### Total vegetation cover soil protection Region:LGA Indigo\_(S) VIC

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: September 2022** 

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







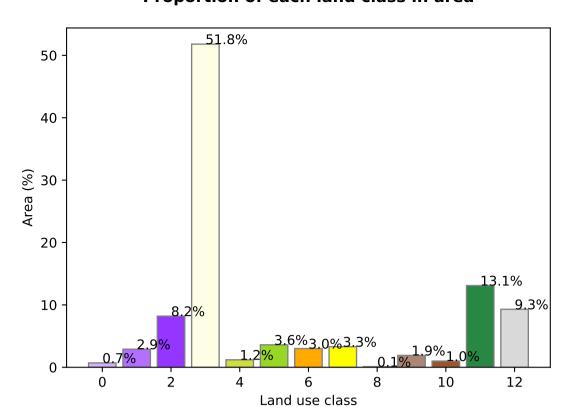


#### **Vegetation Cover Sep 2022**

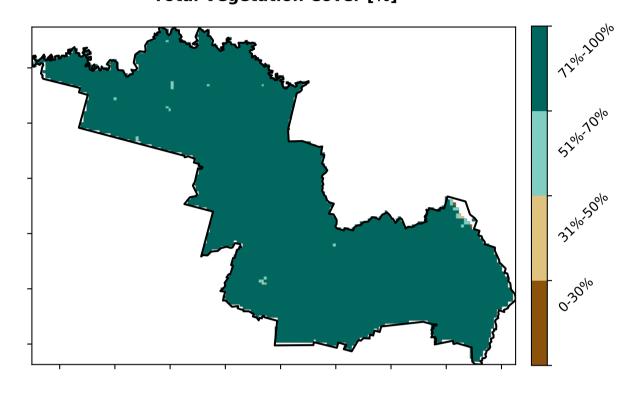
#### Land use and forest cover

#### 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 Catchment Scale 3 Conservation and natural environments - Non-Woodland forest Land Use and Forests of Australia (2018) 4 Agriculture - Grazing - Non-forest Derived from 5 Agriculture - Grazing - Woodland forest Catchment Scale Land 6 Agriculture - Grazing - Non-woodland forest Use of Australia 7 Agriculture - Grazing - Irrigated (2018) and Forests 8 Agriculture - Cropping - Non-irrigated of Australia (2018) 9 Agriculture - Cropping - Irrigated 10 Agriculture - Horticulture - Non-irrigated 11 Agriculture - Horticulture - Irrigated 12 Production native forests and plantation 13 Other uses

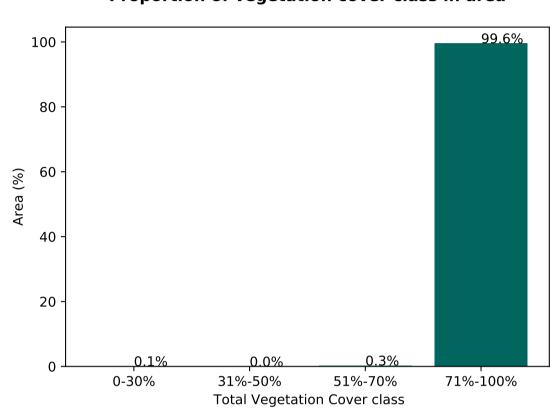
#### Proportion of each land class in area



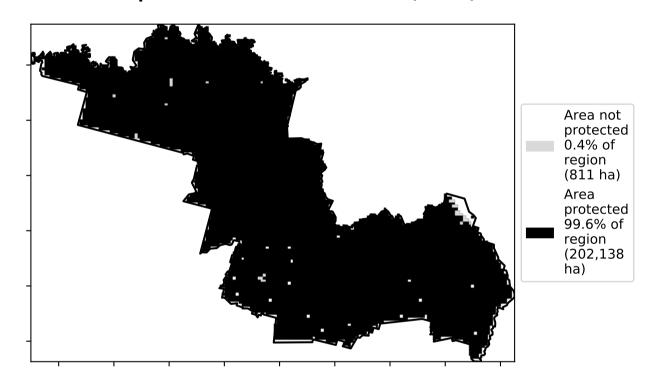
#### **Total Vegetation Cover [%]**



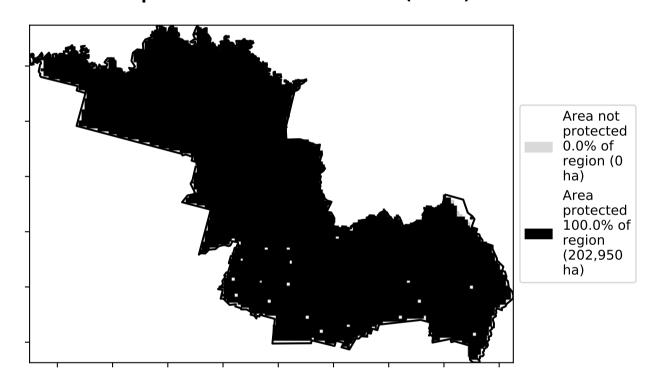
Proportion of vegetation cover class in area



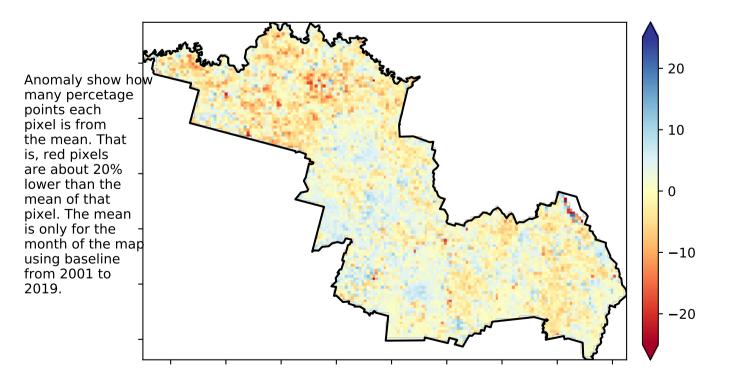
#### % Area protected from water erosion (>70%)



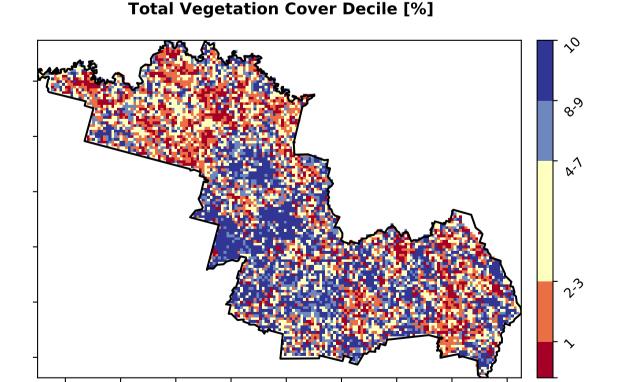
% Area protected from wind erosion (>50%)



#### 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.

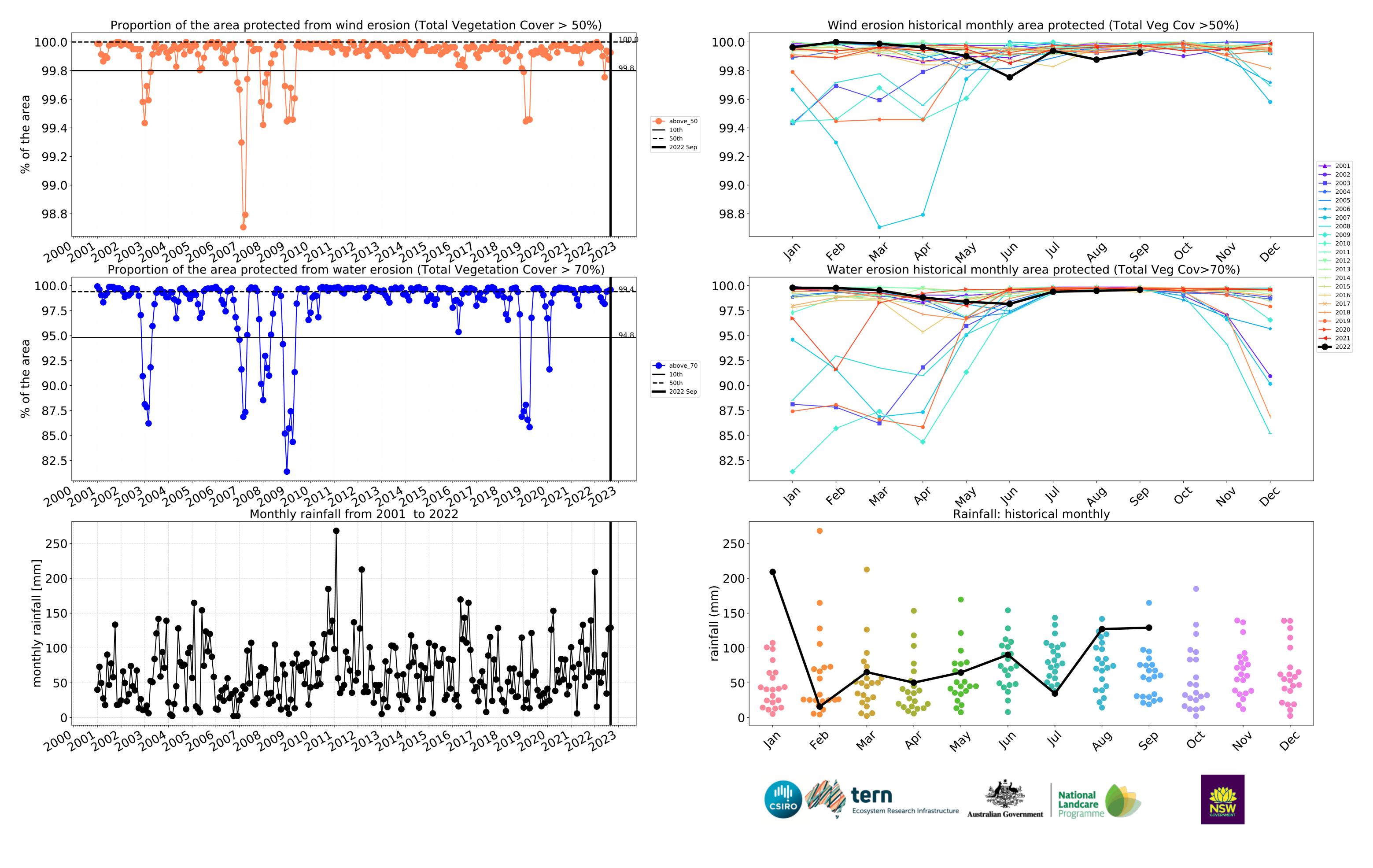


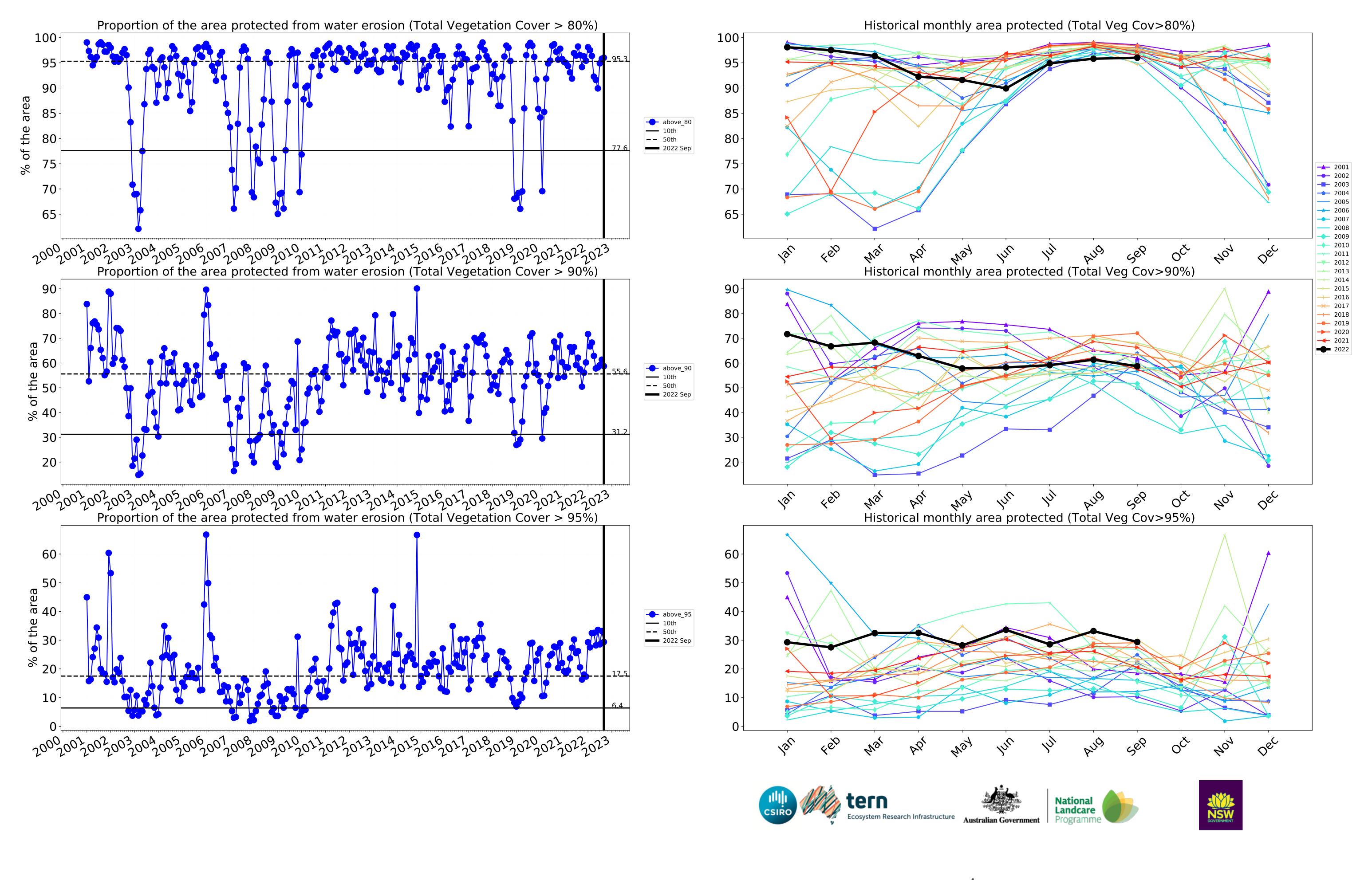
# tern Ecosystem Research Infrastructure











#### **Conservation and natural environments**

#### Proportion of each land class in area Land use and forest cover 69.3% 70 60 · Catchment Scale Land Use and Forests of Australia (2018) Derived from 1 Conservation and natural environments - Nonforest 2 Conservation and natural environments - Woodland Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018) 3 Conservation and natural environments - Non-woodland forest 30 24.5% 20 · 10 -6.1% 1.5 -0.50.0 0.5 1.0 2.0 Land use class **Proportion of vegetation cover class in area Total Vegetation Cover [%]** 100.0% 100 Area (%) 60 40 20 -0.0%0.0% 51%-70% 0-30% 31%-50% 71%-100% **Total Vegetation Cover class** % Area protected from water erosion (>70%) % Area protected from wind erosion (>50%) Area Area protected 100.0% of protected 100.0% of region (24,050 region (24,050 ha) ha) **Total Vegetation Cover Anomaly [%] Total Vegetation Cover Decile [%]** - 20 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.





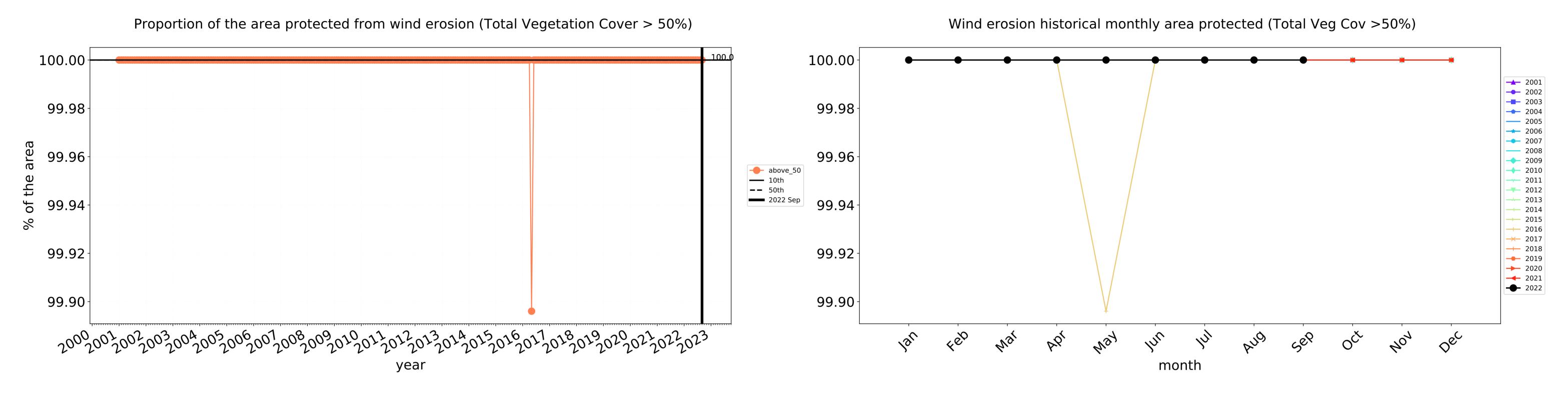
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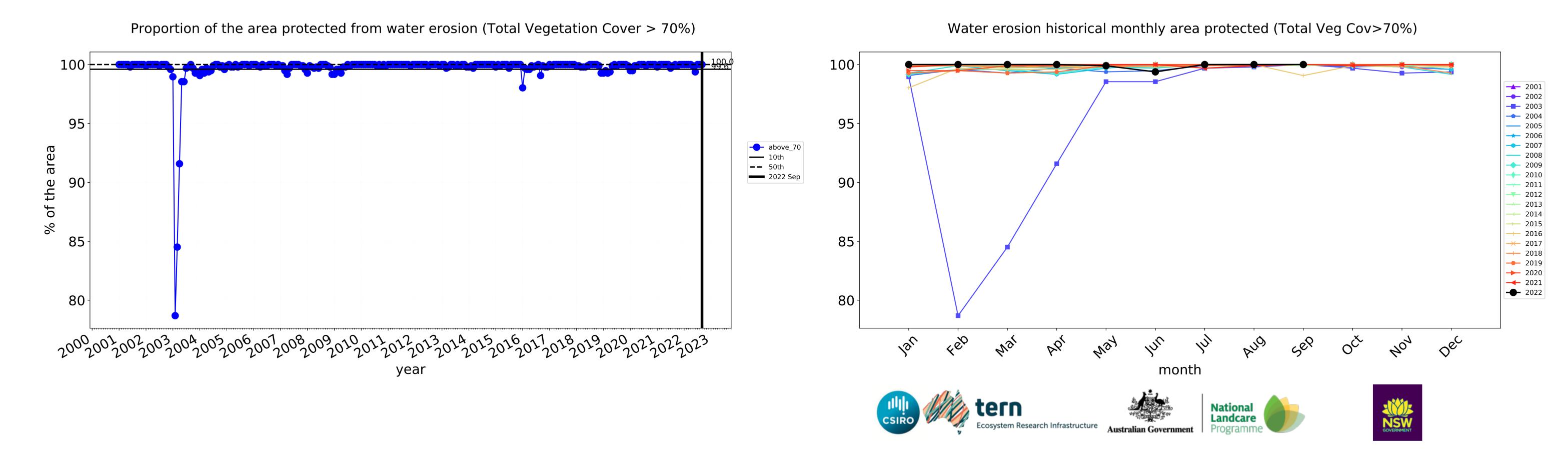
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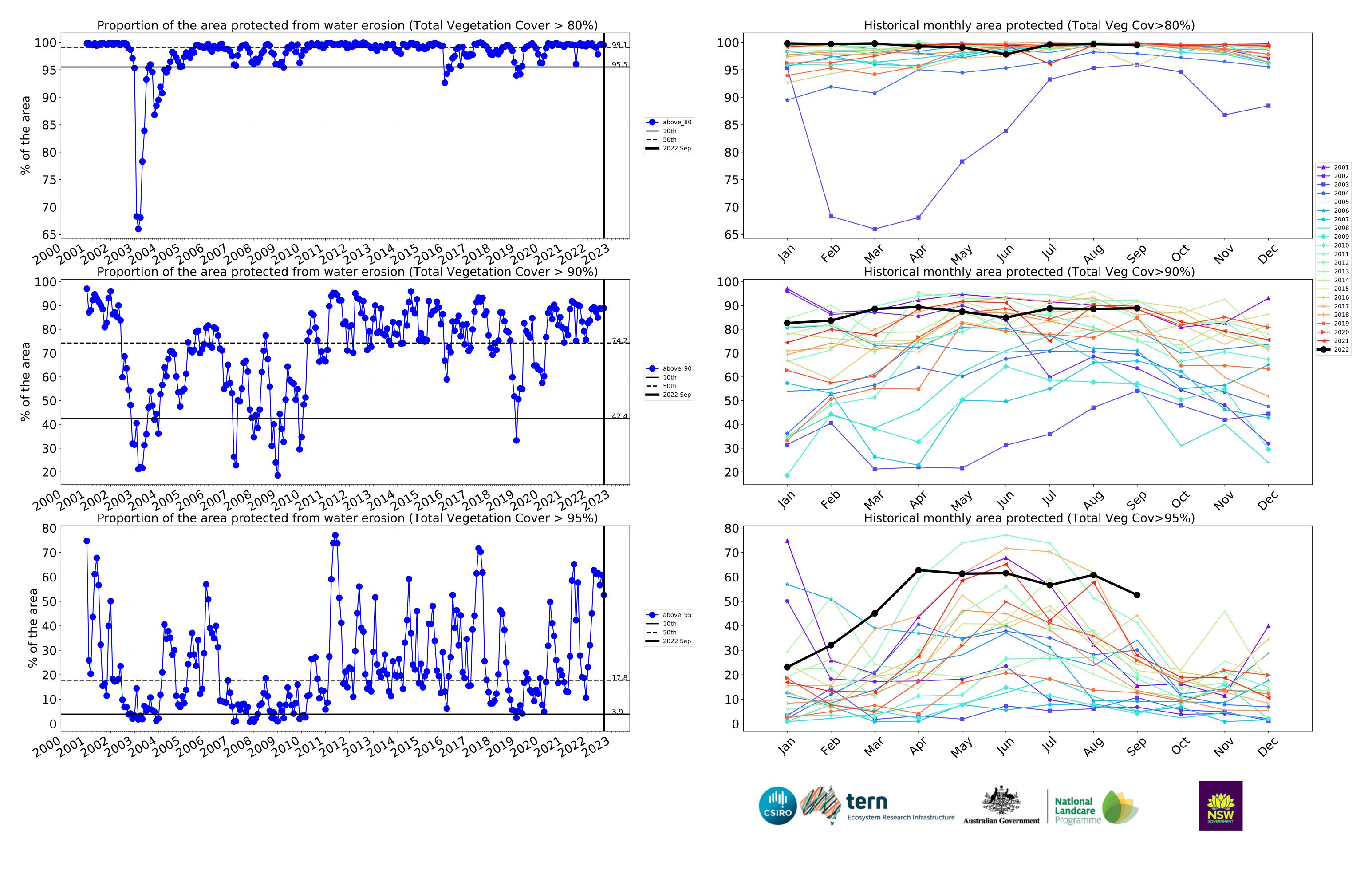
-10

**-**20

#### **Conservation and natural environments timeseries**

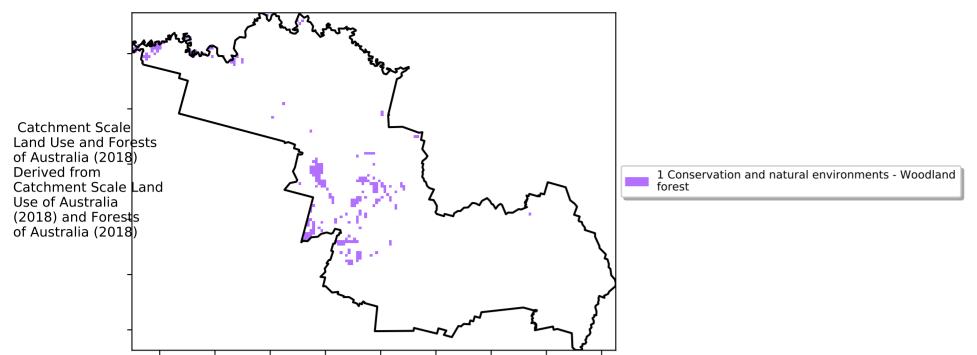




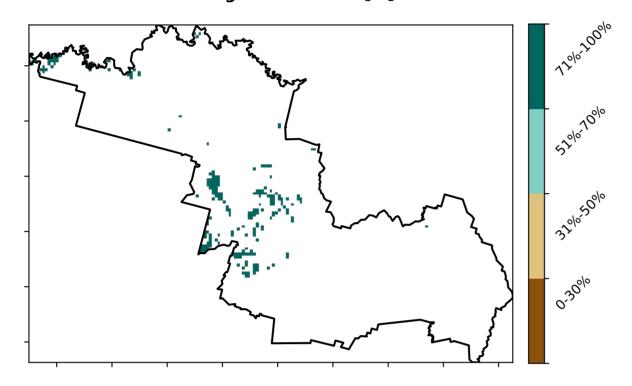


#### **Conservation and natural environments Woodland forest**

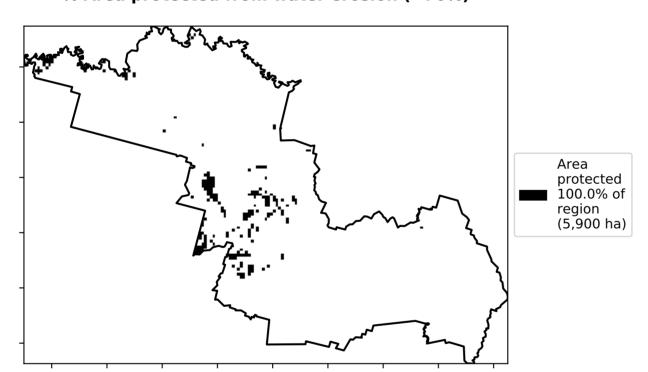
#### Land use and forest cover



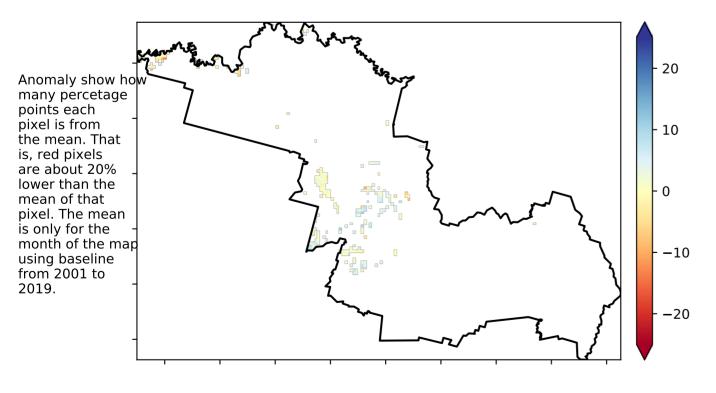
#### Total Vegetation Cover [%]



#### % Area protected from water erosion (>70%)

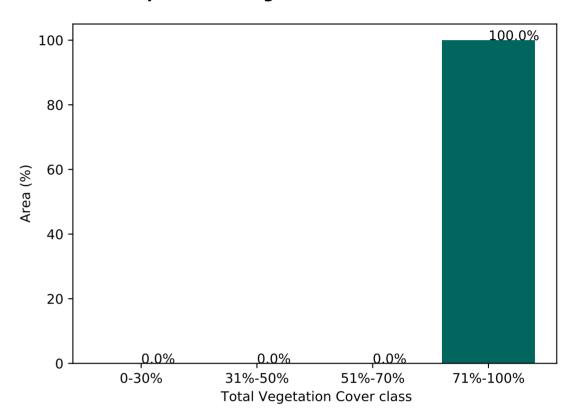


#### Total Vegetation Cover Anomaly [%]

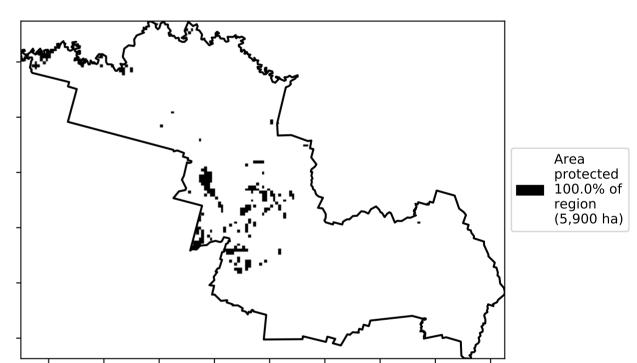


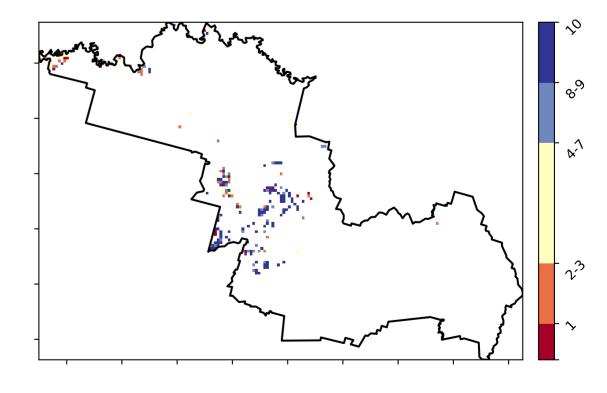
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#### Proportion of vegetation cover class in area



