# Total vegetation cover soil protection Region:NRM Burnett Mary 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: June 2011

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 Jun 2011**

#### Land use and forest cover

#### Legend with land class forest cover and number, i.e. Forests is 12 1 Conservation and natural environments -2 Conservation and natural environments -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 forests 13 Other uses



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

is only for the

using baseline from 2001 to 2019.

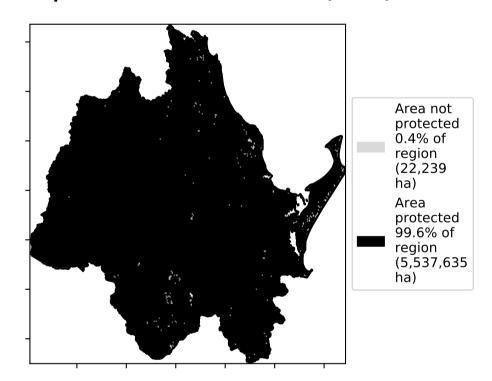
pixel. The mean

month of the map

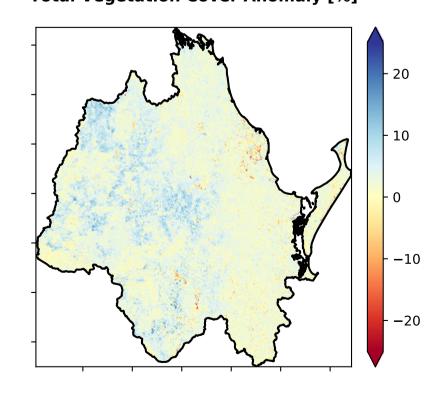




% Area protected from water erosion (>70%)

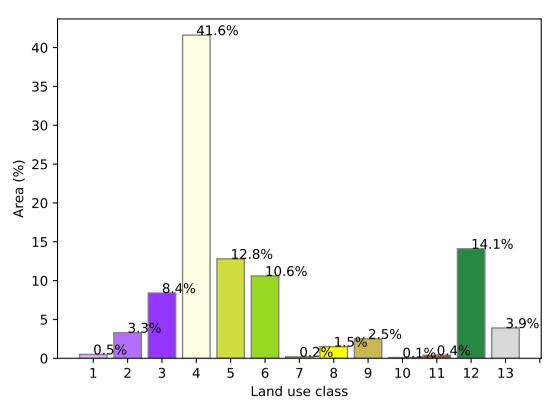


**Total Vegetation Cover Anomaly [%]** 

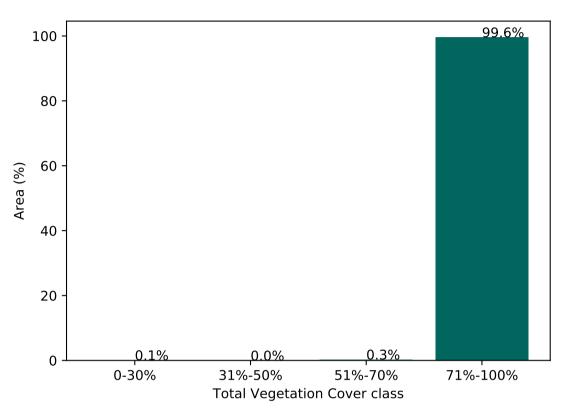


Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

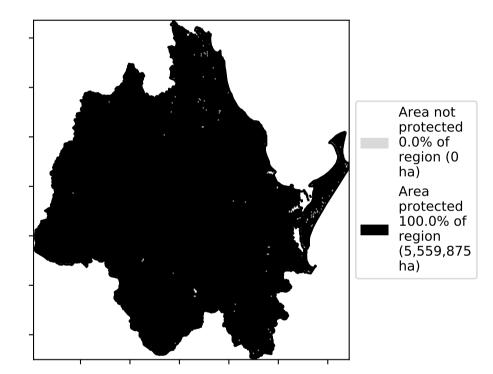
#### Proportion of each land class in area

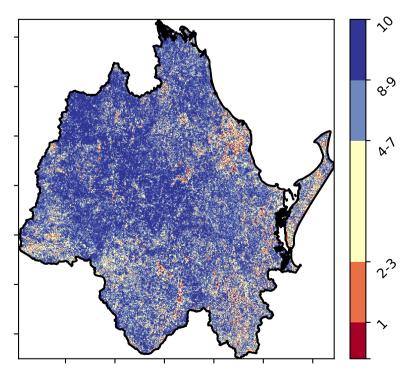


#### Proportion of vegetation cover class in area



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







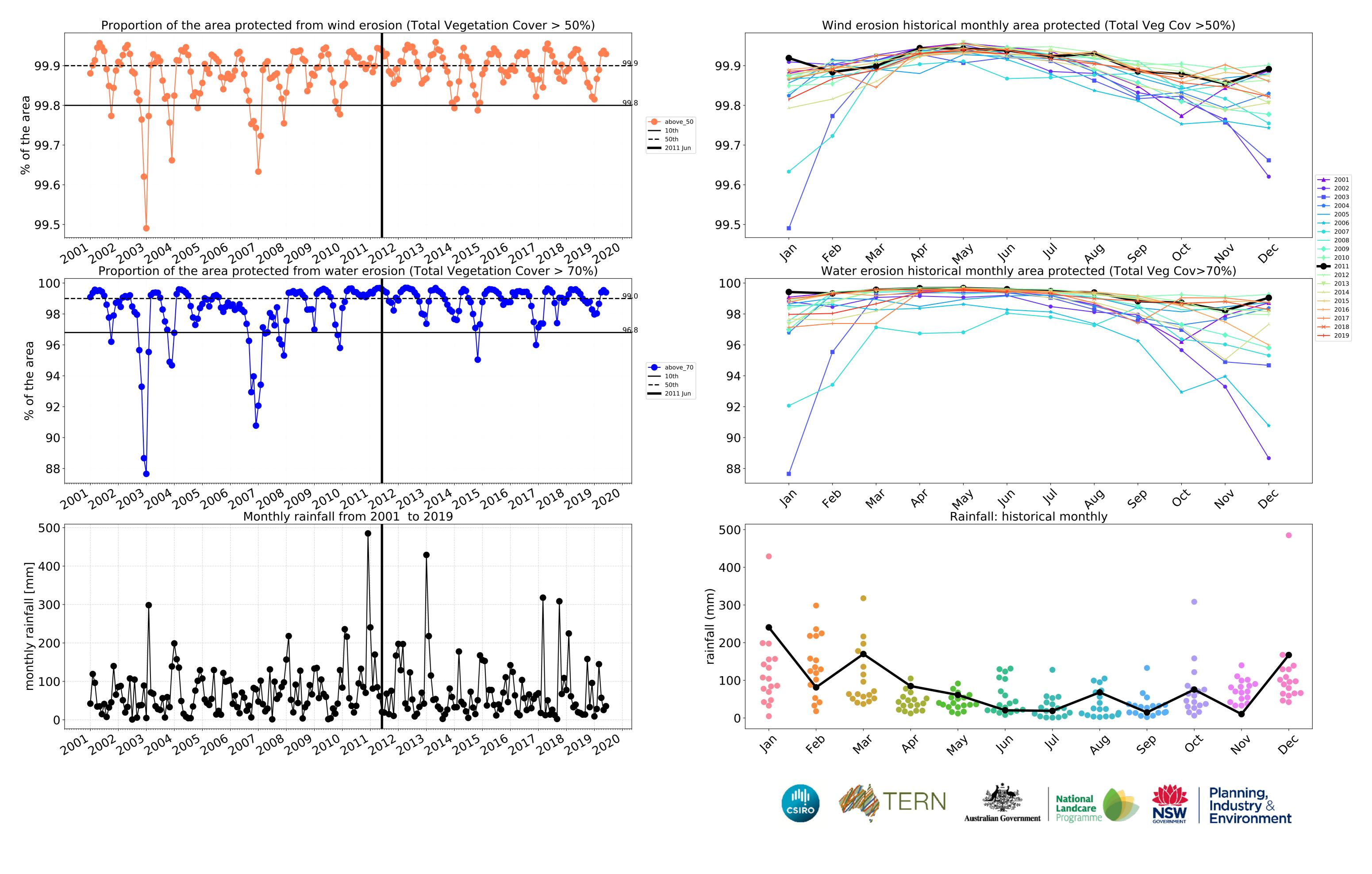


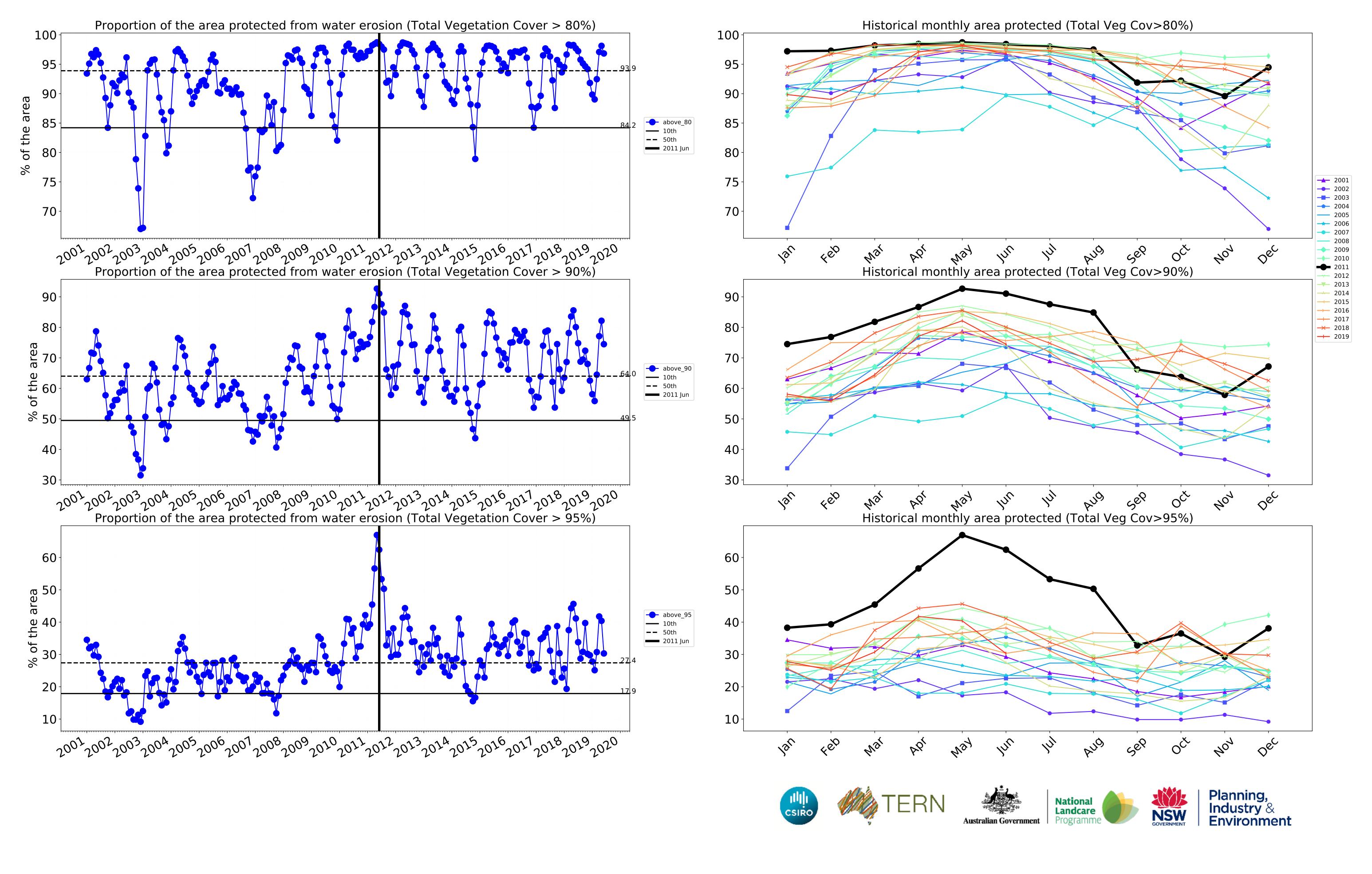












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#### **Conservation and natural environments**

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

of Australia (2018)

Anomaly show how many percetage points each

pixel is from

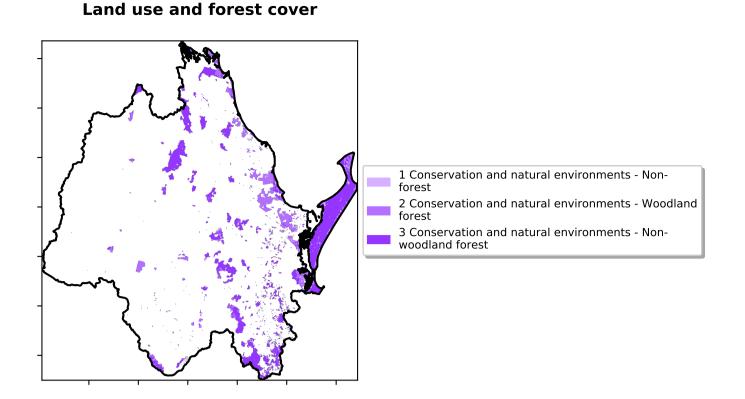
is, red pixels are about 20% lower than the mean of that

the mean. That

pixel. The mean

using baseline from 2001 to 2019.

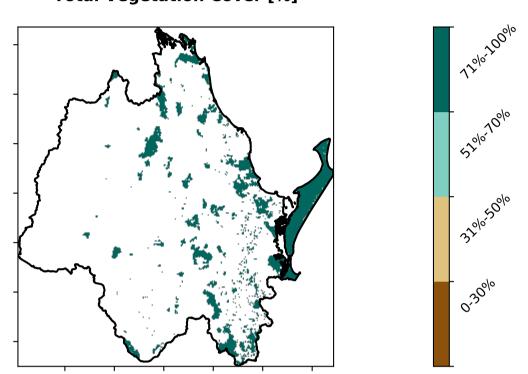
is only for the month of the map



# 70 - 68.6% 60 - 50 - 27.0% 20 - 20 - 4.4%

Proportion of each land class in area

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

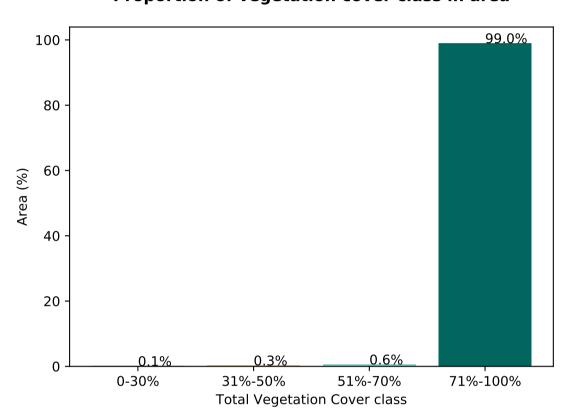


Proportion of vegetation cover class in area

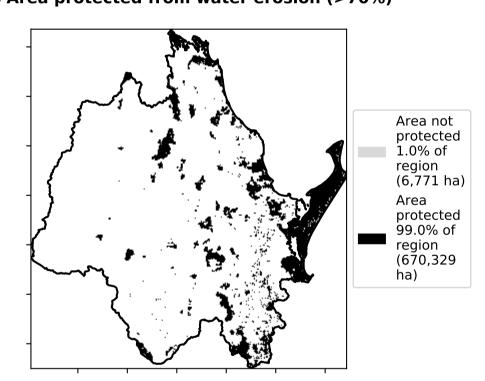
Land use class

2

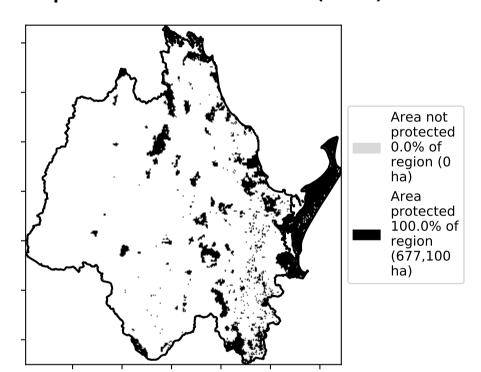
3



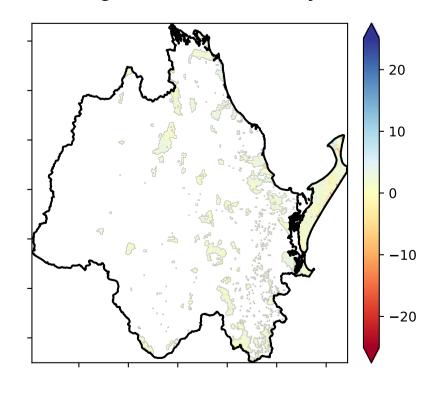
#### % Area protected from water erosion (>70%)



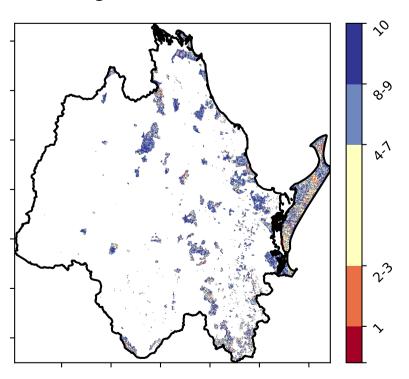
% Area protected from wind erosion (>50%)



