# Total vegetation cover soil protection Region:LGA Gladstone (R) QLD

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

Land use forest cover:

Date: January 2021

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.

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:

Total vegetation Cover:

- 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 Jan 2021**

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

of Australia (2018)

Derived from

pixel is from

is, red pixels are about 20% lower than the

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

using baseline from 2001 to

2019.

the mean. That

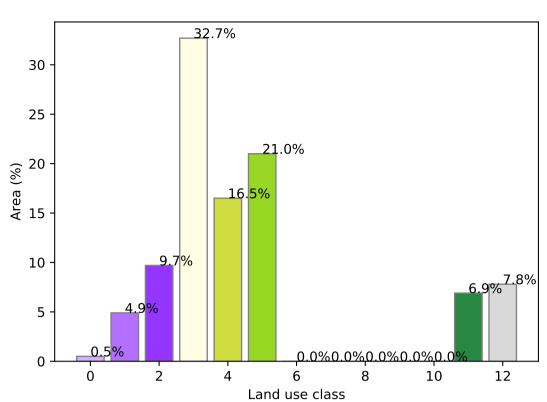
Use of Australia

(2018) and Forests

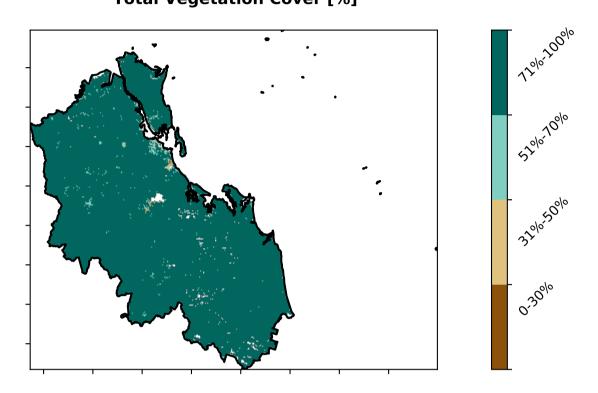
of Australia (2018)

#### Legend with land class forest cover and number, i.e. Forests is 12 1 Conservation and natural environments - Non-forest 2 Conservation and natural environments - Woodland forest Catchment Scale Land Use and Forests 3 Conservation and natural environments - Non-Woodland forest 4 Agriculture - Grazing - Non-forest 5 Agriculture - Grazing - Woodland forest Catchment Scale Land 6 Agriculture - Grazing - Non-woodland forest 7 Agriculture - Grazing - Irrigated 8 Agriculture - Cropping - Non-irrigated 9 Agriculture - Cropping - Irrigated 10 Agriculture - Horticulture - Non-irrigated 11 Agriculture - Horticulture - Irrigated 12 Production native forests and plantation forests 13 Other uses

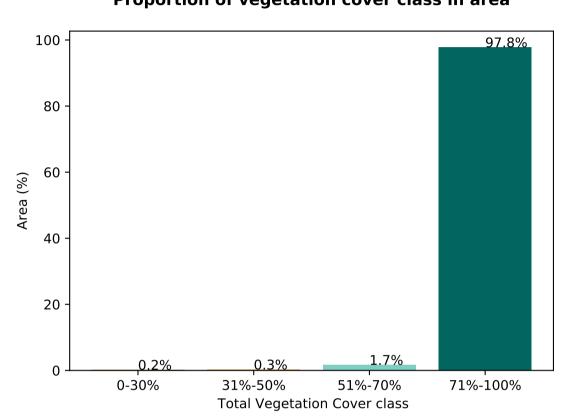
#### **Proportion of each land class in area**

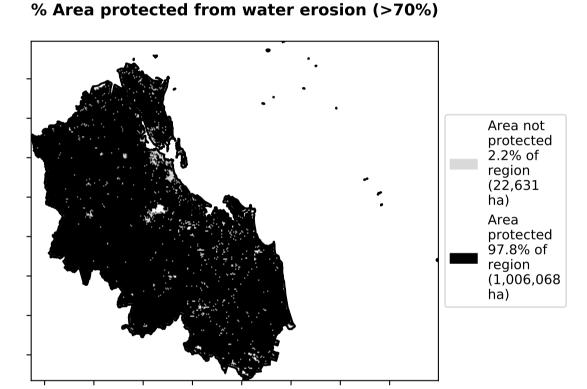


#### **Total Vegetation Cover [%]**

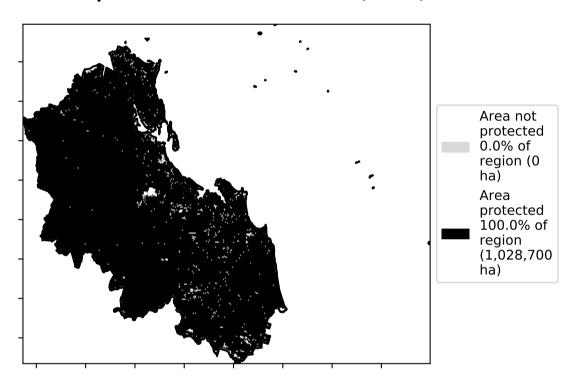


**Proportion of vegetation cover class in area** 

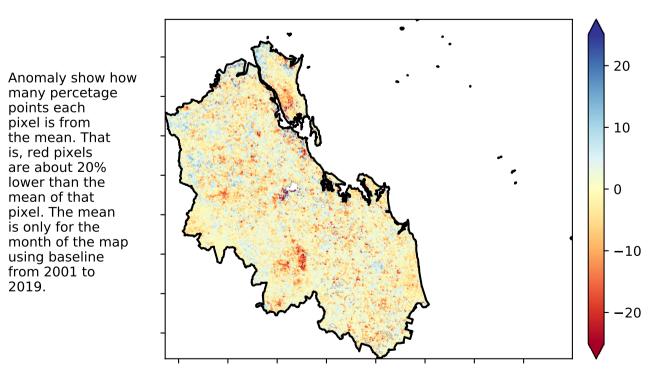




% Area protected from wind erosion (>50%)

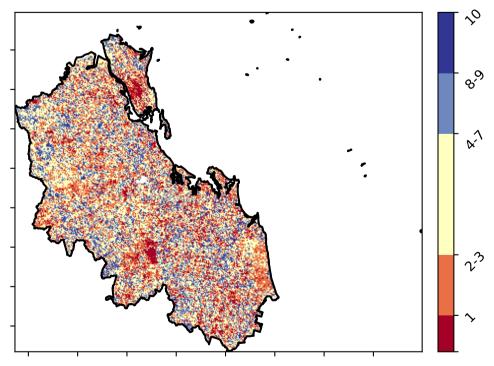


#### **Total Vegetation Cover Anomaly [%]**



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

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

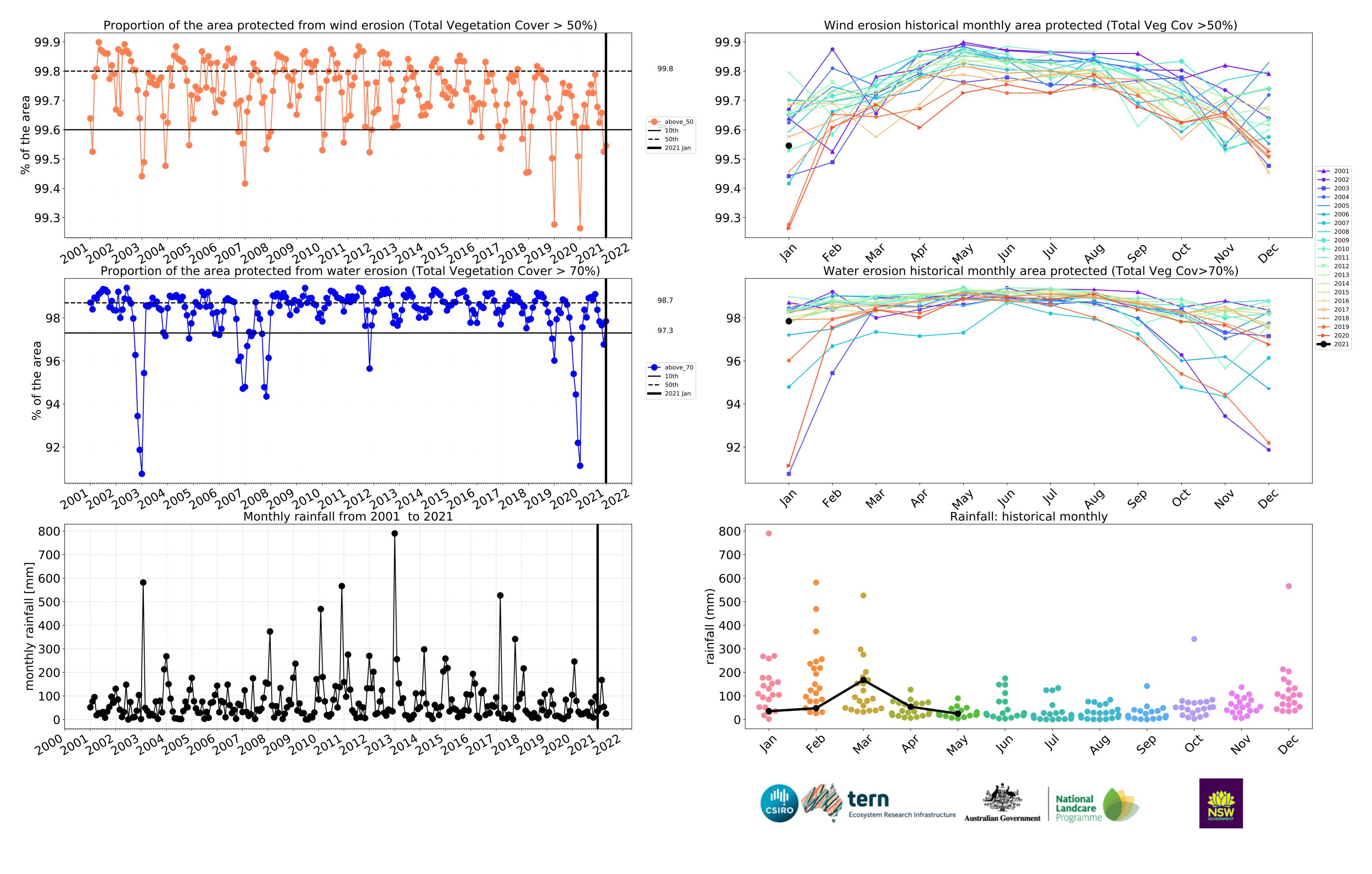




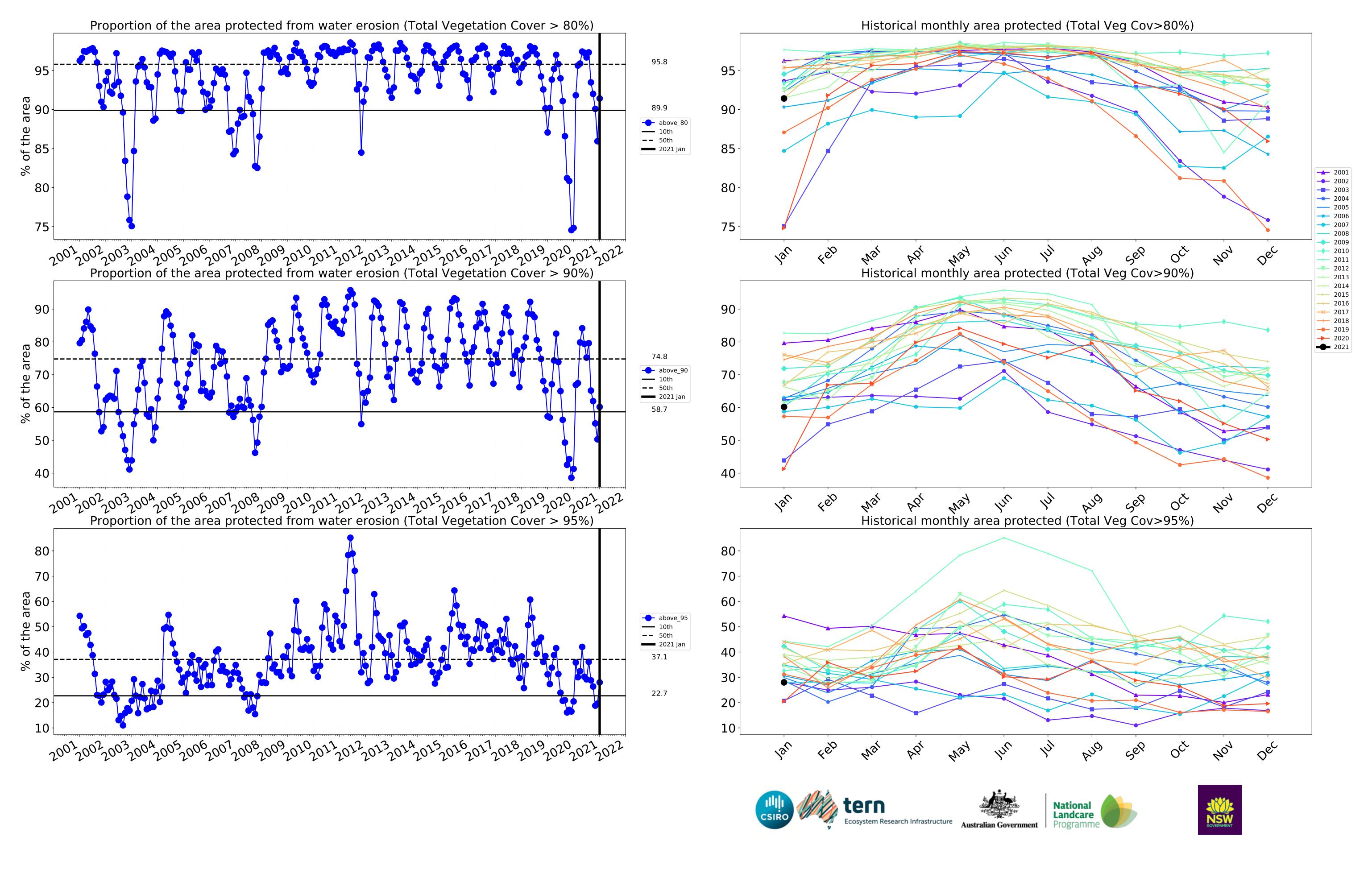








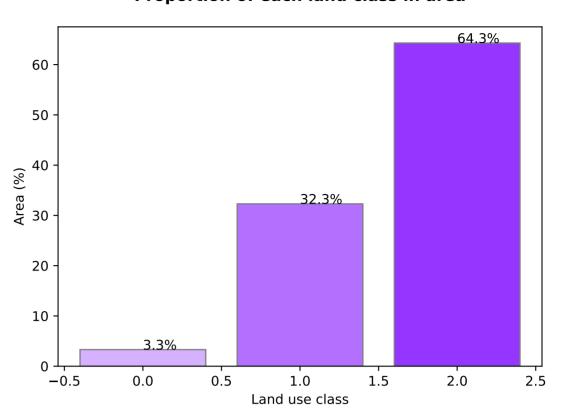
.



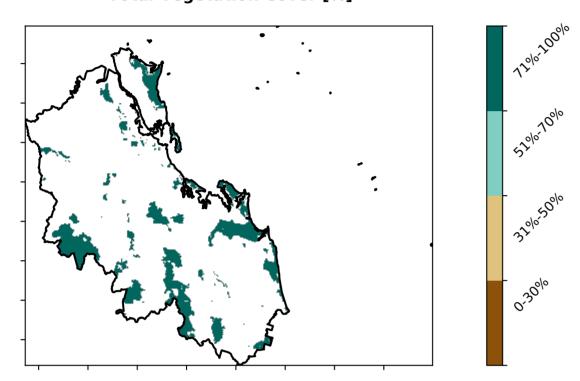
## **Conservation and natural environments**

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

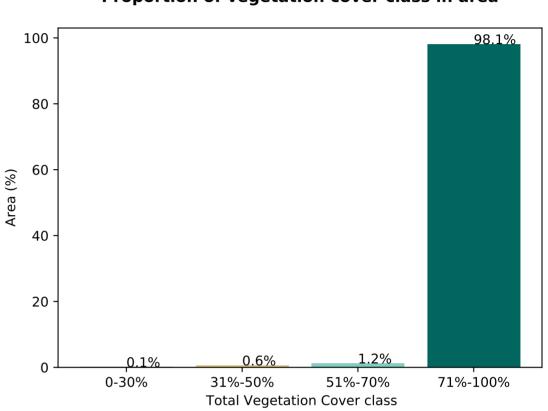
#### Proportion of each land class in area



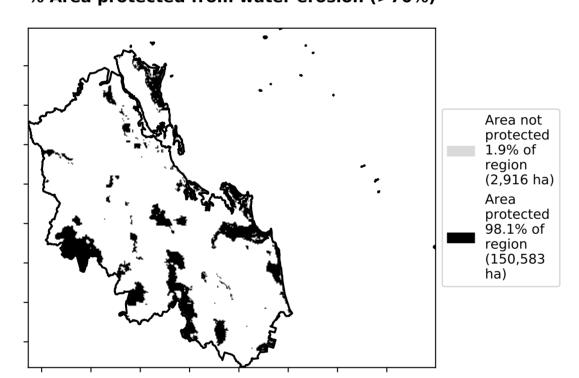




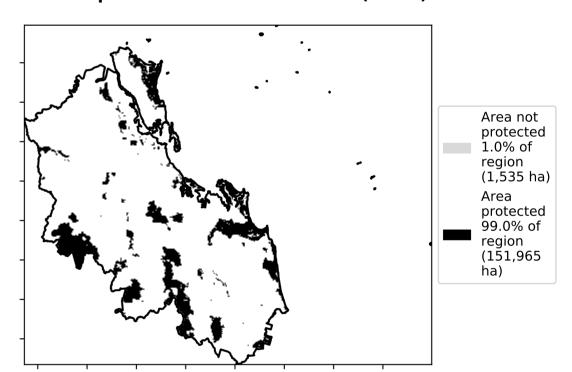
Proportion of vegetation cover class in area



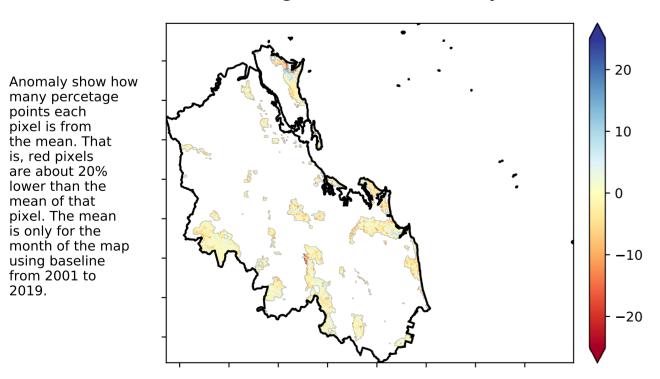
## % Area protected from water erosion (>70%)



