### Total vegetation cover soil protection Region:NRM Wet Tropics QLD

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

Land use forest cover:

Date: March 2024

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

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

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

Erosion protection: Wind erosion 50% total vegetation cover

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

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

Comparison with previous years:

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

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

#### **Erosion protection**

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

#### Rainfall

• Millimetres rainfall each month (black line).

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

Water erosion protection for higher rainfall and steeper slopes:

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

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

#### **Acknowledgment of data:**

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

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









#### **Vegetation Cover Mar 2024**

#### 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

of Australia (2018)

Derived from

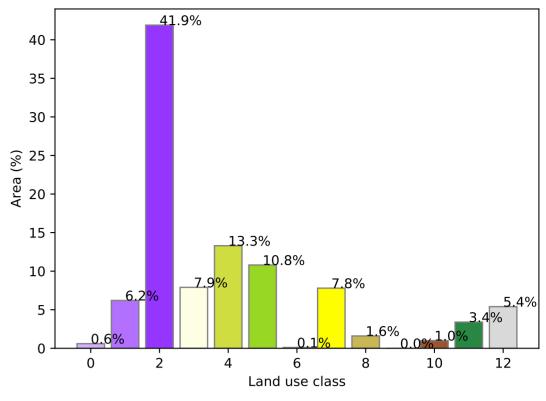
Use of Australia

(2018) and Forests

of Australia (2018)

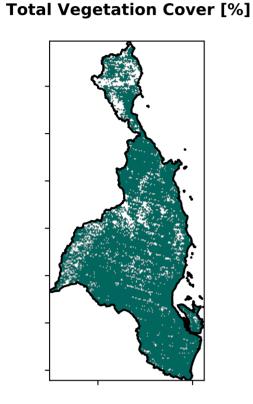
Land Use and Forests

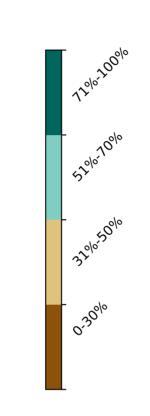
Catchment Scale Land



Proportion of each land class in area

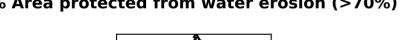
#### Proportion of vegetation cover class in area

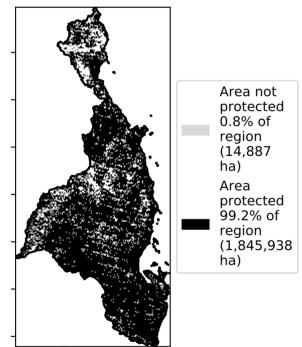




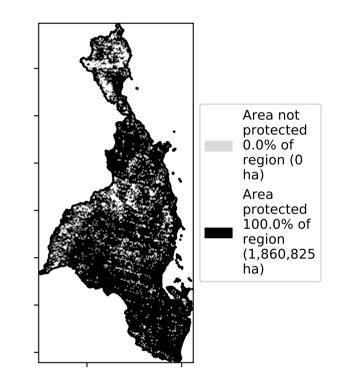
99.2% 100 80 60 40 20 71%-100% 0-30% 31%-50% 51%-70% **Total Vegetation Cover class** 

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

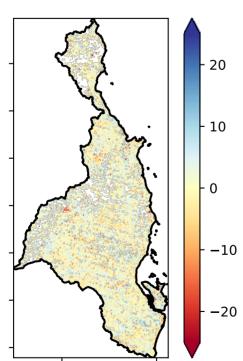




% Area protected from wind erosion (>50%)

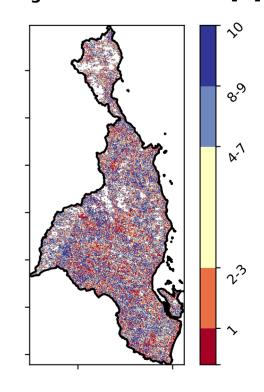


#### **Total Vegetation Cover Anomaly [%]**



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 [%]**



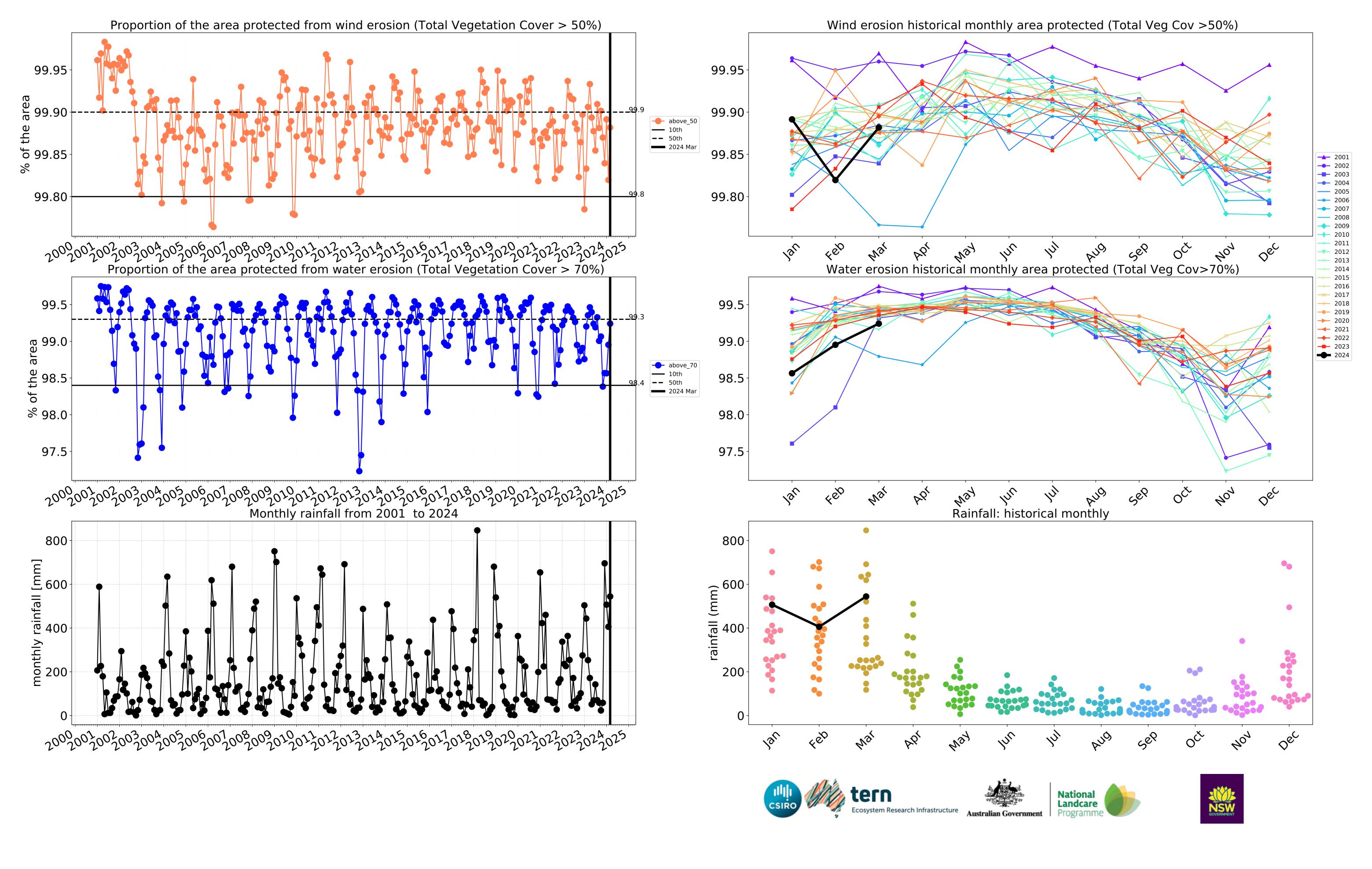
Anomaly show how many percetage points each pixel is from the mean. That is, red pixels are about 20% lower than the mean of that pixel. The mean is only for the month of the map using baseline from 2001 to 2019.

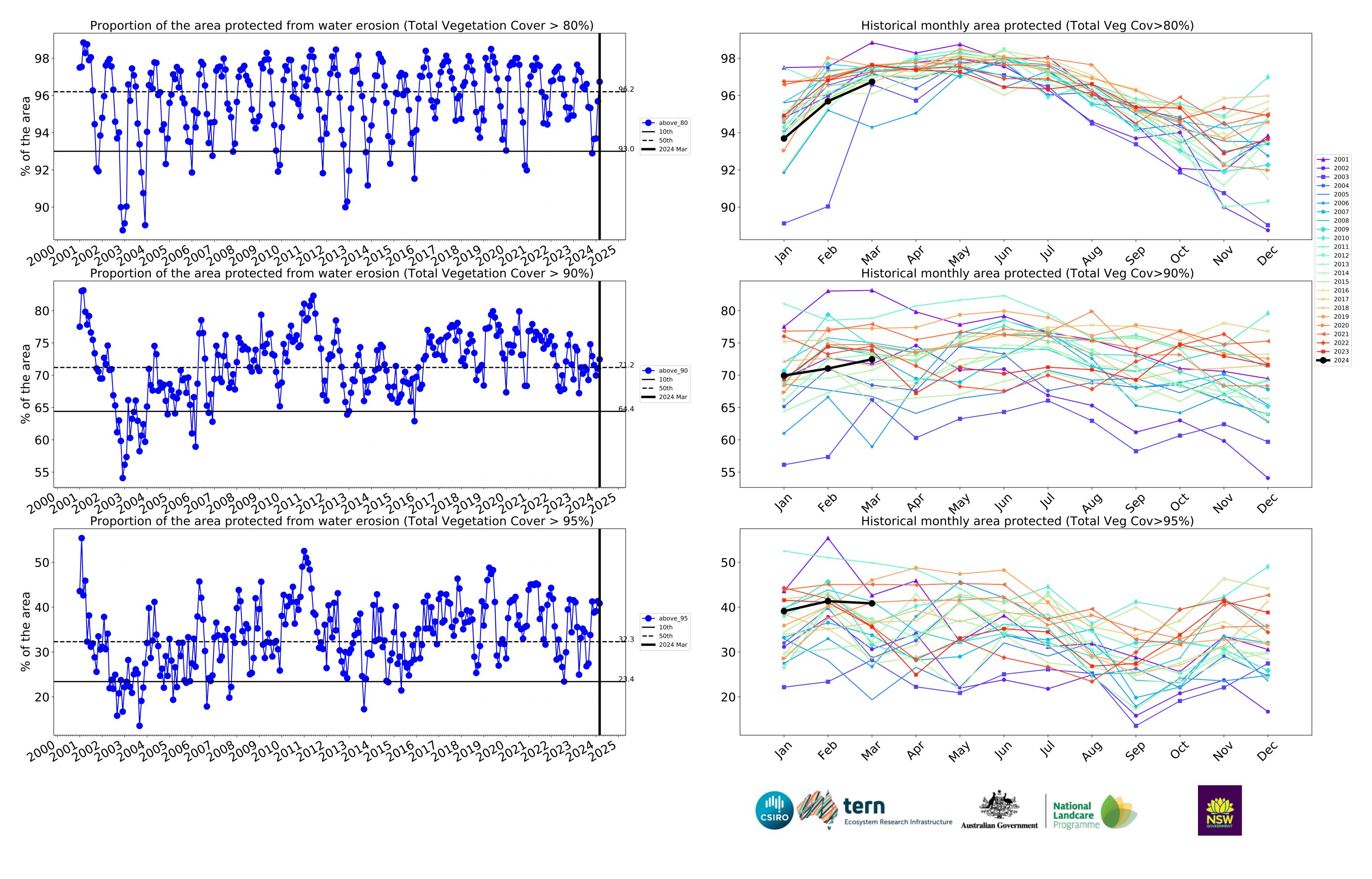










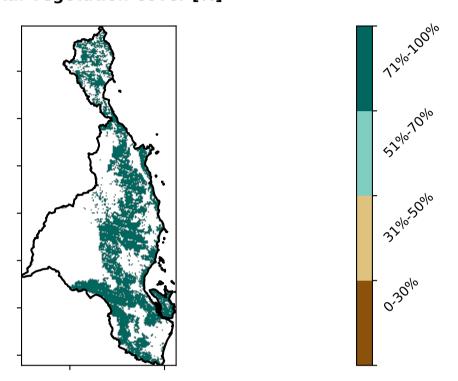


#### **Conservation and natural environments**

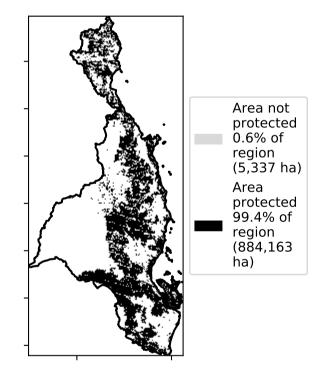
#### Land use and forest cover

#### Catchment Scale Land Use and Forests 1 Conservation and natural environments - Nonforest of Australia (2018) Derived from 2 Conservation and natural environments - Woodland Catchment Scale Land Use of Australia 3 Conservation and natural environments - Non-(2018) and Forests of Australia (2018)

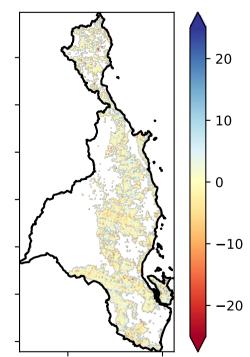
#### **Total Vegetation Cover [%]**



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

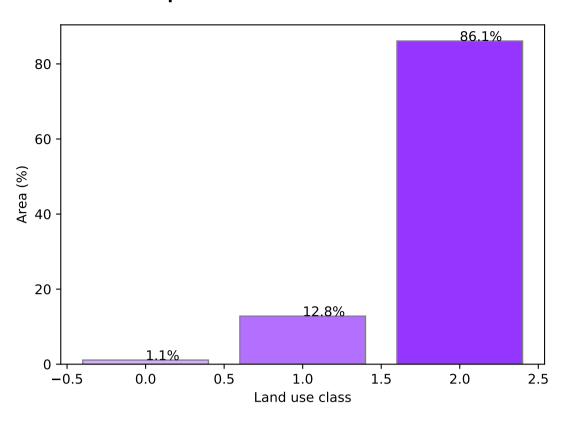


#### **Total Vegetation Cover Anomaly [%]**

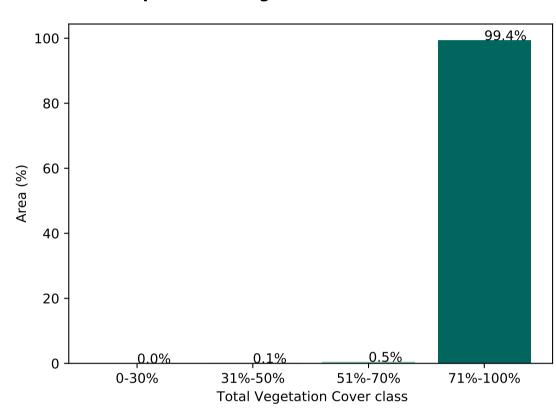


Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of

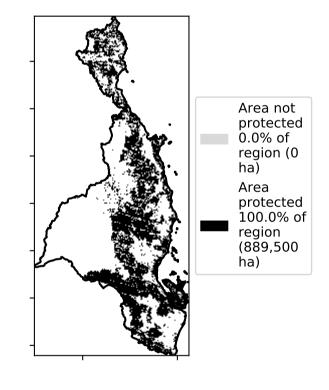
#### **Proportion of each land class in area**

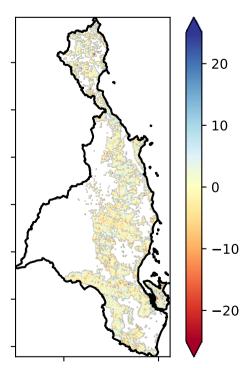


#### Proportion of vegetation cover class in area

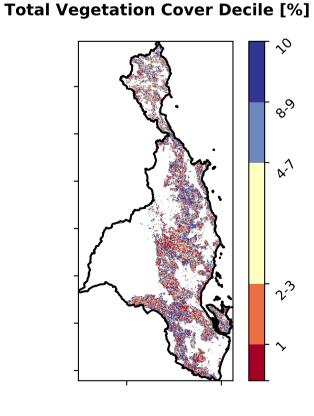


#### % Area protected from wind erosion (>50%)





the map using baseline from 2001 to 2019.





Anomaly show how many percetage points each

pixel is from the mean. That

pixel. The mean

using baseline from 2001 to 2019.