#### **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.







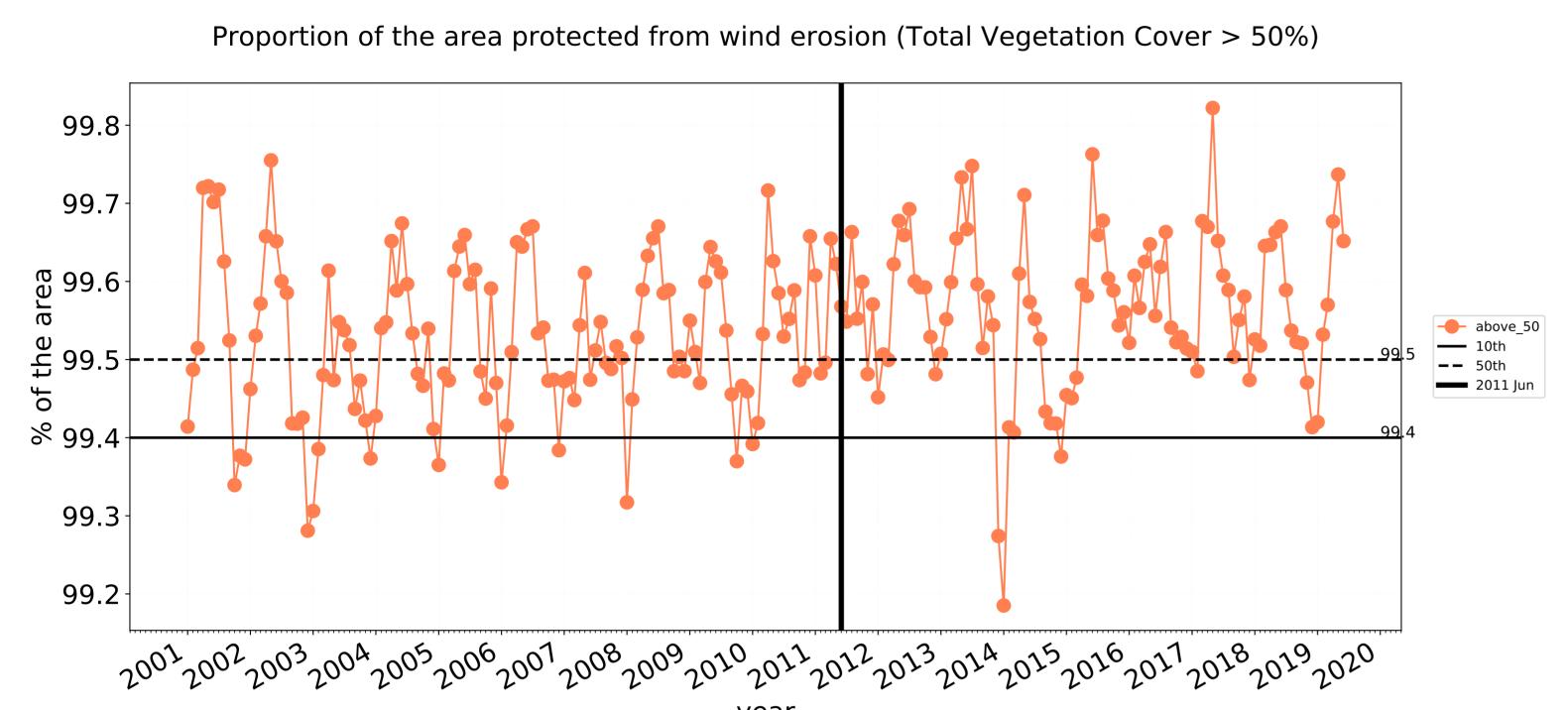




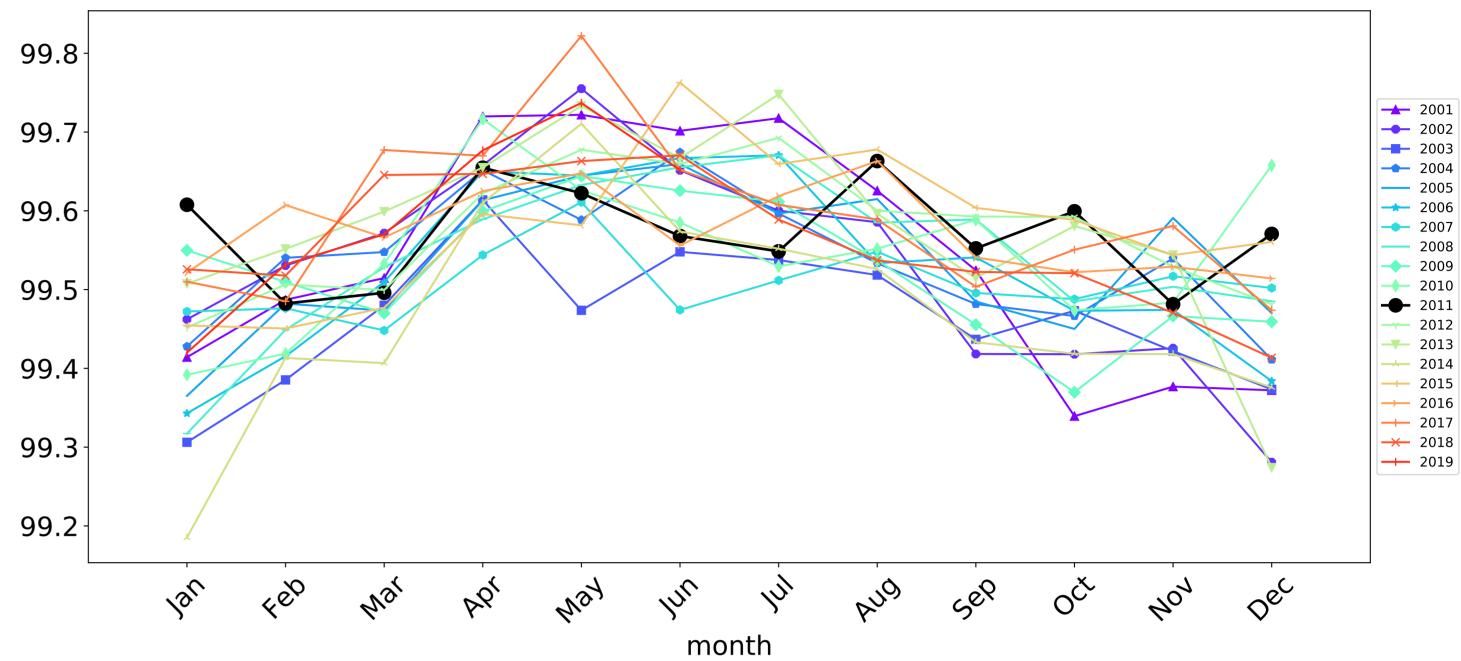


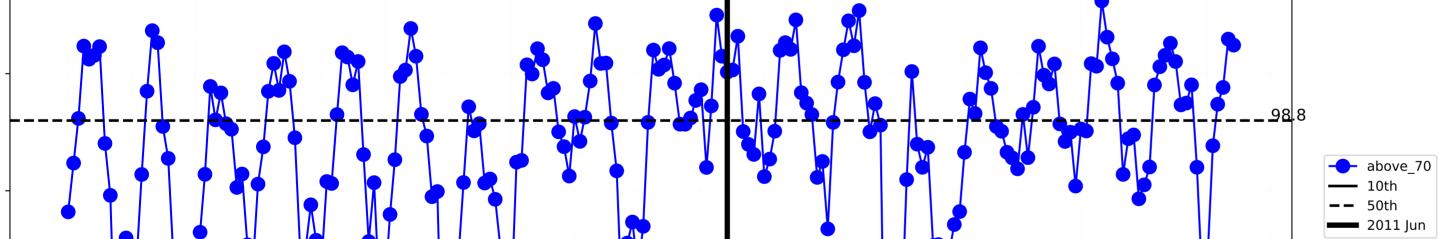


## **Conservation and natural environments timeseries**

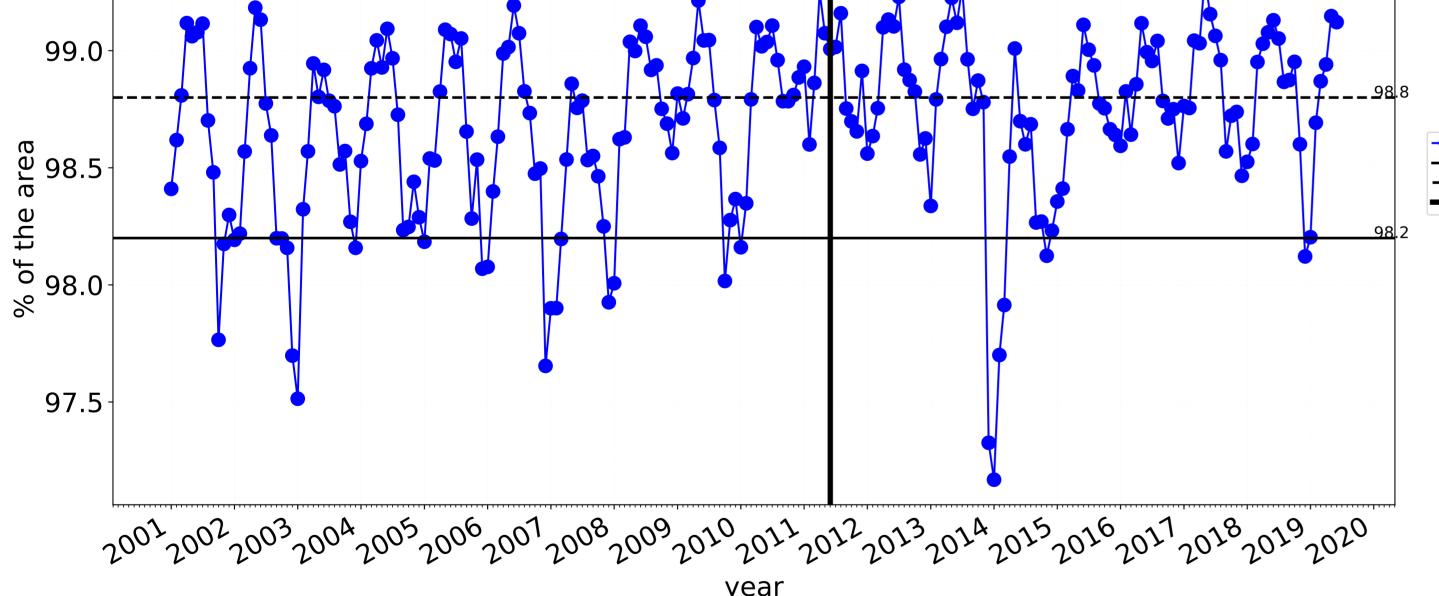


## Wind erosion historical monthly area protected (Total Veg Cov >50%)

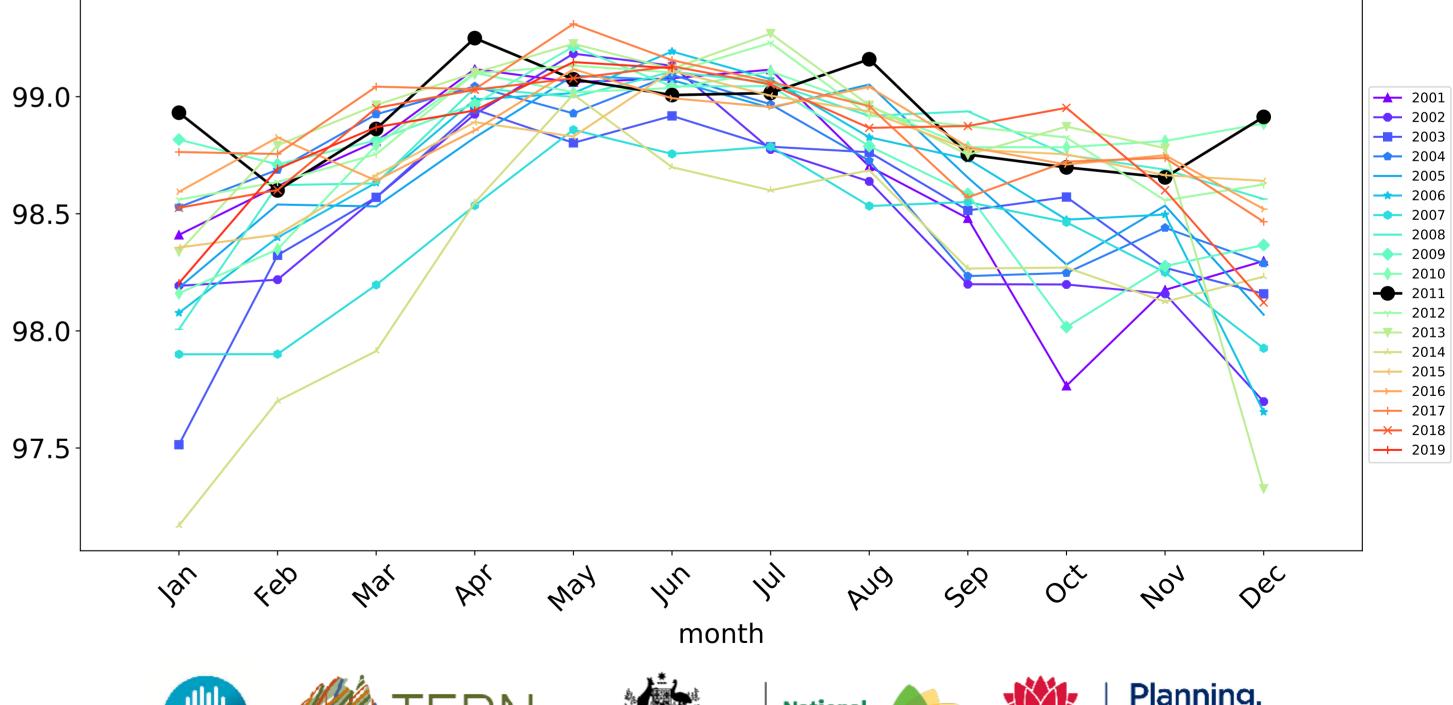




Proportion of the area protected from water erosion (Total Vegetation Cover > 70%)



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





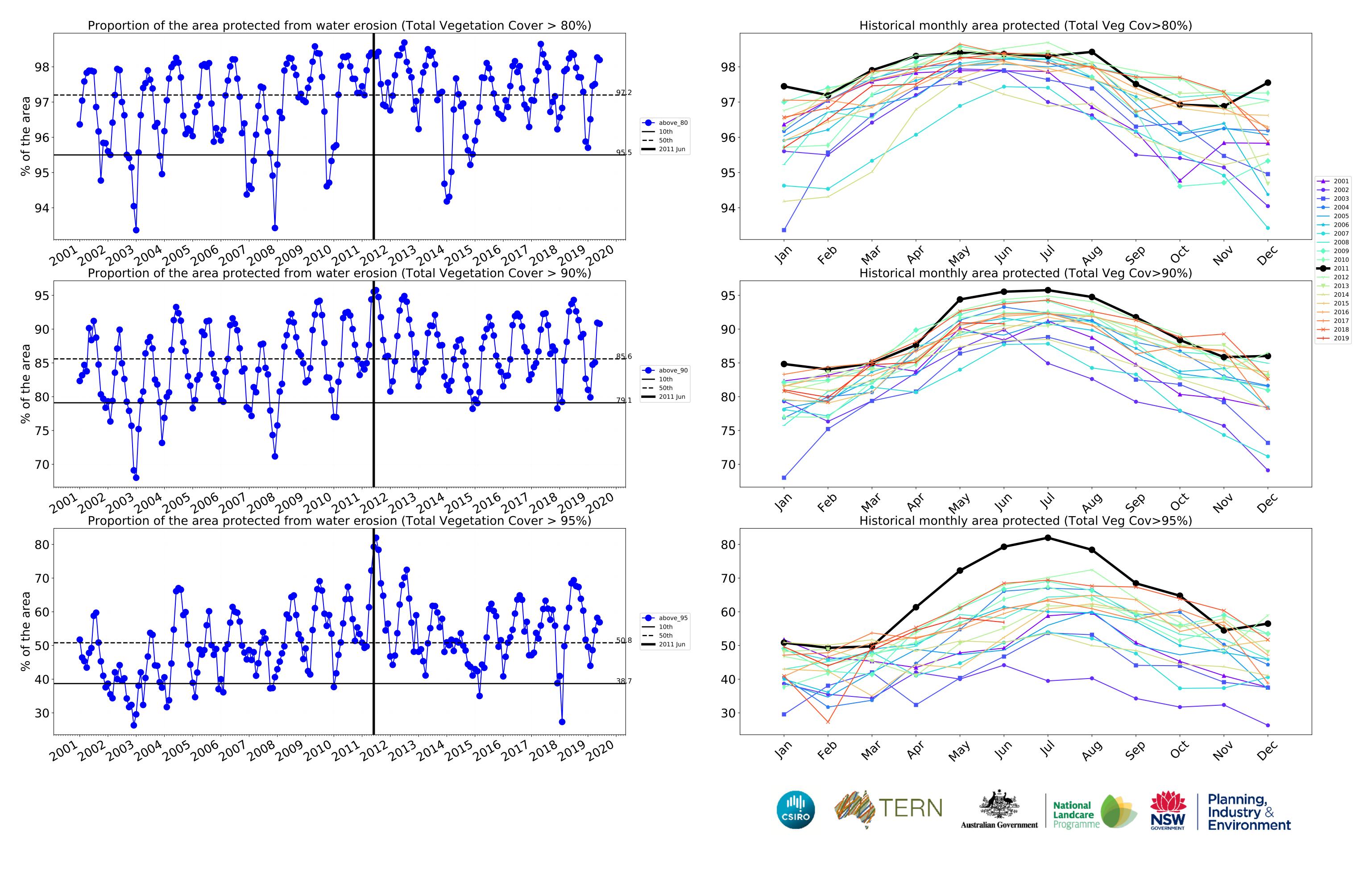












## **Conservation and natural environments Woodland forest**

#### 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)

Anomaly show how many percetage points each pixel is from

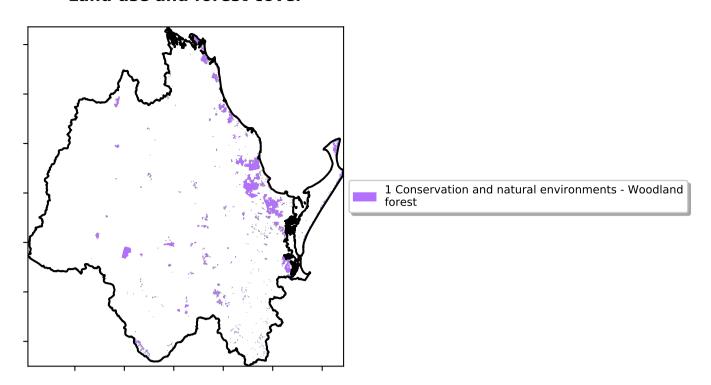
the mean. That

pixel. The mean

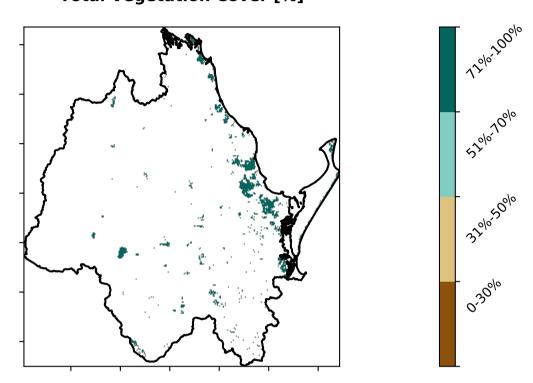
using baseline from 2001 to 2019.

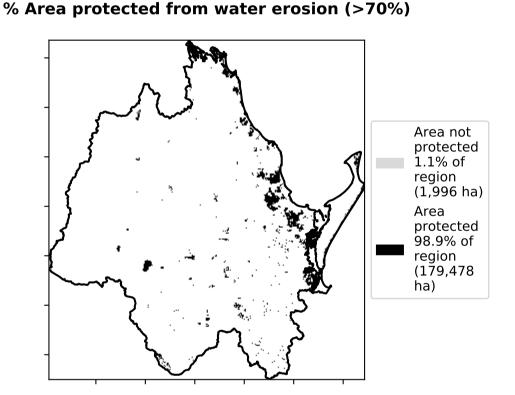
is only for the month of the map

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

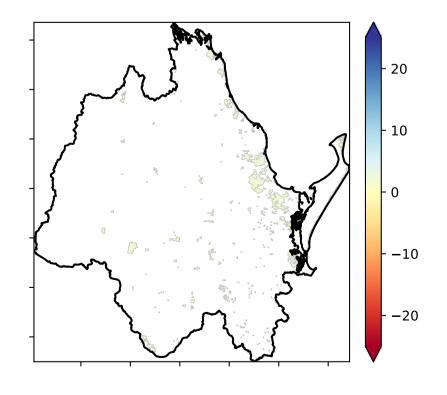


#### **Total Vegetation Cover [%]**



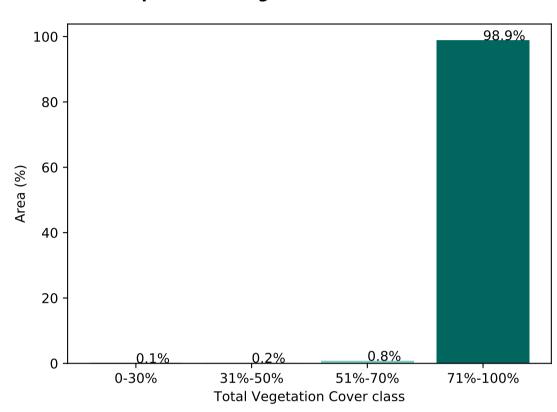


#### **Total Vegetation Cover Anomaly [%]**

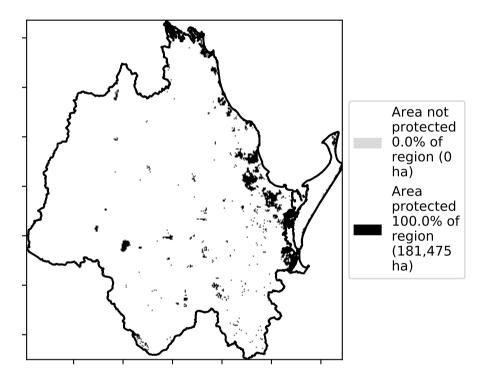


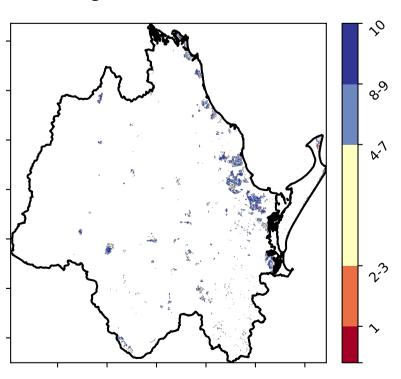
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#### Proportion of vegetation cover class in area