% Area protected from wind erosion (>50%)

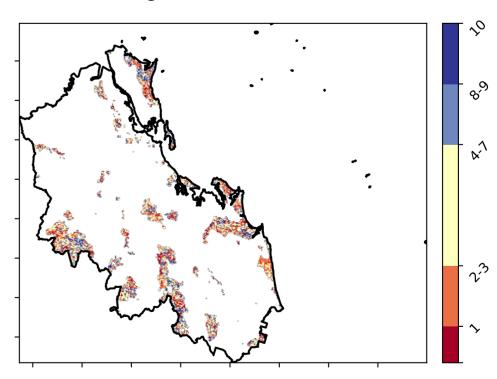


#### **Total Vegetation Cover Anomaly [%]**



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 [%]**





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



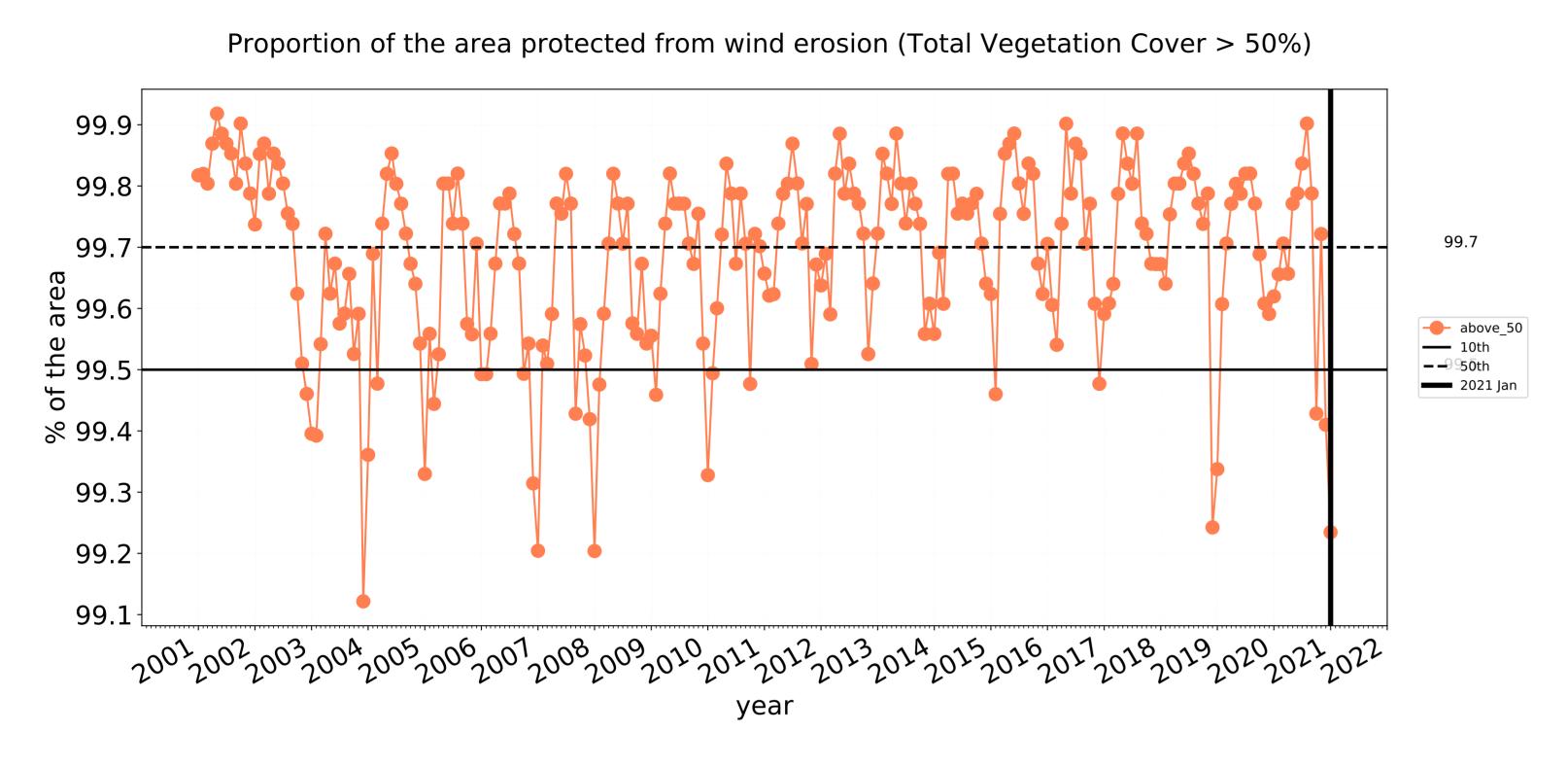


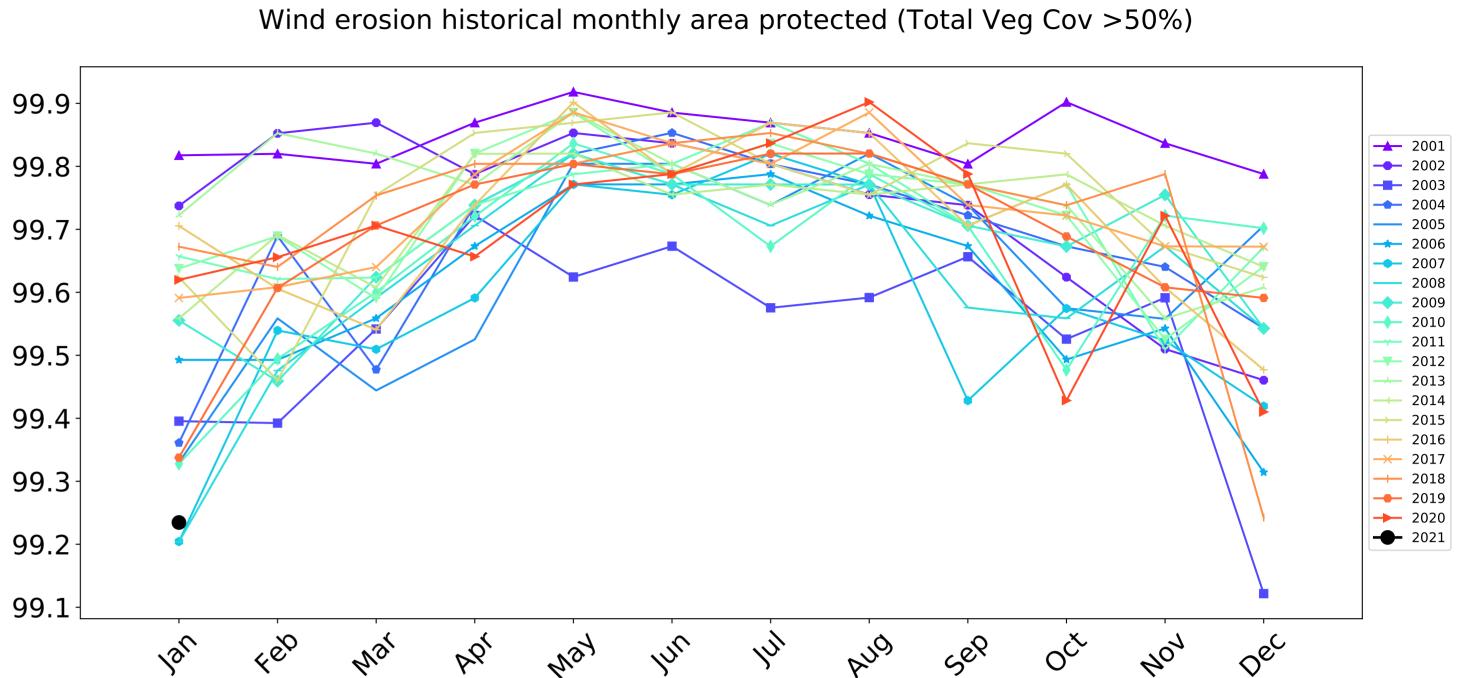




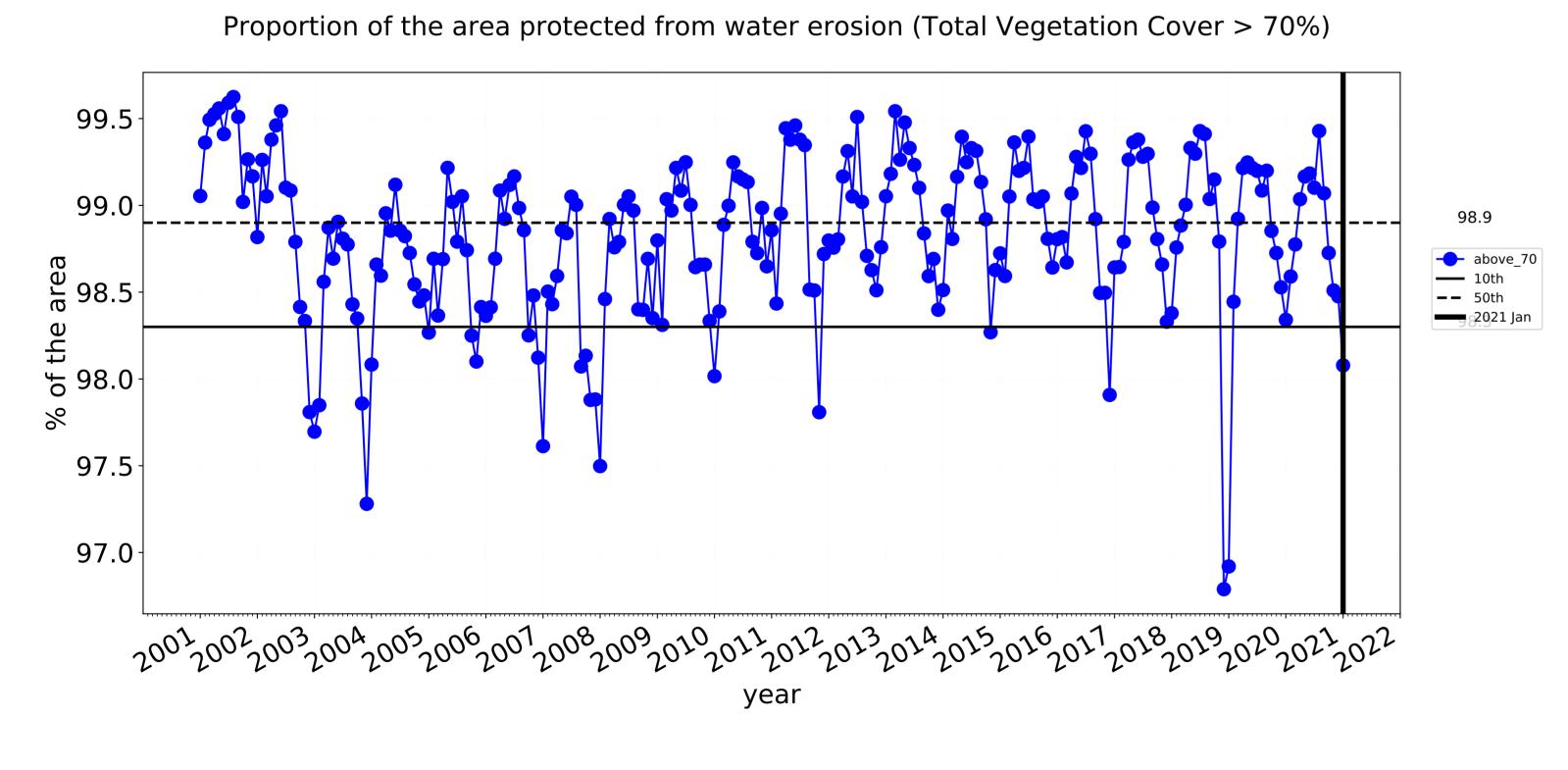


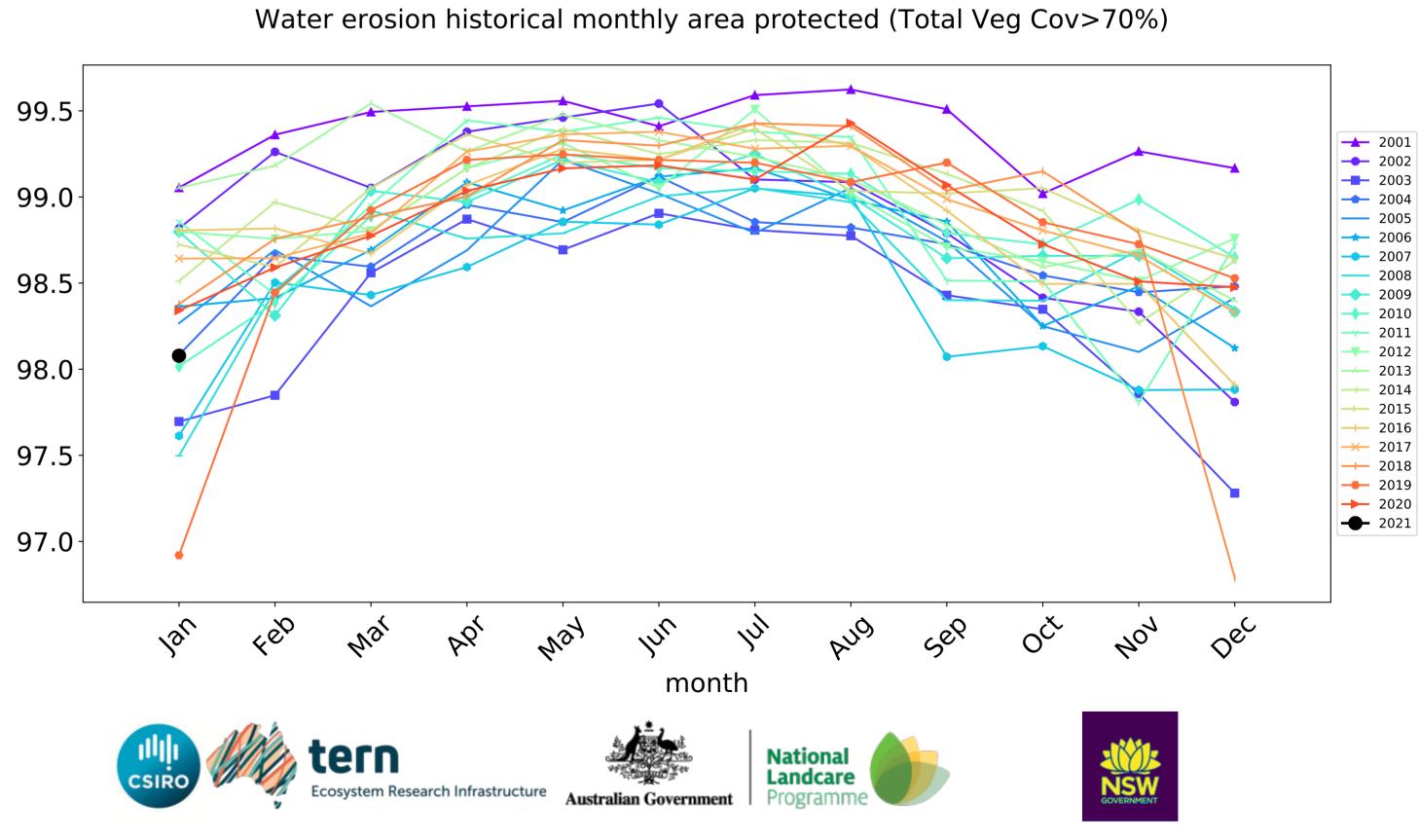
## **Conservation and natural environments timeseries**

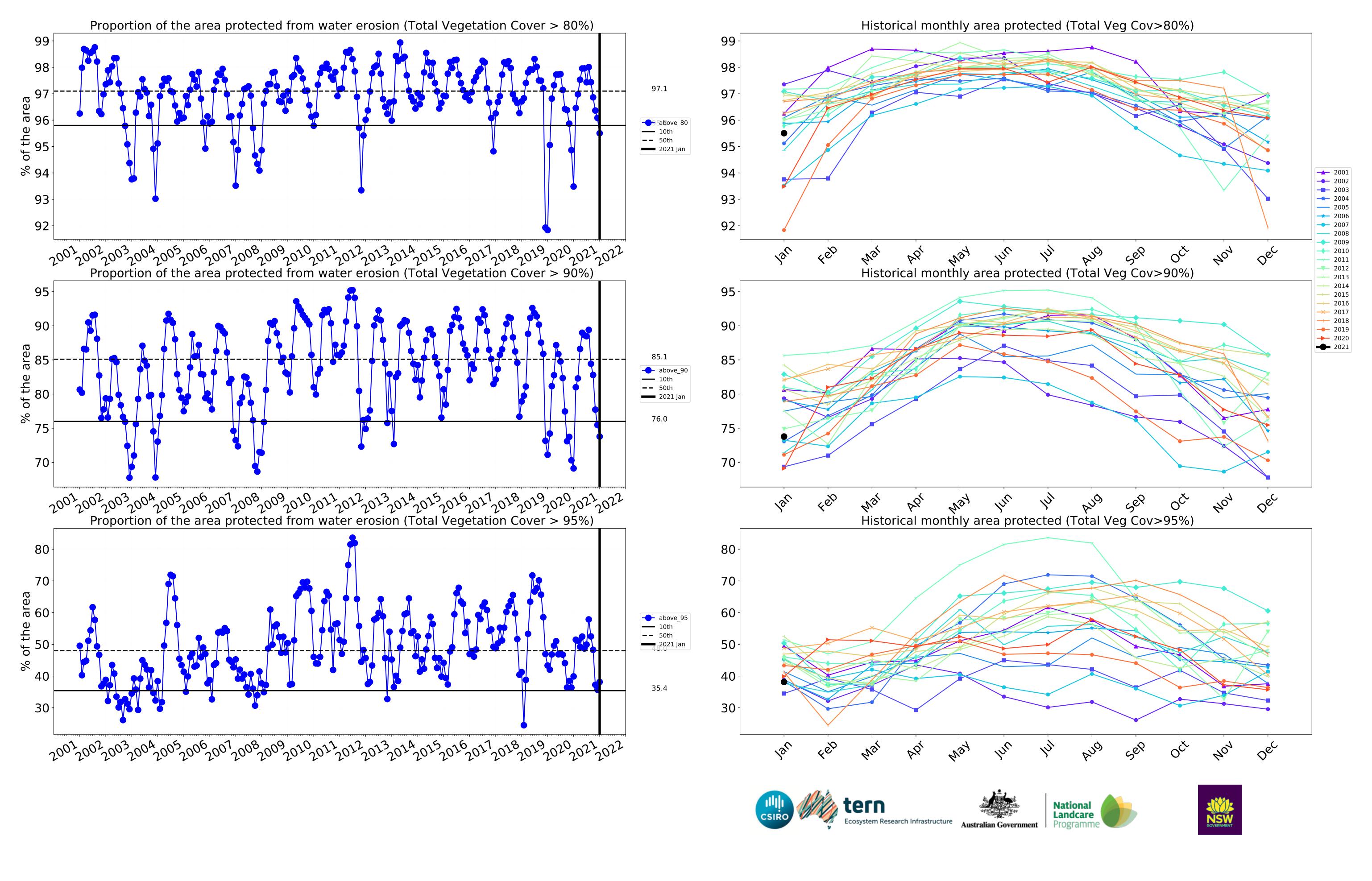




month





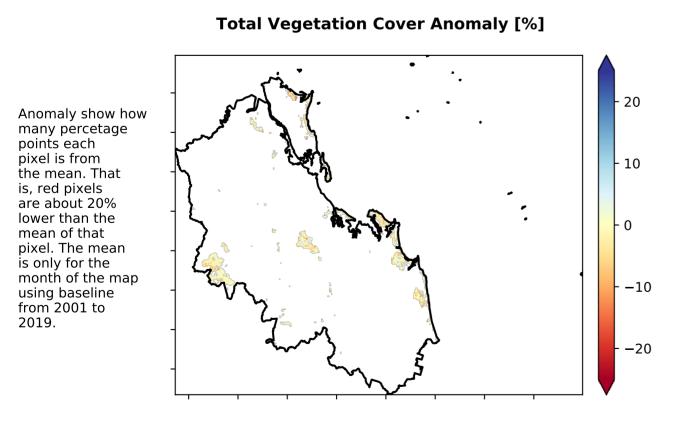


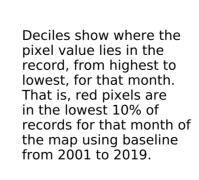
## **Conservation and natural environments Woodland forest**