is only for the month of the map

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



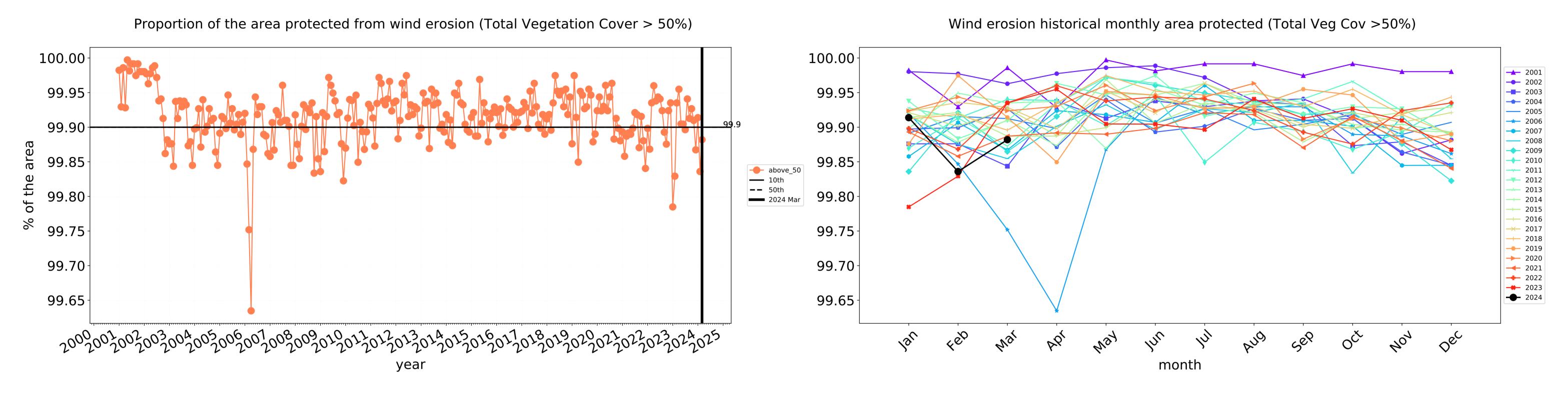


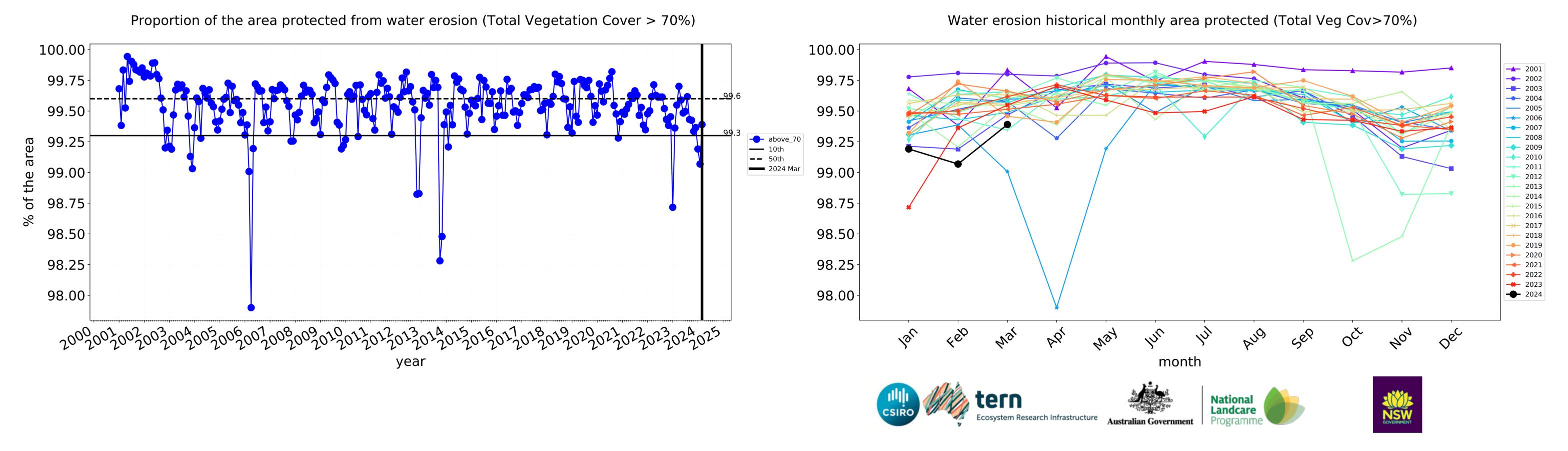


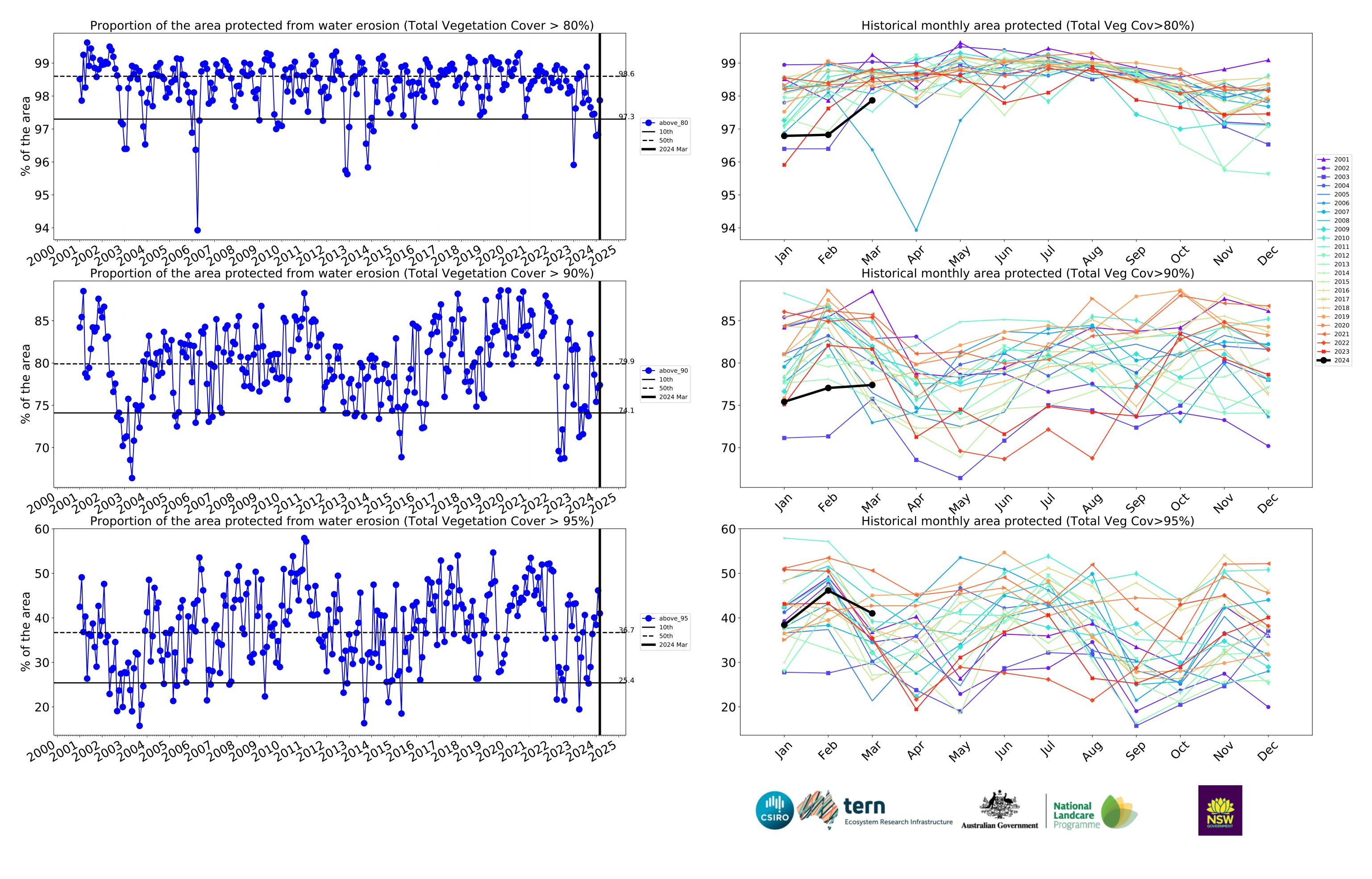




#### **Conservation and natural environments timeseries**



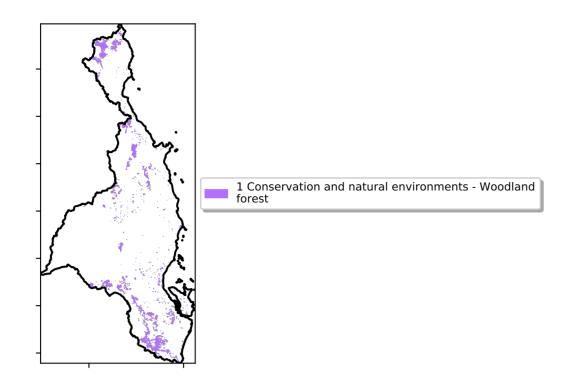




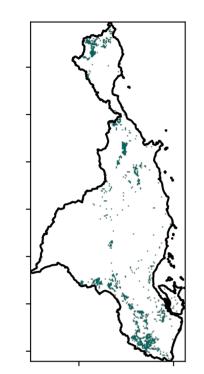
#### **Conservation and natural environments Woodland forest**

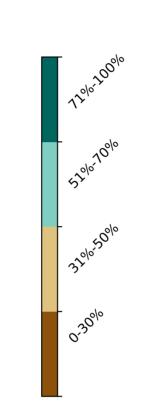
#### Land use and forest cover

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

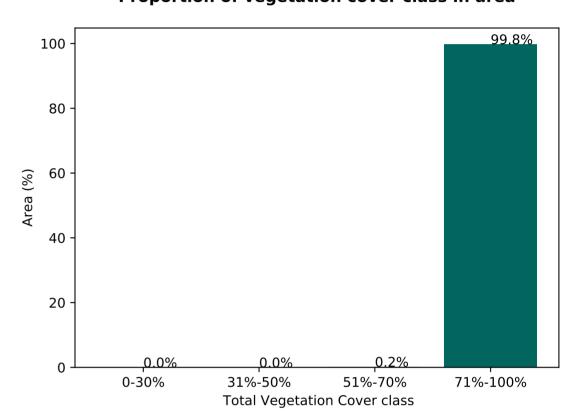


#### **Total Vegetation Cover [%]**

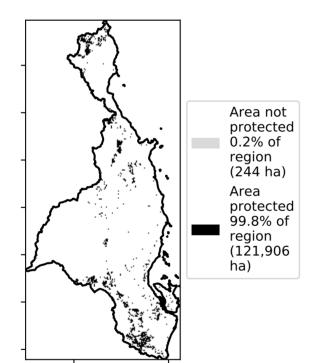




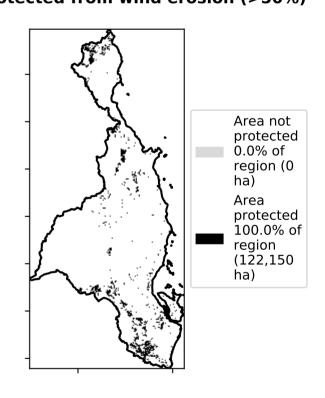
#### Proportion of vegetation cover class in area



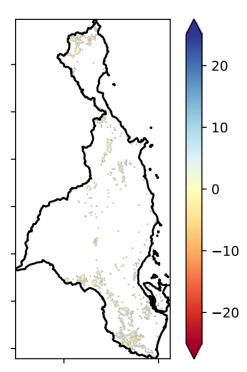
#### % Area protected from water erosion (>70%)



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

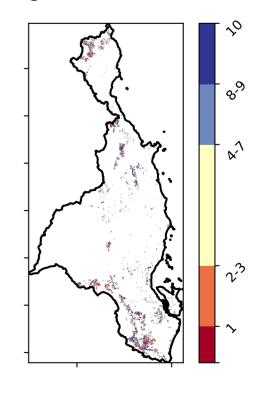


#### **Total Vegetation Cover Anomaly [%]**

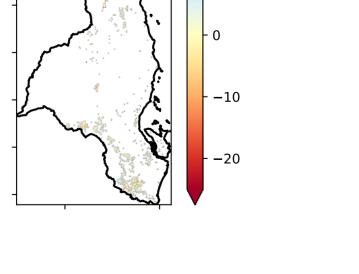


Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

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



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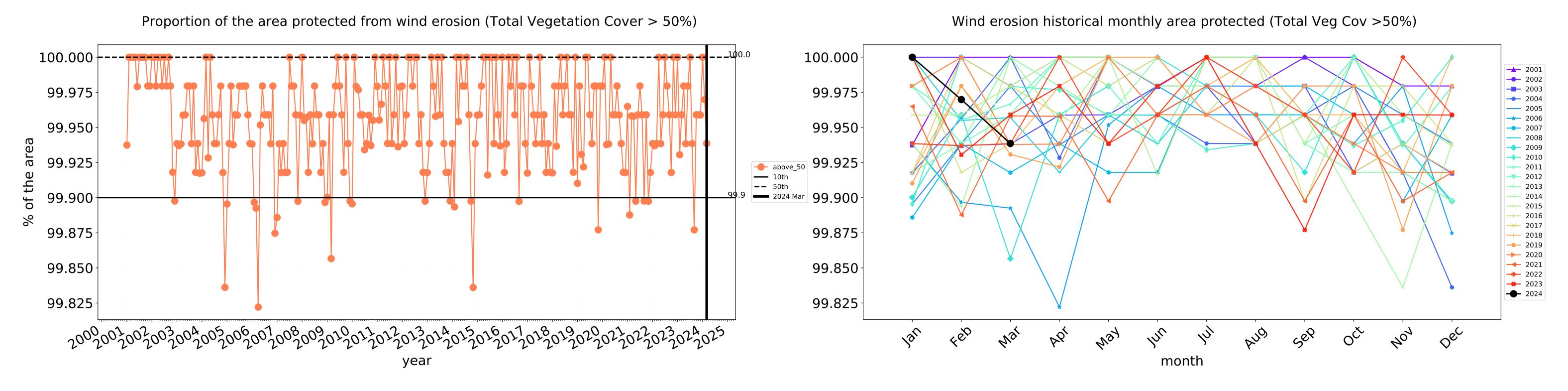


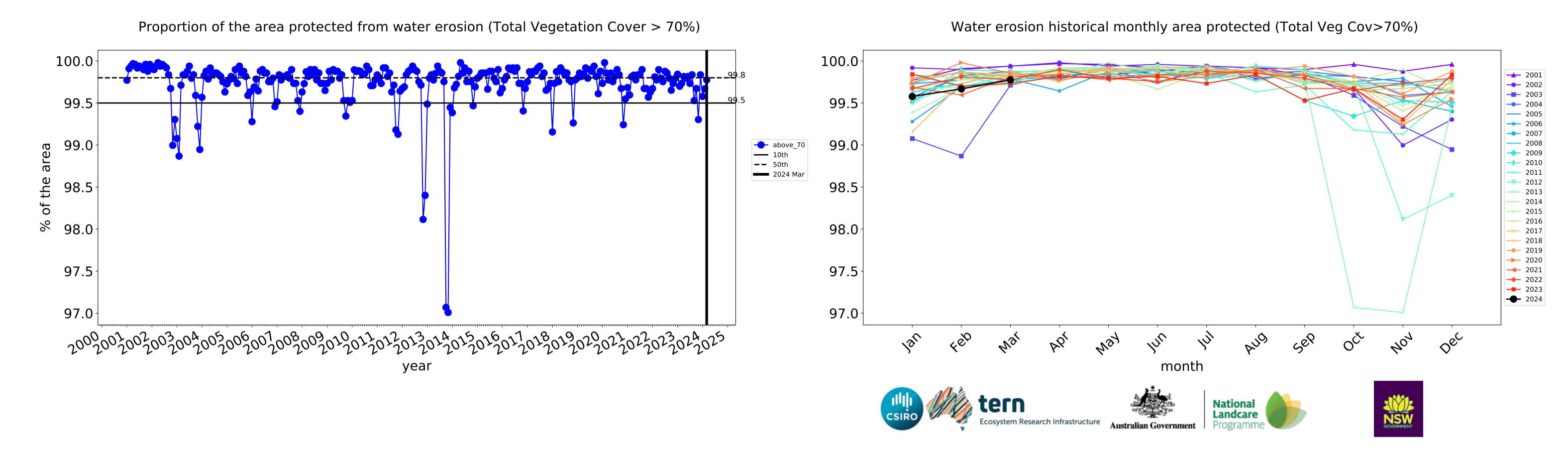
**Ecosystem Research Infrastructure** 

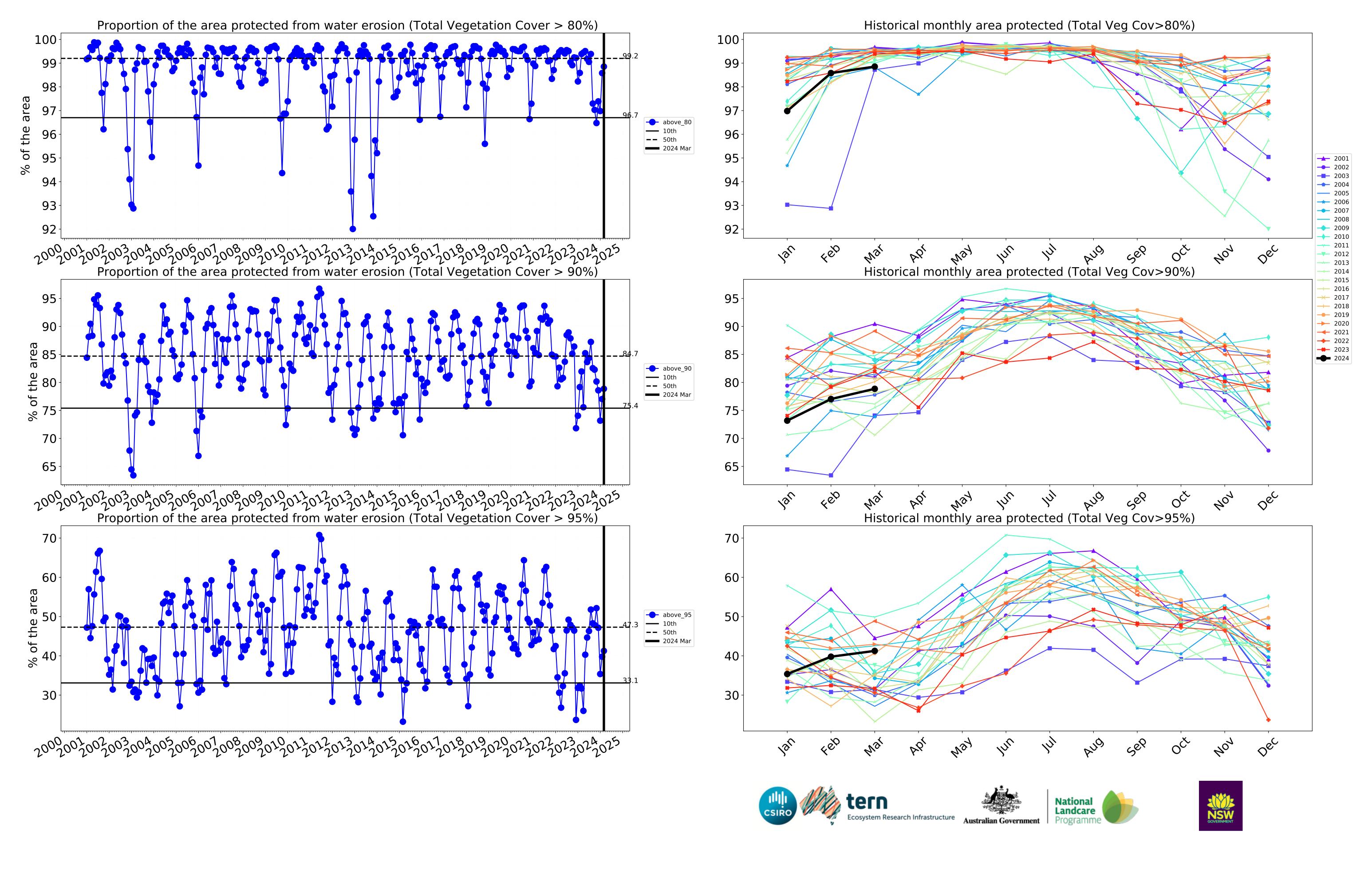








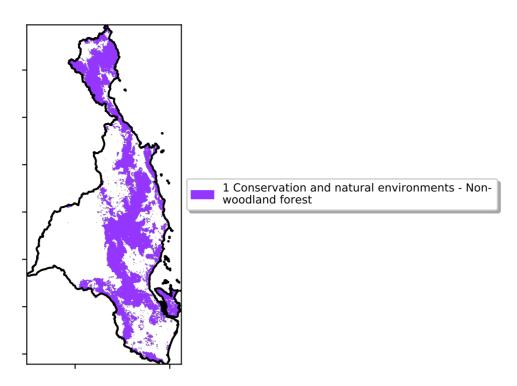




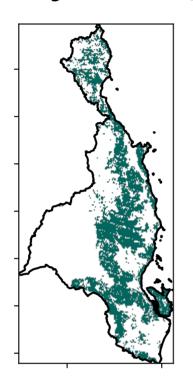
#### **Conservation and natural environments Forest (non woodland)**

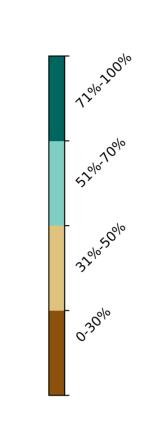
#### Land use and forest cover

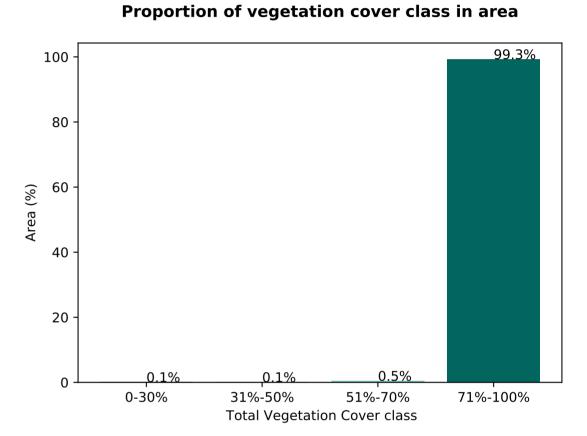
Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)



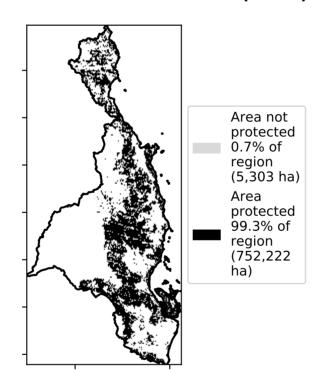
#### **Total Vegetation Cover [%]**



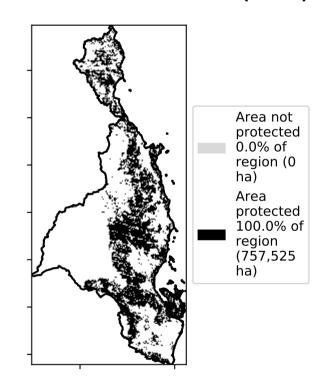




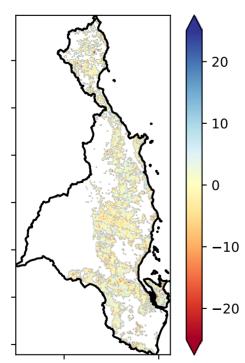
#### % Area protected from water erosion (>70%)