#### % Area protected from wind erosion (>50%)



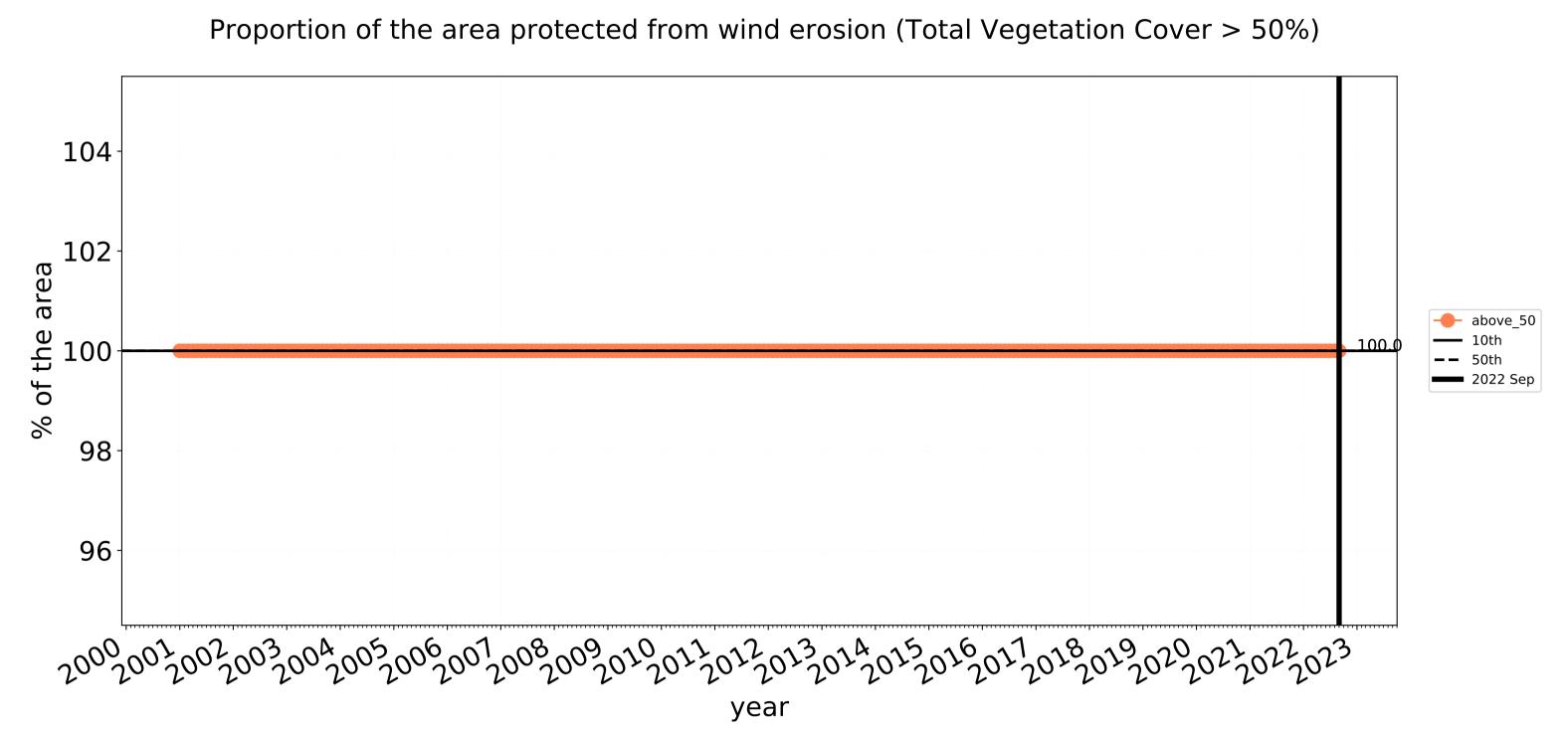


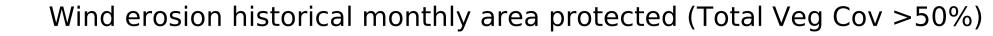


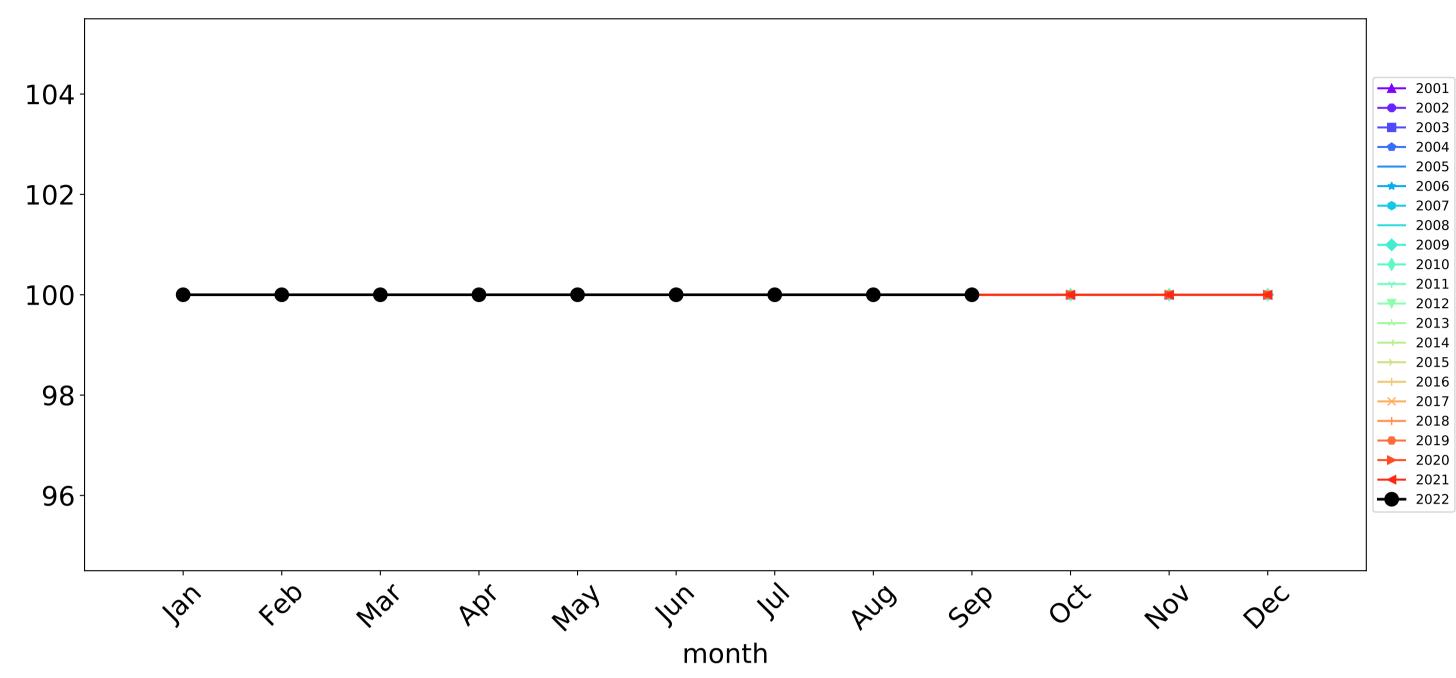


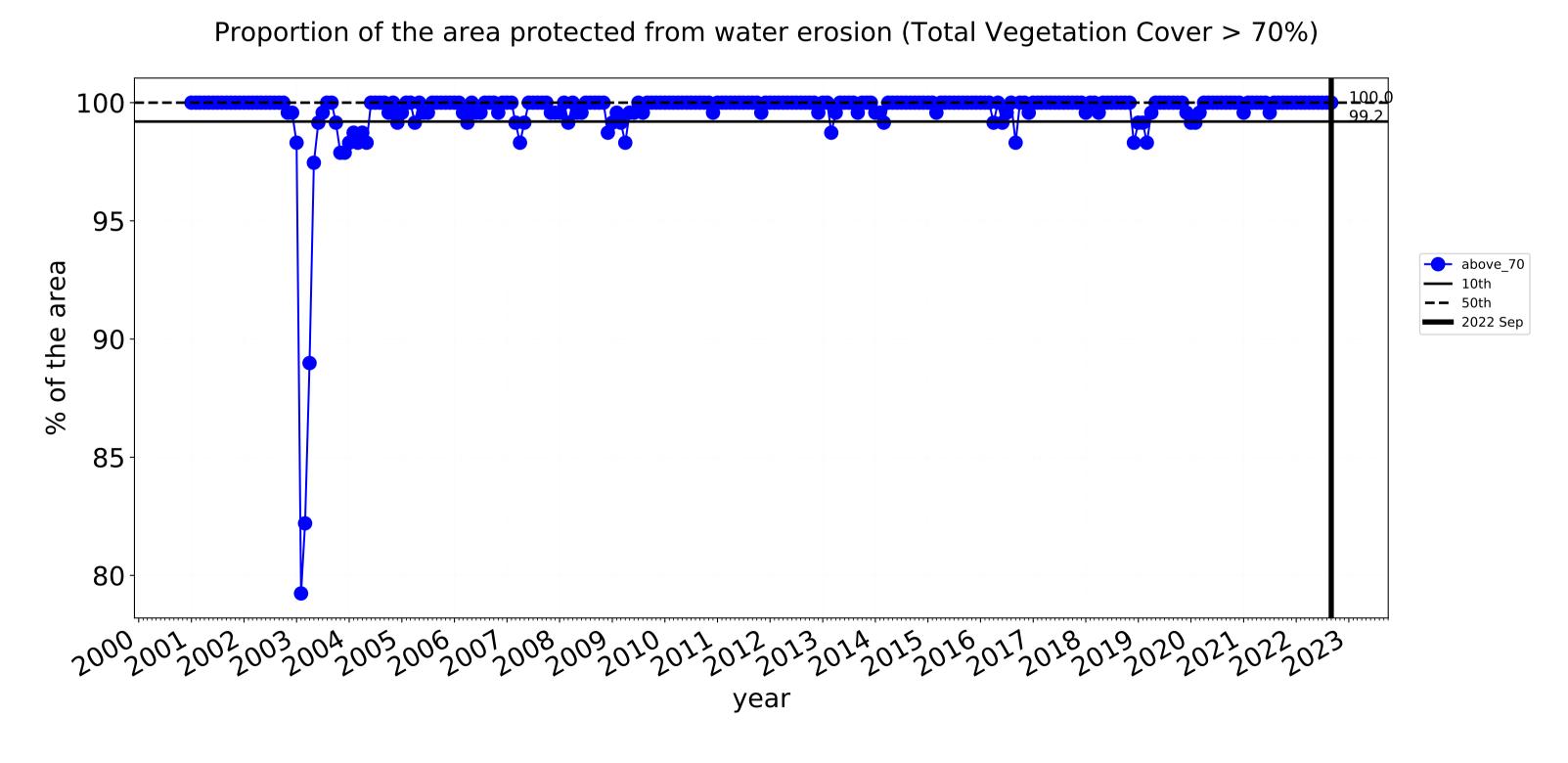


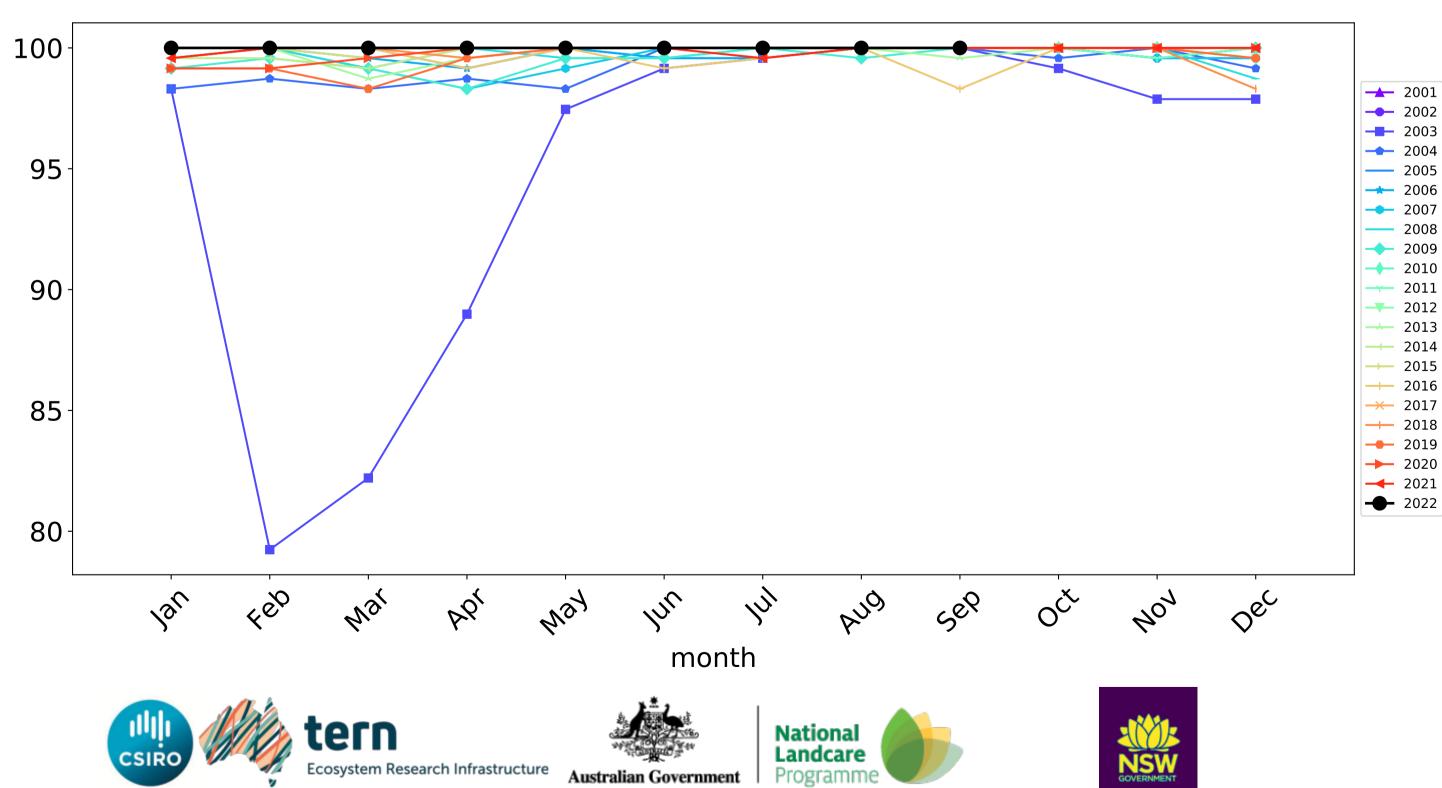




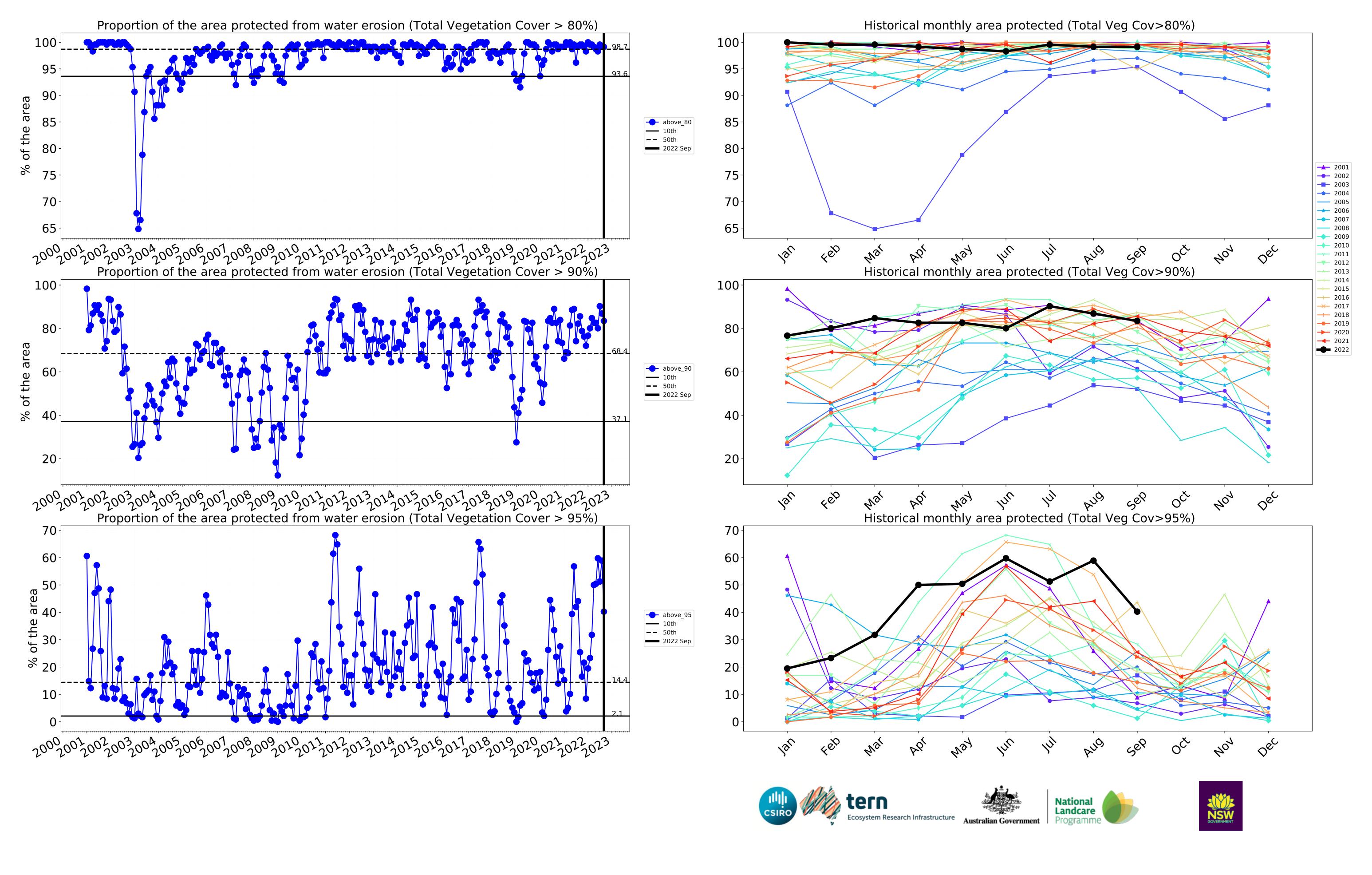




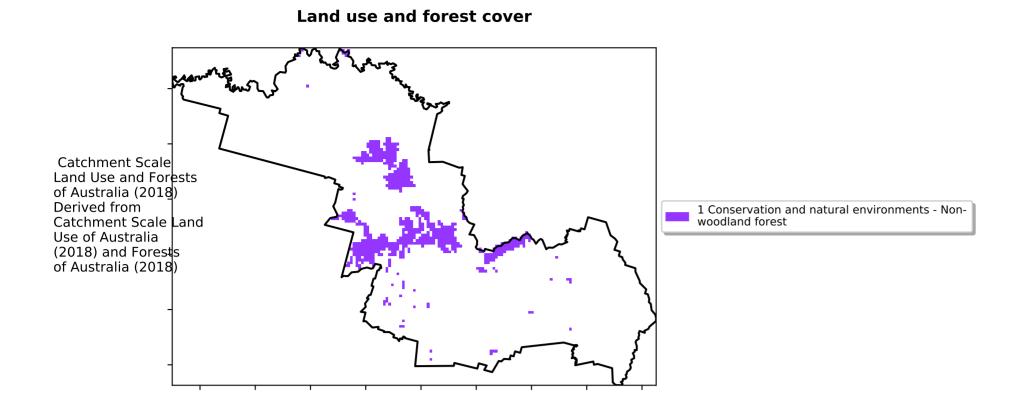




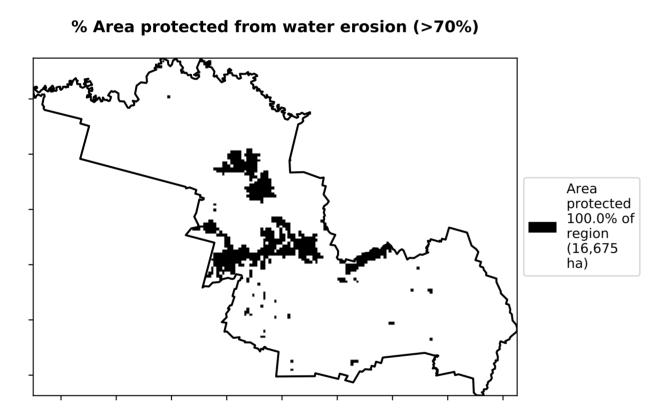
Water erosion historical monthly area protected (Total Veg Cov>70%)

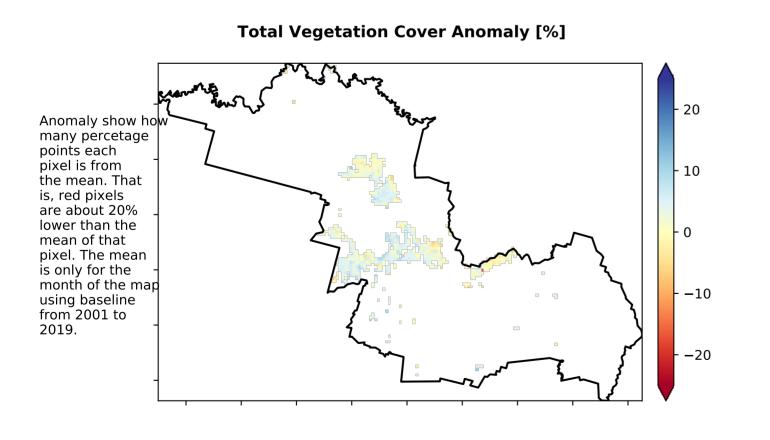


#### **Conservation and natural environments Forest (non woodland)**

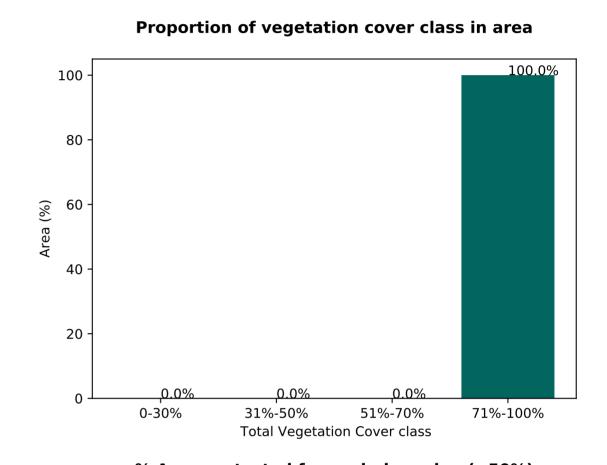


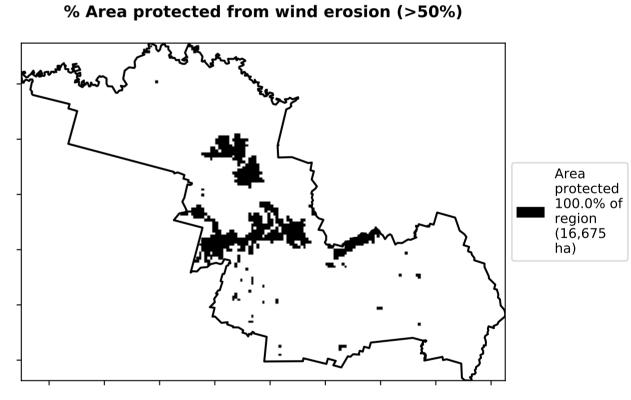
# Total Vegetation Cover [%]

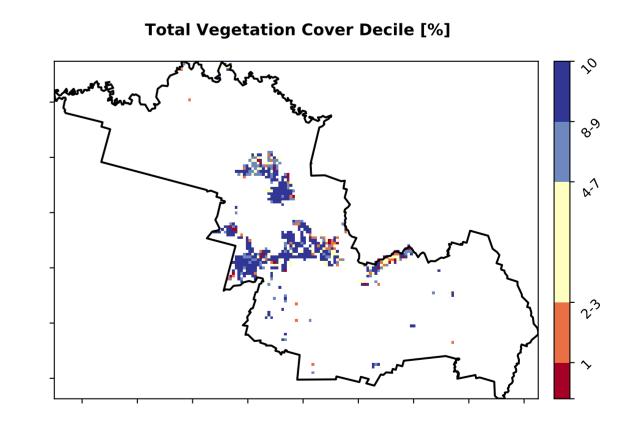




# Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.