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









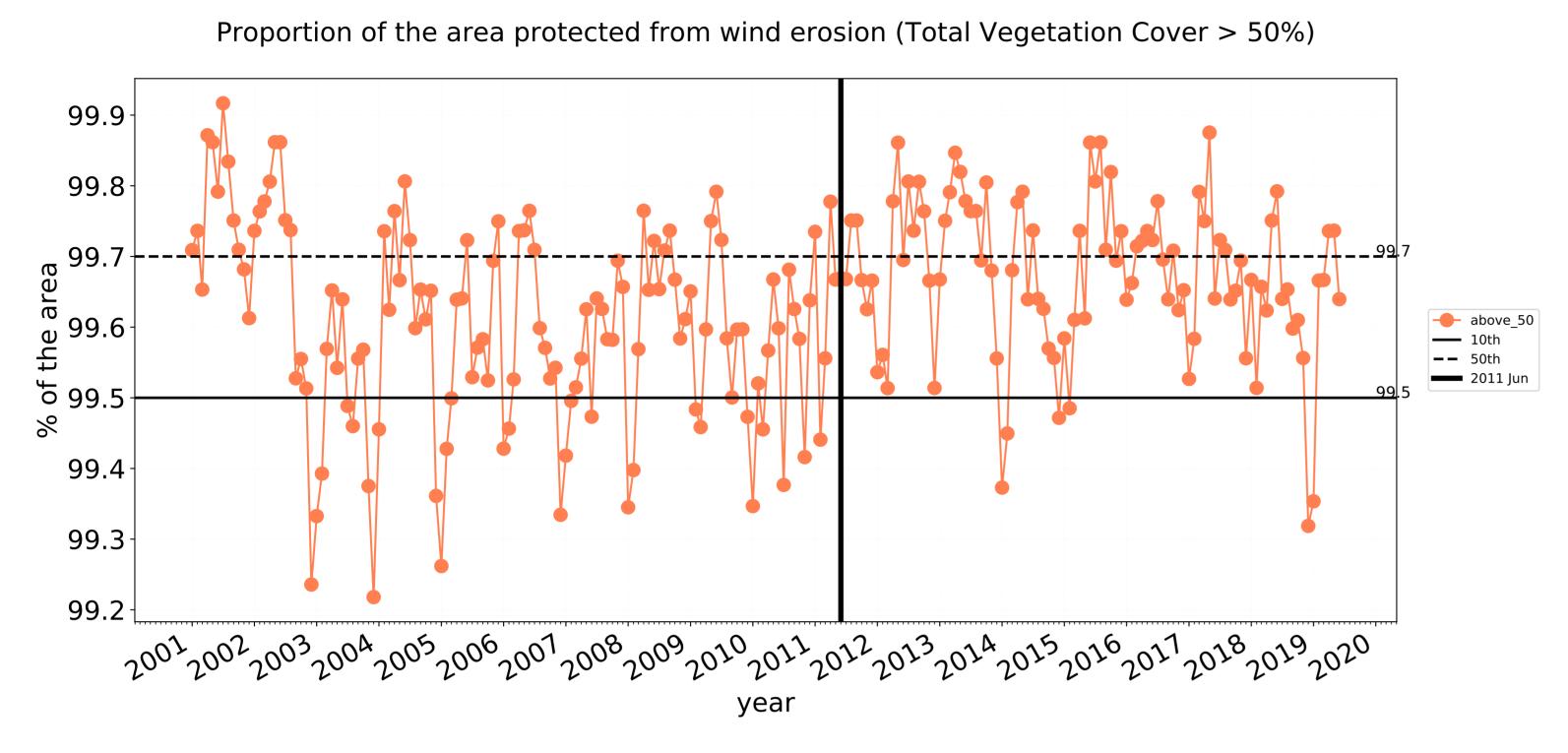




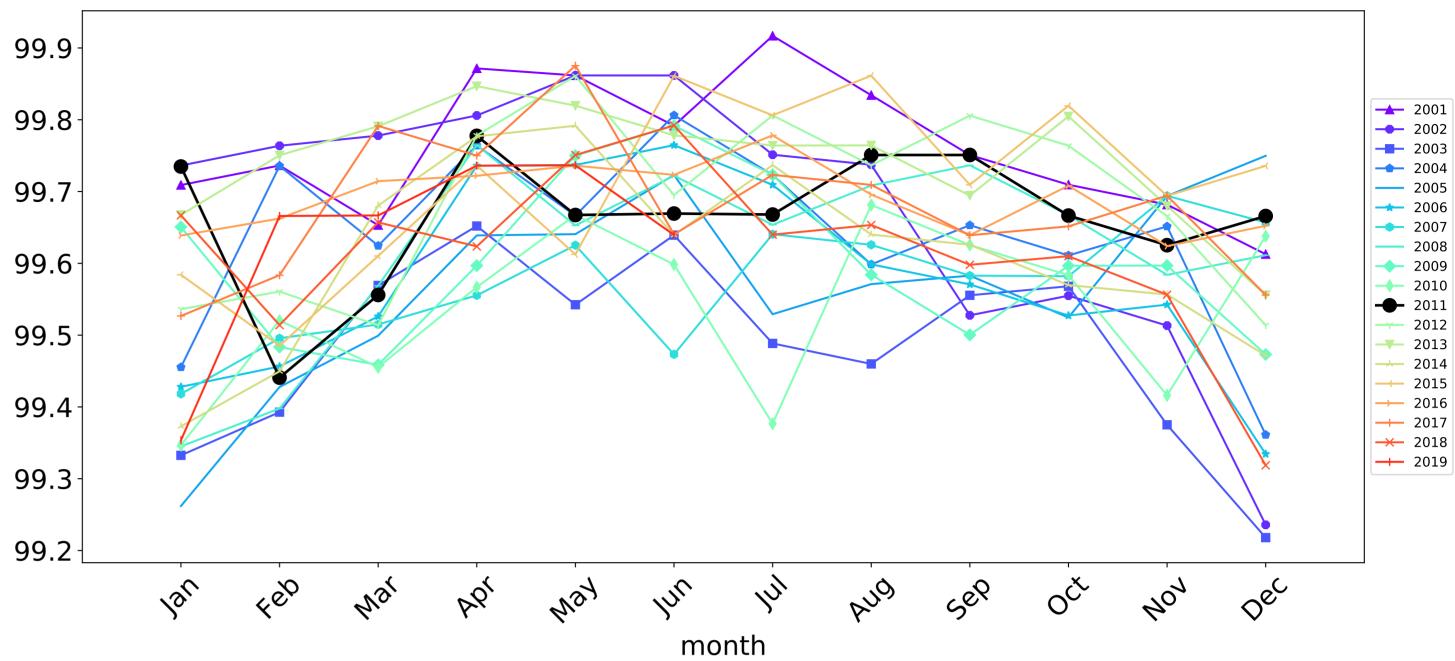


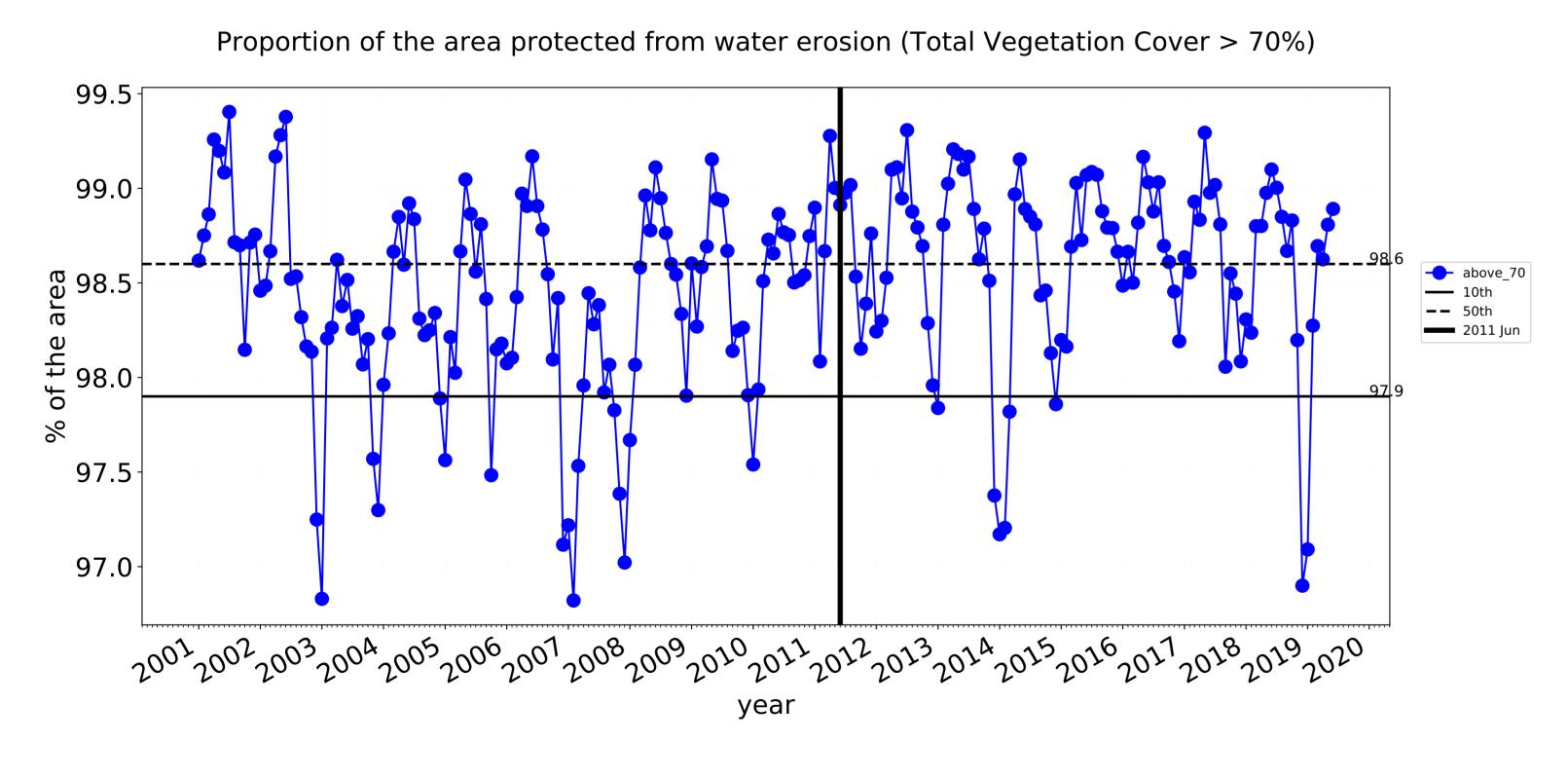


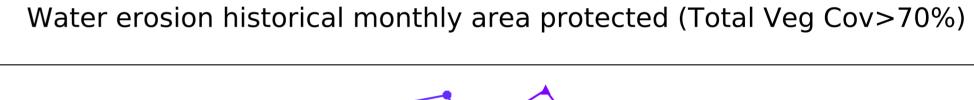
#### **Conservation and natural environments Woodland forest timeseries**

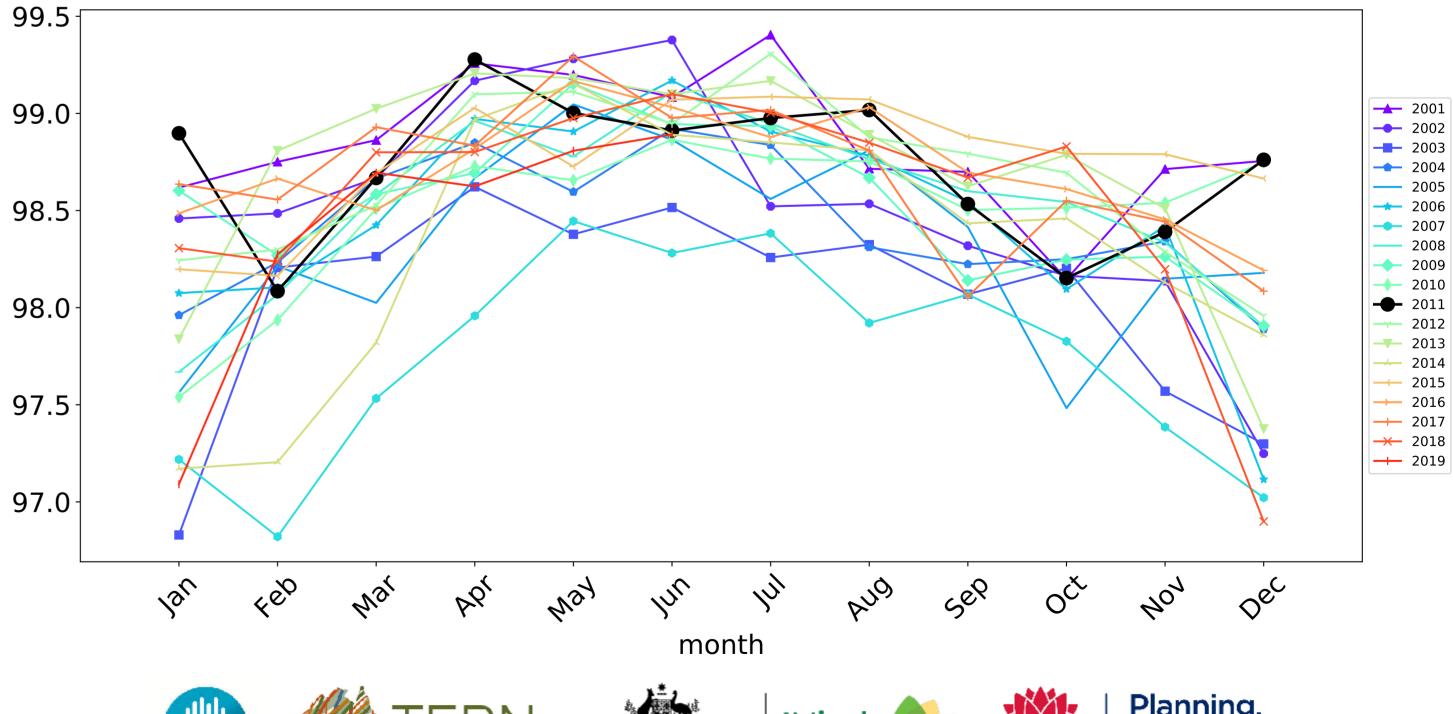


## Wind erosion historical monthly area protected (Total Veg Cov >50%)







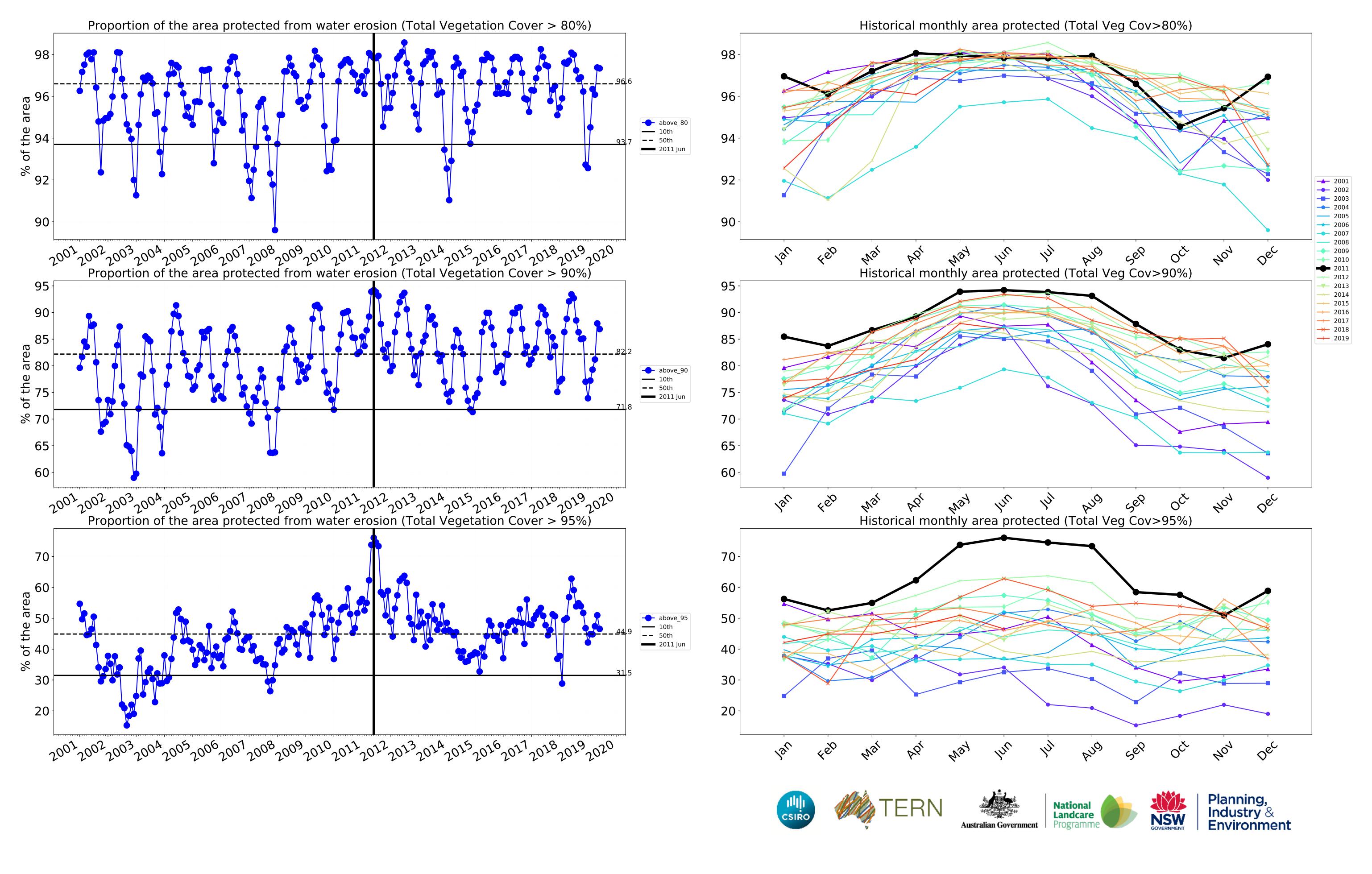












## **Conservation and natural environments Forest (non woodland)**

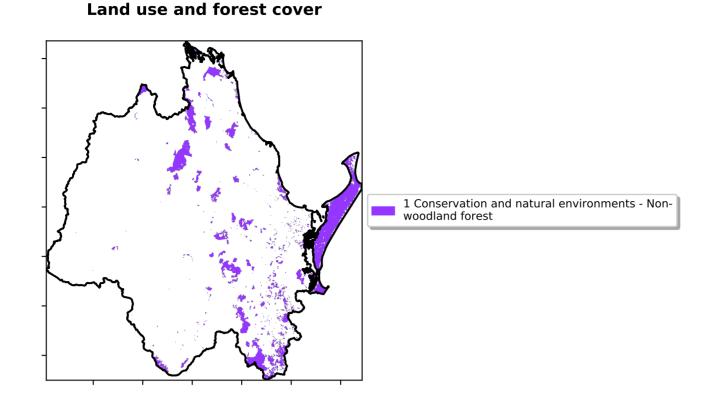
#### Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)

Anomaly show how many percetage points each pixel is from the mean. That

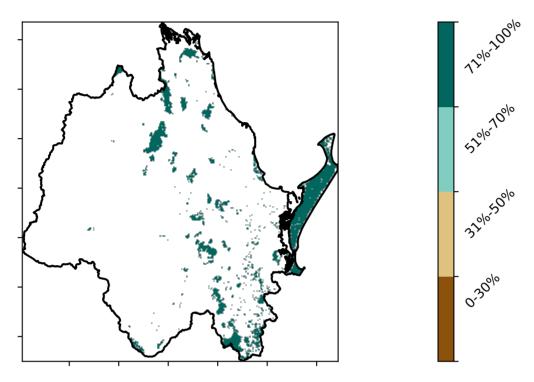
is, red pixels

are about 20% lower than the mean of that pixel. The mean

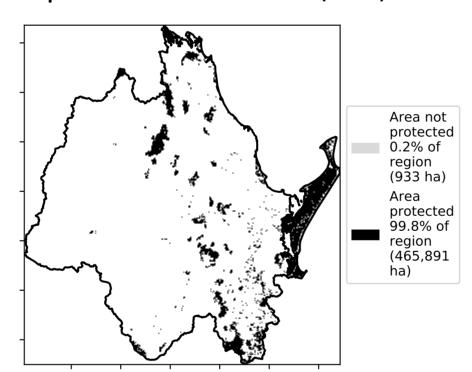
is only for the month of the map using baseline from 2001 to 2019.



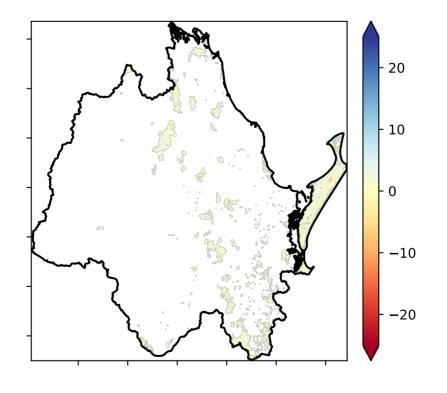
#### Total Vegetation Cover [%]



% Area protected from water erosion (>70%)

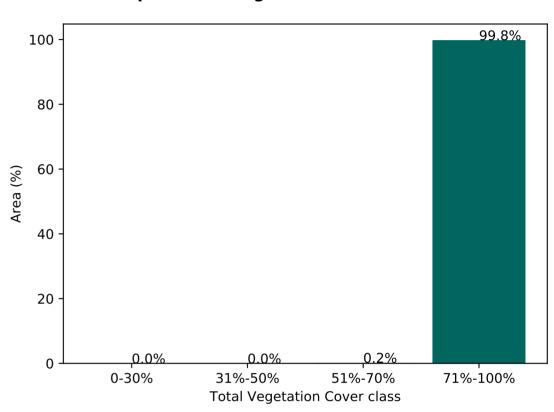


#### **Total Vegetation Cover Anomaly [%]**

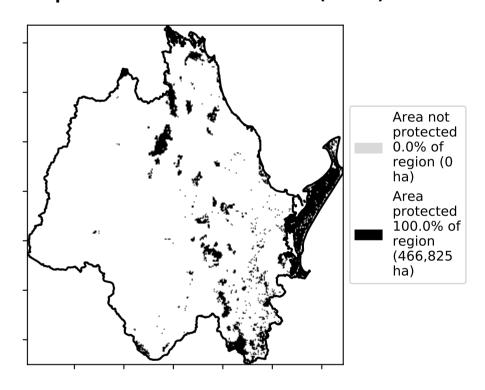


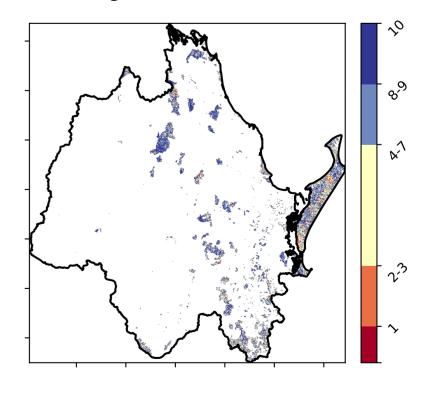
Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