% Area protected from wind erosion (>50%)

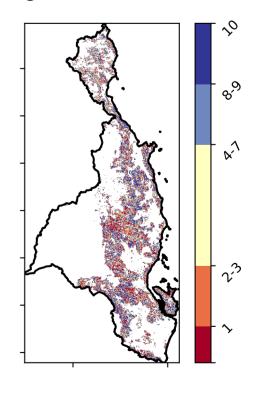


#### **Total Vegetation Cover Anomaly [%]**



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#### Total Vegetation Cover Decile [%]



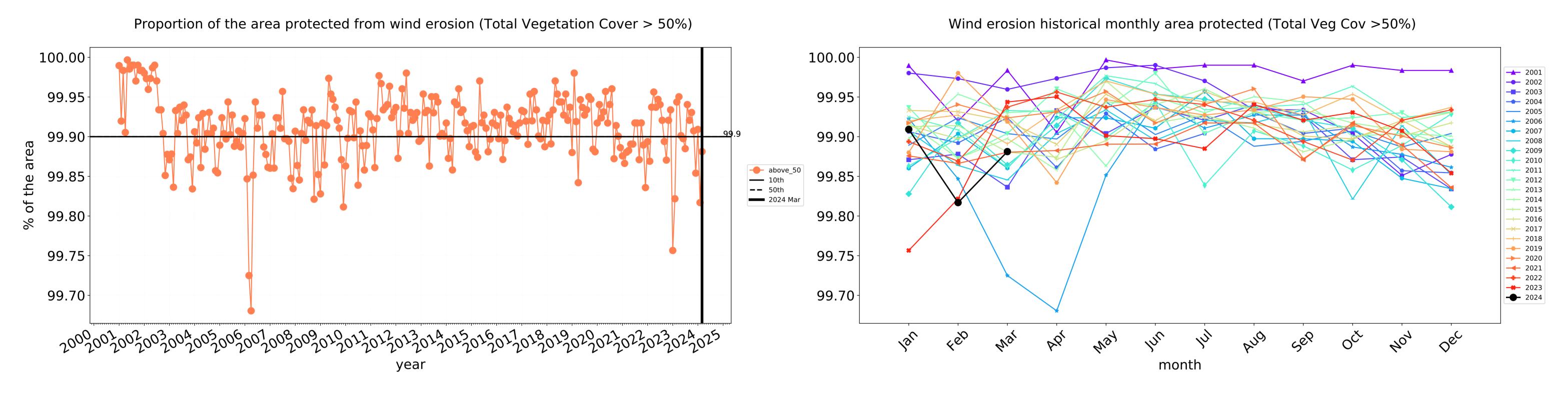
Anomaly show how many percetage points each pixel is from the mean. That is, red pixels are about 20% lower than the mean of that pixel. The mean is only for the month of the map using baseline from 2001 to 2019.

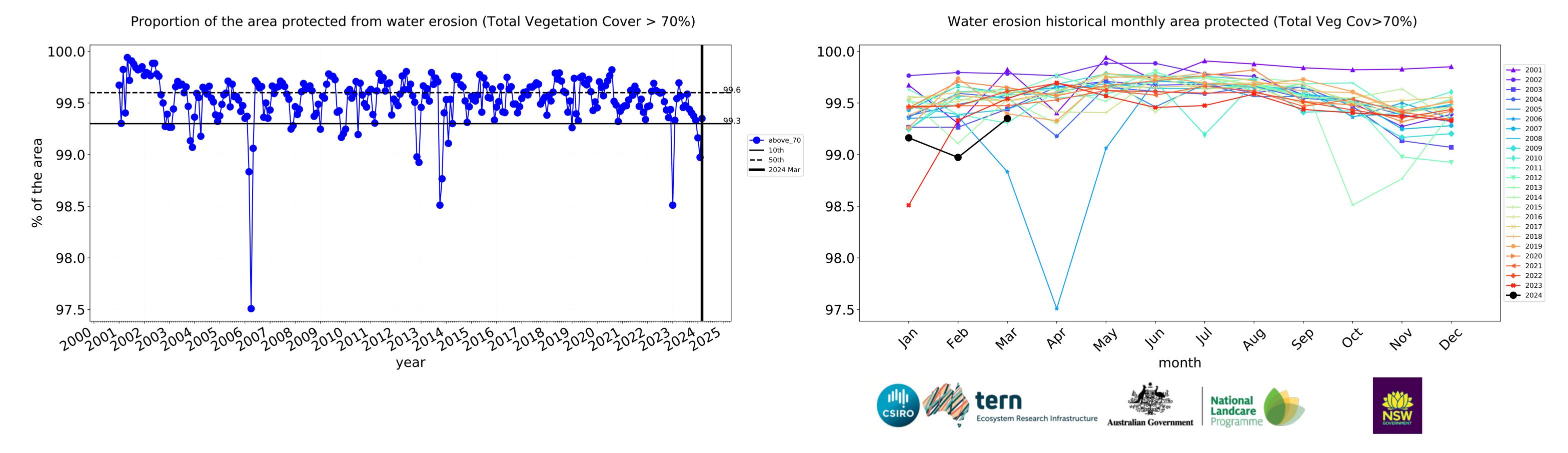


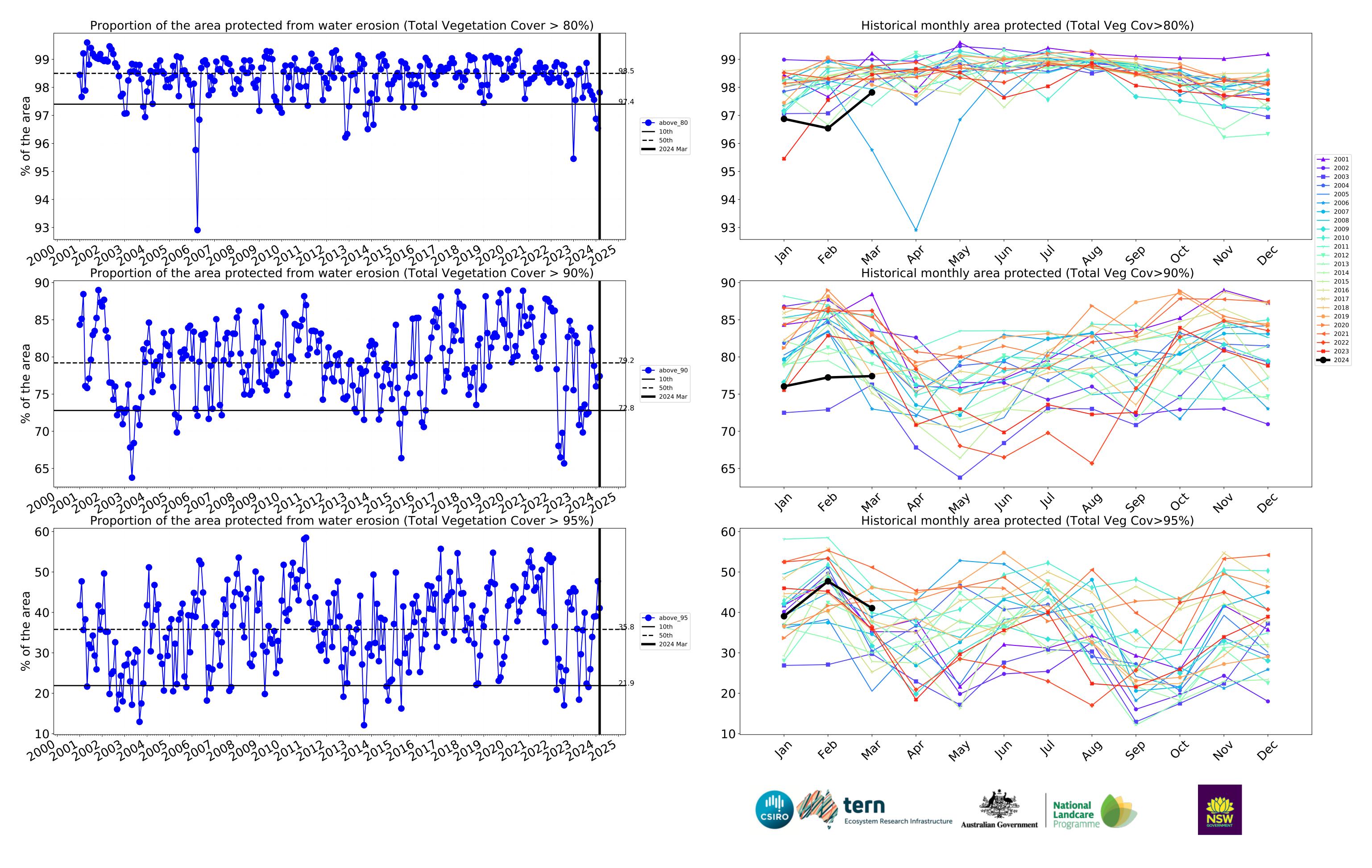








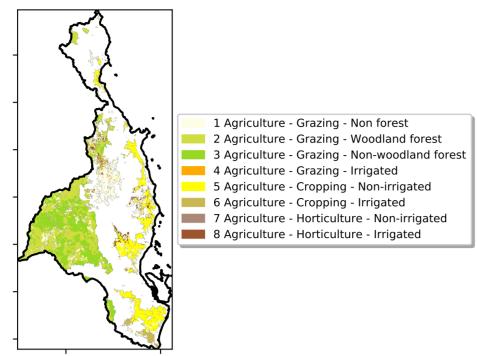




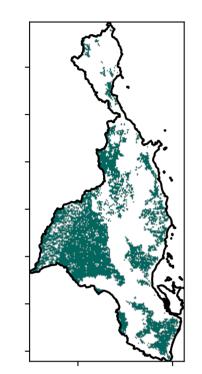
#### **Agriculture**

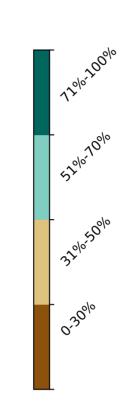
#### Land use and forest cover

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

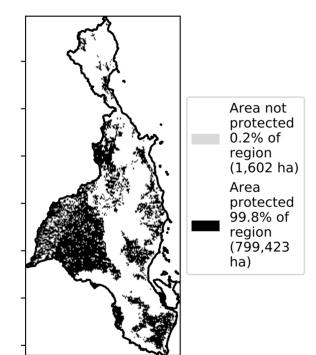


#### **Total Vegetation Cover [%]**

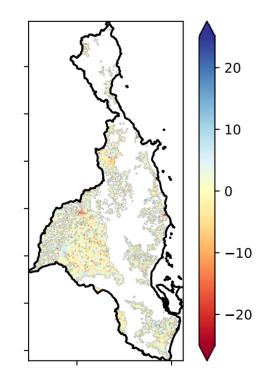




#### % Area protected from water erosion (>70%)

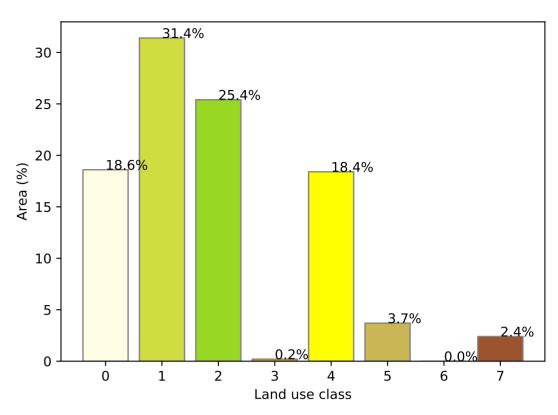


#### **Total Vegetation Cover Anomaly [%]**

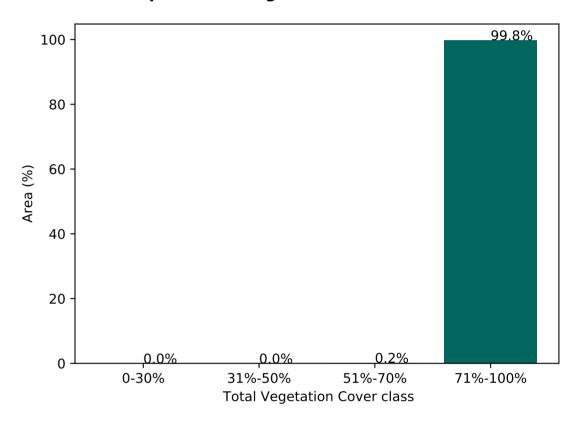


Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

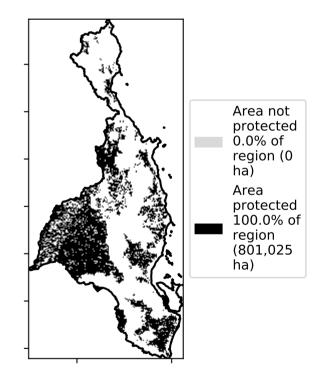
#### Proportion of each land class in area



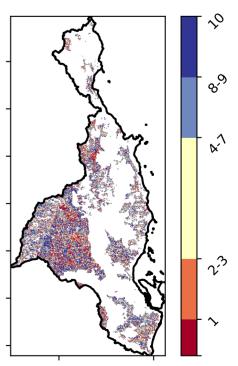
#### Proportion of vegetation cover class in area



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



#### Total Vegetation Cover Decile [%]





Anomaly show how many percetage points each

pixel is from

the mean. That is, red pixels

are about 20% lower than the mean of that

pixel. The mean

using baseline from 2001 to 2019.

is only for the month of the map



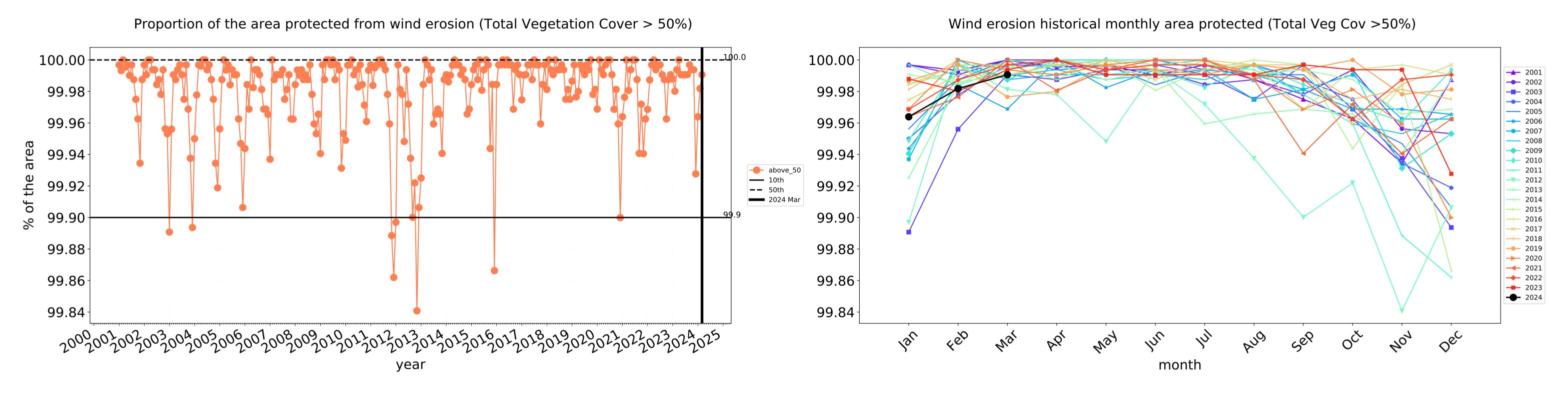


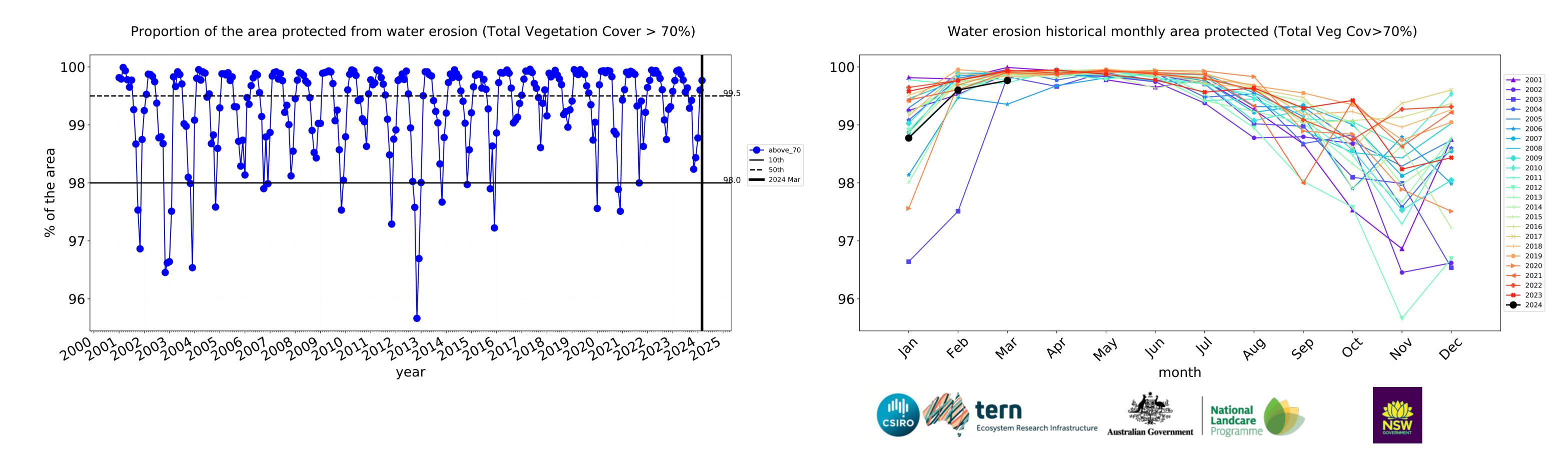


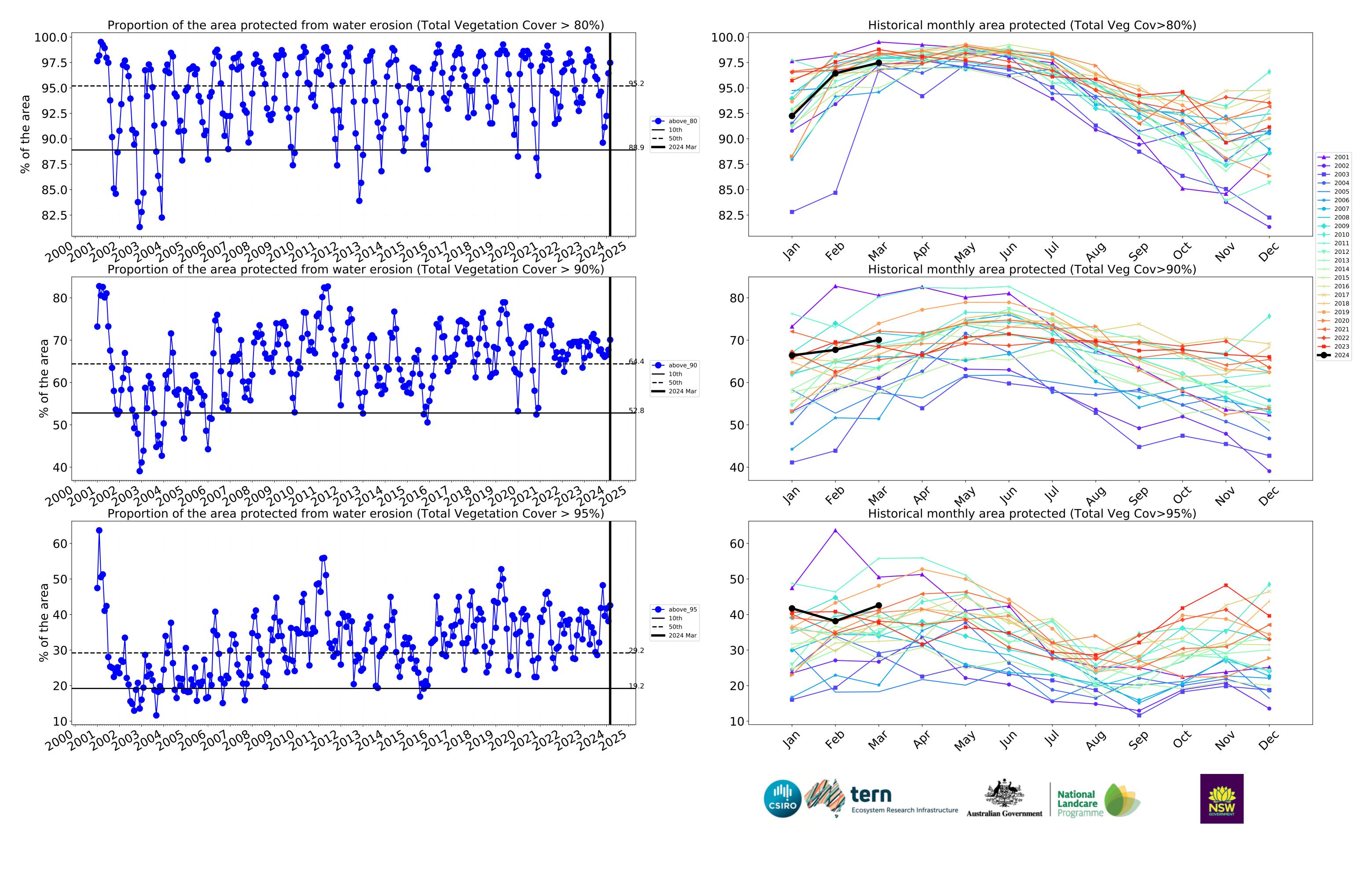




#### **Agriculture timeseries**







#### Grazing

#### **Land use and forest cover**

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

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

Anomaly show how many percetage points each

pixel is from the mean. That

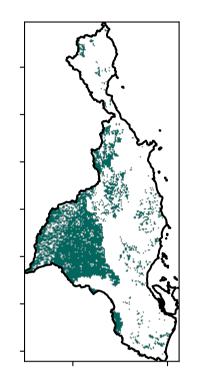
pixel. The mean

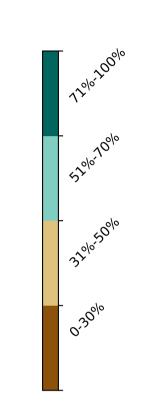
using baseline from 2001 to 2019.