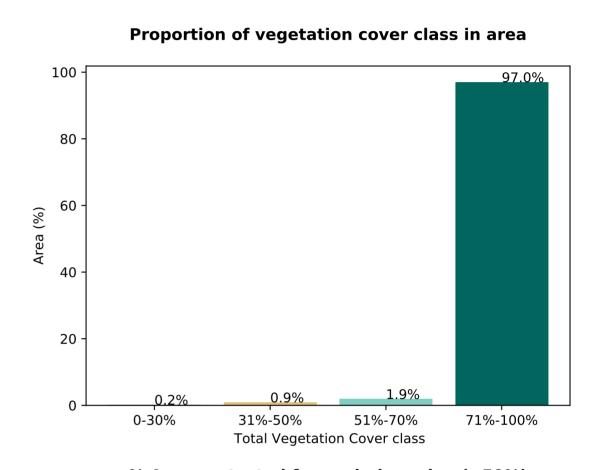
# Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) Of Australia (2018) 1 Conservation and natural environments - Woodland forest 1 Conservation and natural environments - Woodland forest

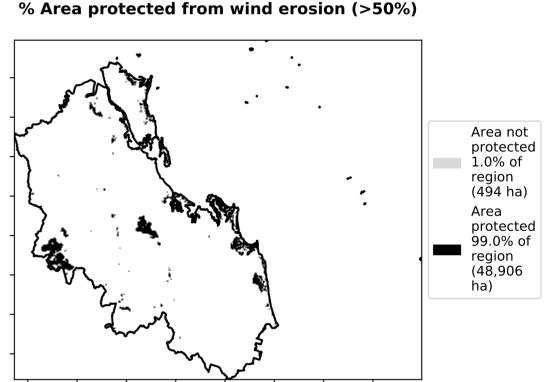
# Total Vegetation Cover [%]

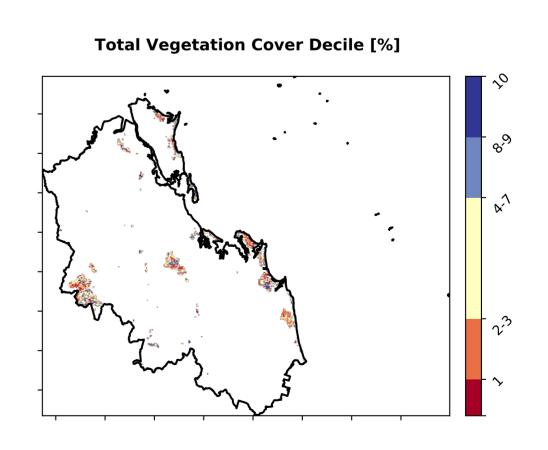
# Area not protected 3.0% of region (1,482 ha) Area protected 77.0% of region (47,918 ha)











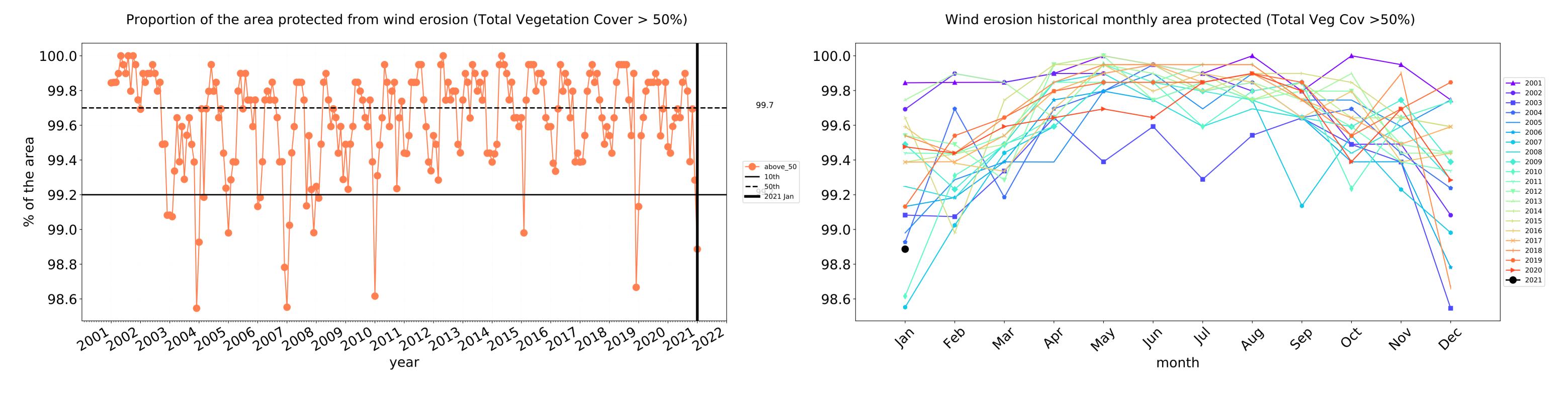


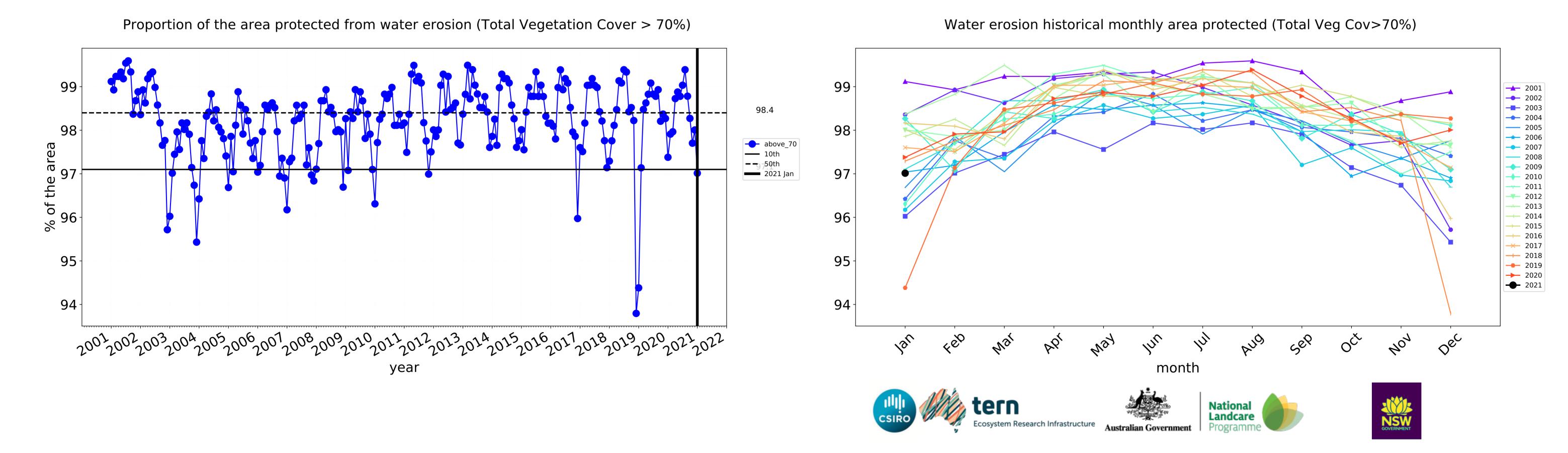


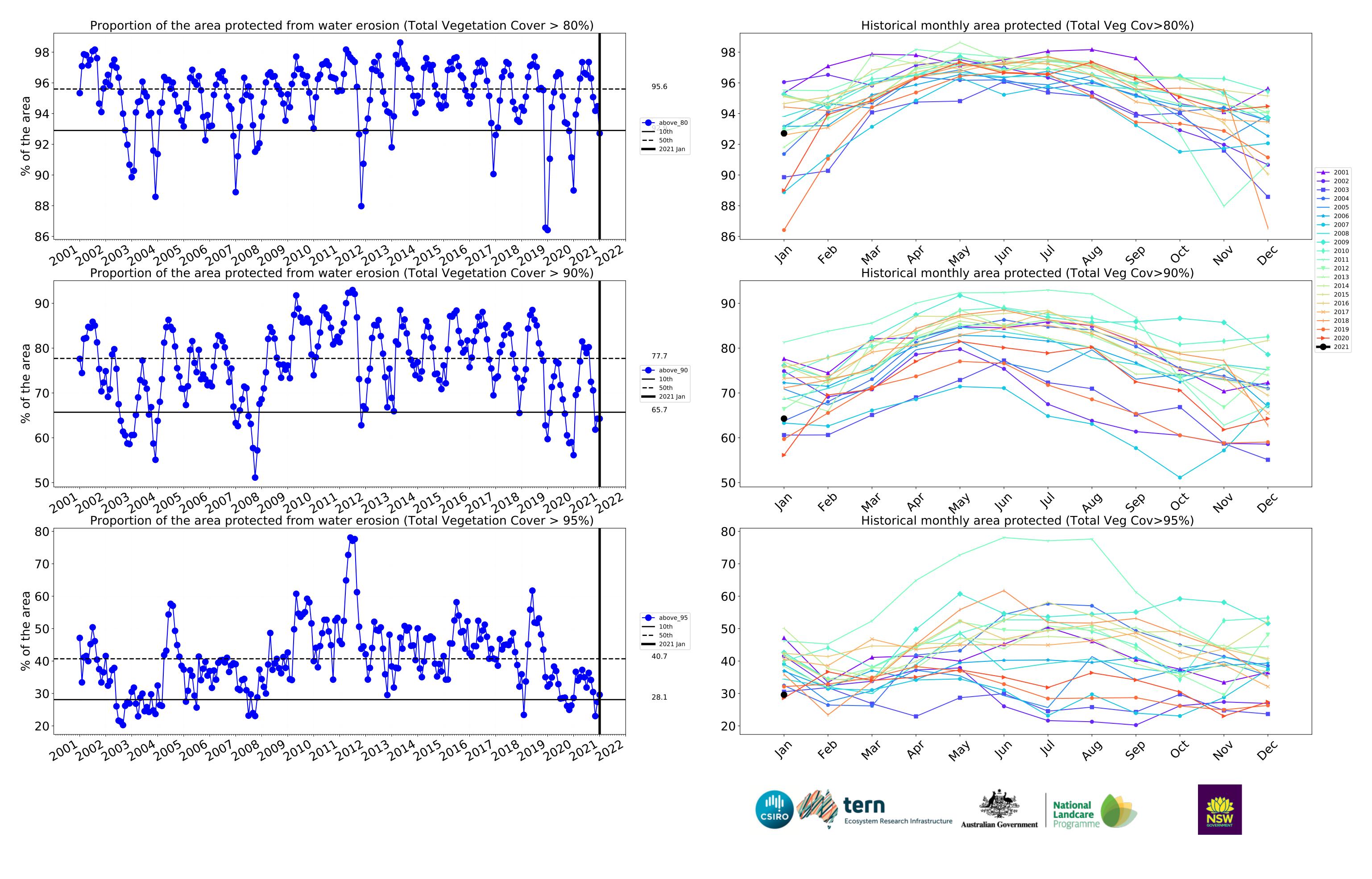




## **Conservation and natural environments Woodland forest timeseries**

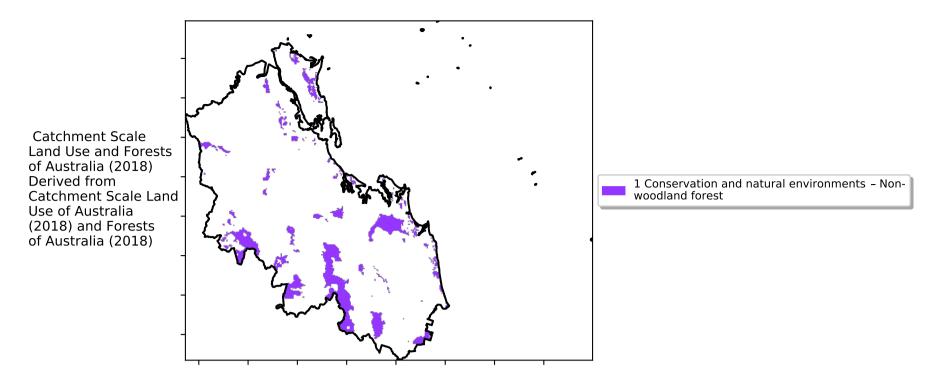




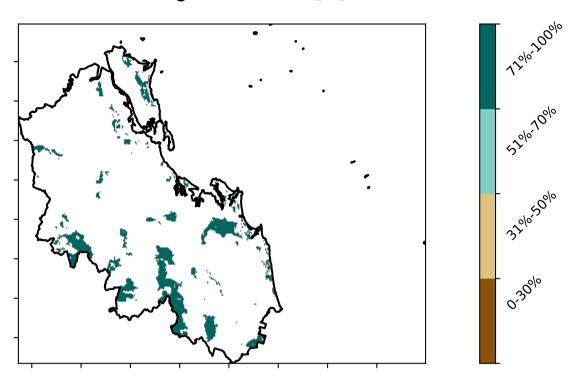


# **Conservation and natural environments Forest (non woodland)**

#### Land use and forest cover



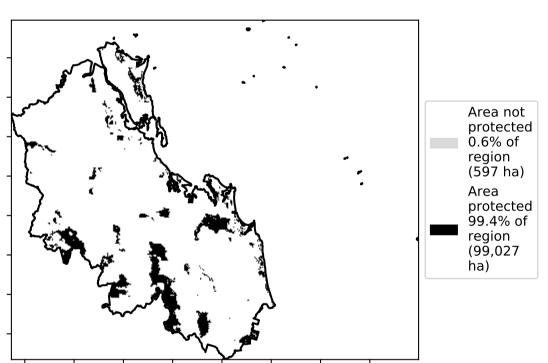
#### Total Vegetation Cover [%]



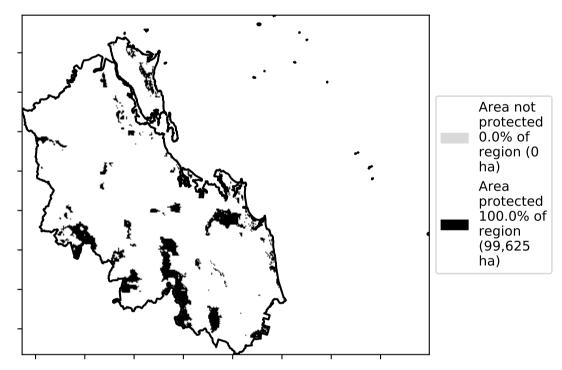
# 100 - 99.4% 80 - 60 - 40 - 20 - 0.1% 0.1% 0.4% 0-30% 31%-50% 51%-70% 71%-100% Total Vegetation Cover class

Proportion of vegetation cover class in area

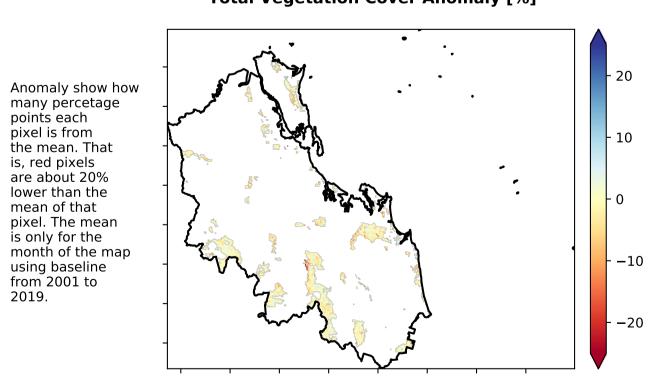
% Area protected from water erosion (>70%)



% Area protected from wind erosion (>50%)

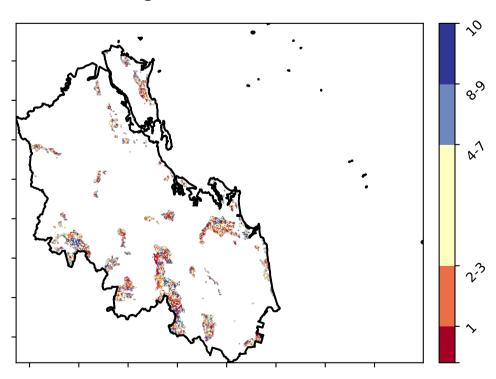


Total Vegetation Cover Anomaly [%]



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Total Vegetation Cover Decile [%]



