Total vegetation cover soil protection Region:NRM Mackay Whitsunday QLD

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

Land use forest cover:

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

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

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

Erosion protection: Wind erosion 50% total vegetation cover

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

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

Comparison with previous years:

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

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

Erosion protection

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

Rainfall

• Millimetres rainfall each month (black line).

Each time series is also stacked by year. The black line shows the current year of data. Water erosion protection for higher rainfall and steeper slopes:

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

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

Acknowledgment of data:

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

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









Date: May 2020

Vegetation Cover May 2020

Land use and forest cover

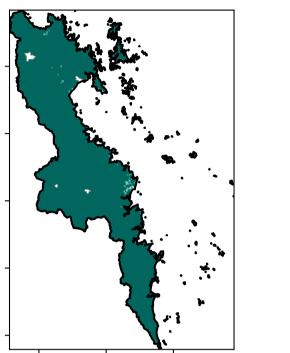
Legend with land class forest cover and number, i.e. Forests is 12 1 Conservation and natural environments - Non-forest 2 Conservation and natural environments - Woodland forest 3 Conservation and natural environments - Non-Woodland forest 4 Agriculture - Grazing - Non-forest 5 Agriculture - Grazing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

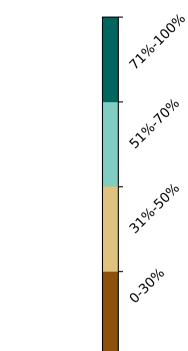
Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia

(2018) and Forests

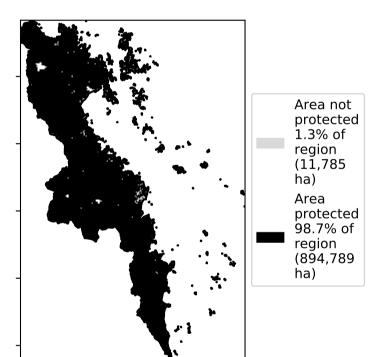
of Australia (2018)

Total Vegetation Cover [%]



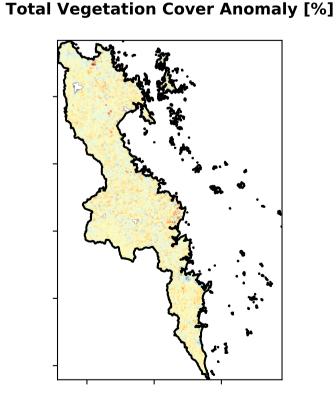


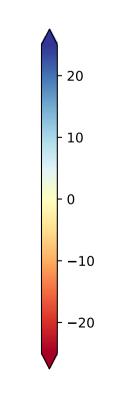
% Area protected from water erosion (>70%)



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

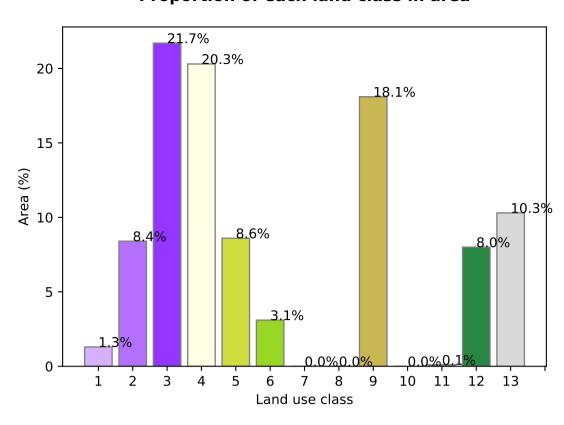
2019.



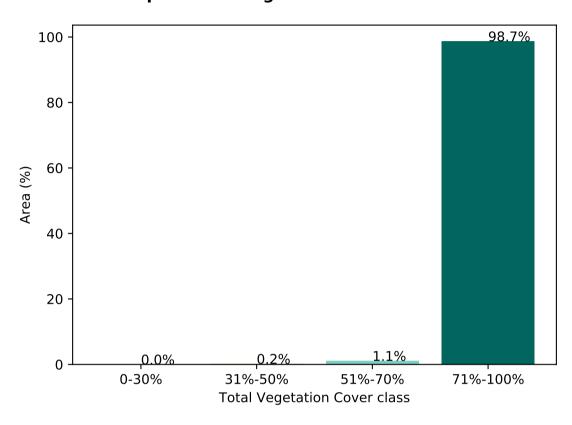


Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

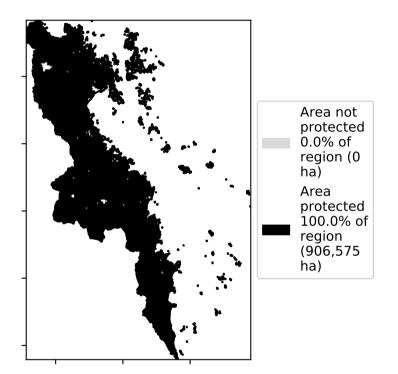
Proportion of each land class in area



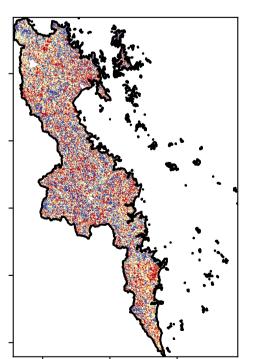
Proportion of vegetation cover class in area

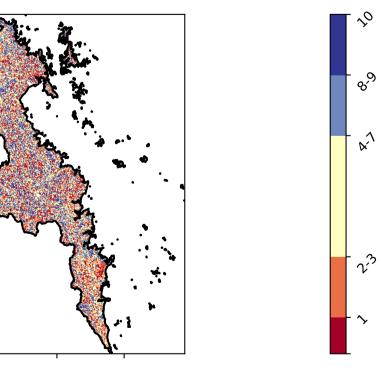


% Area protected from wind erosion (>50%)



Total Vegetation Cover Decile [%]







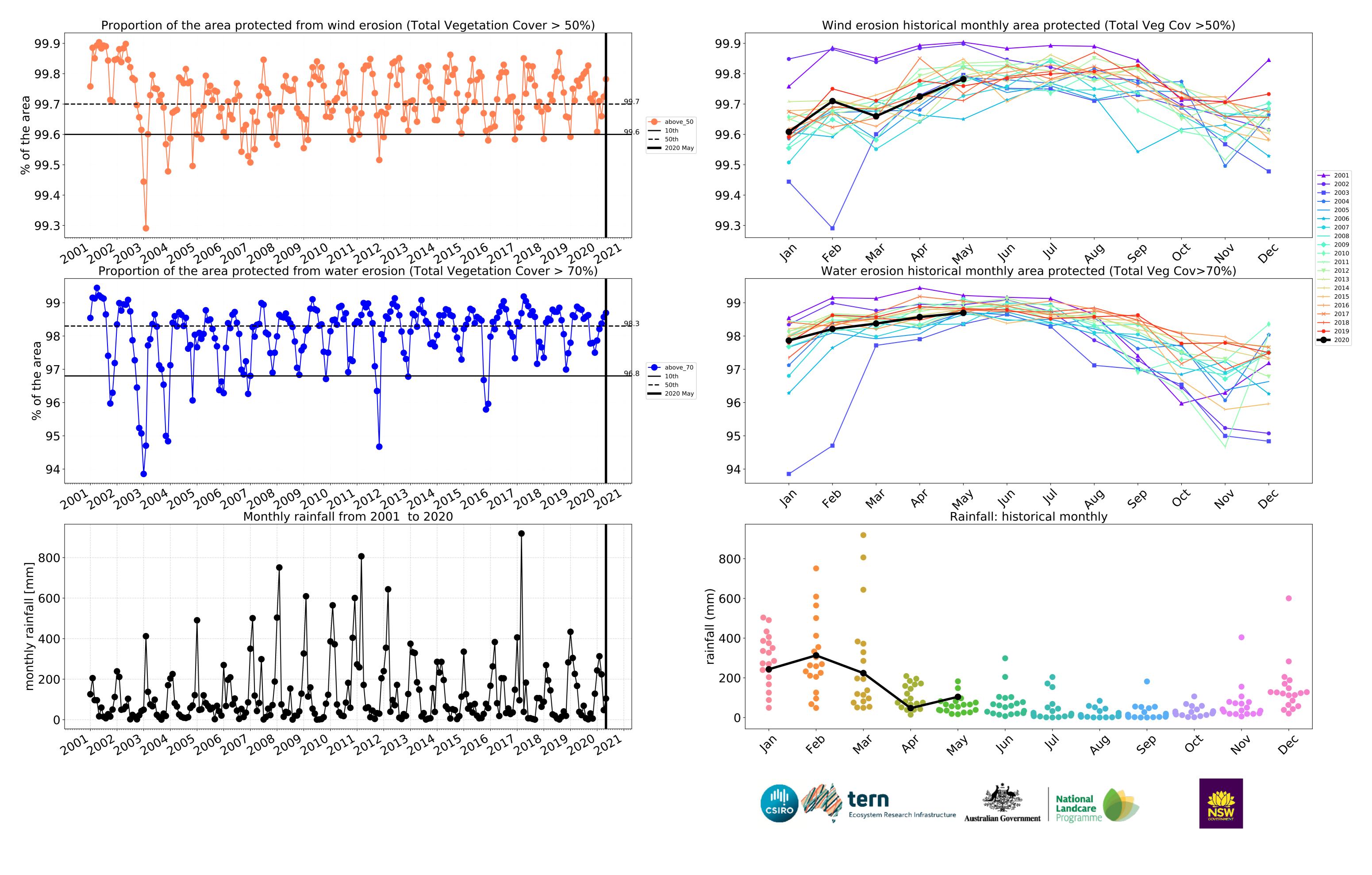


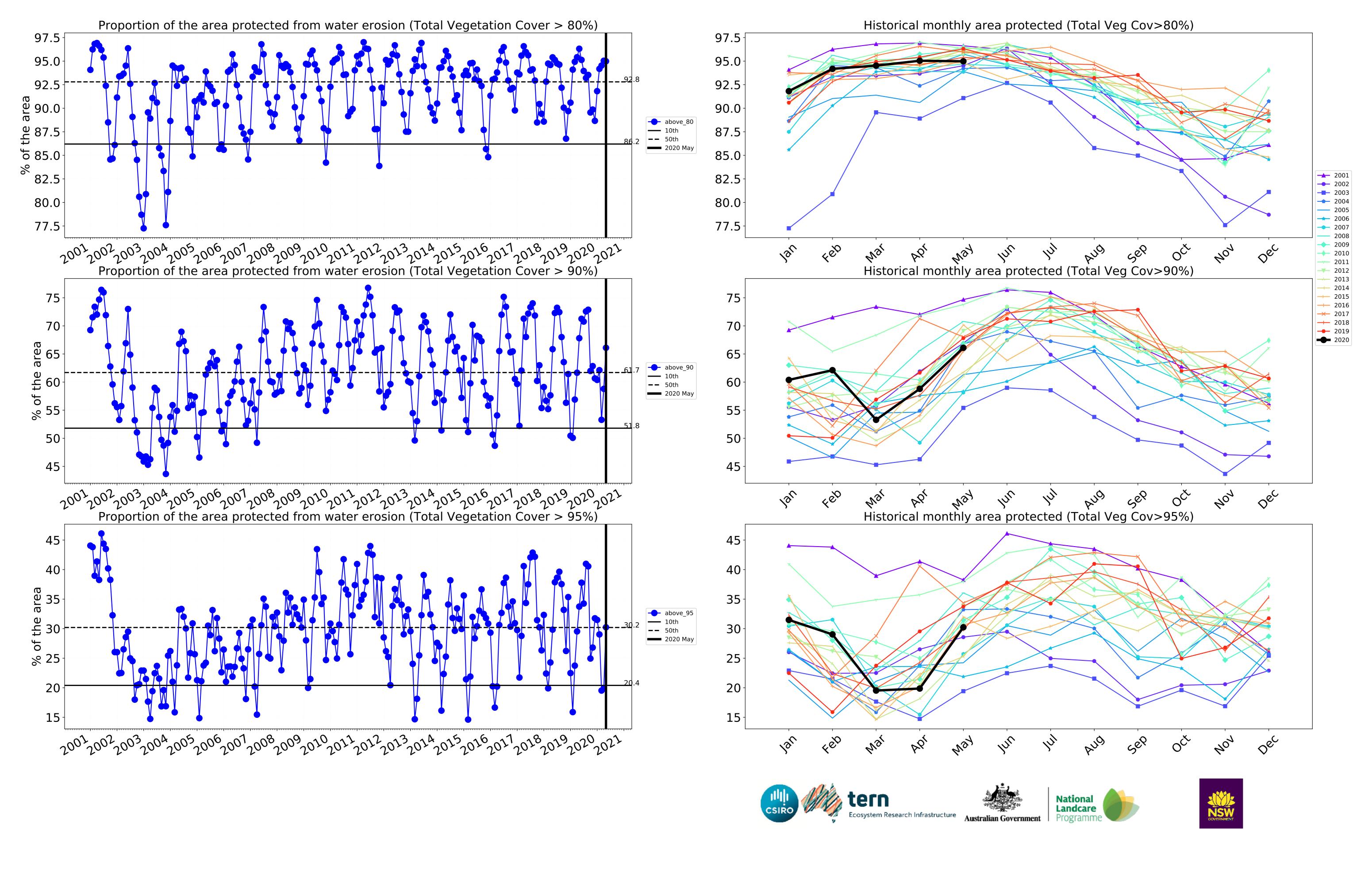








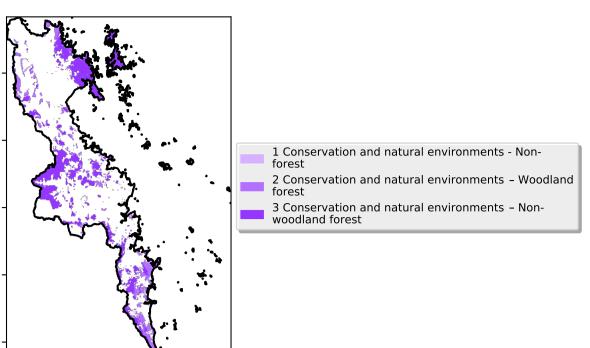


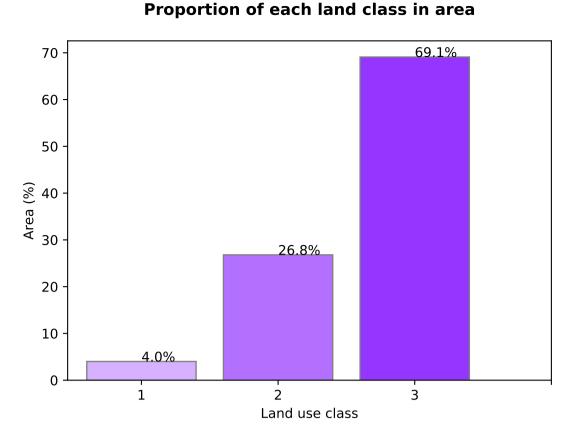


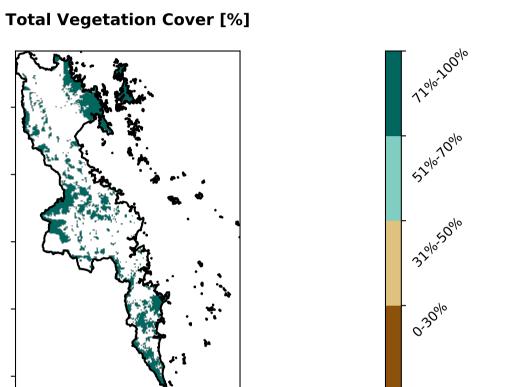
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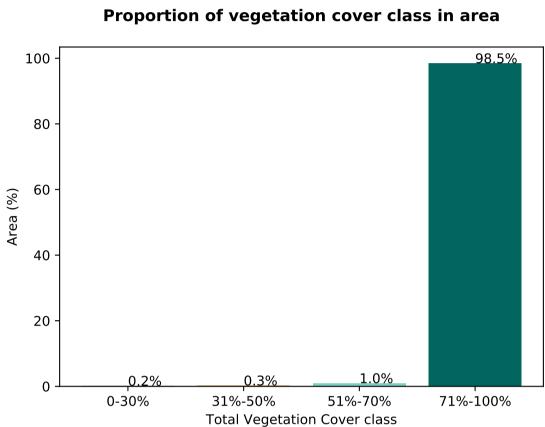
Conservation and natural environments

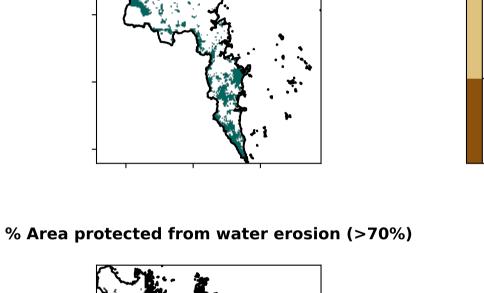
Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)



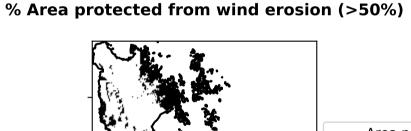


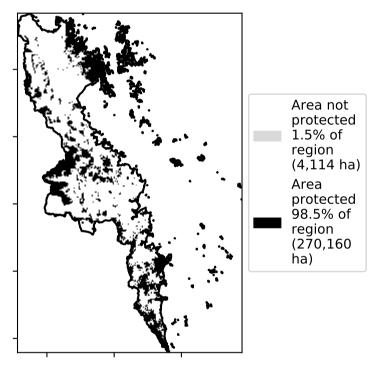


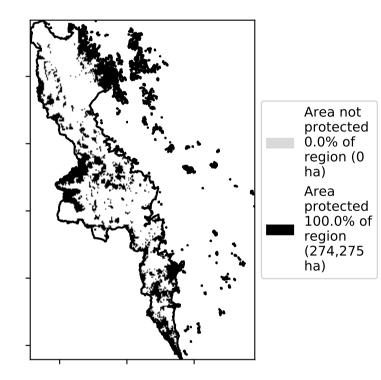




Land use and forest cover







Total Vegetation Cover Anomaly [%]

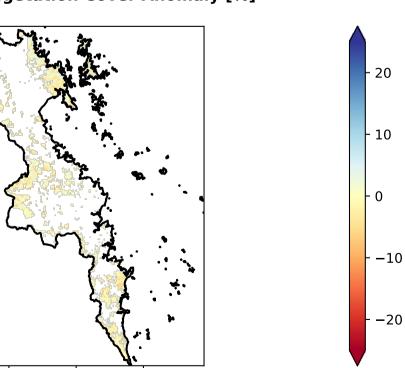
Anomaly show how many percetage points each the mean. That are about 20% lower than the pixel. The mean is only for the month of the map using baseline

pixel is from

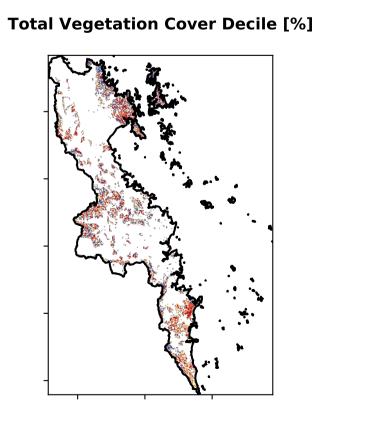
is, red pixels

mean of that

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.