is only for the month of the map

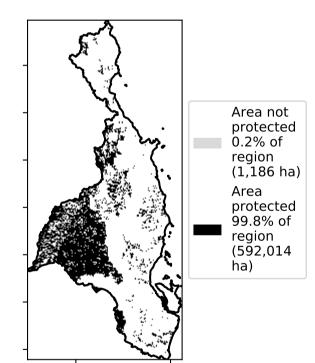
is, red pixels are about 20% lower than the mean of that

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



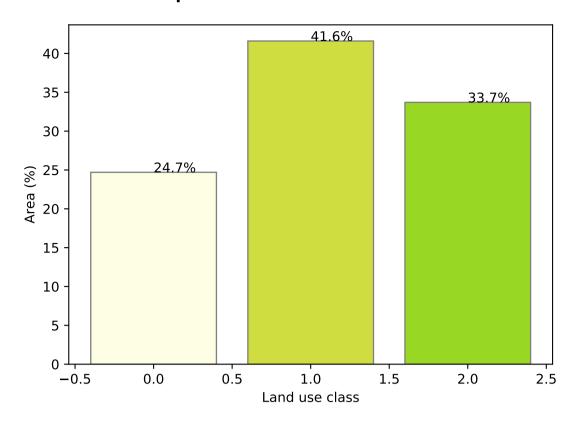


#### % Area protected from water erosion (>70%)

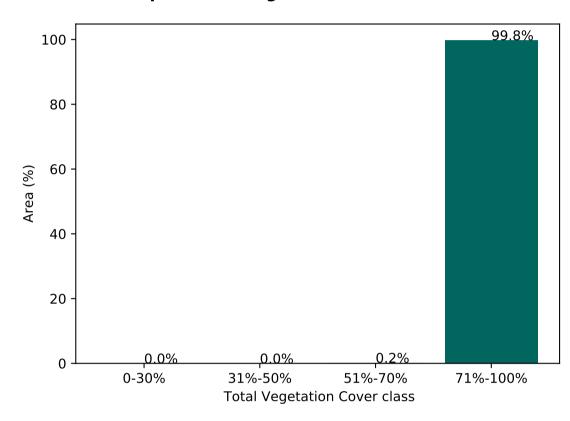


pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

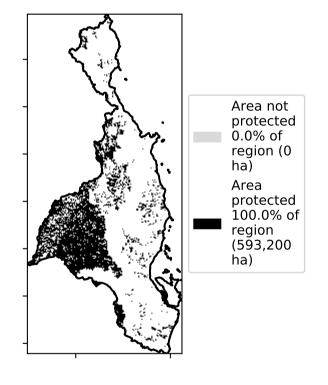
#### Proportion of each land class in area



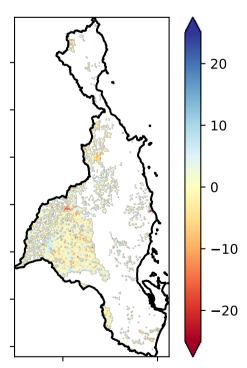
#### Proportion of vegetation cover class in area



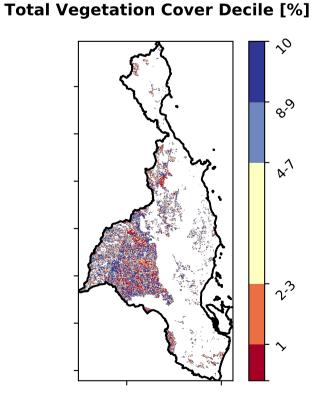
#### % Area protected from wind erosion (>50%)



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



Deciles show where the







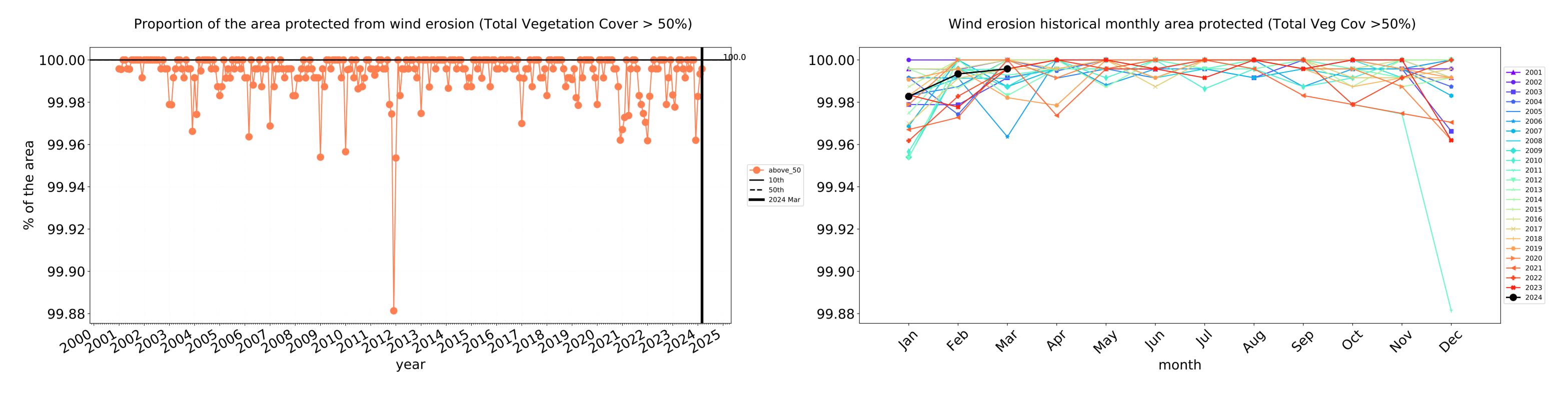


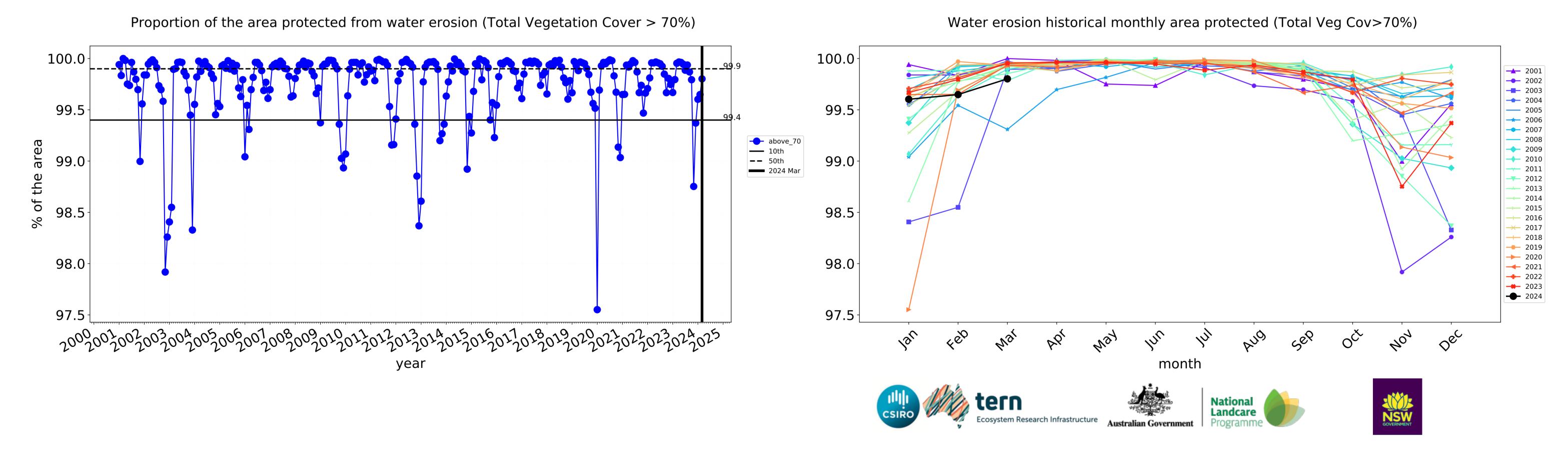


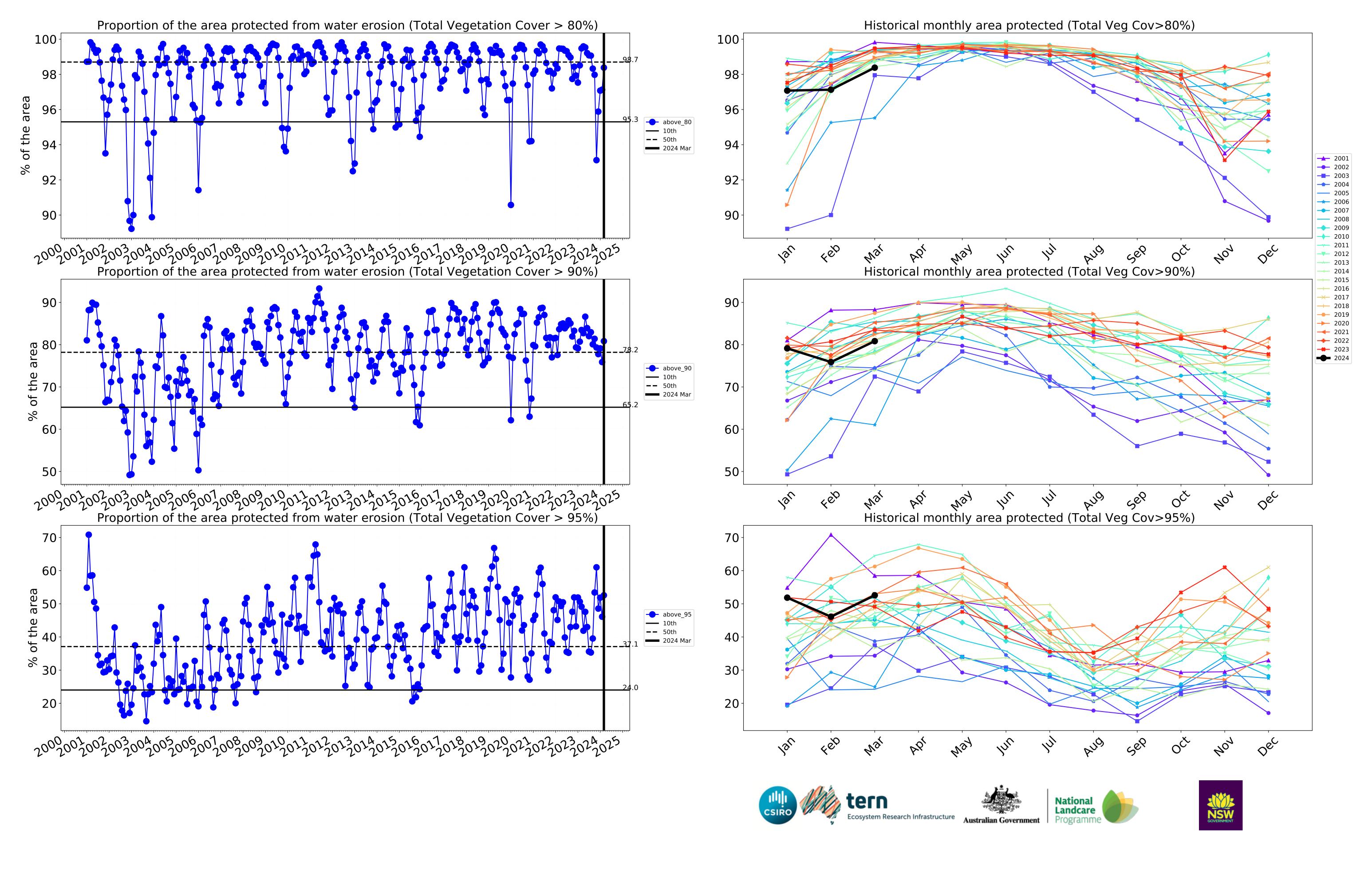




#### **Grazing timeseries**



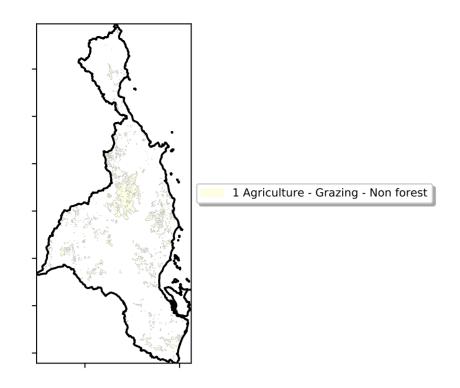




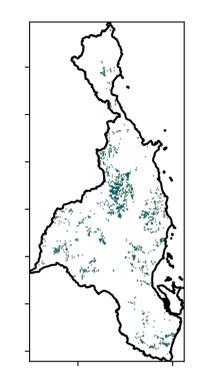
#### **Grazing non forest**

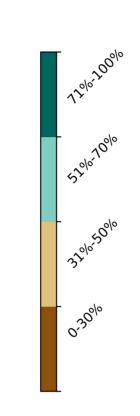
#### Land use and forest cover

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

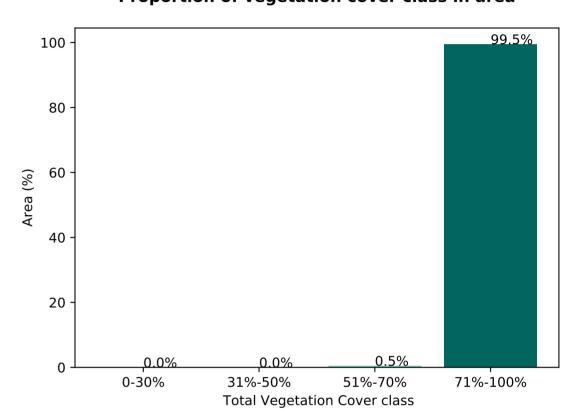


#### **Total Vegetation Cover [%]**

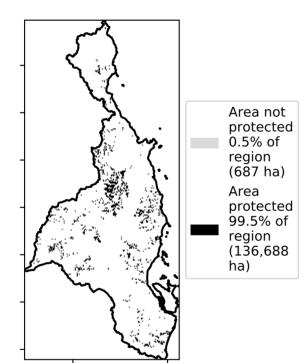




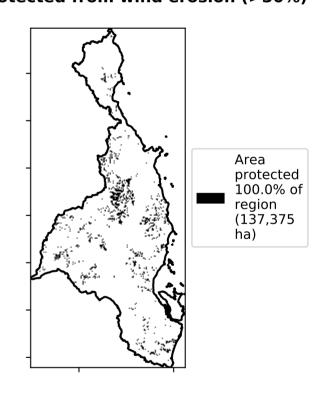
#### Proportion of vegetation cover class in area



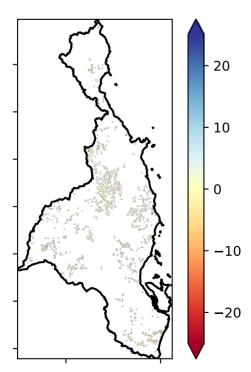
#### % Area protected from water erosion (>70%)



% Area protected from wind erosion (>50%)

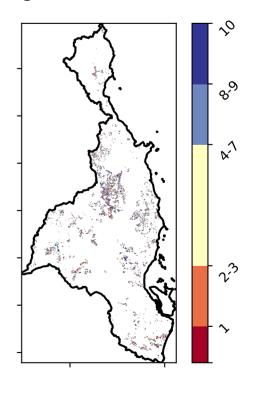


#### **Total Vegetation Cover Anomaly [%]**



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.