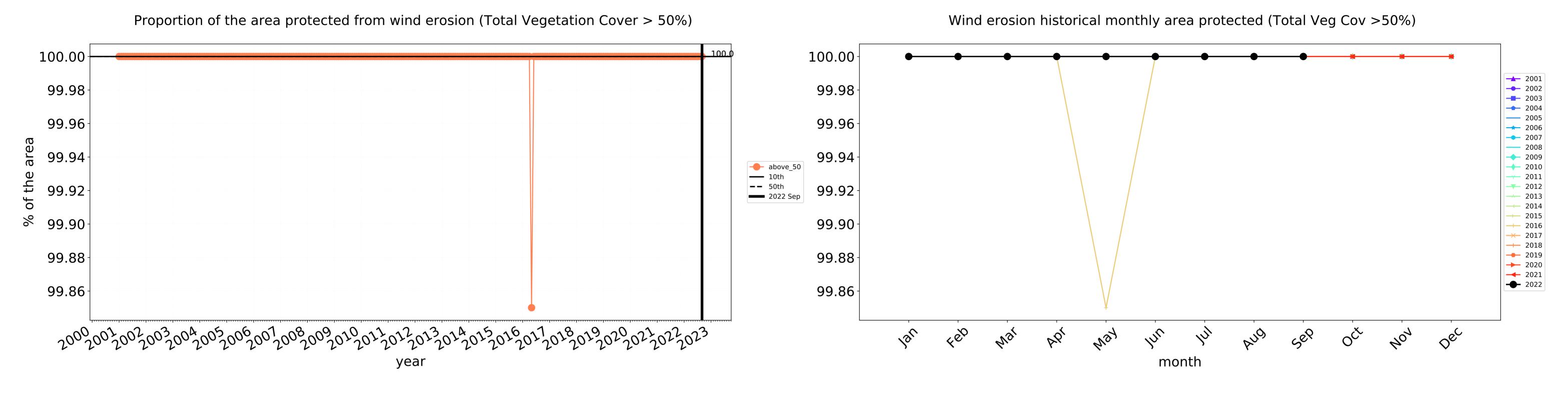


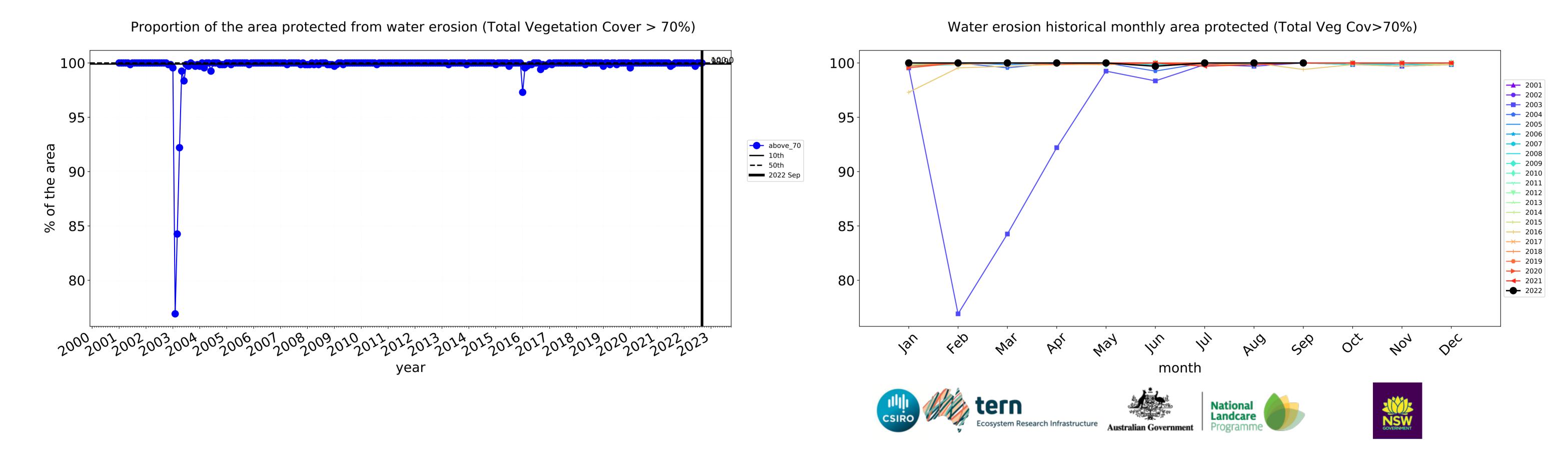


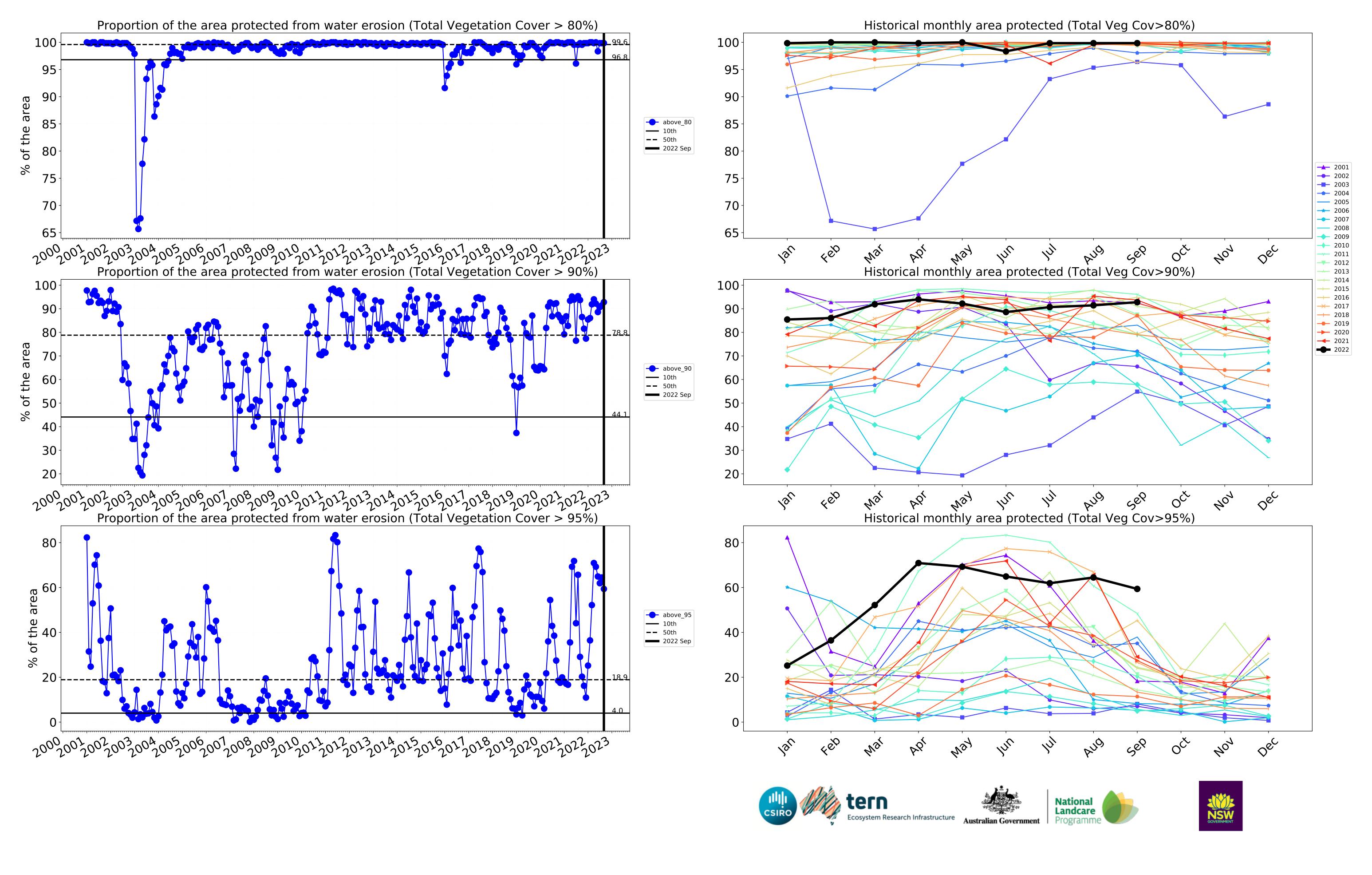






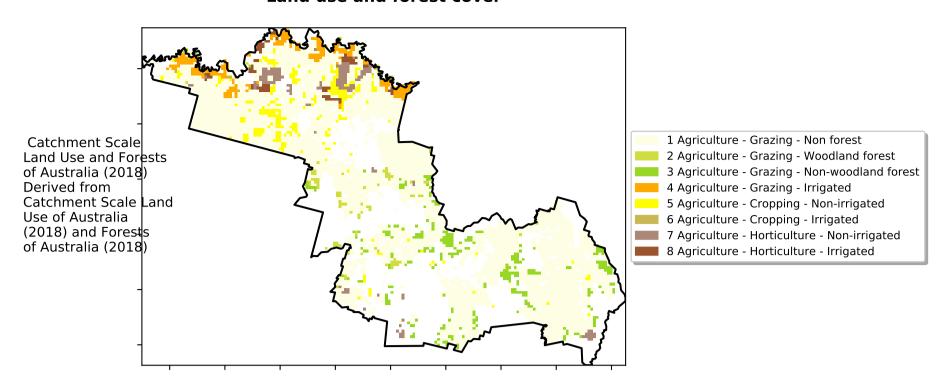




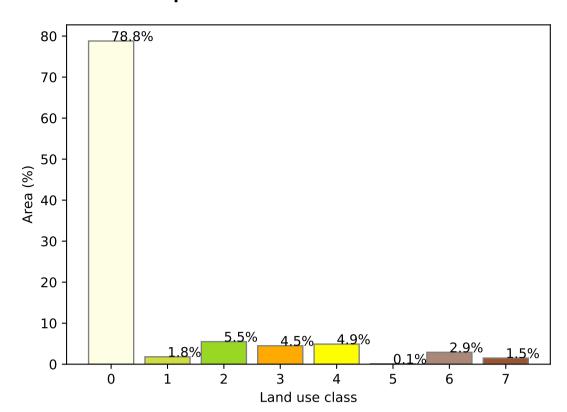


#### **Agriculture**

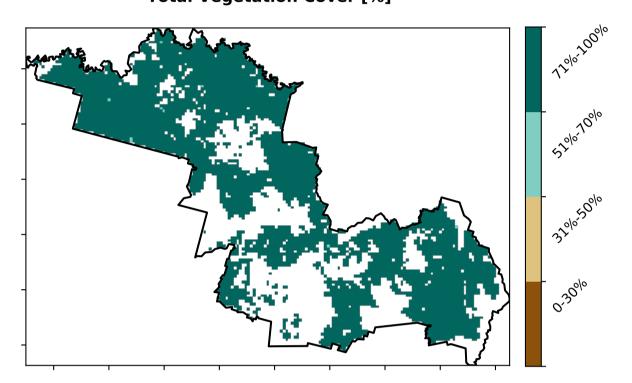
#### Land use and forest cover



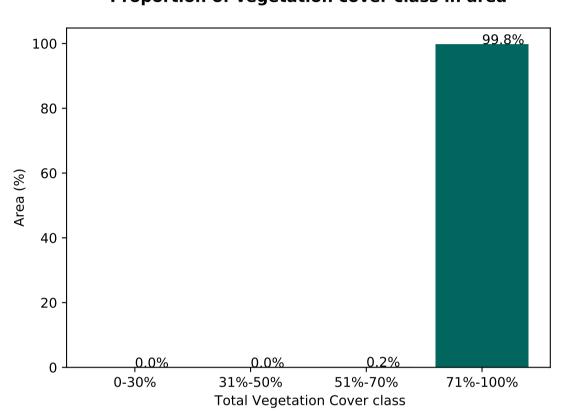
#### Proportion of each land class in area



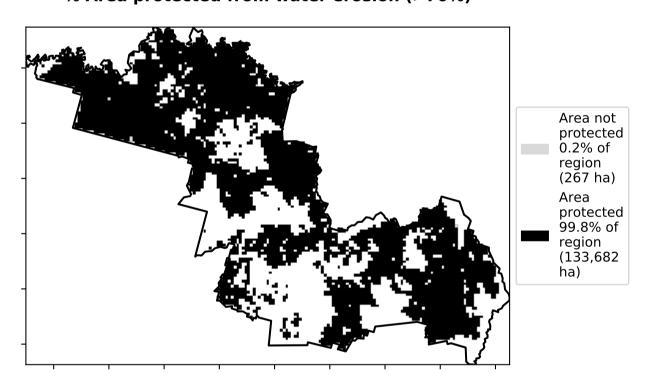
#### **Total Vegetation Cover [%]**



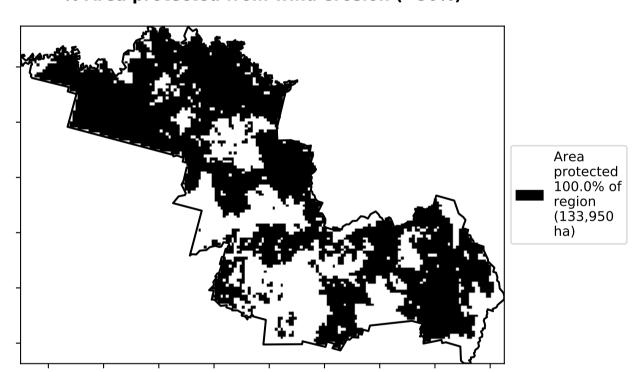
Proportion of vegetation cover class in area



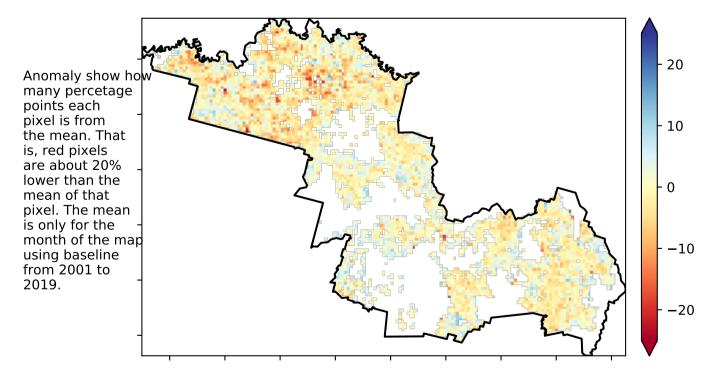
#### % Area protected from water erosion (>70%)



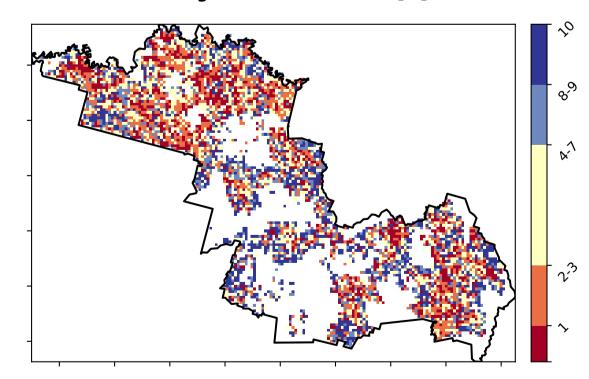
% Area protected from wind erosion (>50%)



#### **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.



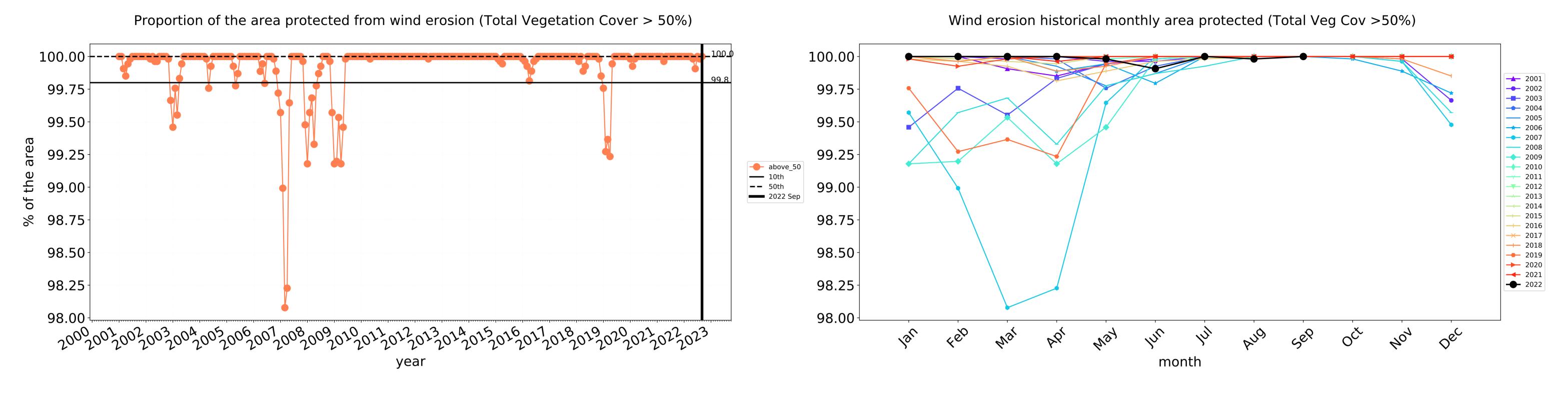


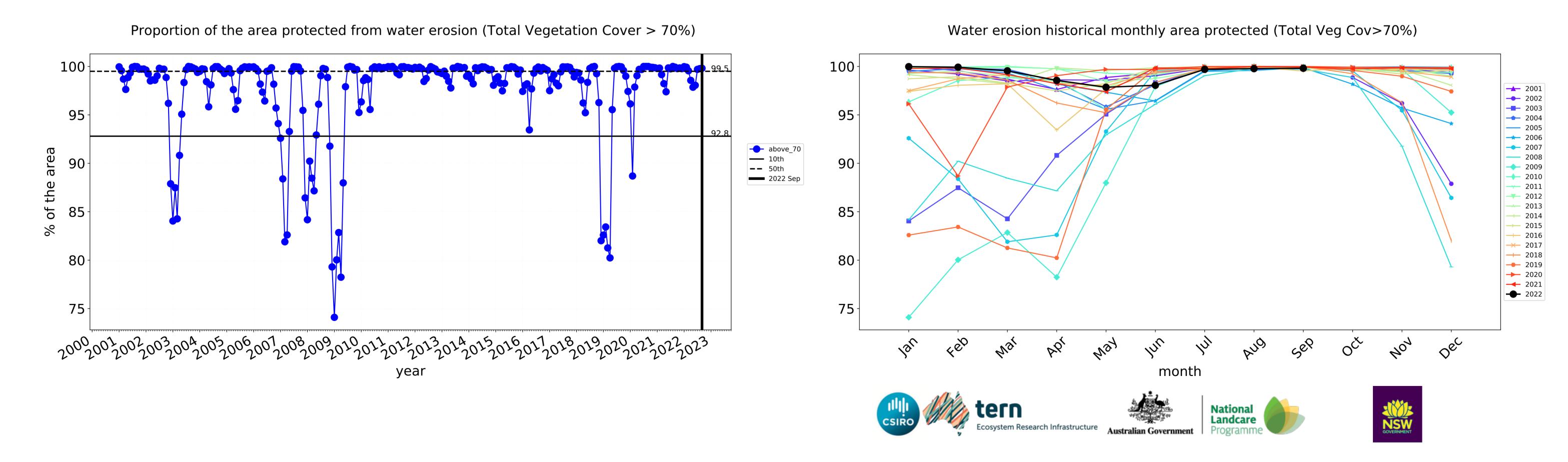


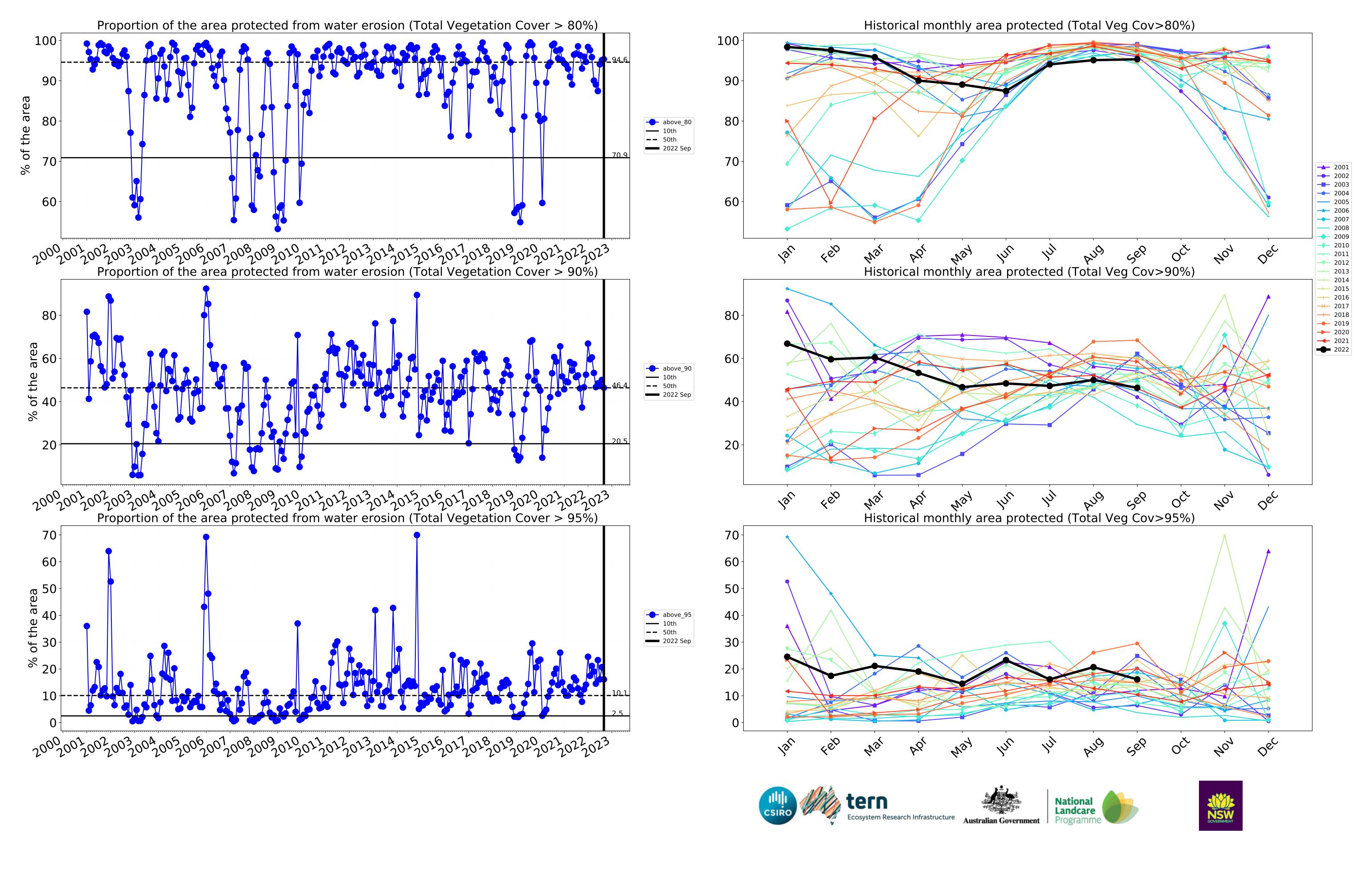




#### **Agriculture timeseries**

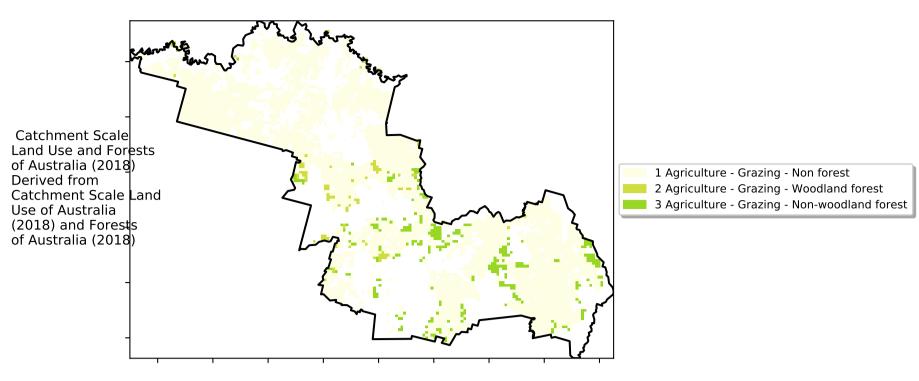




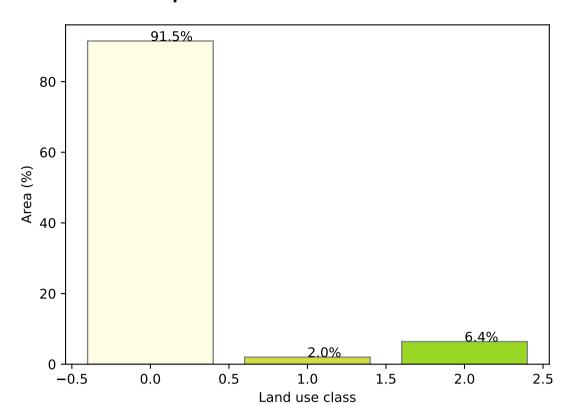


#### **Grazing**

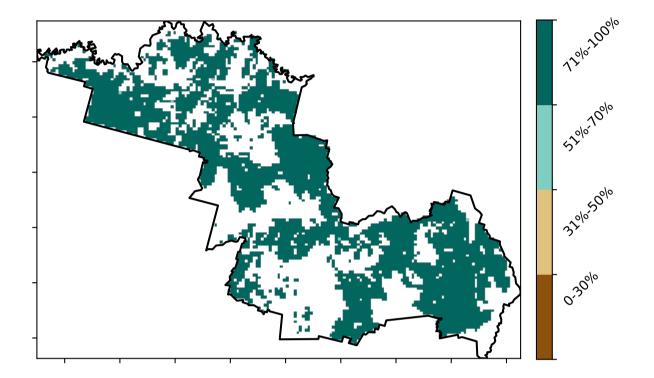
#### Land use and forest cover



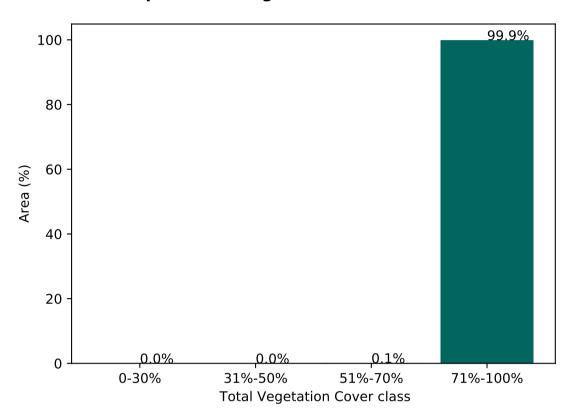
#### Proportion of each land class in area



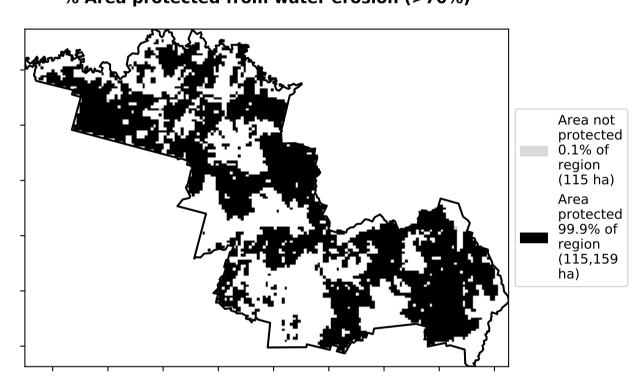
#### **Total Vegetation Cover [%]**



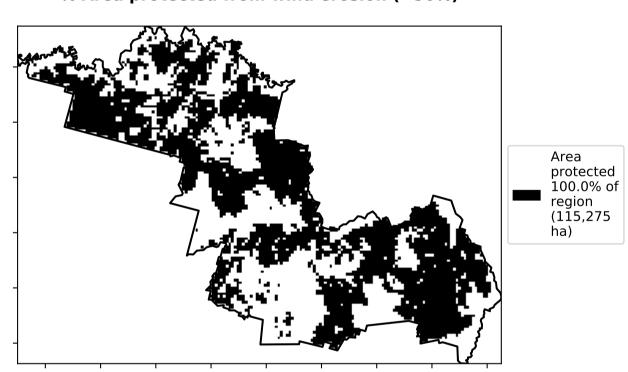
Proportion of vegetation cover class in area



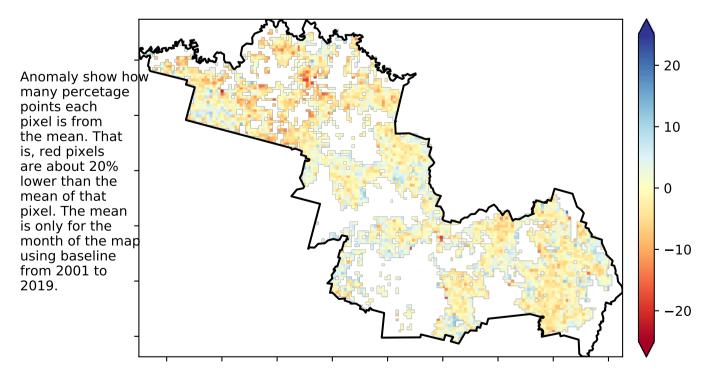
#### % Area protected from water erosion (>70%)



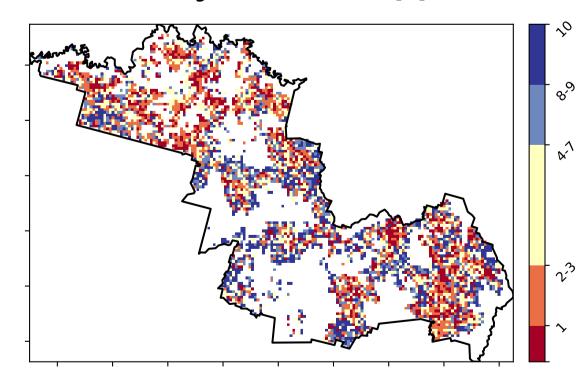
% Area protected from wind erosion (>50%)



#### **Total Vegetation Cover Anomaly [%]**



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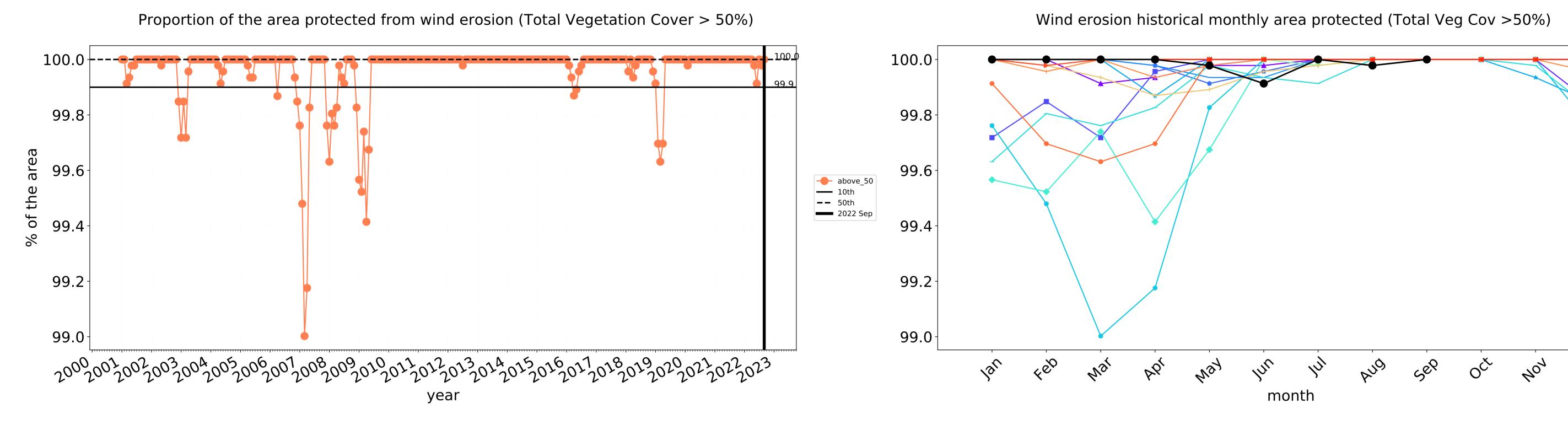