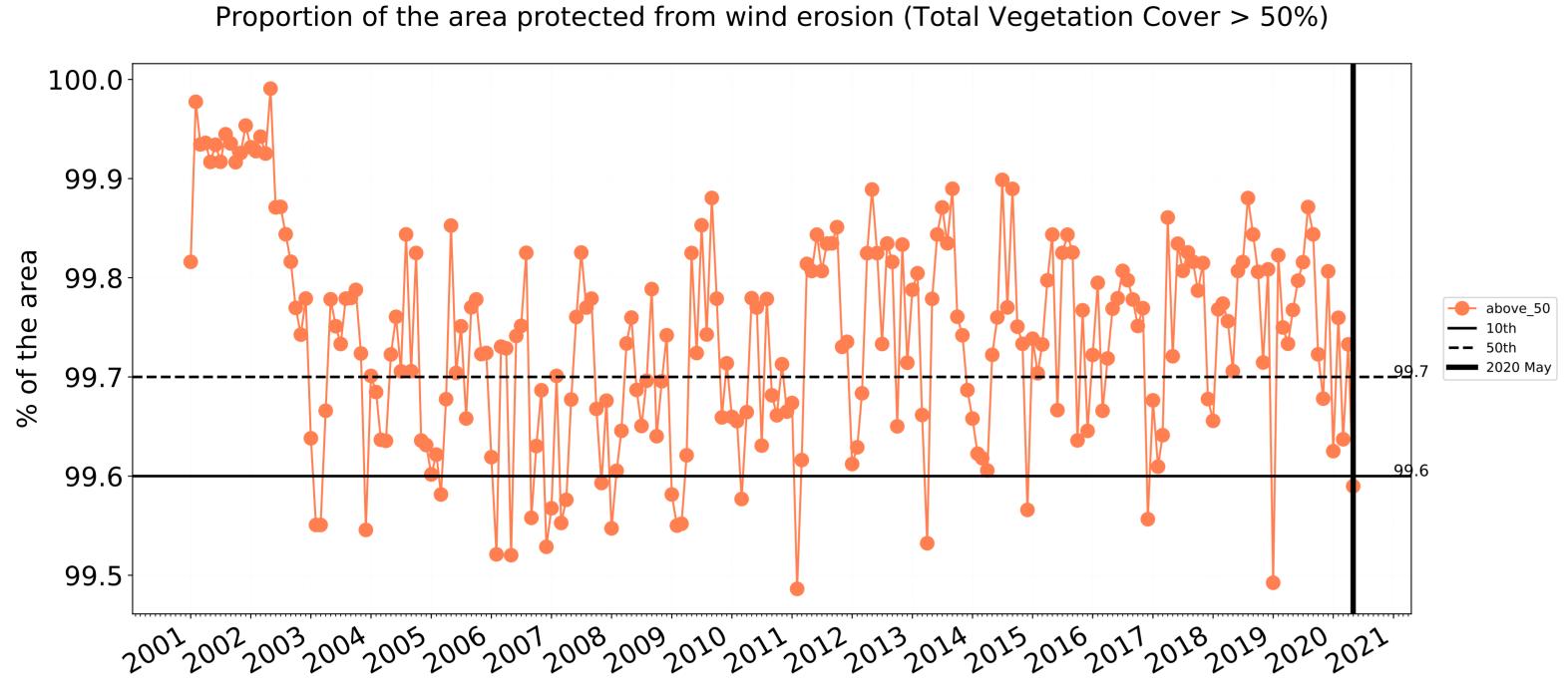




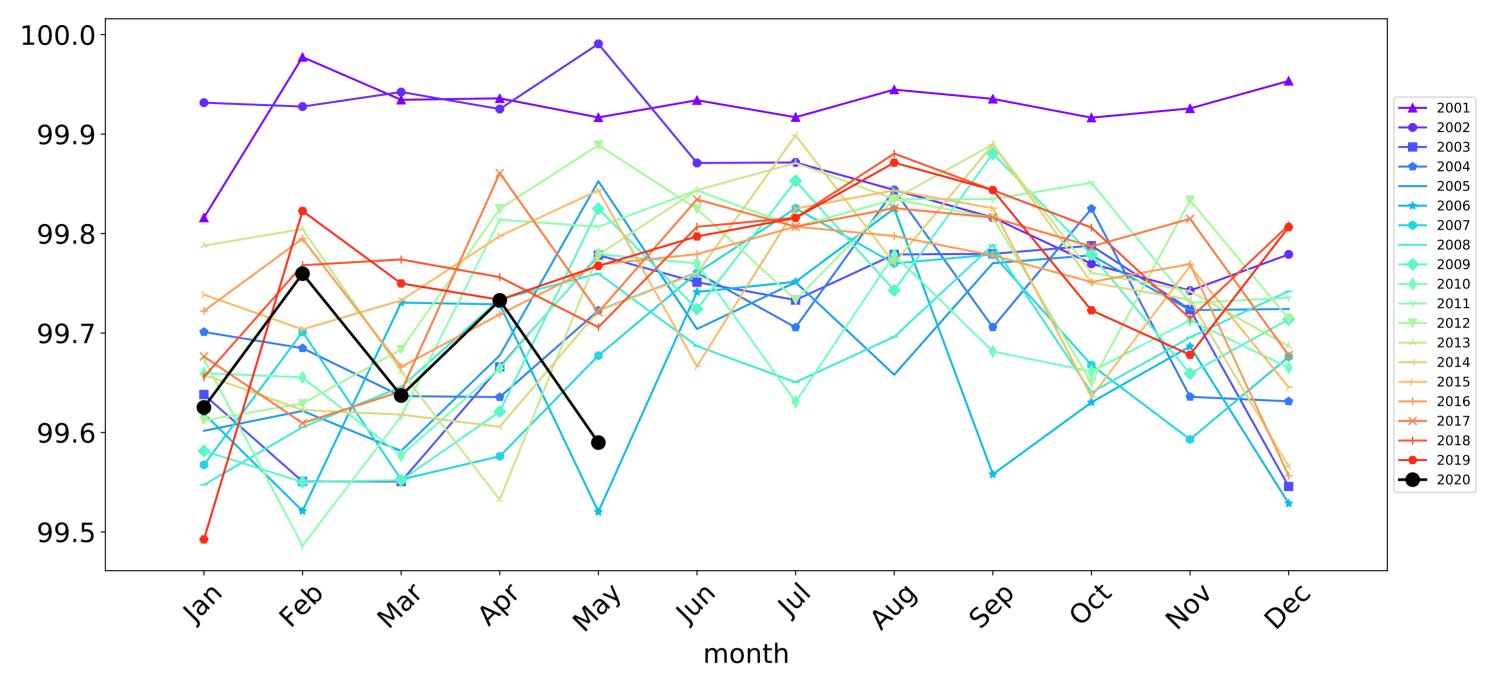


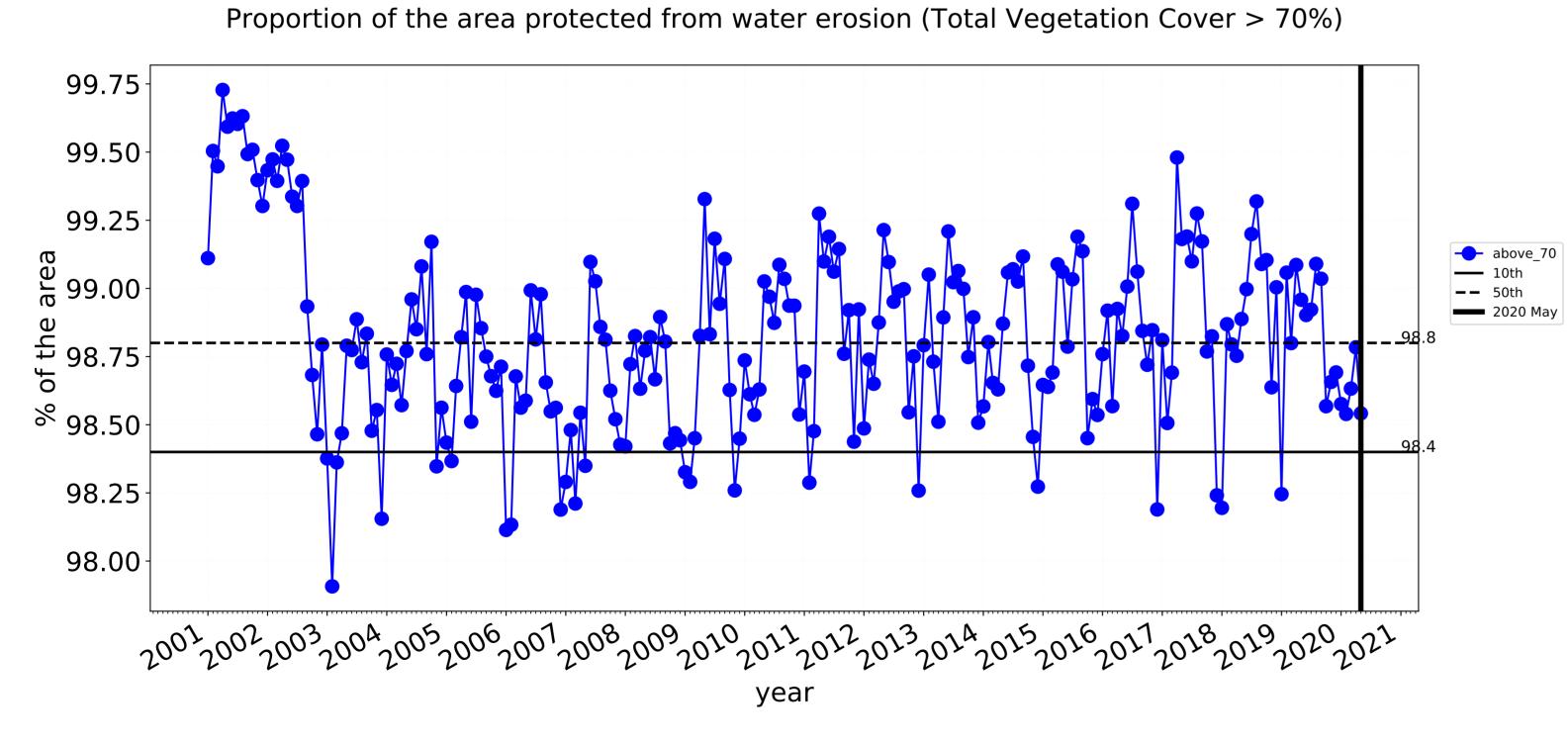


Conservation and natural environments timeseries







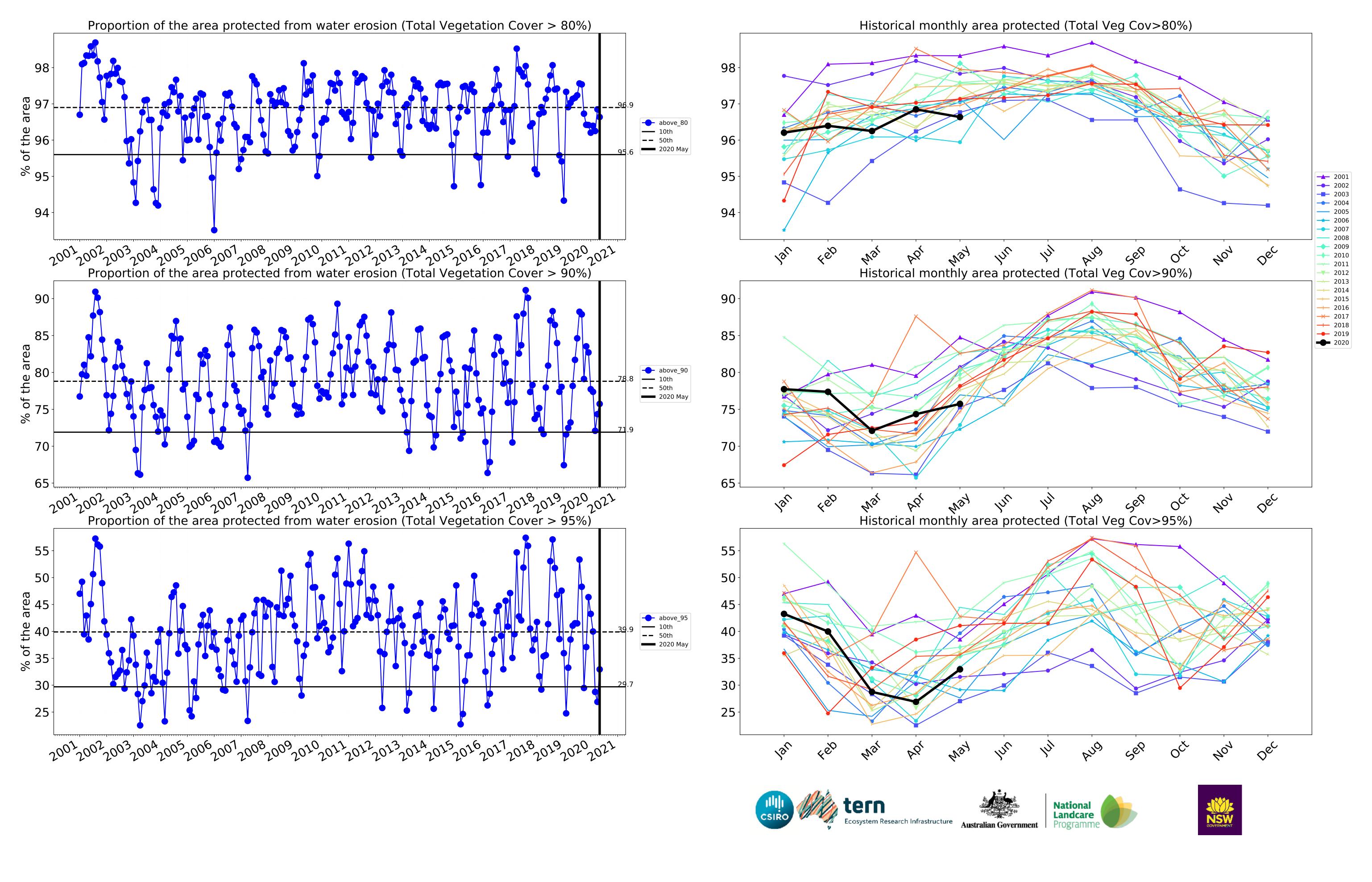


99.75 99.50 → 2001 2003 2004 99.25 ____ 2005 → 2006 ---- 2007 99.00 2010 2011 98.75 2012 ---- 2013 → 2014 98.50 **→** 2015 ---- 2016 × 2017 2018 2019 98.25 **---** 2020 98.00 month

National Landcare

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

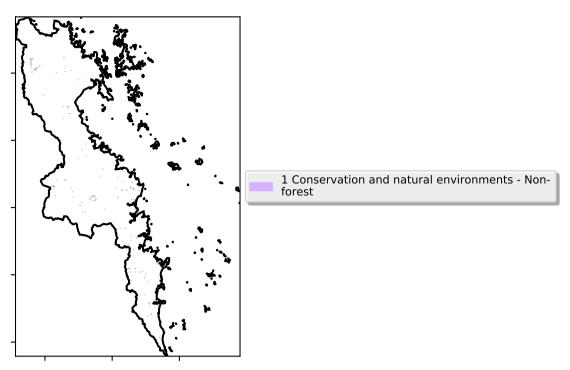
Ecosystem Research Infrastructure



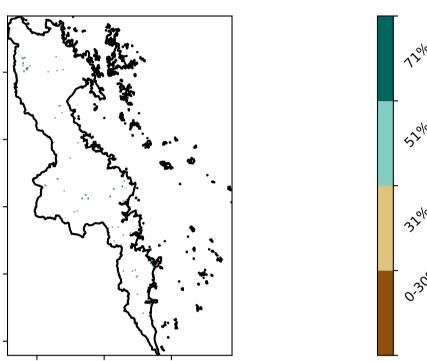
Conservation and natural environments non forest

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)



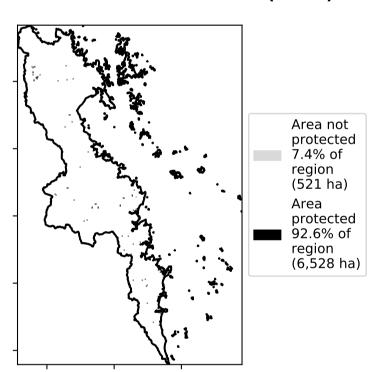
Total Vegetation Cover [%]



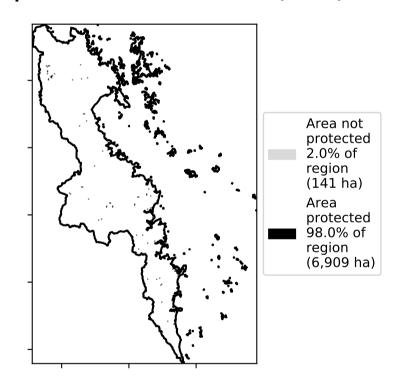
92.6% 80 60 Area (%) 20 5.3% 0-30% 31%-50% 51%-70% 71%-100% **Total Vegetation Cover class**

Proportion of vegetation cover class in area

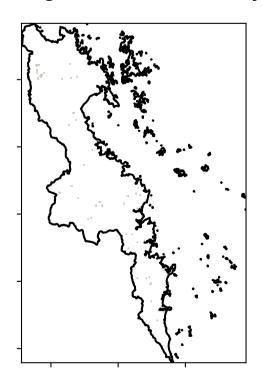
% Area protected from water erosion (>70%)

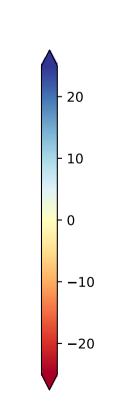


% Area protected from wind erosion (>50%)



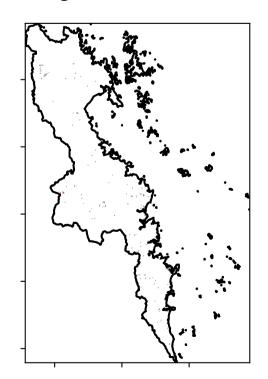
Total Vegetation Cover Anomaly [%]

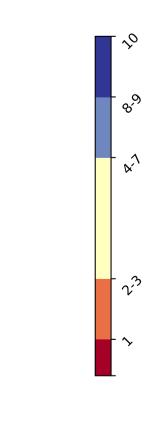




Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

Total Vegetation Cover Decile [%]





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

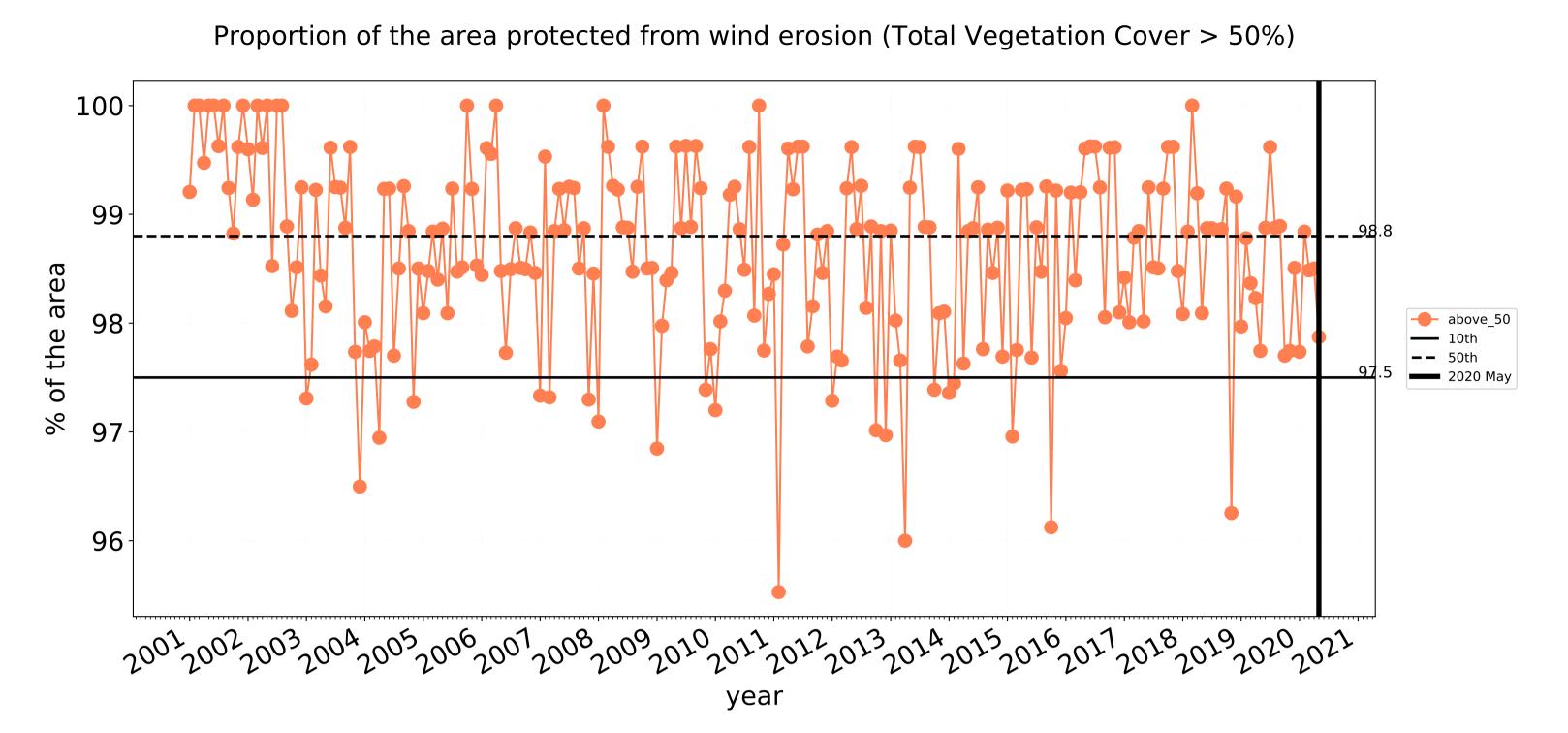


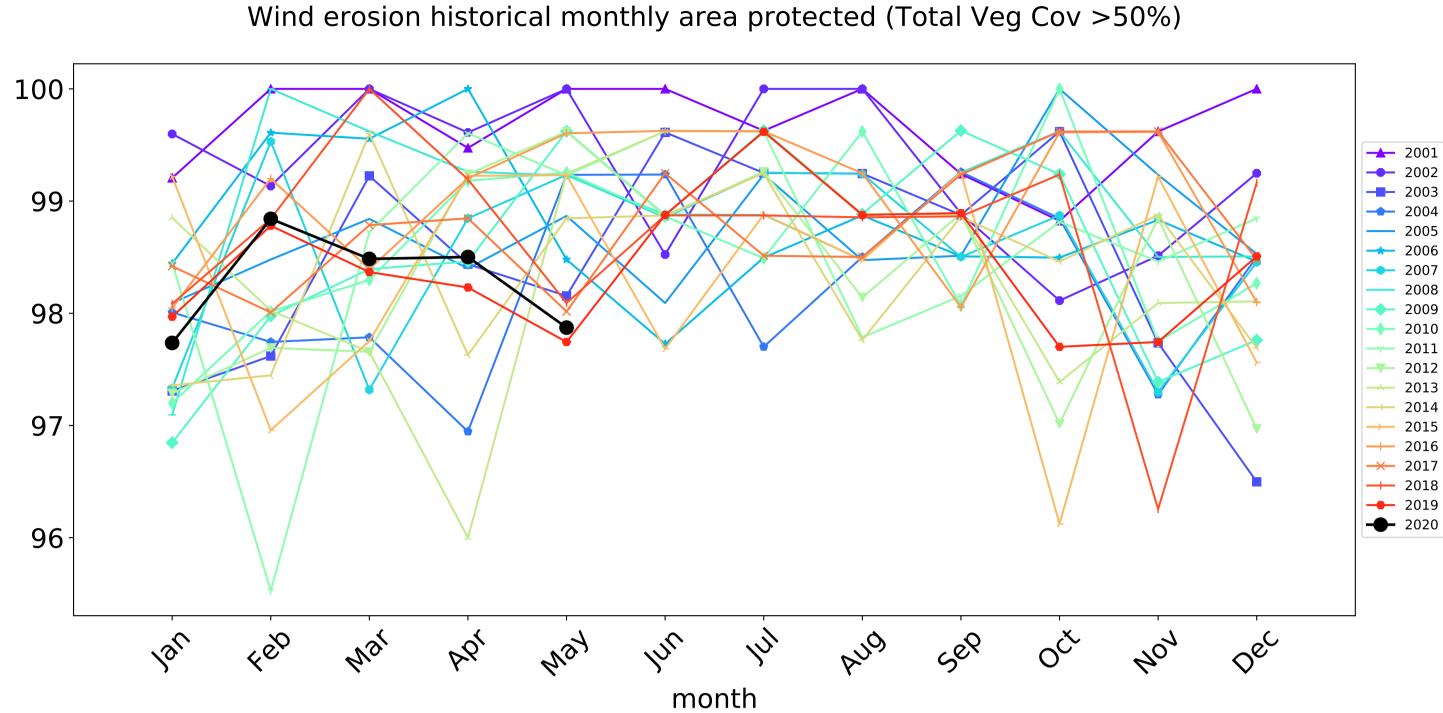


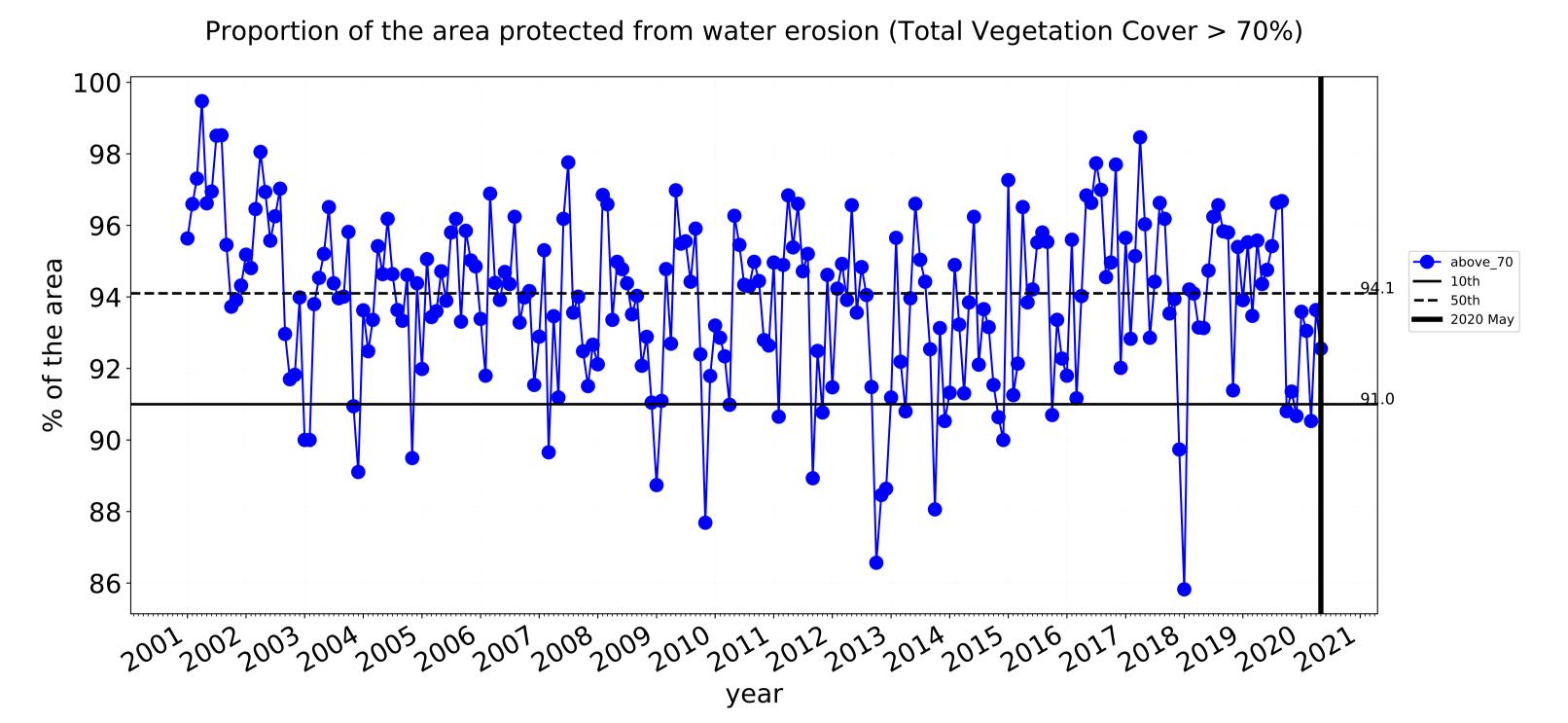


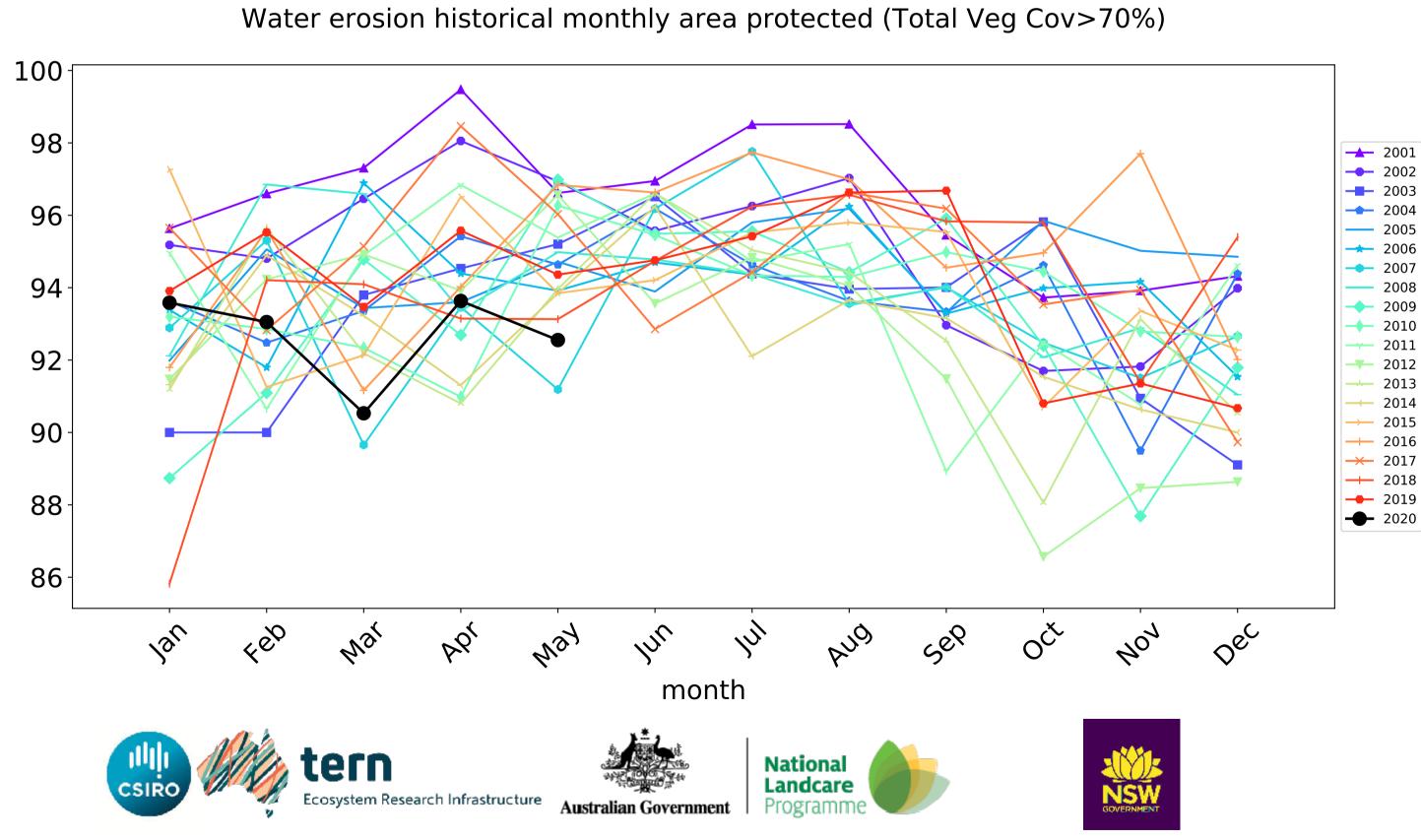


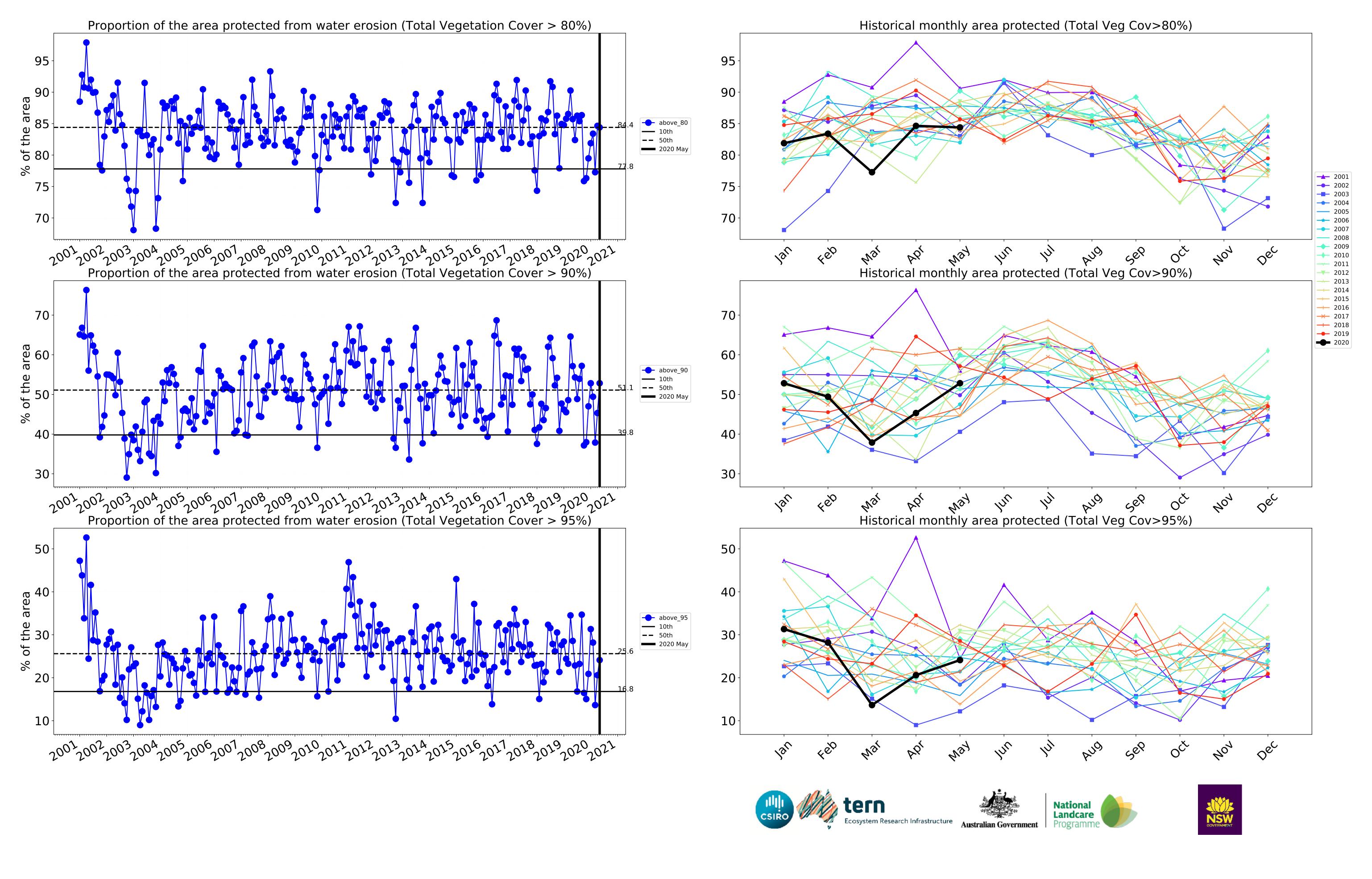
Conservation and natural environments non forest timeseries











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)

Anomaly show how many percetage points each

pixel is from

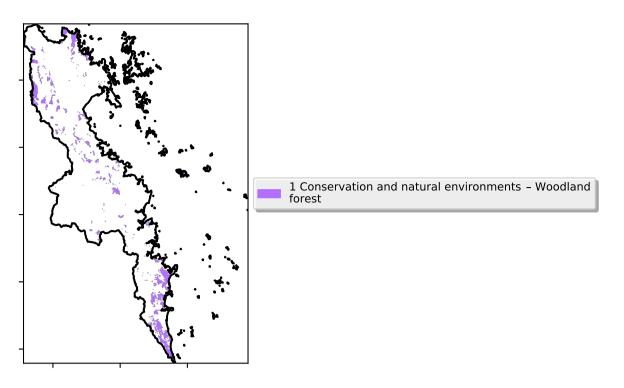
is, red pixels are about 20% lower than the mean of that pixel. The mean

the mean. That

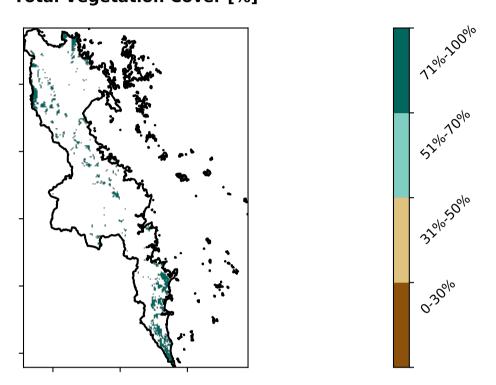
is only for the month of the map

using baseline from 2001 to 2019.