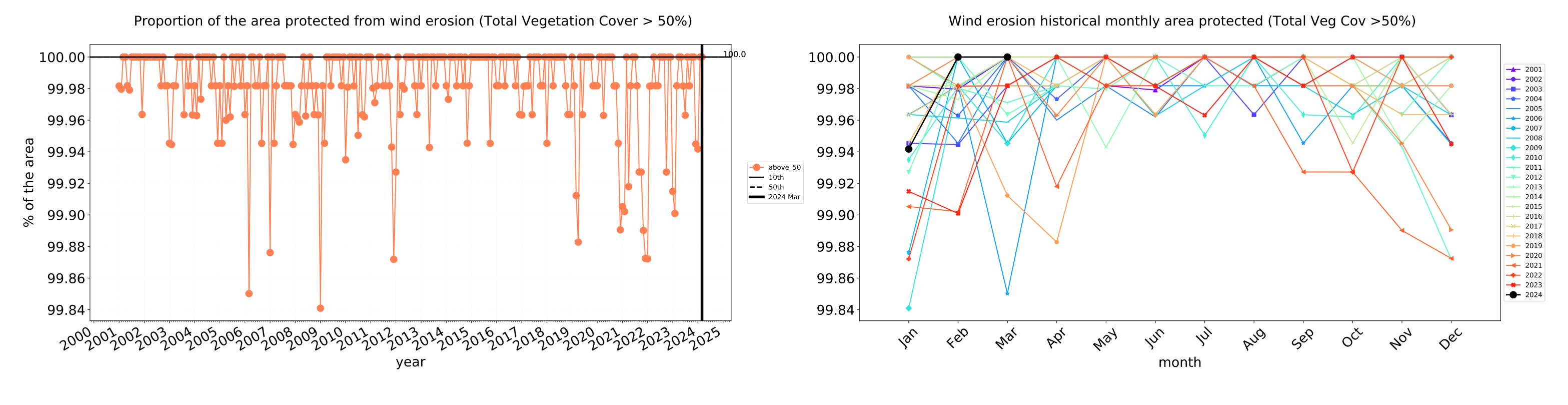


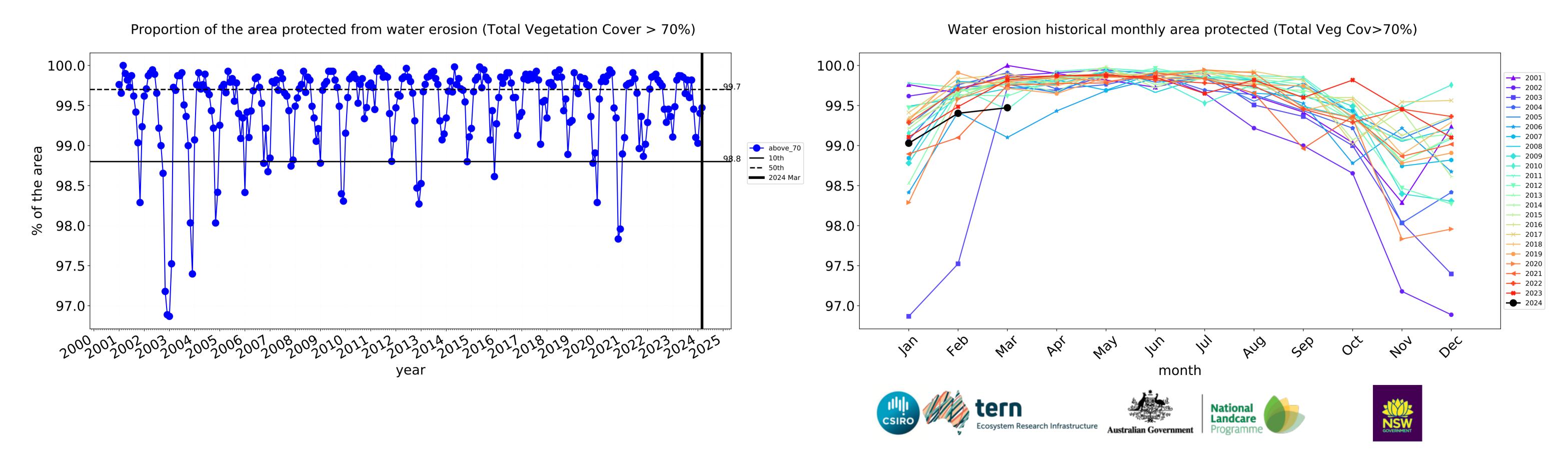


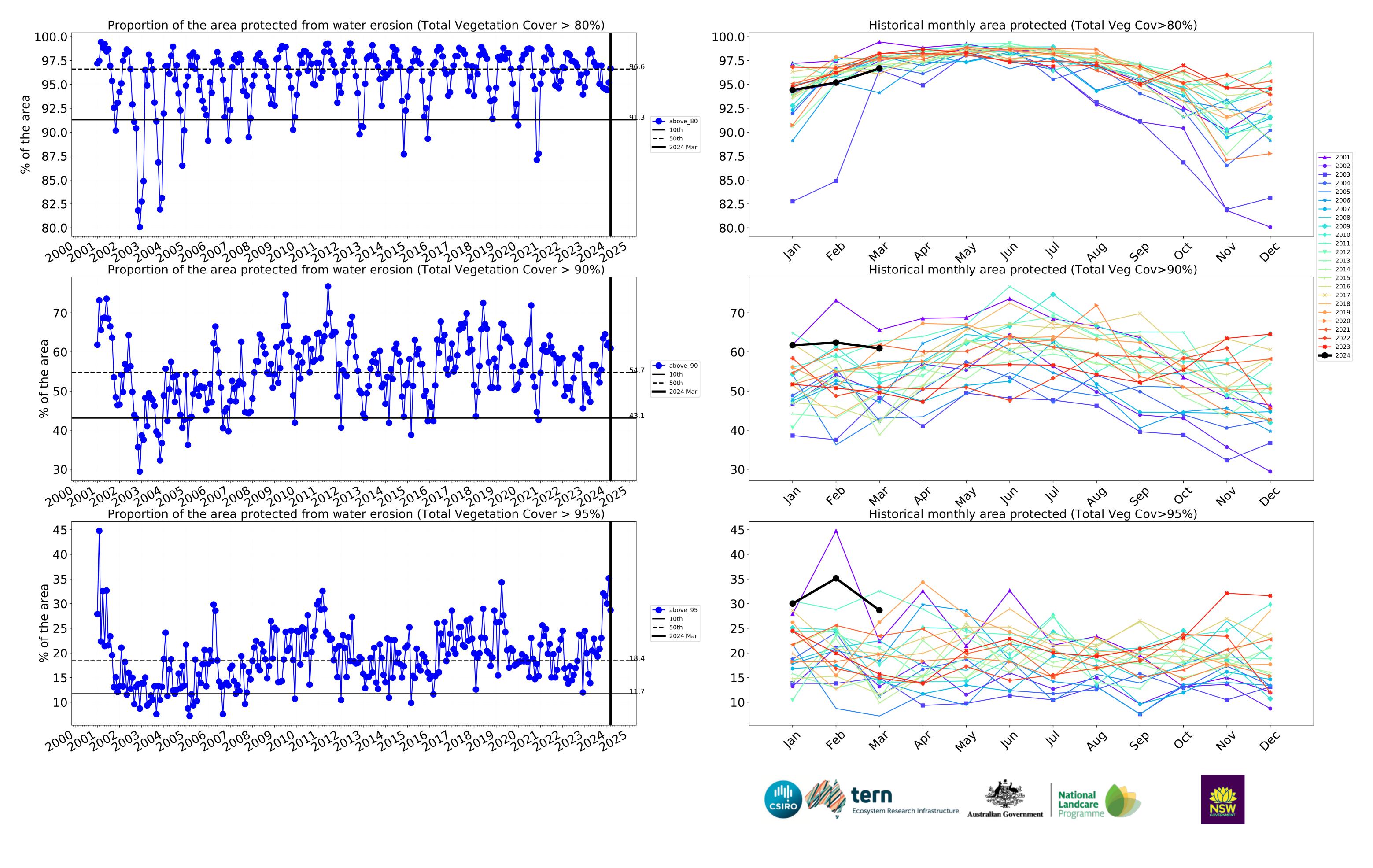




#### **Grazing non forest timeseries**







#### **Grazing Woodland forest**

#### Land use and forest cover

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

Anomaly show how many percetage points each

pixel is from the mean. That

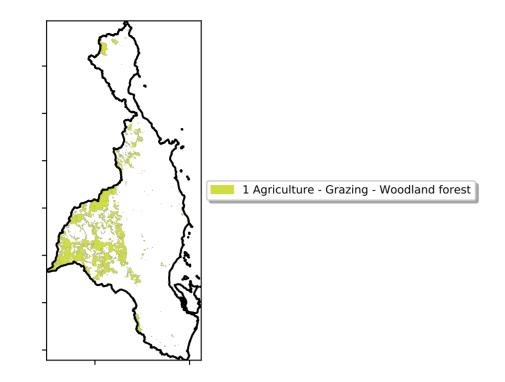
is, red pixels

are about 20% lower than the mean of that

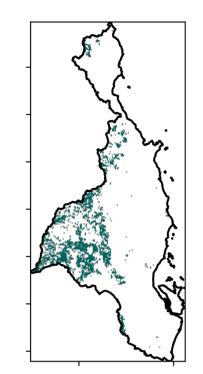
pixel. The mean

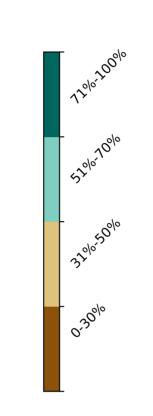
using baseline from 2001 to 2019.

is only for the month of the map

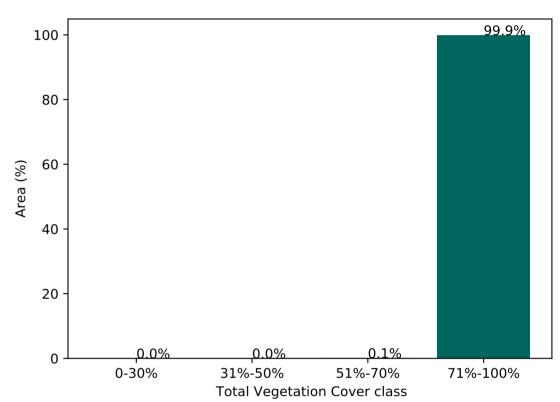


#### **Total Vegetation Cover [%]**

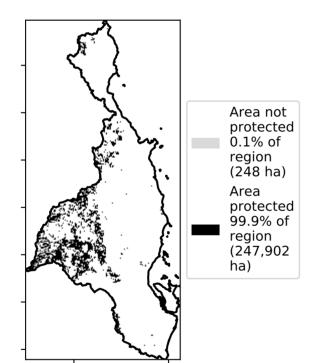




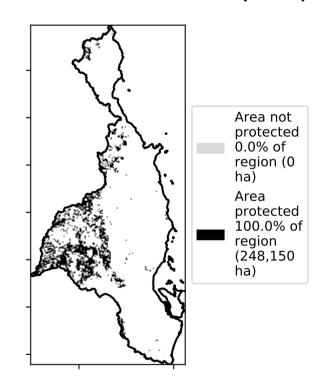
#### Proportion of vegetation cover class in area



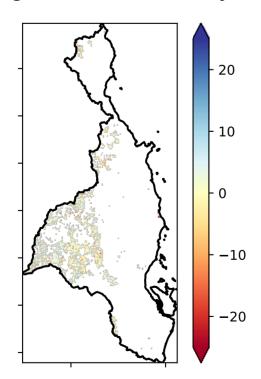
#### % Area protected from water erosion (>70%)



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

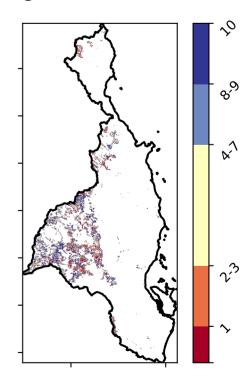


#### **Total Vegetation Cover Anomaly [%]**



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 [%]**







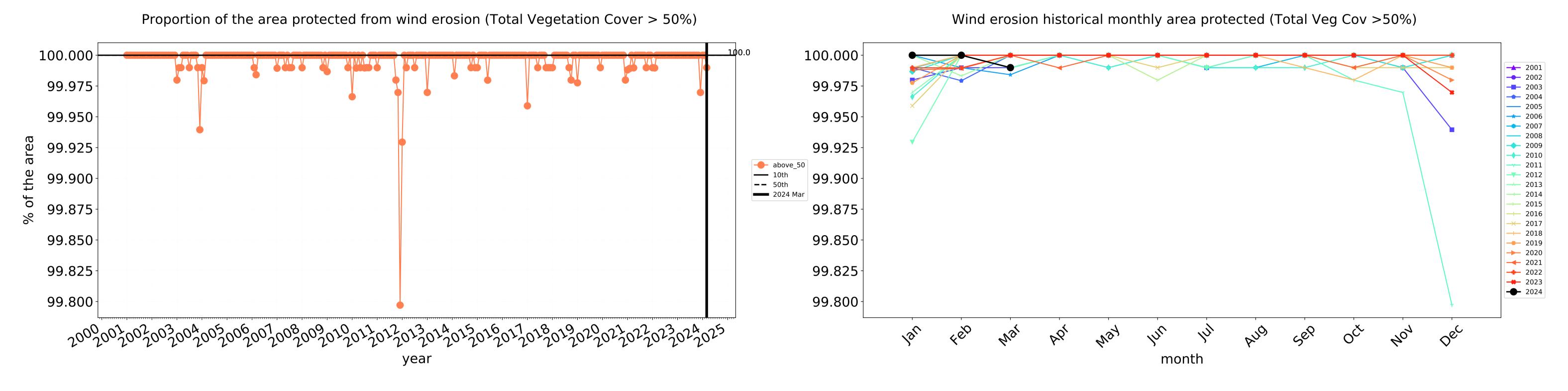


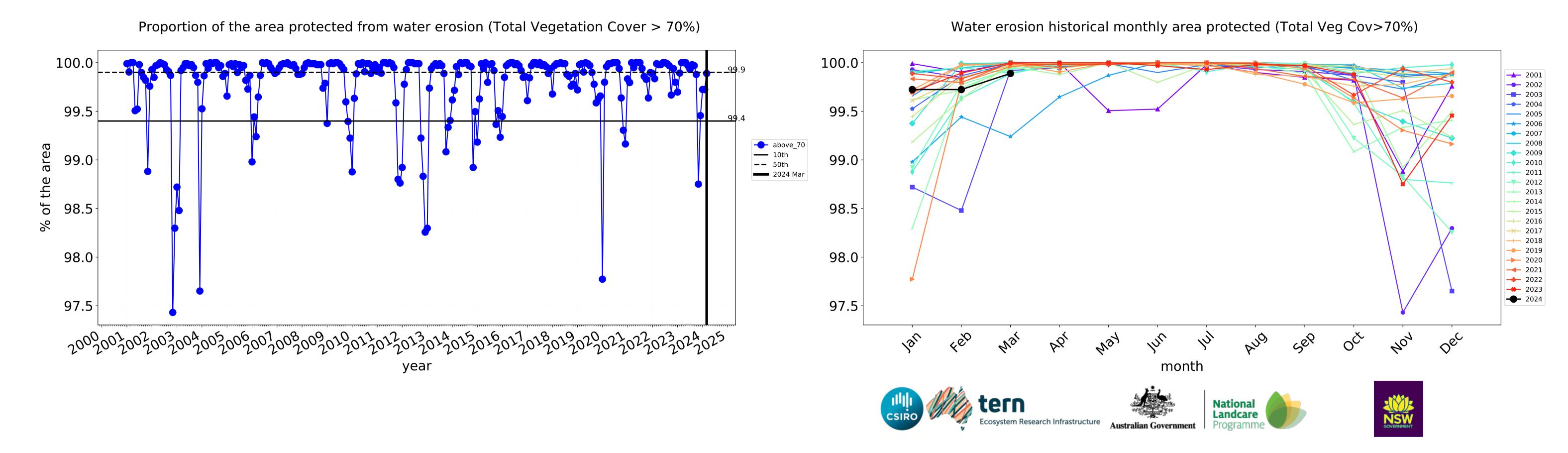


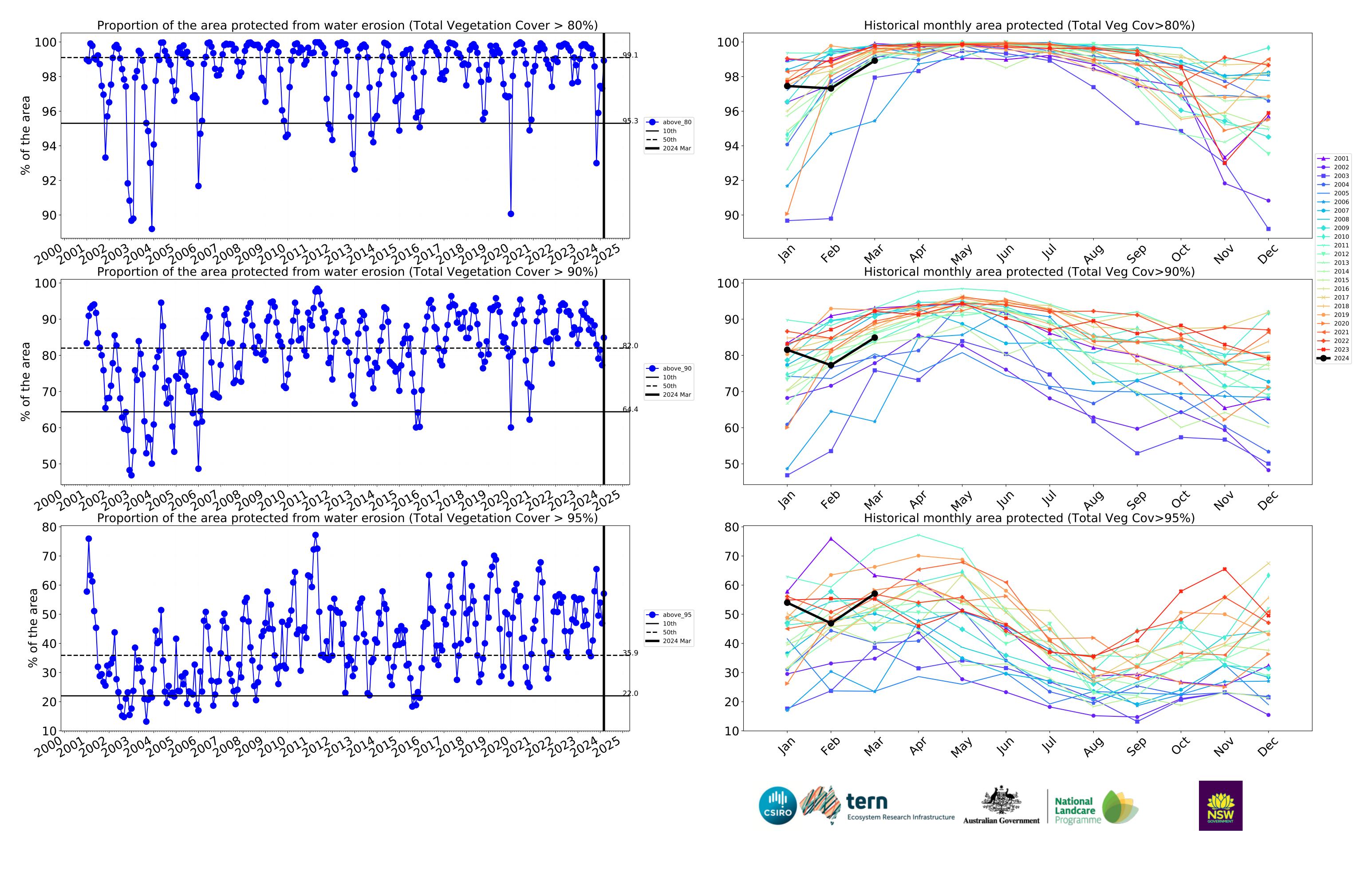




#### **Grazing Woodland forest timeseries**



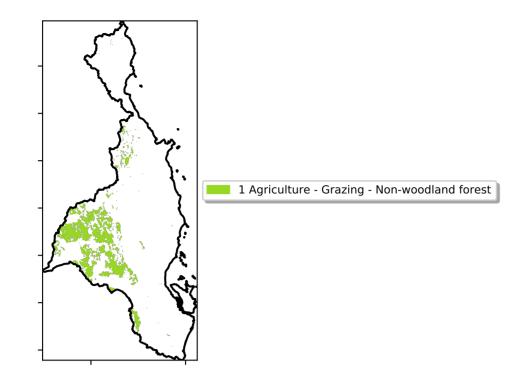




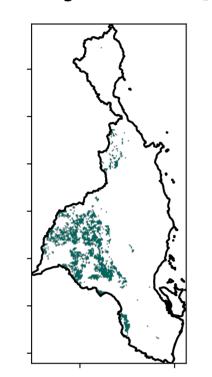
#### **Grazing - Forest (non woodland)**