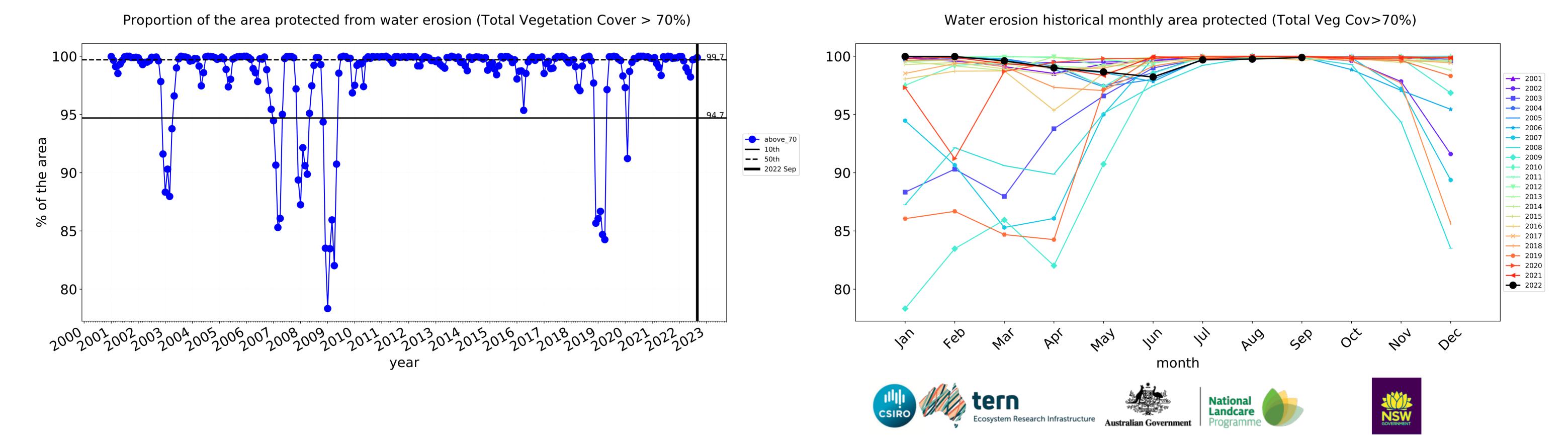




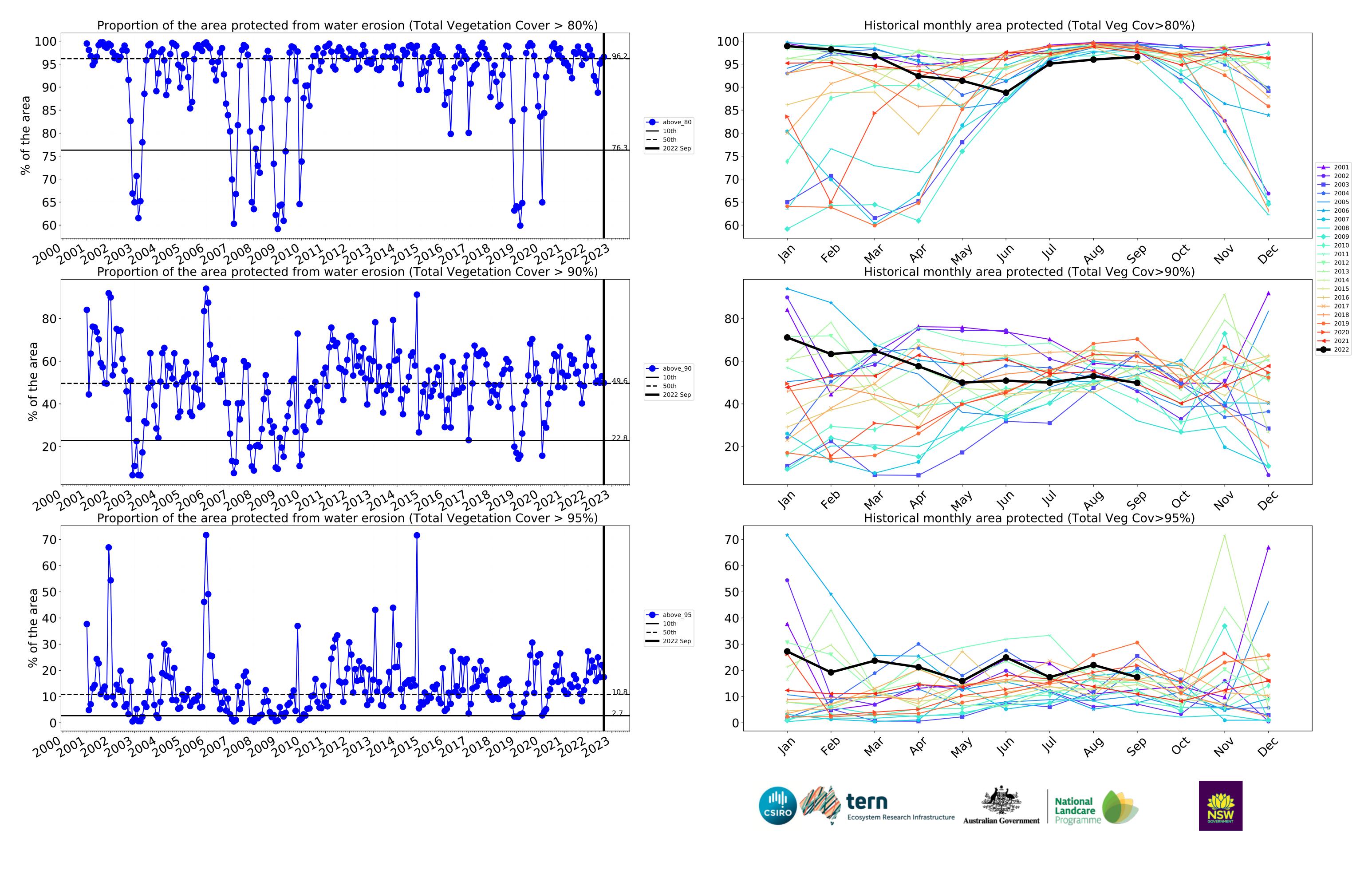


#### **Grazing timeseries**



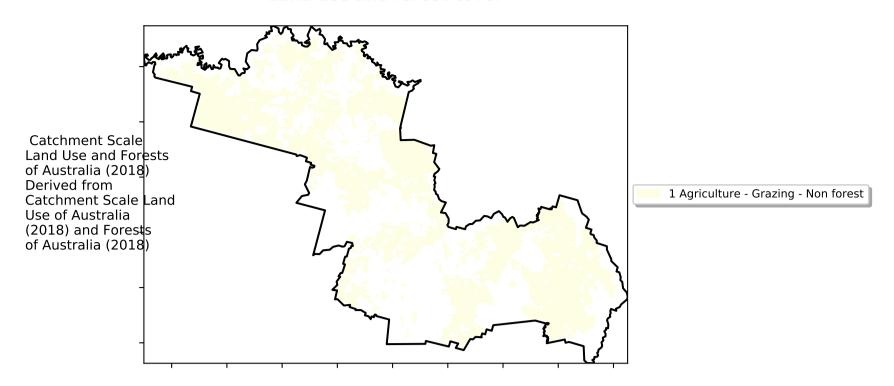


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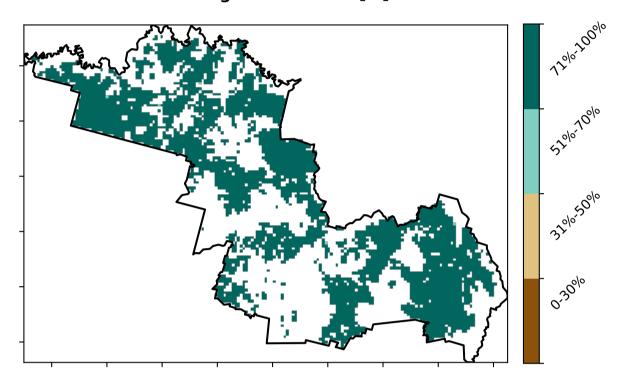


#### **Grazing non forest**

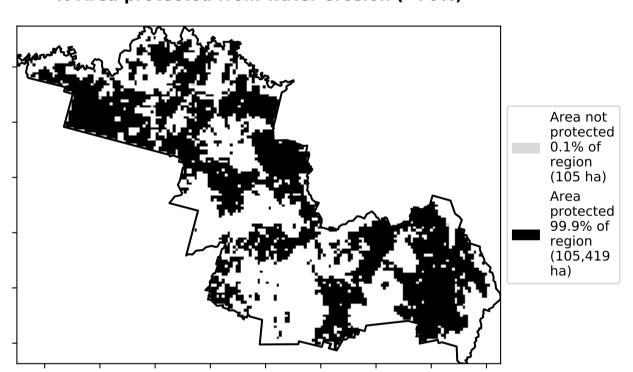
#### Land use and forest cover



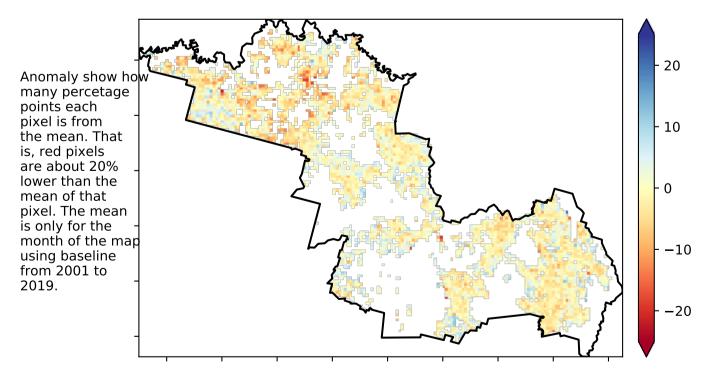
#### Total Vegetation Cover [%]



#### % Area protected from water erosion (>70%)

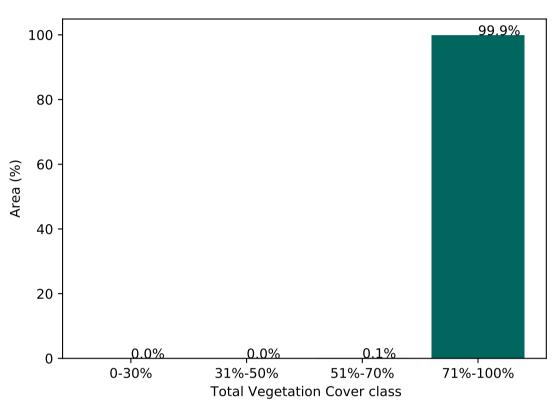


#### Total Vegetation Cover Anomaly [%]

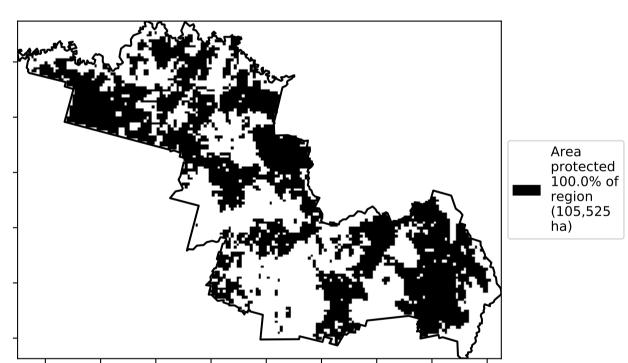


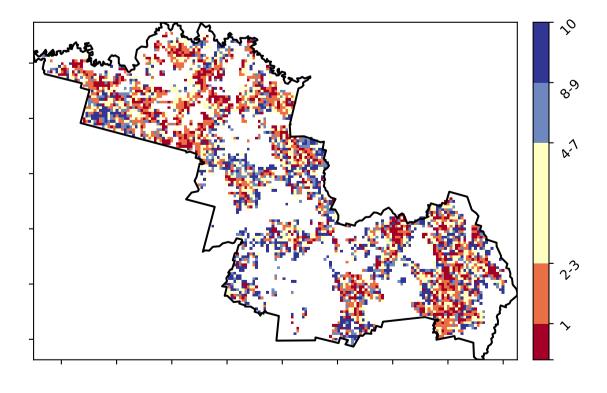
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#### Proportion of vegetation cover class in area



#### % Area protected from wind erosion (>50%)





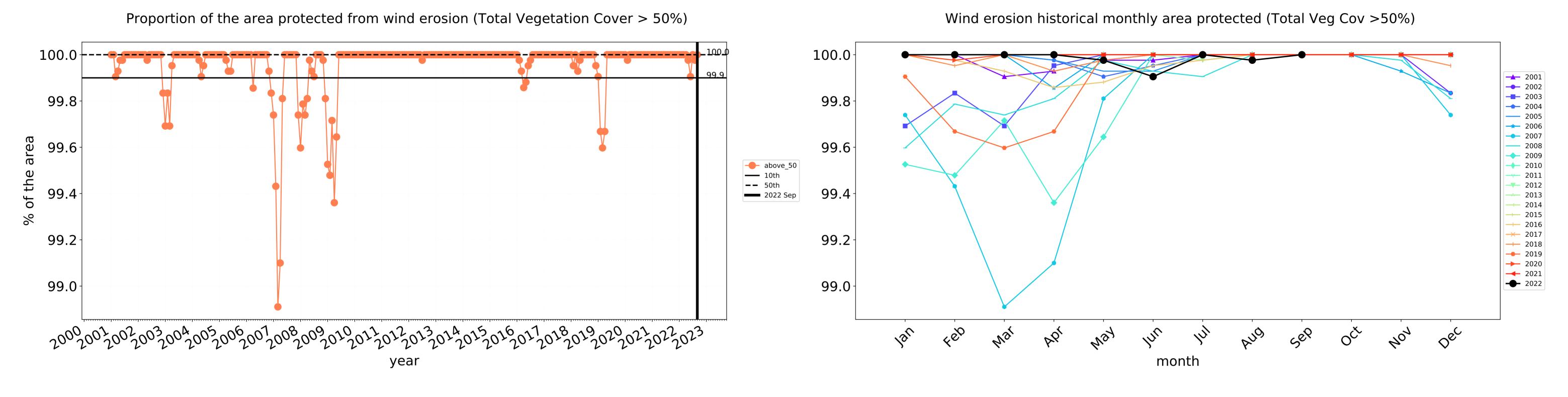


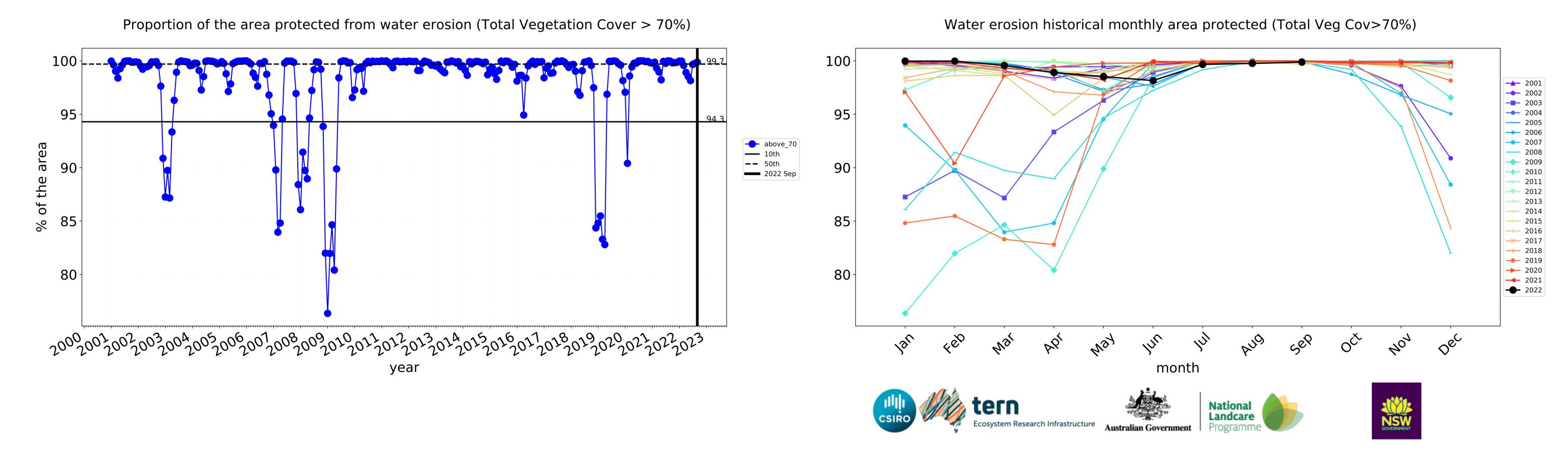


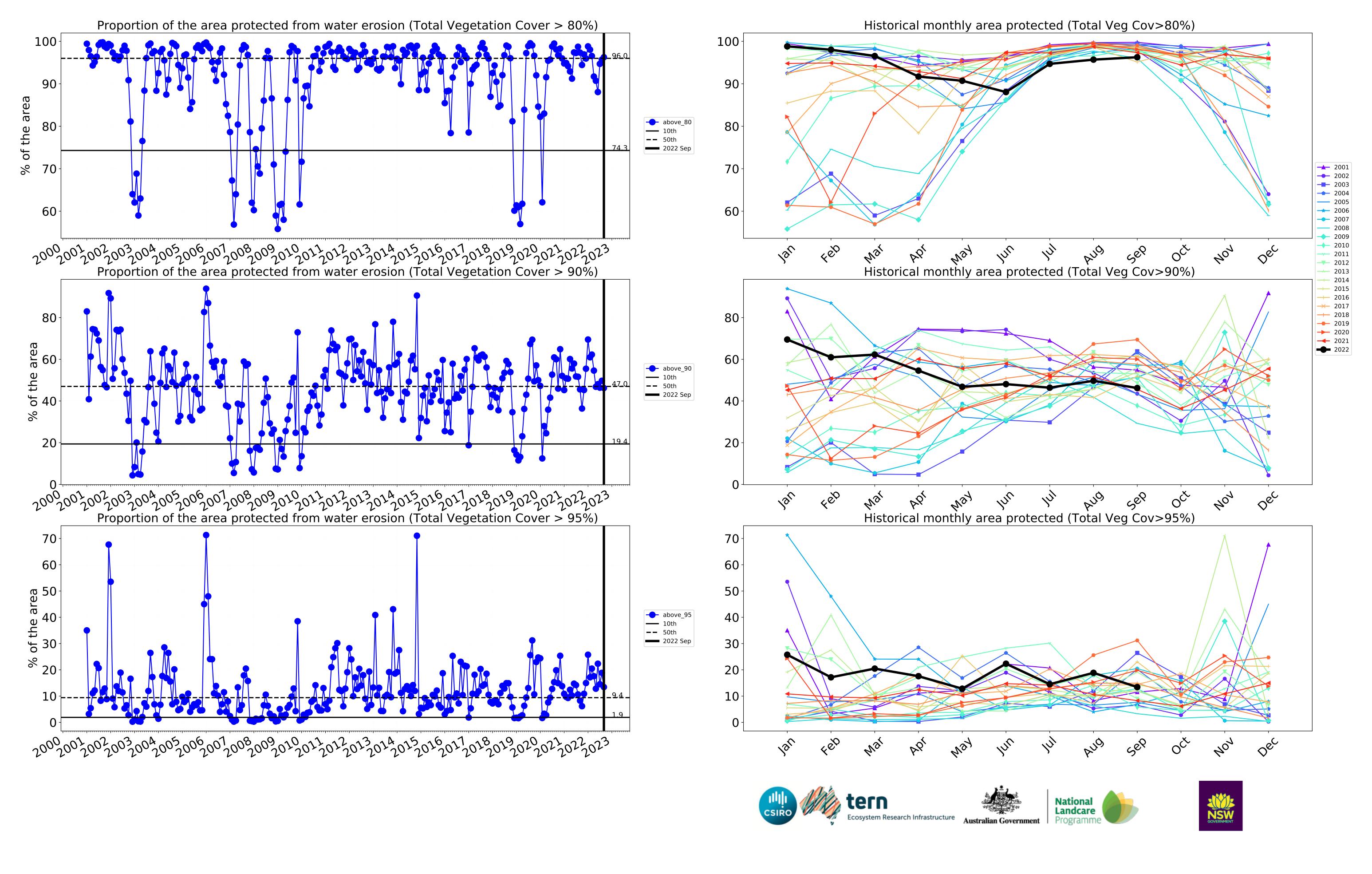




#### **Grazing non forest timeseries**

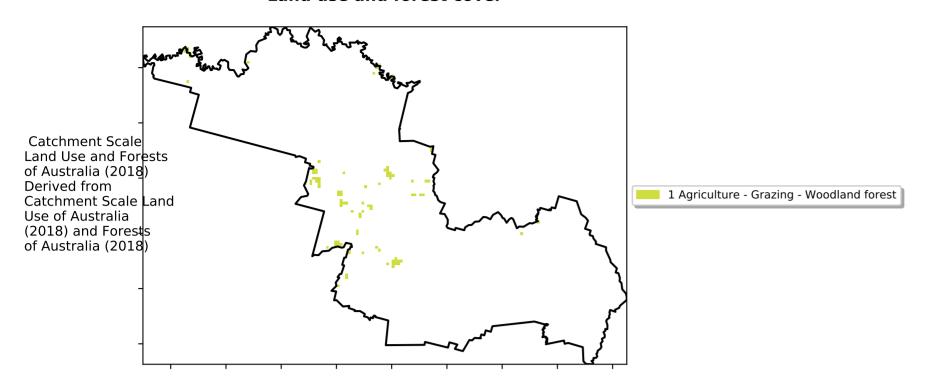




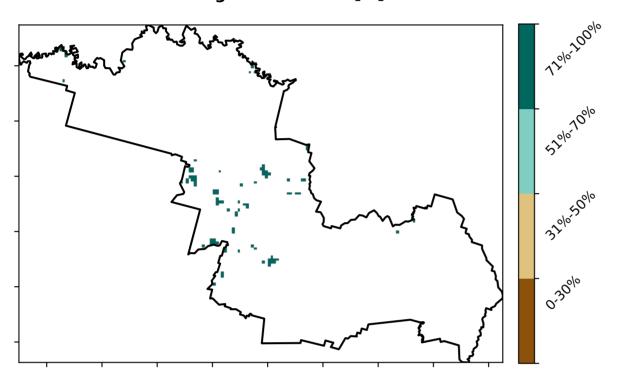


#### **Grazing Woodland forest**

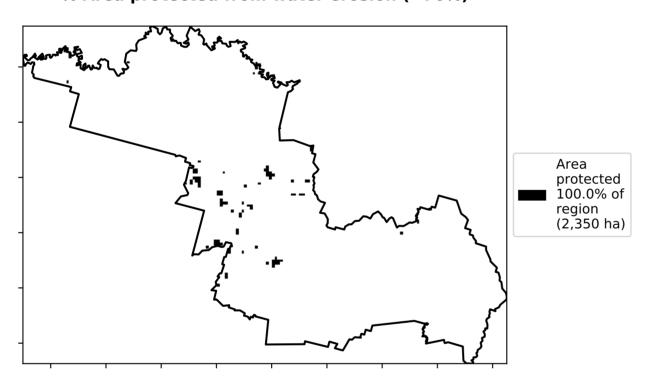
#### Land use and forest cover



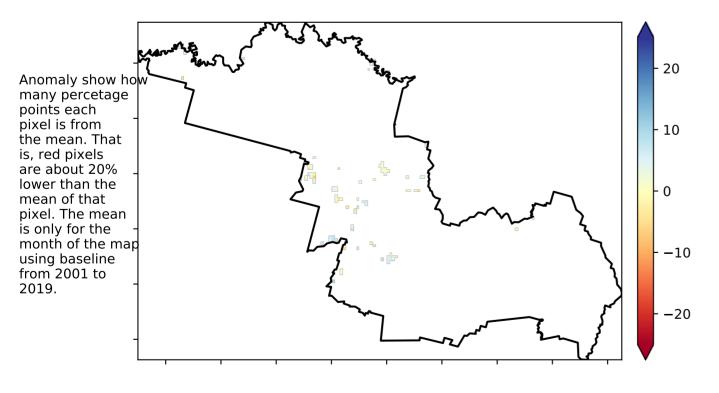
#### **Total Vegetation Cover [%]**



#### % Area protected from water erosion (>70%)

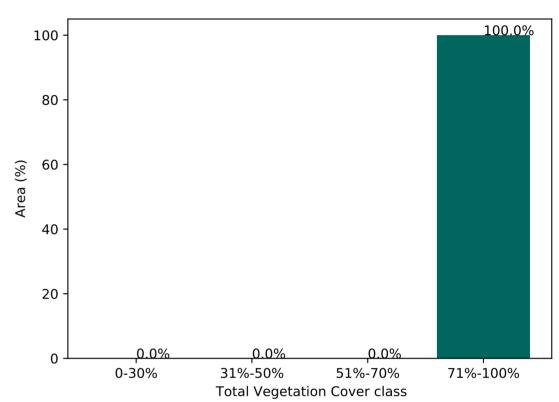


#### Total Vegetation Cover Anomaly [%]

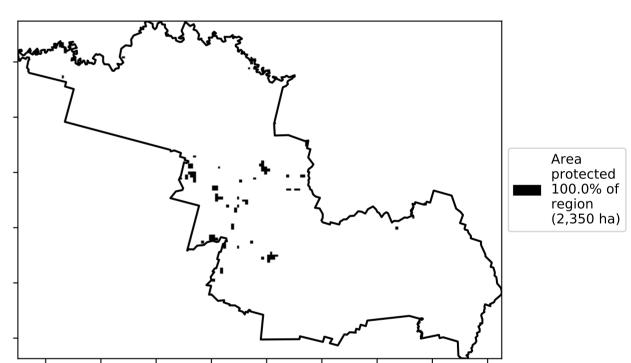


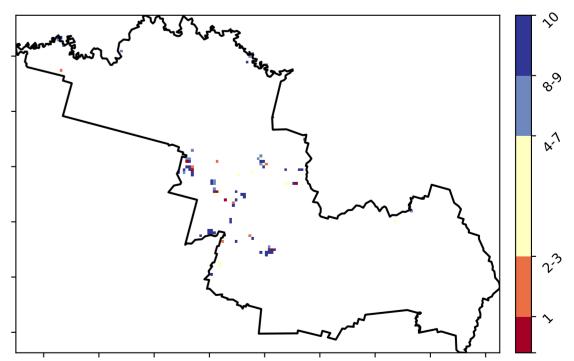
Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