#### Proportion of vegetation cover class in area



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







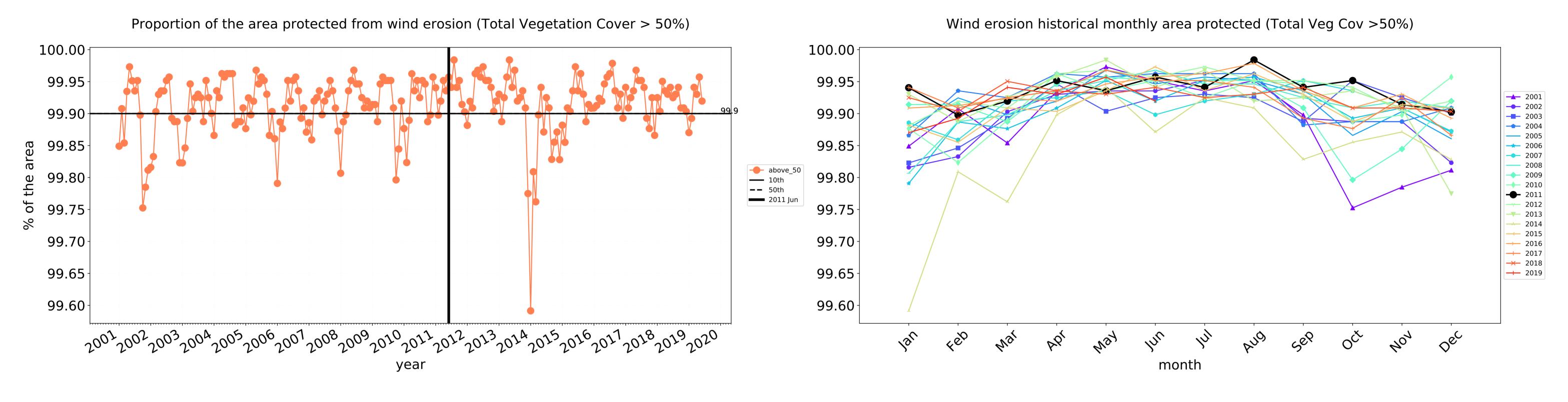


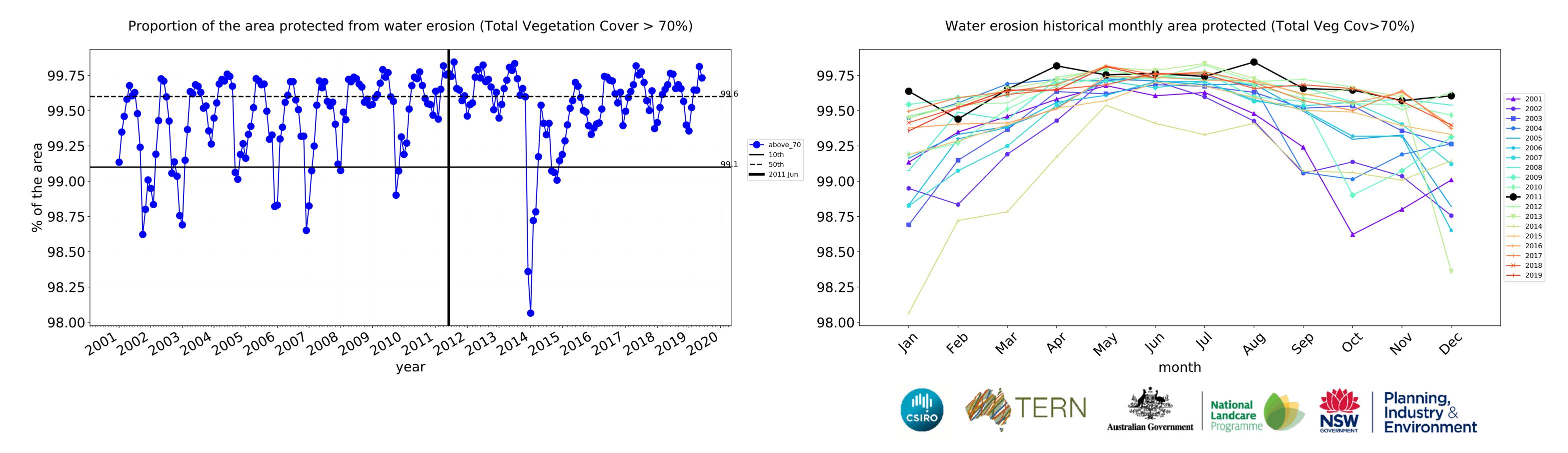


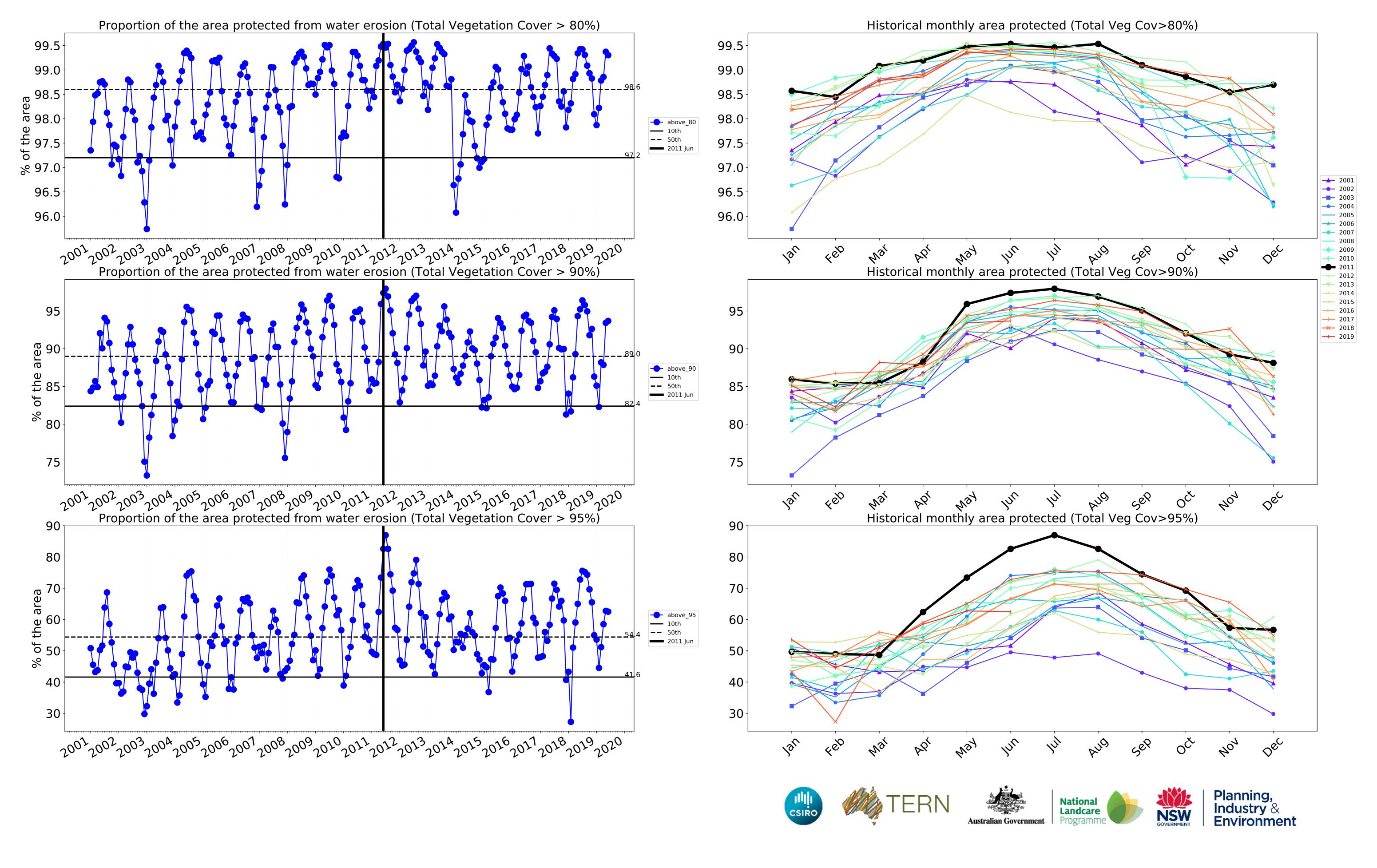












## **Agriculture**

#### 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)

Anomaly show how many percetage points each

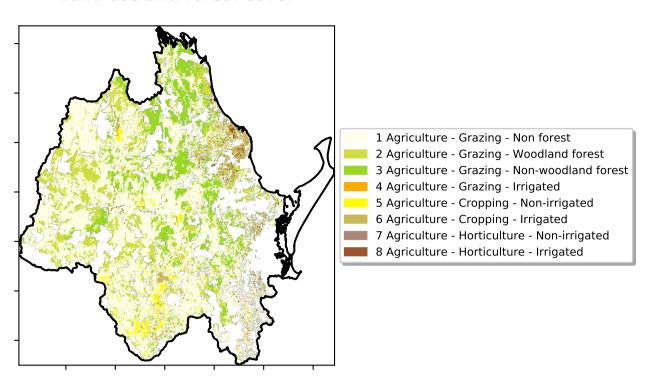
pixel is from

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

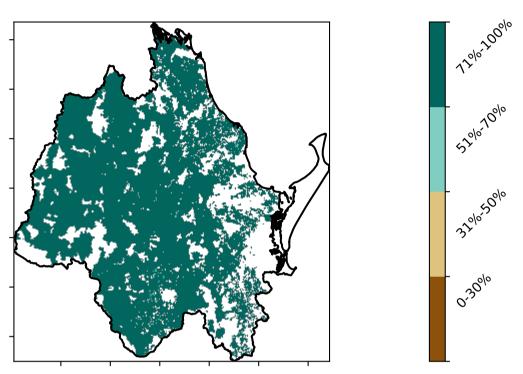
the mean. That

is only for the month of the map

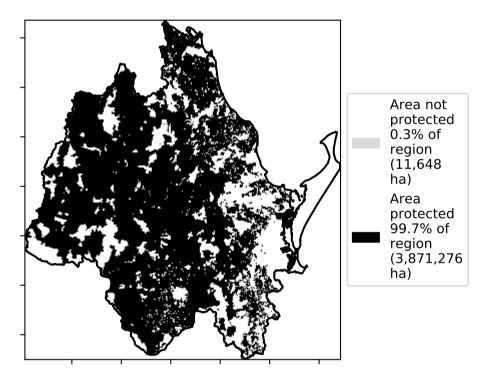
using baseline from 2001 to 2019.



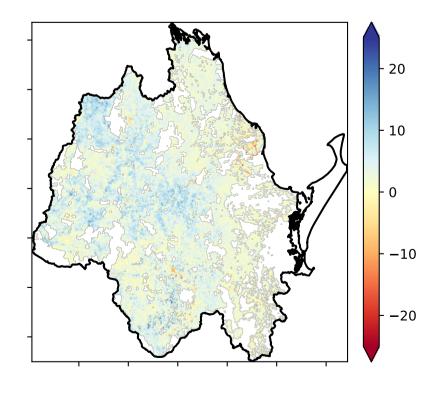
#### **Total Vegetation Cover [%]**



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

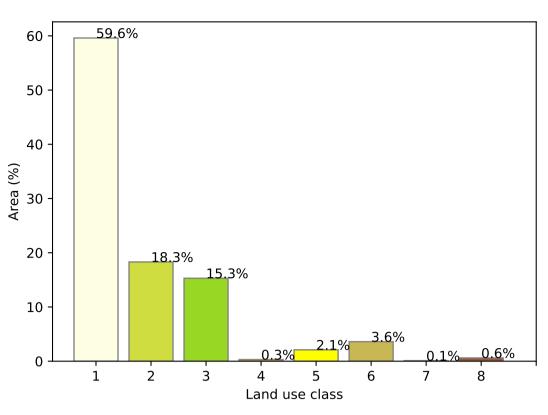


#### **Total Vegetation Cover Anomaly [%]**

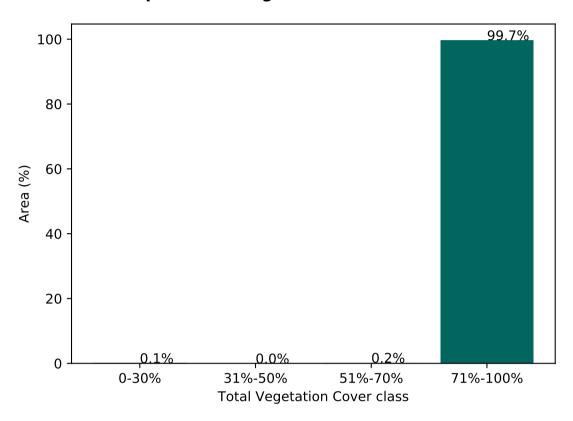


Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

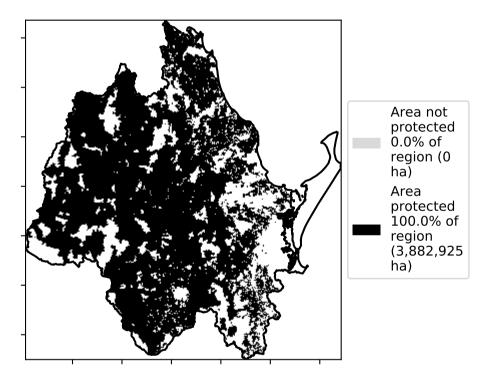
#### **Proportion of each land class in area**

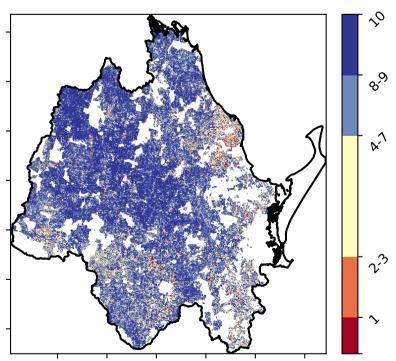


#### Proportion of vegetation cover class in area



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









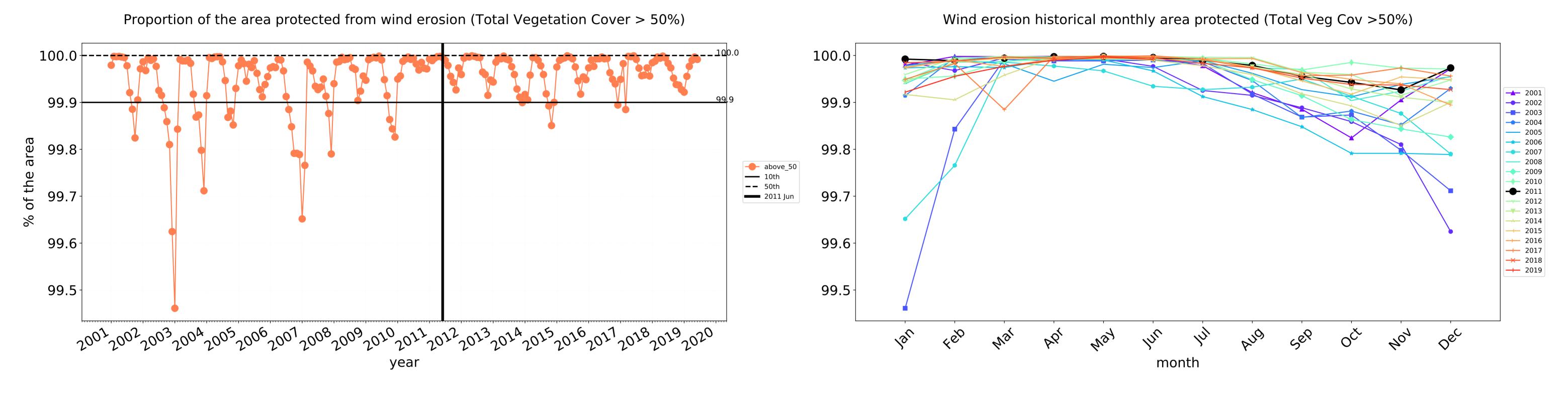


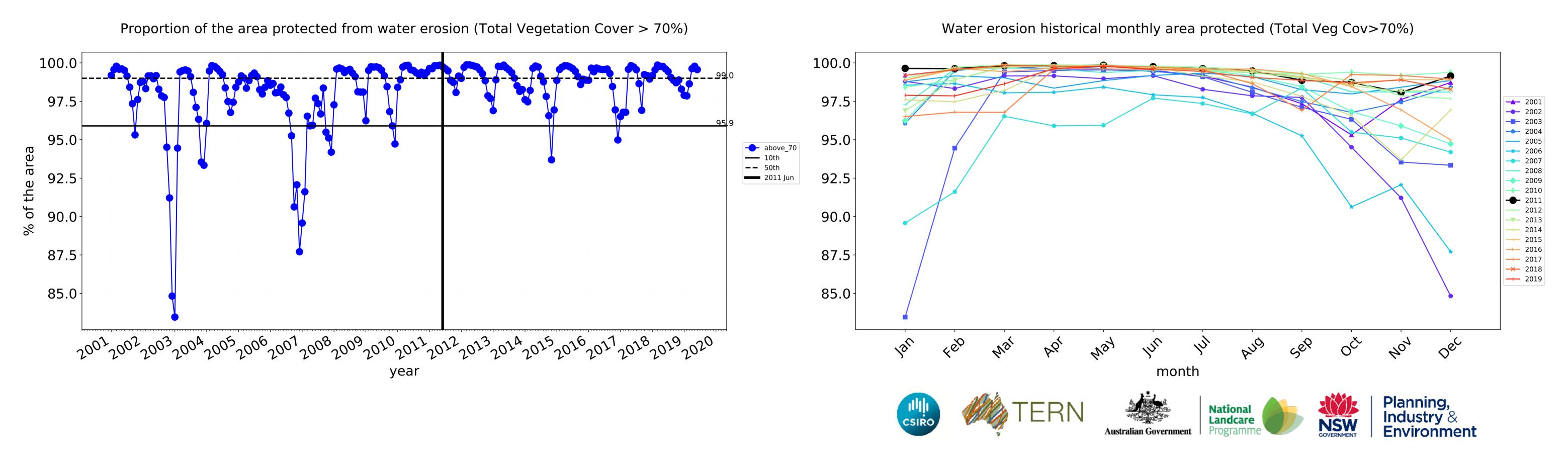


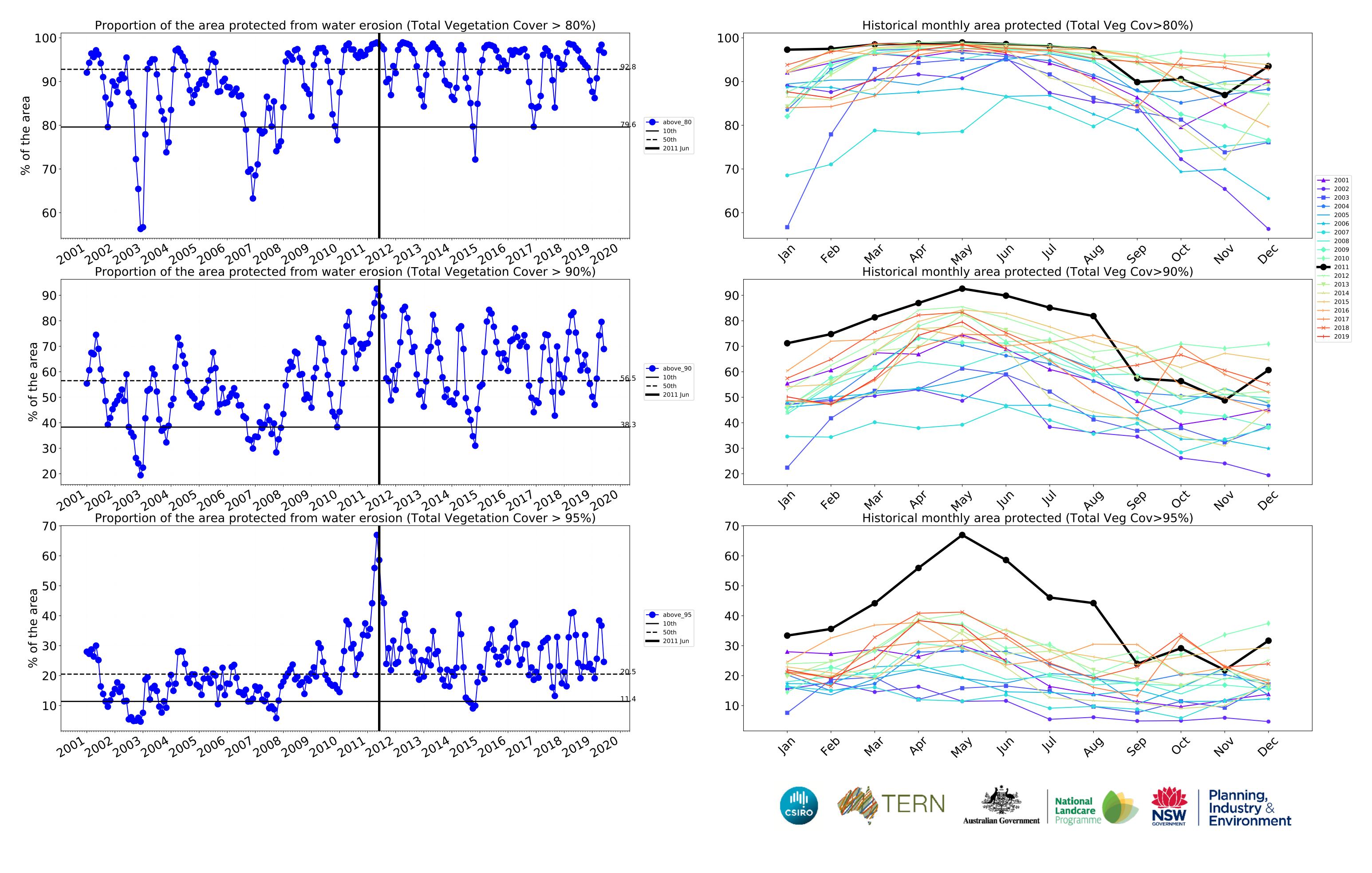




## **Agriculture timeseries**







## **Grazing**

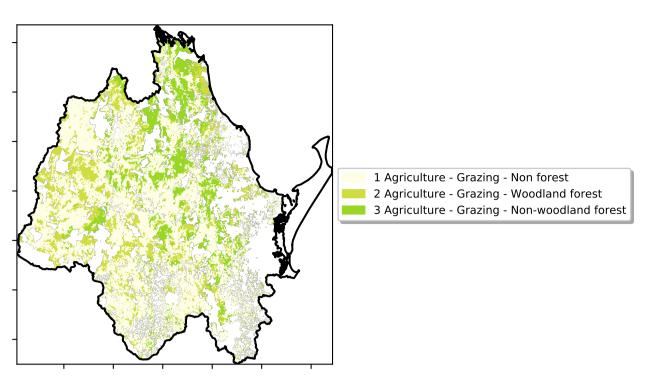
#### Land use and forest cover

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

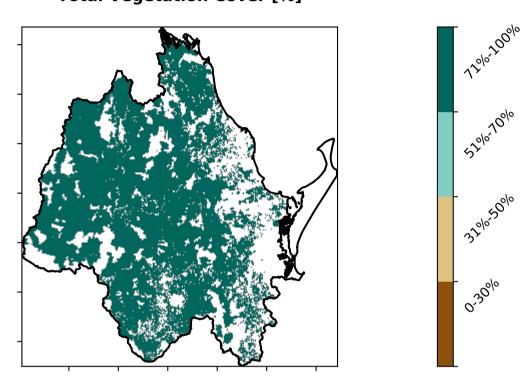
Anomaly show how many percetage points each pixel is from the mean. That is, red pixels

are about 20% lower than the mean of that pixel. The mean

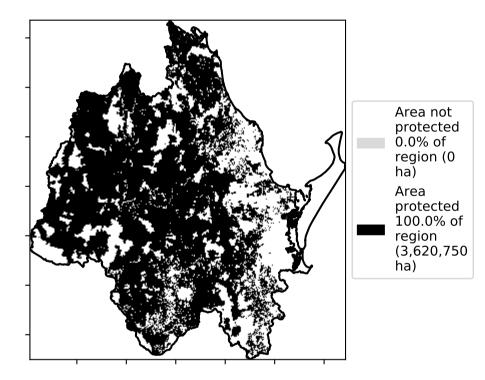
is only for the month of the map using baseline from 2001 to 2019.