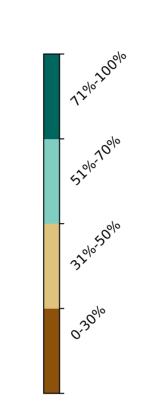
#### Land use and forest cover

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

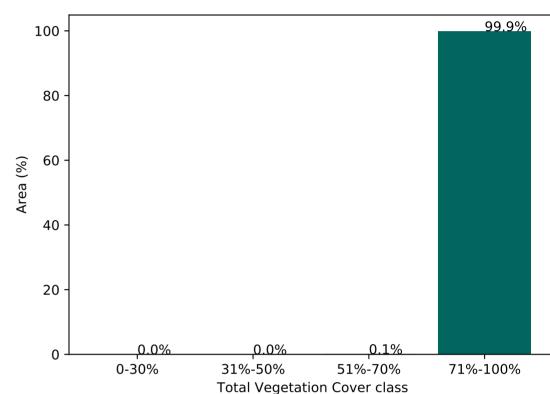


#### **Total Vegetation Cover [%]**

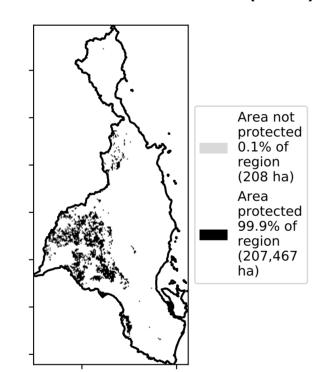




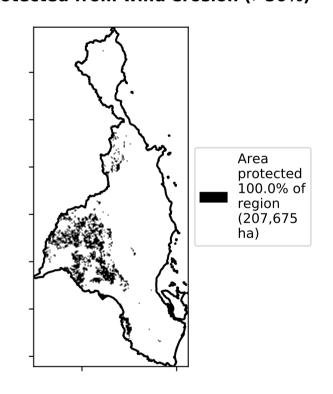
#### Proportion of vegetation cover class in area



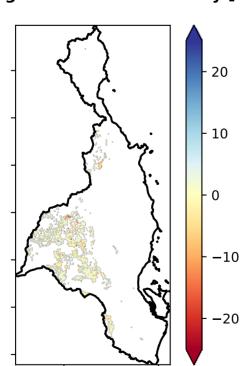
#### % Area protected from water erosion (>70%)



% Area protected from wind erosion (>50%)

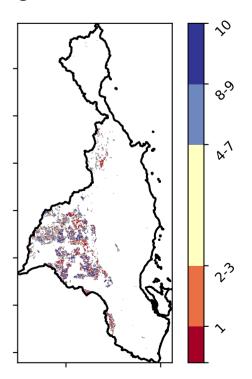


#### **Total Vegetation Cover Anomaly [%]**



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 [%]**



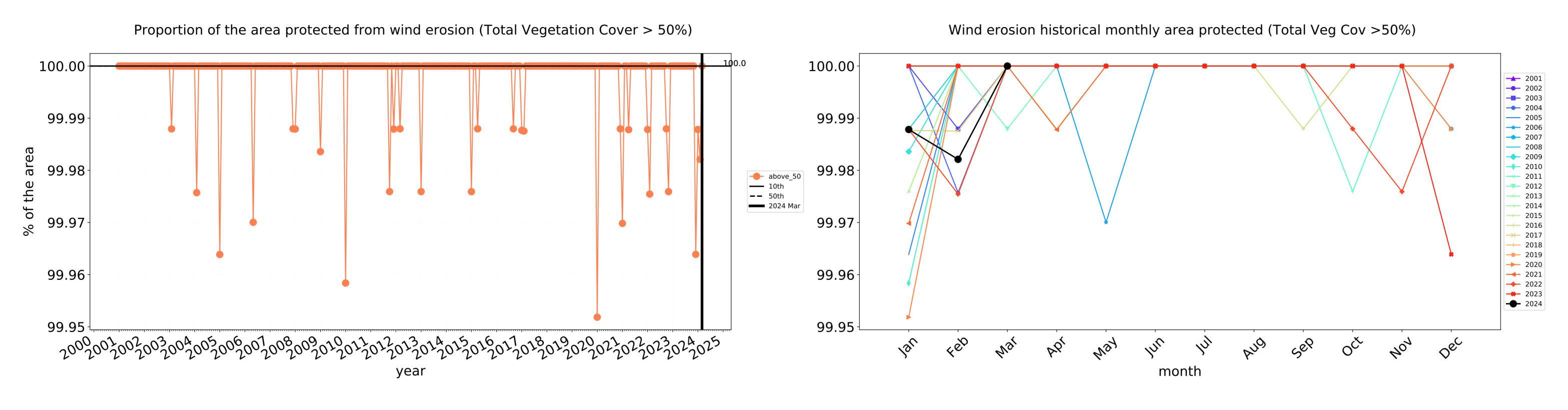
Anomaly show how many percetage points each pixel is from the mean. That is, red pixels are about 20% lower than the mean of that pixel. The mean is only for the month of the map using baseline from 2001 to 2019.

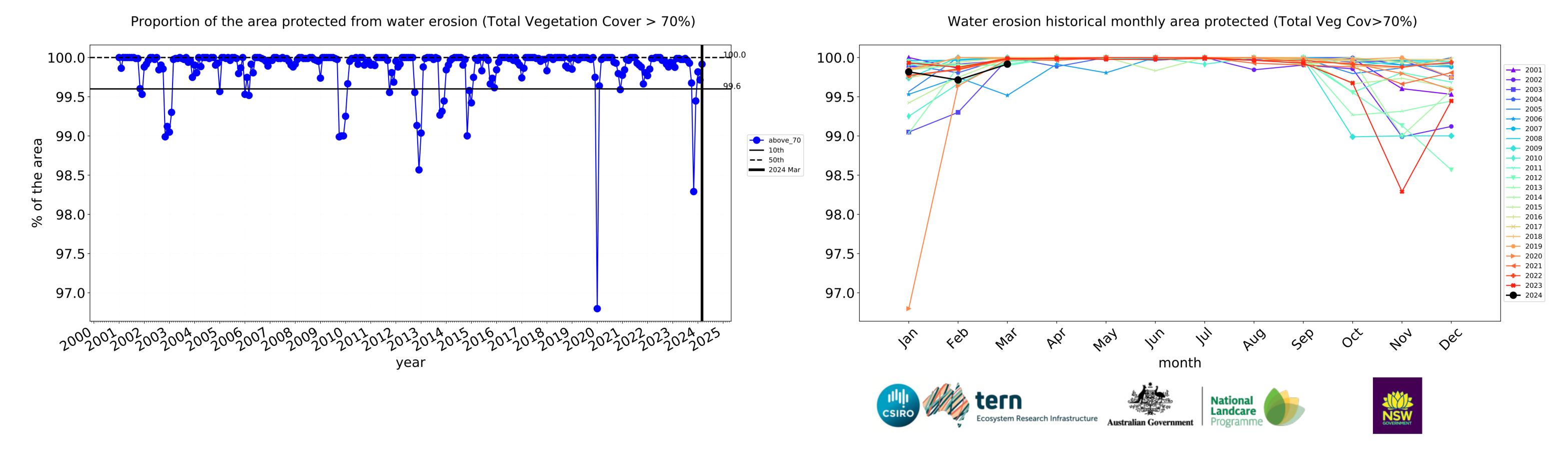


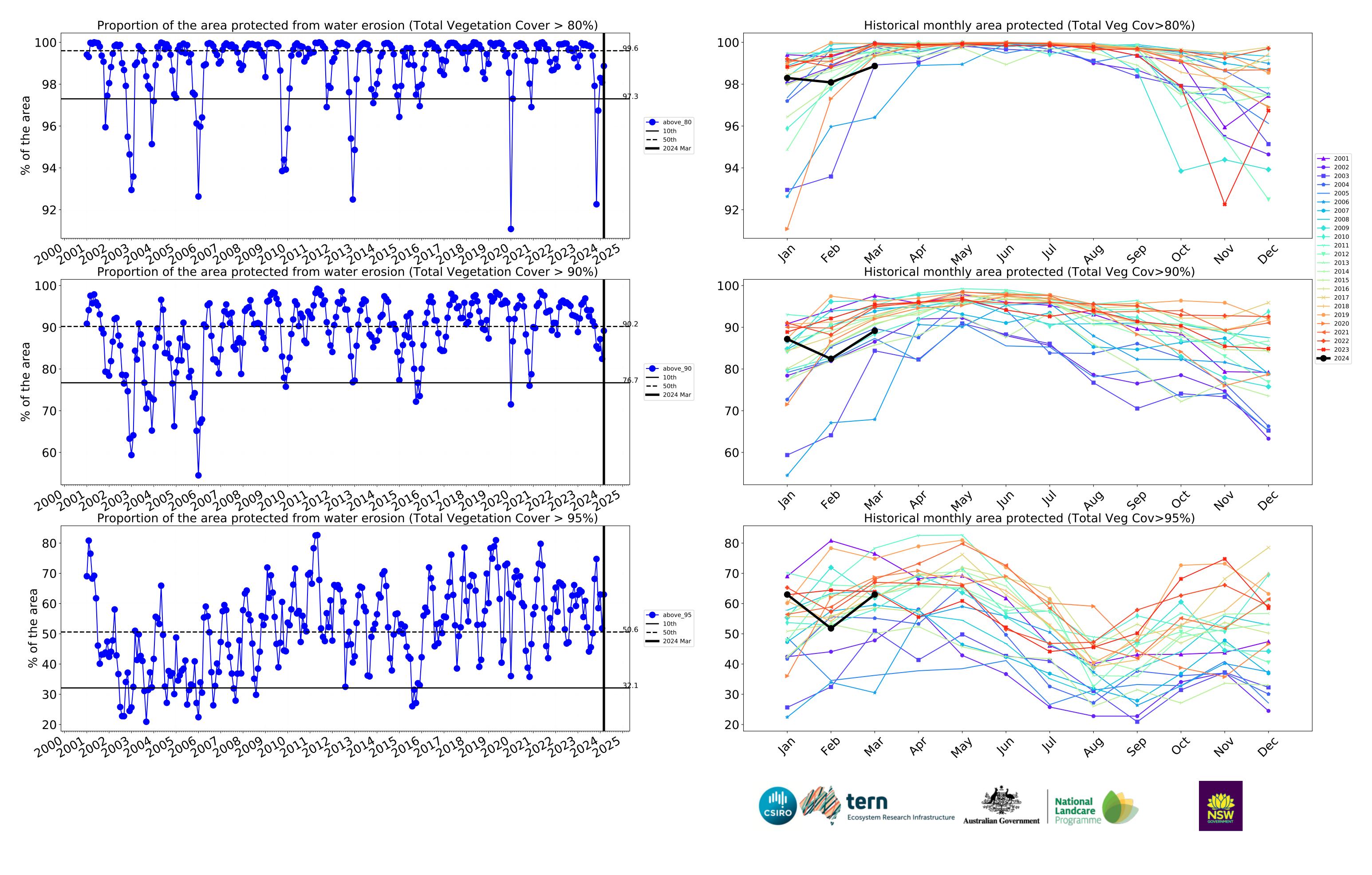












#### **Cropping**

#### Land use and forest cover

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

Anomaly show how many percetage points each

pixel is from the mean. That

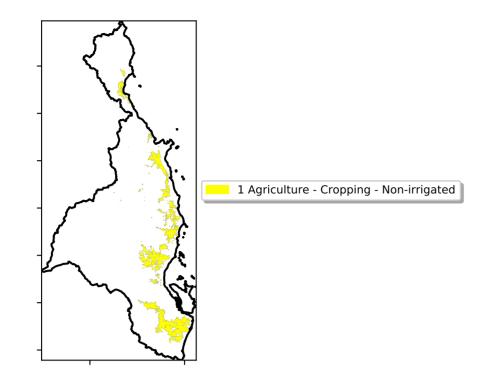
is, red pixels

are about 20% lower than the mean of that

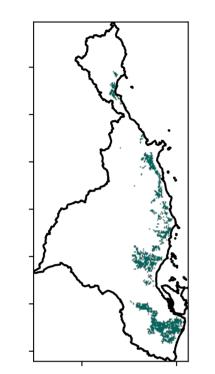
pixel. The mean

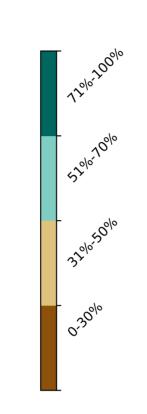
using baseline from 2001 to 2019.

is only for the month of the map

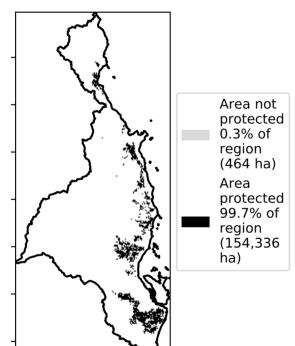


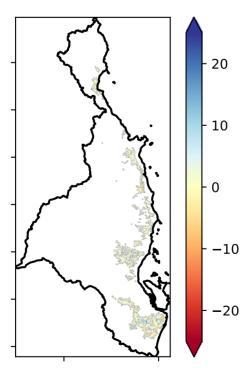
#### **Total Vegetation Cover [%]**





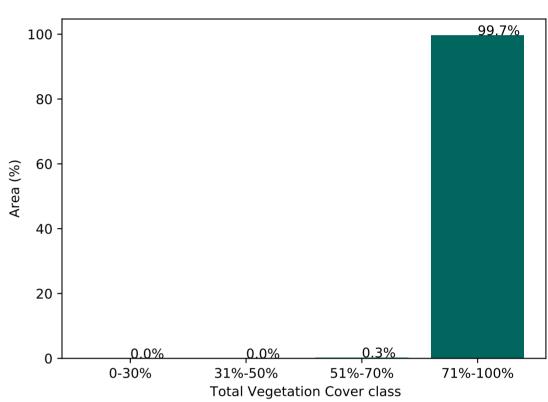
#### % Area protected from water erosion (>70%)



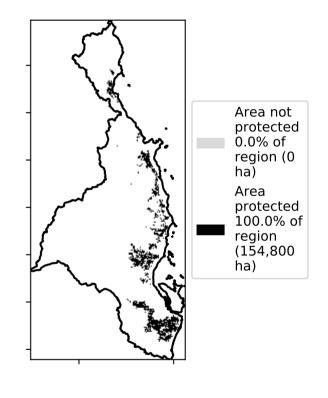


Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

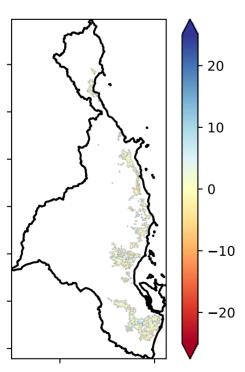
#### Proportion of vegetation cover class in area