#### Proportion of vegetation cover class in area



#### % Area protected from wind erosion (>50%)





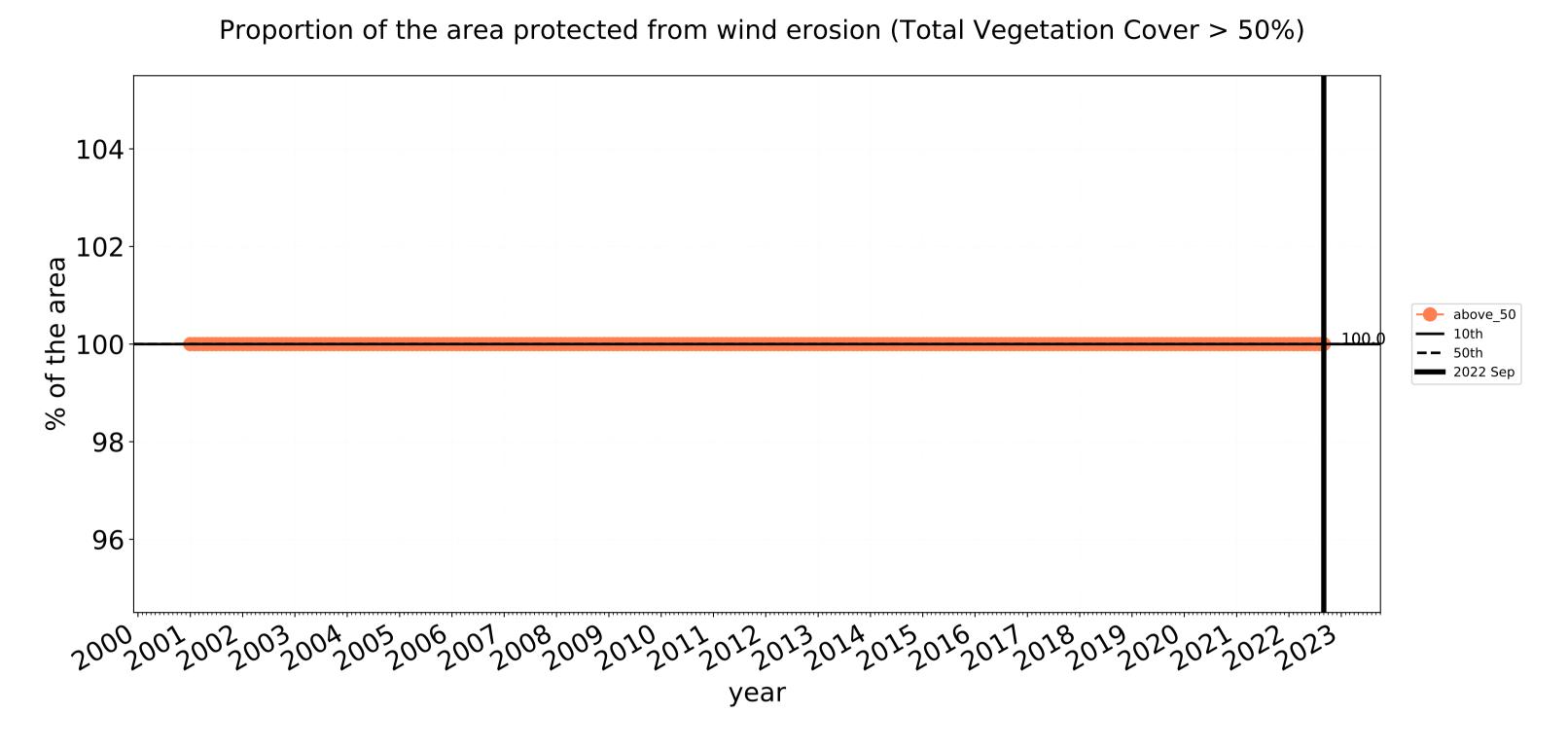


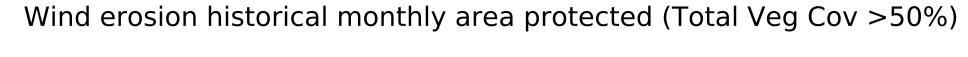


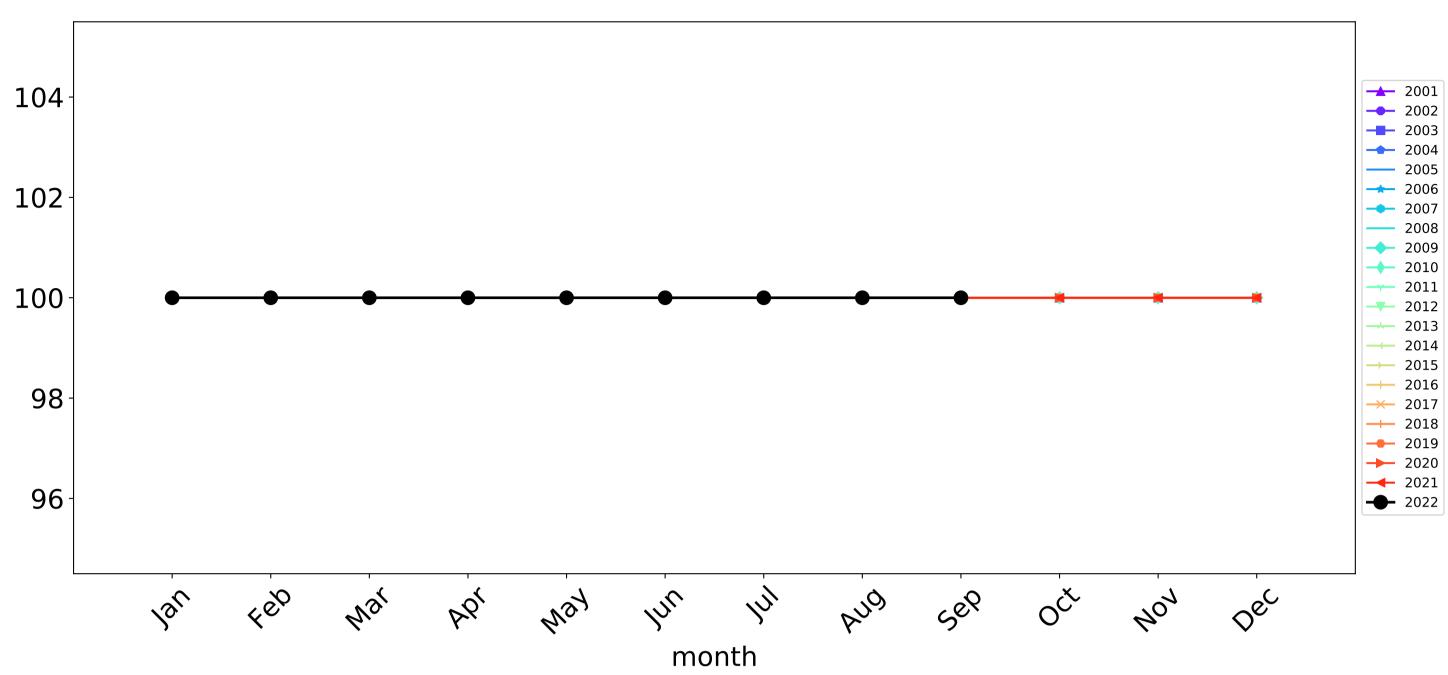


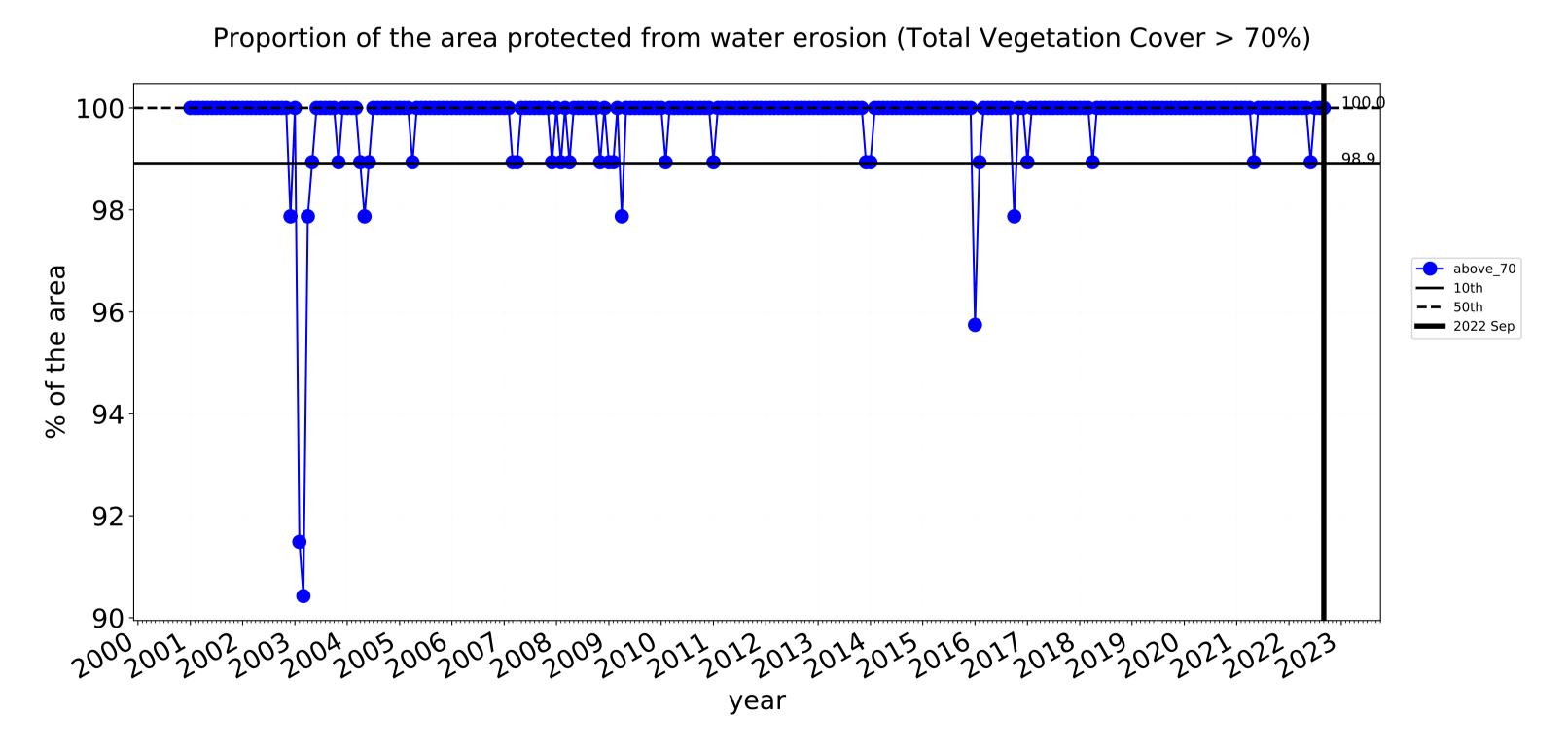


#### **Grazing Woodland forest timeseries**

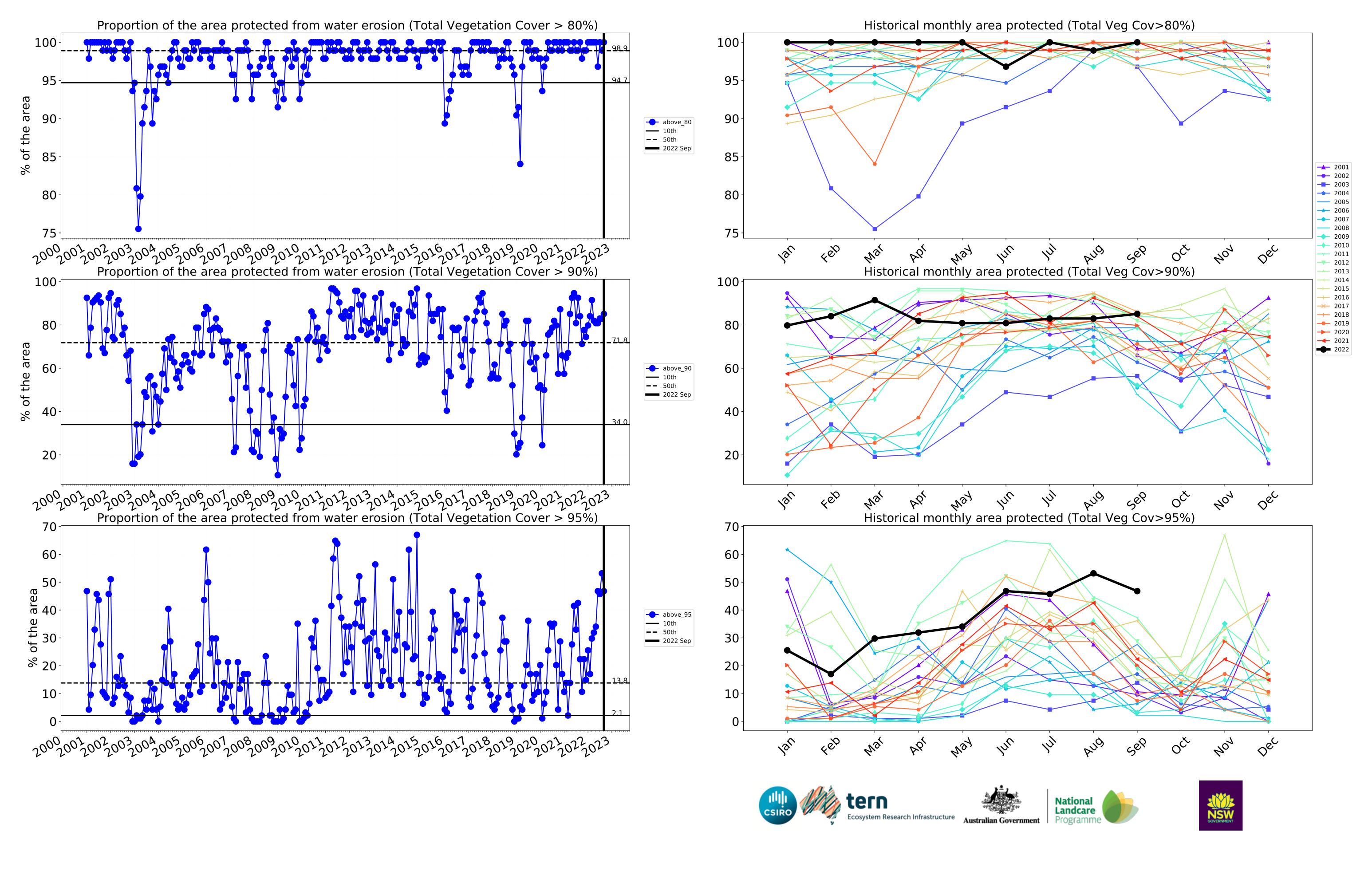






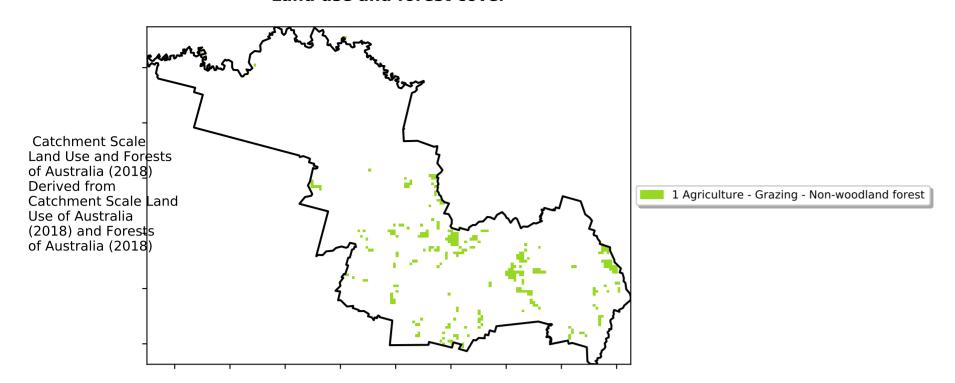


#### Water erosion historical monthly area protected (Total Veg Cov>70%) 100 **---** 2002 2003 98-\_\_\_\_ 2005 → 2006 <del>----</del> 2007 \_\_\_\_ 2008 96 2011 2013 **←** 2014 **→** 2015 <del>─</del> 2017 2019 92 → 2020 **2021 ---** 2022 month **National** Landcare

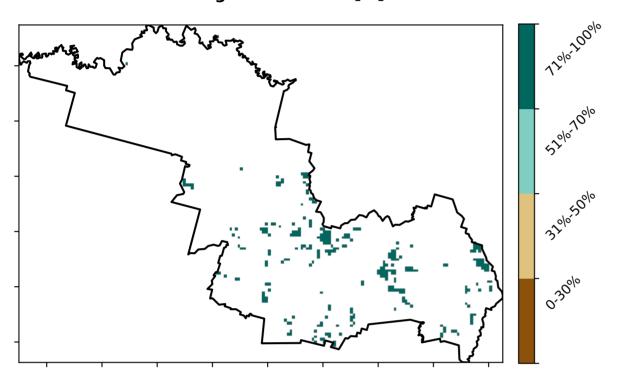


#### **Grazing - Forest (non woodland)**

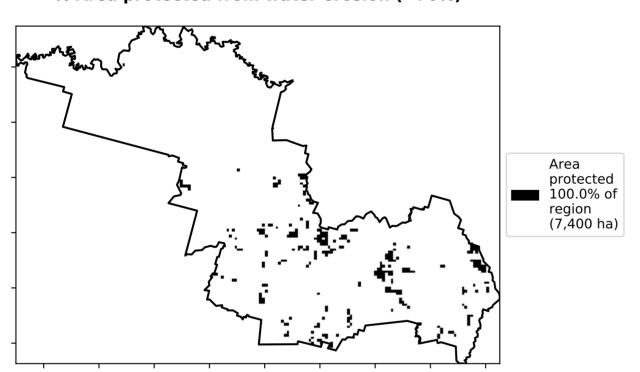
#### Land use and forest cover



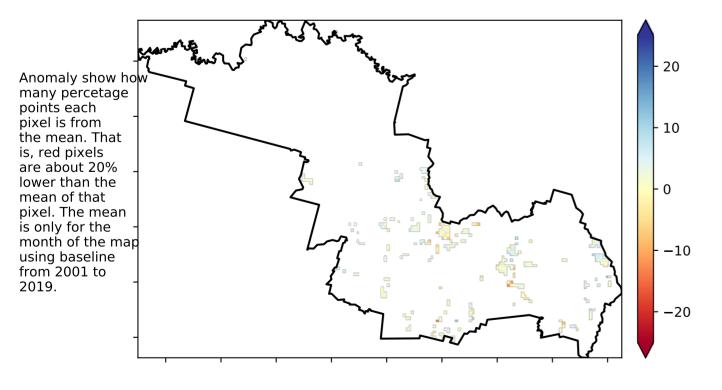
#### Total Vegetation Cover [%]



#### % Area protected from water erosion (>70%)

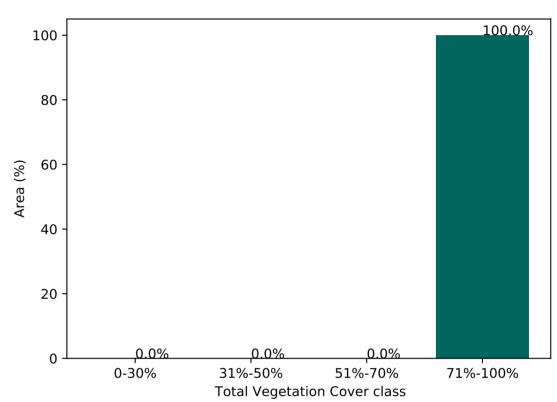


#### Total Vegetation Cover Anomaly [%]

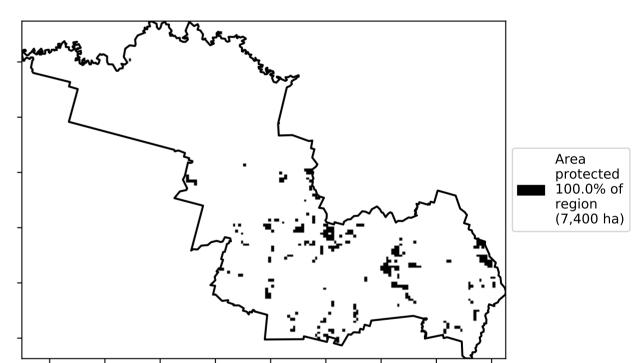


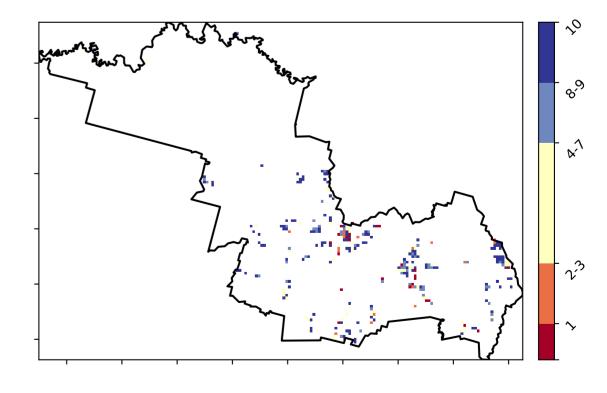
Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

#### Proportion of vegetation cover class in area



#### % Area protected from wind erosion (>50%)



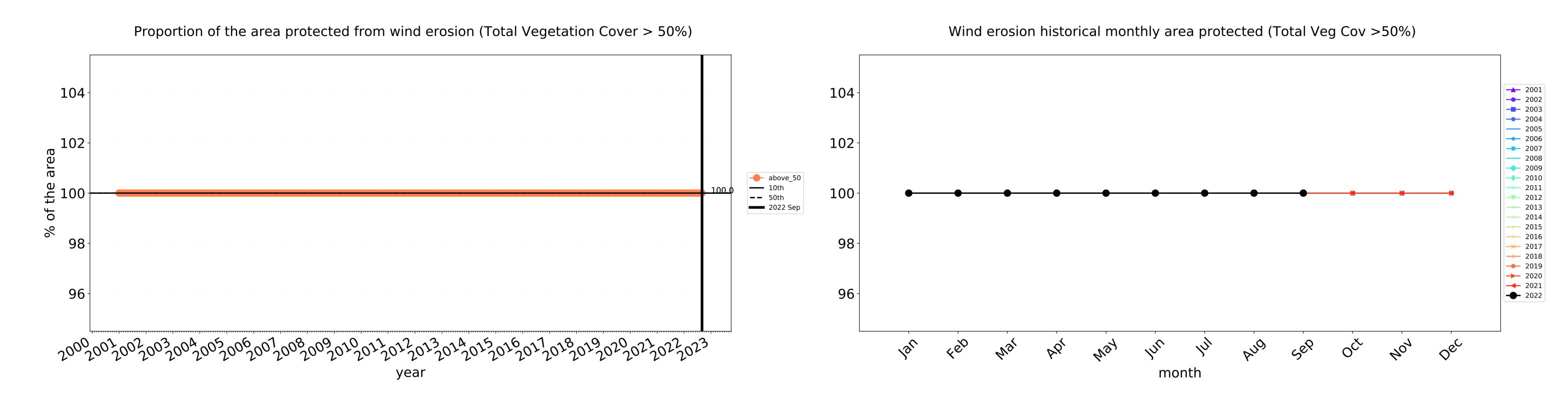


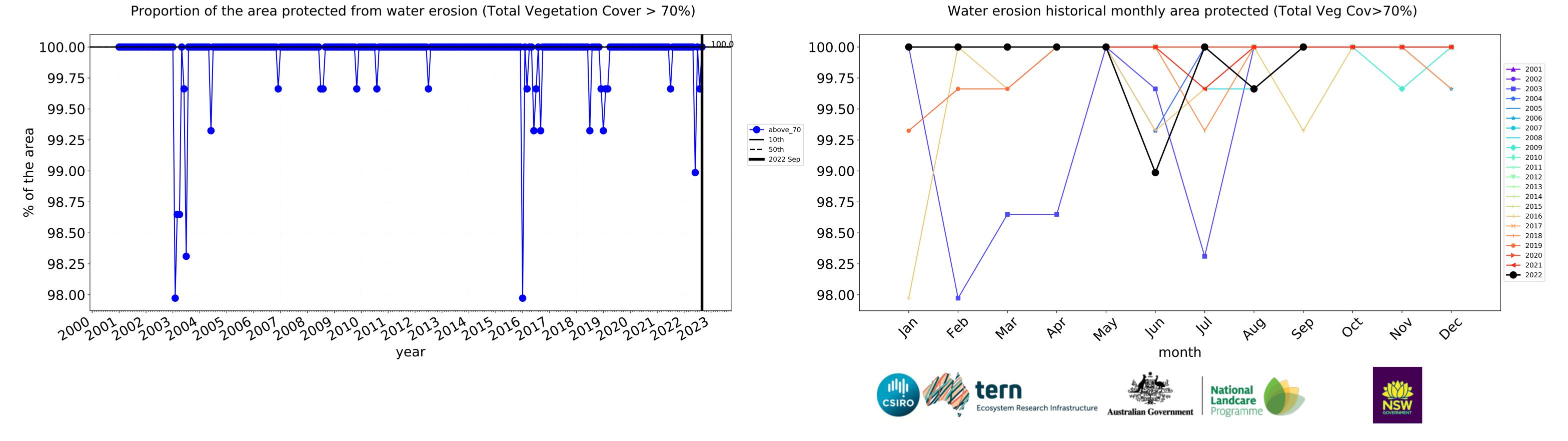


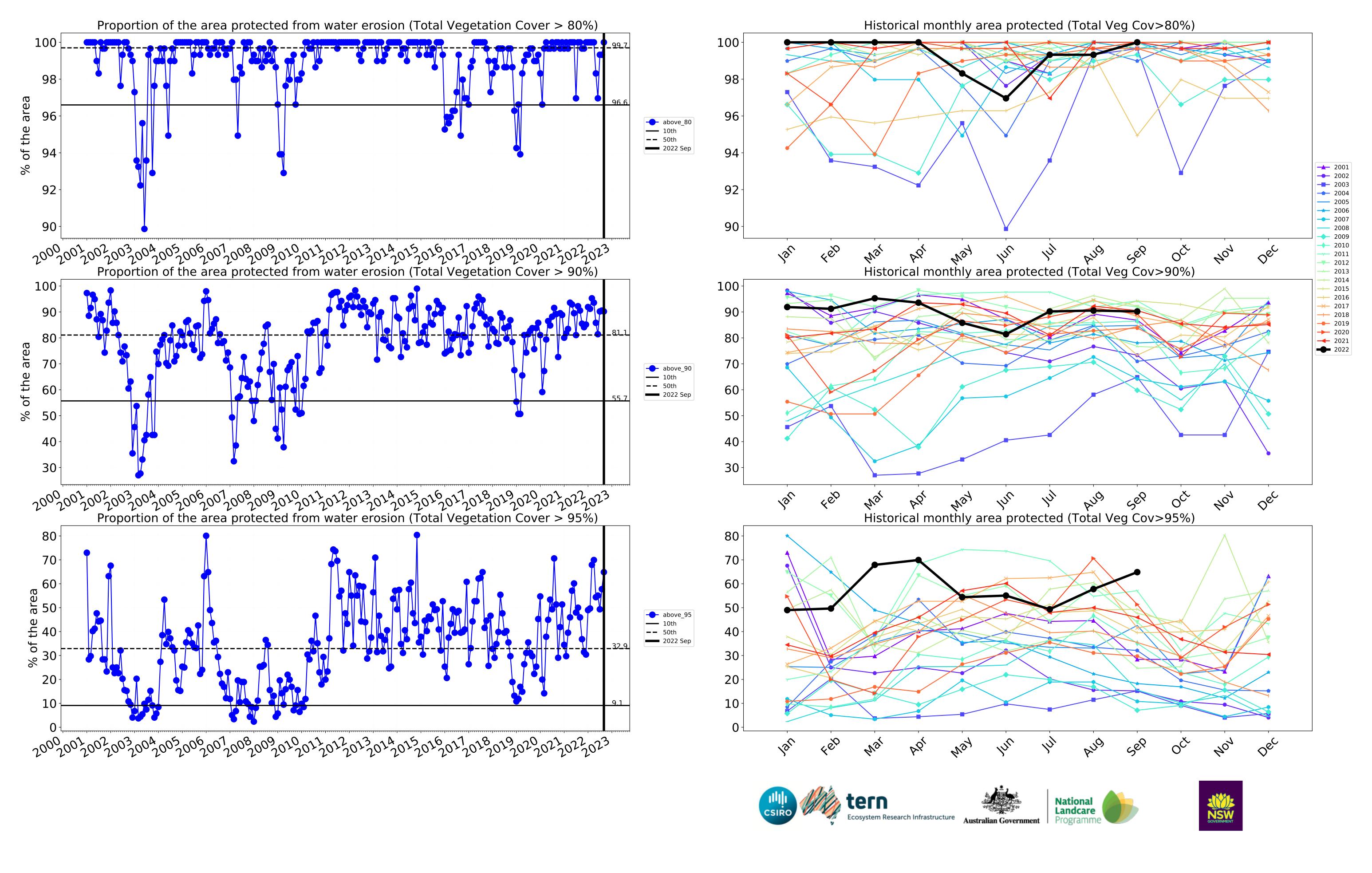






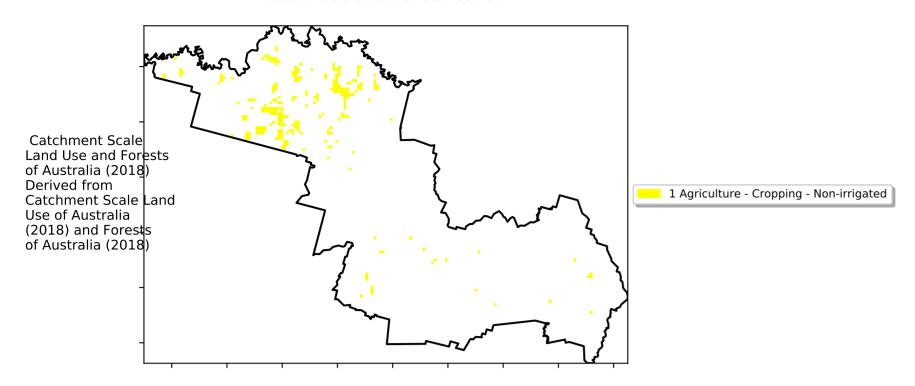




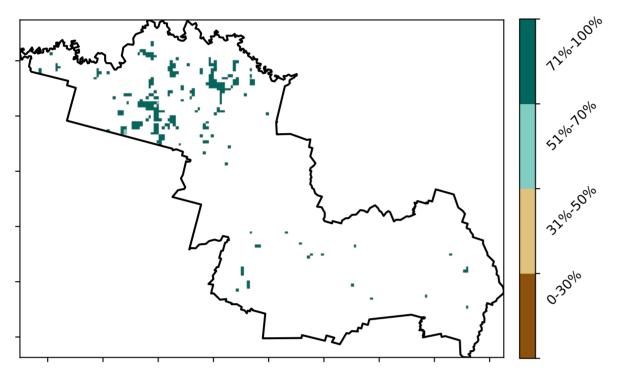


#### **Cropping**

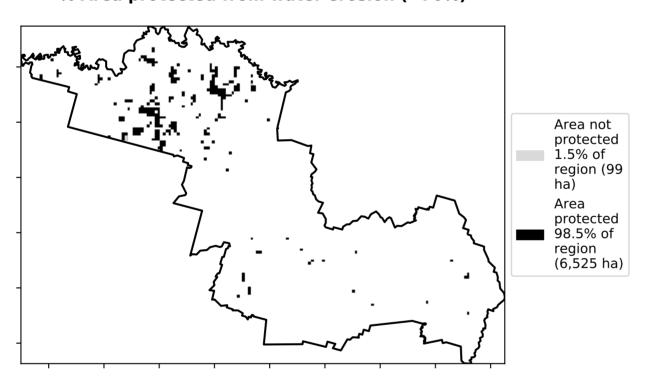
#### Land use and forest cover



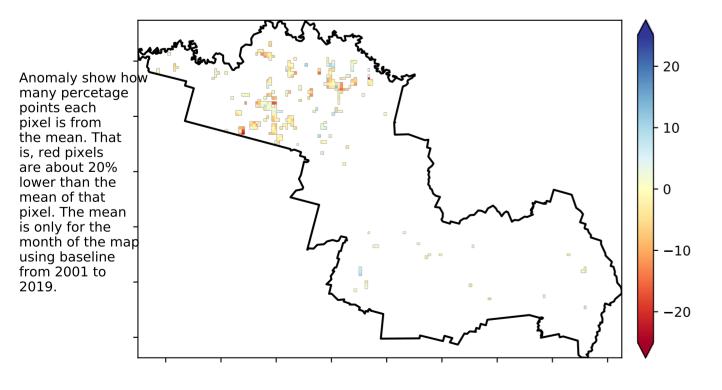
#### Total Vegetation Cover [%]