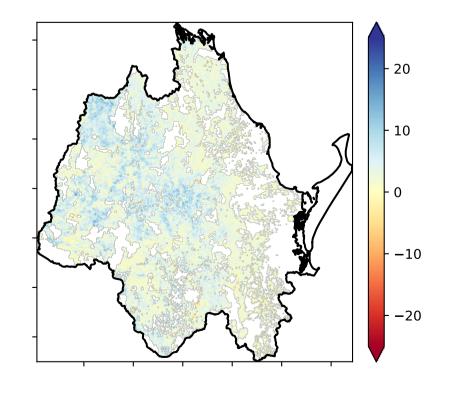
#### **Total Vegetation Cover [%]**



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

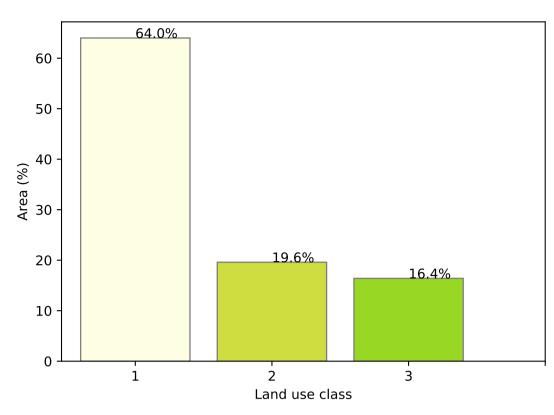


#### **Total Vegetation Cover Anomaly [%]**

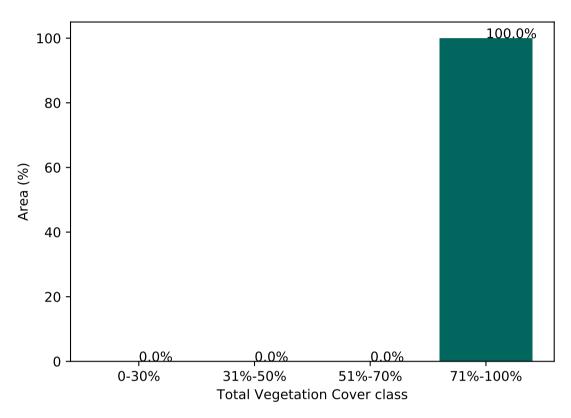


Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

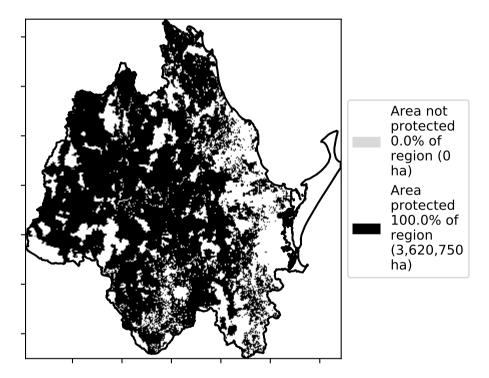
#### Proportion of each land class in area

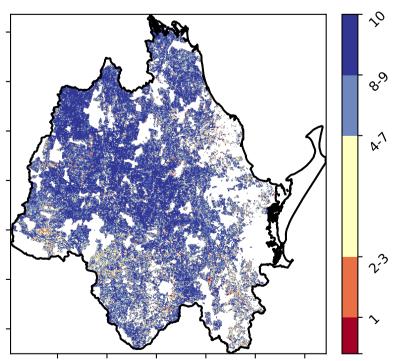


#### Proportion of vegetation cover class in area



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









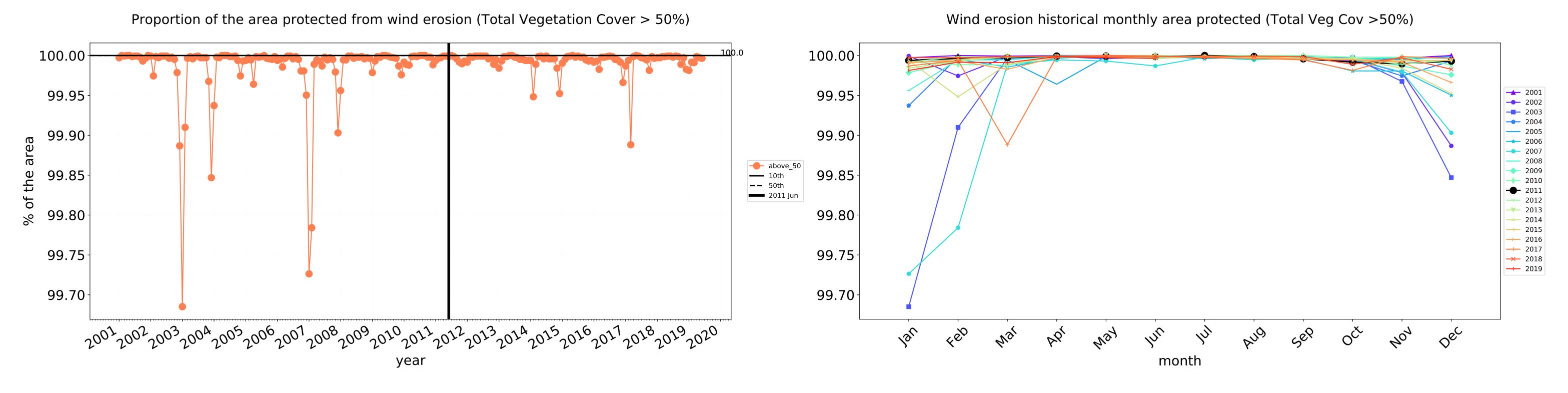


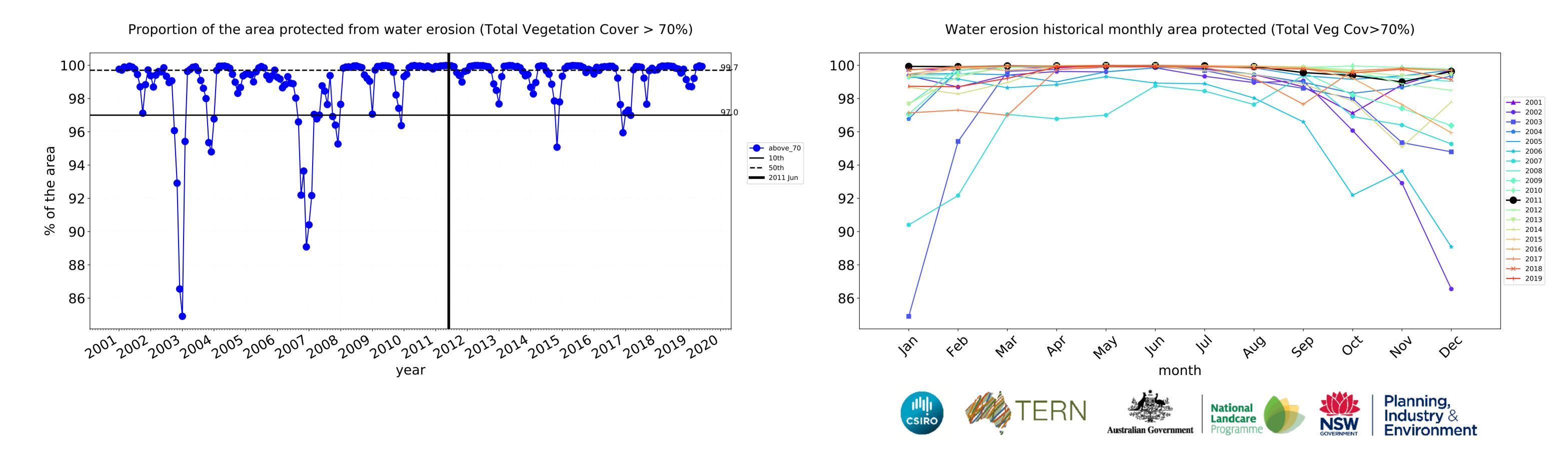


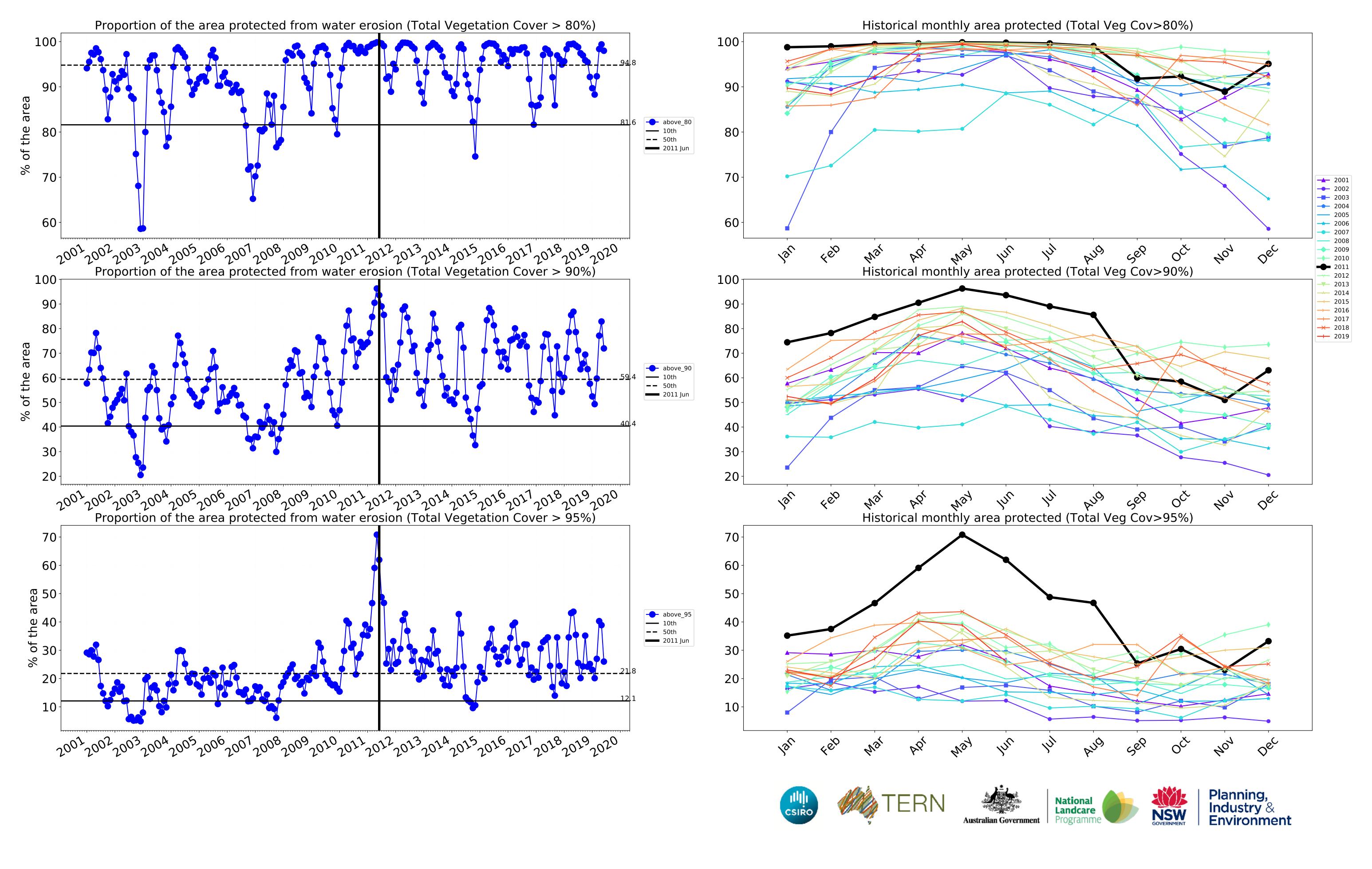




## **Grazing timeseries**







## **Grazing non forest**

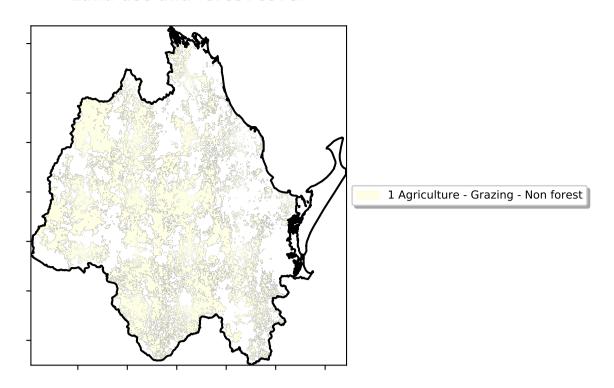
#### Land use and forest cover

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

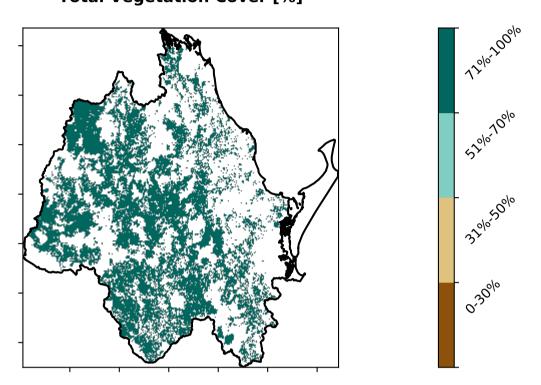
Anomaly show how many percetage points each pixel is from the mean. That is, red pixels are about 20%

lower than the mean of that

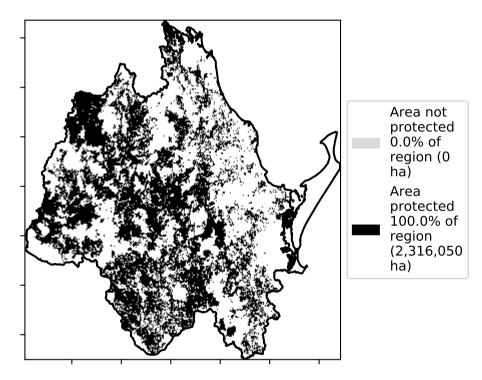
pixel. The mean is only for the month of the map using baseline from 2001 to 2019.



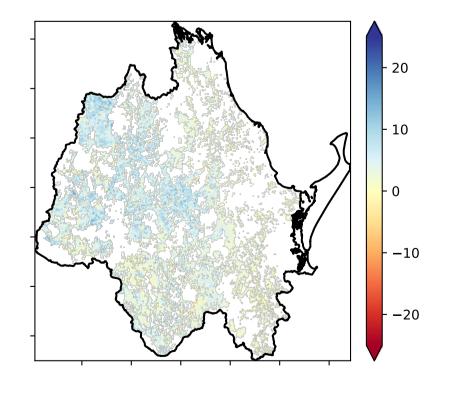
#### **Total Vegetation Cover [%]**



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

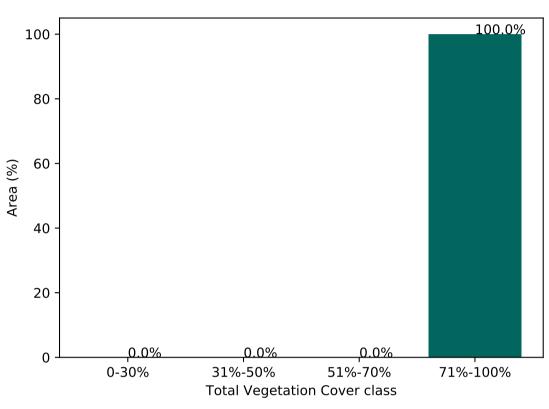


#### **Total Vegetation Cover Anomaly [%]**

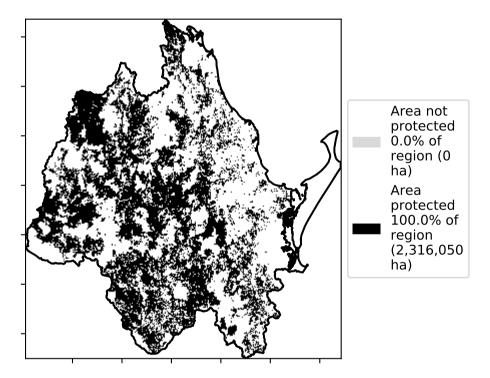


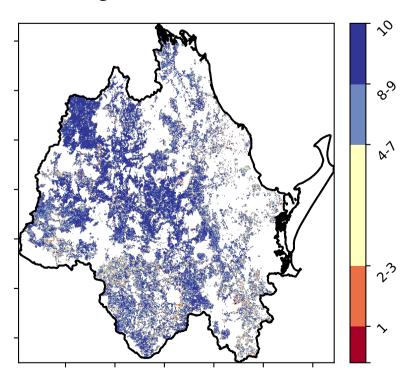
Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