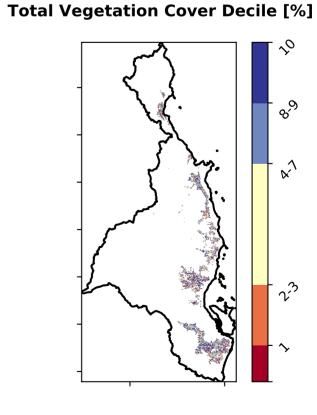


#### % Area protected from wind erosion (>50%)



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









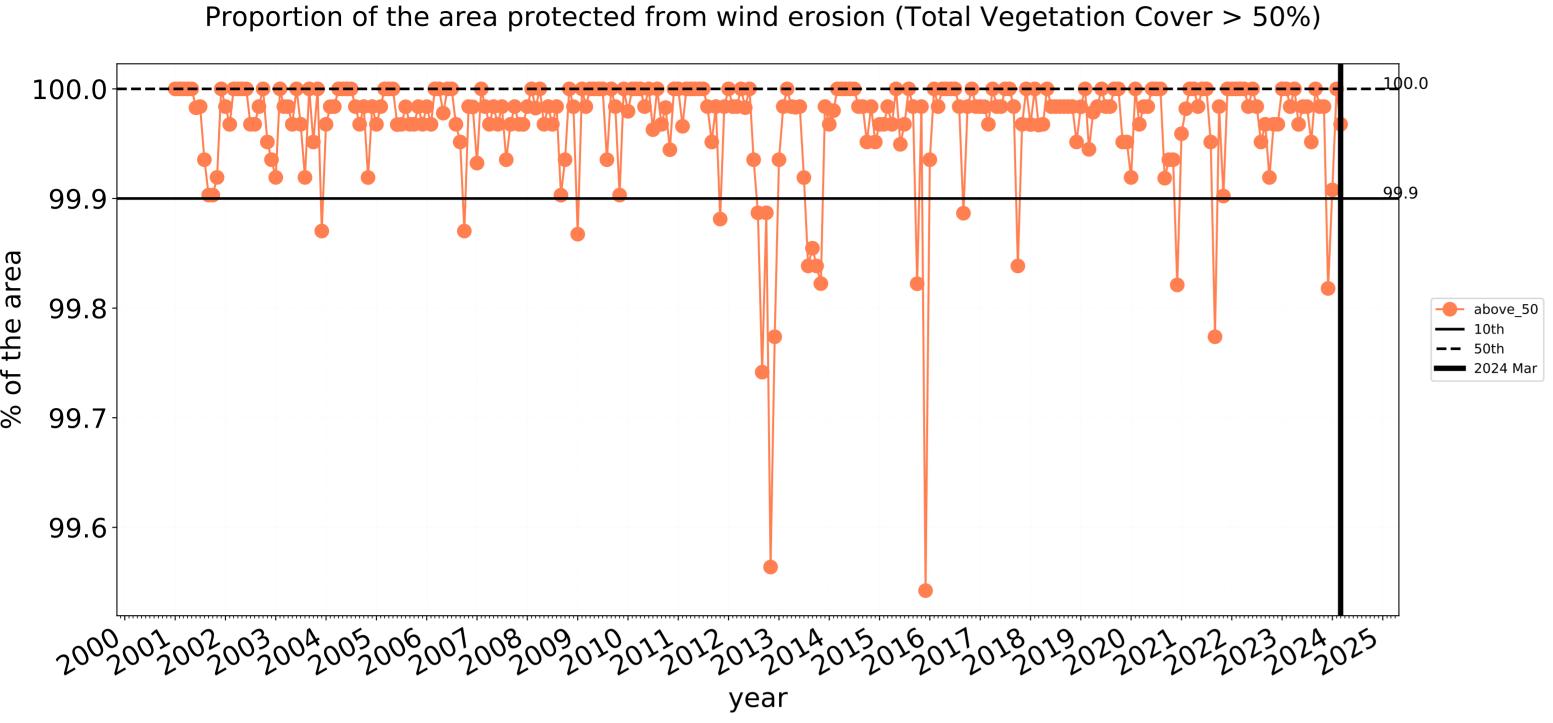


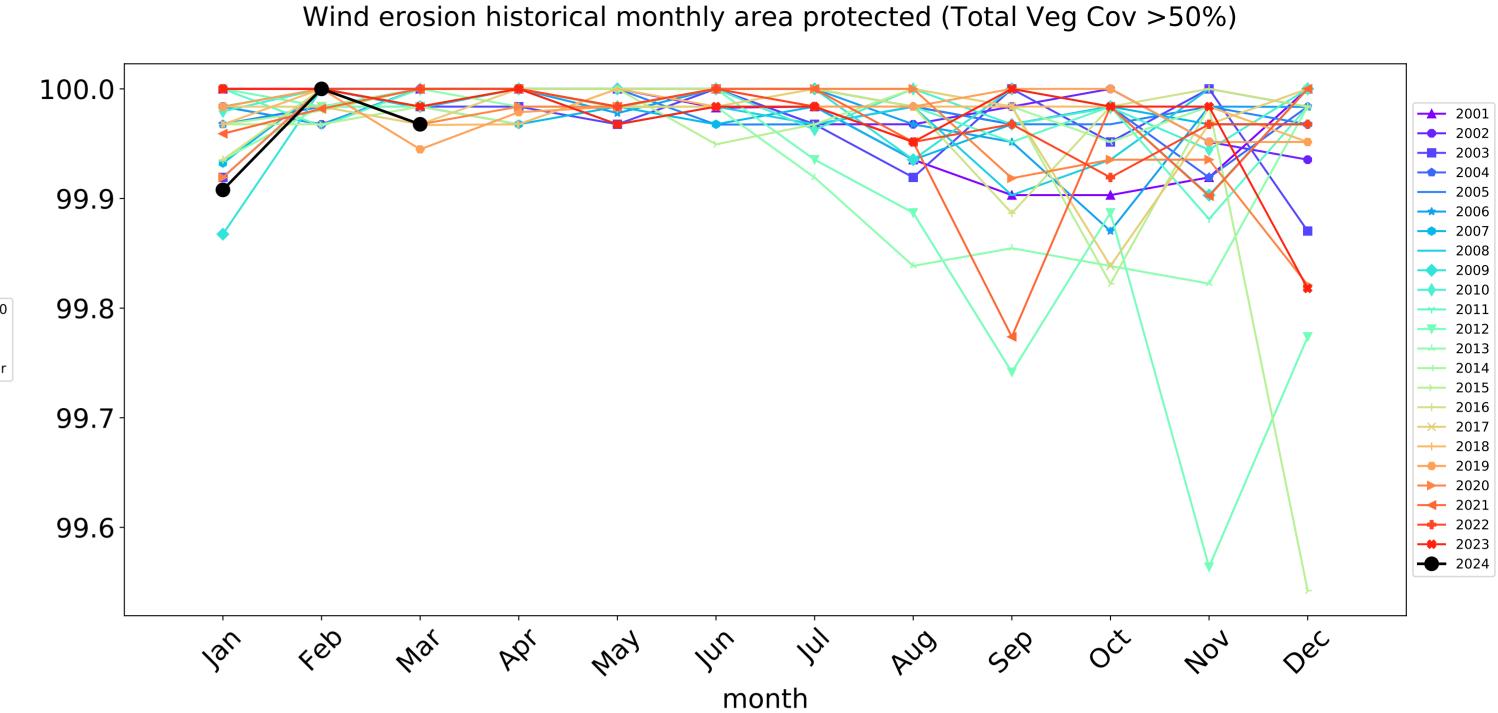


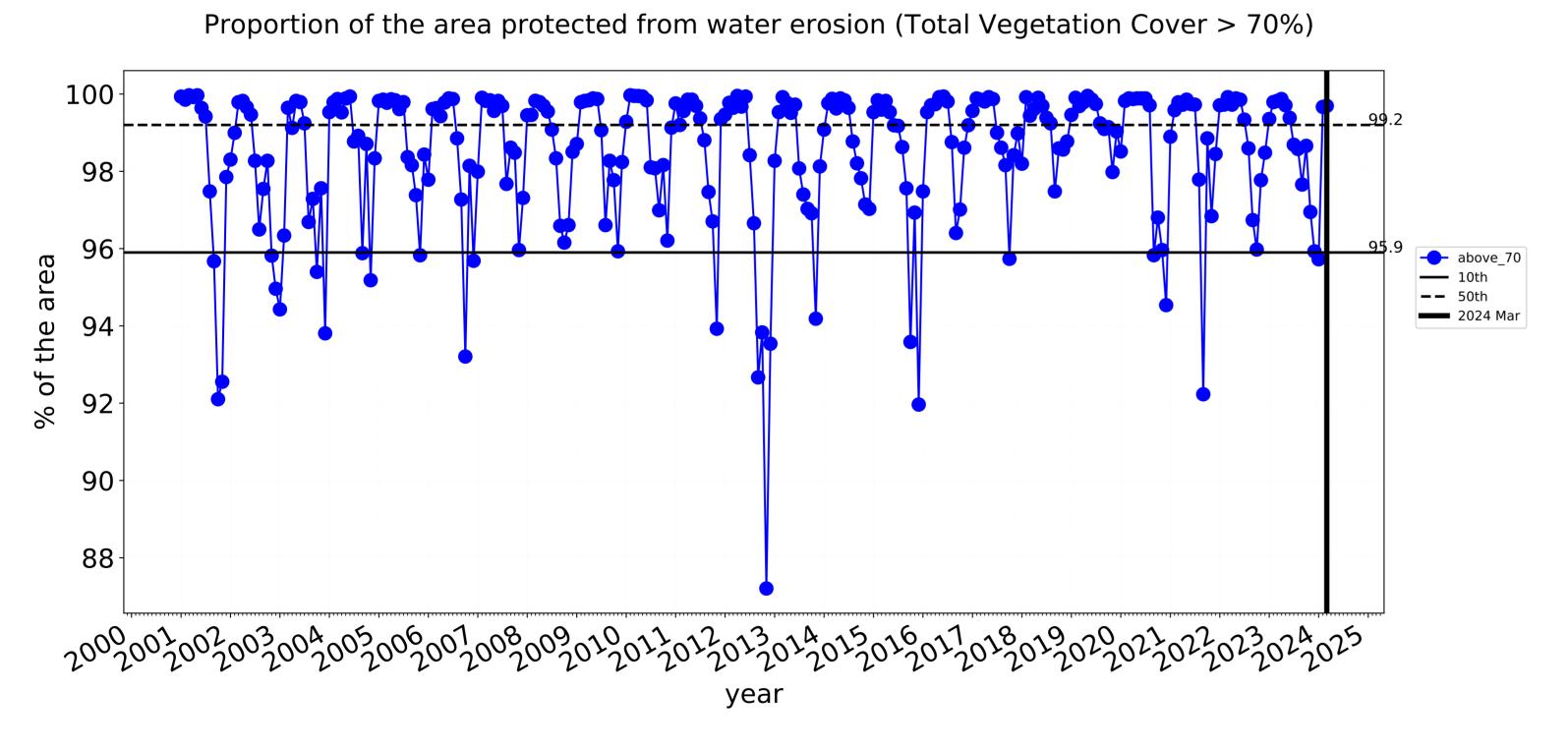


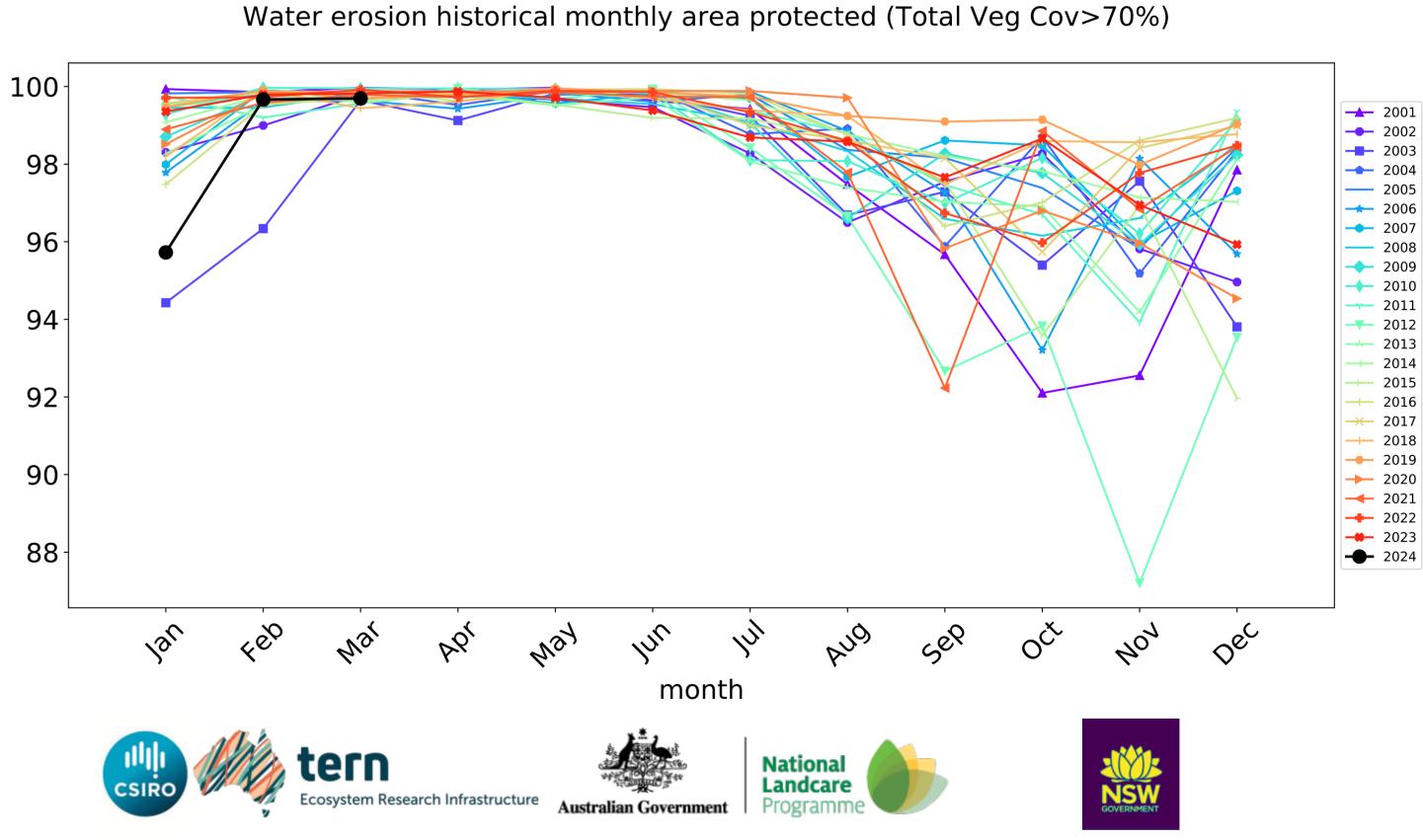


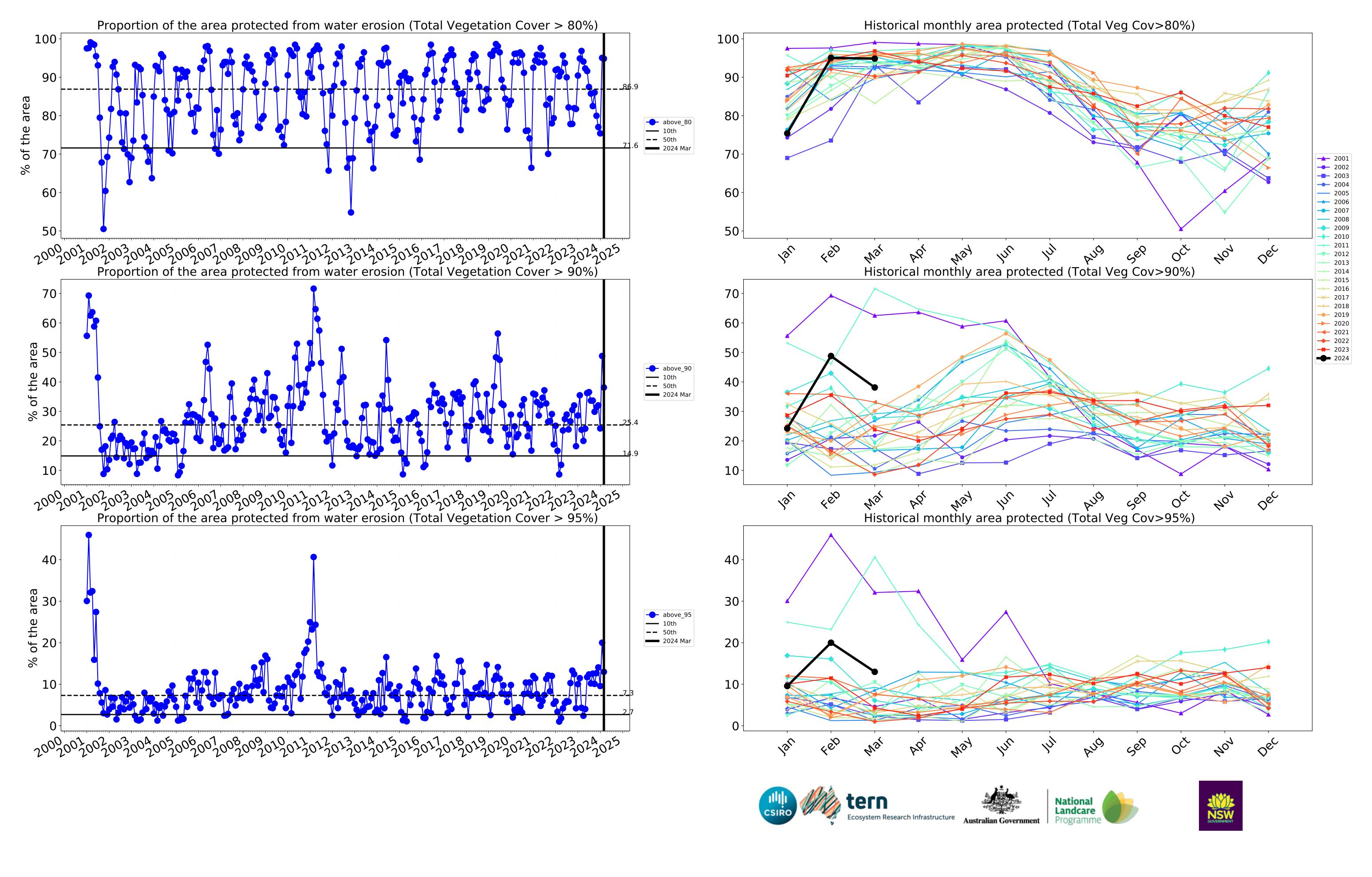
#### **Cropping timeseries**











#### **Irrigation**

#### Land use and forest cover

# ale Forests (18) Ile Land ests (18) Agriculture - Grazing - Irrigated 2 Agriculture - Cropping - Irrigated 3 Agriculture - Horticulture - Irrigated

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

Anomaly show how many percetage points each

pixel is from the mean. That

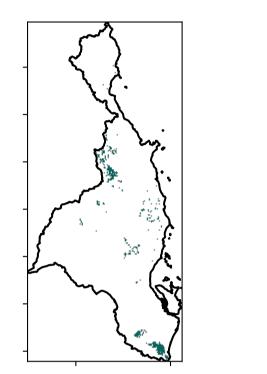
pixel. The mean

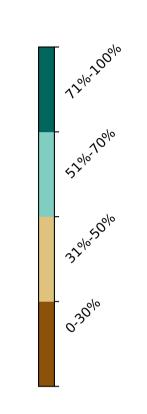
using baseline from 2001 to 2019.

is only for the month of the map

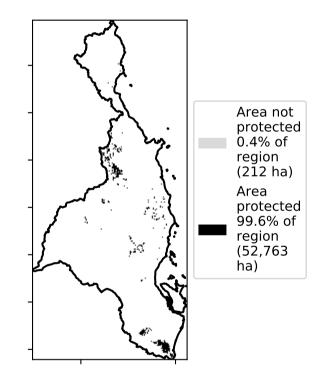
is, red pixels are about 20% lower than the mean of that

#### Total Vegetation Cover [%]

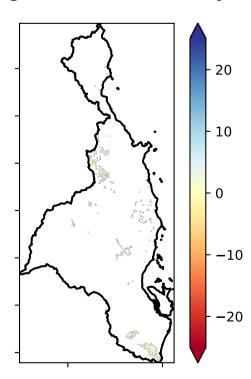




#### % Area protected from water erosion (>70%)

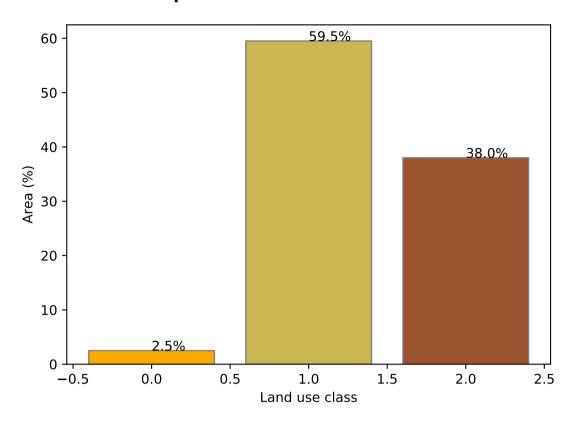


#### **Total Vegetation Cover Anomaly [%]**

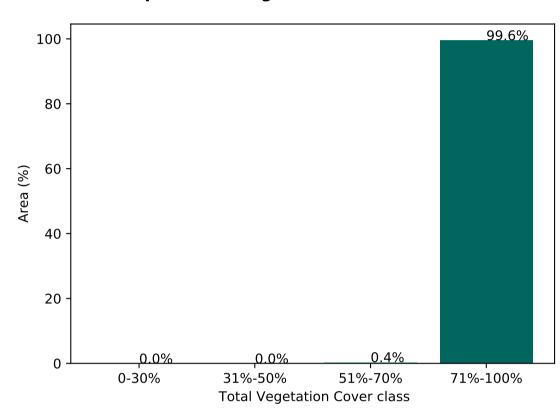


Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

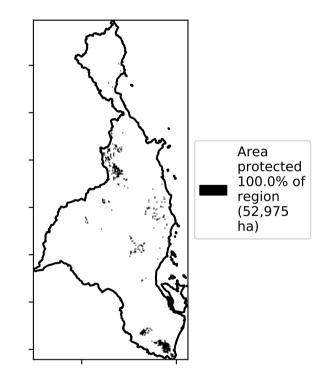
#### Proportion of each land class in area