#### % Area protected from water erosion (>70%)

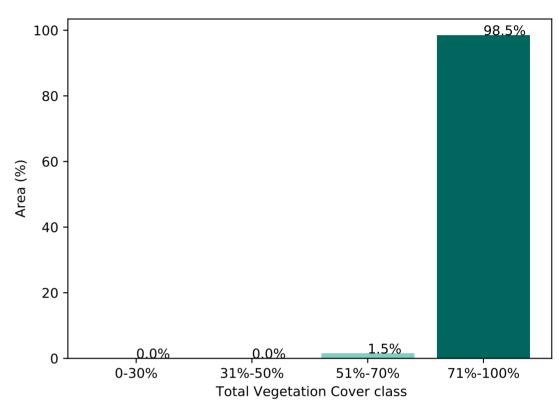


#### Total Vegetation Cover Anomaly [%]

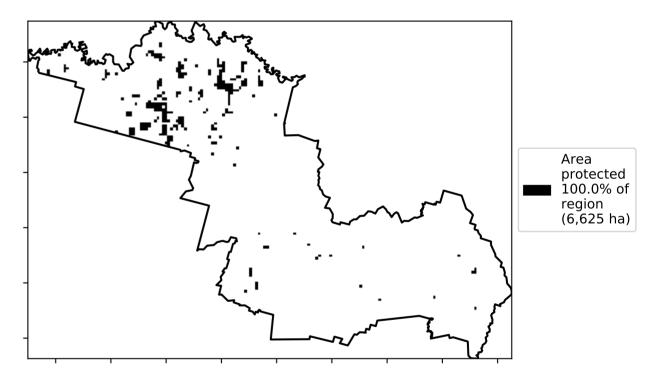


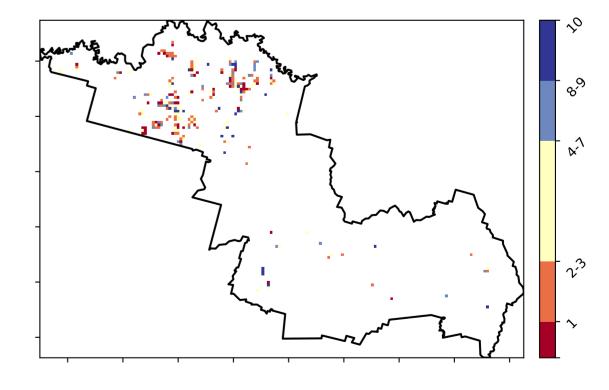
Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

#### Proportion of vegetation cover class in area



#### % Area protected from wind erosion (>50%)





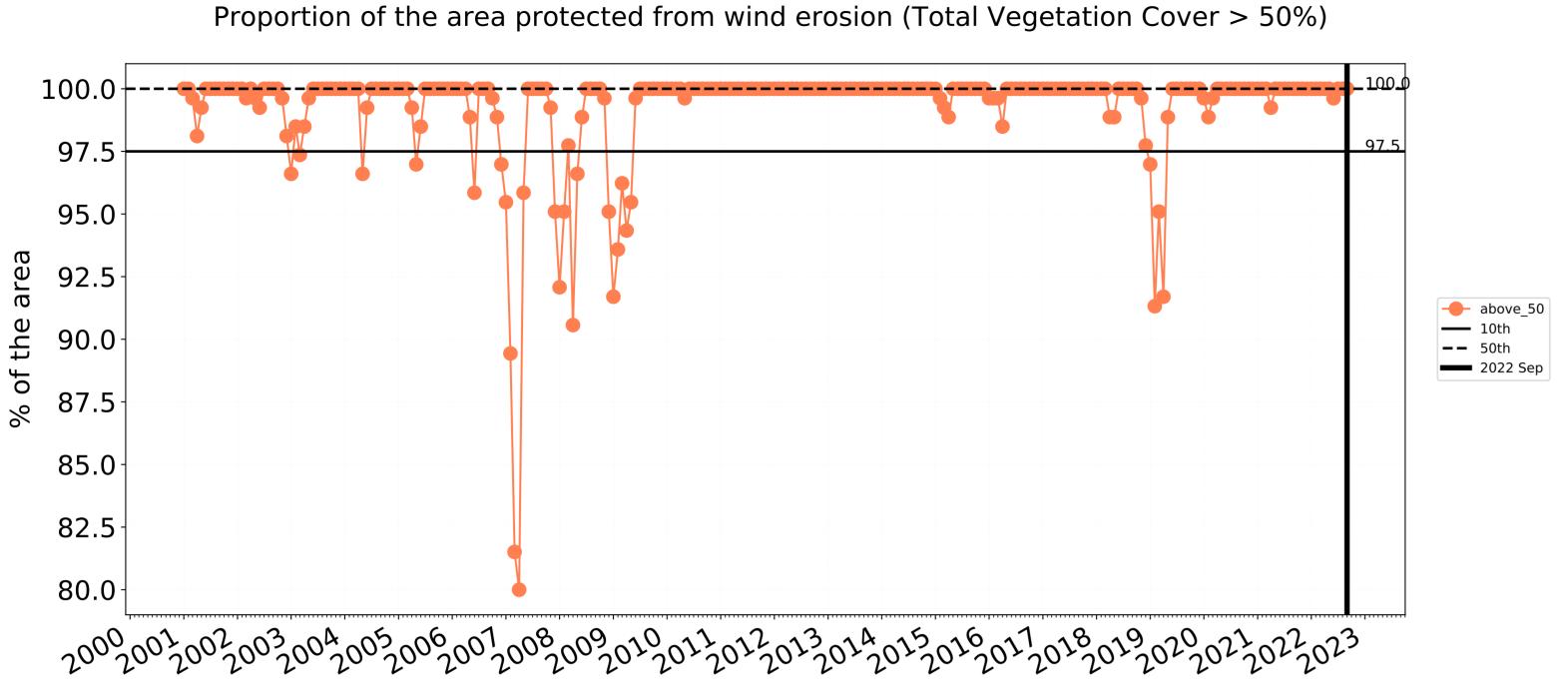


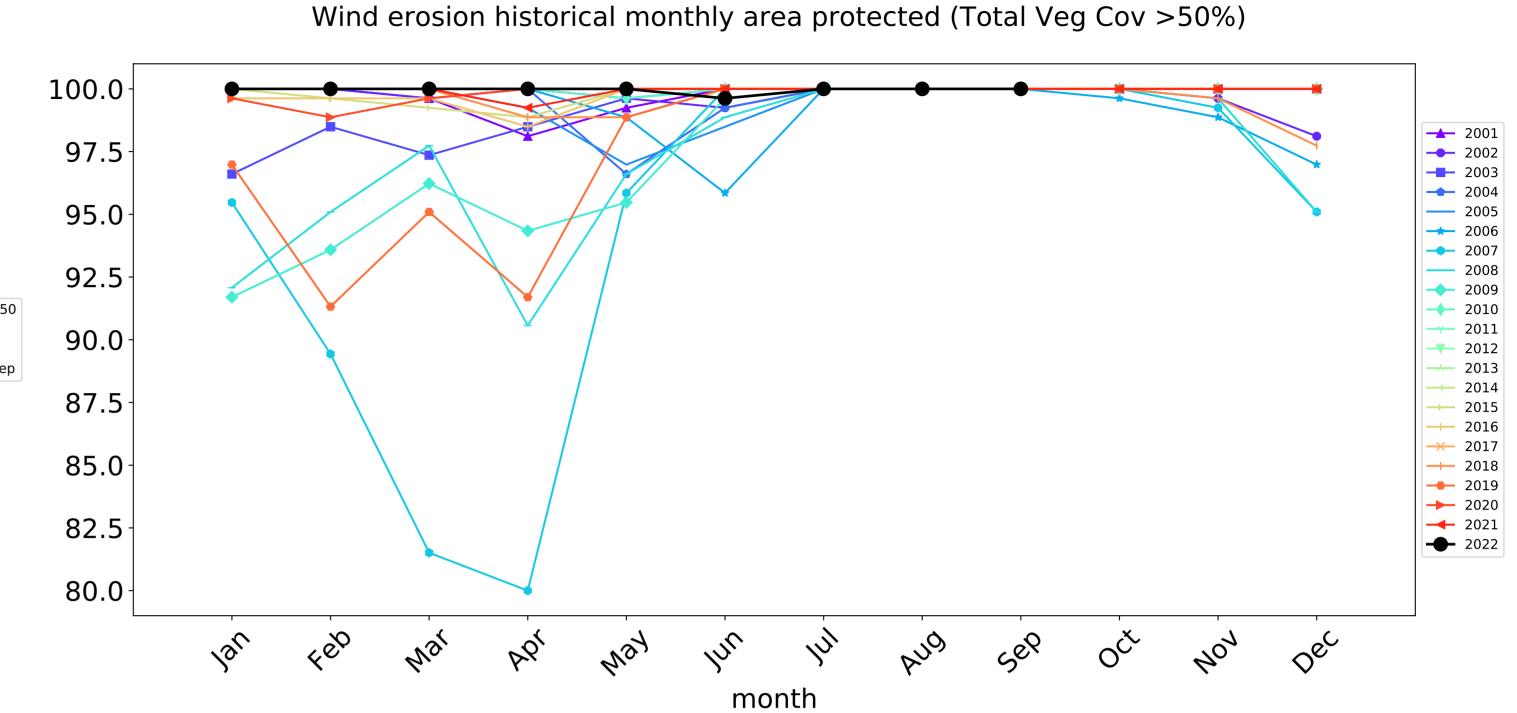


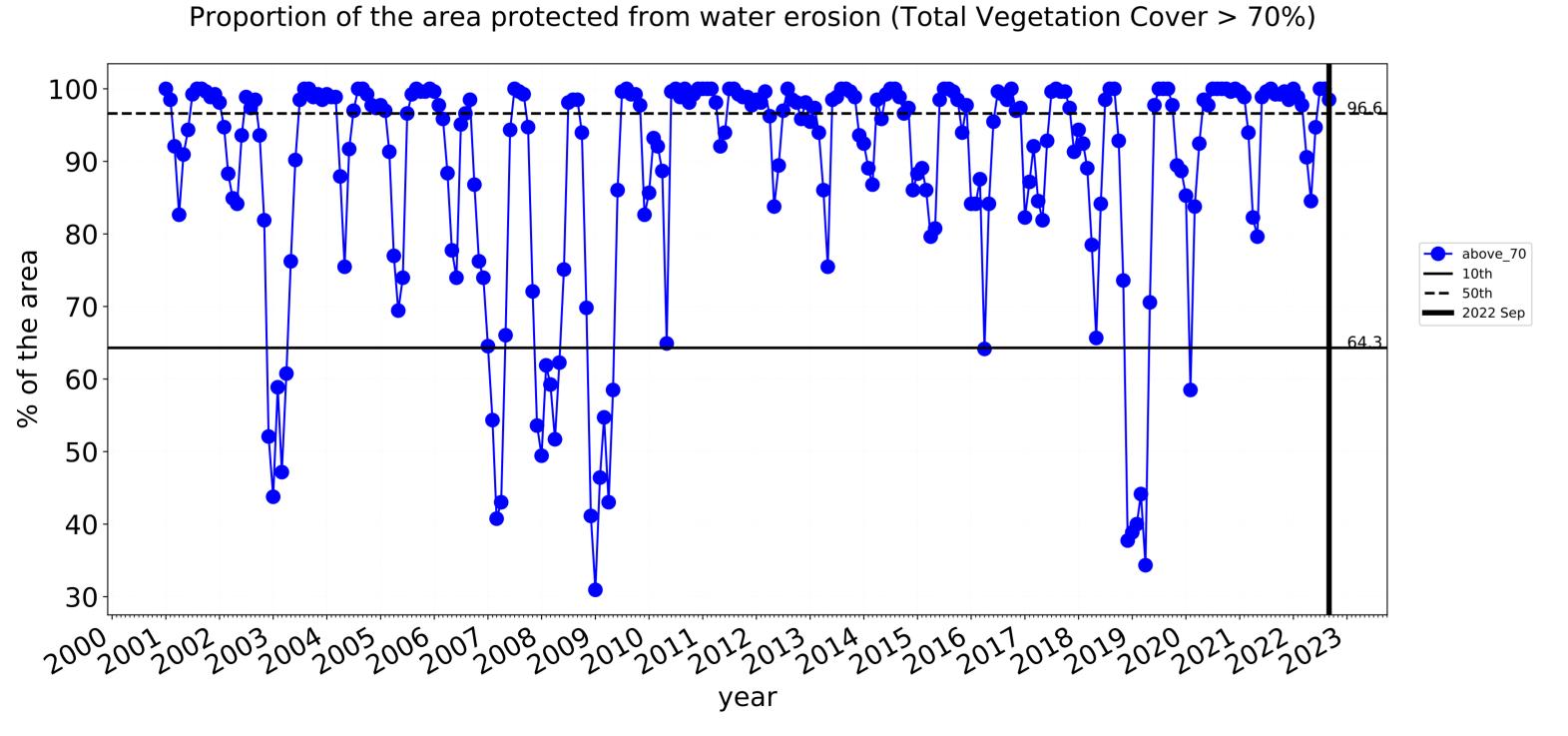


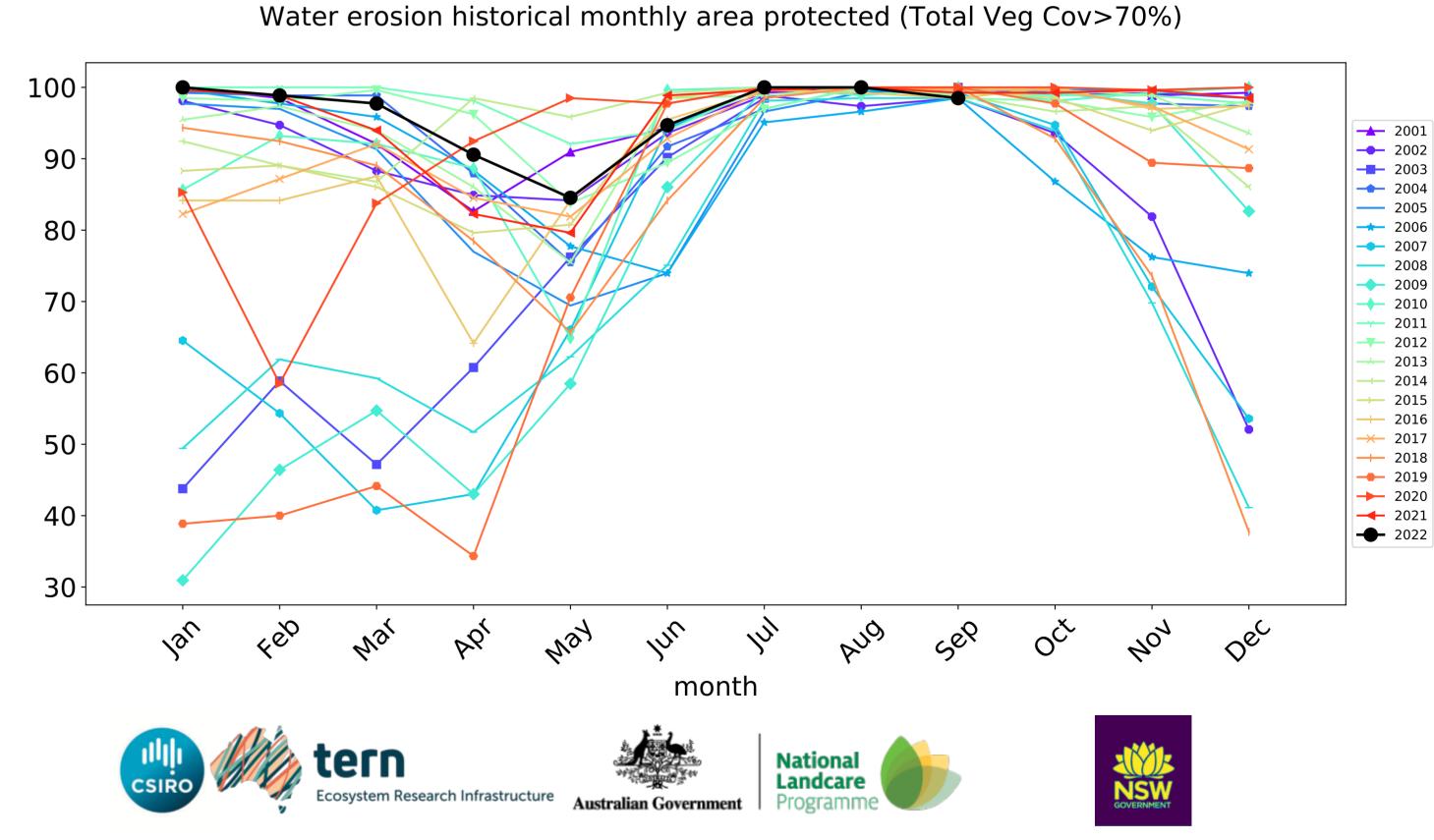


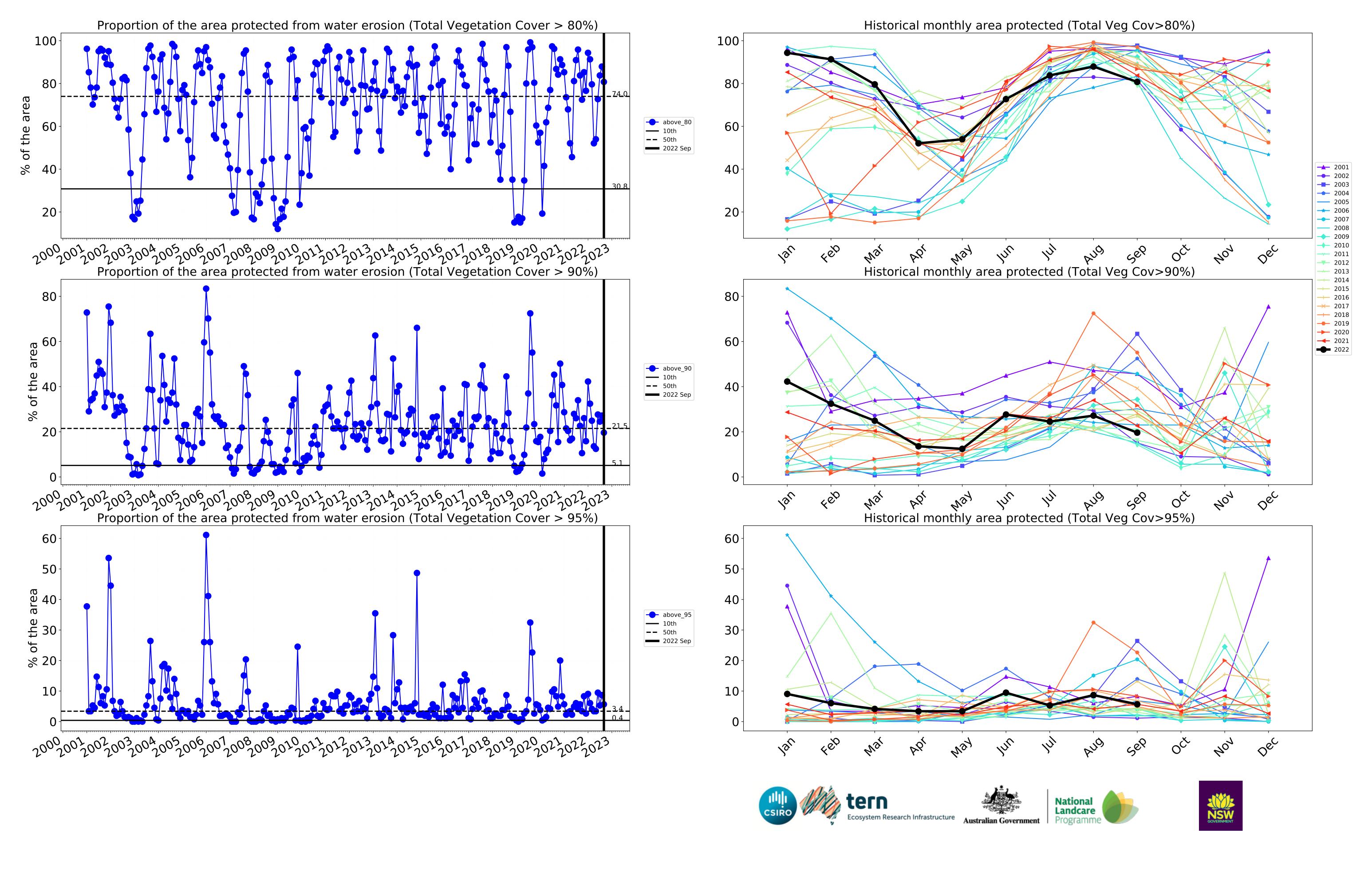
#### **Cropping timeseries**





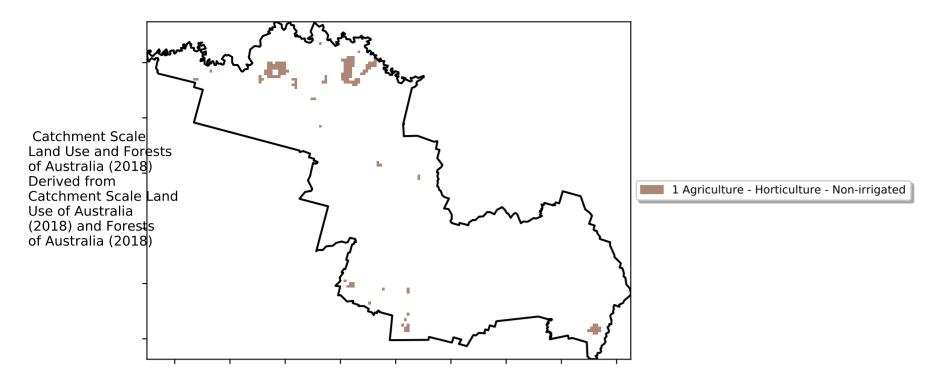




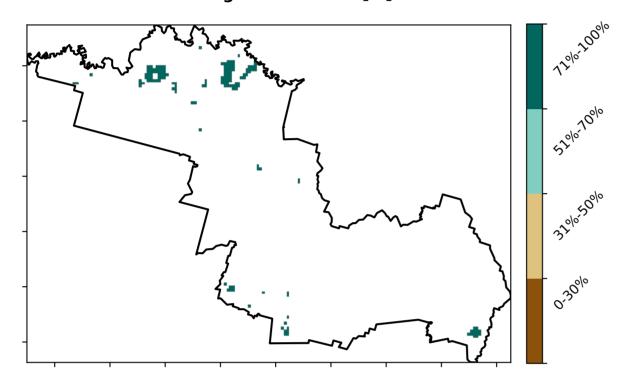


#### **Horticulture**

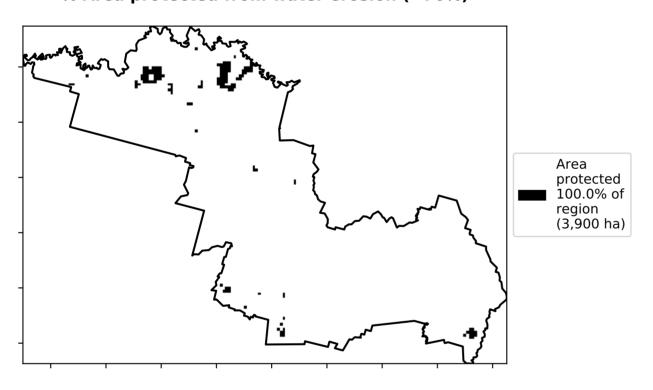
#### Land use and forest cover



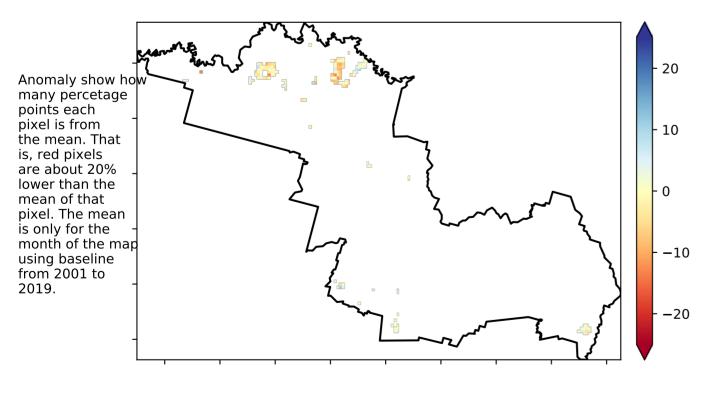
#### Total Vegetation Cover [%]



#### % Area protected from water erosion (>70%)

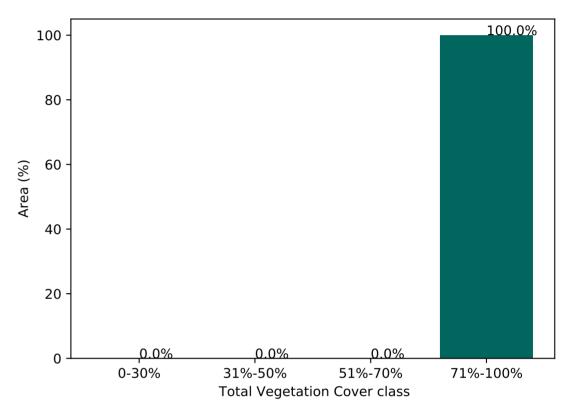


#### Total Vegetation Cover Anomaly [%]

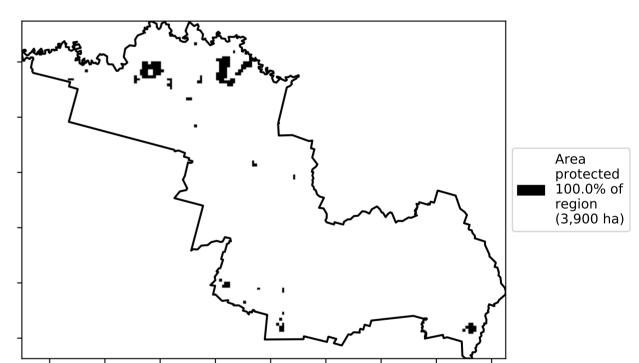


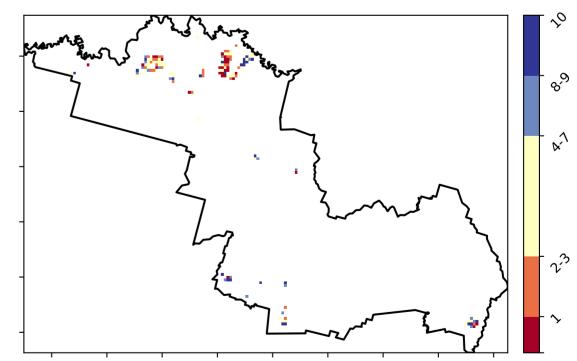
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#### Proportion of vegetation cover class in area