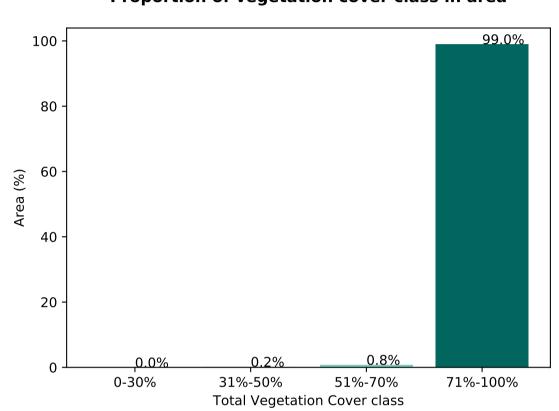
Land use and forest cover



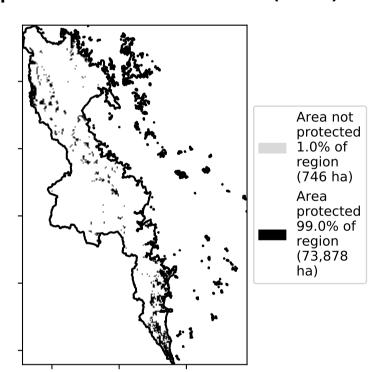
Total Vegetation Cover [%]



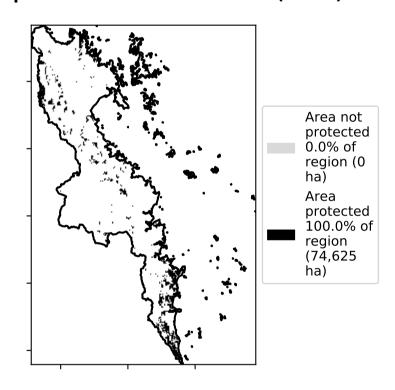
Proportion of vegetation cover class in area



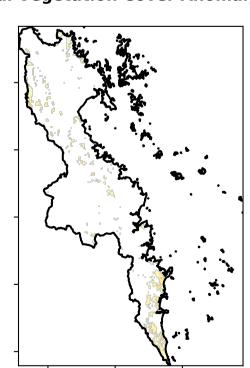
% Area protected from water erosion (>70%)

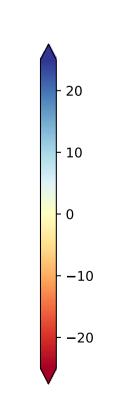


% Area protected from wind erosion (>50%)



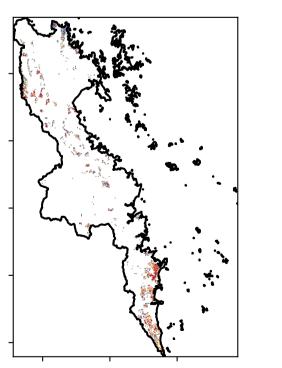
Total Vegetation Cover Anomaly [%]

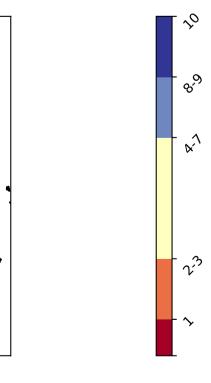




Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

Total Vegetation Cover Decile [%]









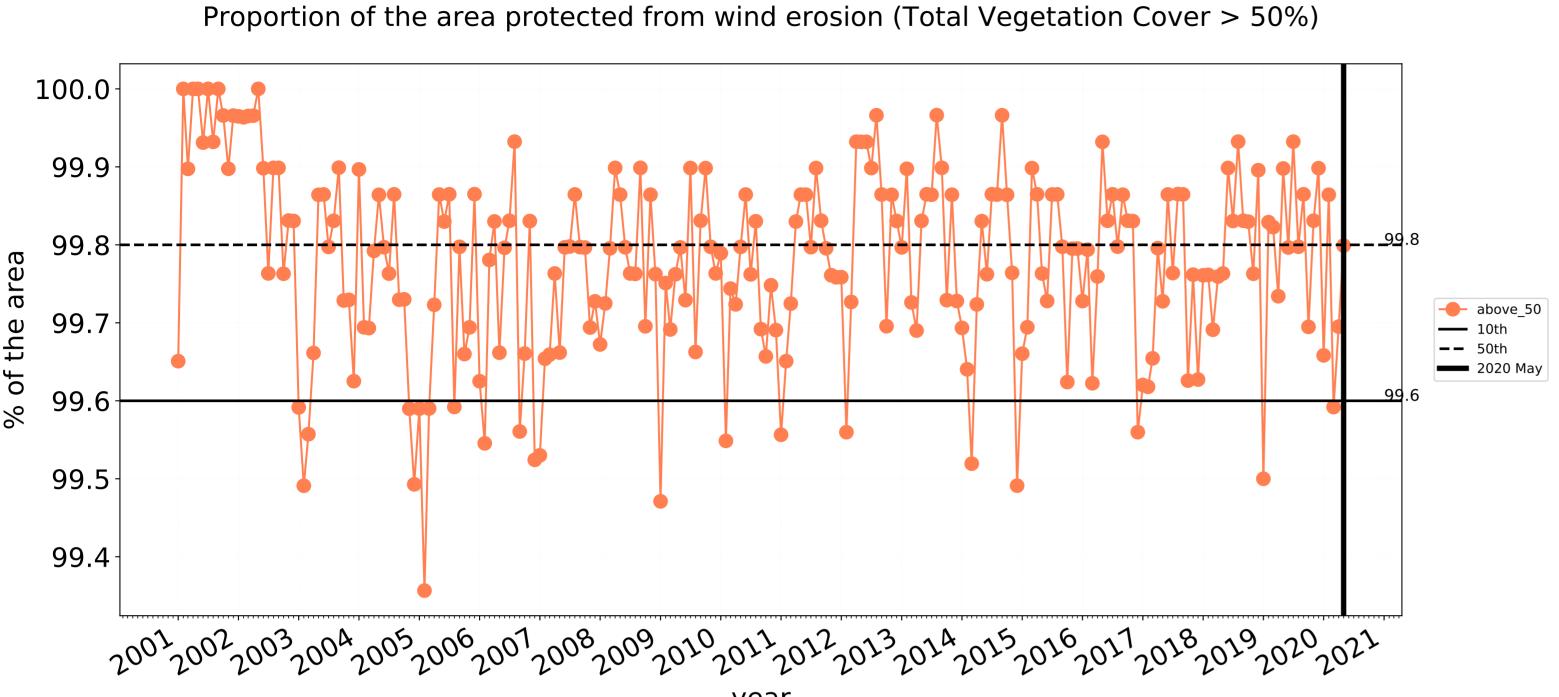


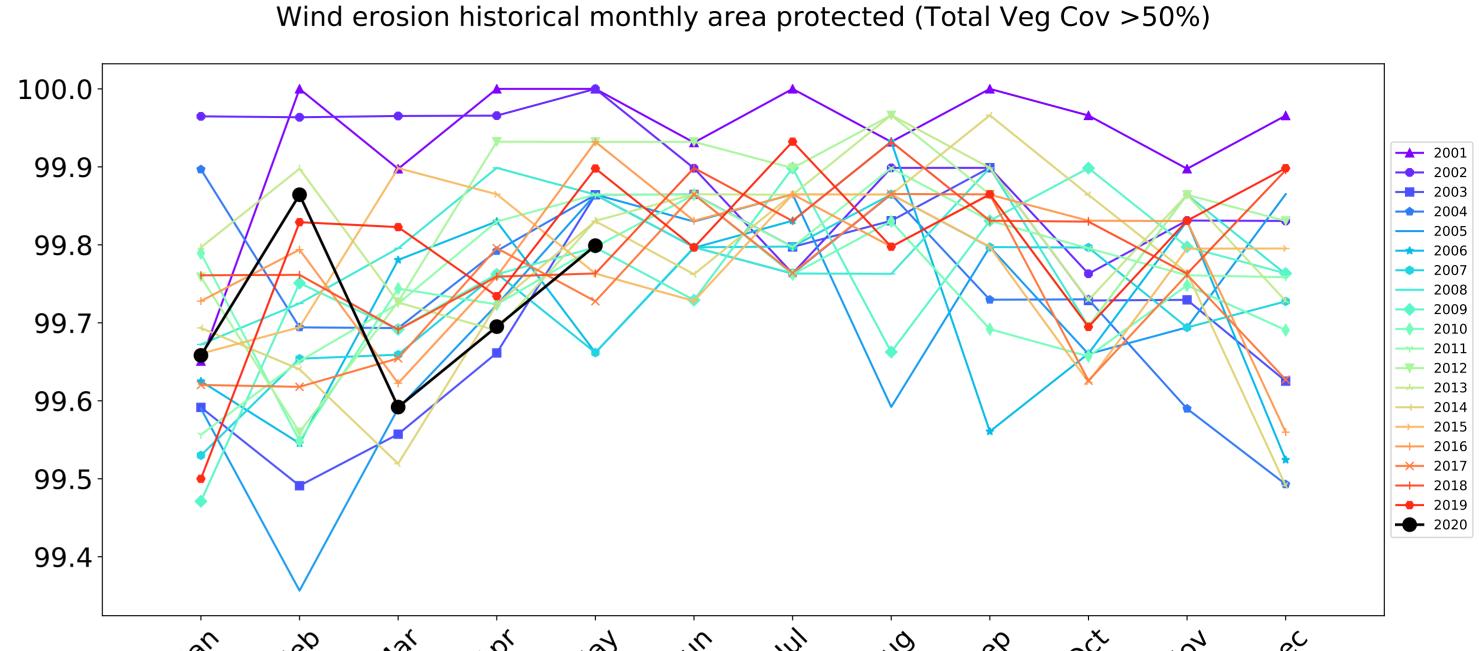




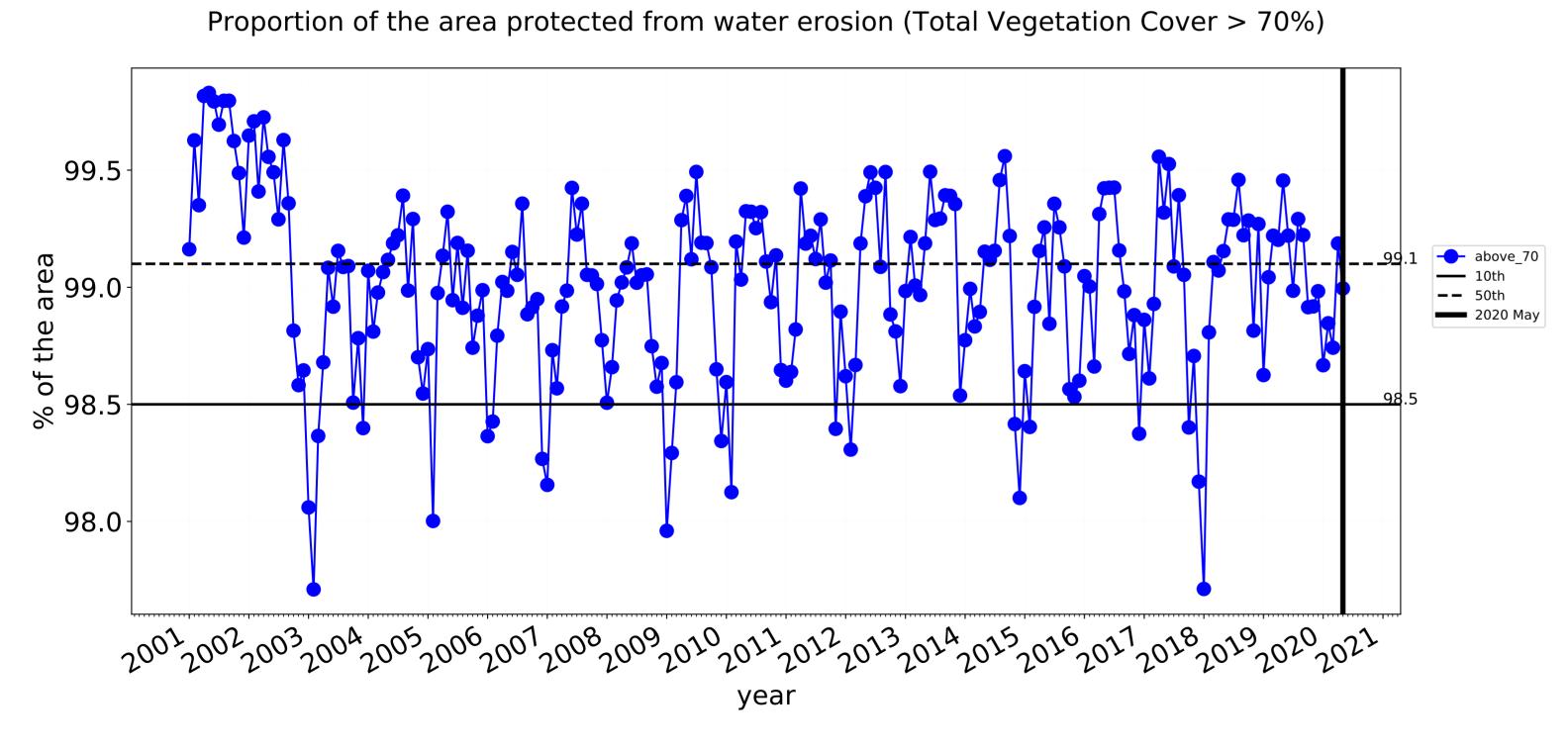


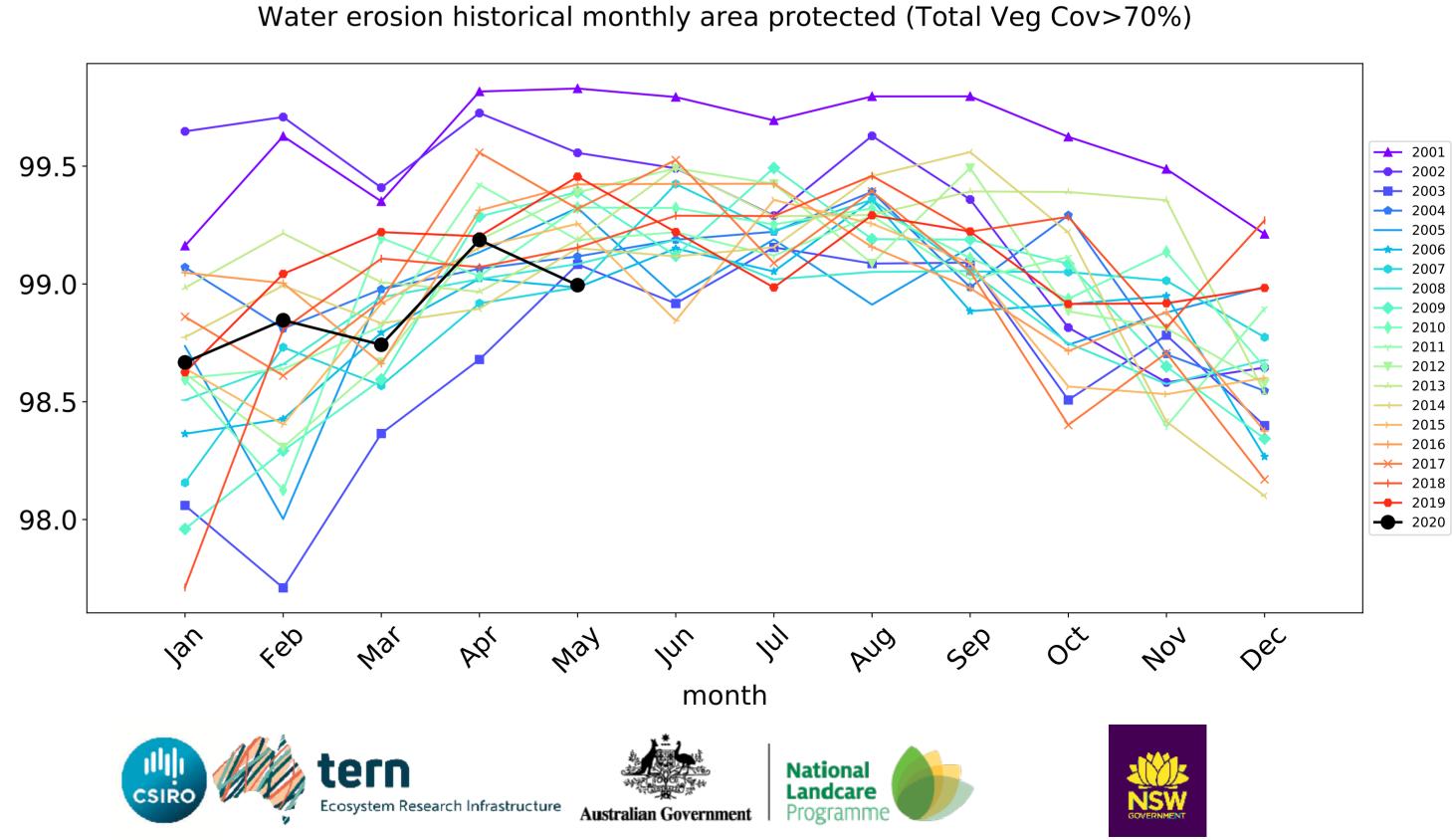
Conservation and natural environments Woodland forest timeseries

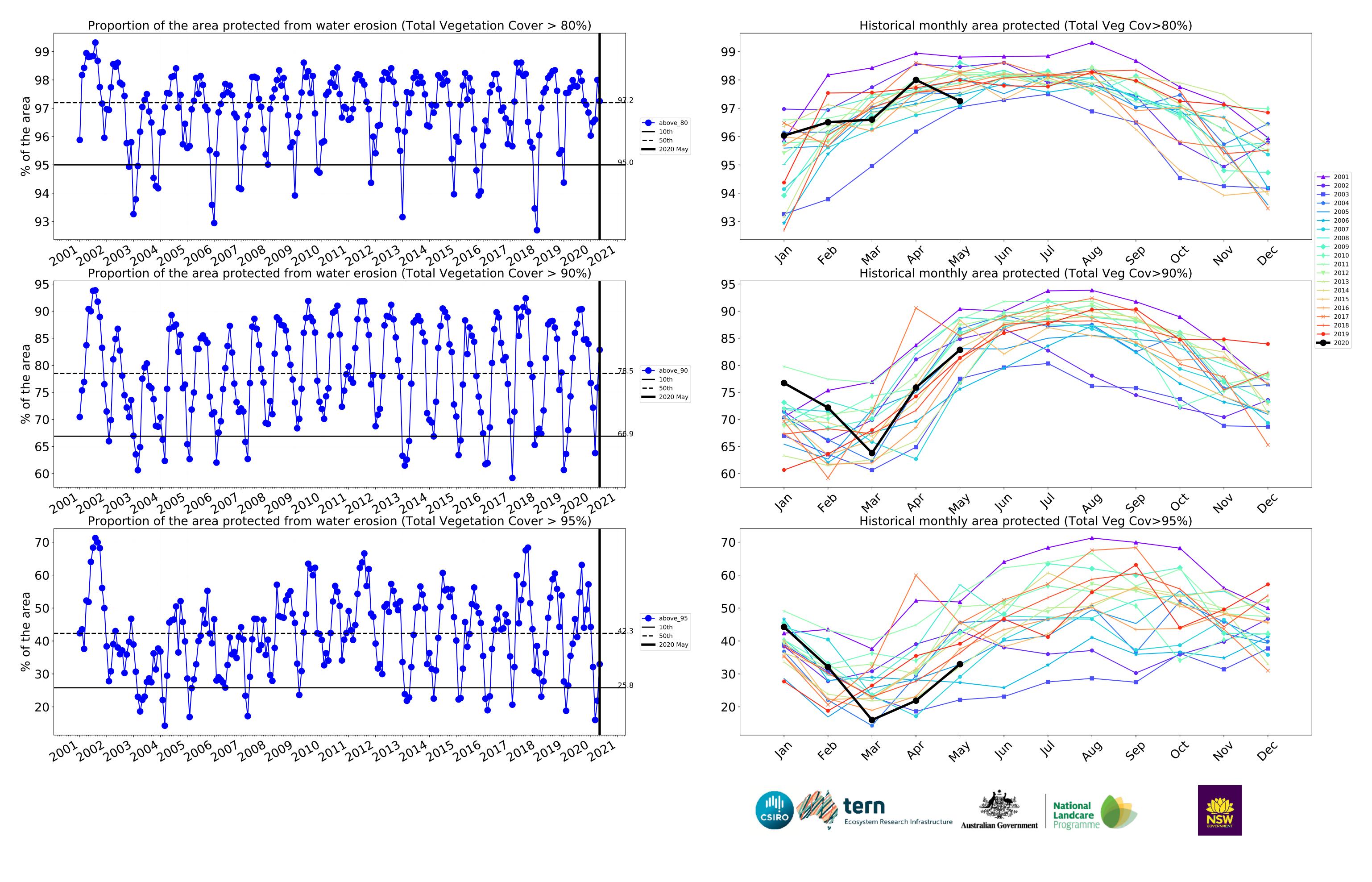




month







Conservation and natural environments Forest (non woodland)

Land use and forest cover

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

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

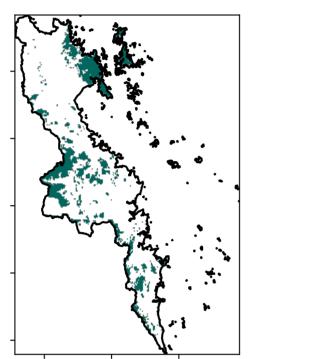
pixel. The mean

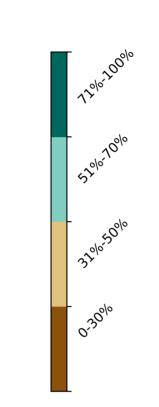
using baseline from 2001 to 2019.