#### Proportion of vegetation cover class in area



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









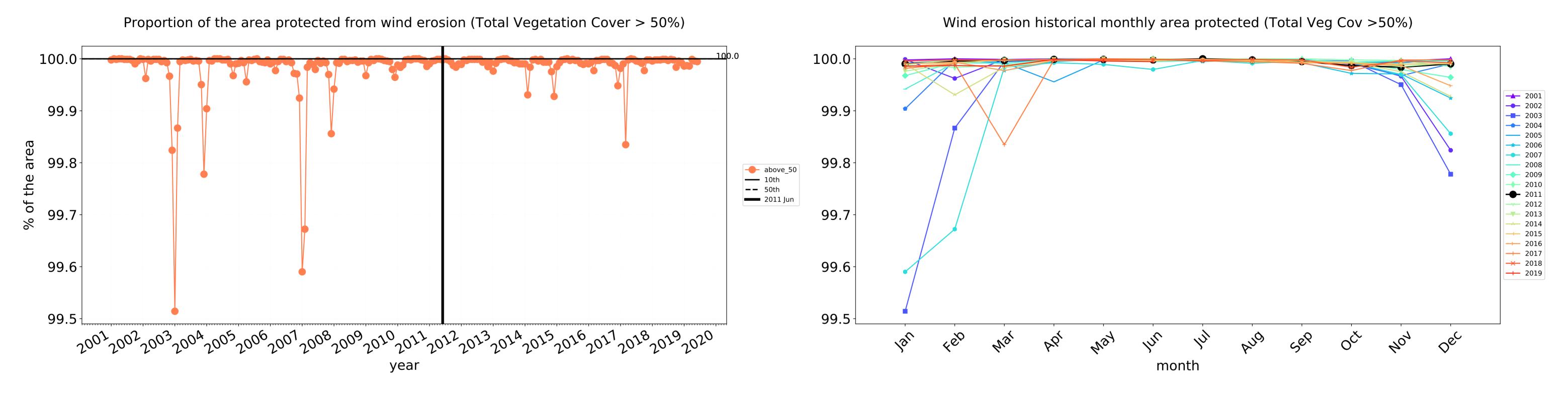


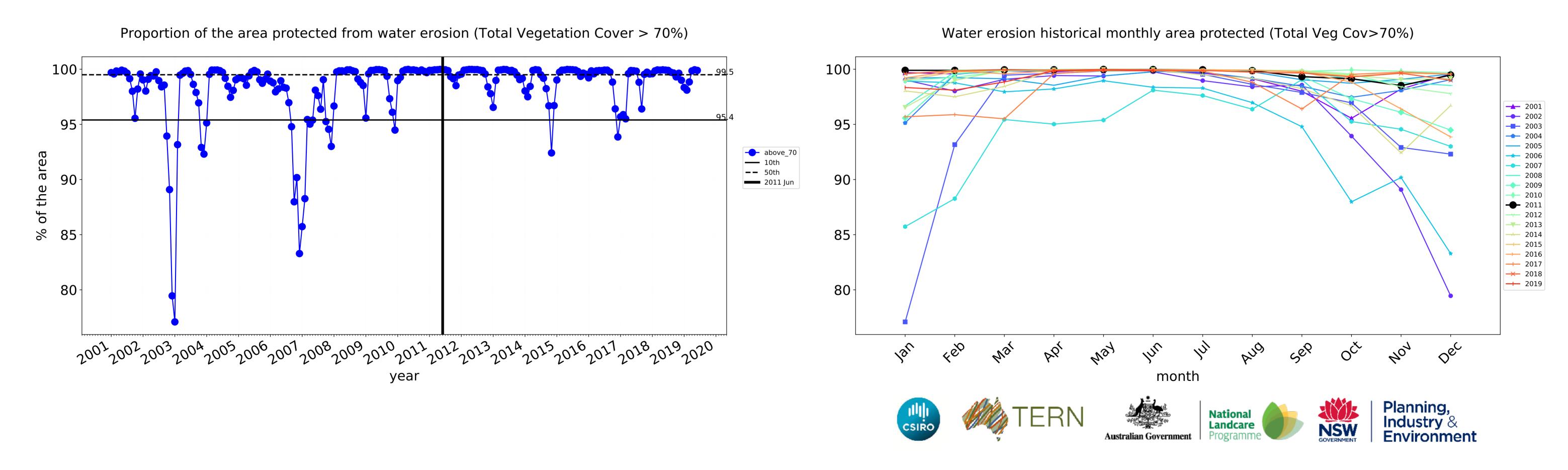


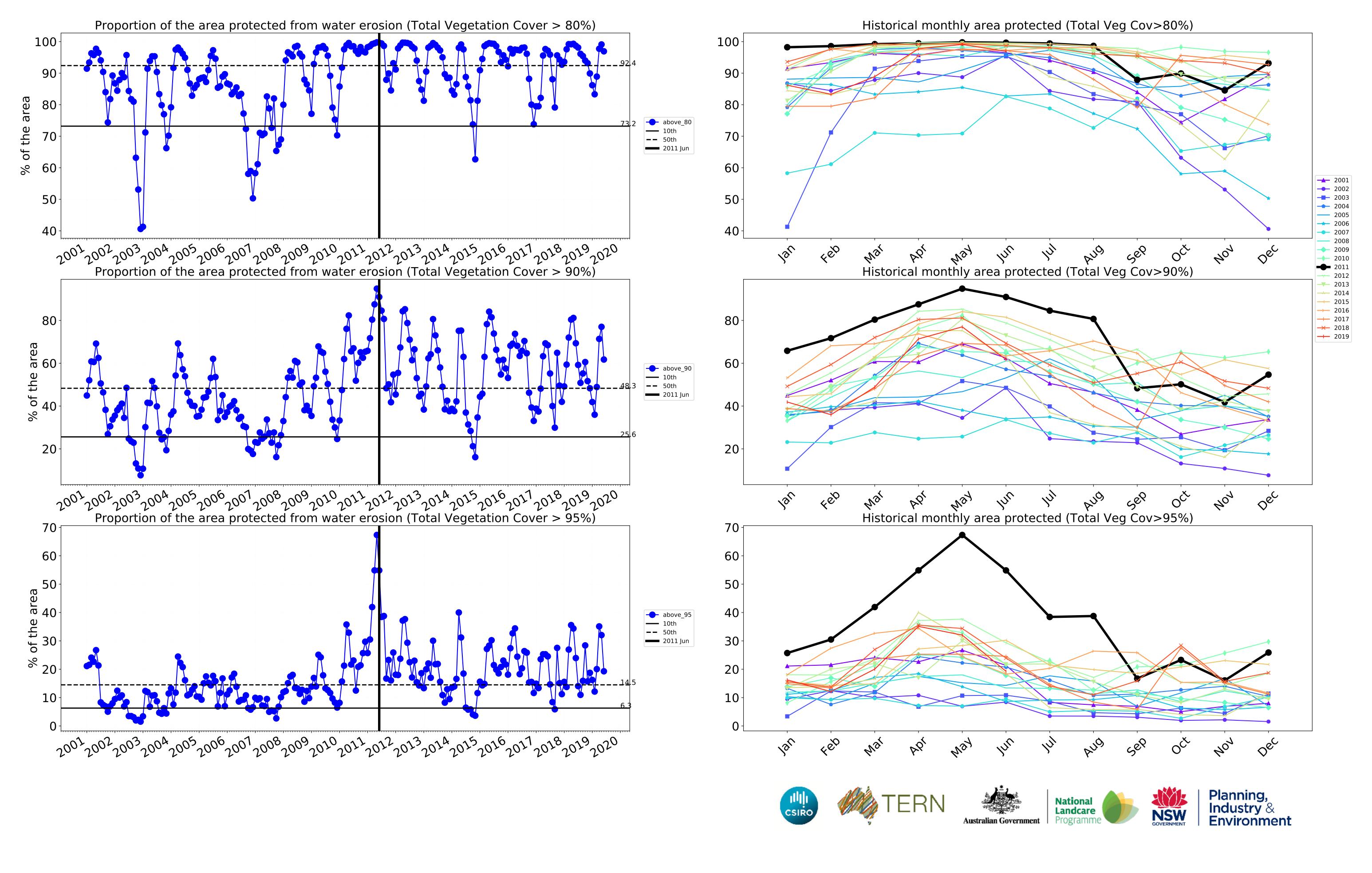




## **Grazing non forest timeseries**







## **Grazing Woodland forest**

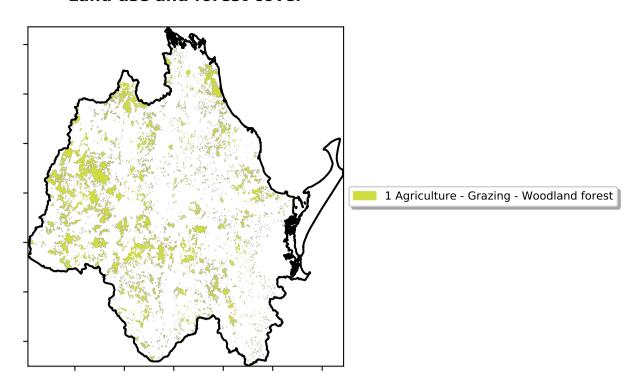
#### Land use and forest cover

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

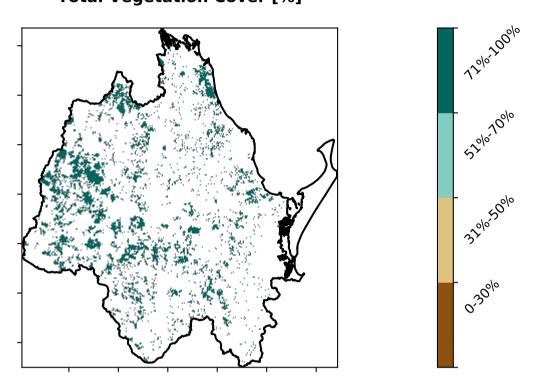
Anomaly show how many percetage points each pixel is from the mean. That

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

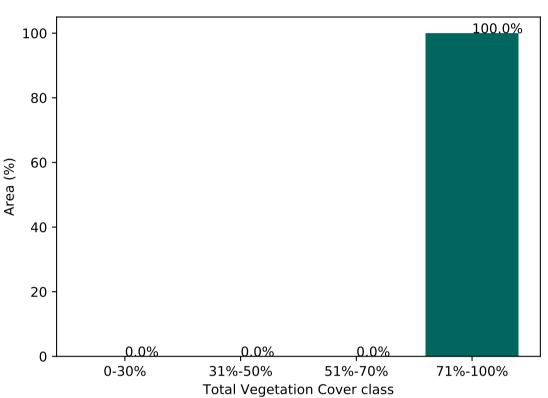
is, red pixels are about 20% lower than the mean of that pixel. The mean



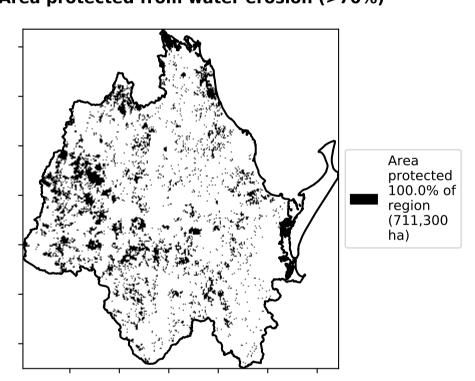
#### **Total Vegetation Cover [%]**



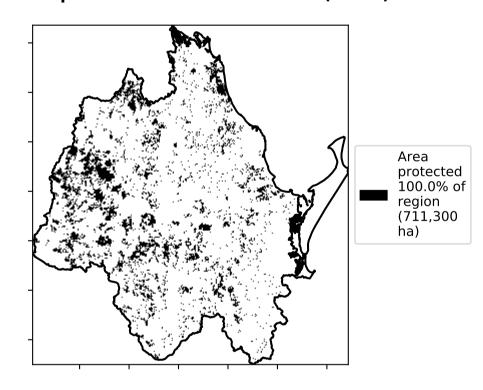
## Proportion of vegetation cover class in area



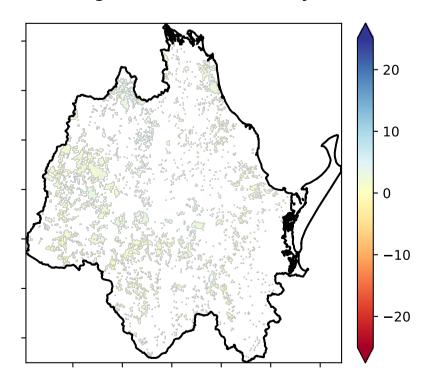
## % Area protected from water erosion (>70%)



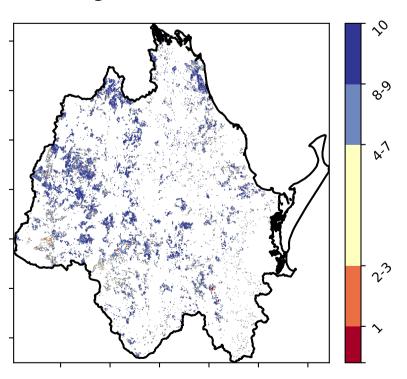
% Area protected from wind erosion (>50%)



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



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







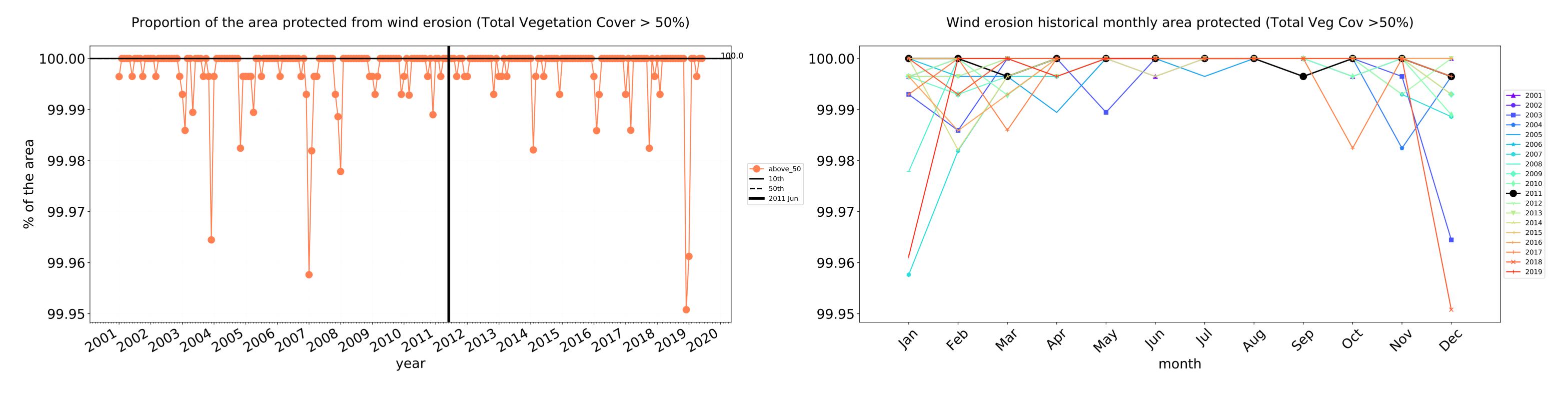


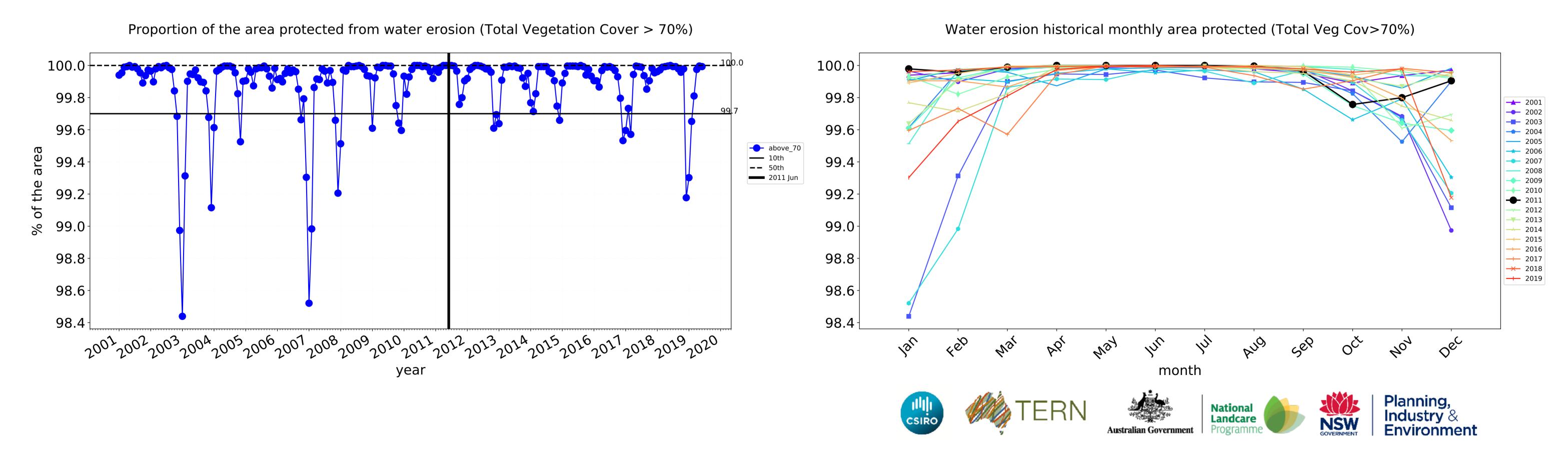


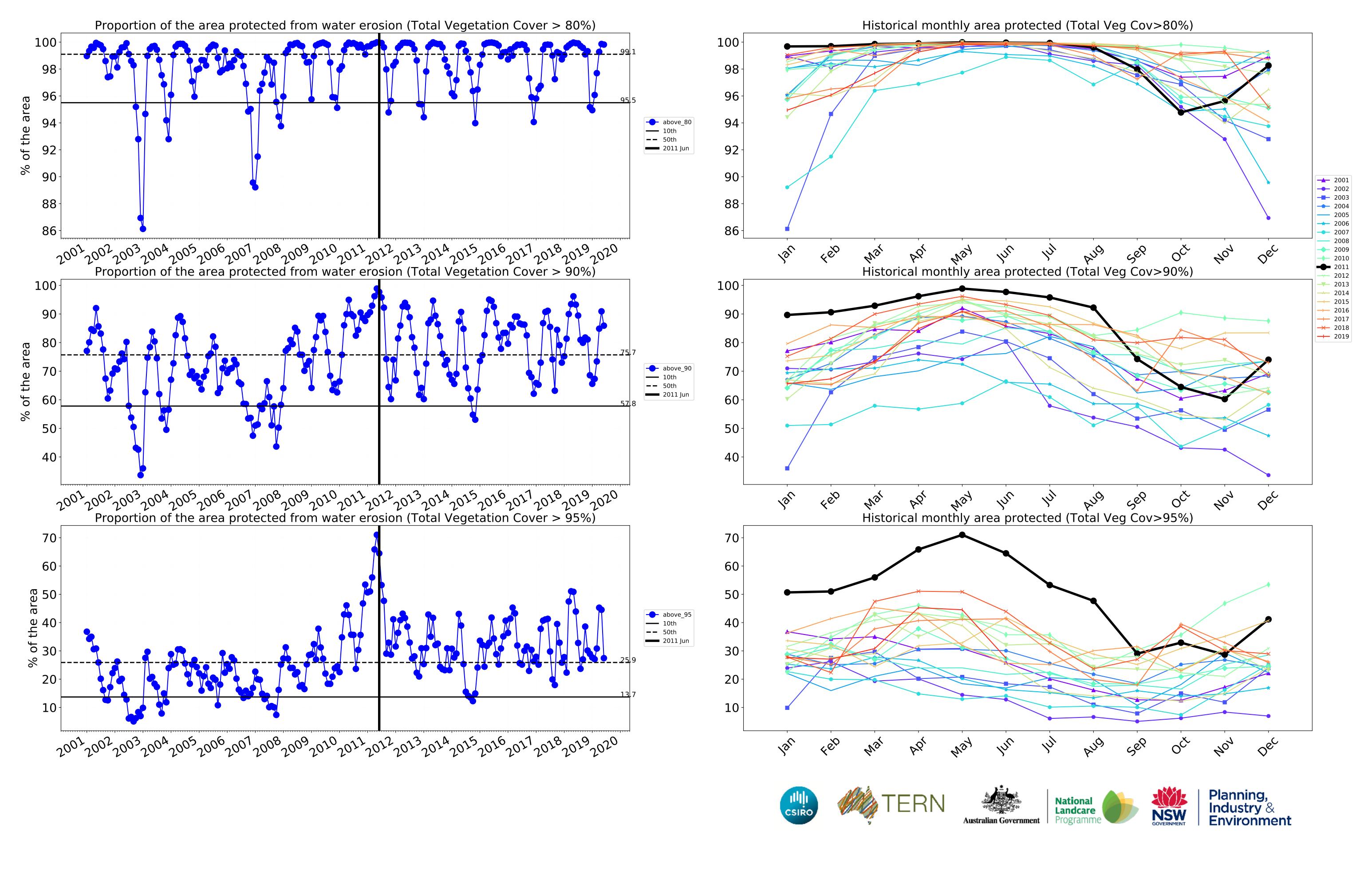




## **Grazing Woodland forest timeseries**







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

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

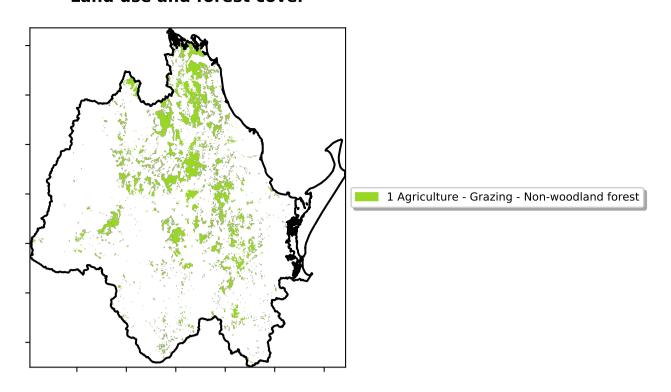
Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)

Anomaly show how many percetage points each pixel is from

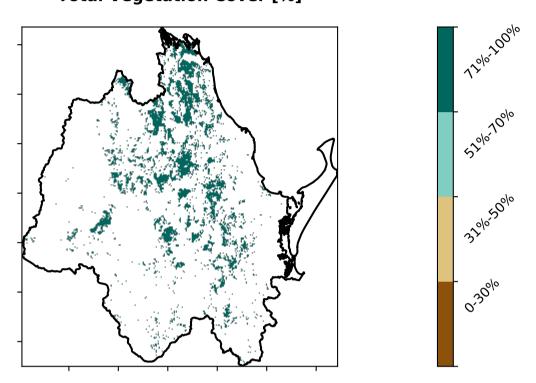
the mean. That

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

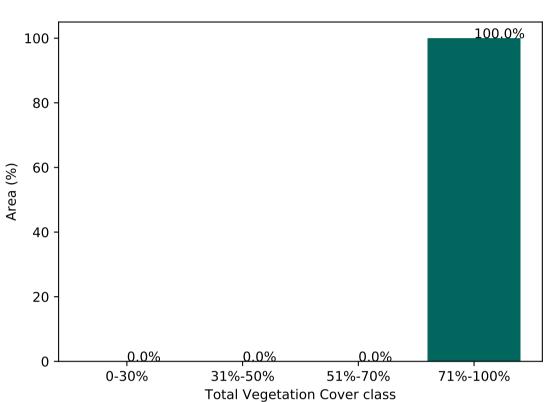
is, red pixels are about 20% lower than the mean of that pixel. The mean



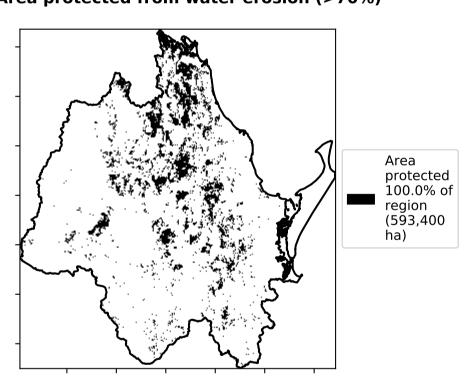
#### **Total Vegetation Cover [%]**



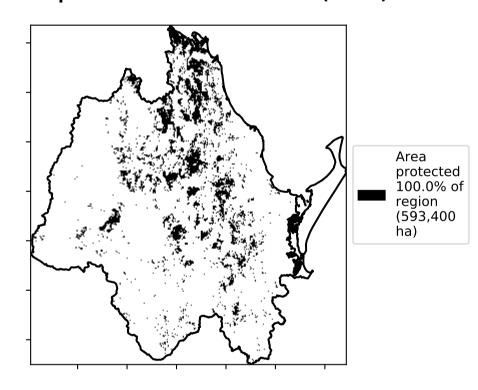
## Proportion of vegetation cover class in area



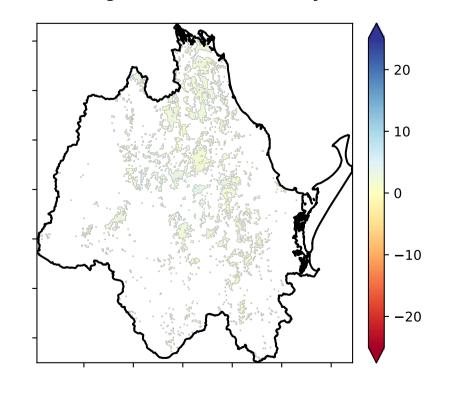
#### % Area protected from water erosion (>70%)



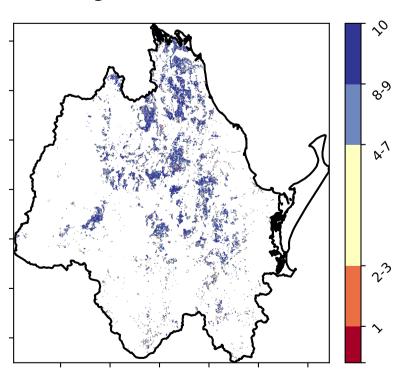
% Area protected from wind erosion (>50%)