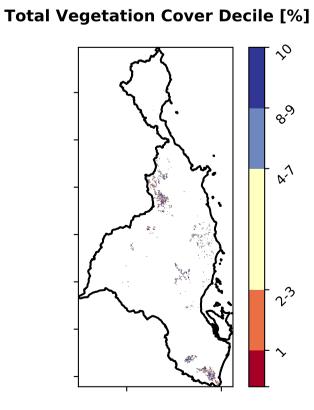


#### Proportion of vegetation cover class in area



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









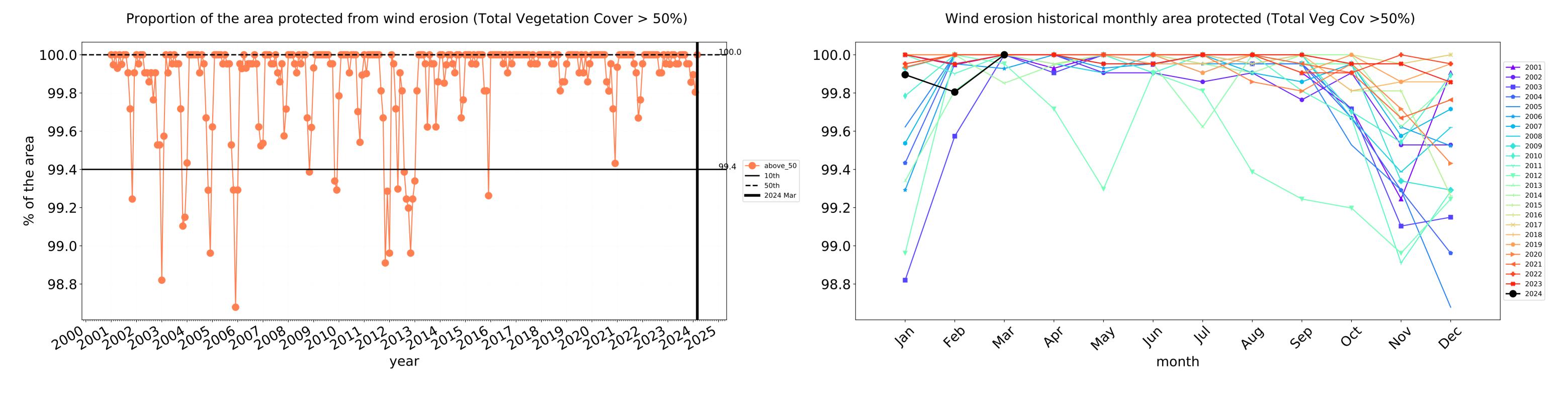


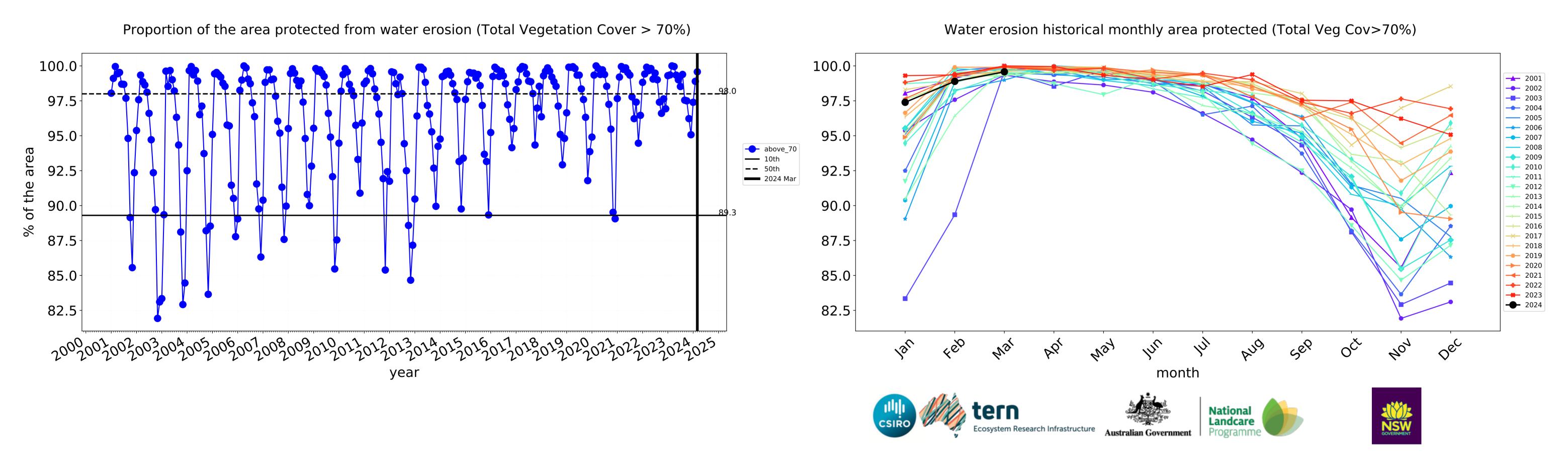


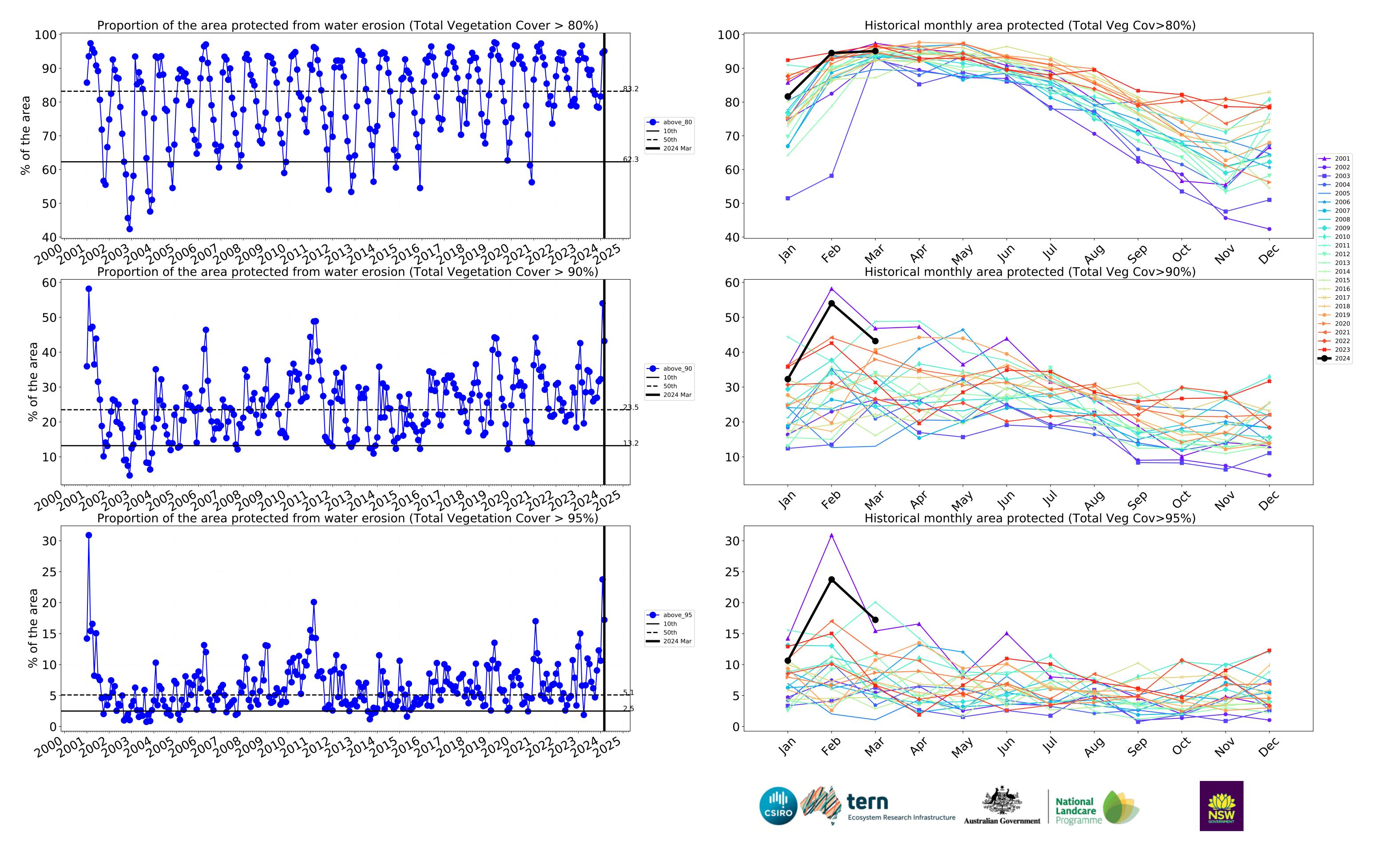




#### Irrigation timeseries



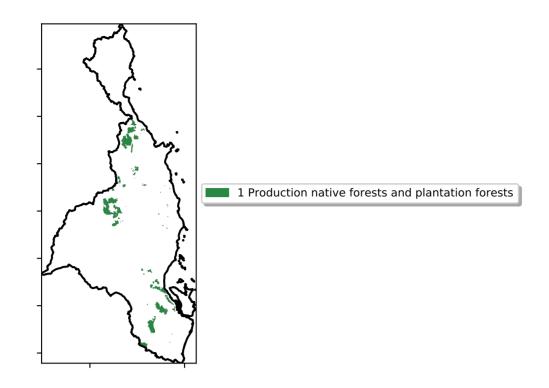




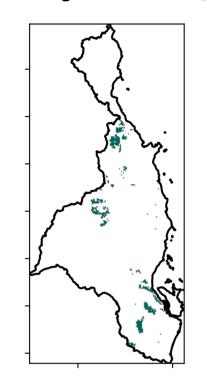
#### **Production native forests and plantation forests**

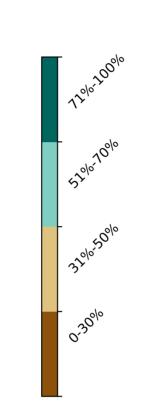
#### Land use and forest cover

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

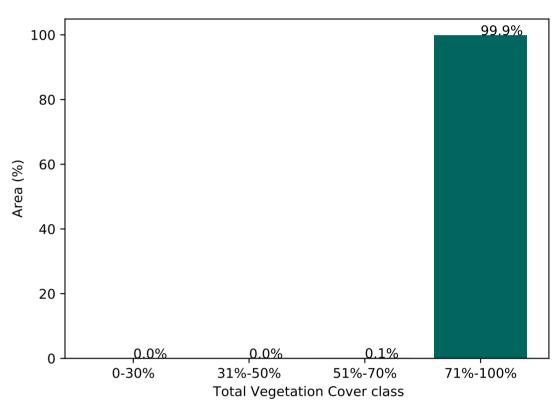


#### **Total Vegetation Cover [%]**

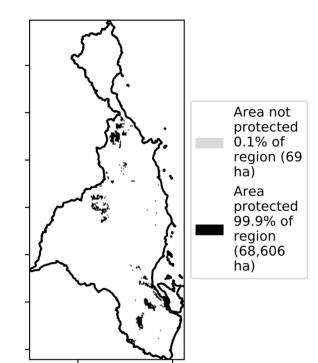




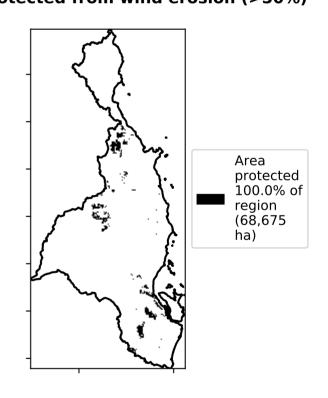
#### Proportion of vegetation cover class in area



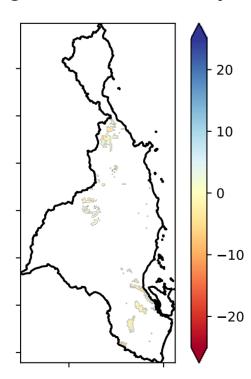
#### % Area protected from water erosion (>70%)



% Area protected from wind erosion (>50%)

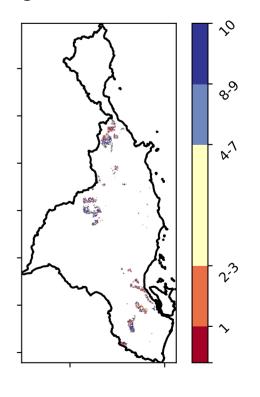


#### **Total Vegetation Cover Anomaly [%]**



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

#### Total Vegetation Cover Decile [%]



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

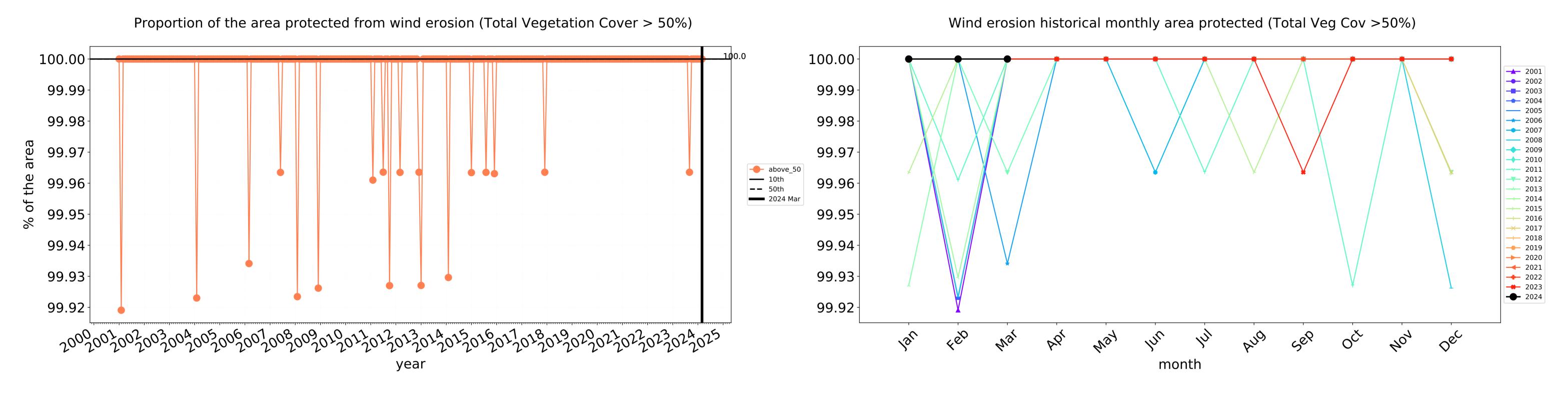


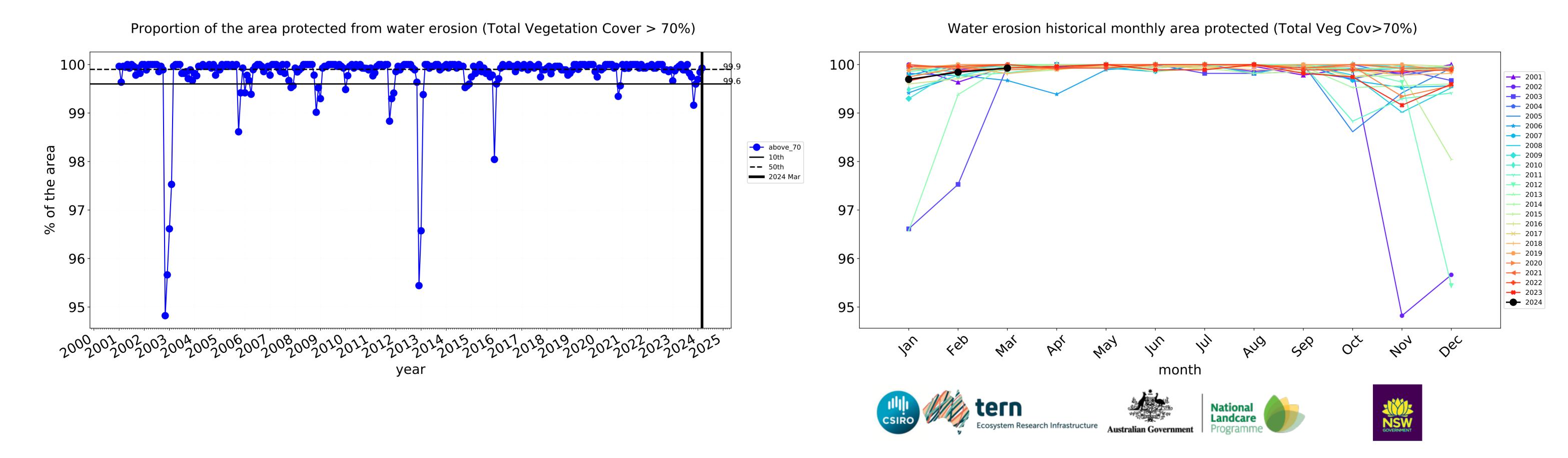


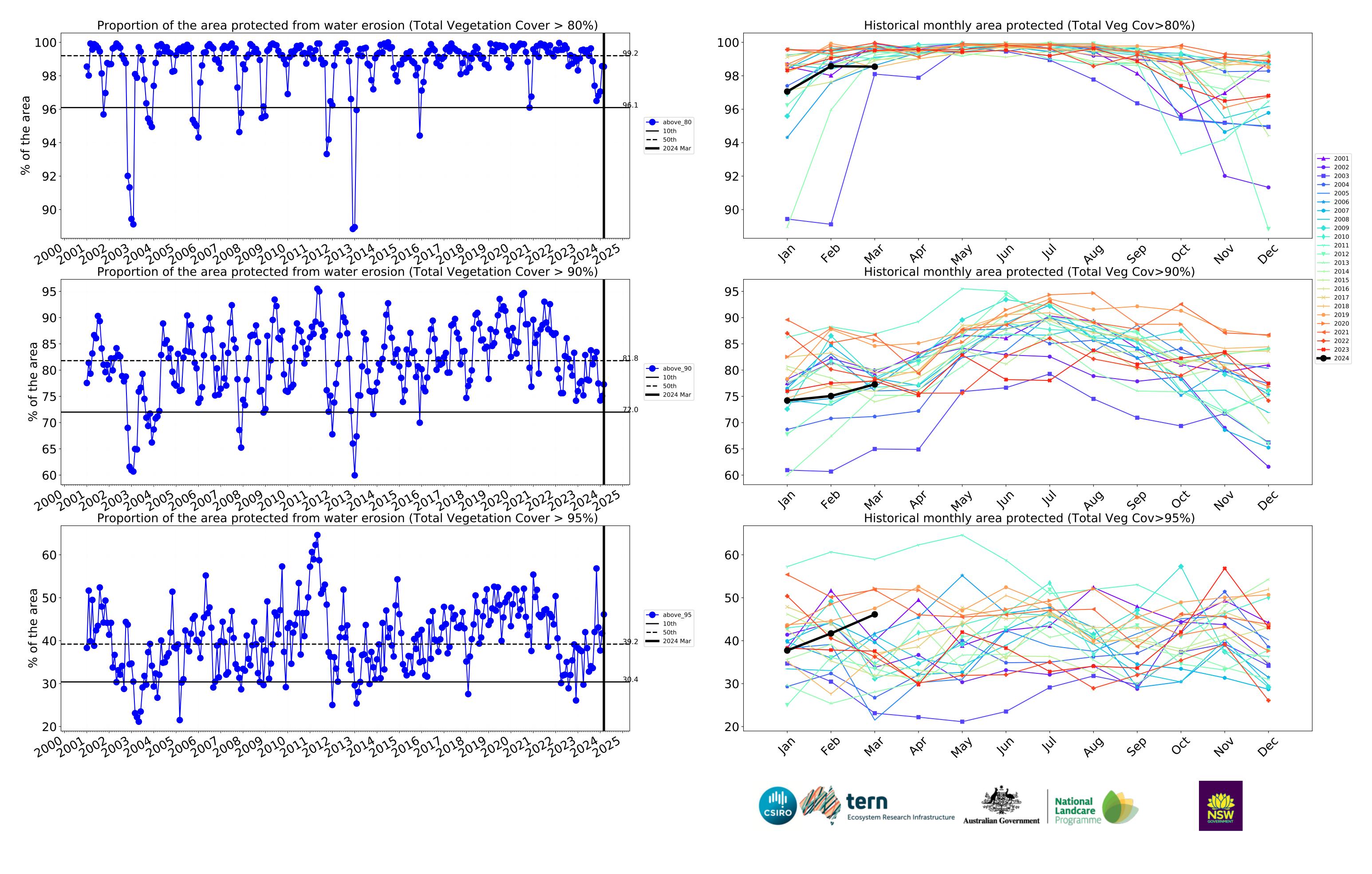




#### **Production native forests and plantation forests timeseries**







## Wet Tropics (1,860,825 ha and no data 363,419 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	1,860,825	100.0% 1,860,250	99.9% 1,858,625	99.2% 1,846,700	96.7% 1,800,075	72.5% 1,348,400	40.8% 760,075
Conservation and natural environments	889,500	100.0% 889,225	99.9% 888,450	99.4% 884,075	97.9% 870,550	77.4% 688,500	41.0% 364,800
Conservation and natural environments Woodland forest	122,150	100.0% 122,100	99.9% 122,075	99.8% 121,875	98.9% 120,750	78.9% 96,325	41.3% 50,400
Conservation and natural environments Forest (non woodland)	757,525	100.0% 757,325	99.9% 756,625	99.3% 752,600	97.8% 741,000	77.4% 586,475	41.1% 311,050
Agriculture	801,025	100.0% 801,025	100.0% 800,950	99.8% 799,150	97.5% 780,825	70.1% 561,425	42.6% 341,075
Grazing	593,200	100.0% 593,200	100.0% 593,175	99.8% 592,025	98.4% 583,600	80.8% 479,525	52.6% 311,850
Grazing non forest	137,375	100.0% 137,375	100.0% 137,375	99.5% 136,650	96.7% 132,800	60.9% 83,675	28.7% 39,375
Grazing Woodland forest	248,150	100.0% 248,150	100.0% 248,125	99.9% 247,875	98.9% 245,475	84.9% 210,700	57.1% 141,650
Grazing - Forest (non woodland)	207,675	100.0% 207,675	100.0% 207,675	99.9% 207,500	98.9% 205,325	89.2% 185,150	63.0% 130,825
Cropping	154,800	100.0% 154,800	100.0% 154,750	99.7% 154,325	94.8% 146,825	38.1% 59,000	13.0% 20,100
Irrigation	52,975	100.0% 52,975	100.0% 52,975	99.6% 52,750	95.1% 50,375	43.2% 22,875	17.2% 9,125
Production native forests and plantation forests	68,675	100.0% 68,675	100.0% 68,675	99.9% 68,625	98.5% 67,675	77.3% 53,075	46.1% 31,675