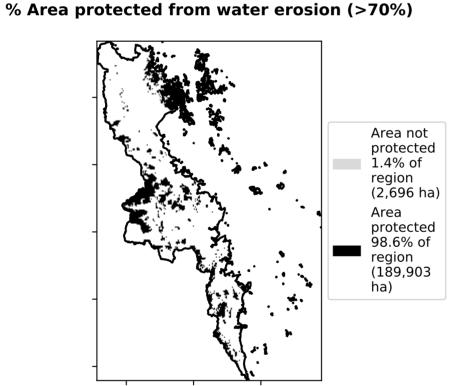
is only for the month of the map

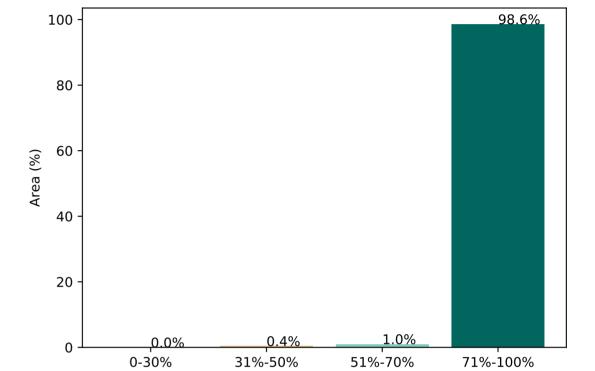
1 Conservation and natural environments - Non-woodland forest

Total Vegetation Cover [%]





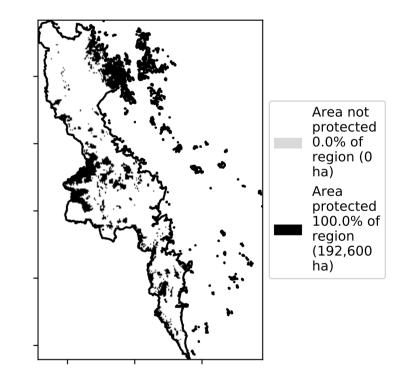




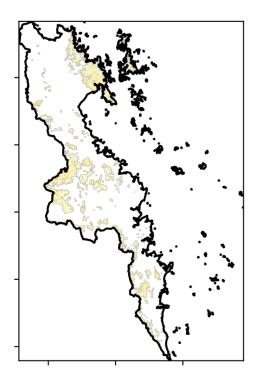
Proportion of vegetation cover class in area

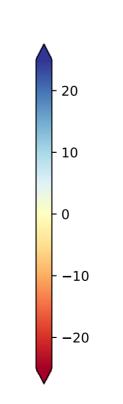
% Area protected from wind erosion (>50%)

Total Vegetation Cover class



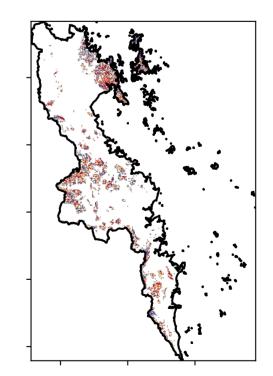
Total Vegetation Cover Anomaly [%]

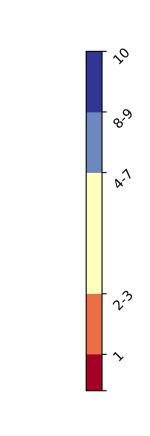




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Total Vegetation Cover Decile [%]







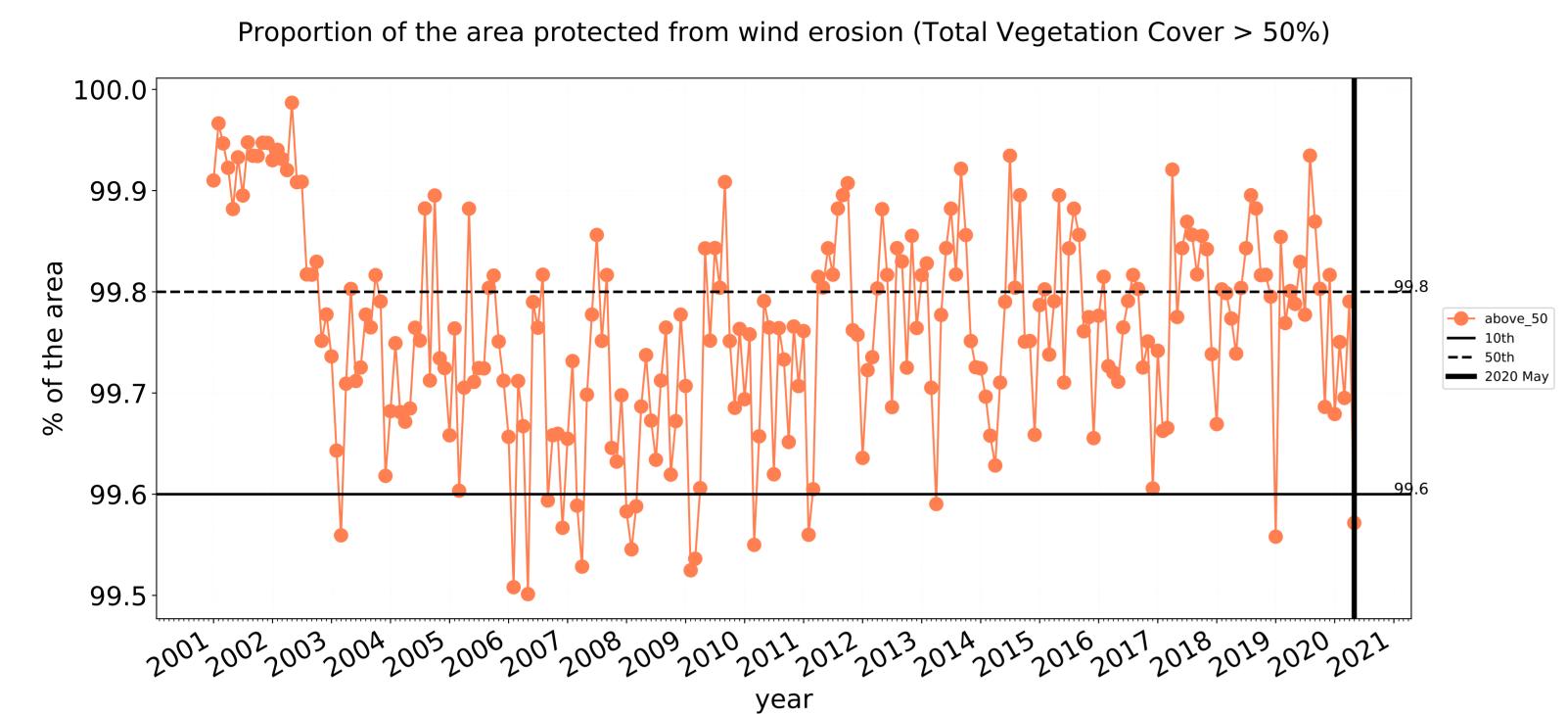


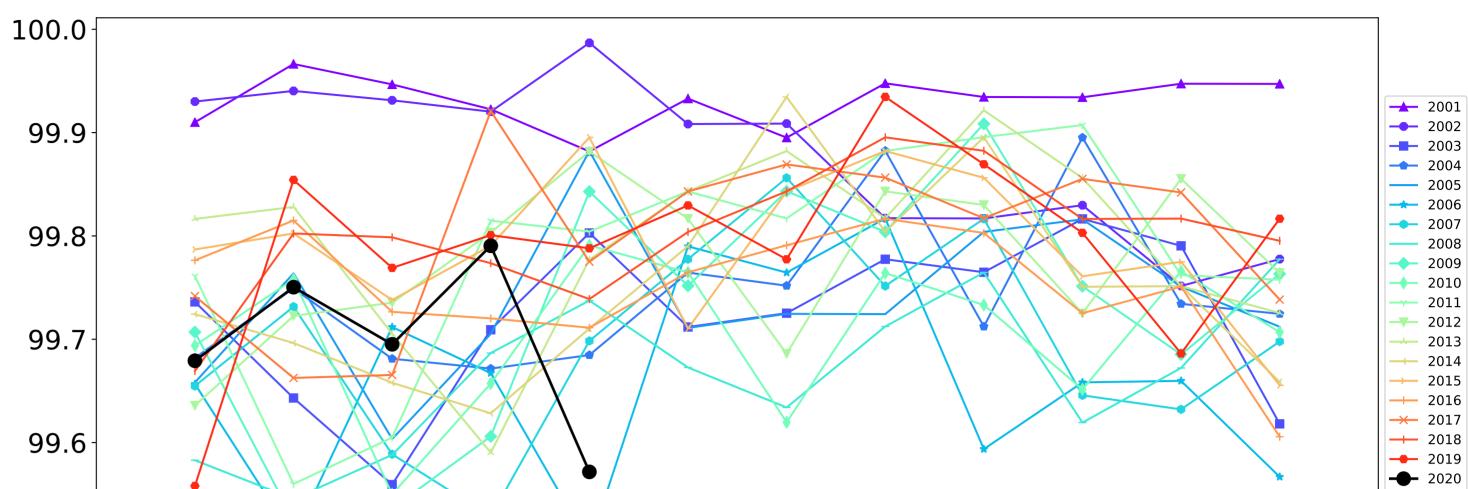








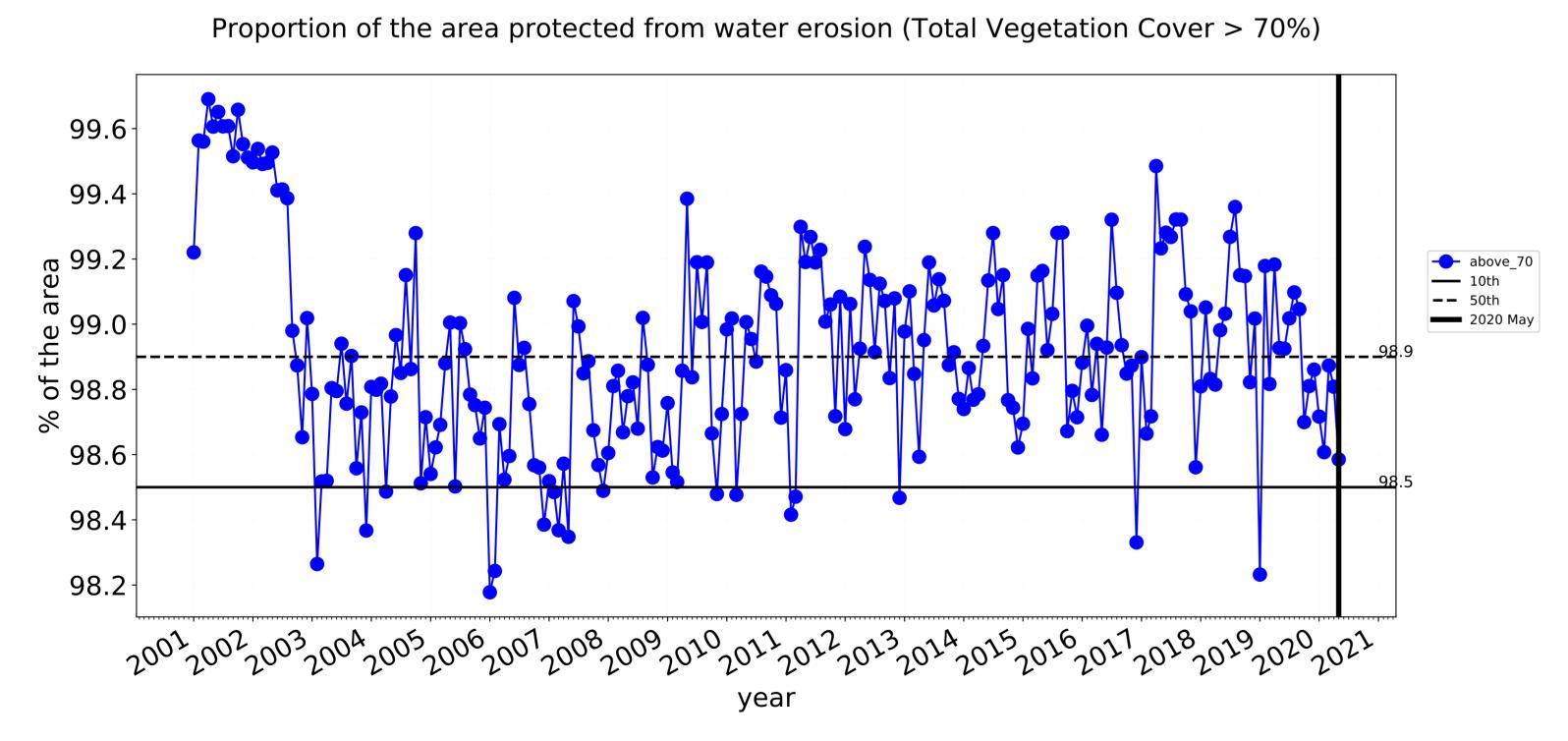


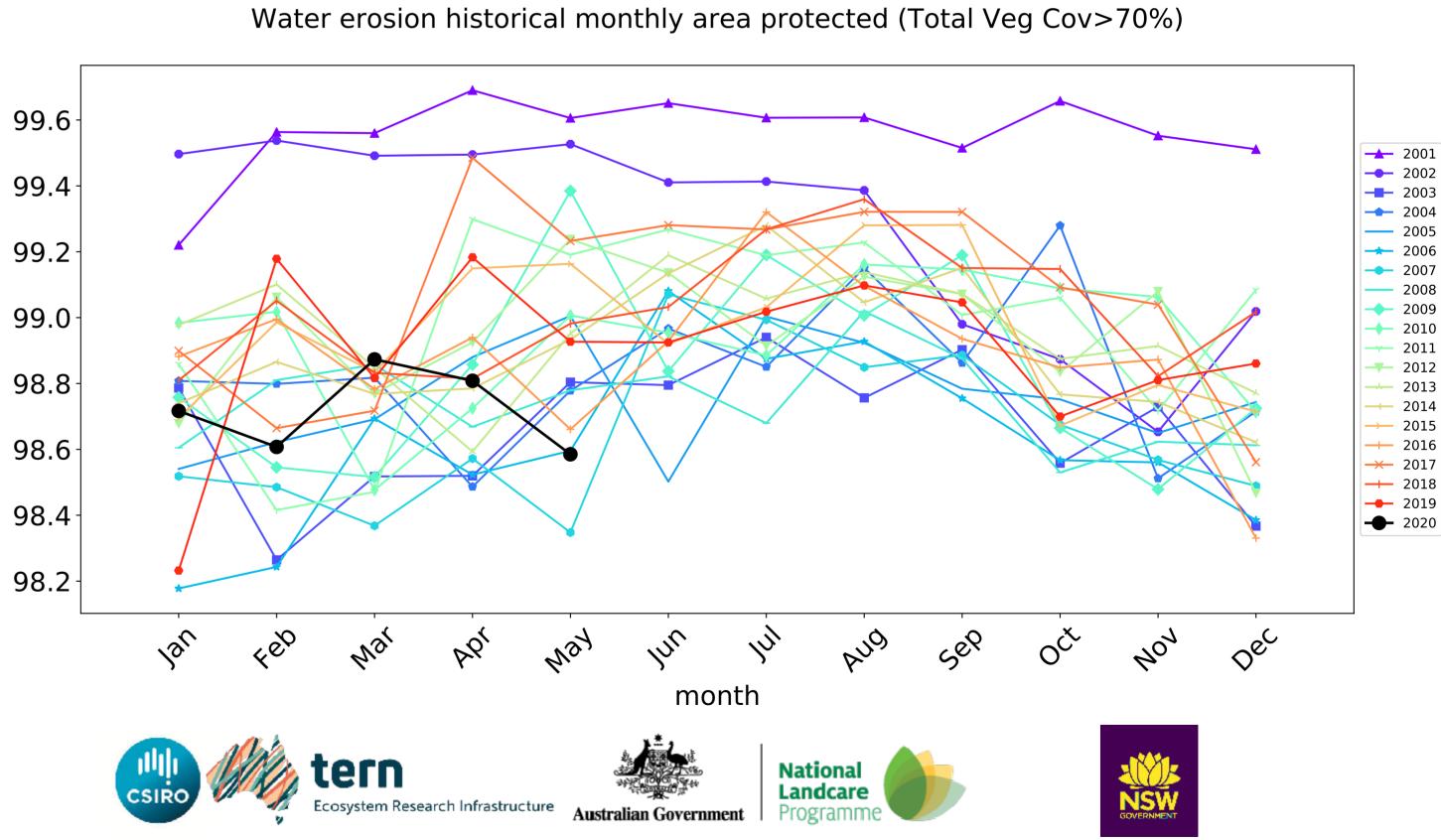


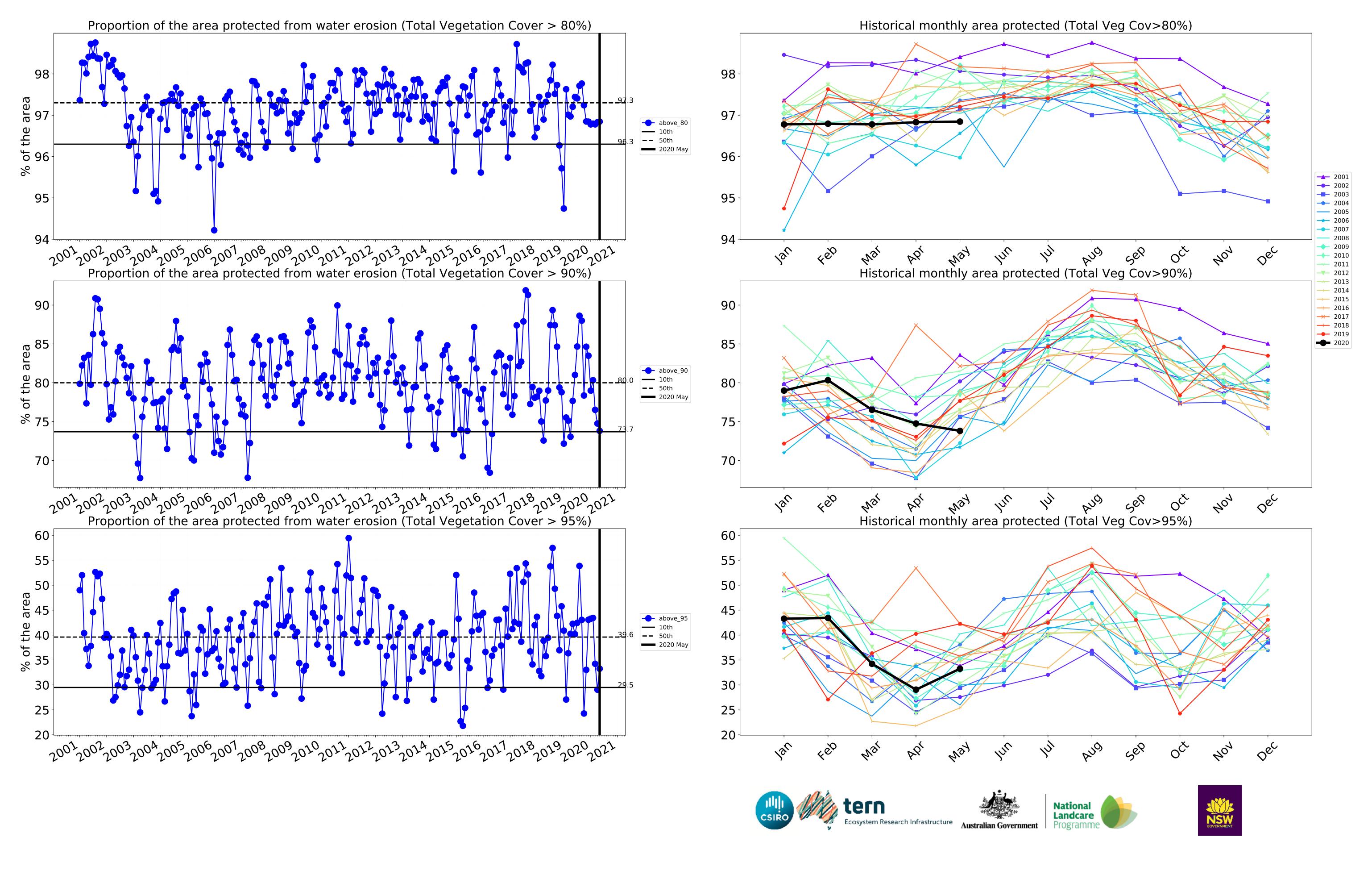
month

99.5

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







Agriculture

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

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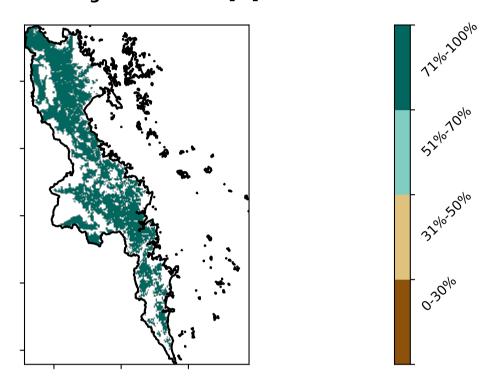
is only for the month of the map

using baseline from 2001 to 2019.

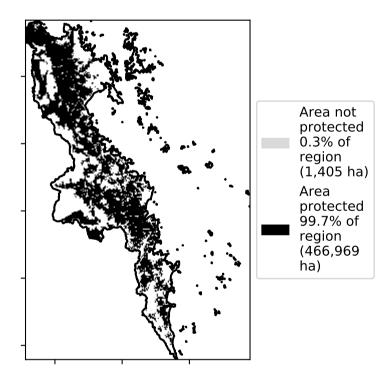
1 Agriculture - Grazing - Non forest 2 Agriculture - Grazing - Woodland forest 3 Agriculture - Grazing - Non-woodland forest 4 Agriculture - Grazing - Irrigated 5 Agriculture - Cropping - Irrigated 6 Agriculture - Horticulture - Non-irrigated 7 Agriculture - Horticulture - Irrigated

Total Vegetation Cover [%]

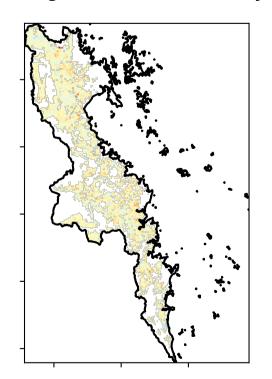
Land use and forest cover

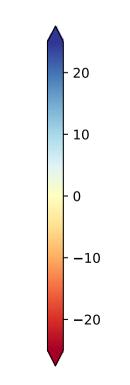


% Area protected from water erosion (>70%)



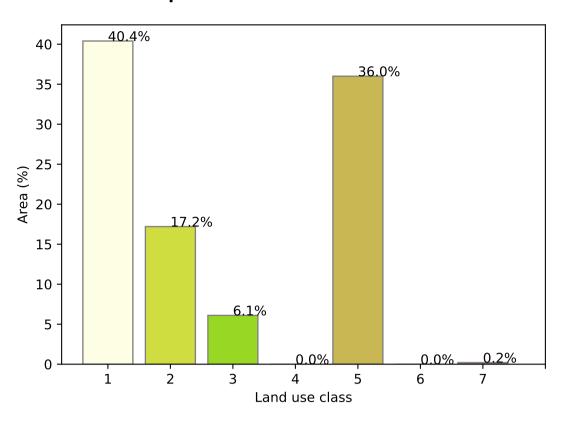
Total Vegetation Cover Anomaly [%]



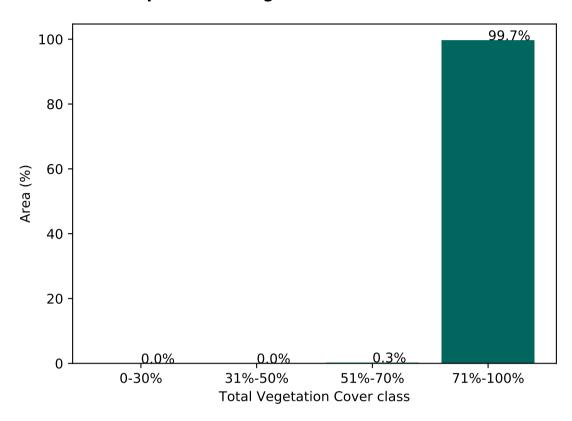


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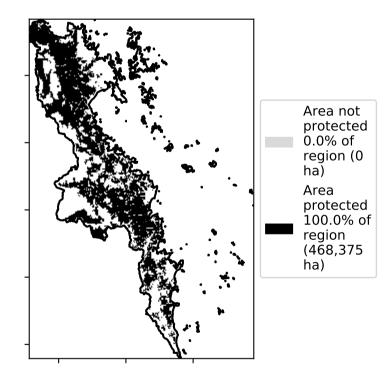
Proportion of each land class in area



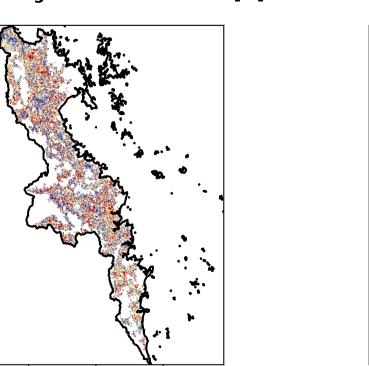
Proportion of vegetation cover class in area

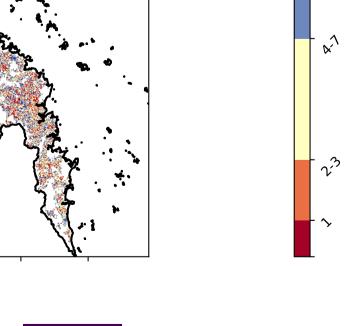


% Area protected from wind erosion (>50%)



Total Vegetation Cover Decile [%]