#### **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.





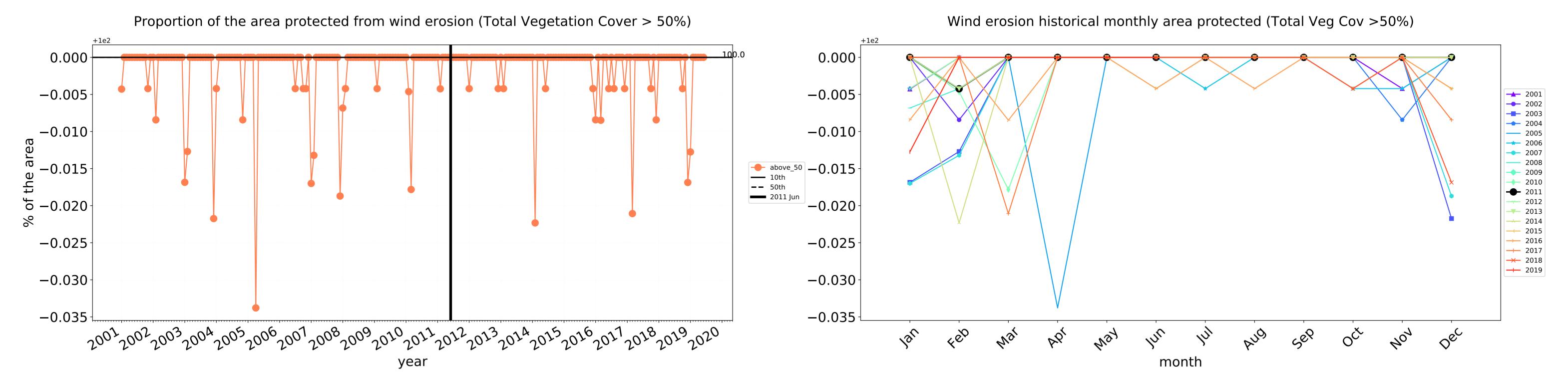


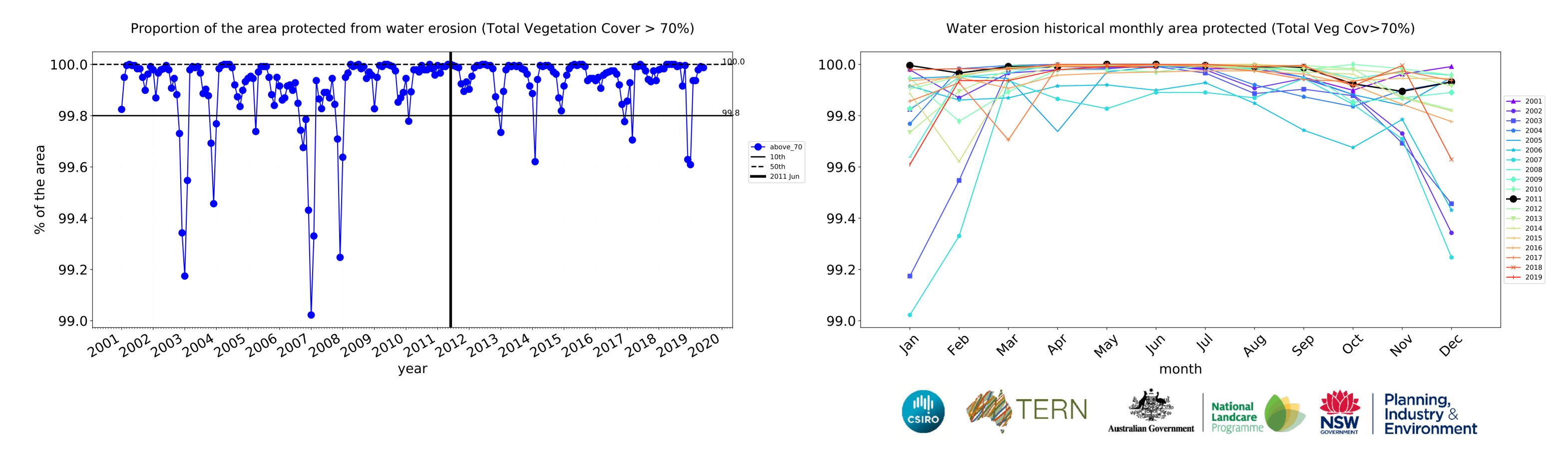


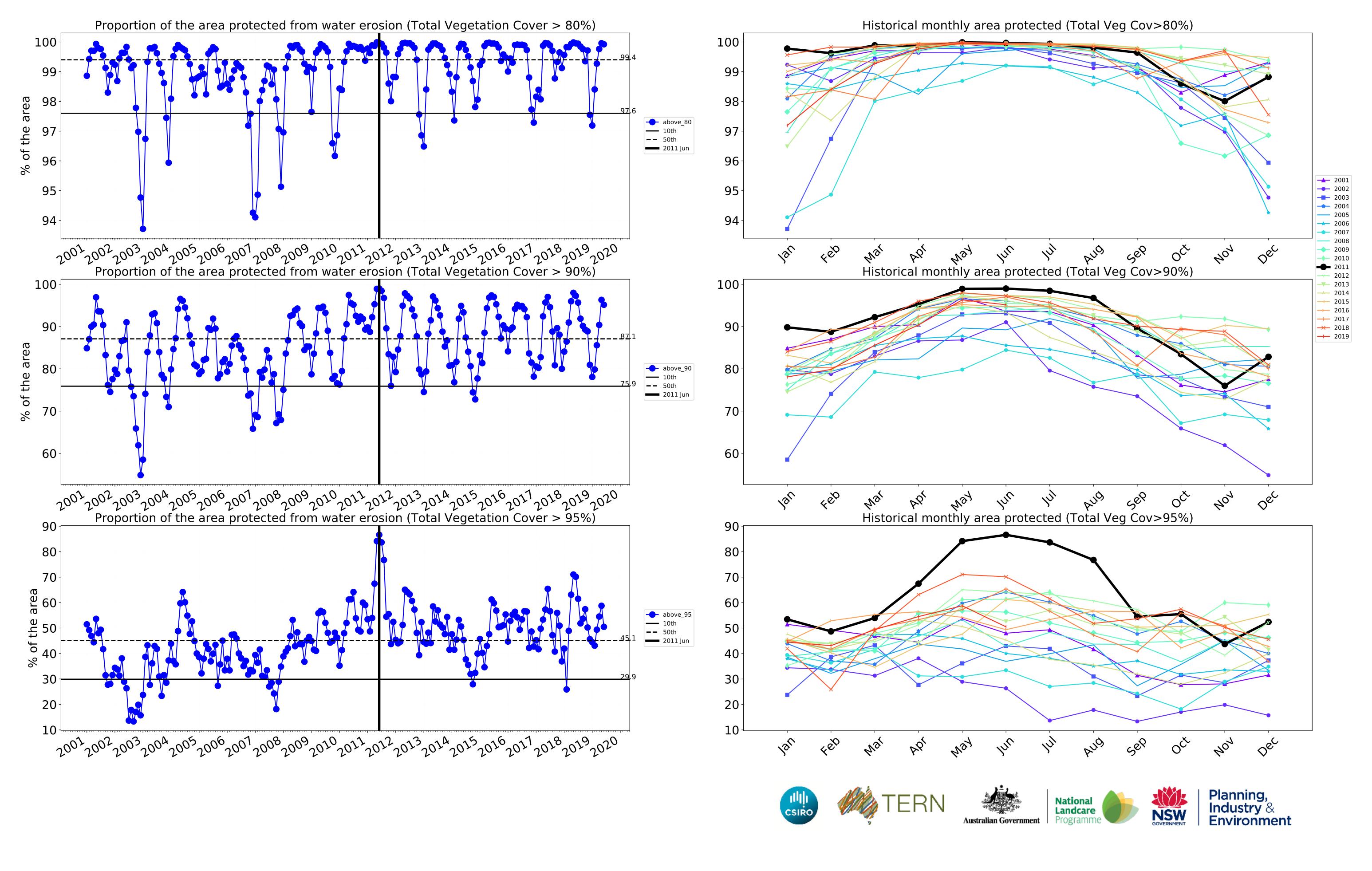












## **Cropping**

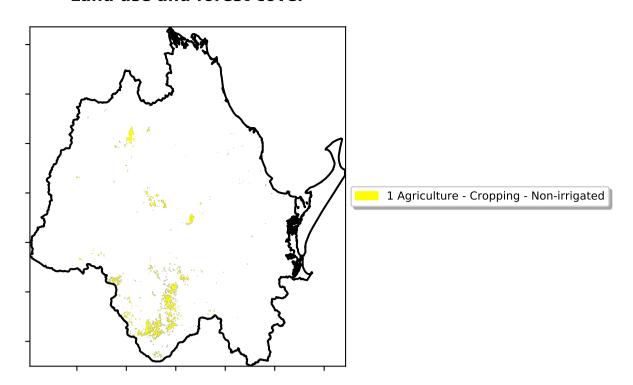
#### Land use and forest cover

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

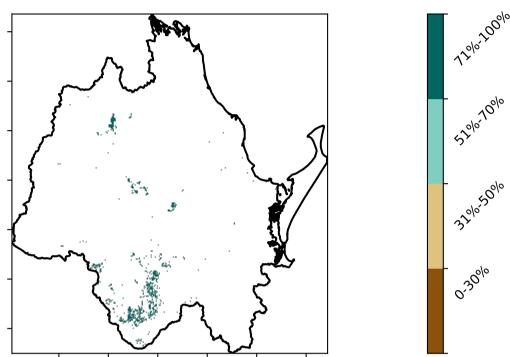
Anomaly show how many percetage points each pixel is from the mean. That

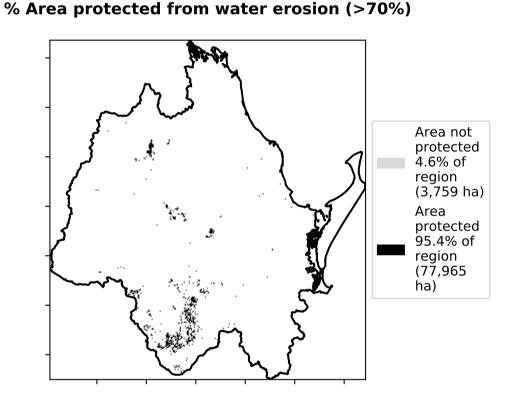
is only for the month of the map using baseline from 2001 to 2019.

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

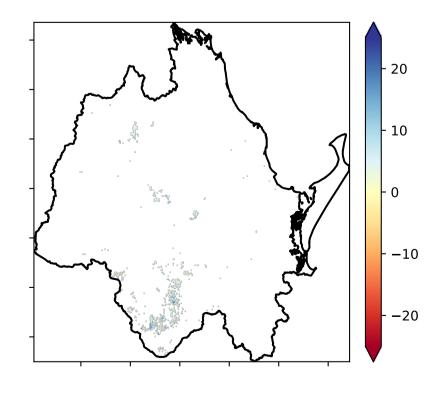


#### Total Vegetation Cover [%]



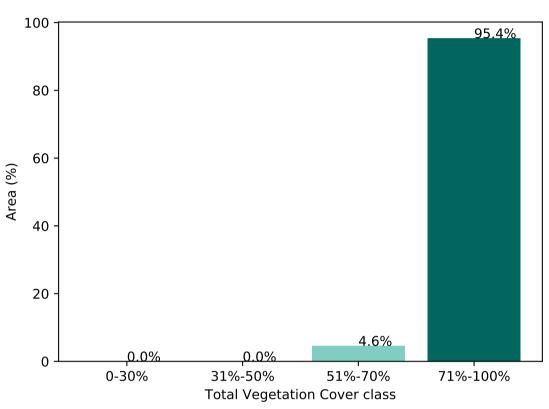


#### **Total Vegetation Cover Anomaly [%]**

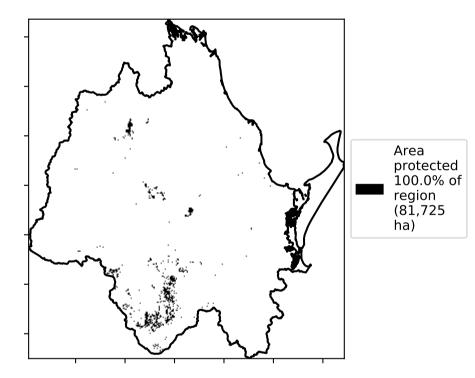


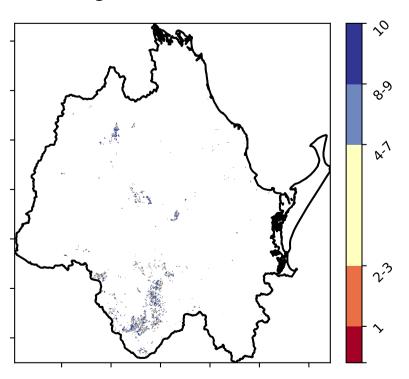
Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