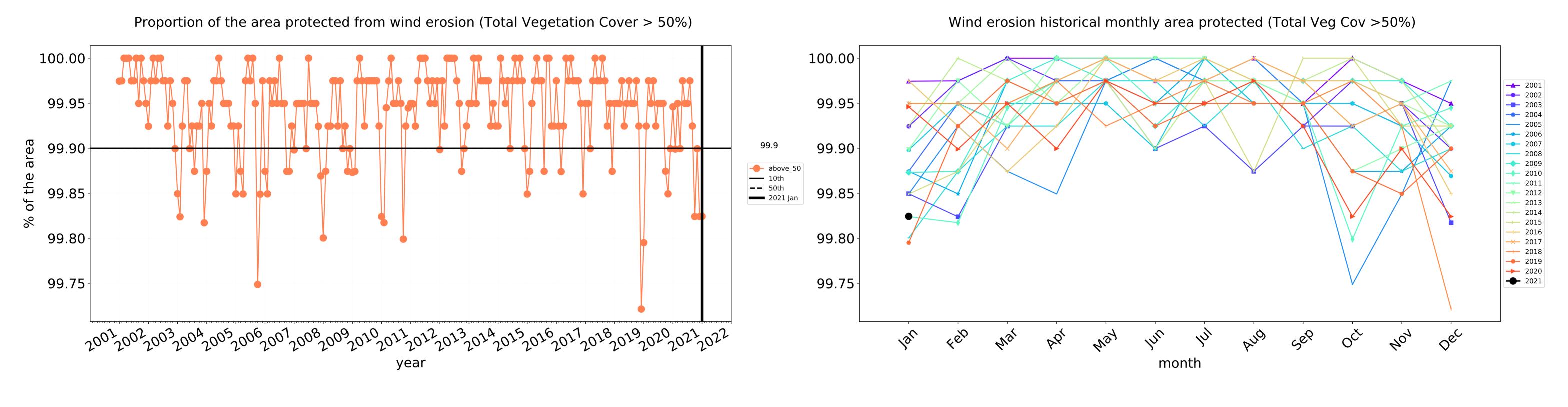


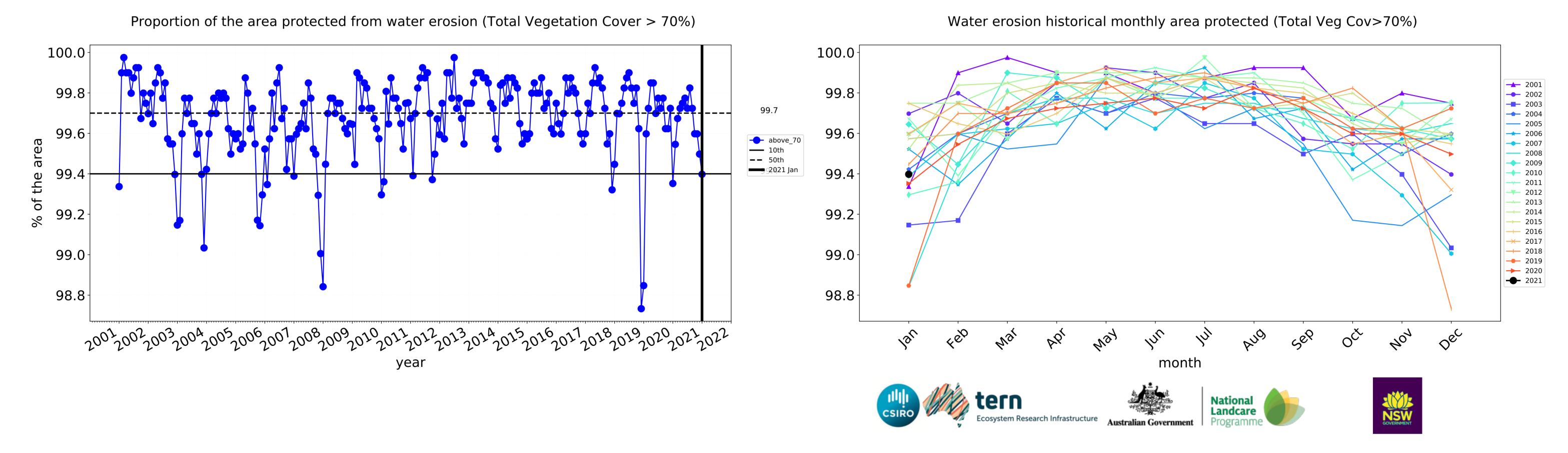


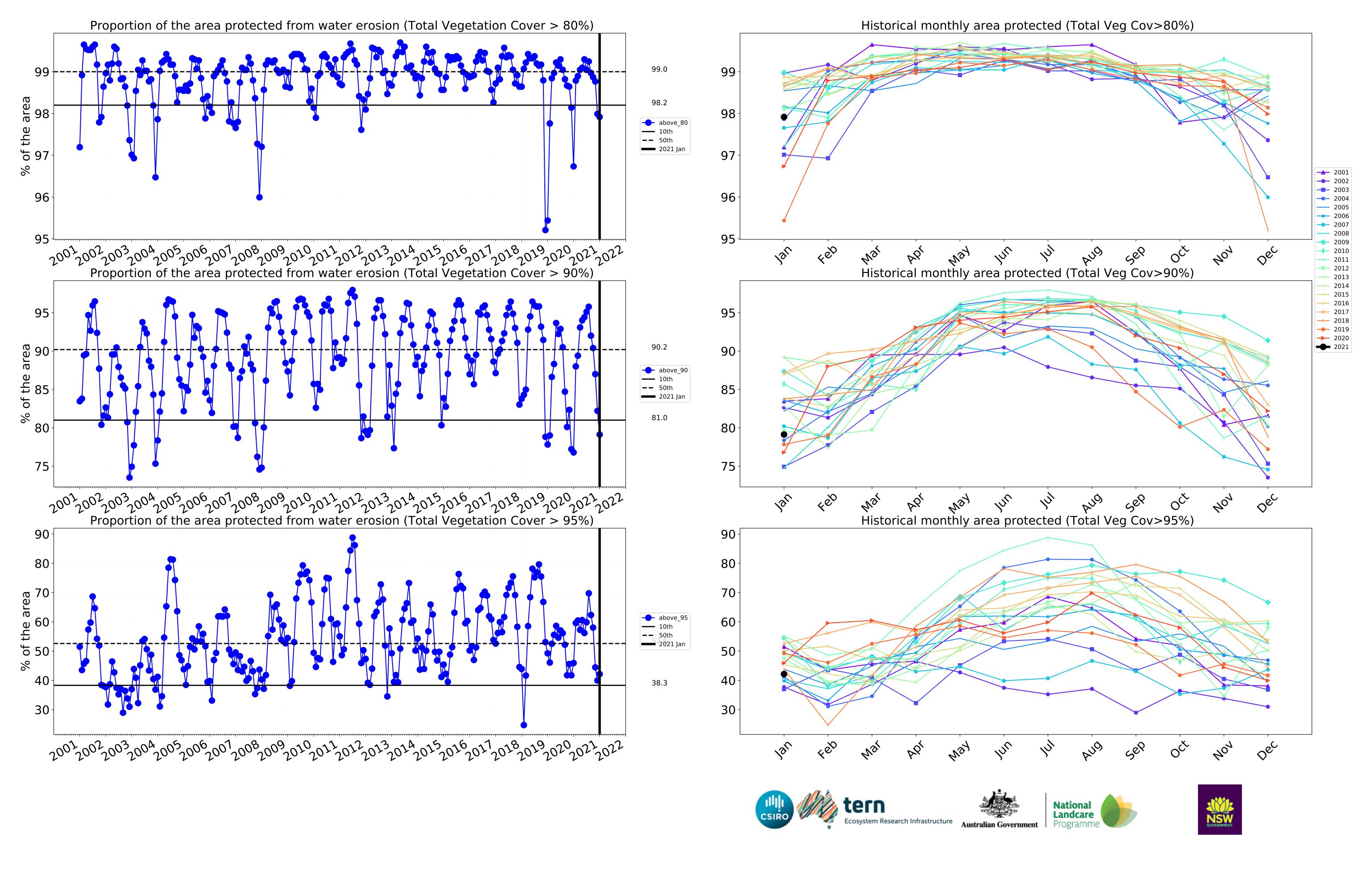




# Conservation and natural environments Forest (non woodland) timeseries

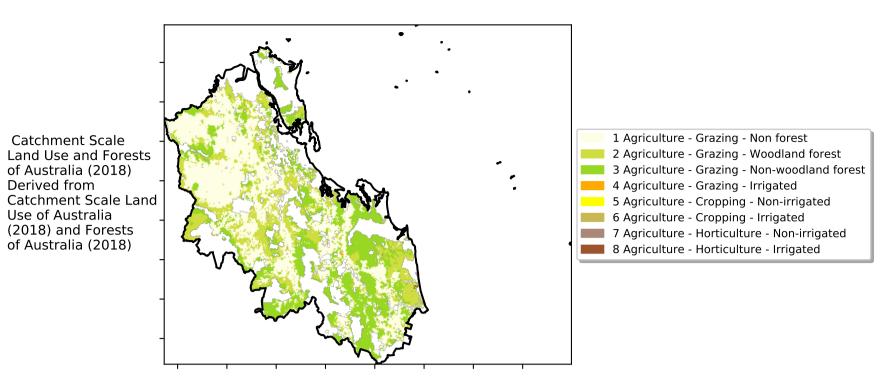




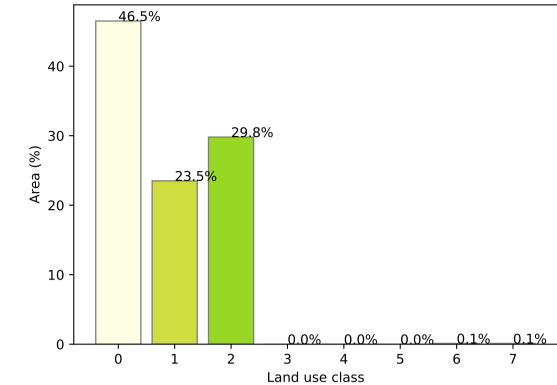


# **Agriculture**

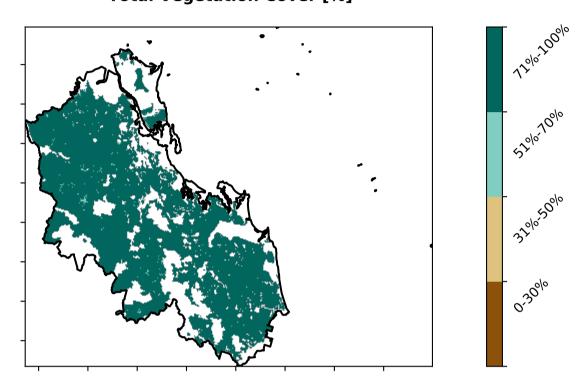
#### **Land use and forest cover**



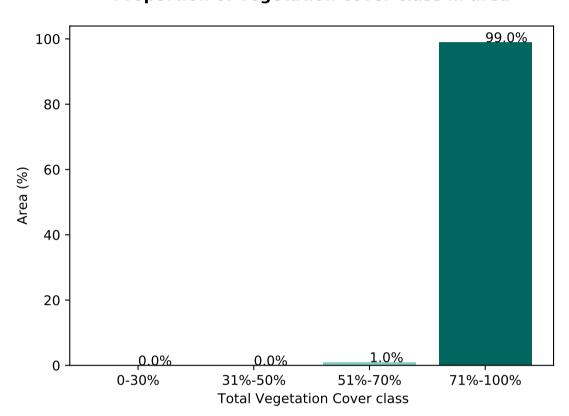
**Proportion of each land class in area** 

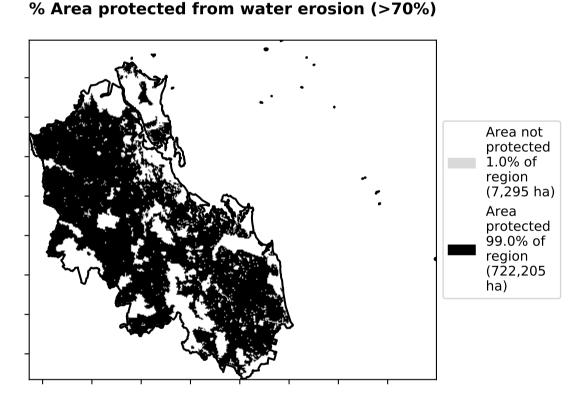


#### **Total Vegetation Cover [%]**

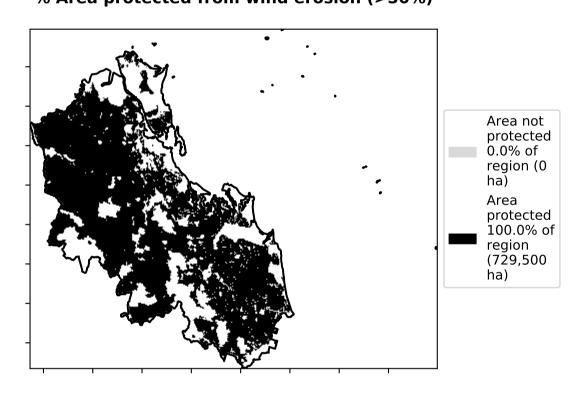


Proportion of vegetation cover class in area

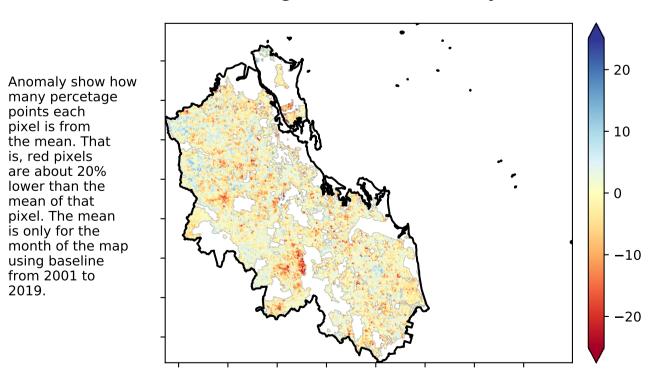




% Area protected from wind erosion (>50%)

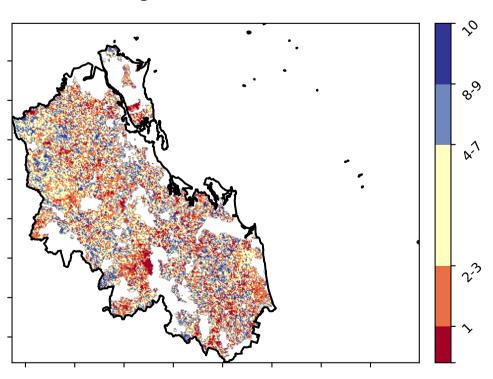


#### **Total Vegetation Cover Anomaly [%]**



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





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

pixel. The mean

using baseline from 2001 to 2019.