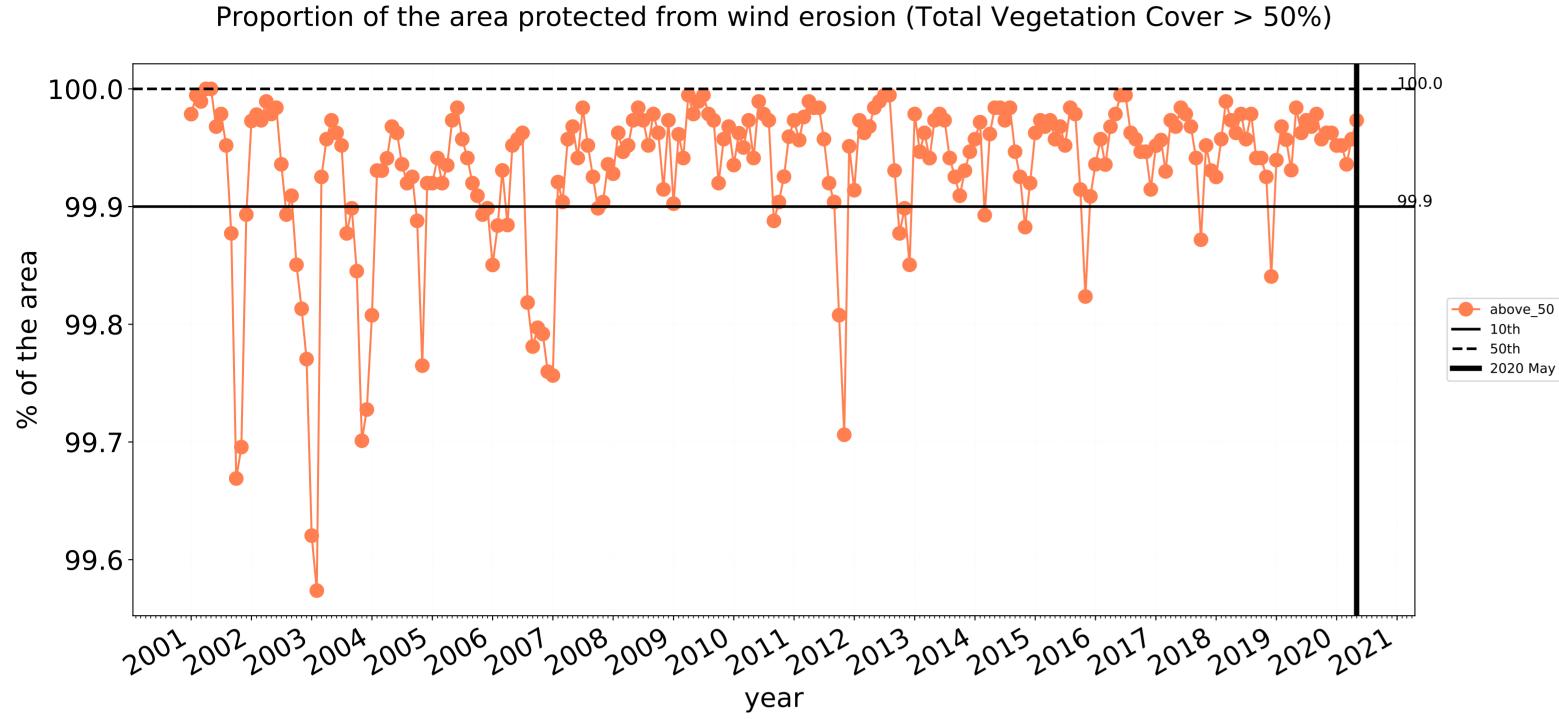


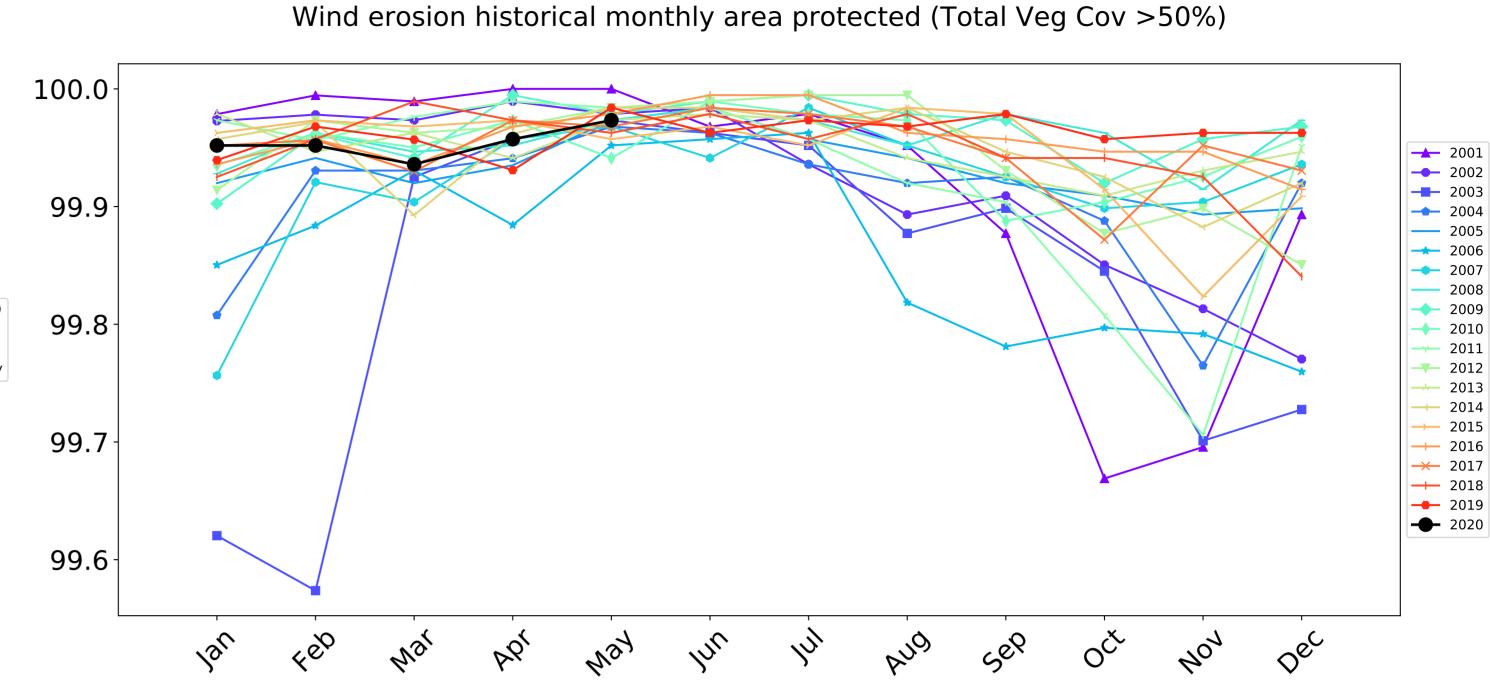




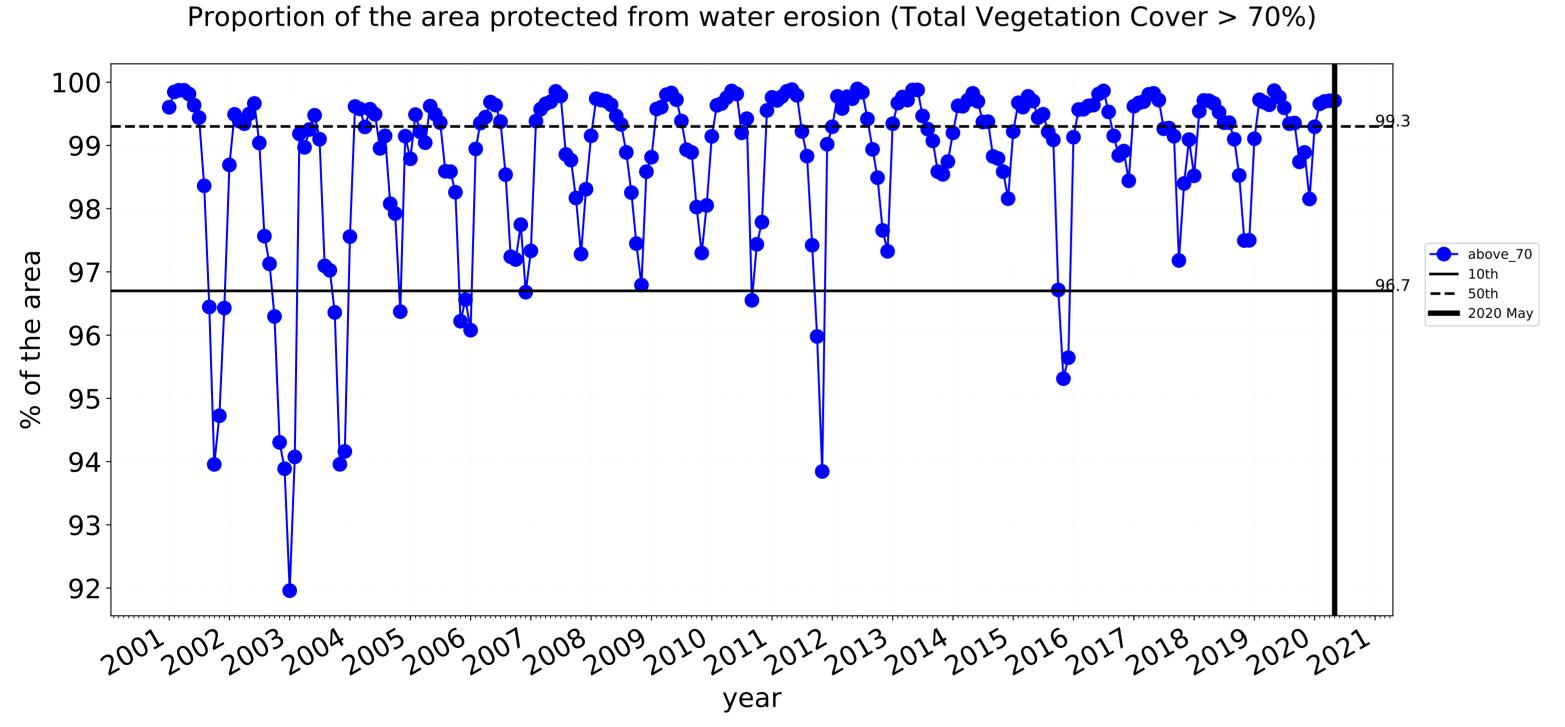


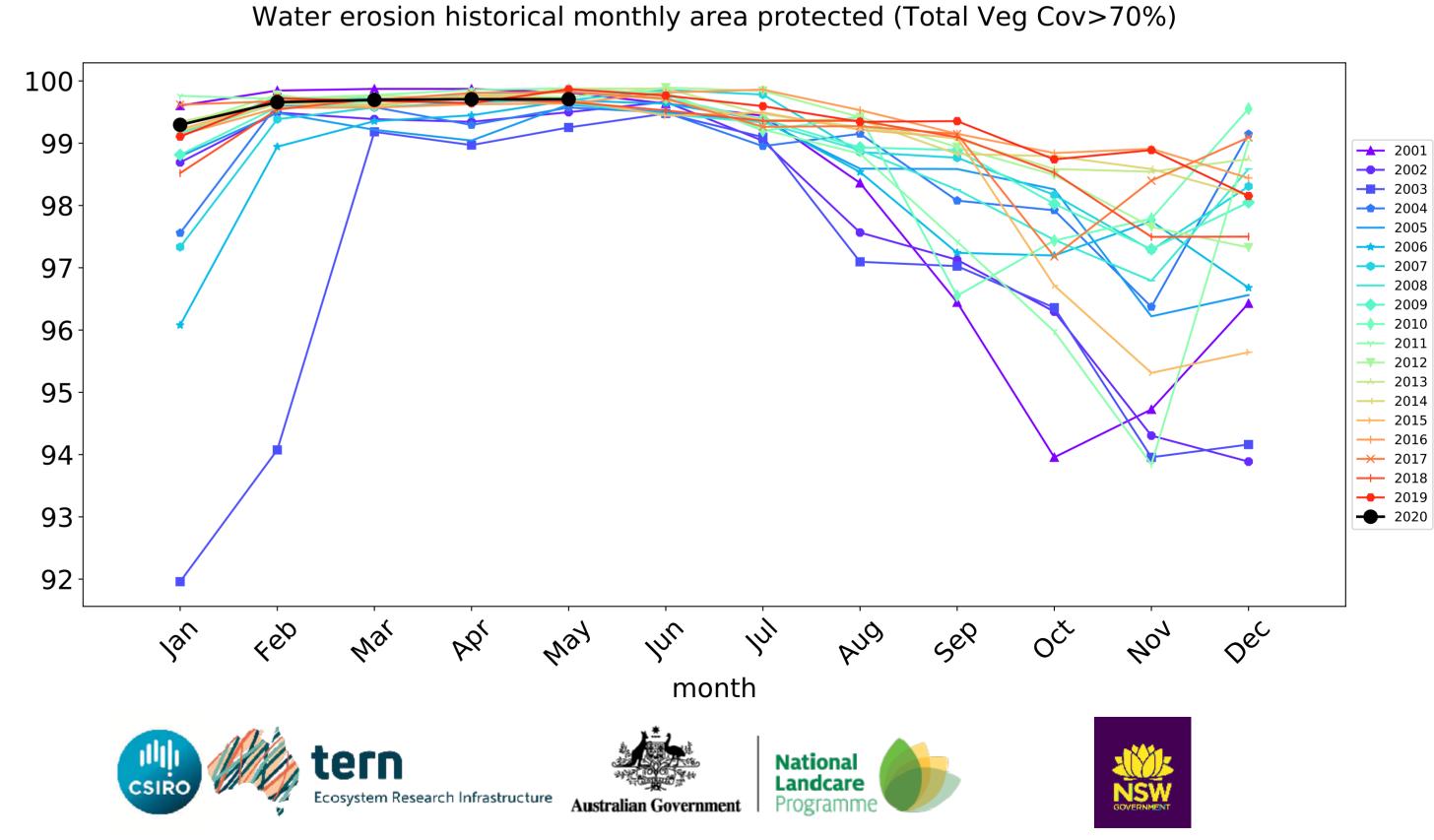
Agriculture timeseries

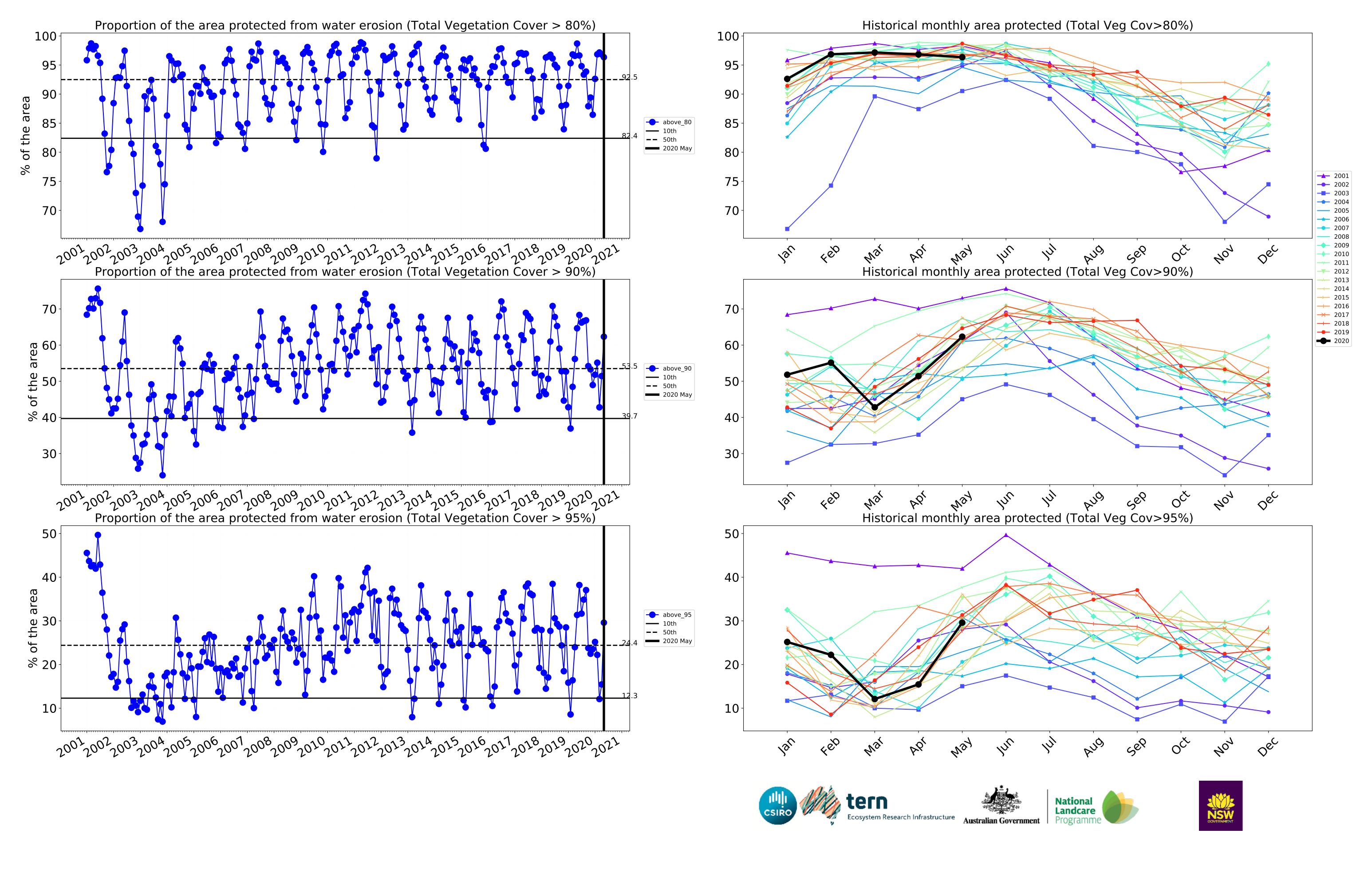




month







Grazing

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

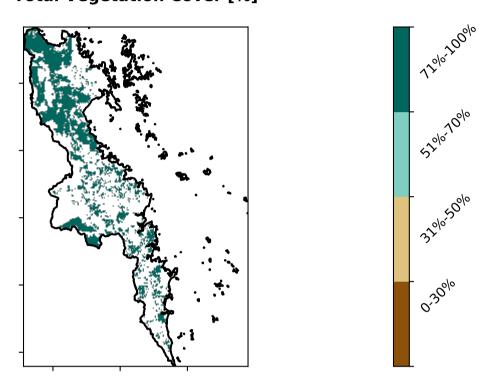
is only for the month of the map

using baseline from 2001 to 2019.

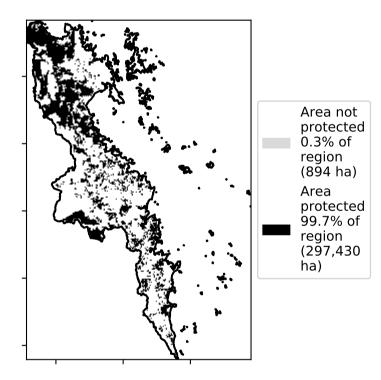
1 Agriculture - Grazing - Non forest 2 Agriculture - Grazing - Woodland forest 3 Agriculture - Grazing - Non-woodland forest

Total Vegetation Cover [%]

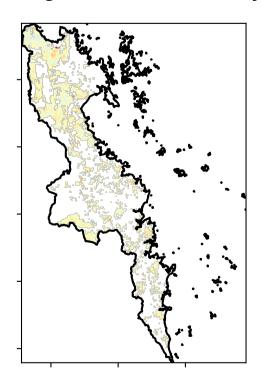
Land use and forest cover

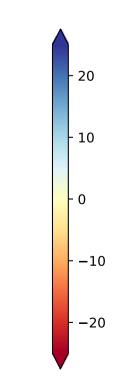


% Area protected from water erosion (>70%)



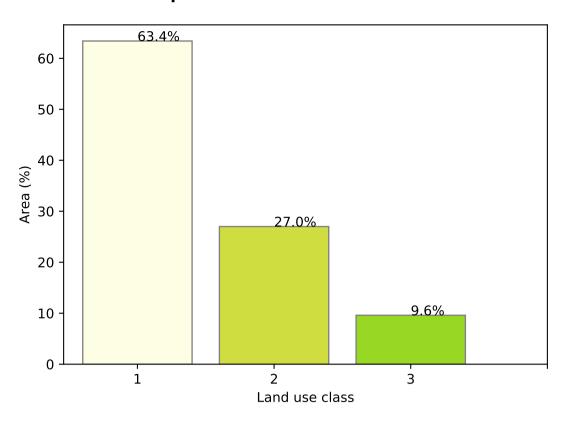
Total Vegetation Cover Anomaly [%]



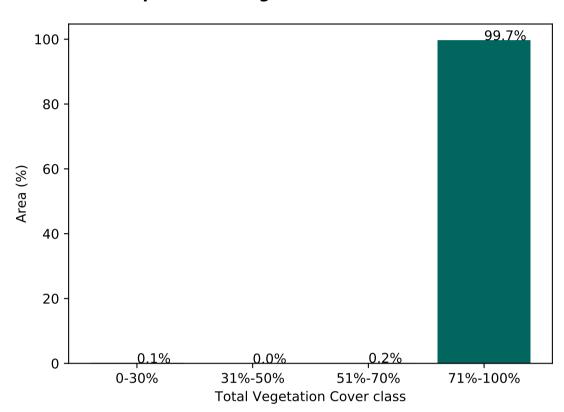


Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

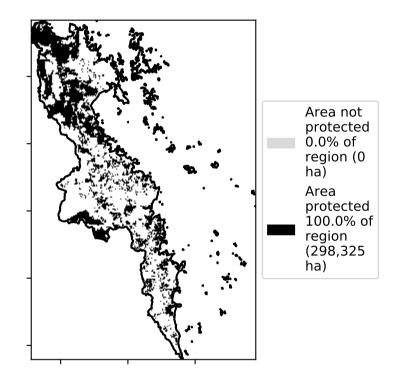
Proportion of each land class in area



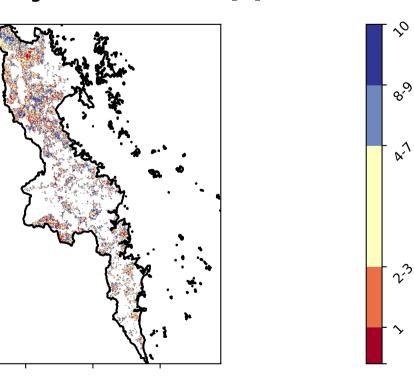
Proportion of vegetation cover class in area



% Area protected from wind erosion (>50%)



Total Vegetation Cover Decile [%]







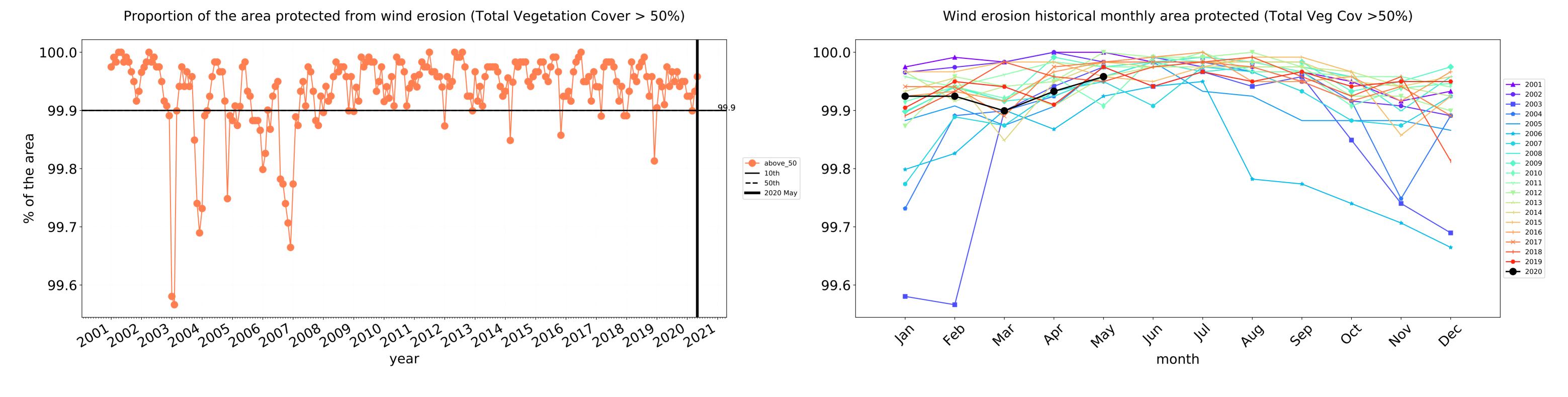


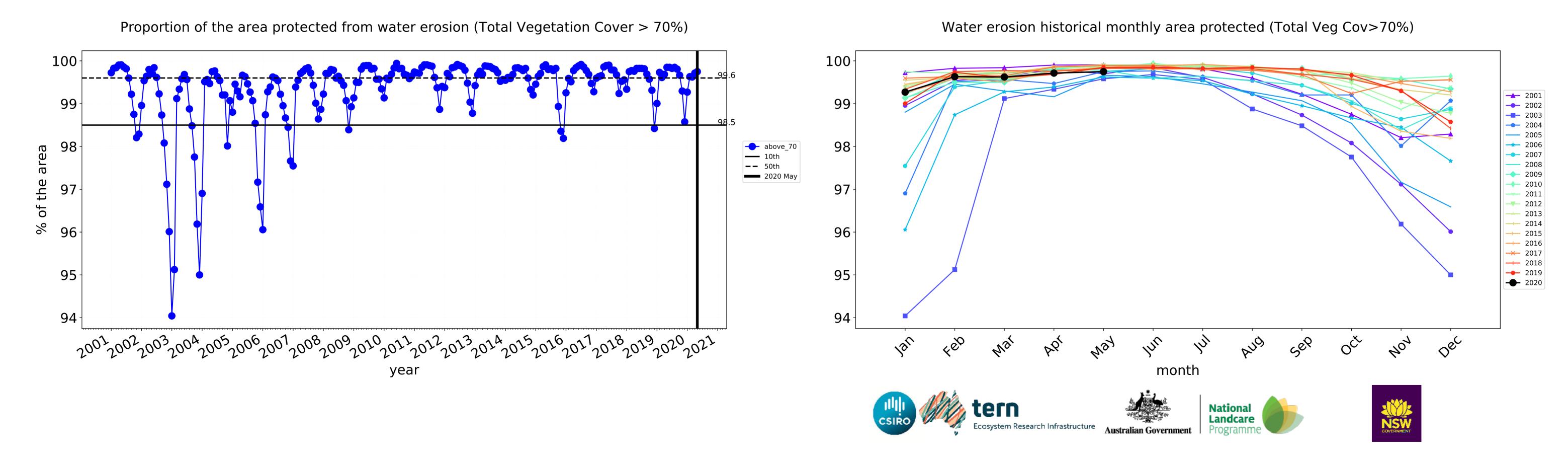


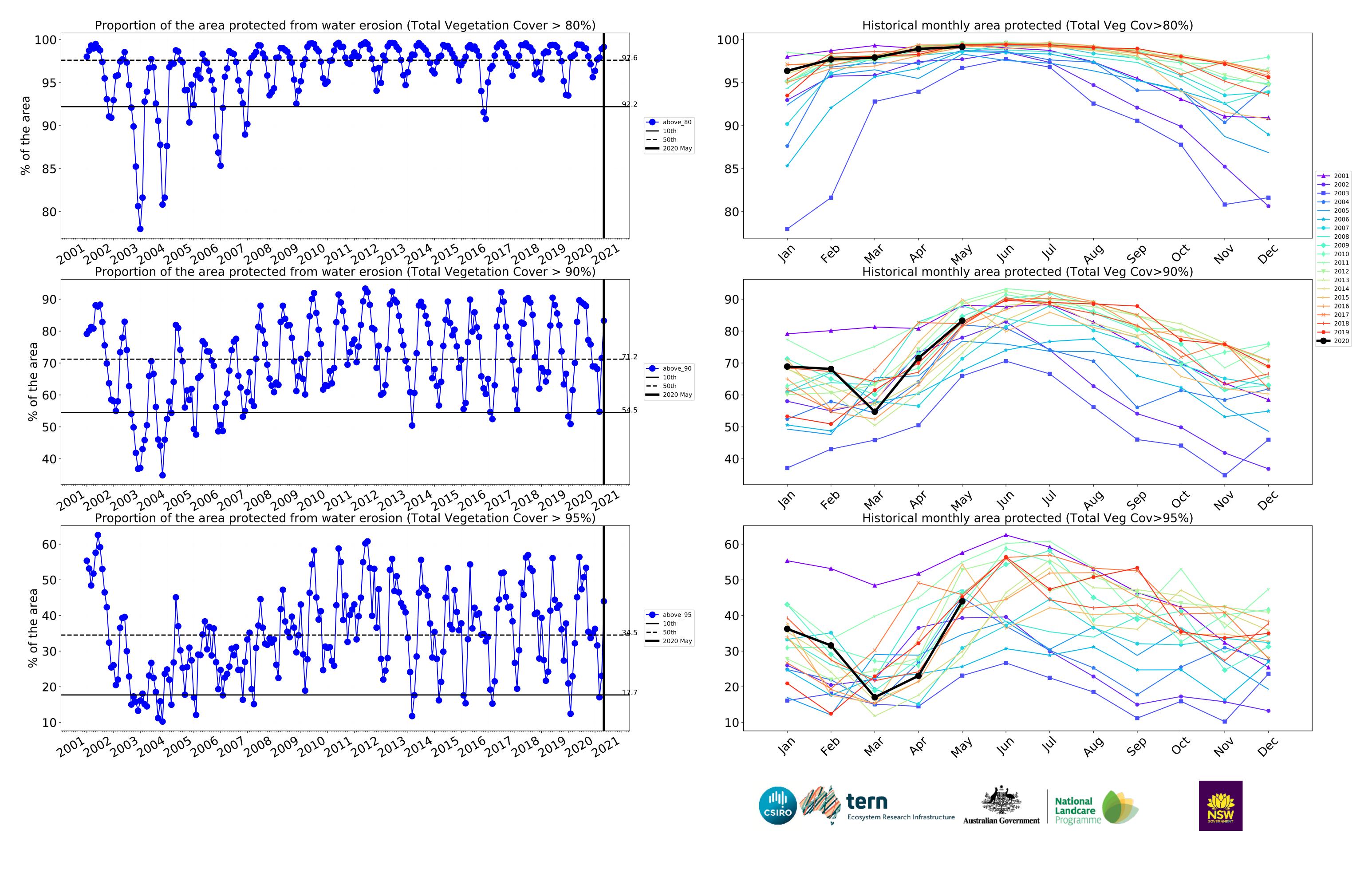




Grazing timeseries







Grazing non forest

Land use and forest cover

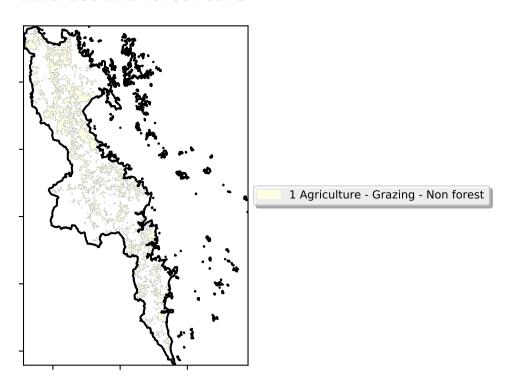
Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)

Anomaly show how many percetage points each

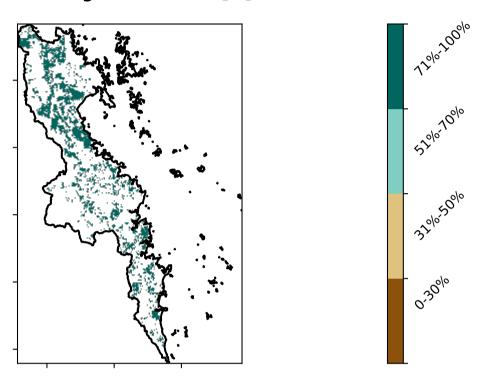
pixel is from

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

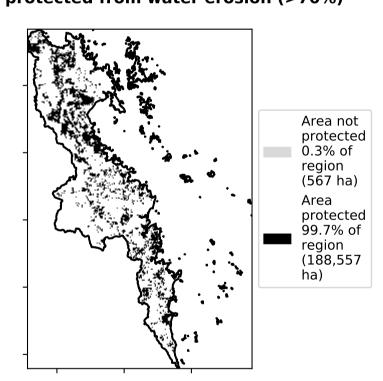
pixel. The mean is only for the month of the map using baseline from 2001 to 2019.