#### % Area protected from wind erosion (>50%)





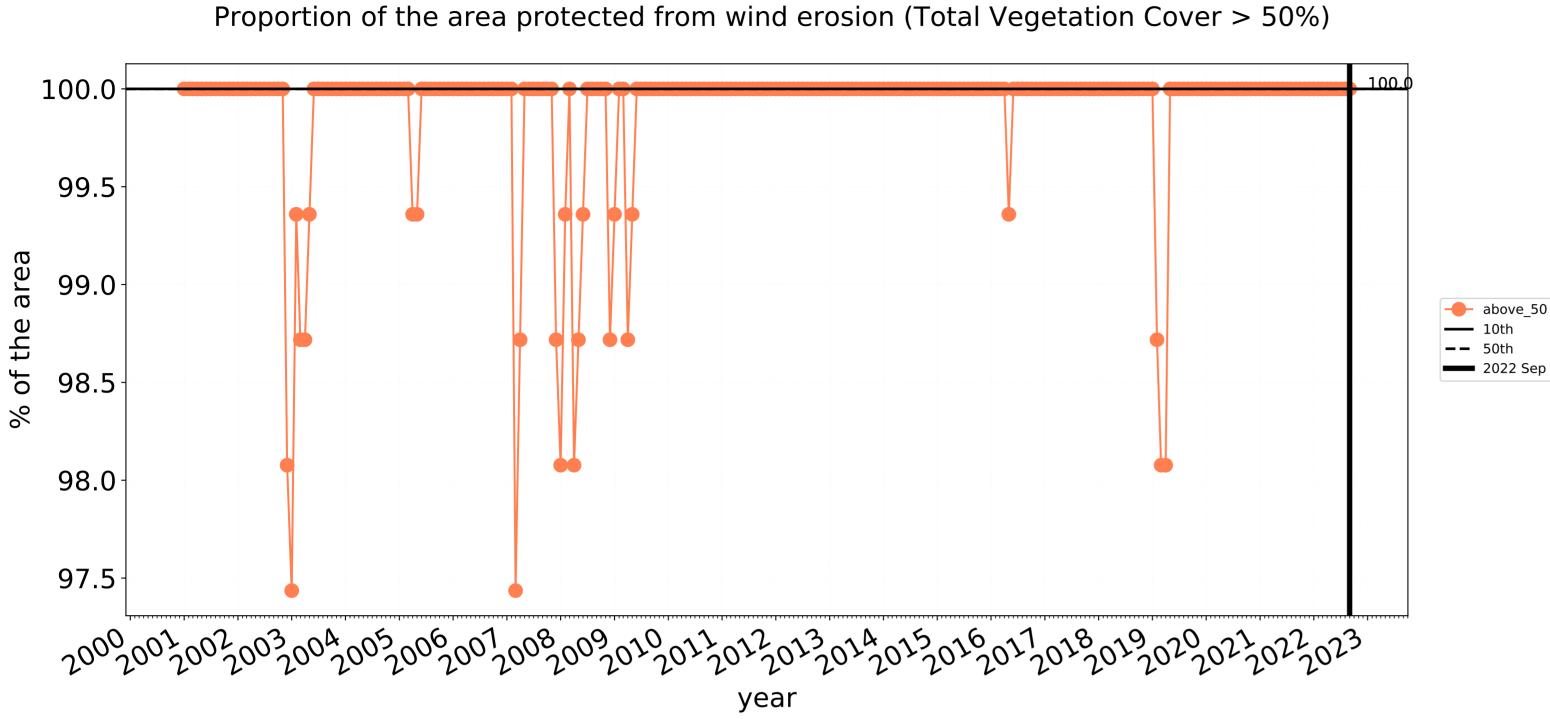


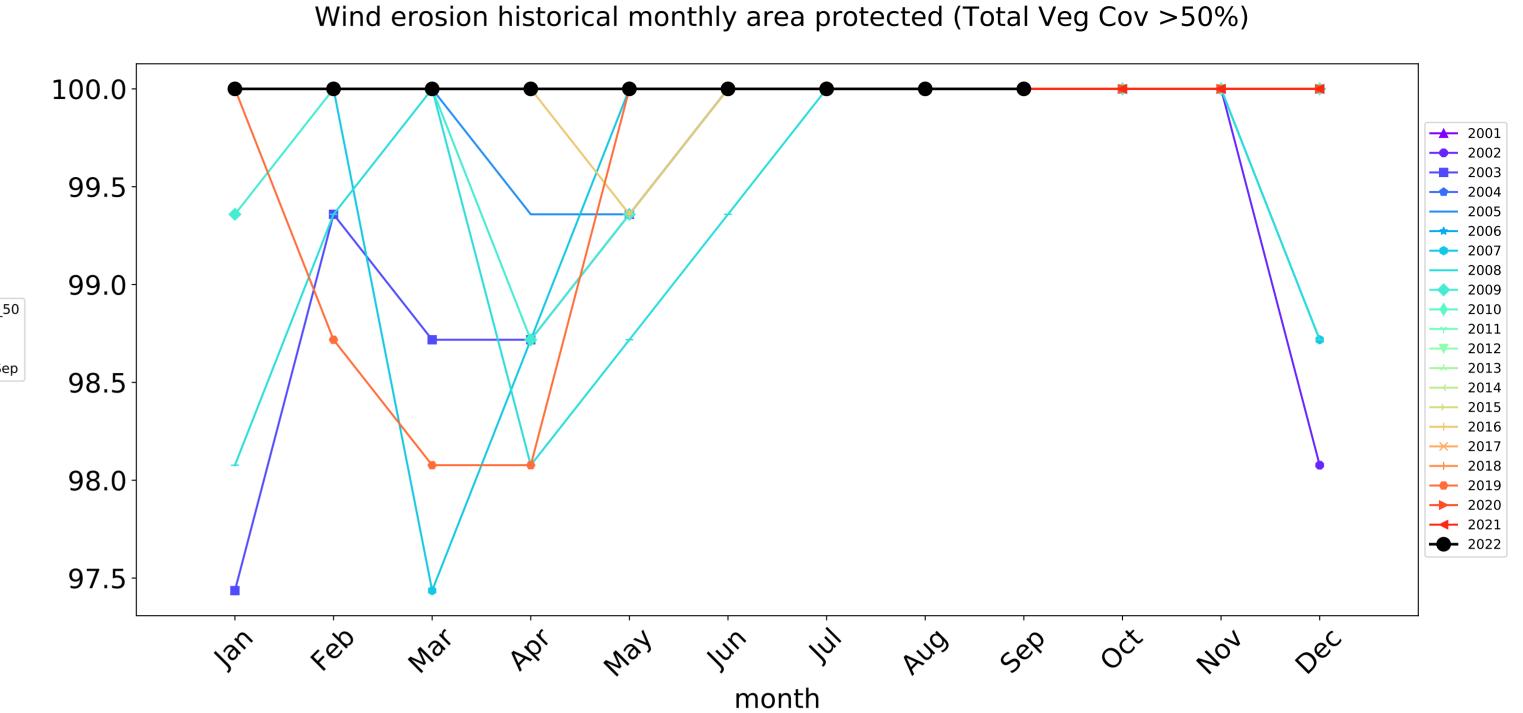


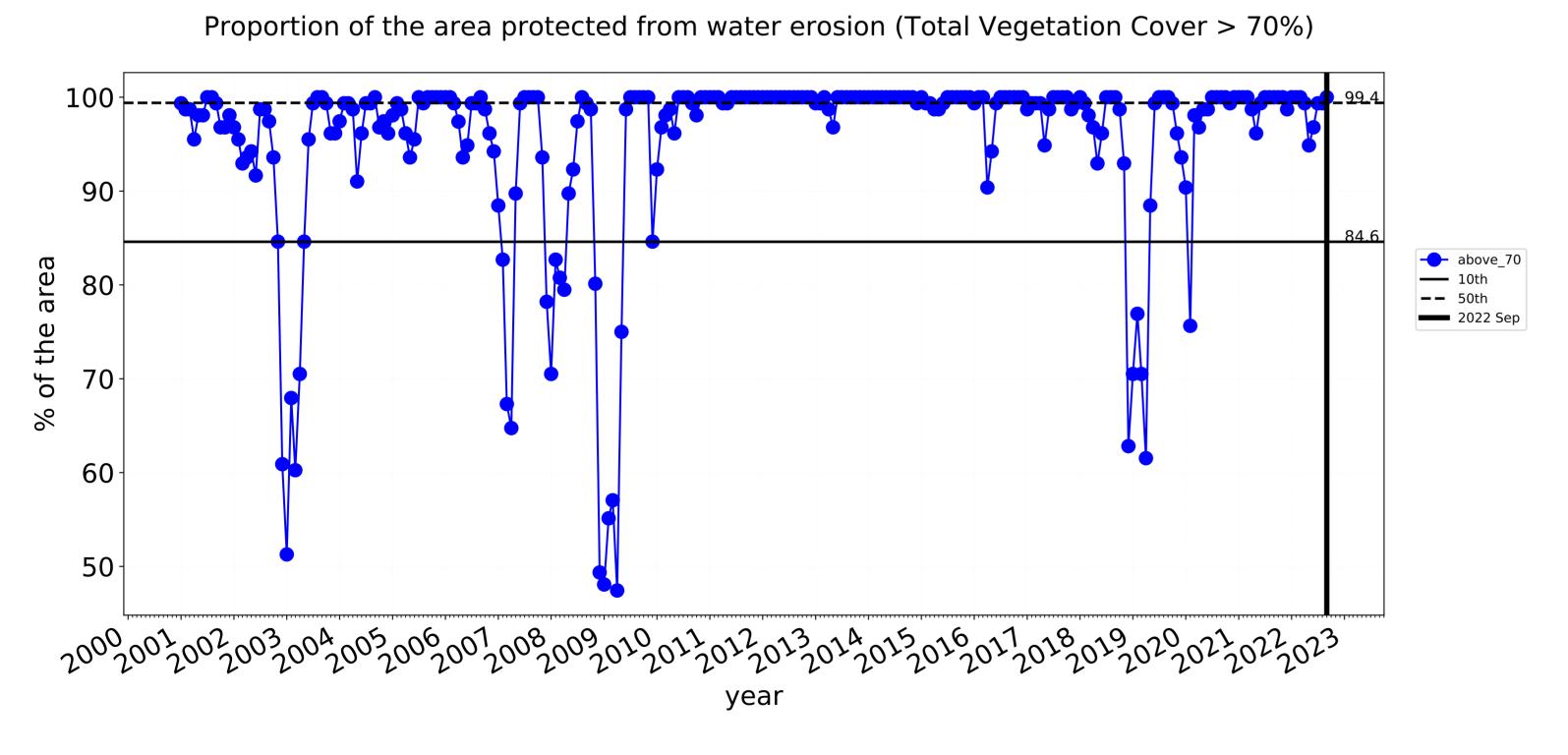


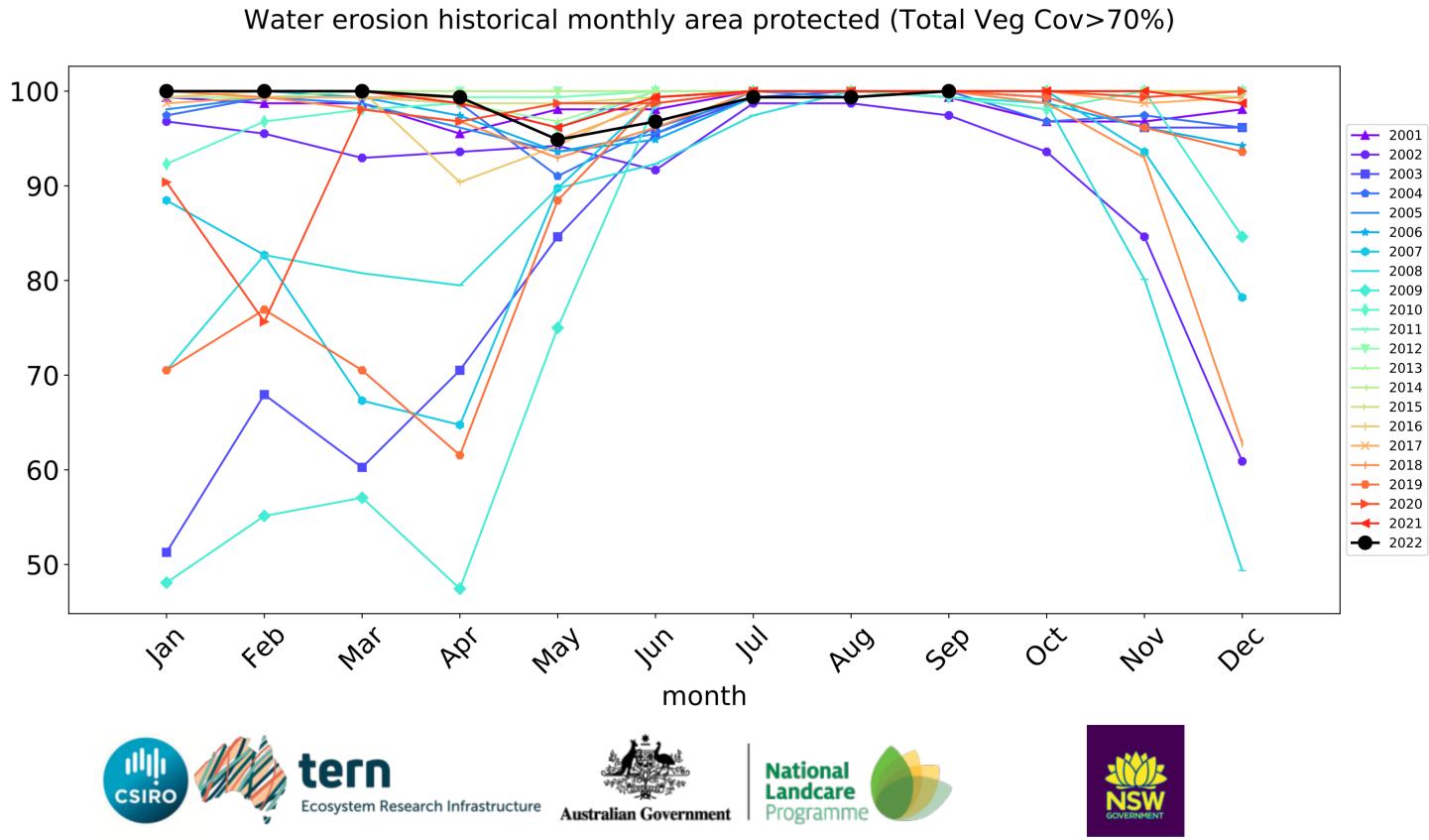


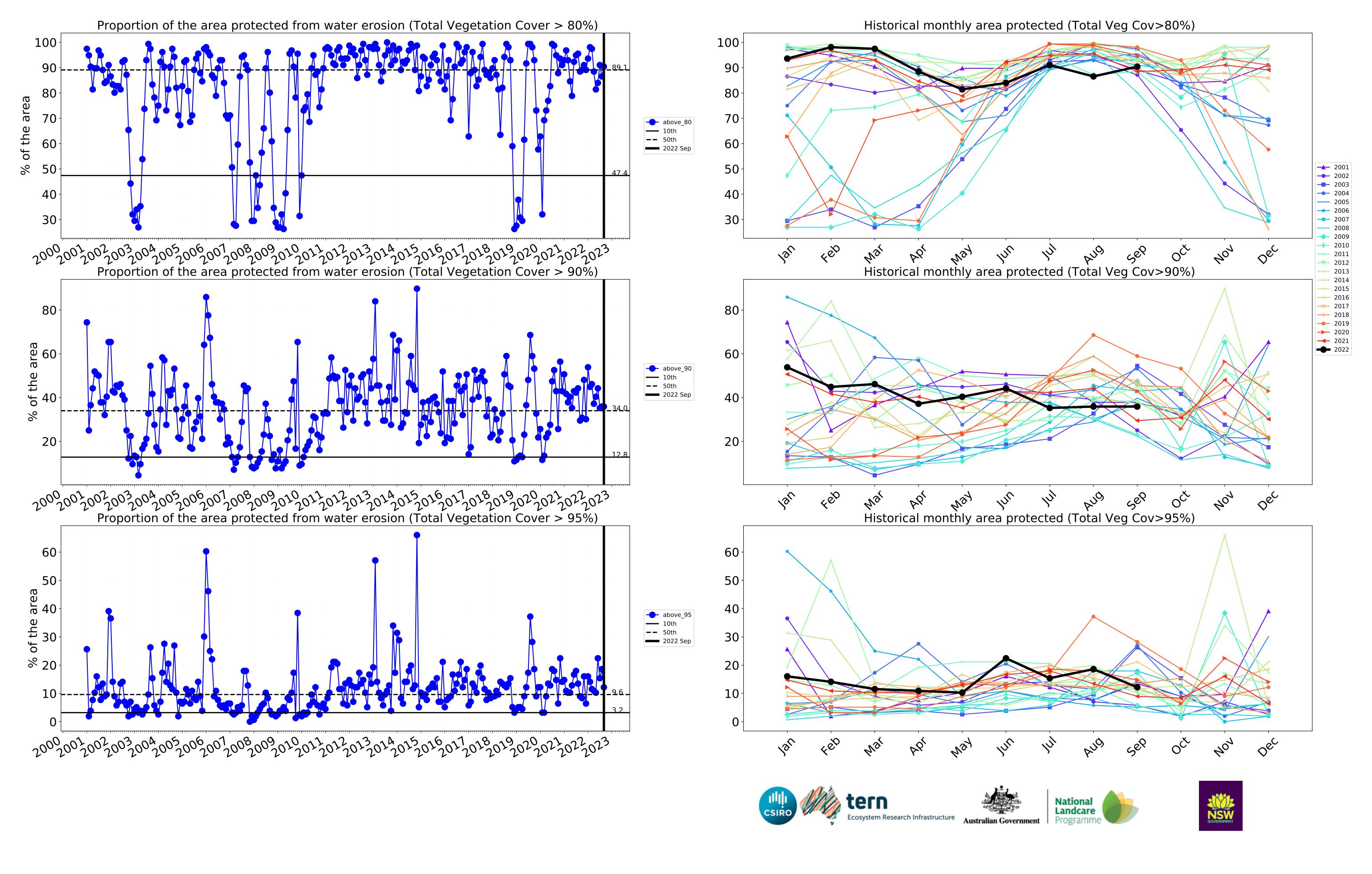
#### **Horticulture timeseries**





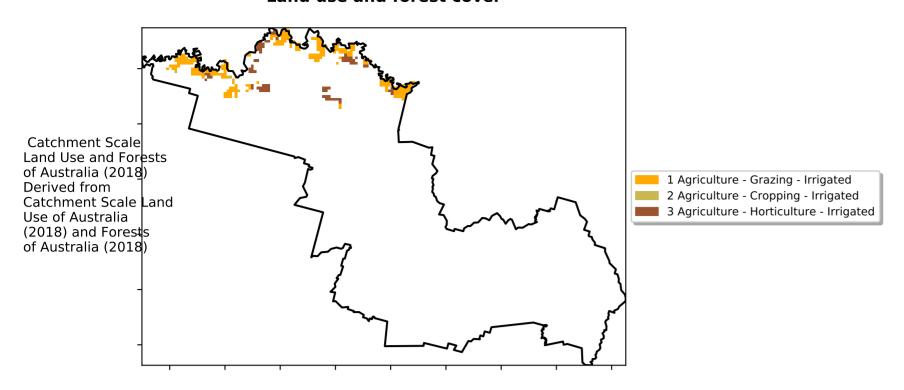




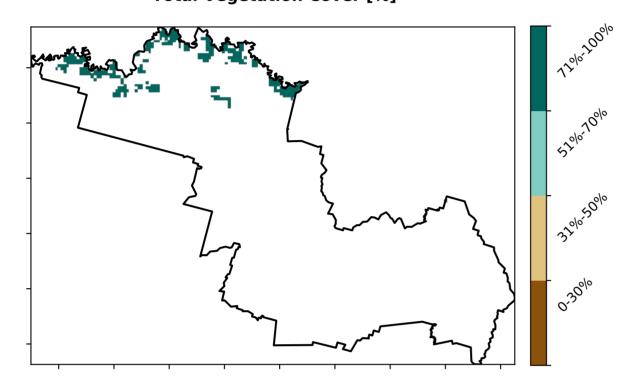


#### Irrigation

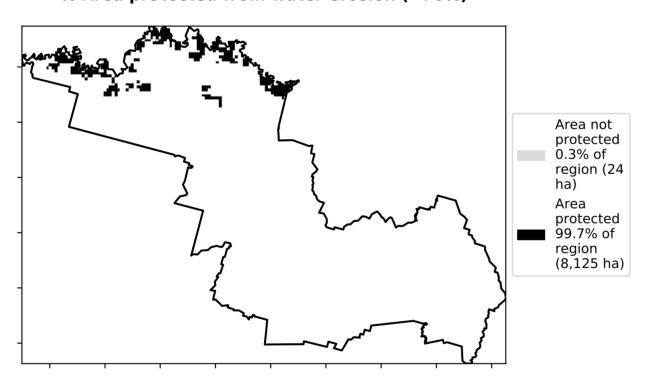
#### Land use and forest cover



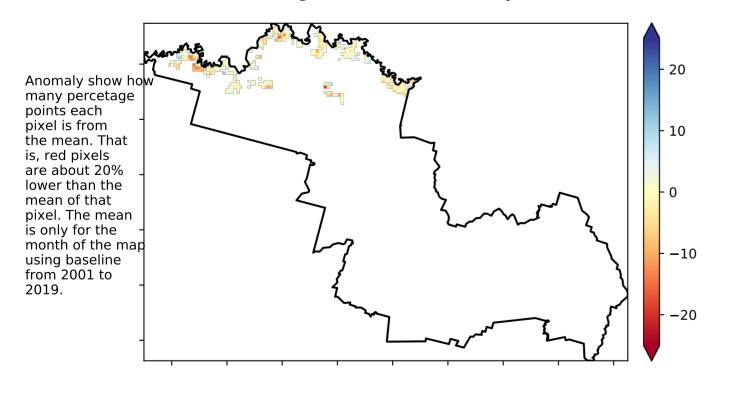
#### **Total Vegetation Cover [%]**



% Area protected from water erosion (>70%)

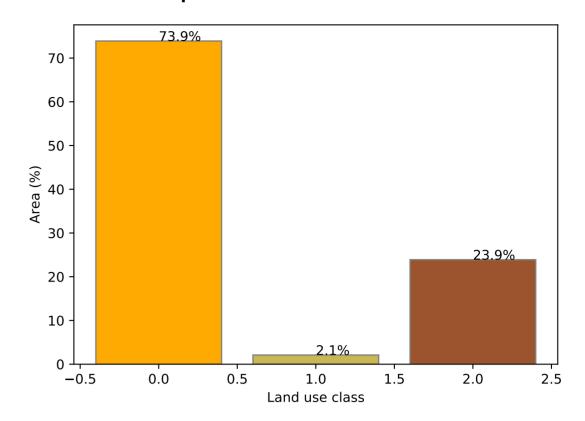


Total Vegetation Cover Anomaly [%]

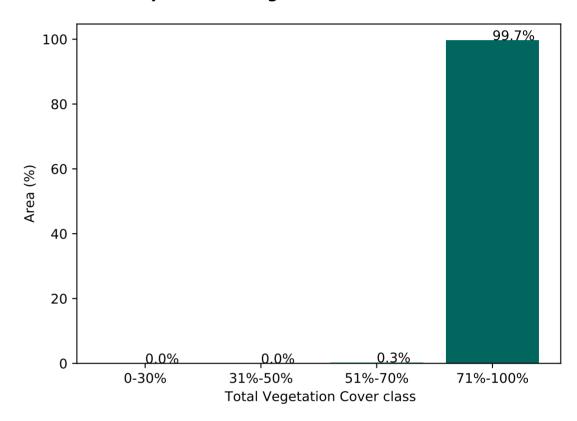


Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

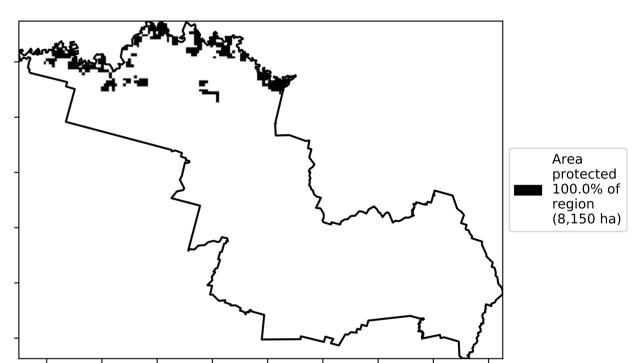
#### Proportion of each land class in area



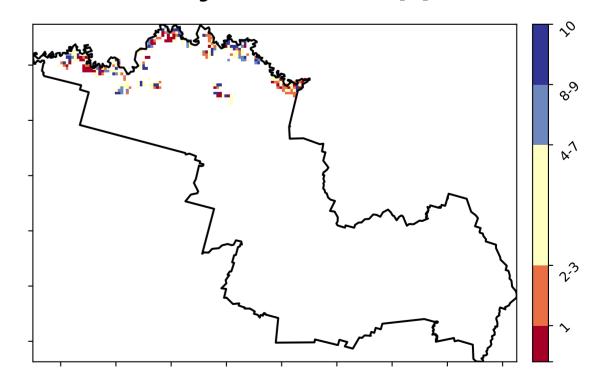
Proportion of vegetation cover class in area



% Area protected from wind erosion (>50%)



Total Vegetation Cover Decile [%]