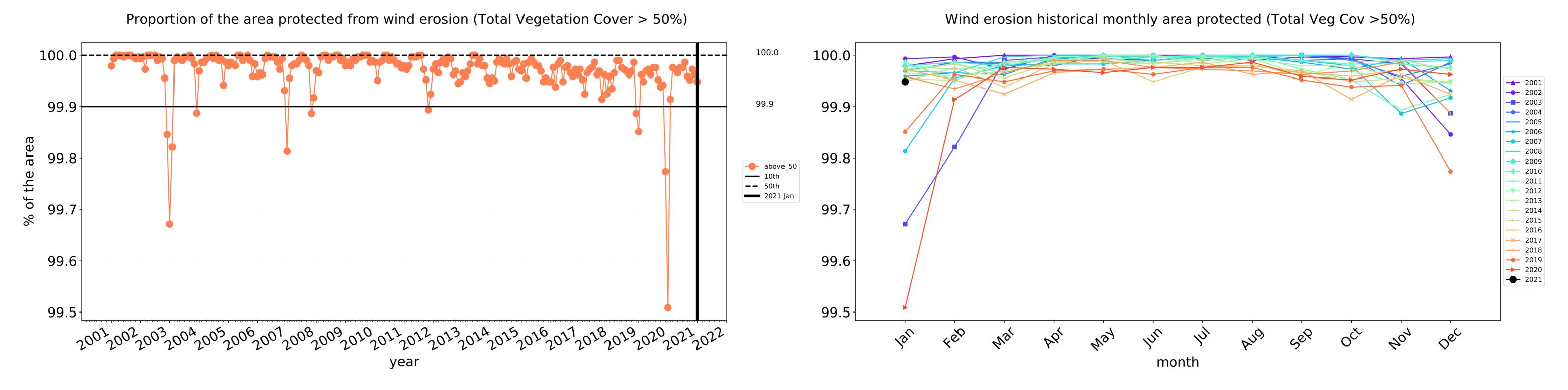


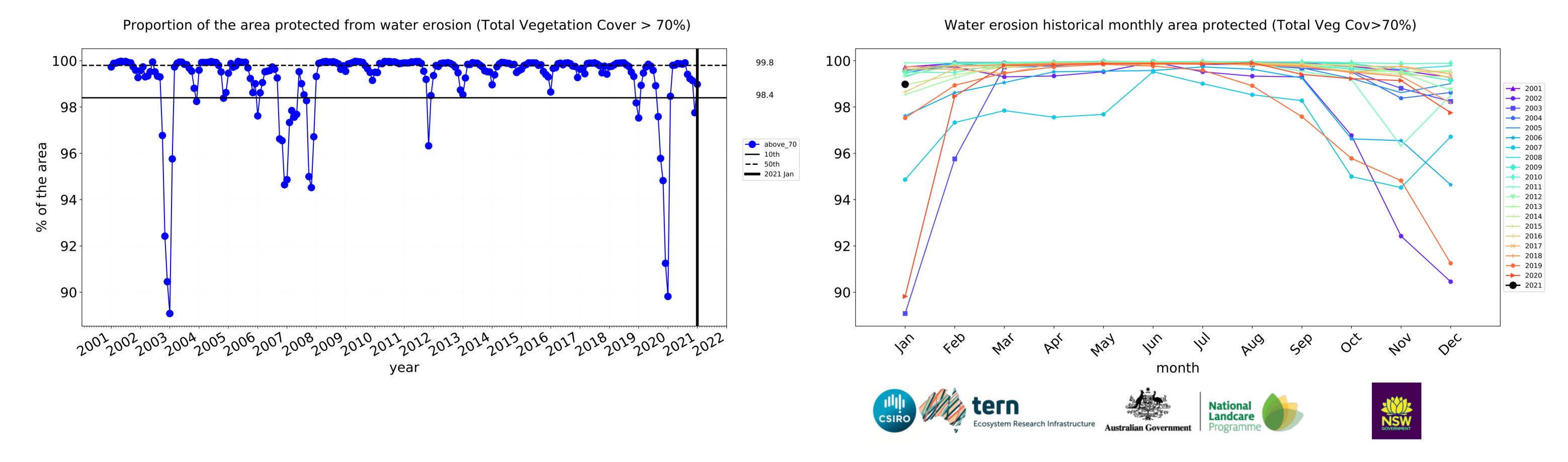


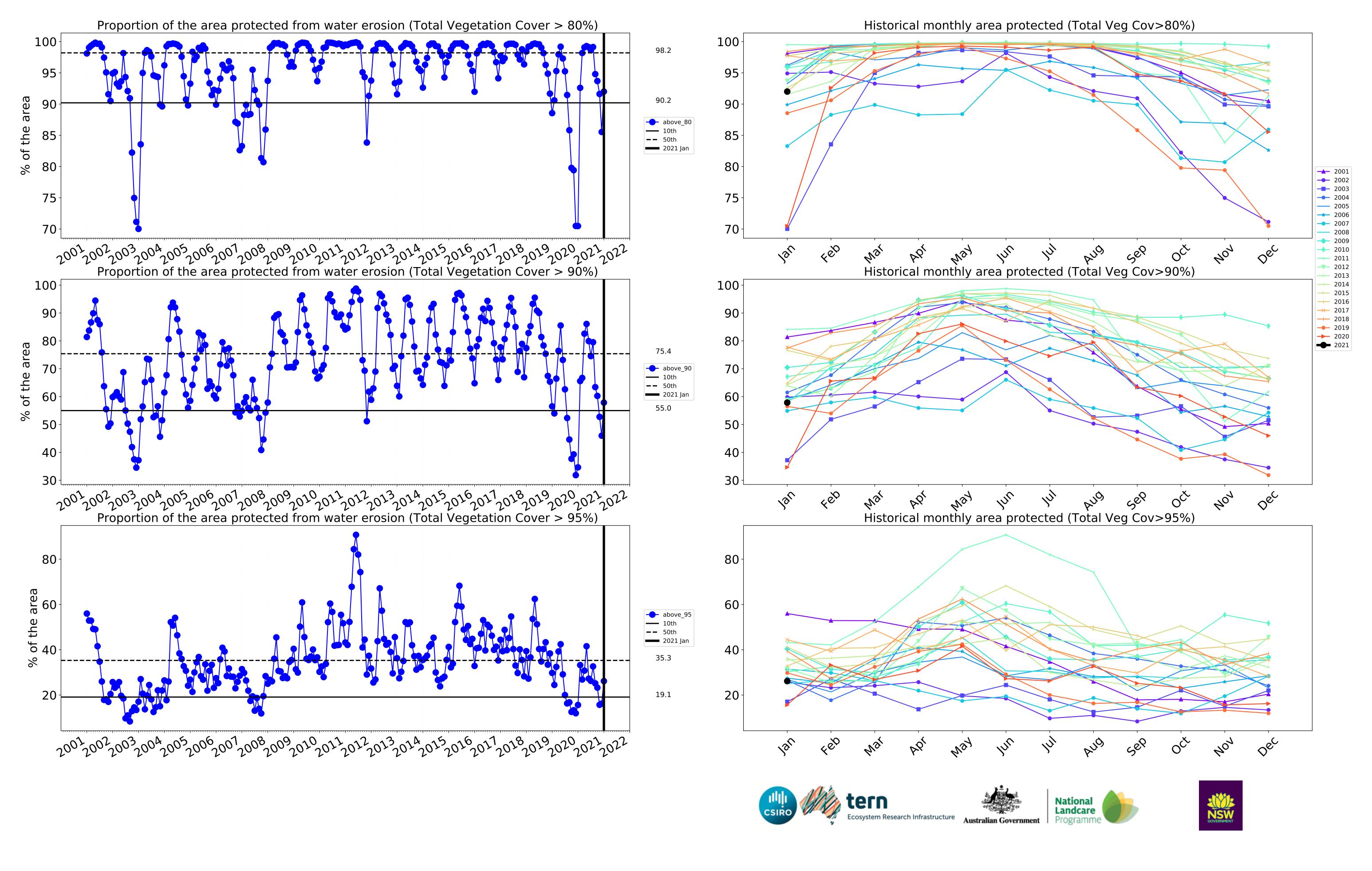




# **Agriculture timeseries**





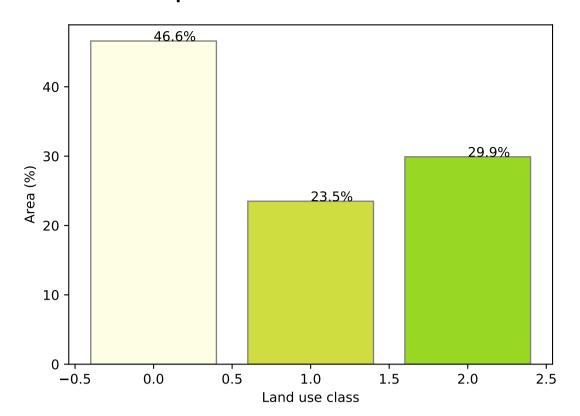


# Grazing

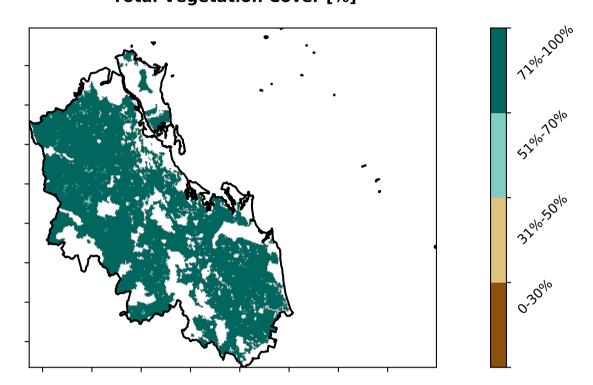
#### Land use and forest cover

# Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land 1 Agriculture - Grazing - Non forest 2 Agriculture - Grazing - Woodland forest 3 Agriculture - Grazing - Non-woodland forest Use of Australia (2018) and Forests of Australia (2018)

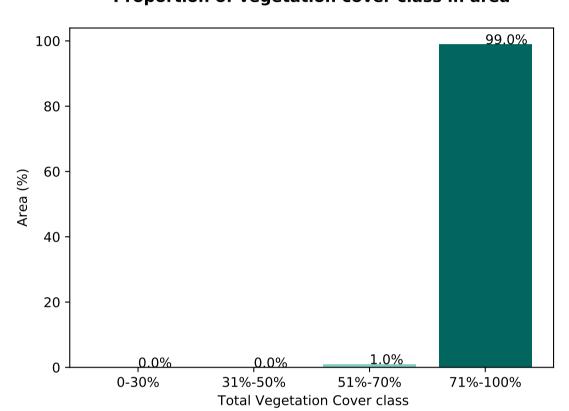
#### **Proportion of each land class in area**



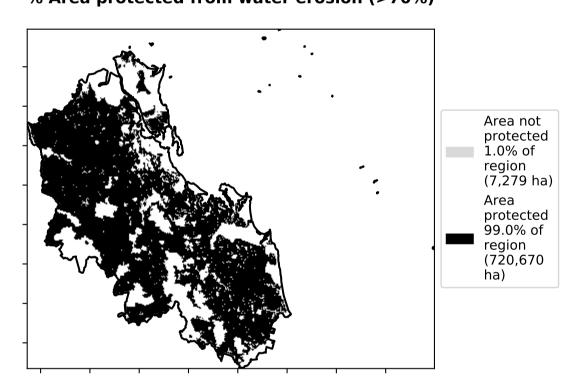
#### **Total Vegetation Cover [%]**



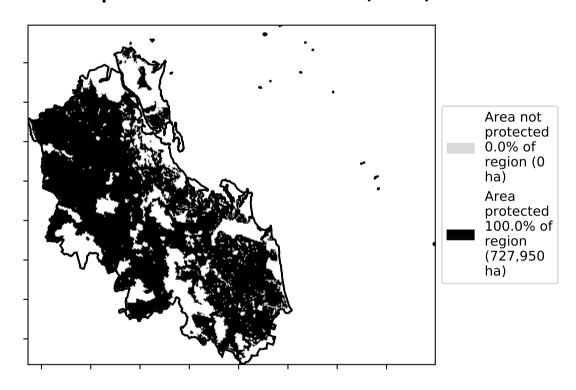
Proportion of vegetation cover class in area



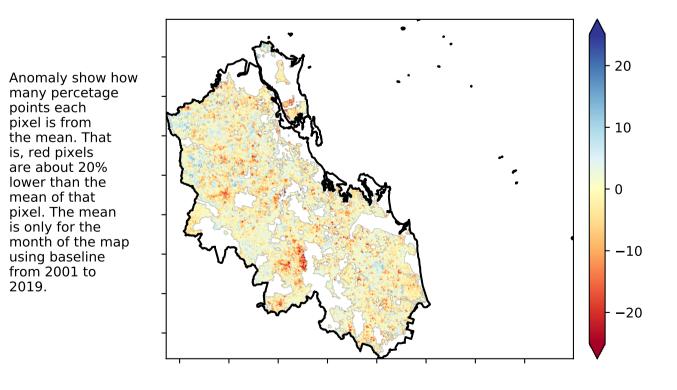
## % Area protected from water erosion (>70%)



% Area protected from wind erosion (>50%)