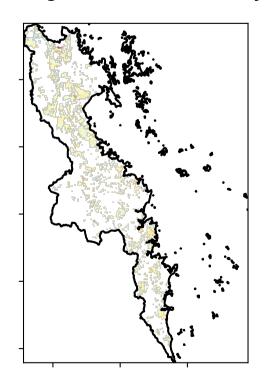
Total Vegetation Cover [%]



% Area protected from water erosion (>70%)



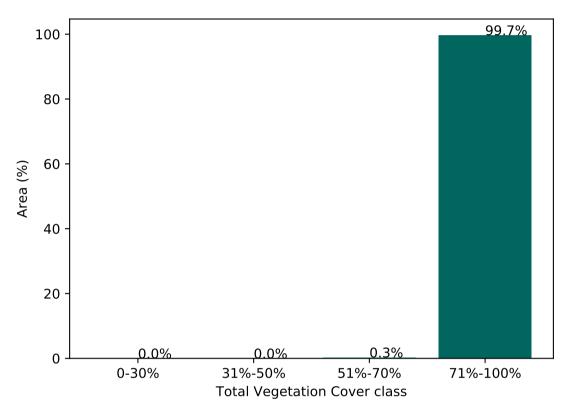
Total Vegetation Cover Anomaly [%]



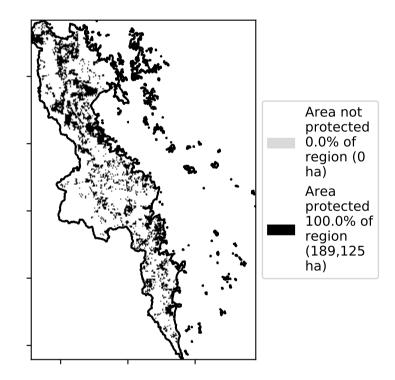
- 20 - 10 - 0 - -10 - -20

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.

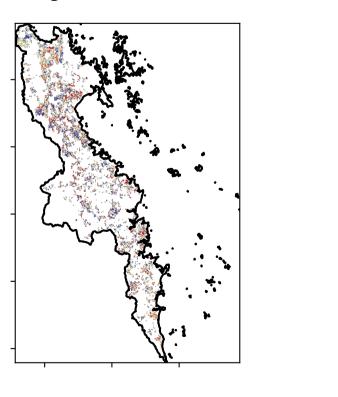
Proportion of vegetation cover class in area



% Area protected from wind erosion (>50%)



Total Vegetation Cover Decile [%]









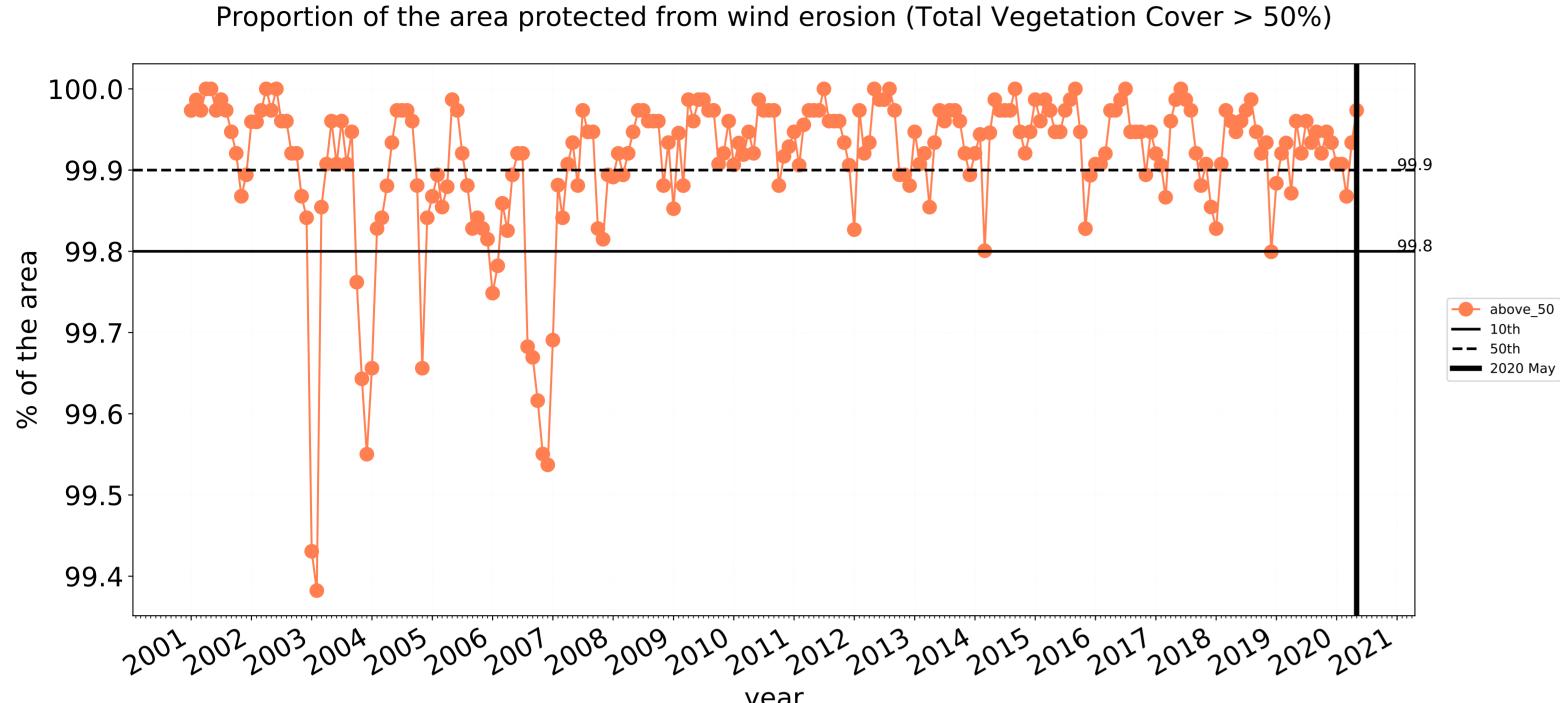


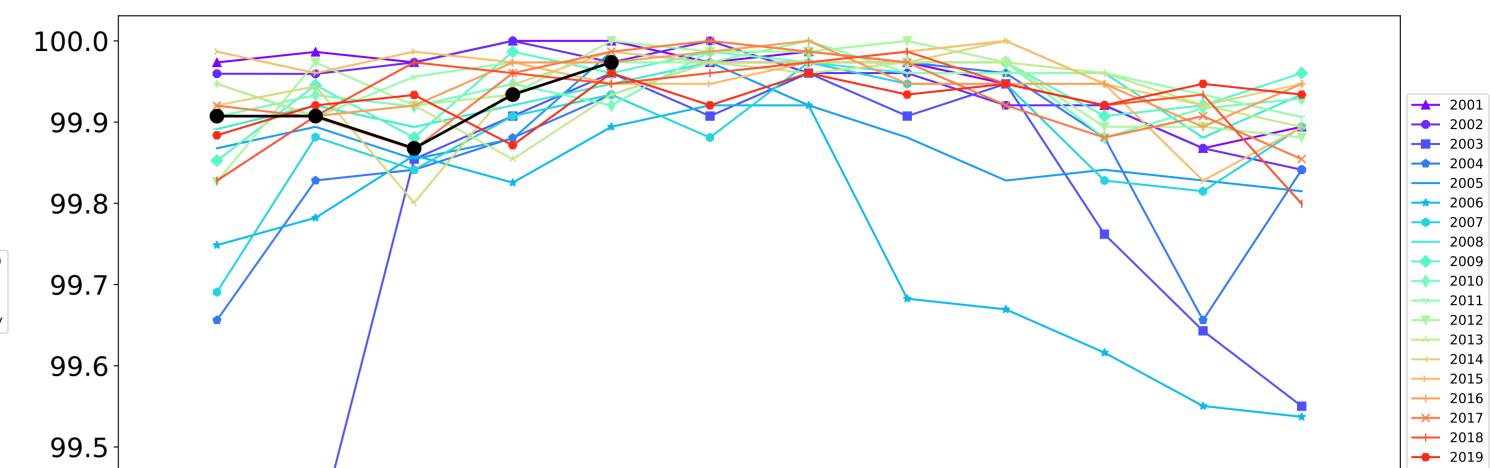




Grazing non forest timeseries

99.4

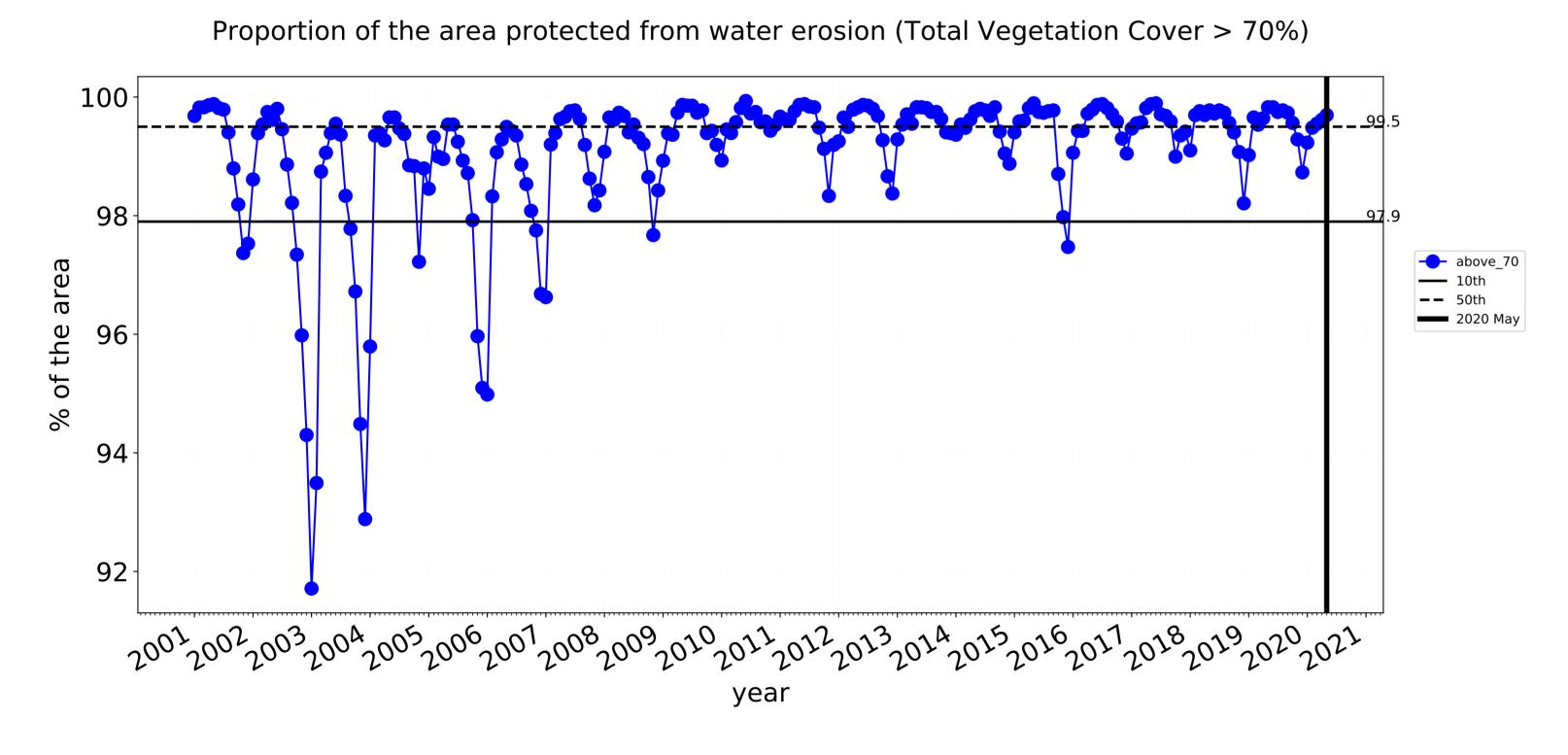


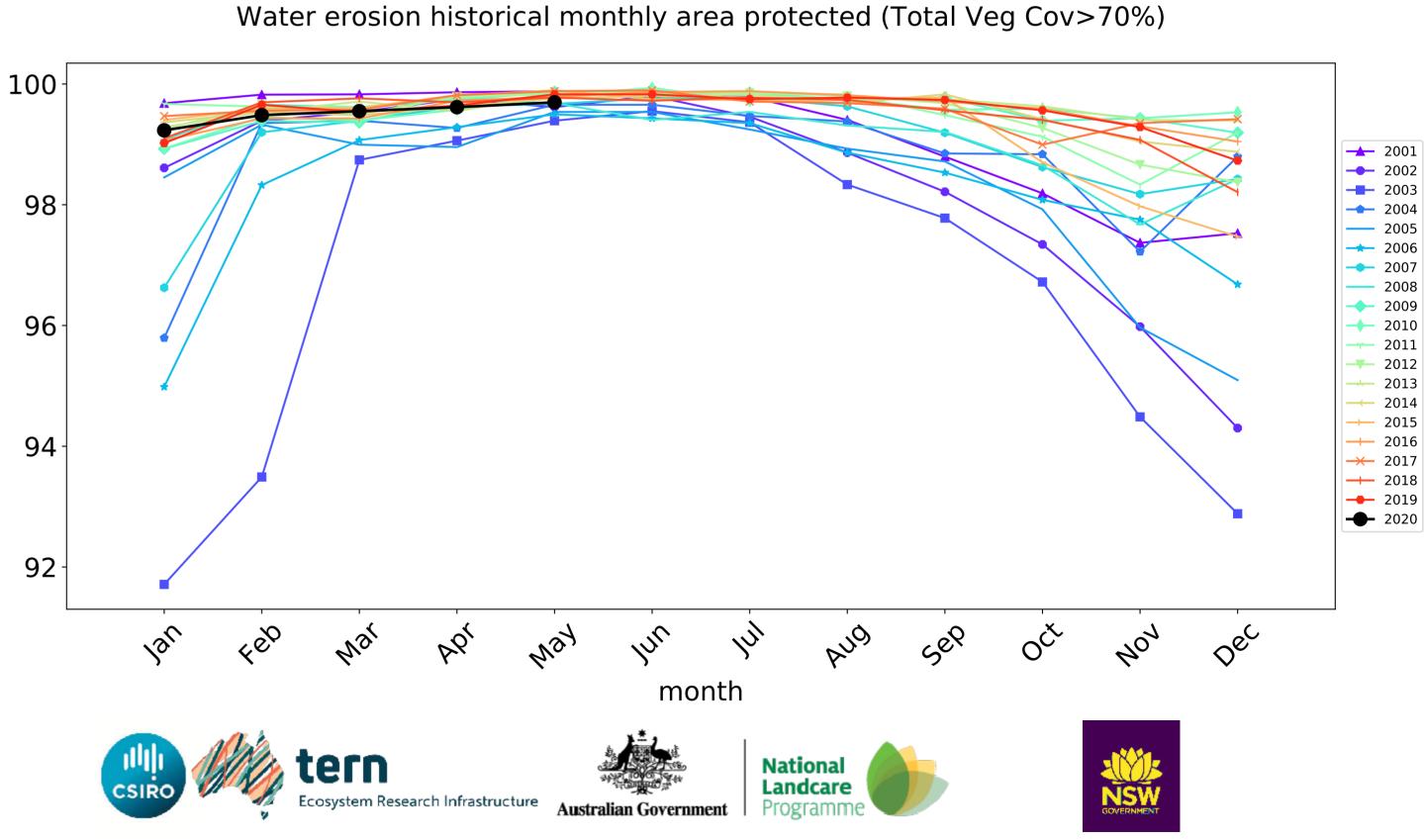


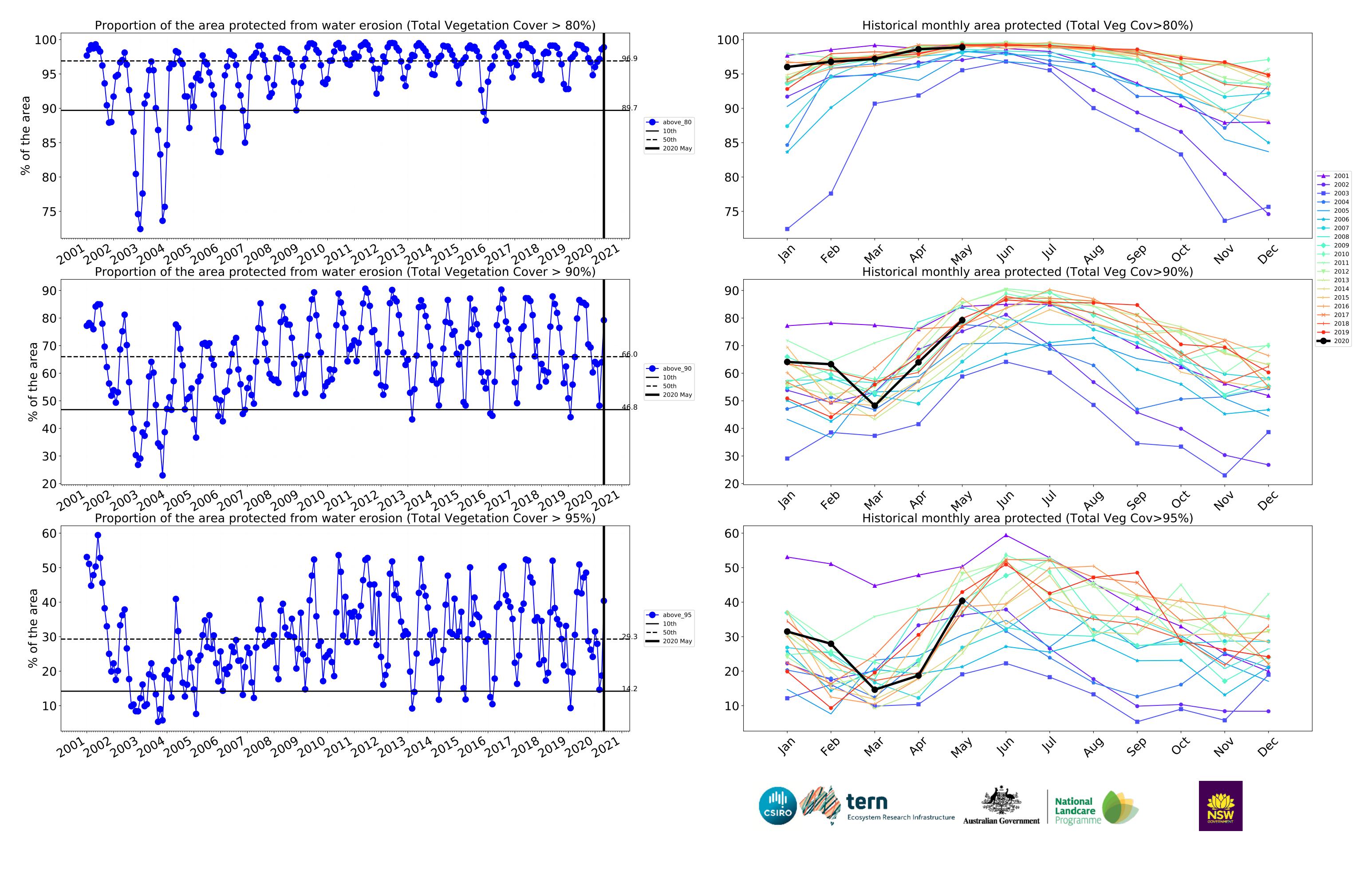
month

--- 2020

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



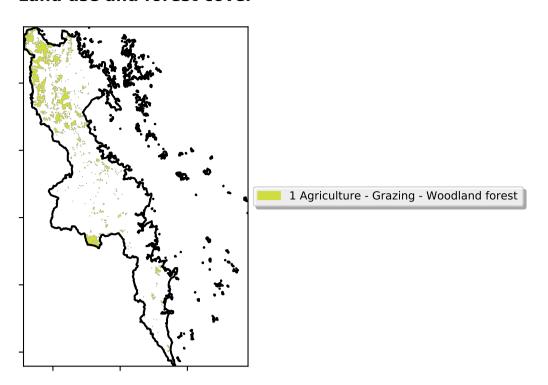




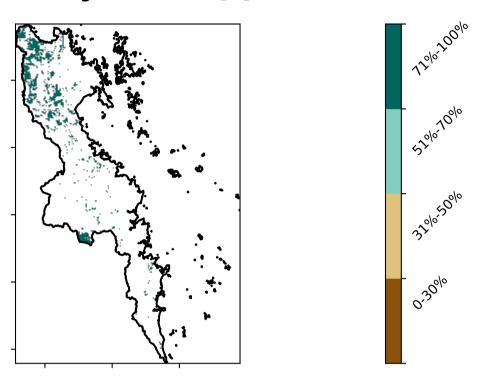
Grazing Woodland forest

Land use and forest cover

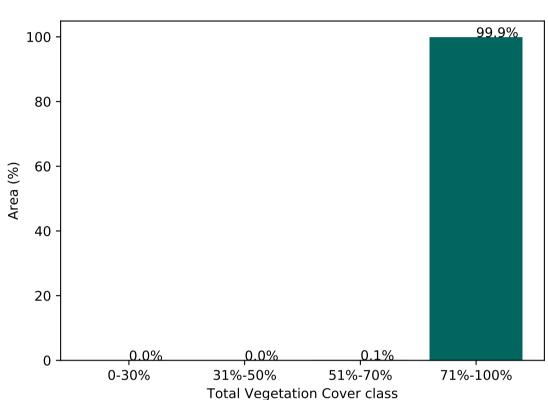
Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)



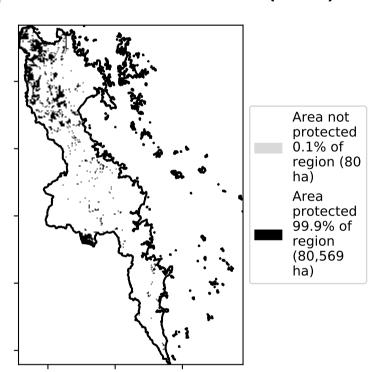
Total Vegetation Cover [%]



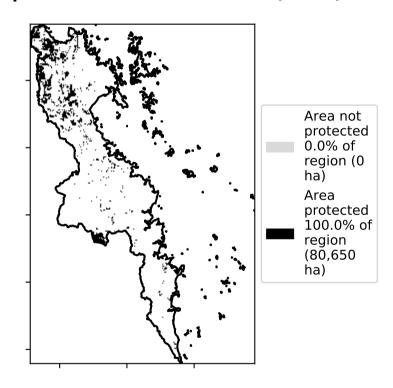
Proportion of vegetation cover class in area



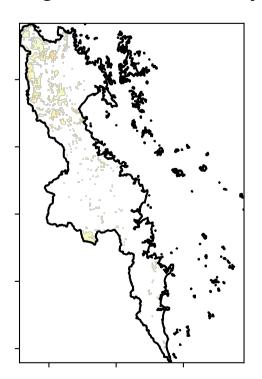
% Area protected from water erosion (>70%)

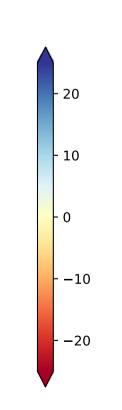


% Area protected from wind erosion (>50%)



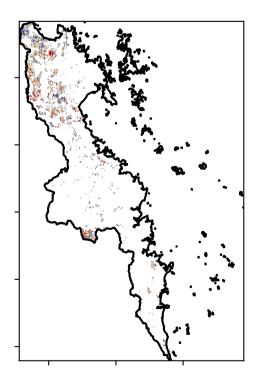
Total Vegetation Cover Anomaly [%]

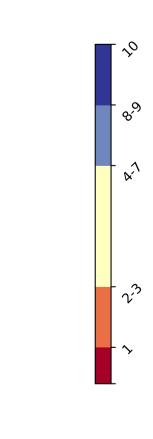




Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

Total Vegetation Cover Decile [%]