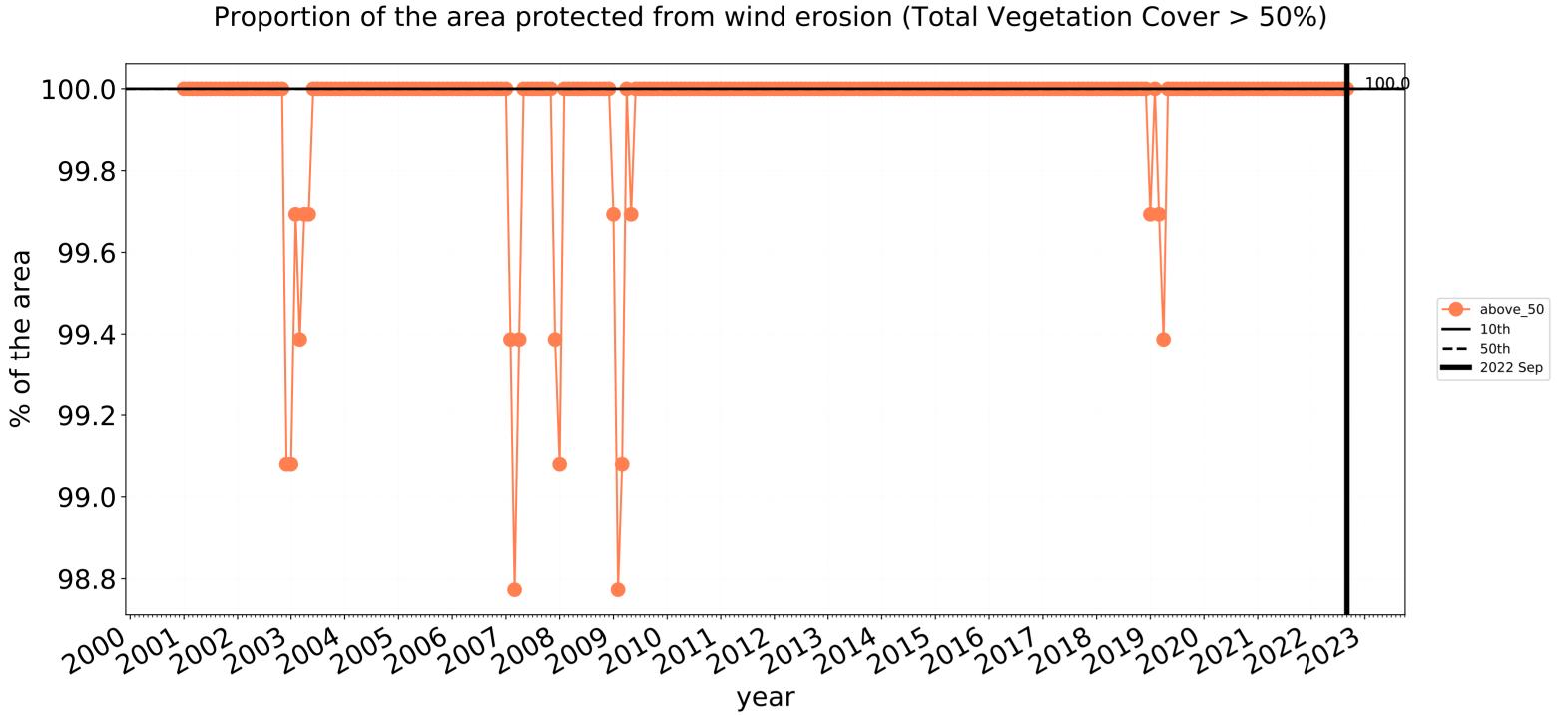


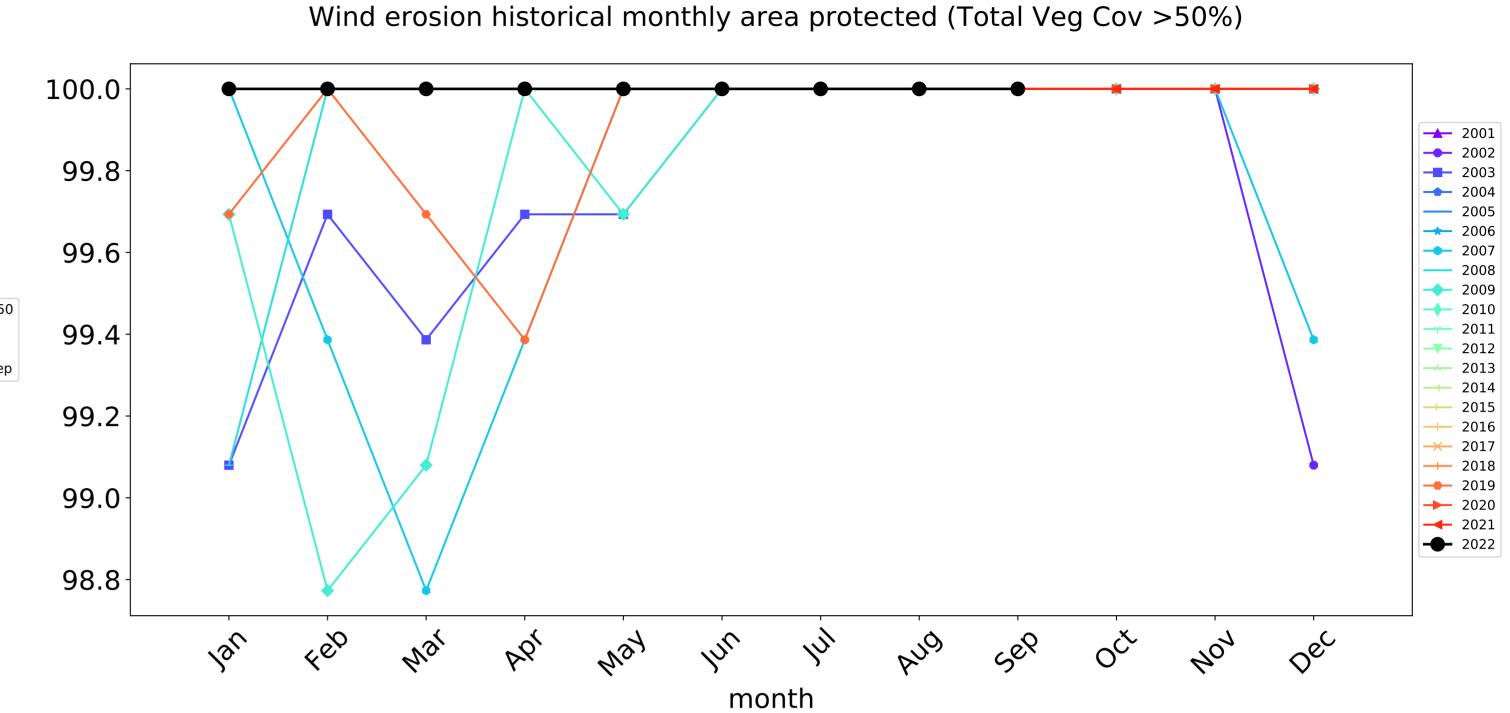


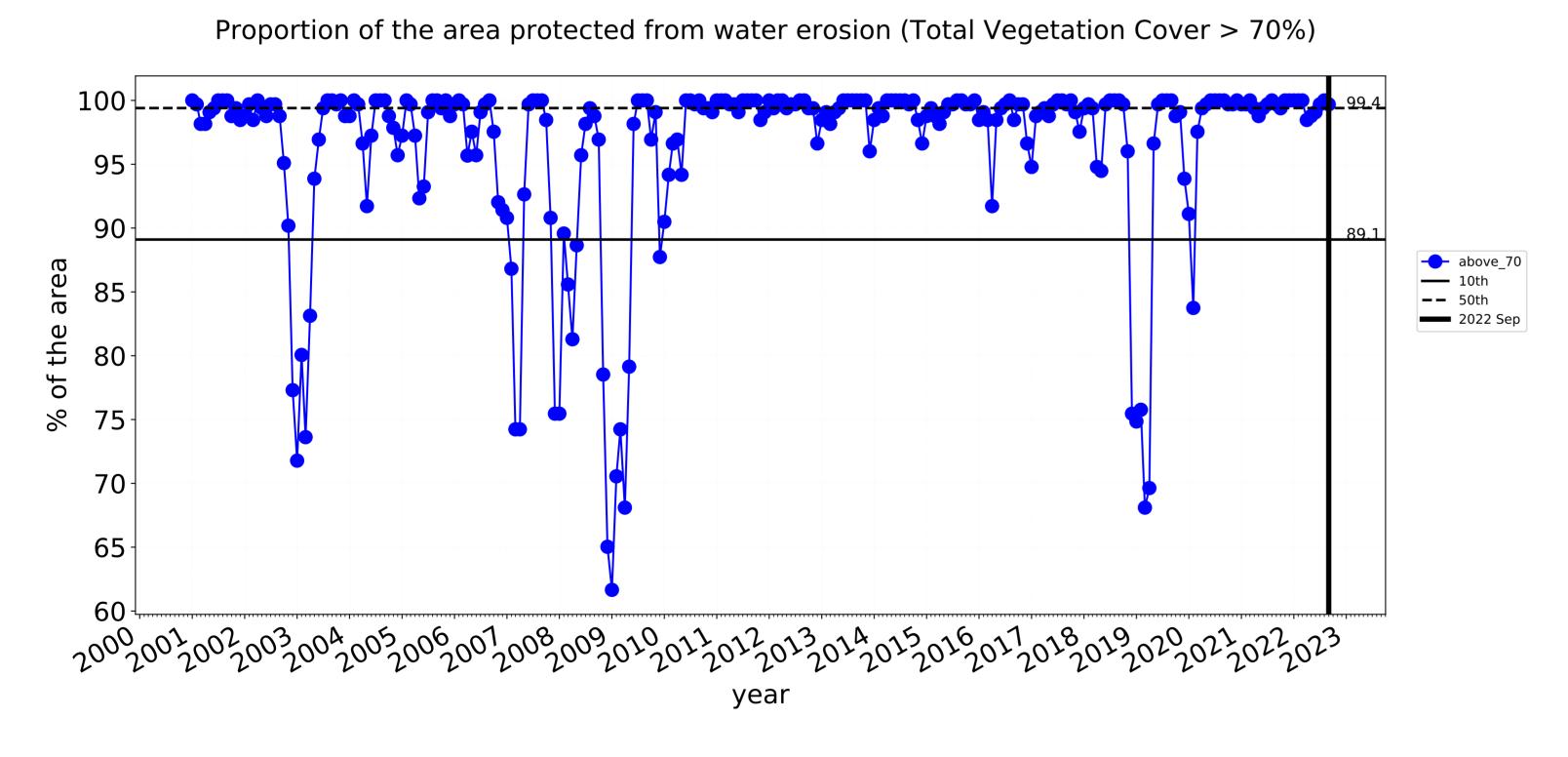


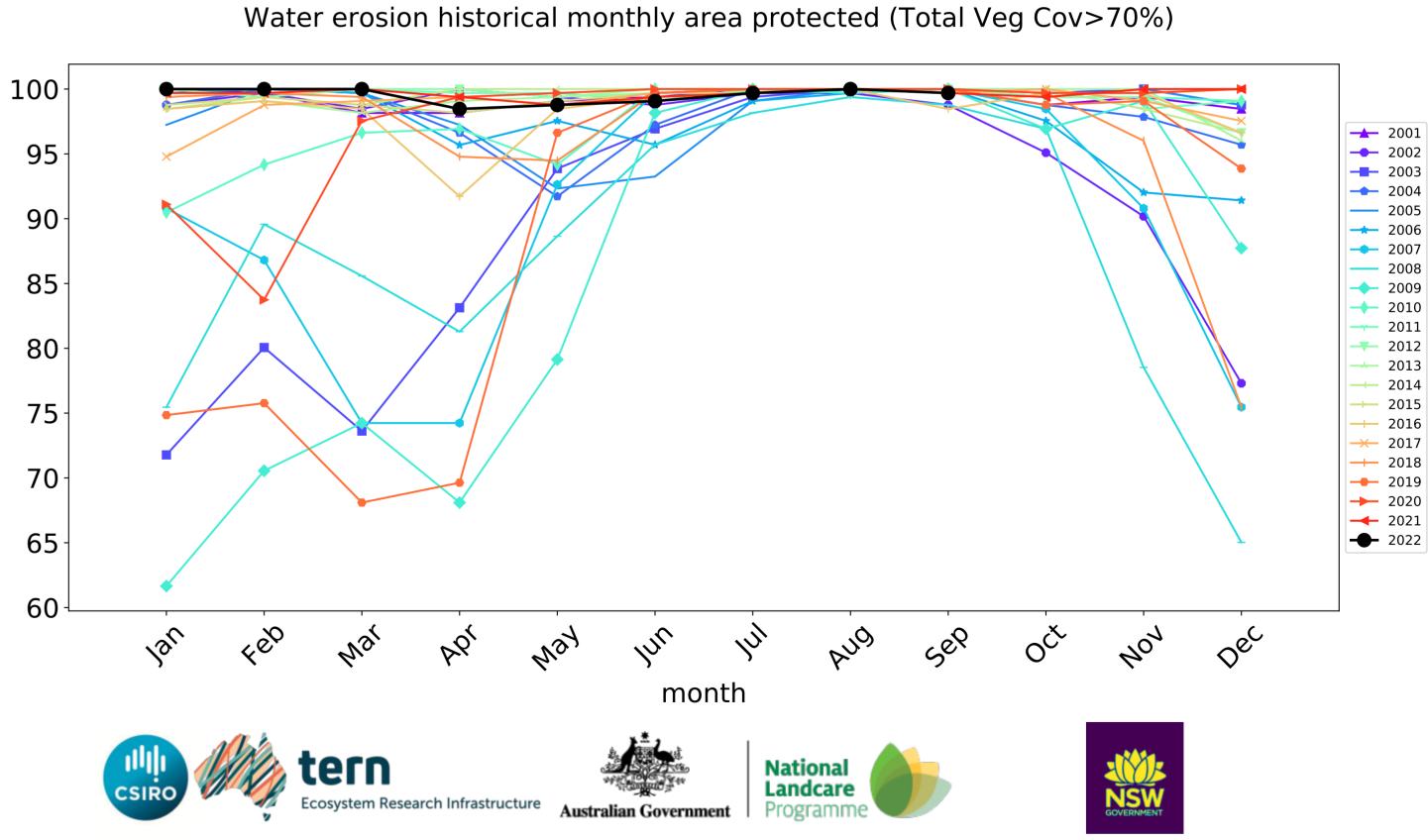


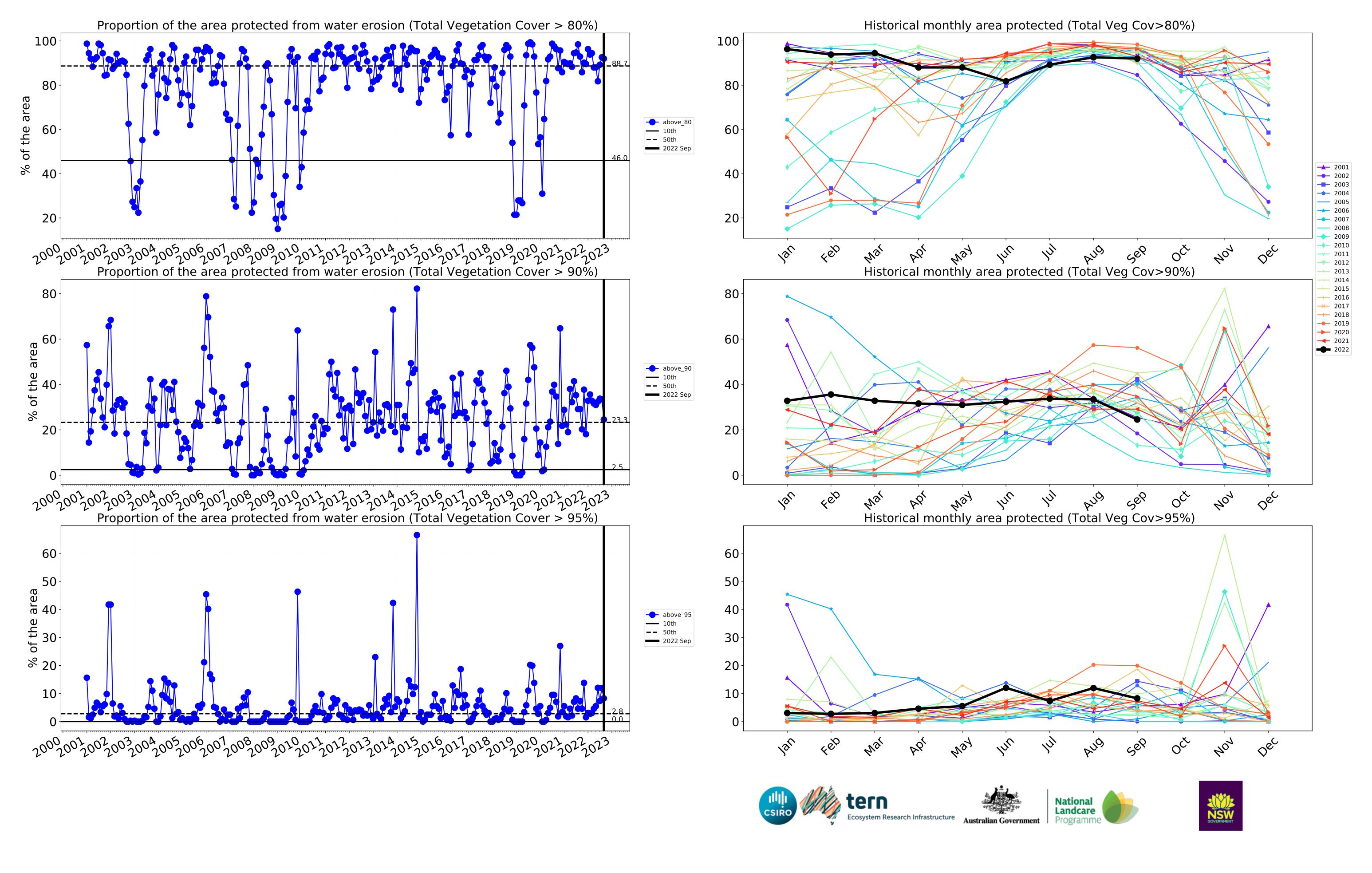
#### Irrigation timeseries





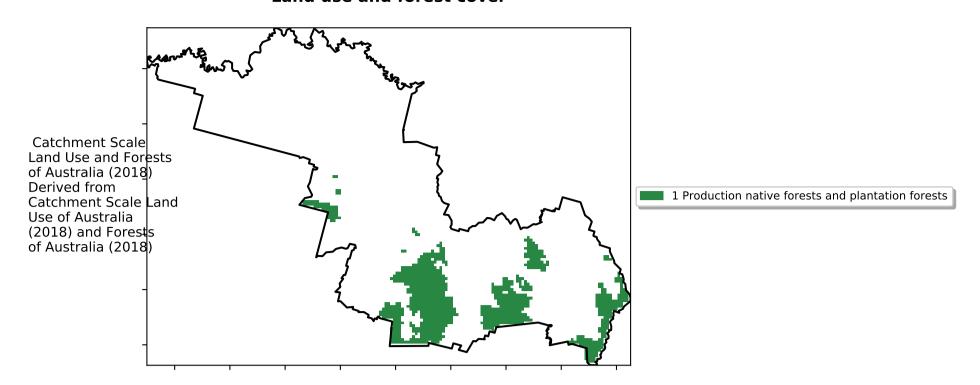




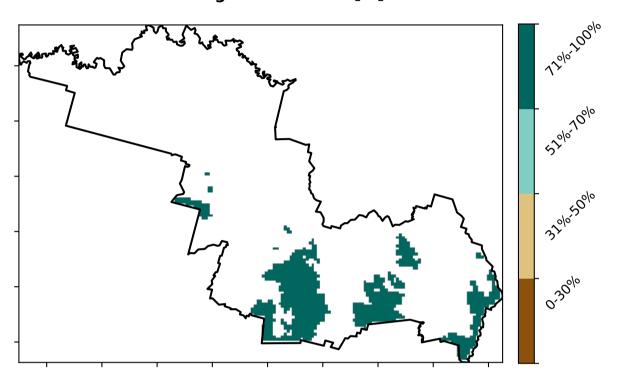


#### **Production native forests and plantation forests**

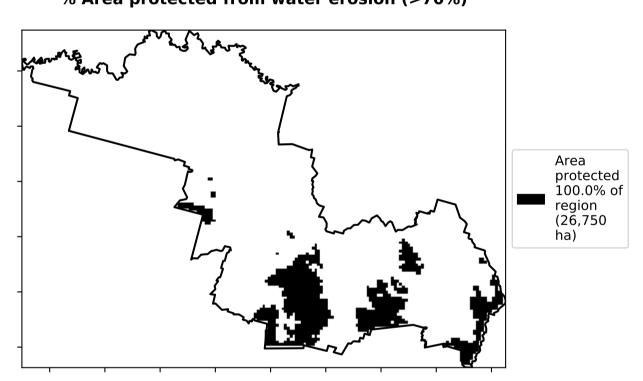
#### Land use and forest cover



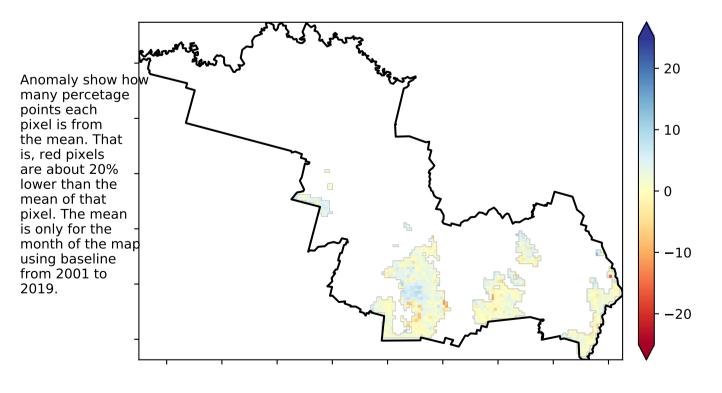
#### Total Vegetation Cover [%]



#### % Area protected from water erosion (>70%)

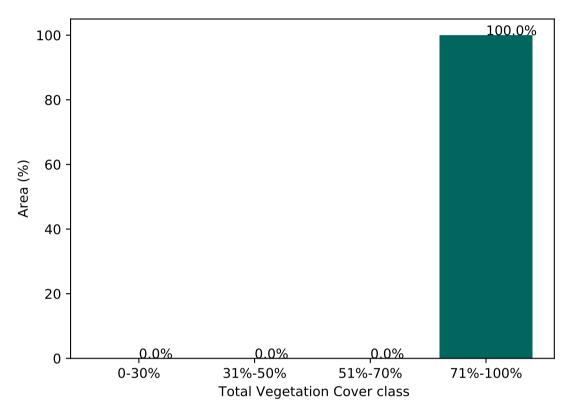


#### **Total Vegetation Cover Anomaly [%]**

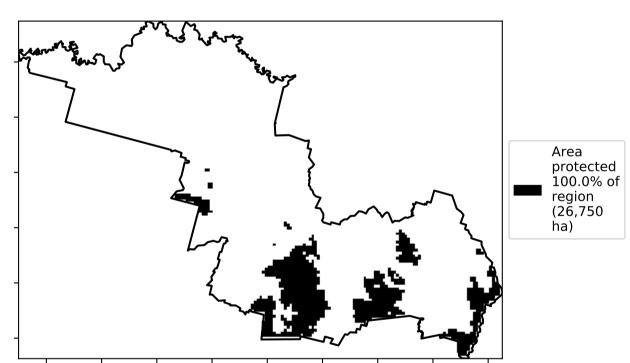


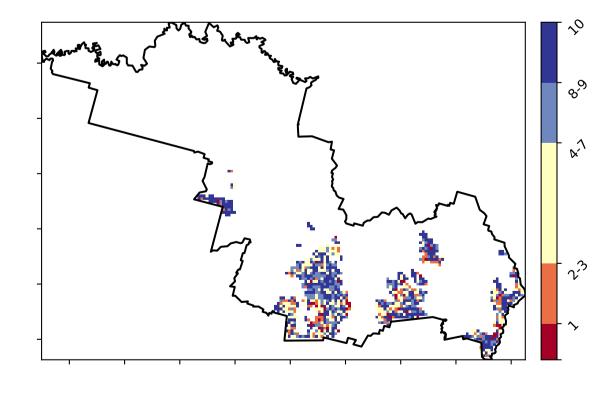
Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

#### Proportion of vegetation cover class in area



#### % Area protected from wind erosion (>50%)





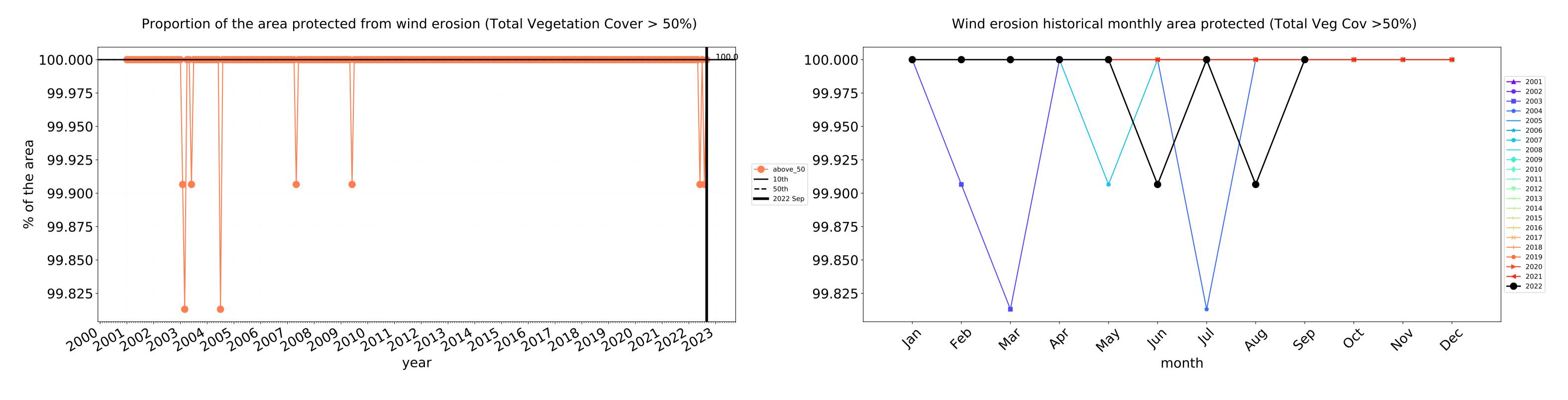


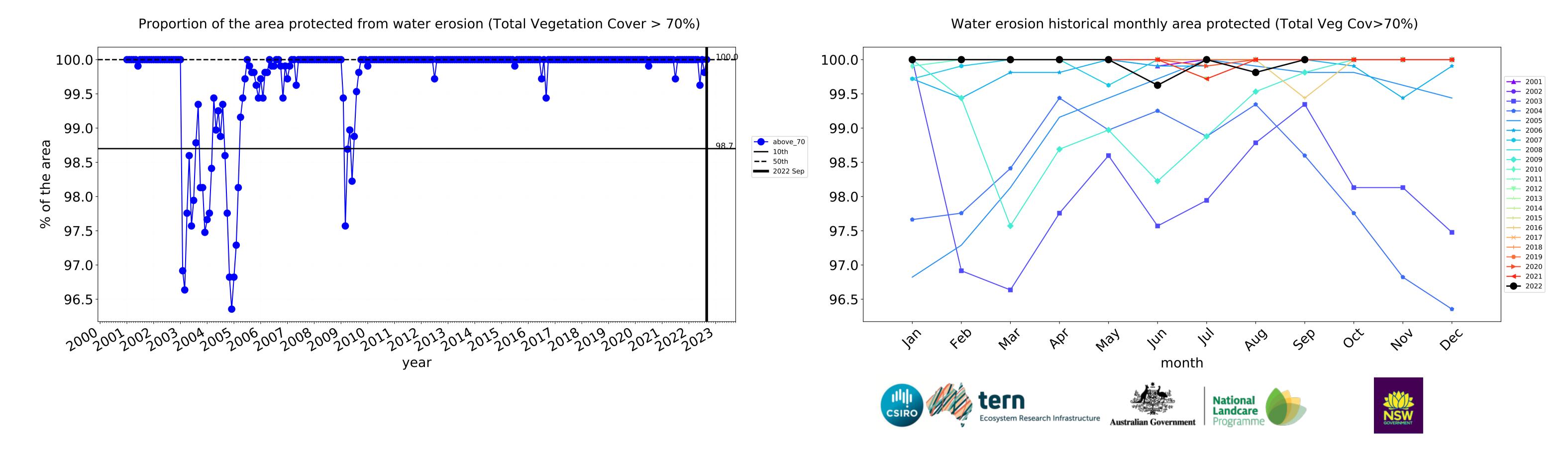


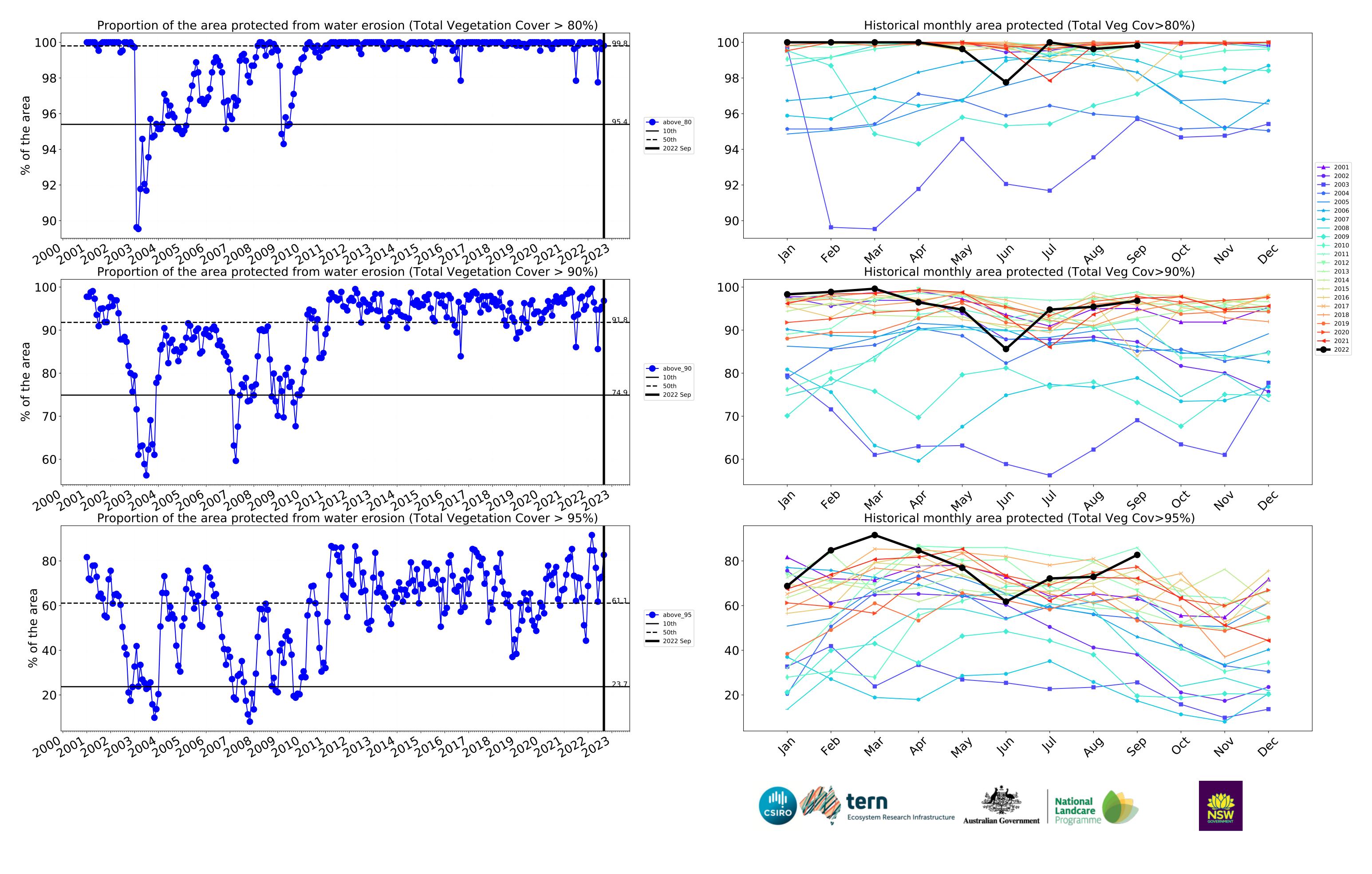




#### **Production native forests and plantation forests timeseries**







## Indigo\_(S) (202,950 ha and no data 926 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	202,950	100.0% 202,900	99.9% 202,800	99.6% 202,125	96.0% 194,850	58.7% 119,175	29.4% 59,625
Conservation and natural environments	24,050	100.0% 24,050	100.0% 24,050	100.0% 24,050	99.5% 23,925	88.9% 21,375	52.6% 12,650
Conservation and natural environments Woodland forest	5,900	100.0% 5,900	100.0% 5,900	100.0% 5,900	99.2% 5,850	83.5% 4,925	40.3% 2,375
Conservation and natural environments Forest (non woodland)	16,675	100.0% 16,675	100.0% 16,675	100.0% 16,675	99.9% 16,650	92.8% 15,475	59.4% 9,900
Agriculture	133,950	100.0% 133,950	100.0% 133,950	99.8% 133,700	95.3% 127,700	46.4% 62,150	16.1% 21,600
Grazing	115,275	100.0% 115,275	100.0% 115,275	99.9% 115,150	96.6% 111,325	49.8% 57,450	17.4% 20,075
Grazing non forest	105,525	100.0% 105,525	100.0% 105,525	99.9% 105,400	96.3% 101,575	46.2% 48,775	13.4% 14,175
Grazing Woodland forest	2,350	100.0% 2,350	100.0% 2,350	100.0% 2,350	100.0% 2,350	85.1% 2,000	46.8% 1,100
Grazing - Forest (non woodland)	7,400	100.0% 7,400	100.0% 7,400	100.0% 7,400	100.0% 7,400	90.2% 6,675	64.9% 4,800
Cropping	6,625	100.0% 6,625	100.0% 6,625	98.5% 6,525	80.8% 5,350	19.6% 1,300	5.7% 375
Horticulture	3,900	100.0% 3,900	100.0% 3,900	100.0% 3,900	90.4% 3,525	35.9% 1,400	12.2% 475
Irrigation	8,150	100.0% 8,150	100.0% 8,150	99.7% 8,125	92.0% 7,500	24.5% 2,000	8.3% 675
Production native forests and plantation forests	26,750	100.0% 26,750	100.0% 26,750	100.0% 26,750	99.8% 26,700	96.8% 25,900	82.7% 22,125