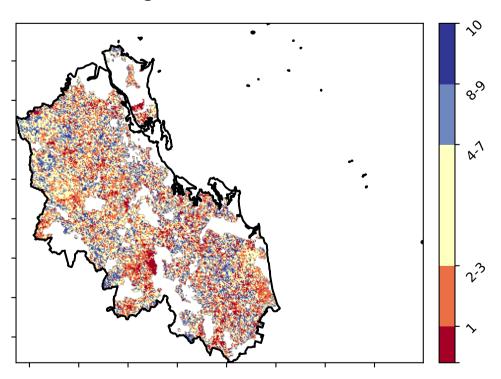


#### **Total Vegetation Cover Anomaly [%]**



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





are about 20% lower than the mean of that

pixel. The mean



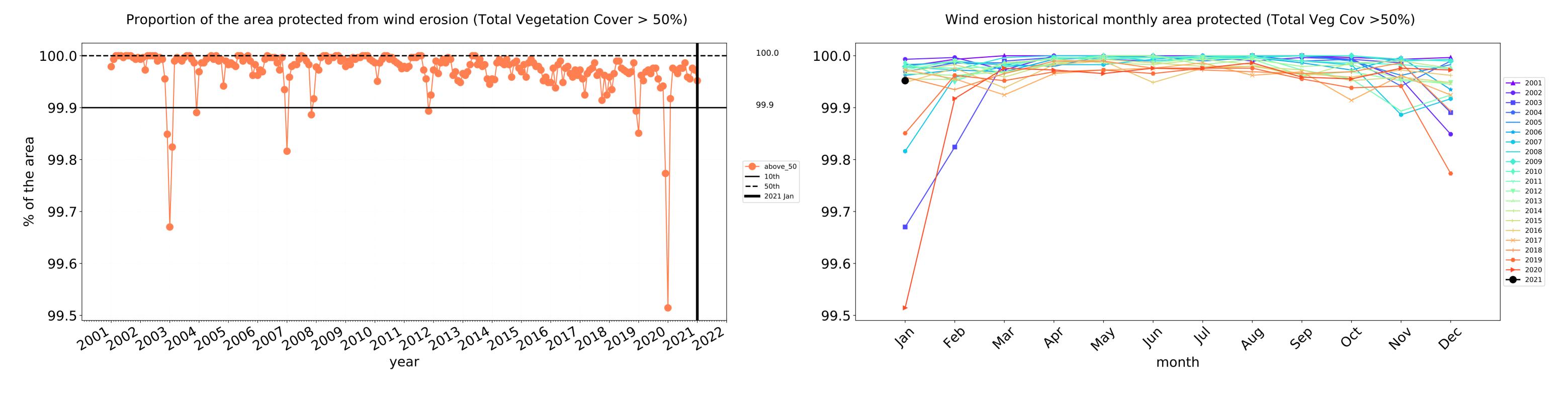
**Ecosystem Research Infrastructure** 

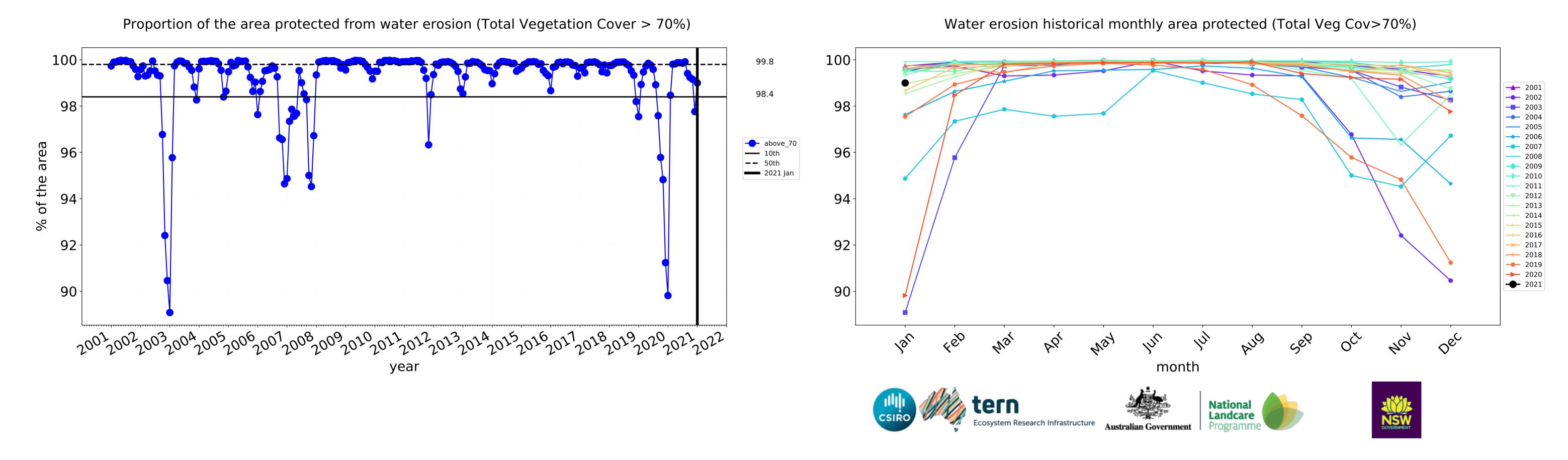


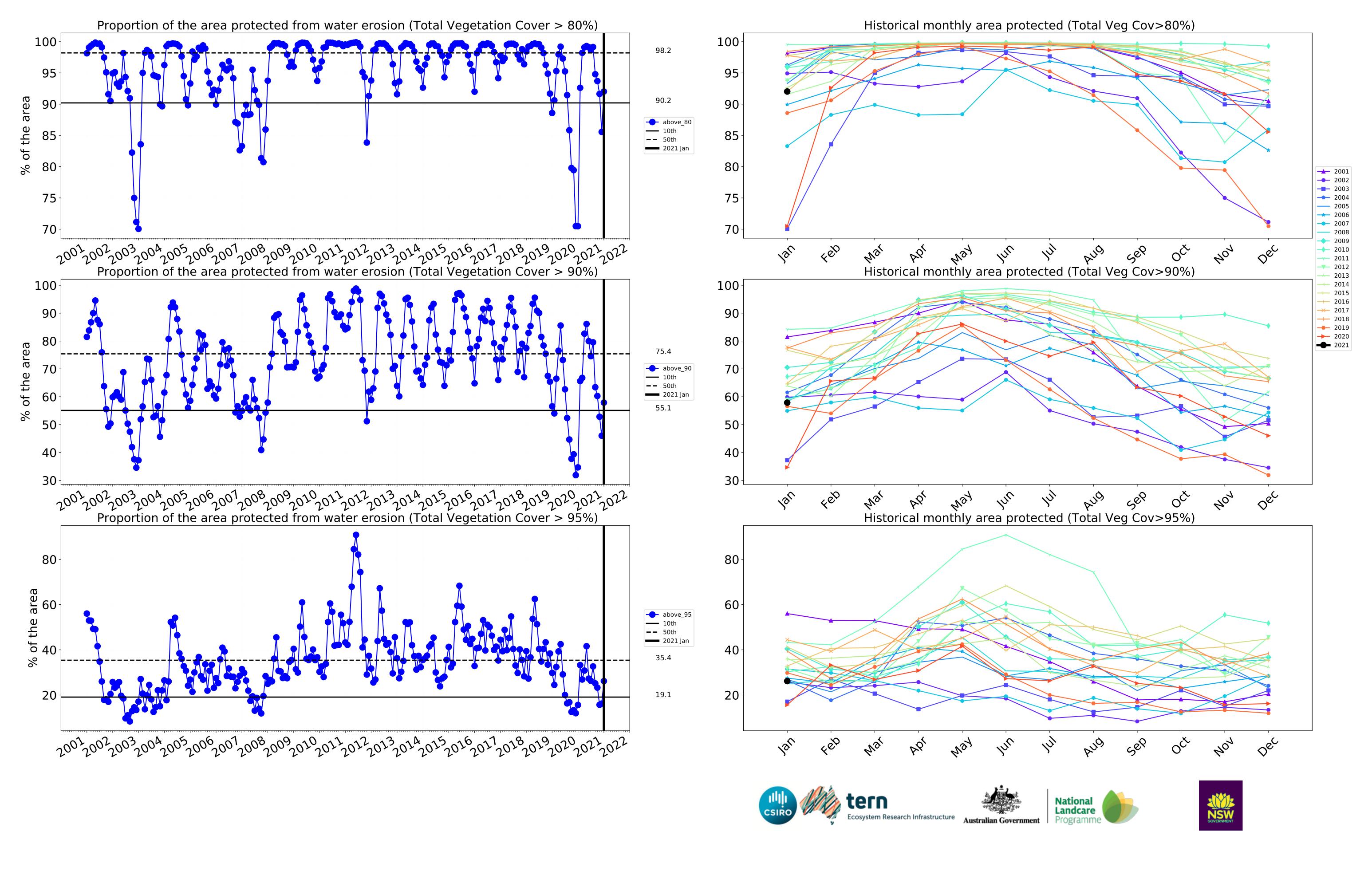




# **Grazing timeseries**

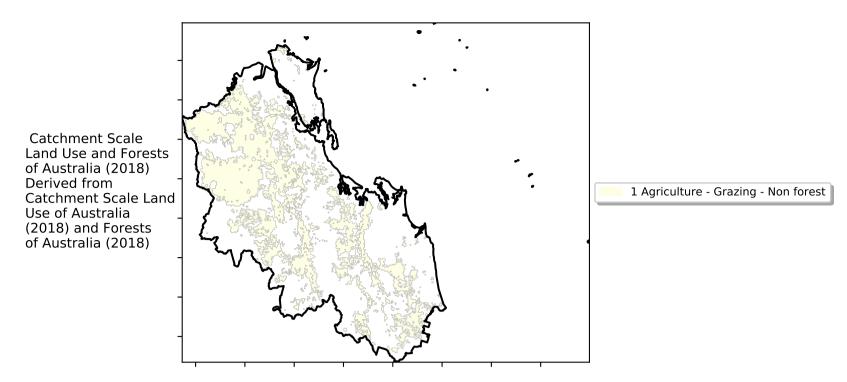




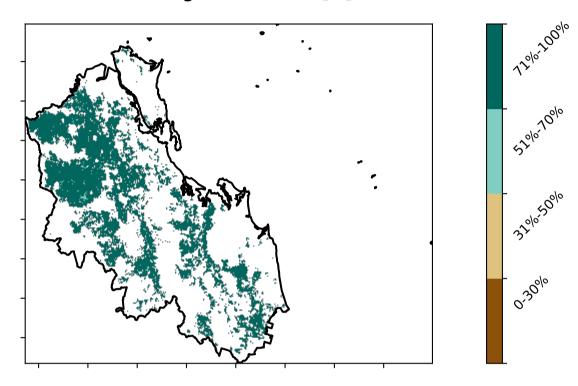


# **Grazing non forest**

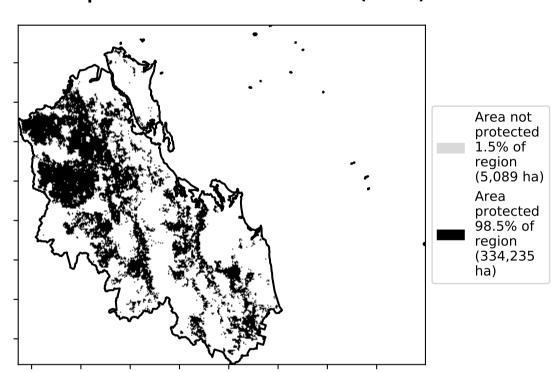
#### Land use and forest cover



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

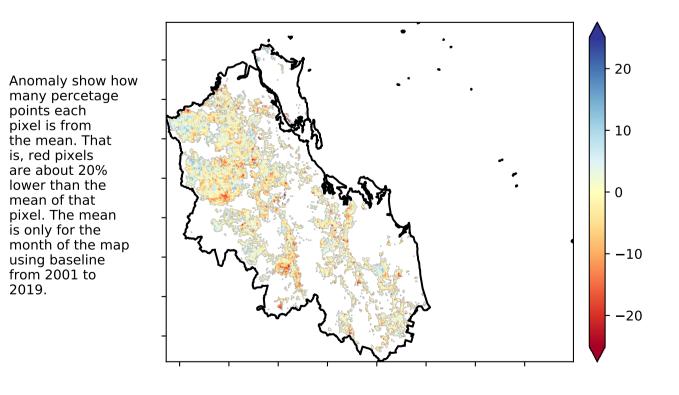


#### % Area protected from water erosion (>70%)



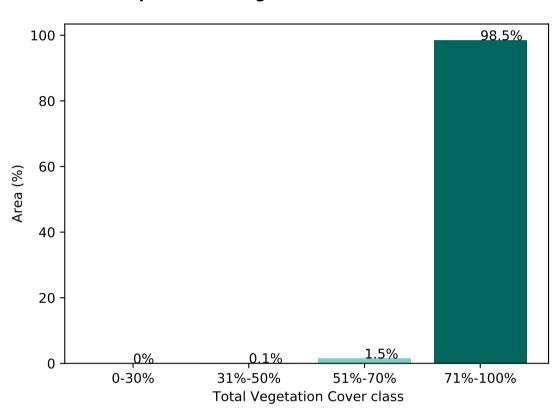
#### **Total Vegetation Cover Anomaly [%]**

lower than the

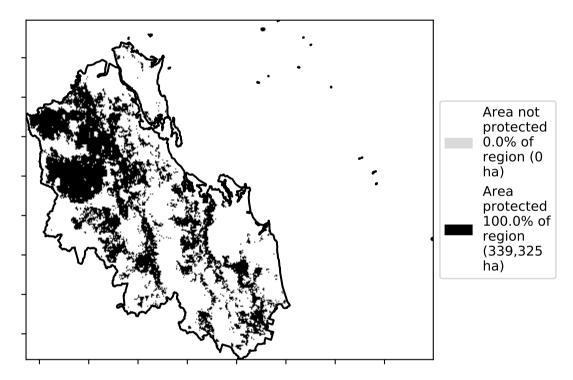


Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

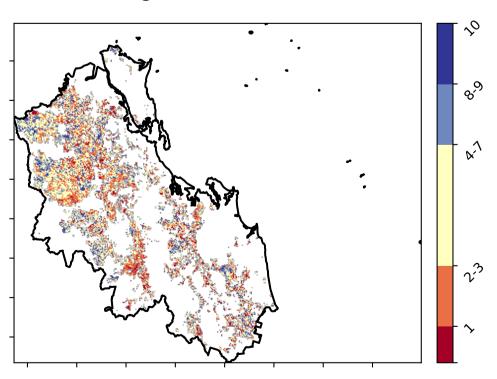
#### Proportion of vegetation cover class in area



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



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



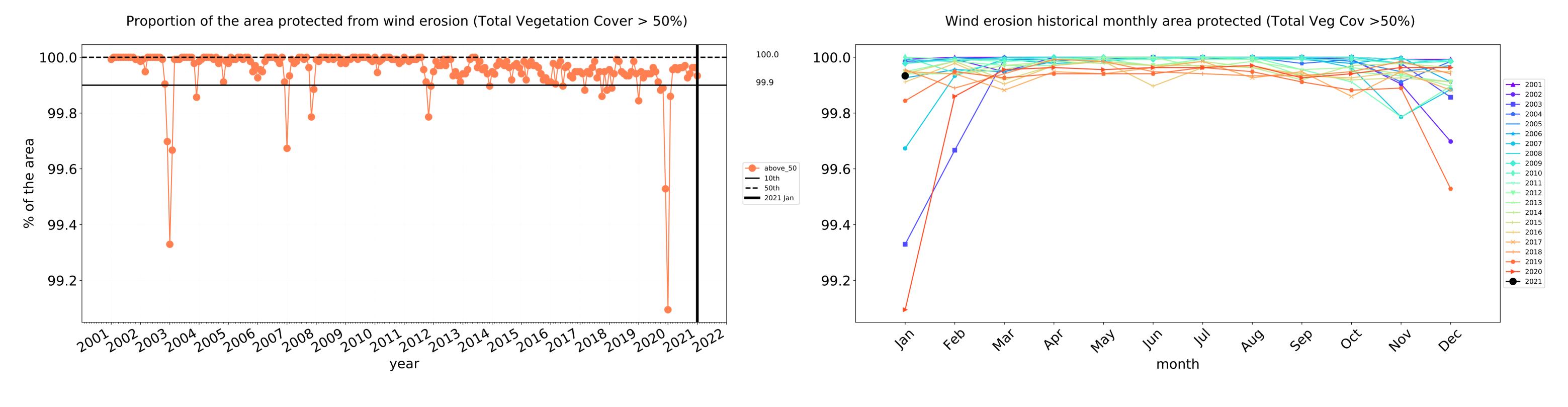


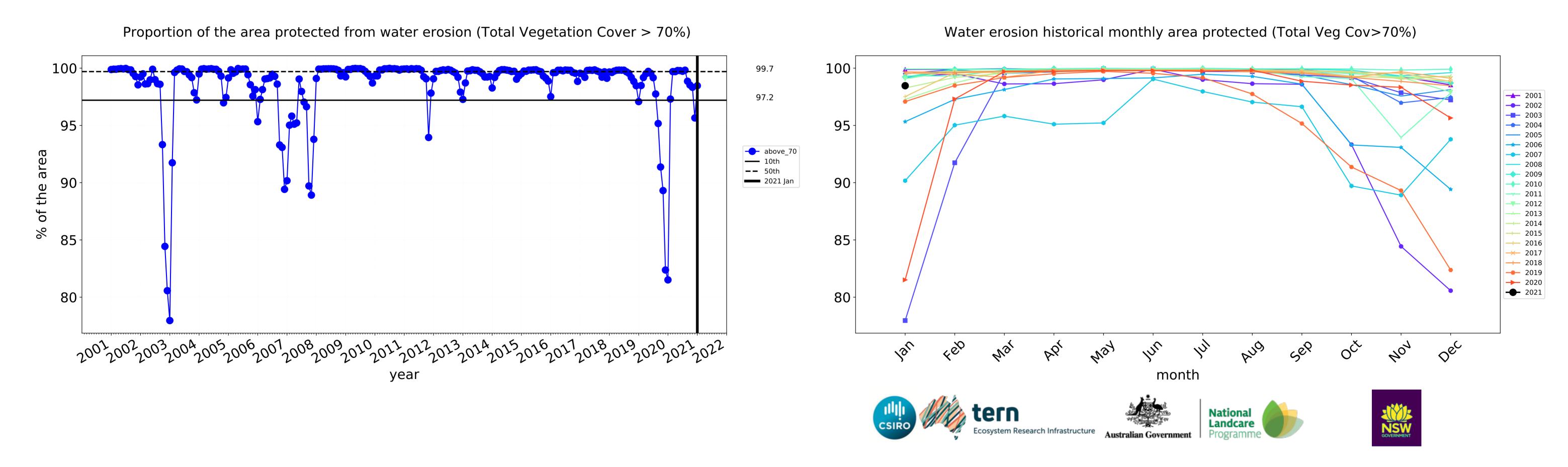


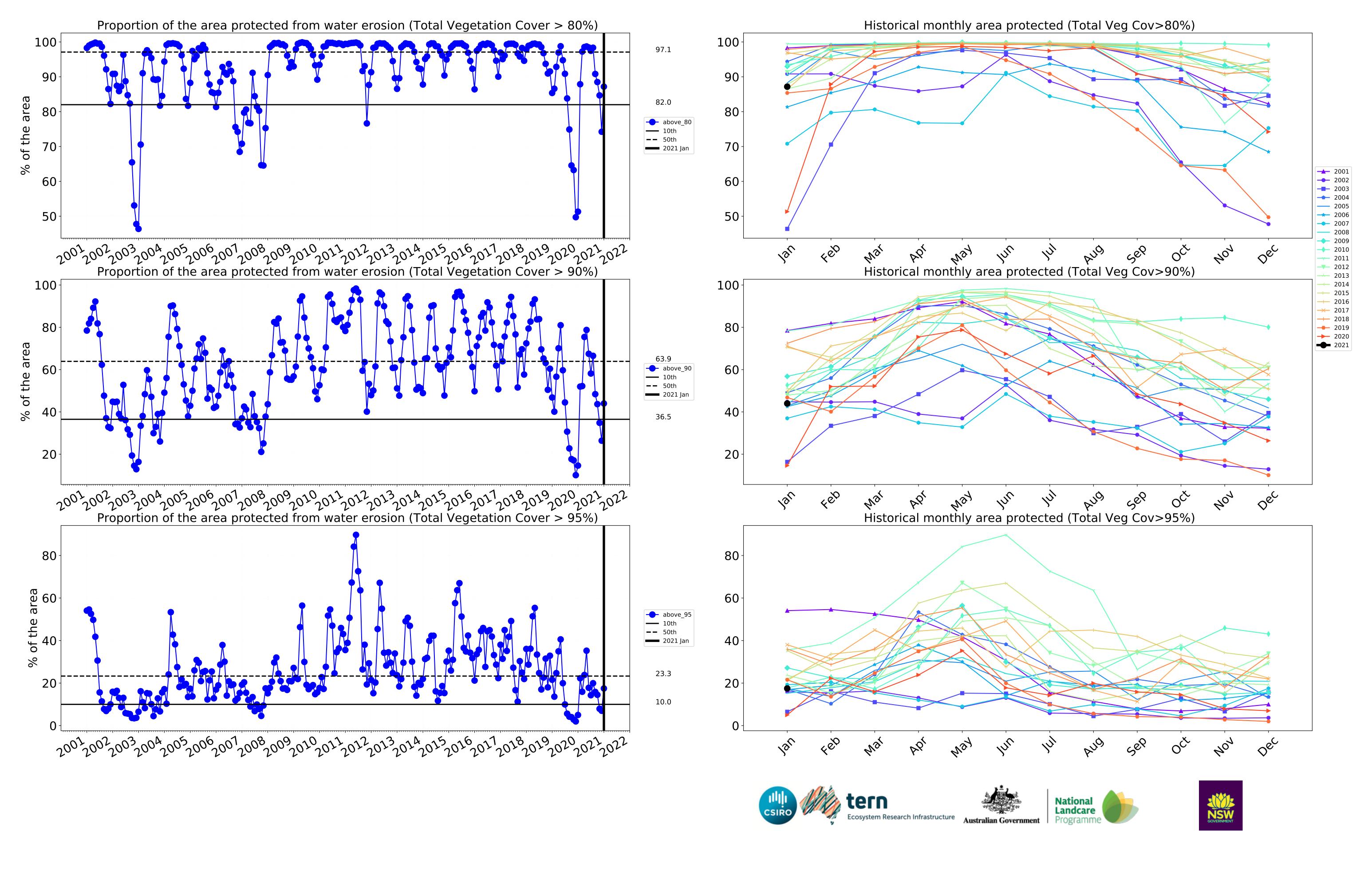




# **Grazing non forest timeseries**

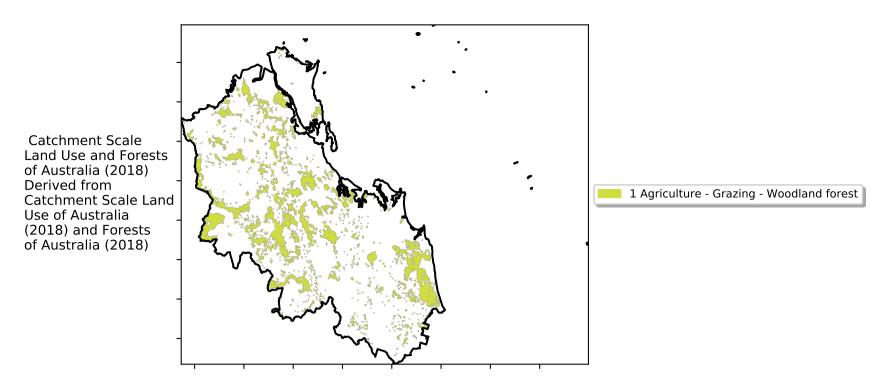




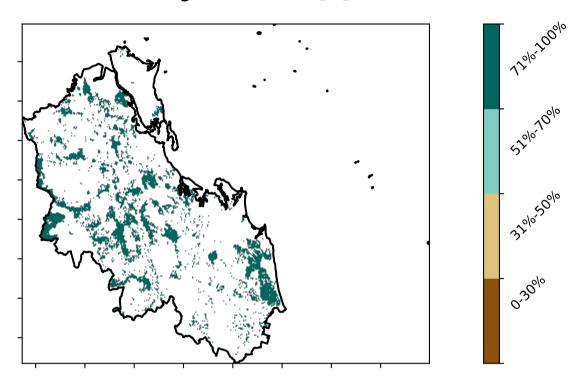


# **Grazing Woodland forest**

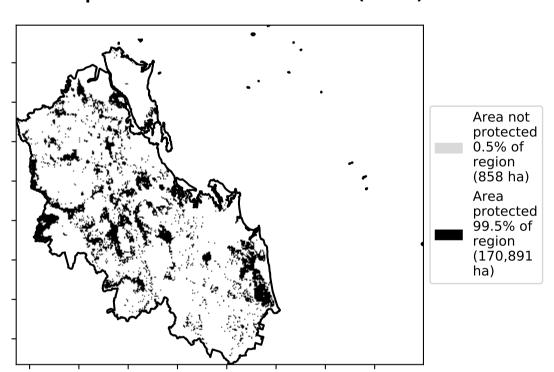
#### **Land use and forest cover**



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

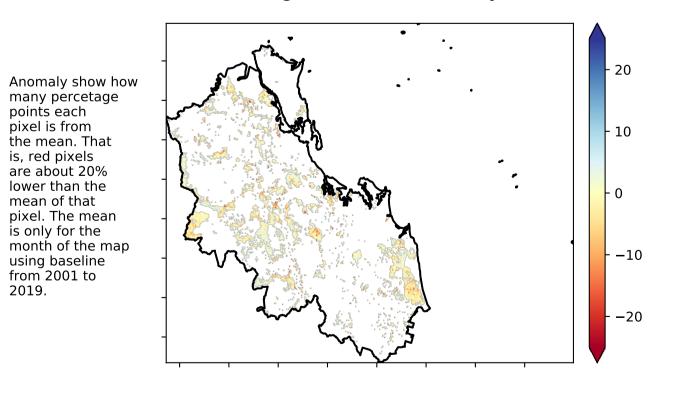


#### % Area protected from water erosion (>70%)



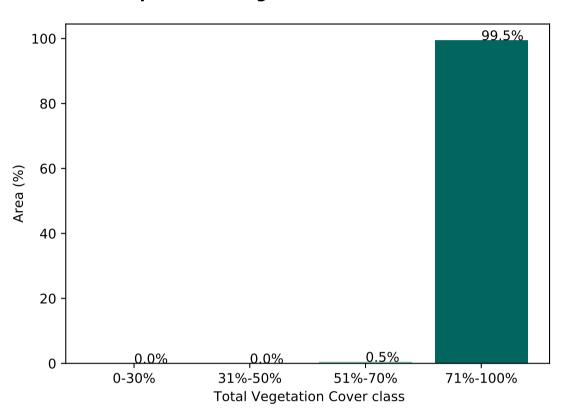
#### **Total Vegetation Cover Anomaly [%]**

lower than the

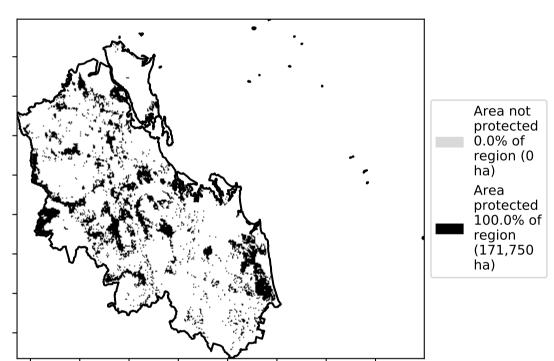


Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

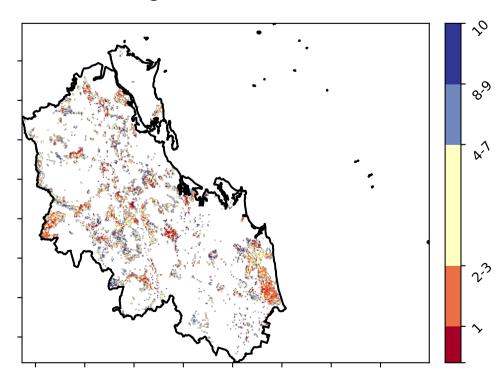
#### Proportion of vegetation cover class in area