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

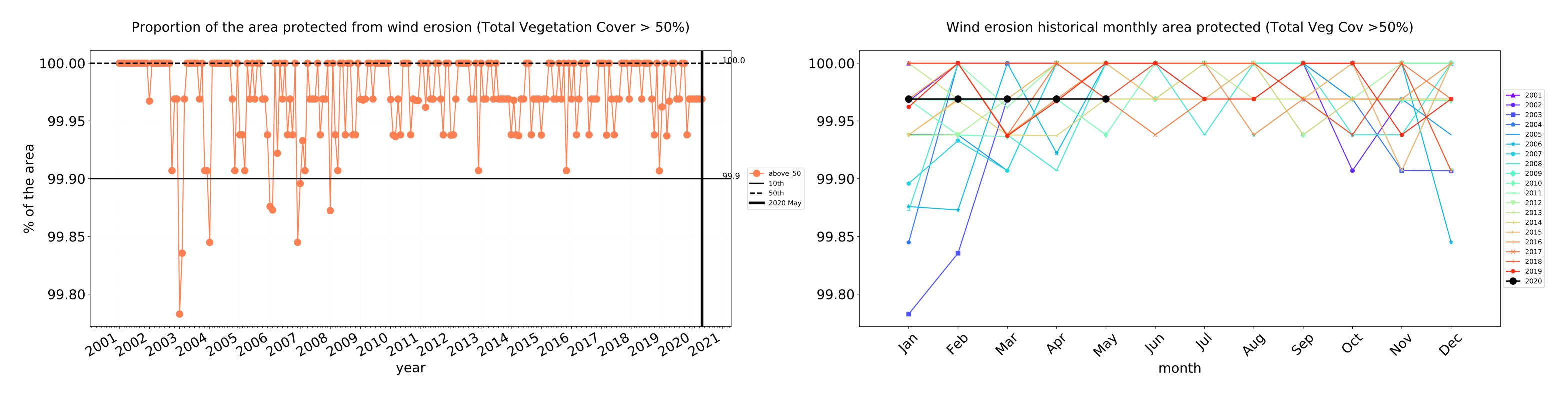


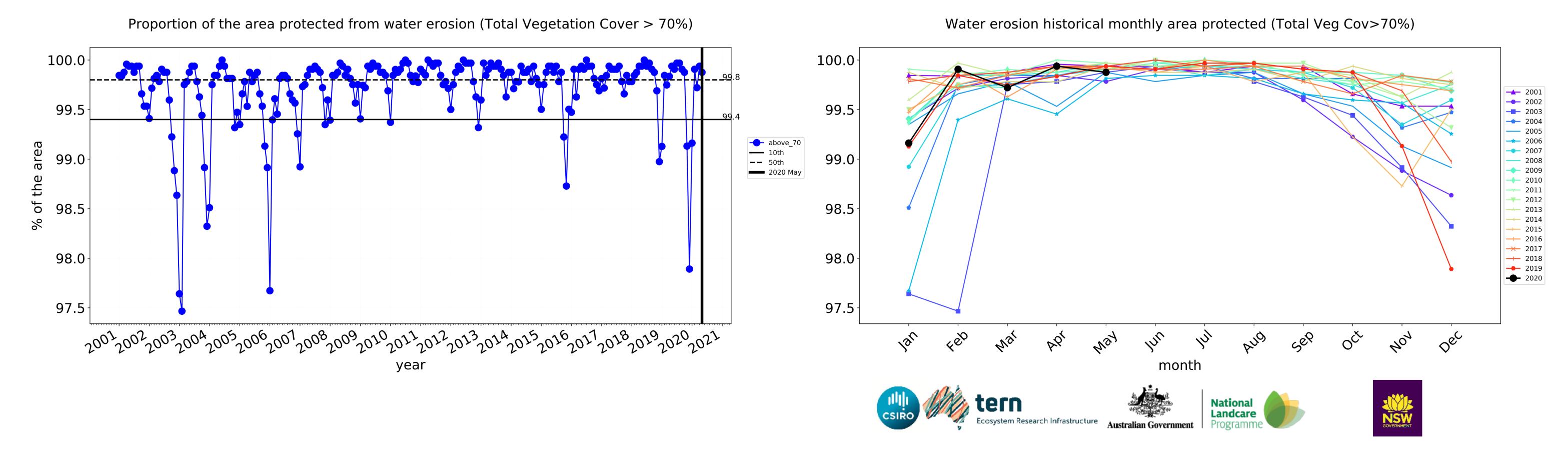


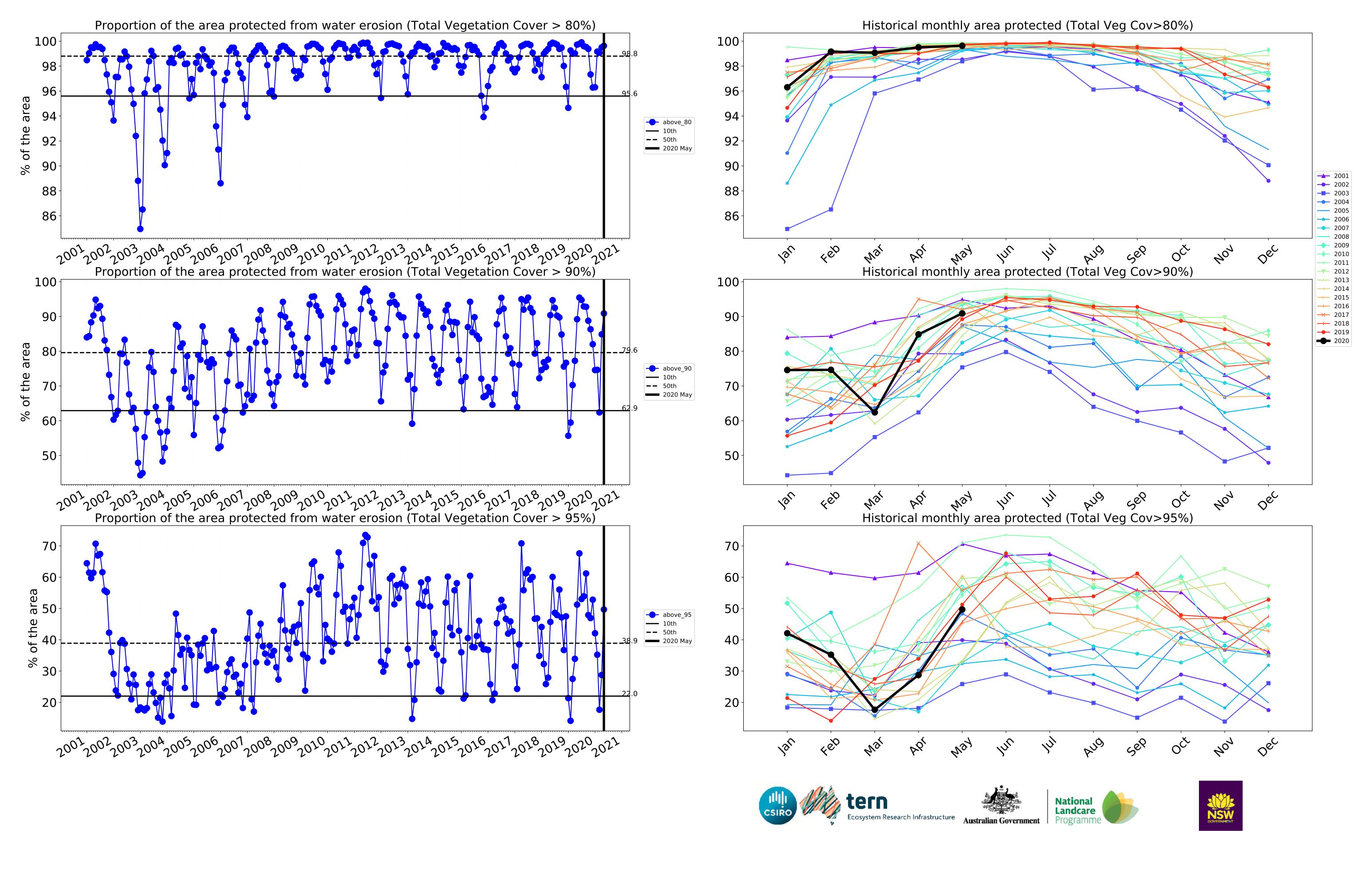




Grazing Woodland forest timeseries



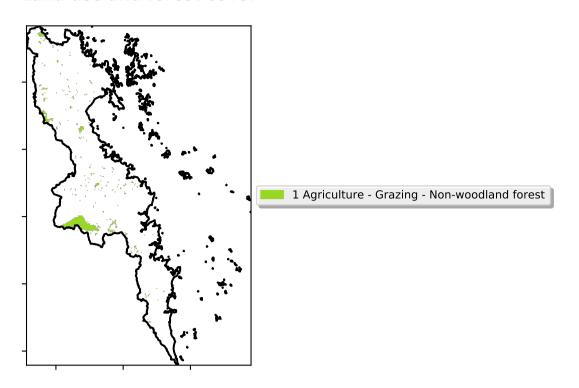




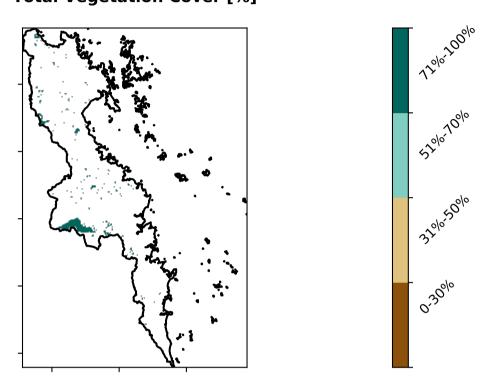
Grazing - Forest (non woodland)

Land use and forest cover

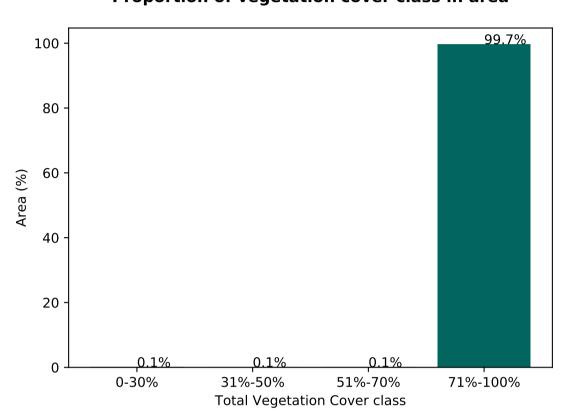
Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)



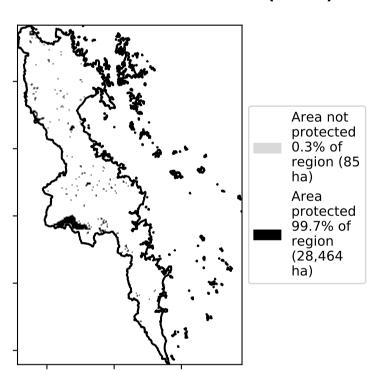
Total Vegetation Cover [%]



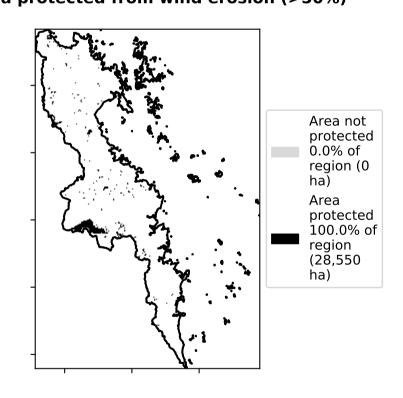
Proportion of vegetation cover class in area



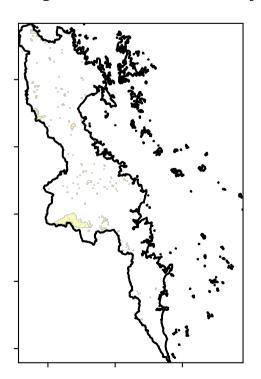
% Area protected from water erosion (>70%)

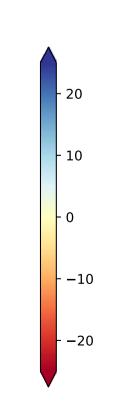


% Area protected from wind erosion (>50%)



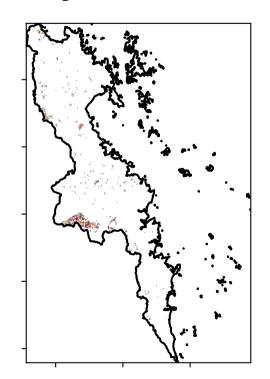
Total Vegetation Cover Anomaly [%]

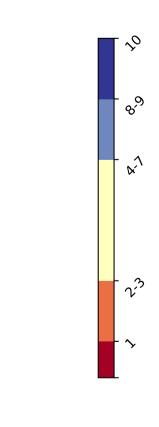




Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

Total Vegetation Cover Decile [%]





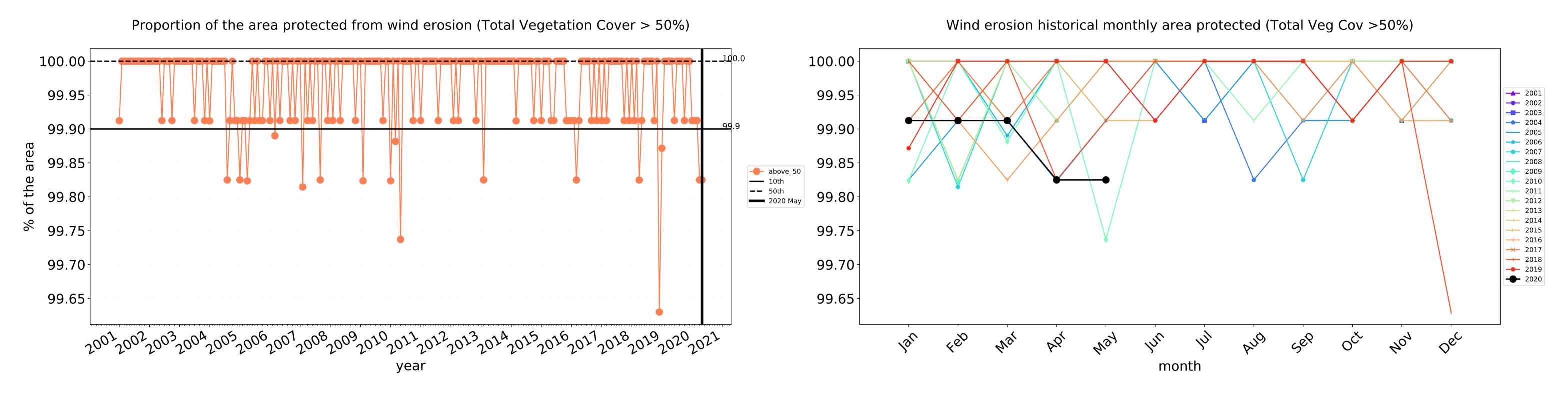
Anomaly show how many percetage points each pixel is from the mean. That is, red pixels are about 20% lower than the mean of that pixel. The mean is only for the month of the map using baseline from 2001 to 2019.

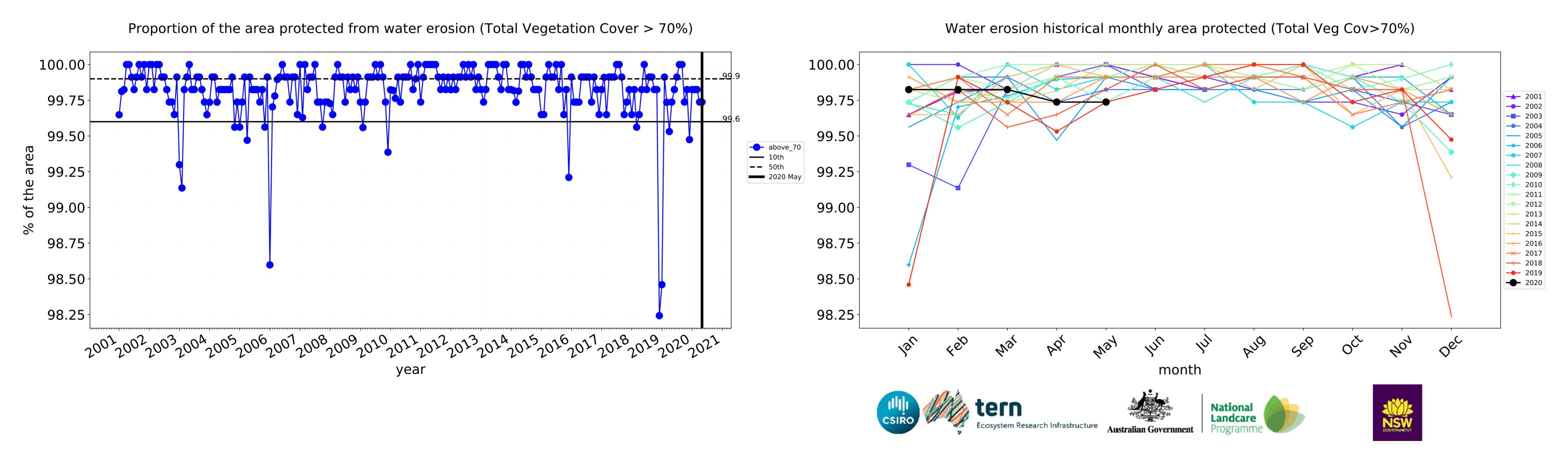


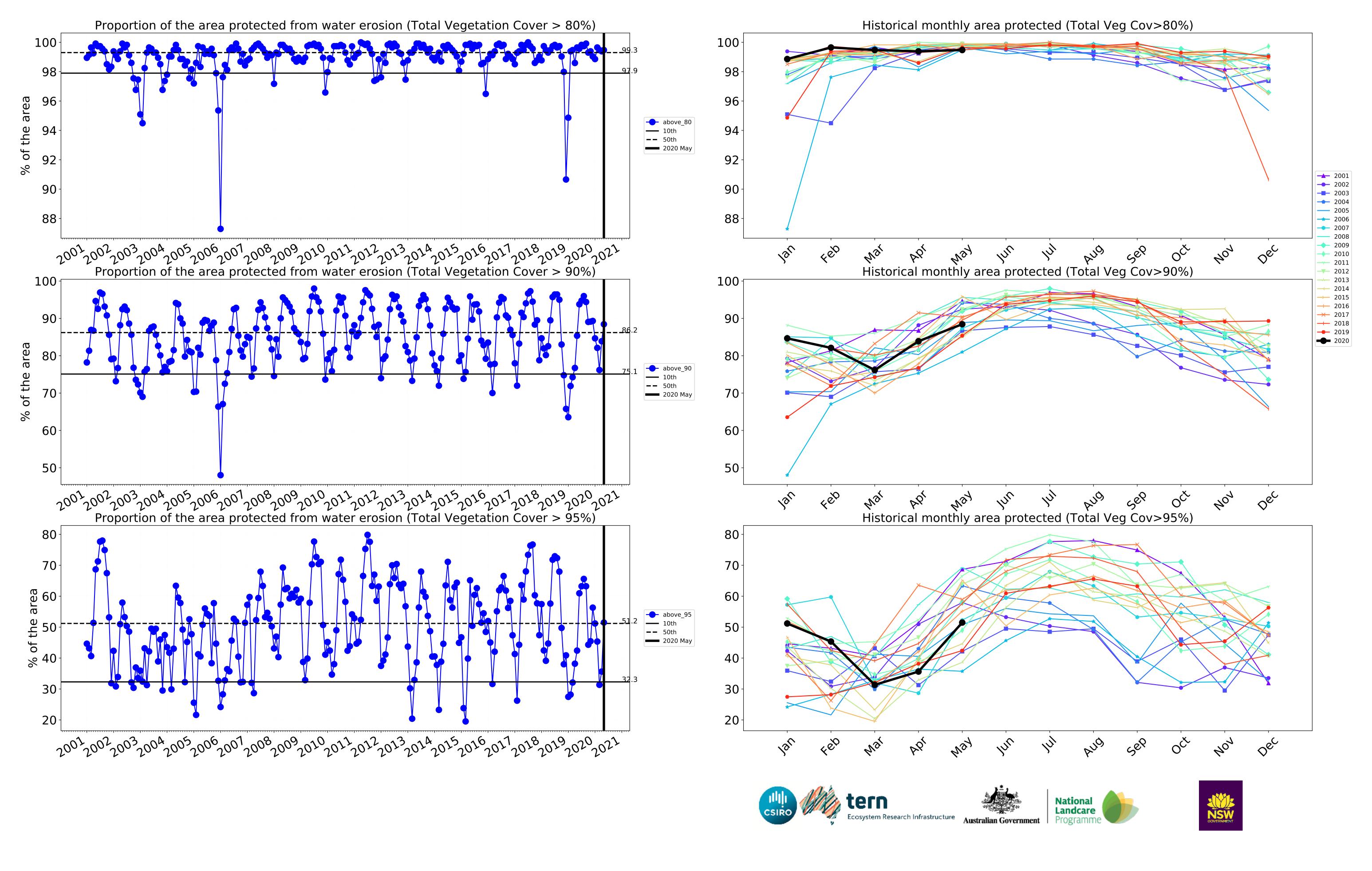






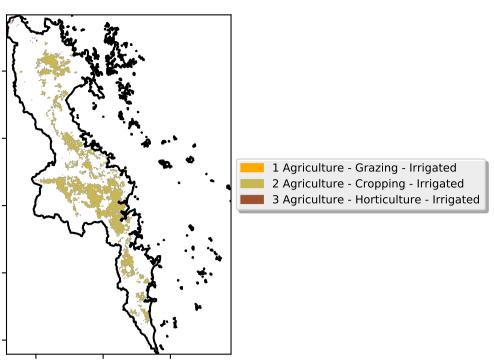






Irrigation

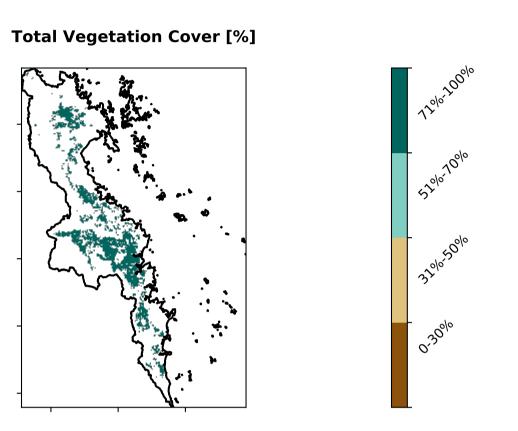
Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)

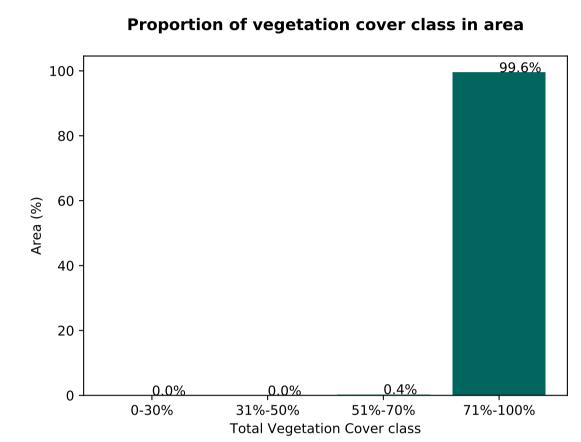


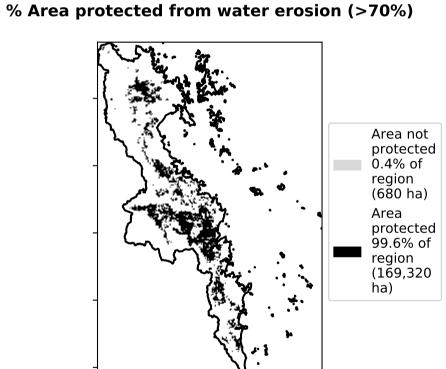
Land use and forest cover

99.3% 100 80 60 40 20 0.5% 2 Land use class

Proportion of each land class in area

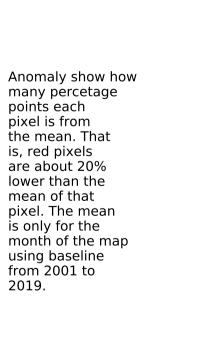






% Area protected from wind erosion (>50%) Area protected 100.0% of region (170,000 ha)

Total Vegetation Cover Decile [%]

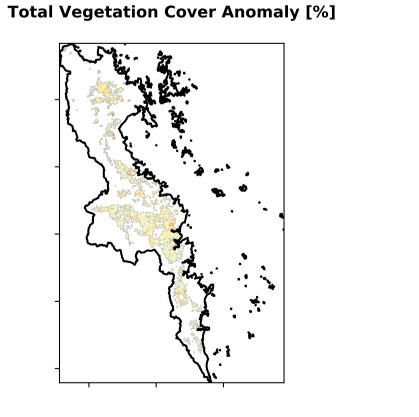


pixel is from

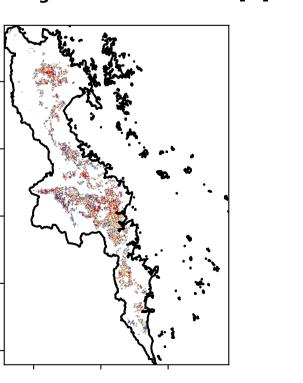
is, red pixels are about 20% lower than the mean of that pixel. The mean

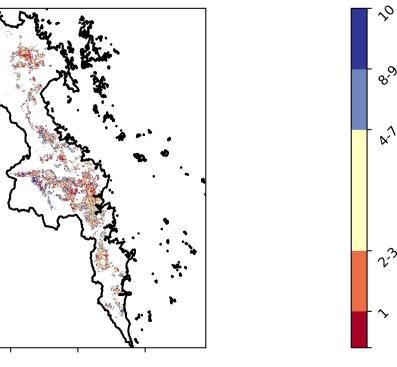
using baseline from 2001 to 2019.

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 map using baseline from 2001 to 2019.















