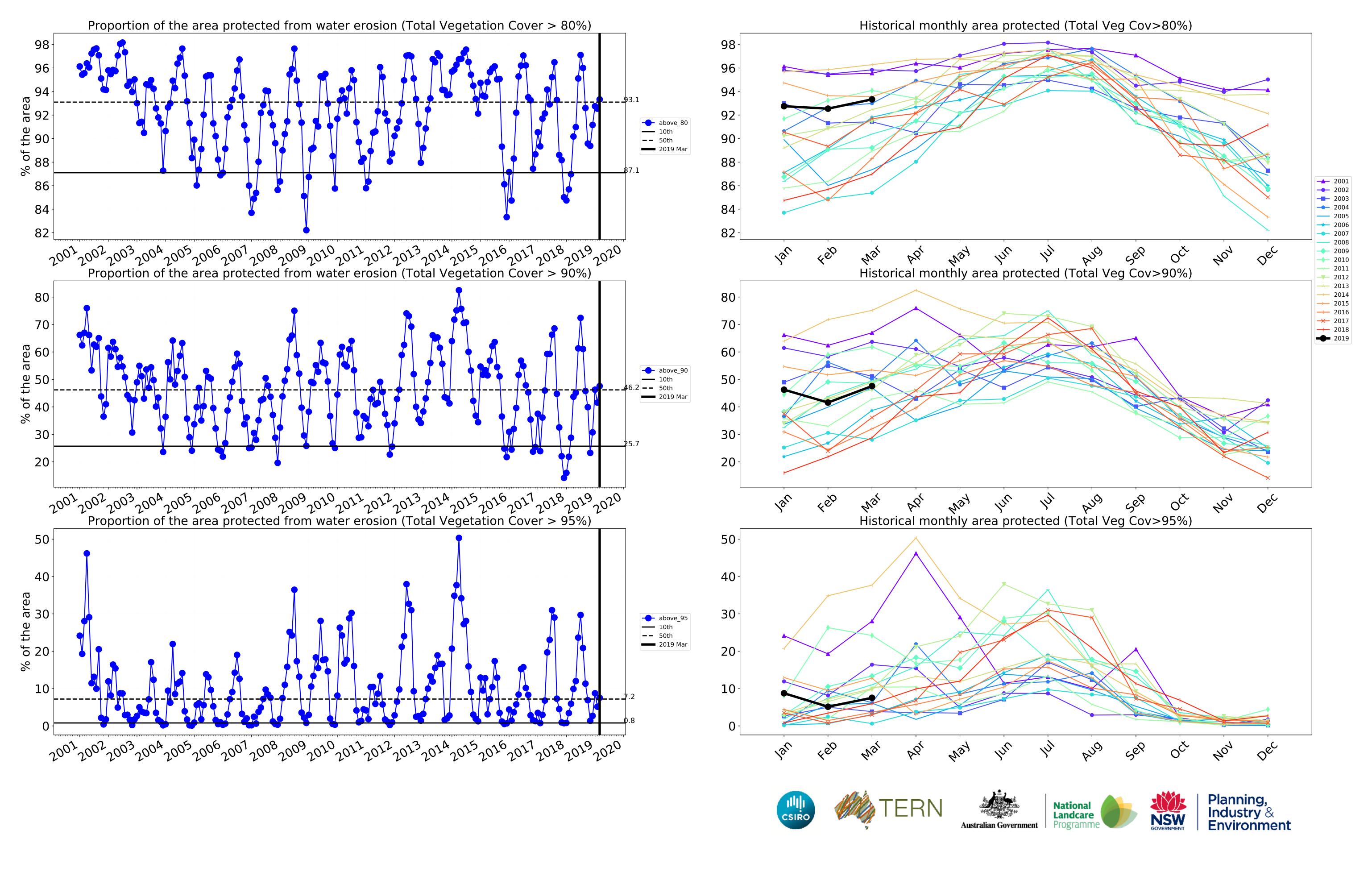




Production native forests and plantation forests timeseries







Swan Region (876,875 ha and no data 7,290 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	876,875	99.8% 875,525	98.1% 860,600	86.4% 758,000	74.0% 649,025	29.1% 255,125	4.5% 39,150
Conservation and natural environments	232,275	100.0% 232,200	99.8% 231,875	96.9% 225,025	85.7% 199,050	31.9% 74,075	4.5% 10,400
Conservation and natural environments non forest	37,725	99.8% 37,650	99.2% 37,425	91.2% 34,400	67.7% 25,525	17.5% 6,600	3.1% 1,175
Conservation and natural environments Woodland forest	135,475	100.0% 135,475	100.0% 135,425	98.6% 133,575	91.2% 123,600	31.4% 42,575	2.5% 3,425
Conservation and natural environments Forest (non woodland)	59,075	100.0% 59,075	99.9% 59,025	96.6% 57,050	84.5% 49,925	42.1% 24,900	9.8% 5,800
Agriculture	175,900	100.0% 175,875	99.8% 175,525	94.7% 166,575	74.7% 131,350	19.0% 33,350	2.9% 5,025
Grazing	56,125	100.0% 56,125	99.7% 55,950	91.0% 51,075	66.2% 37,150	14.0% 7,875	1.8% 1,000
Grazing non forest	55,575	100.0% 55,575	99.7% 55,425	91.0% 50,550	66.0% 36,675	13.9% 7,700	1.8% 975
Cropping	109,475	100.0% 109,450	99.9% 109,375	97.9% 107,200	81.3% 88,950	22.9% 25,100	3.7% 4,000
Irrigation	10,075	100.0% 10,075	99.0% 9,975	80.4% 8,100	51.1% 5,150	3.7% 375	0.2% 25
Production native forests and plantation forests	300,425	100.0% 300,400	99.9% 300,025	98.6% 296,150	93.3% 280,400	47.6% 142,975	7.5% 22,625