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



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





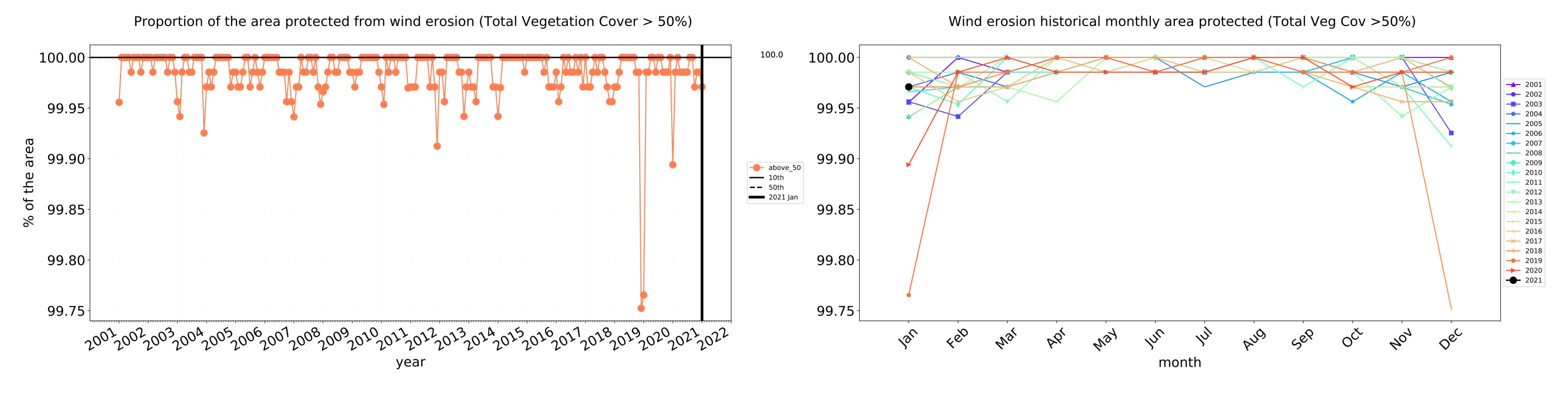


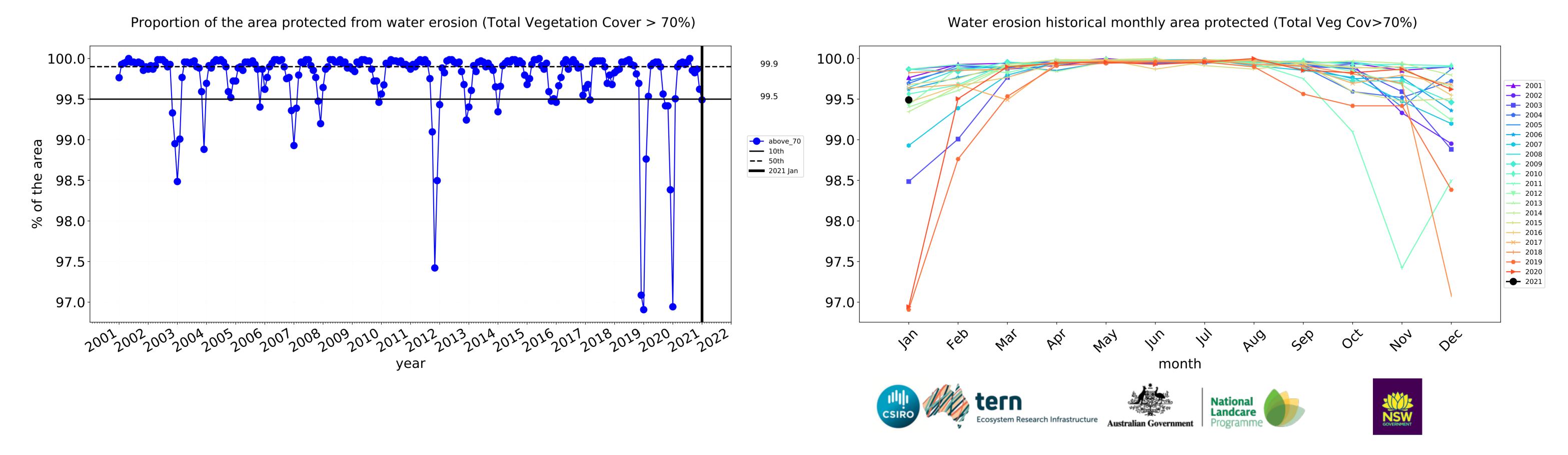


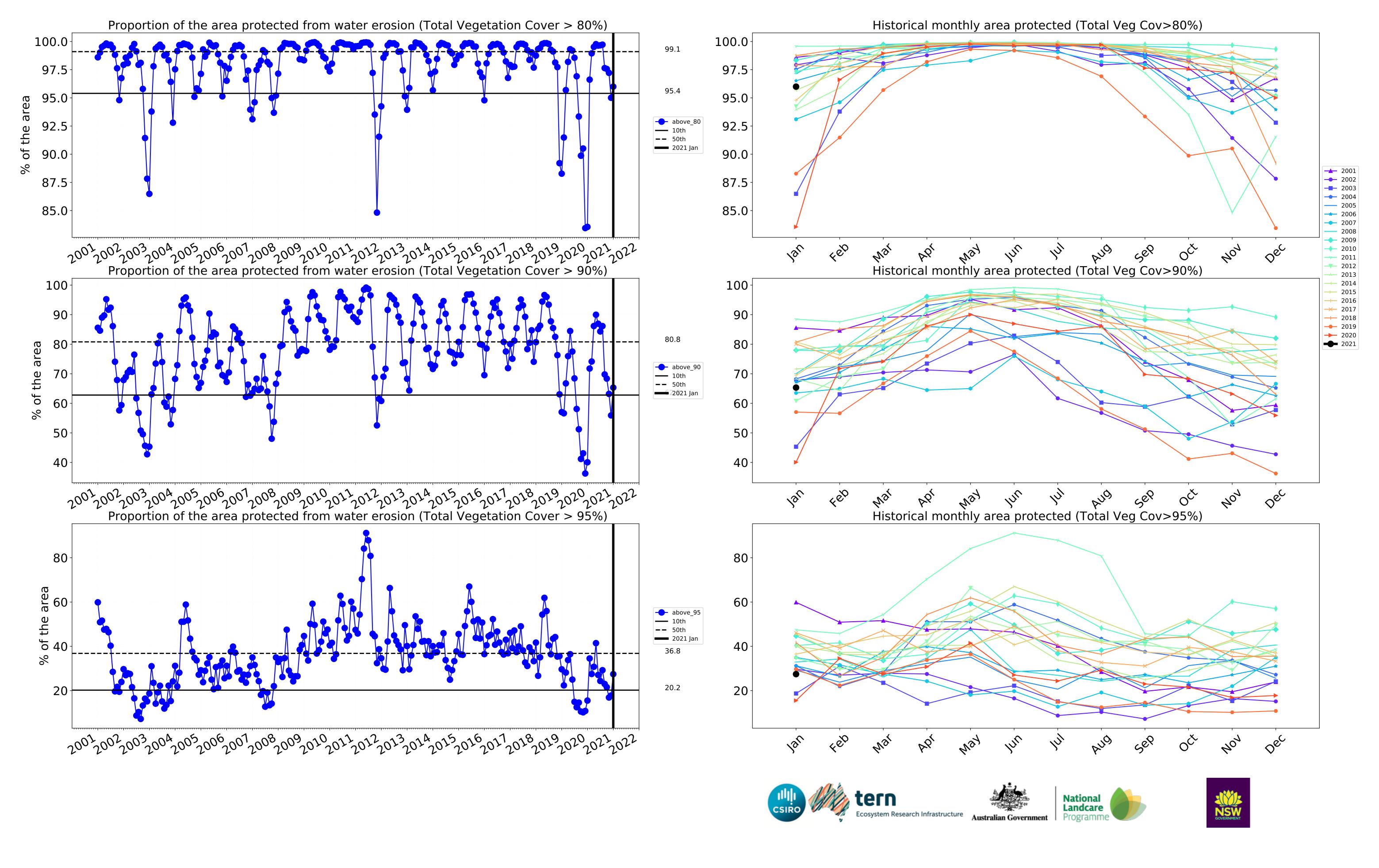




# **Grazing Woodland forest timeseries**

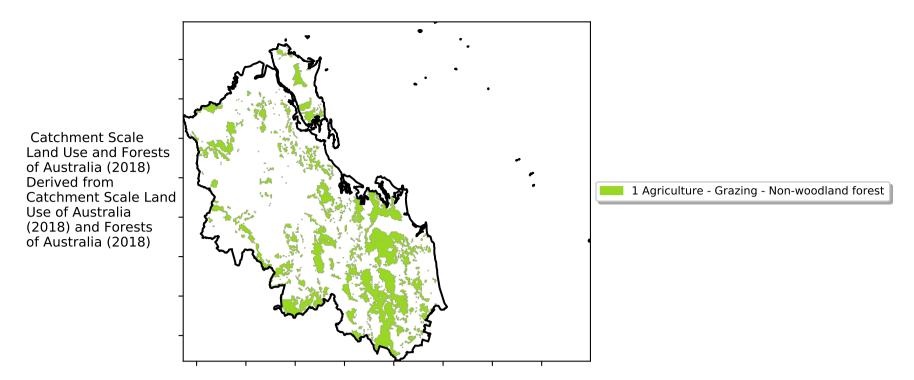




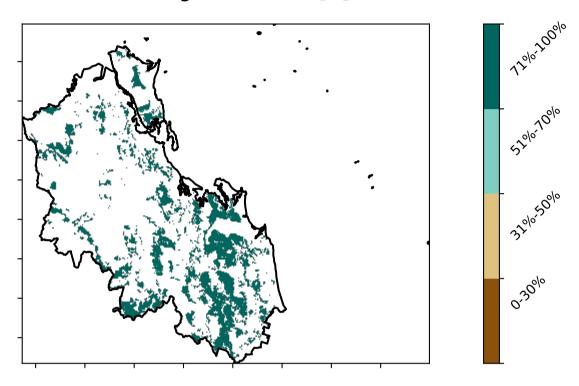


# **Grazing - Forest (non woodland)**

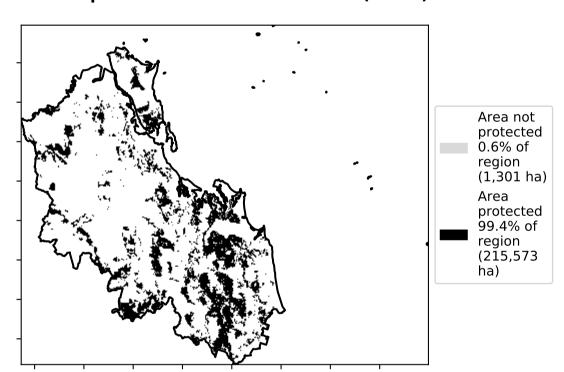
#### **Land use and forest cover**



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



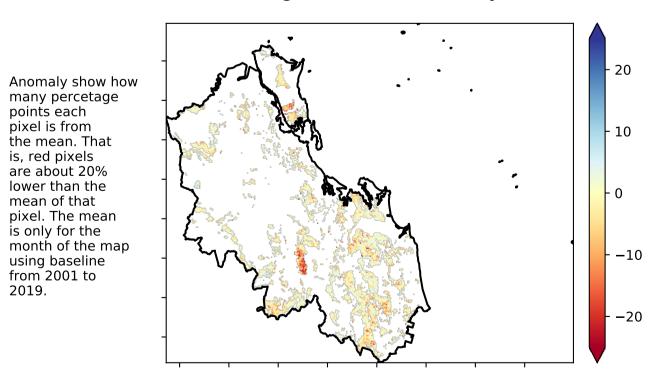
#### % Area protected from water erosion (>70%)



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

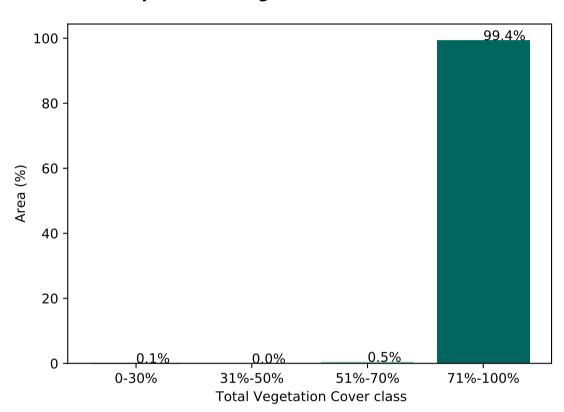
lower than the

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

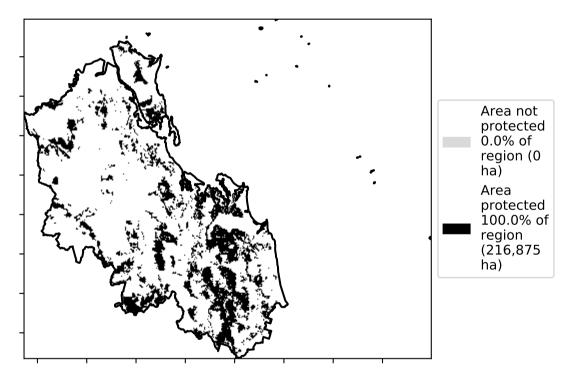


Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

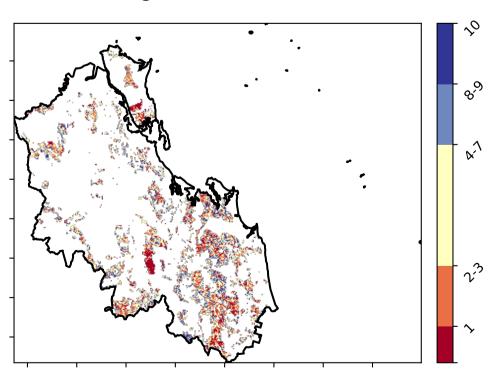
#### Proportion of vegetation cover class in area