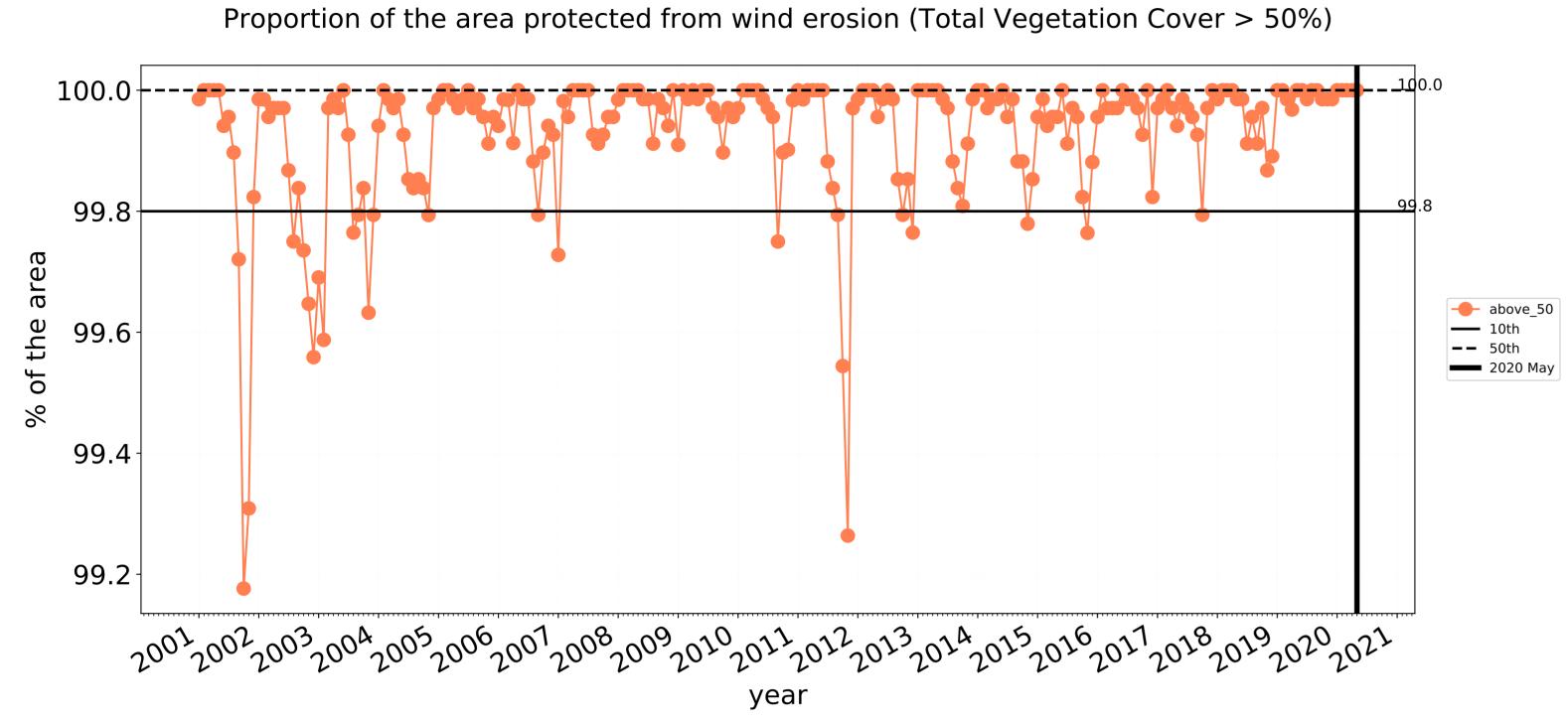
- 20

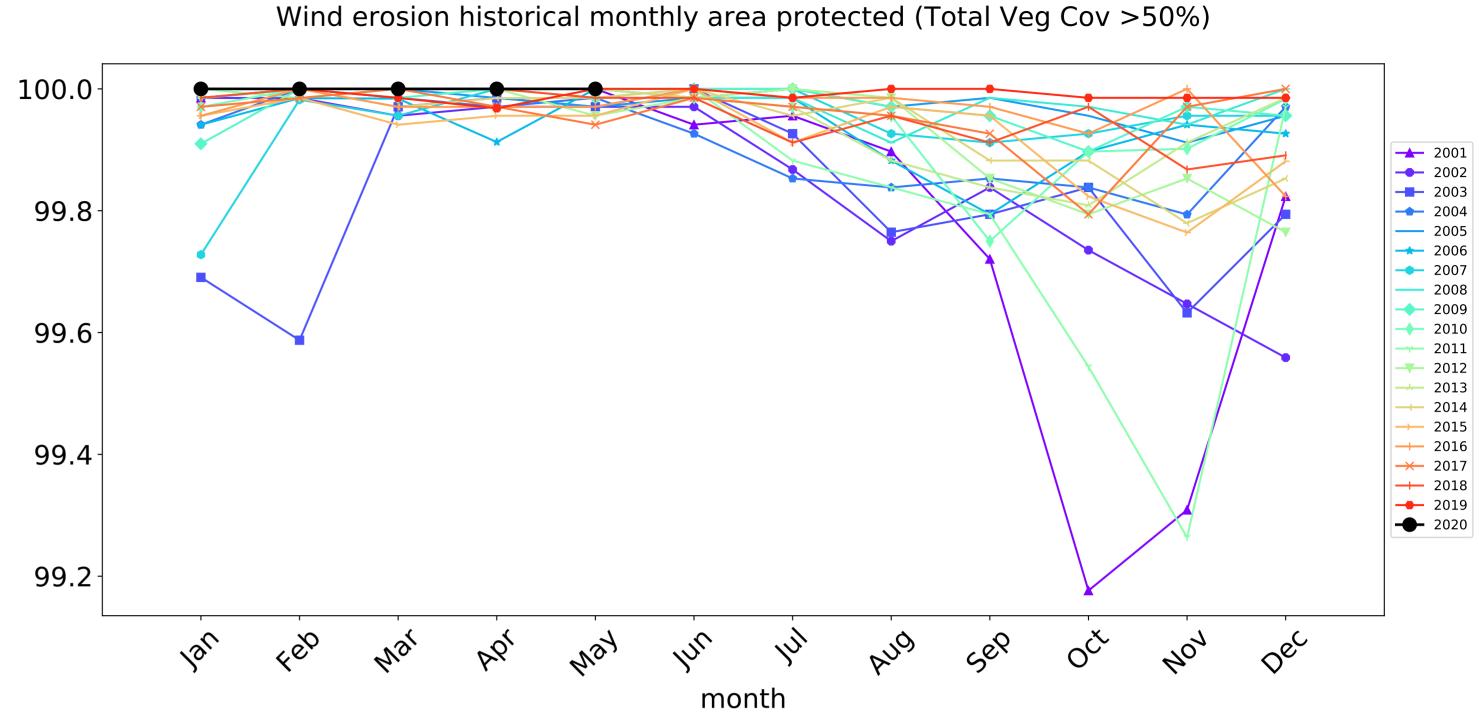
- 10

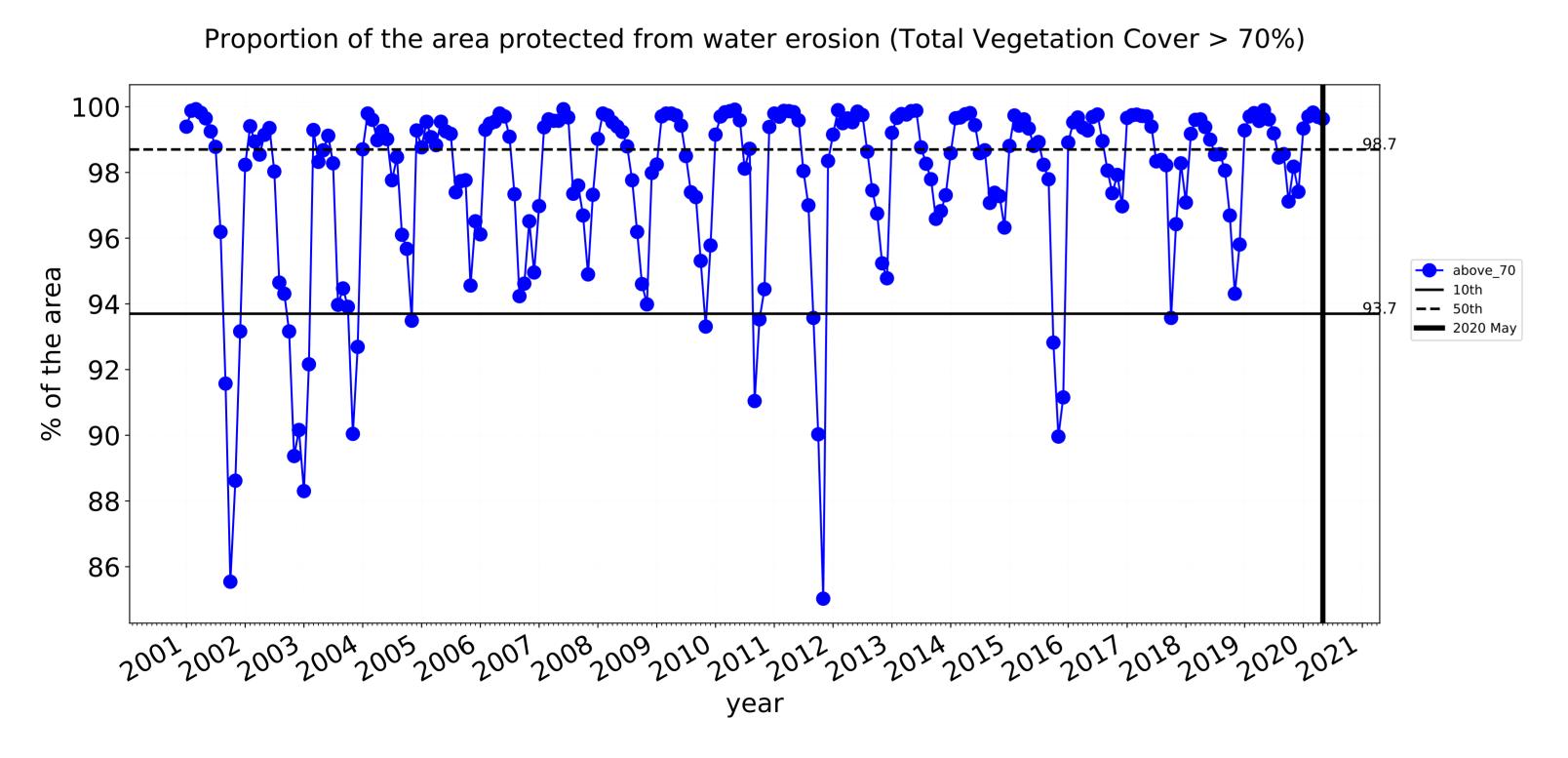
-10

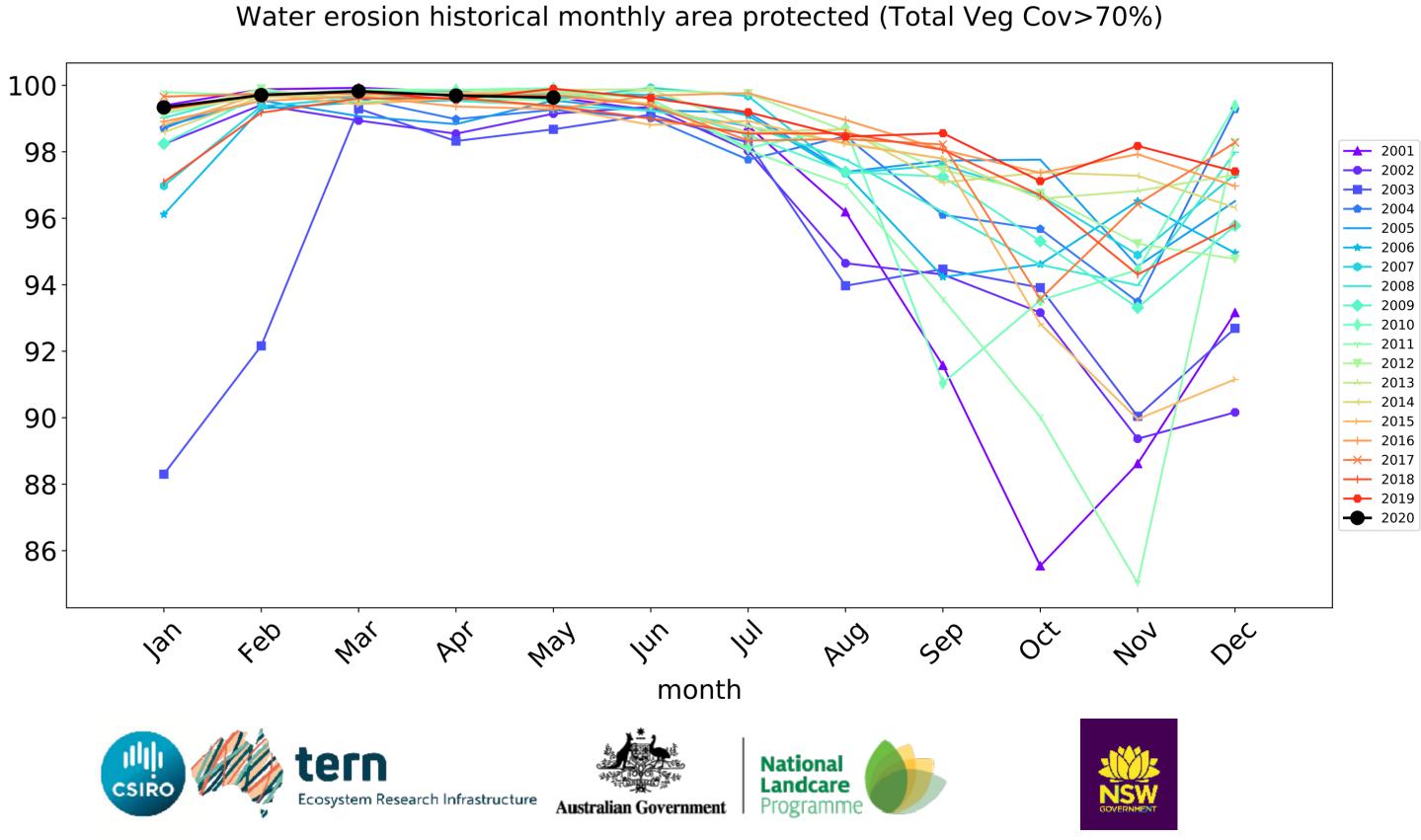
-20

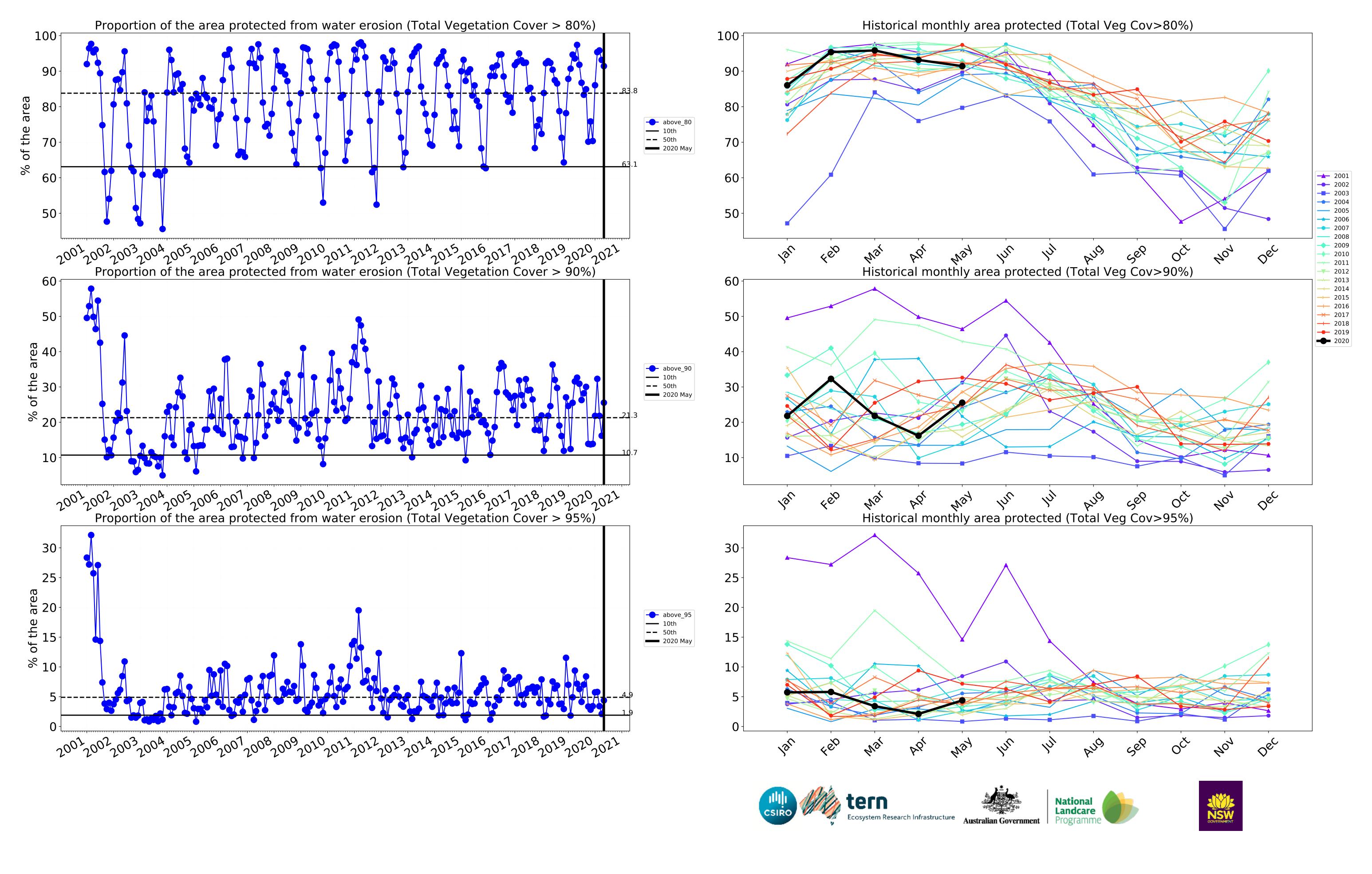
Irrigation timeseries











Production native forests and plantation forests

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

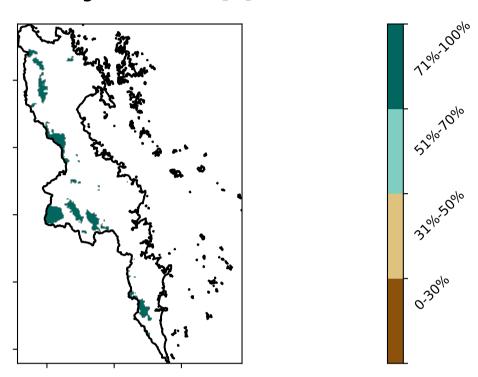
is only for the month of the map

using baseline from 2001 to 2019.

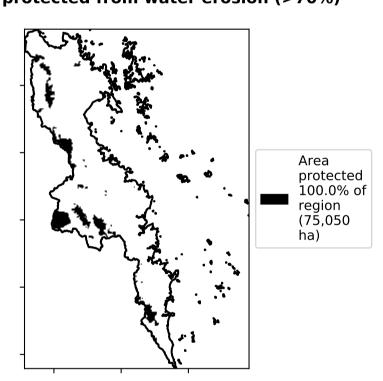
1 Production native forests and plantation forests

Total Vegetation Cover [%]

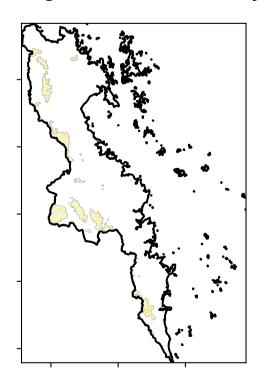
Land use and forest cover

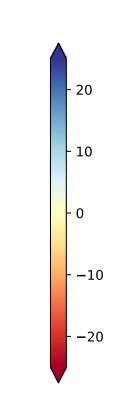


% Area protected from water erosion (>70%)



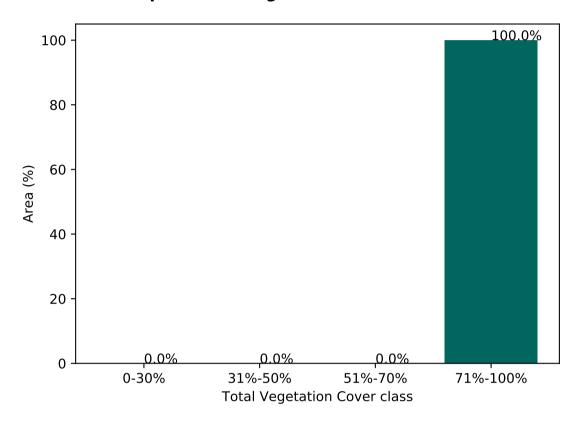
Total Vegetation Cover Anomaly [%]



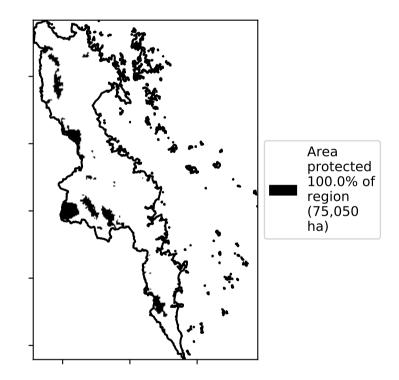


Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

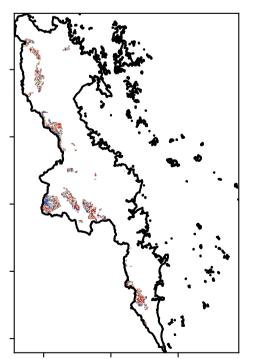
Proportion of vegetation cover class in area

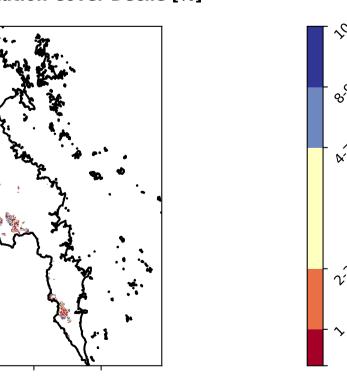


% Area protected from wind erosion (>50%)



Total Vegetation Cover Decile [%]









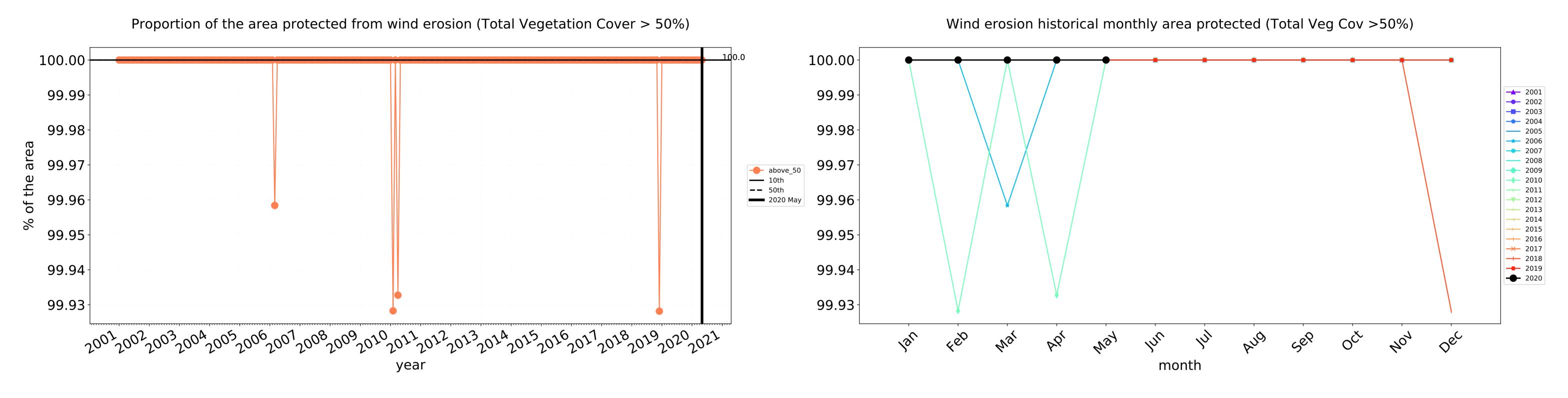


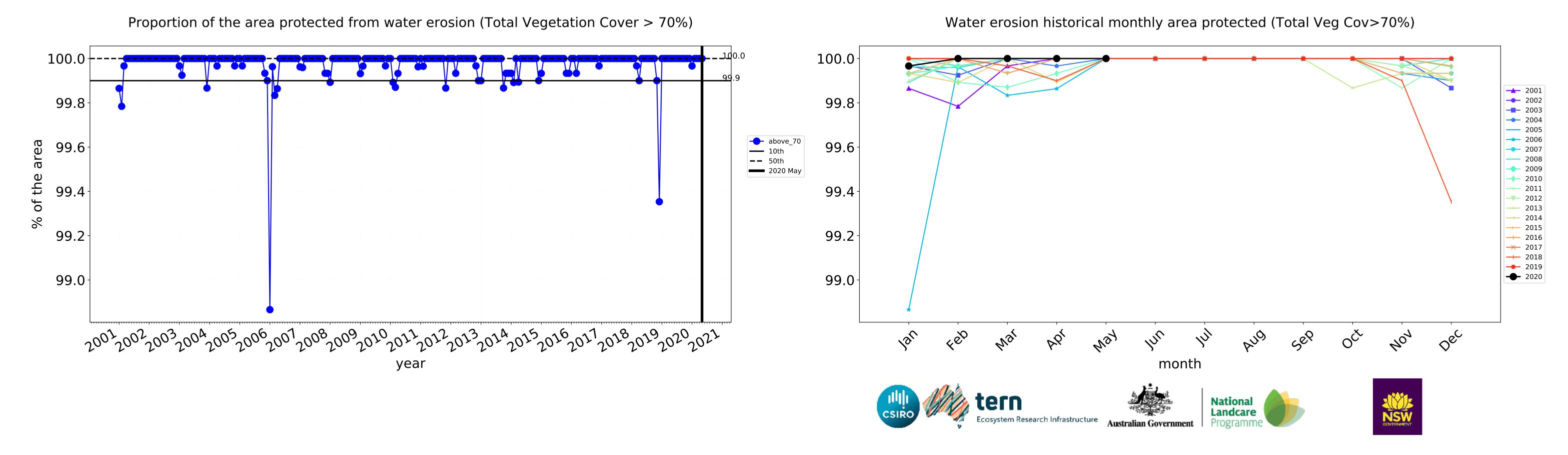


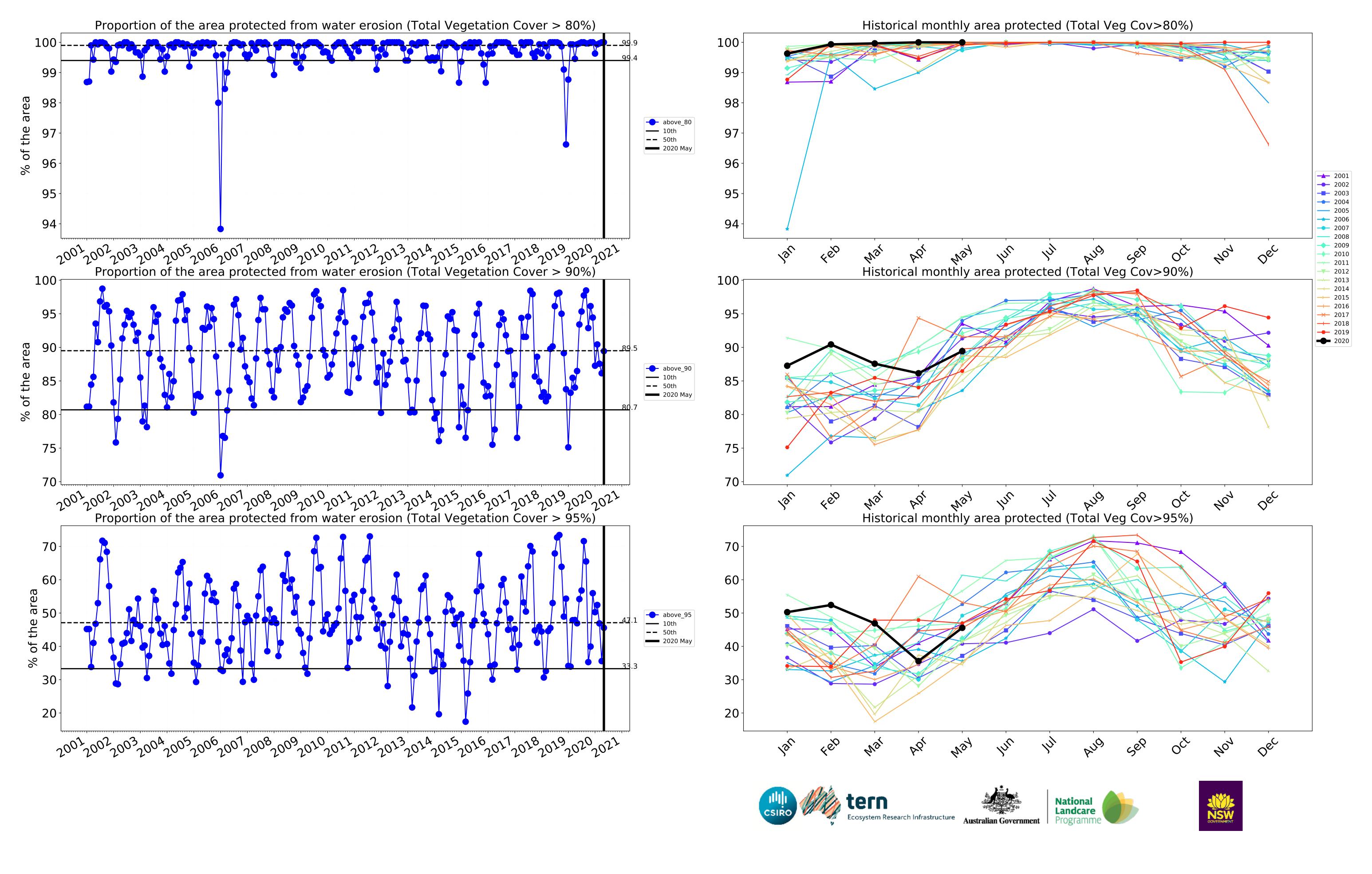




Production native forests and plantation forests timeseries







Mackay Whitsunday (906,575 ha and no data 26,485 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	906,575	100.0% 906,150	99.8% 904,600	98.7% 894,750	95.0% 861,125	66.1% 599,275	30.2% 274,125
Conservation and natural environments	274,275	99.9% 274,050	99.6% 273,150	98.5% 270,275	96.6% 265,050	75.7% 207,725	32.9% 90,350
Conservation and natural environments non forest	7,050	99.3% 7,000	97.9% 6,900	92.6% 6,525	84.4% 5,950	52.8% 3,725	24.1% 1,700
Conservation and natural environments Woodland forest	74,625	100.0% 74,600	99.8% 74,475	99.0% 73,875	97.3% 72,575	82.8% 61,825	33.0% 24,600
Conservation and natural environments Forest (non woodland)	192,600	99.9% 192,450	99.6% 191,775	98.6% 189,875	96.8% 186,525	73.8% 142,175	33.3% 64,050
Agriculture	468,375	100.0% 468,325	100.0% 468,250	99.7% 467,000	96.3% 451,250	62.3% 291,875	29.6% 138,600
Grazing	298,325	100.0% 298,275	100.0% 298,200	99.7% 297,575	99.1% 295,775	83.3% 248,400	44.0% 131,150
Grazing non forest	189,125	100.0% 189,100	100.0% 189,075	99.7% 188,550	98.9% 187,025	79.2% 149,850	40.4% 76,375
Grazing Woodland forest	80,650	100.0% 80,650	100.0% 80,625	99.9% 80,550	99.6% 80,350	90.9% 73,300	49.7% 40,075
Grazing - Forest (non woodland)	28,550	99.9% 28,525	99.8% 28,500	99.7% 28,475	99.5% 28,400	88.4% 25,250	51.5% 14,700
Irrigation	170,000	100.0% 170,000	100.0% 170,000	99.6% 169,375	91.4% 155,425	25.5% 43,425	4.4% 7,450
Production native forests and plantation forests	75,050	100.0% 75,050	100.0% 75,050	100.0% 75,050	100.0% 75,050	89.4% 67,125	45.6% 34,200