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



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

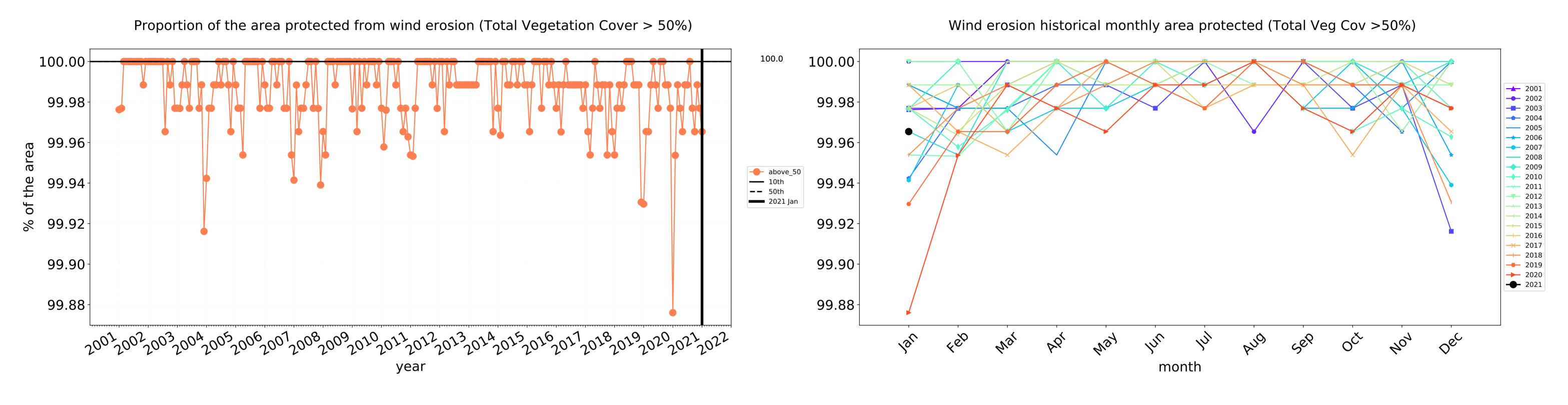


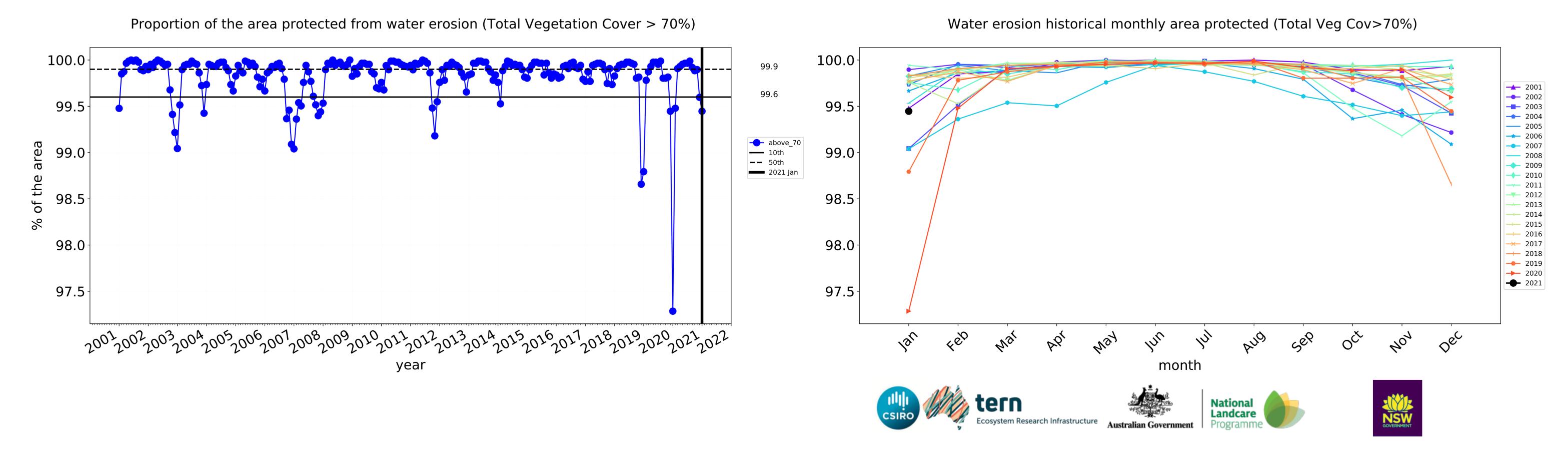


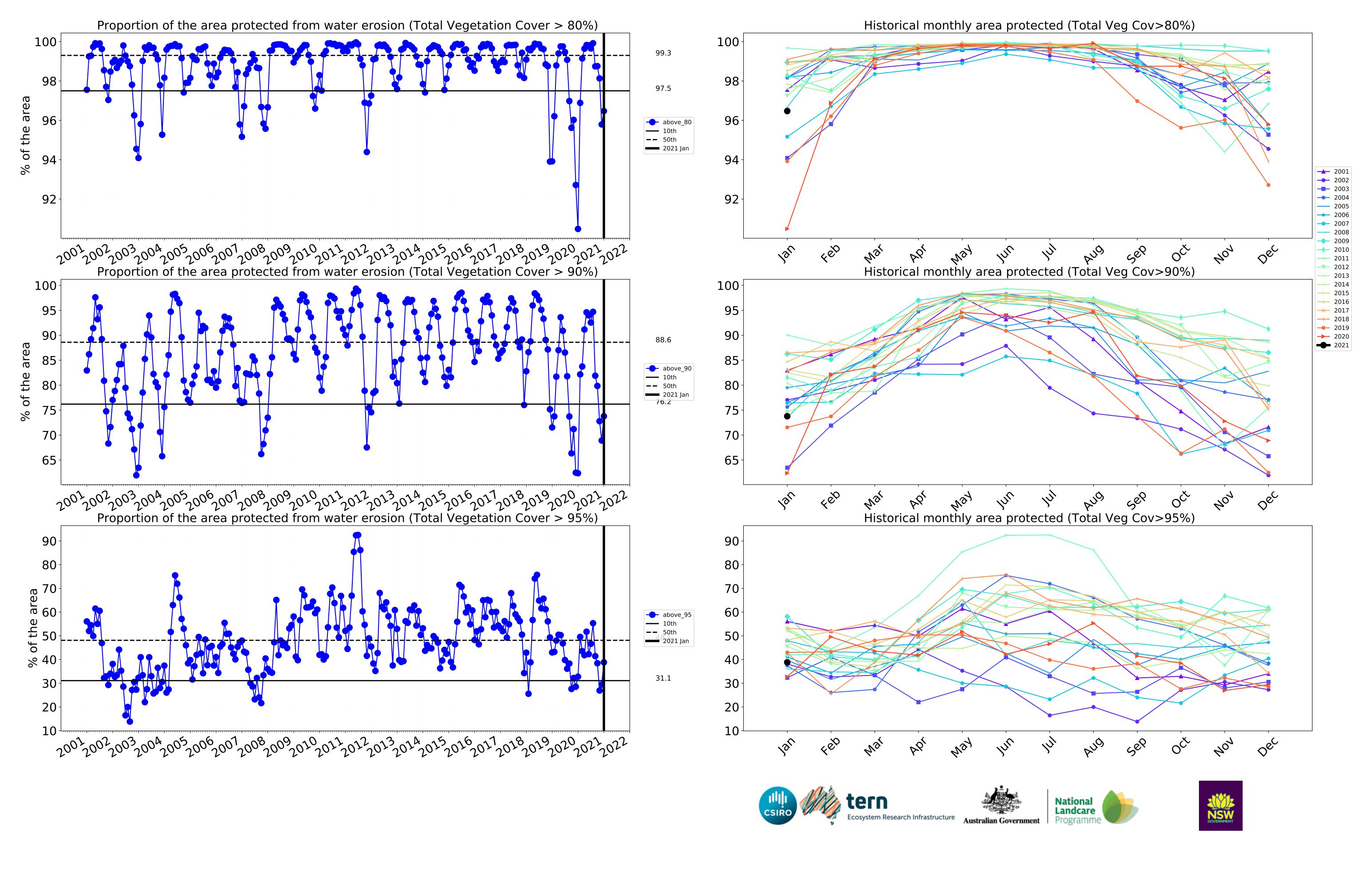






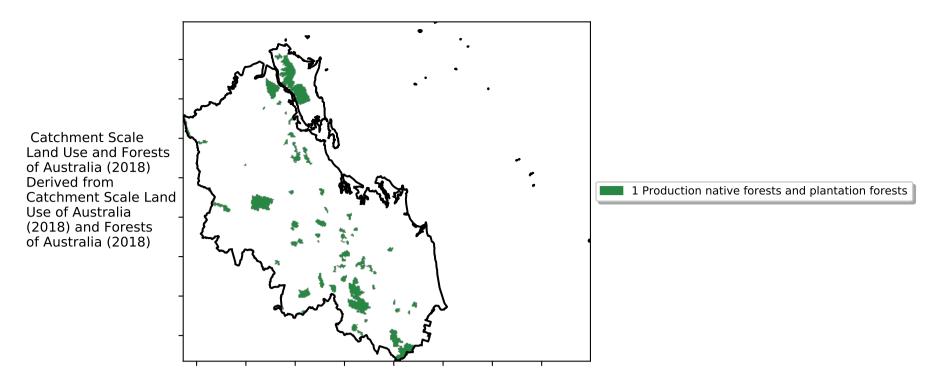




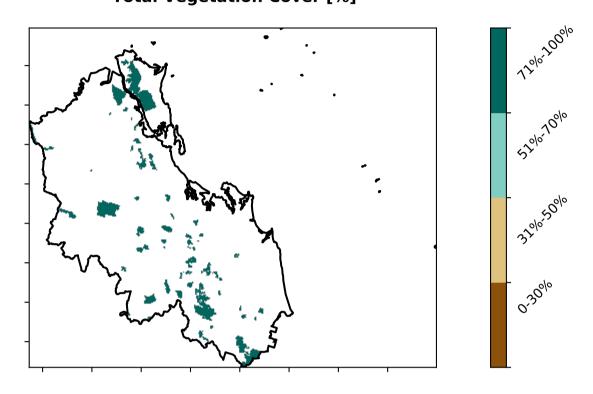


# **Production native forests and plantation forests**

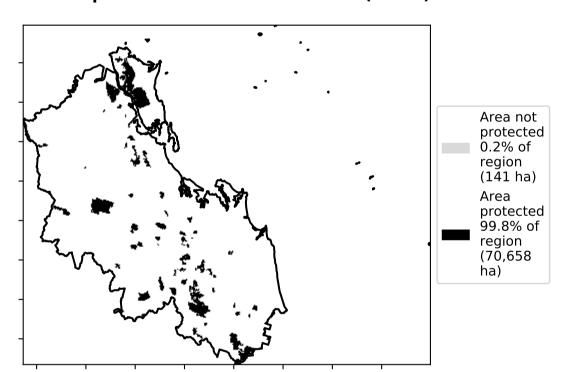
#### **Land use and forest cover**



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



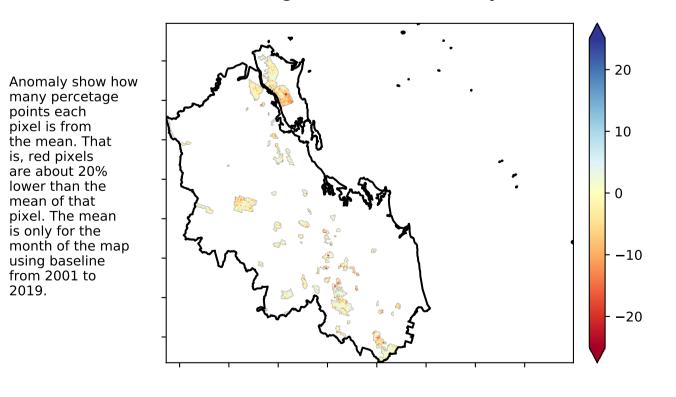
% Area protected from water erosion (>70%)



**Total Vegetation Cover Anomaly [%]** 

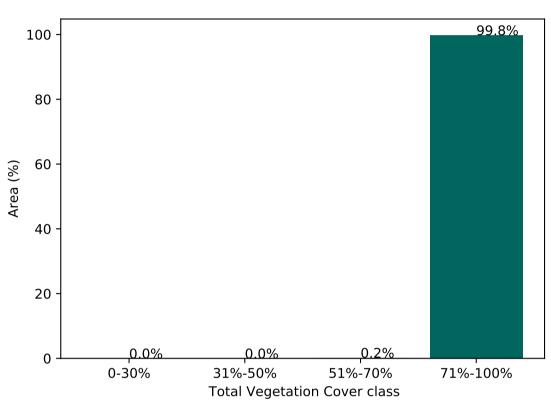
is, red pixels are about 20% lower than the mean of that

pixel. The mean

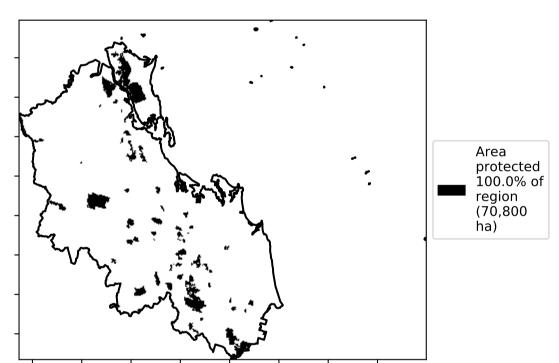


Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

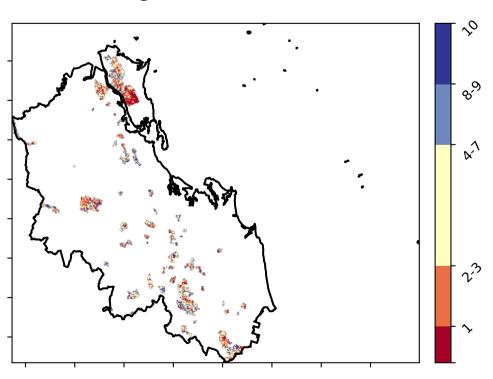
#### Proportion of vegetation cover class in area



% Area protected from wind erosion (>50%)



**Total Vegetation Cover Decile [%]** 



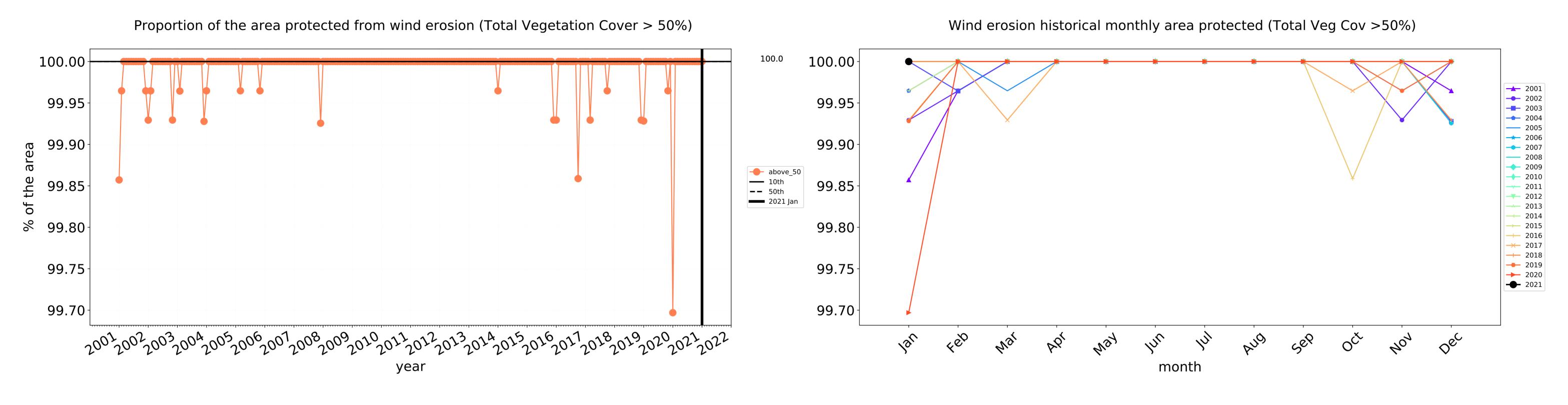


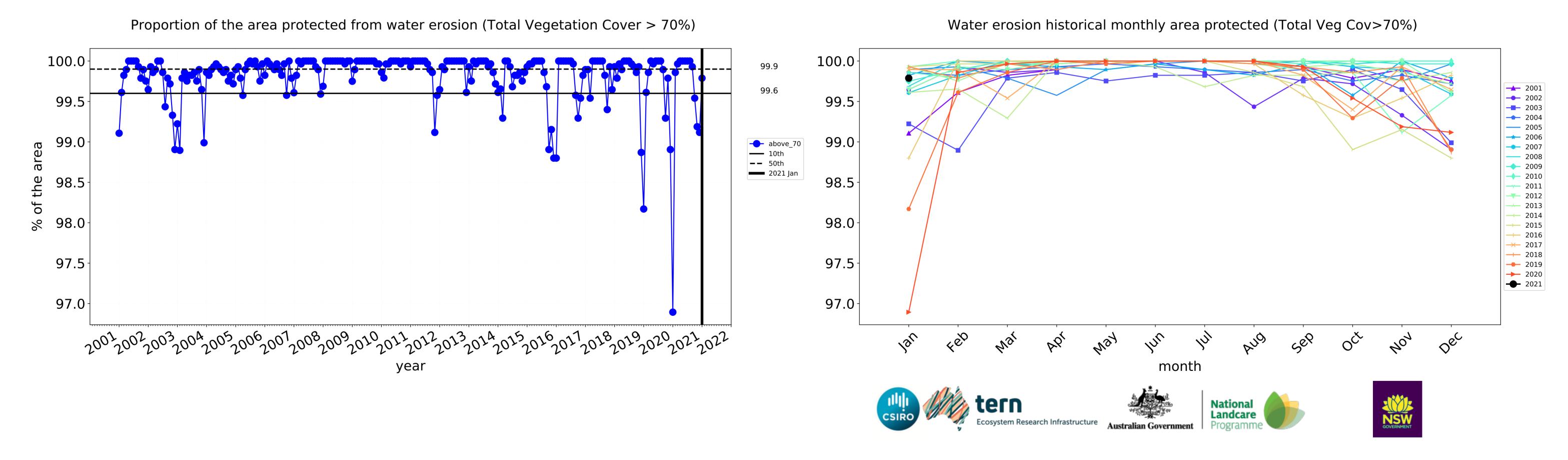


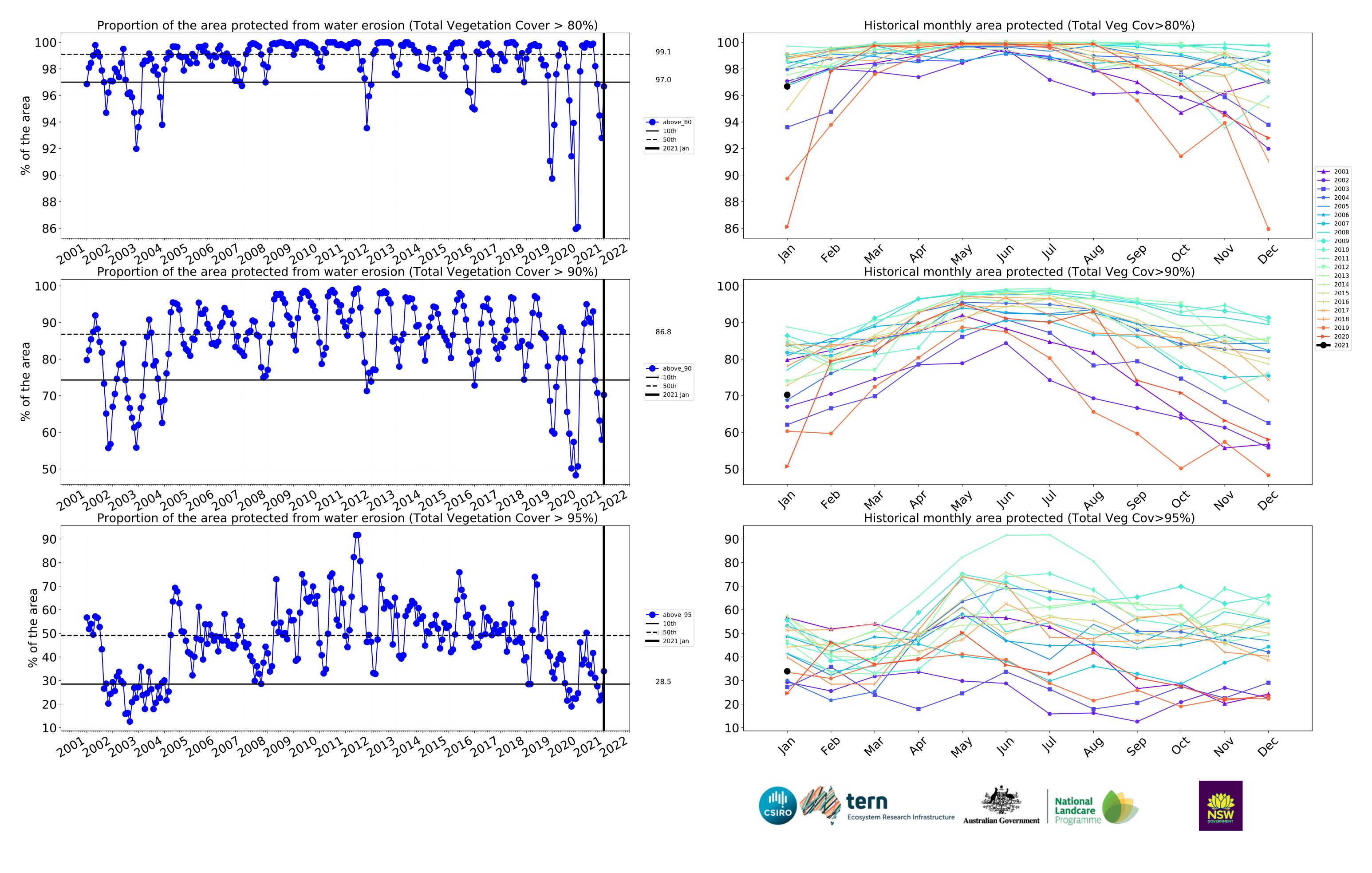




# **Production native forests and plantation forests timeseries**







# Gladstone\_(R) (1,028,700 ha and no data 19,554 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	1,028,700	99.9% 1,027,300	99.5% 1,024,025	97.8% 1,006,525	91.4% 940,475	60.2% 619,100	28.0% 288,150
Conservation and natural environments	153,500	99.8% 153,175	99.2% 152,325	98.1% 150,550	95.5% 146,600	73.8% 113,250	38.1% 58,550
Conservation and natural environments Woodland forest	49,400	99.8% 49,300	98.9% 48,850	97.0% 47,925	92.7% 45,800	64.3% 31,750	29.6% 14,625
Conservation and natural environments Forest (non woodland)	99,625	99.9% 99,525	99.8% 99,450	99.4% 99,025	97.9% 97,550	79.1% 78,825	42.2% 42,000
Agriculture	729,500	100.0% 729,375	99.9% 729,125	99.0% 722,075	92.0% 671,175	57.9% 422,025	26.2% 190,825
Grazing	727,950	100.0% 727,825	100.0% 727,600	99.0% 720,675	92.0% 669,900	57.9% 421,425	26.2% 190,625
Grazing non forest	339,325	100.0% 339,300	99.9% 339,100	98.5% 334,125	87.2% 295,800	44.0% 149,225	17.5% 59,300
Grazing Woodland forest	171,750	100.0% 171,725	100.0% 171,700	99.5% 170,875	96.0% 164,875	65.3% 112,200	27.4% 47,125
Grazing - Forest (non woodland)	216,875	100.0% 216,800	100.0% 216,800	99.4% 215,675	96.5% 209,225	73.8% 160,000	38.8% 84,200
Production native forests and plantation forests	70,800	100.0% 70,800	100.0% 70,800	99.8% 70,650	96.7% 68,450	70.2% 49,725	33.9% 24,025