#### Proportion of vegetation cover class in area



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









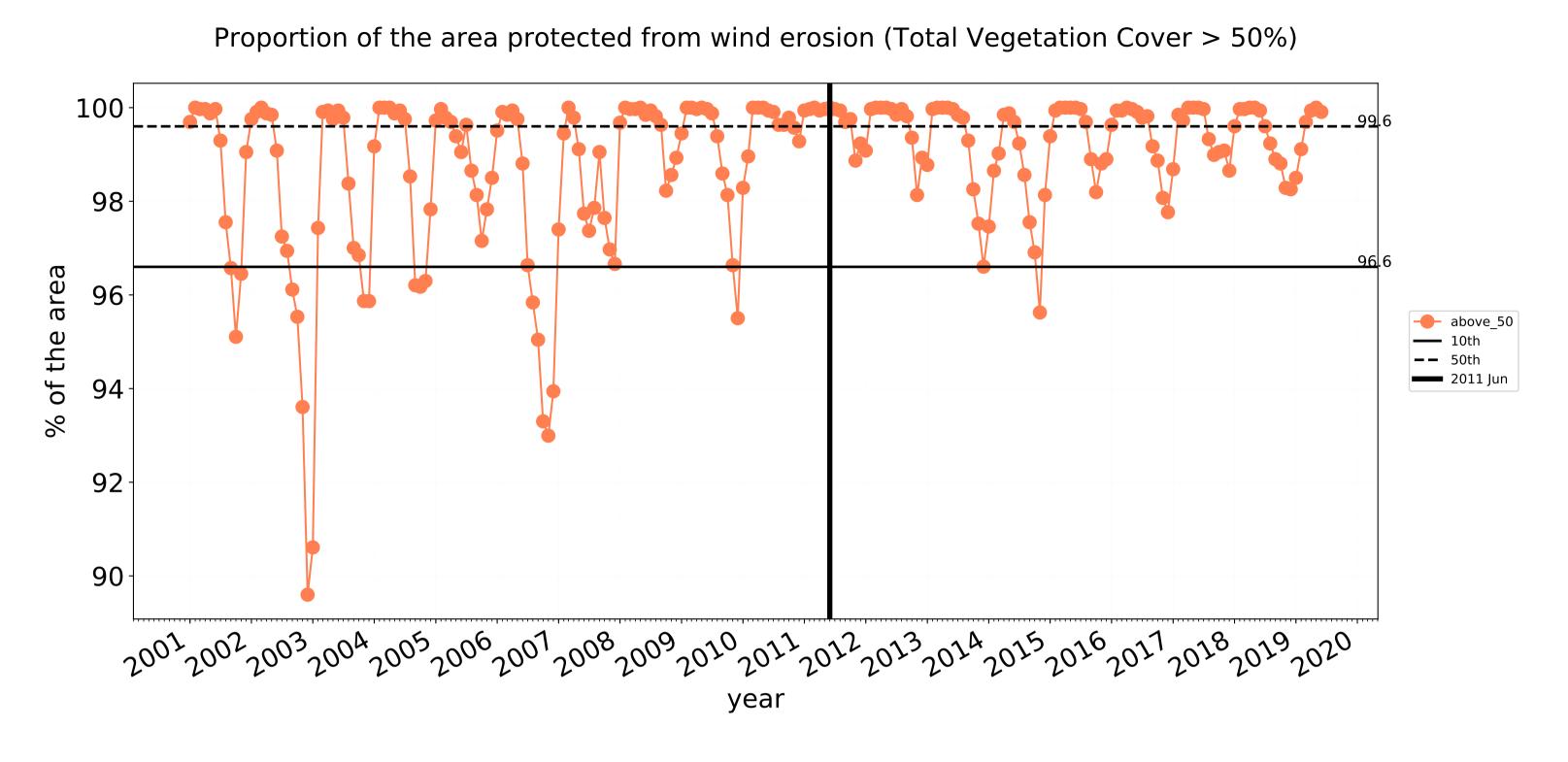


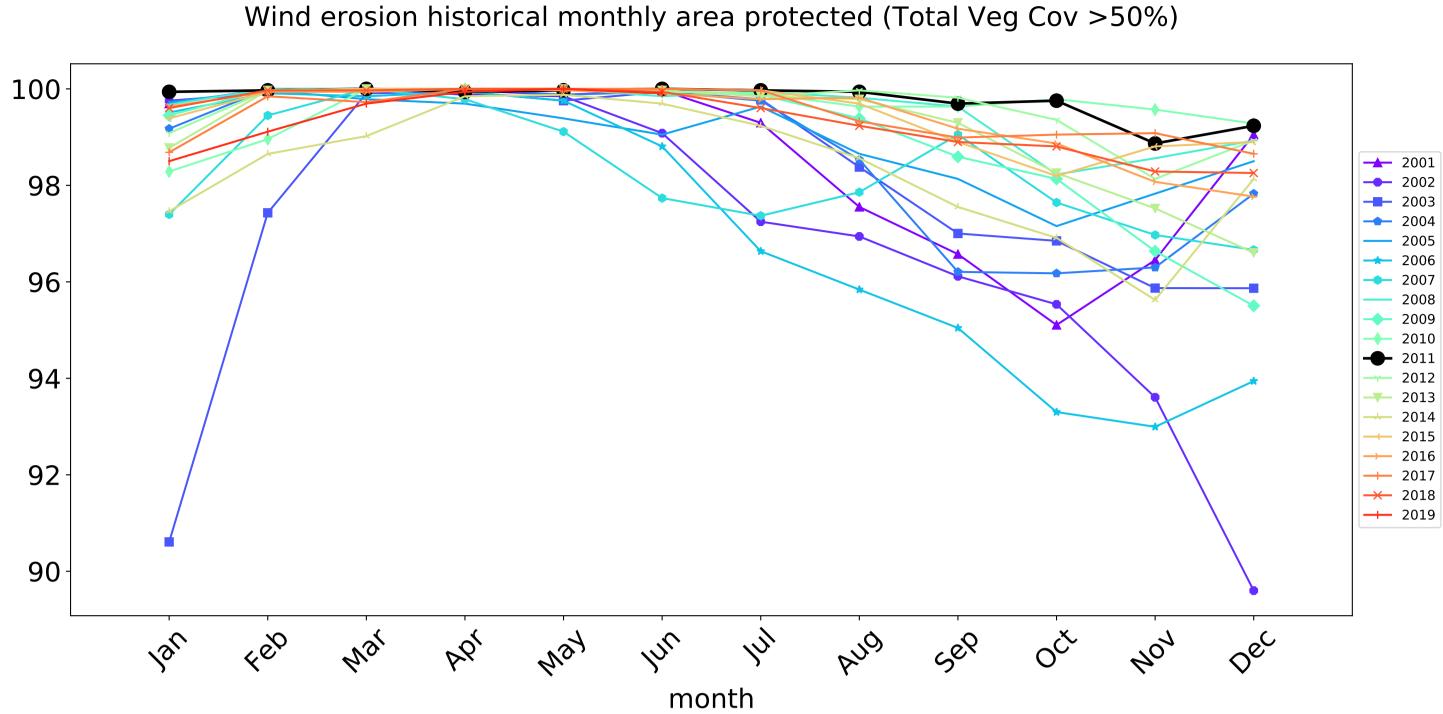


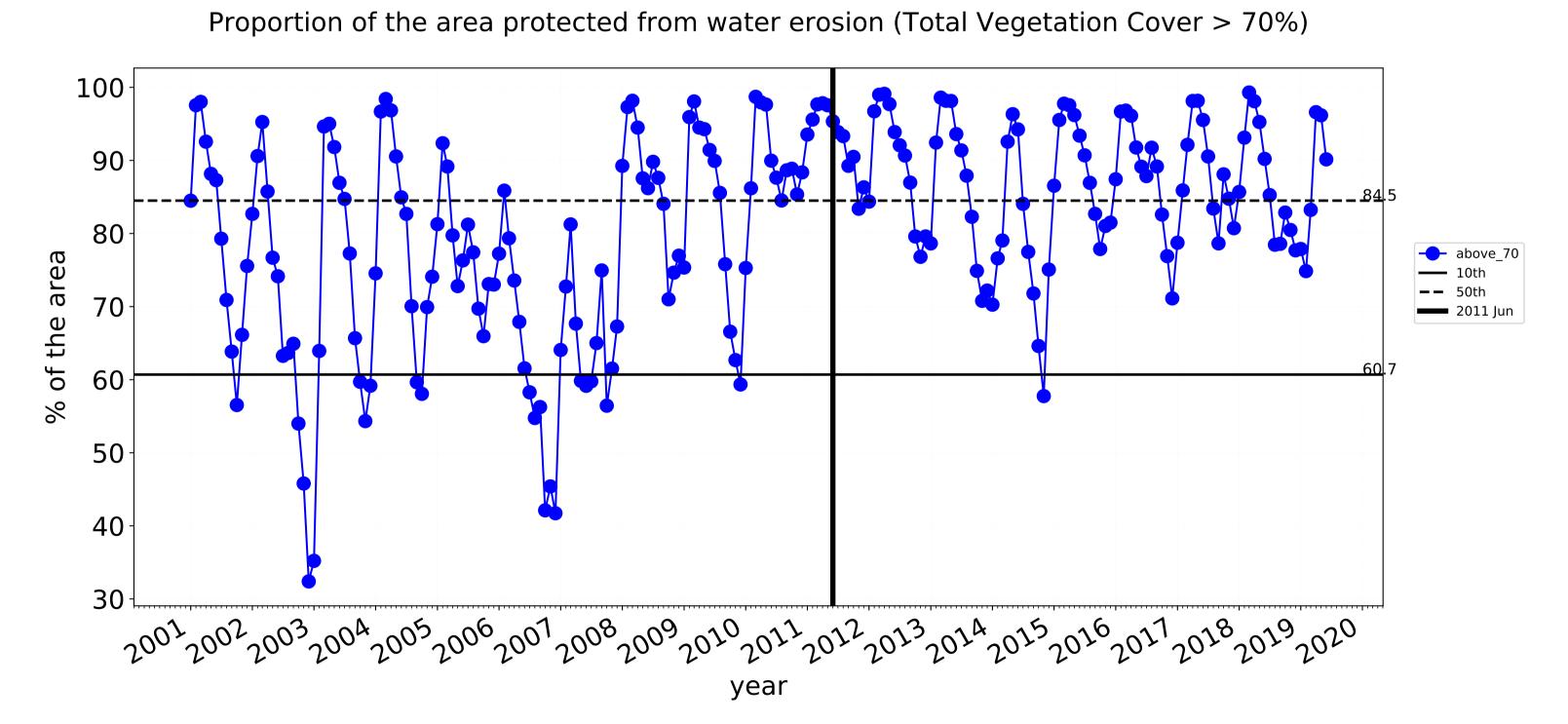


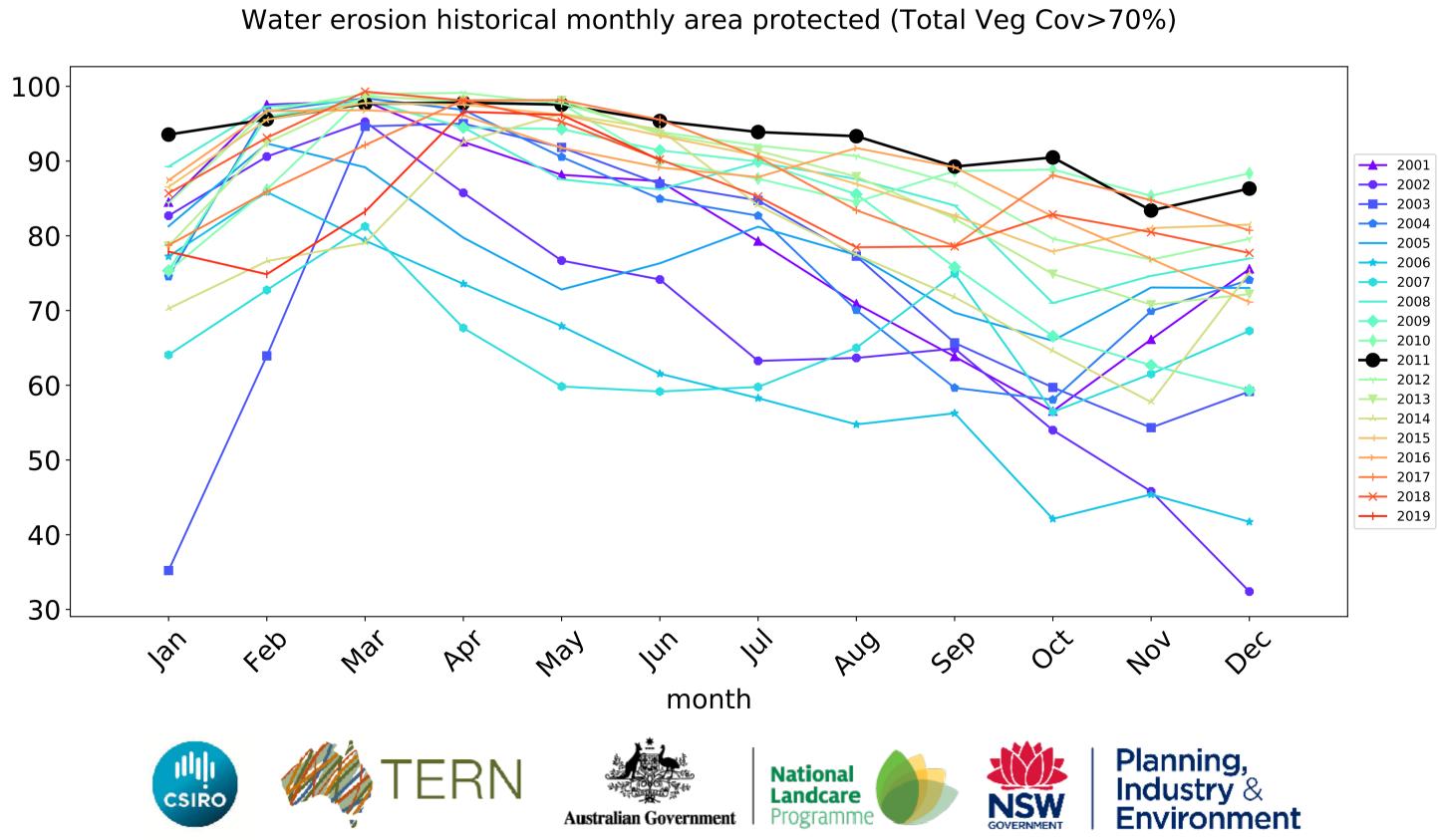


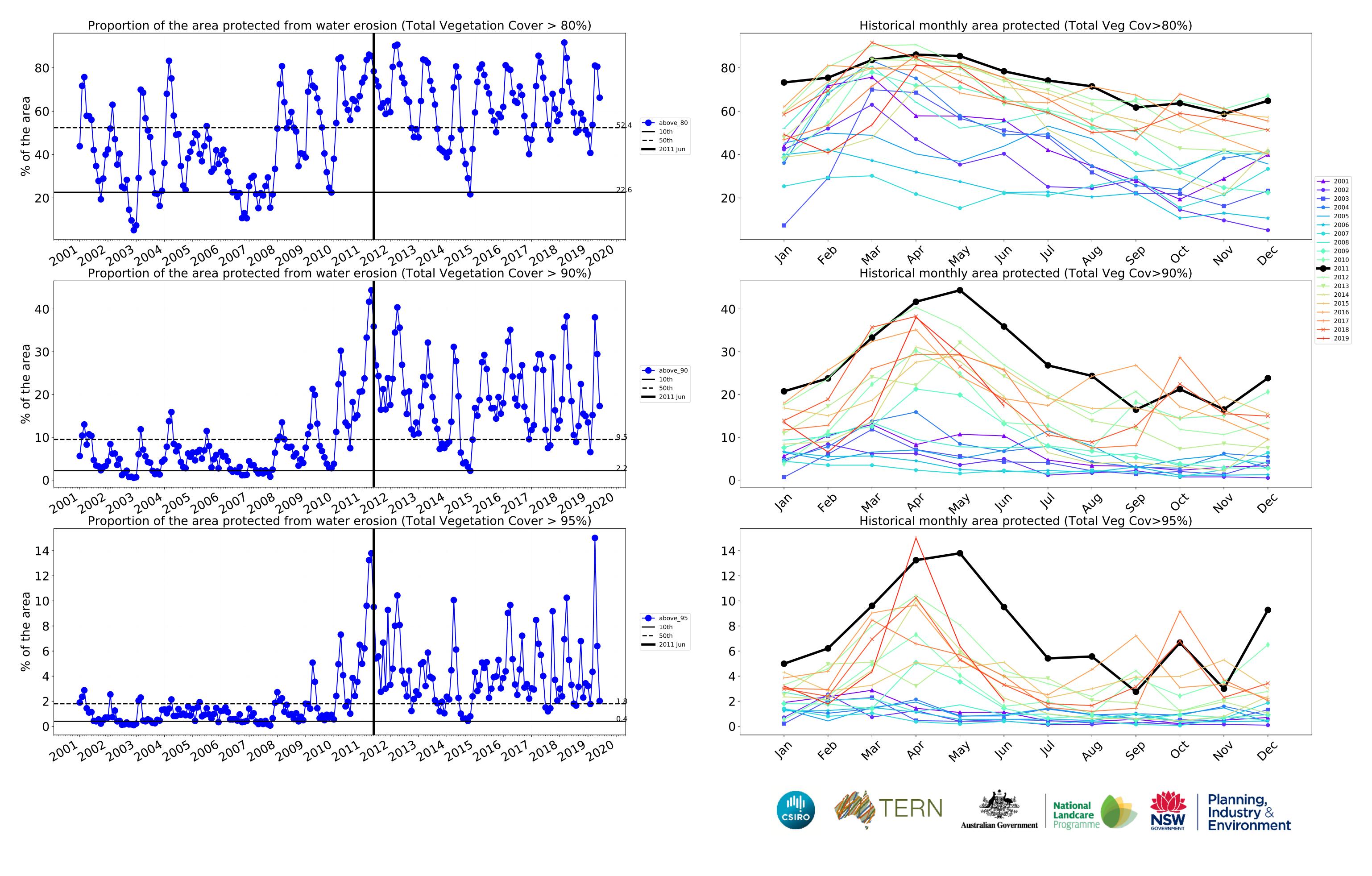
## **Cropping timeseries**











## Irrigation

# Land use and forest cover

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

Anomaly show how many percetage points each

pixel is from

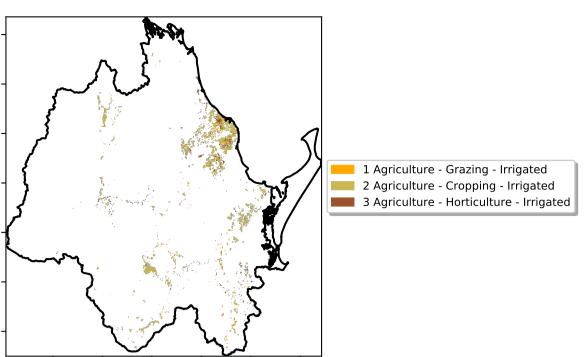
is, red pixels are about 20% lower than the mean of that

the mean. That

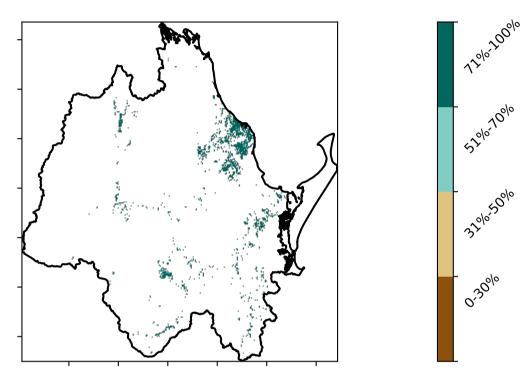
pixel. The mean

using baseline from 2001 to 2019.

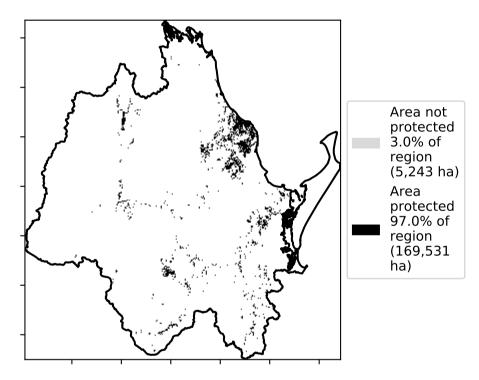
is only for the month of the map



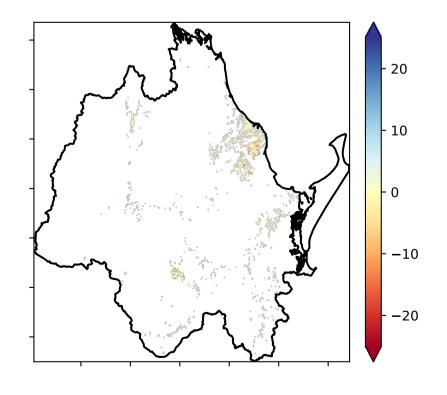
#### **Total Vegetation Cover [%]**



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

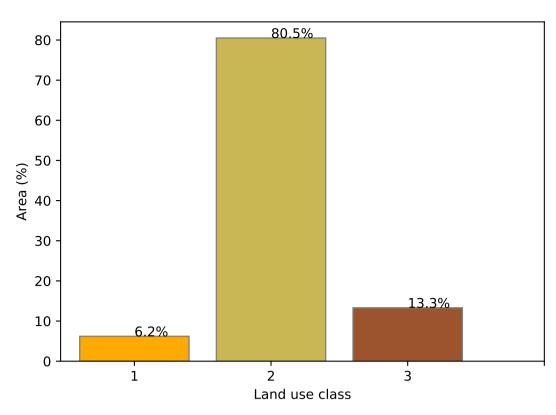


#### **Total Vegetation Cover Anomaly [%]**

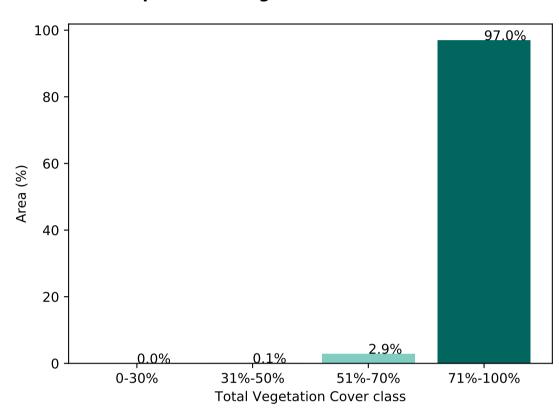


Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

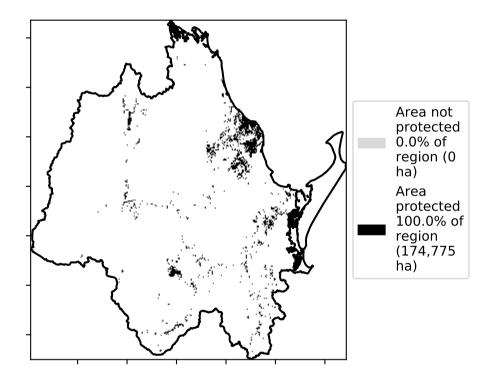
#### Proportion of each land class in area

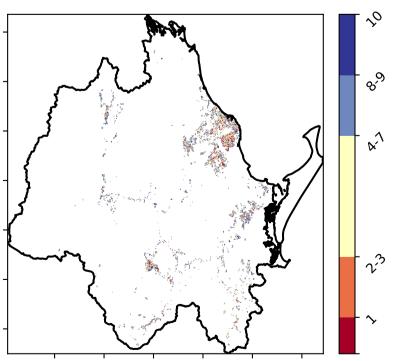


#### Proportion of vegetation cover class in area



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









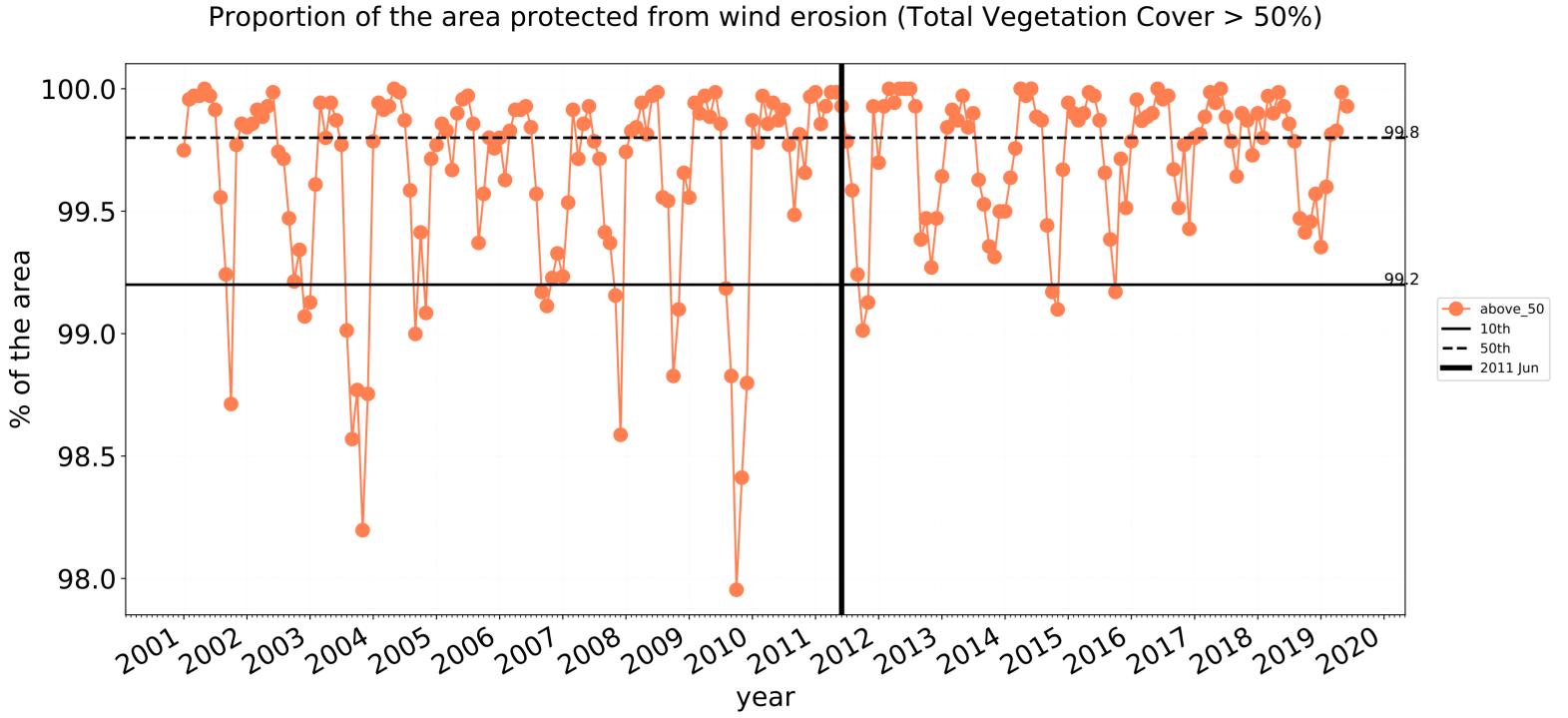


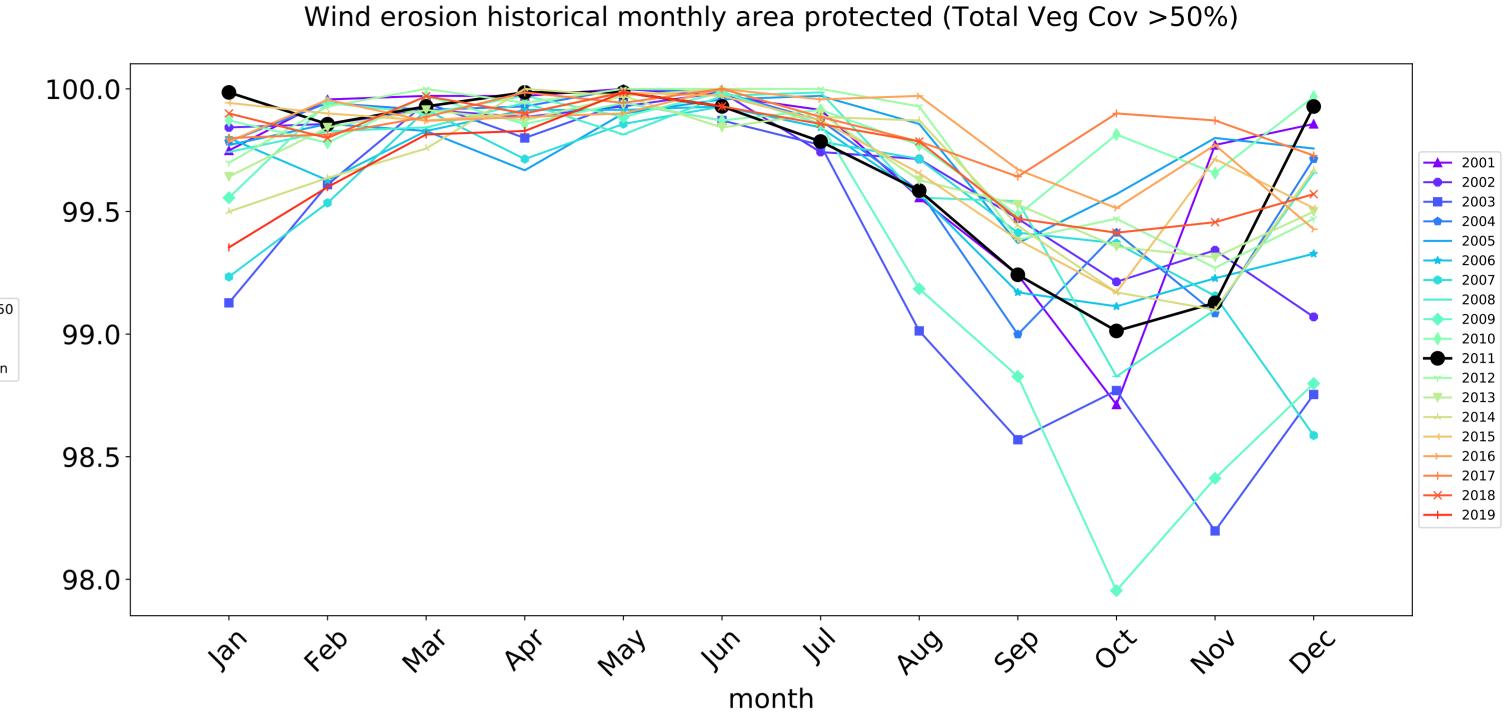


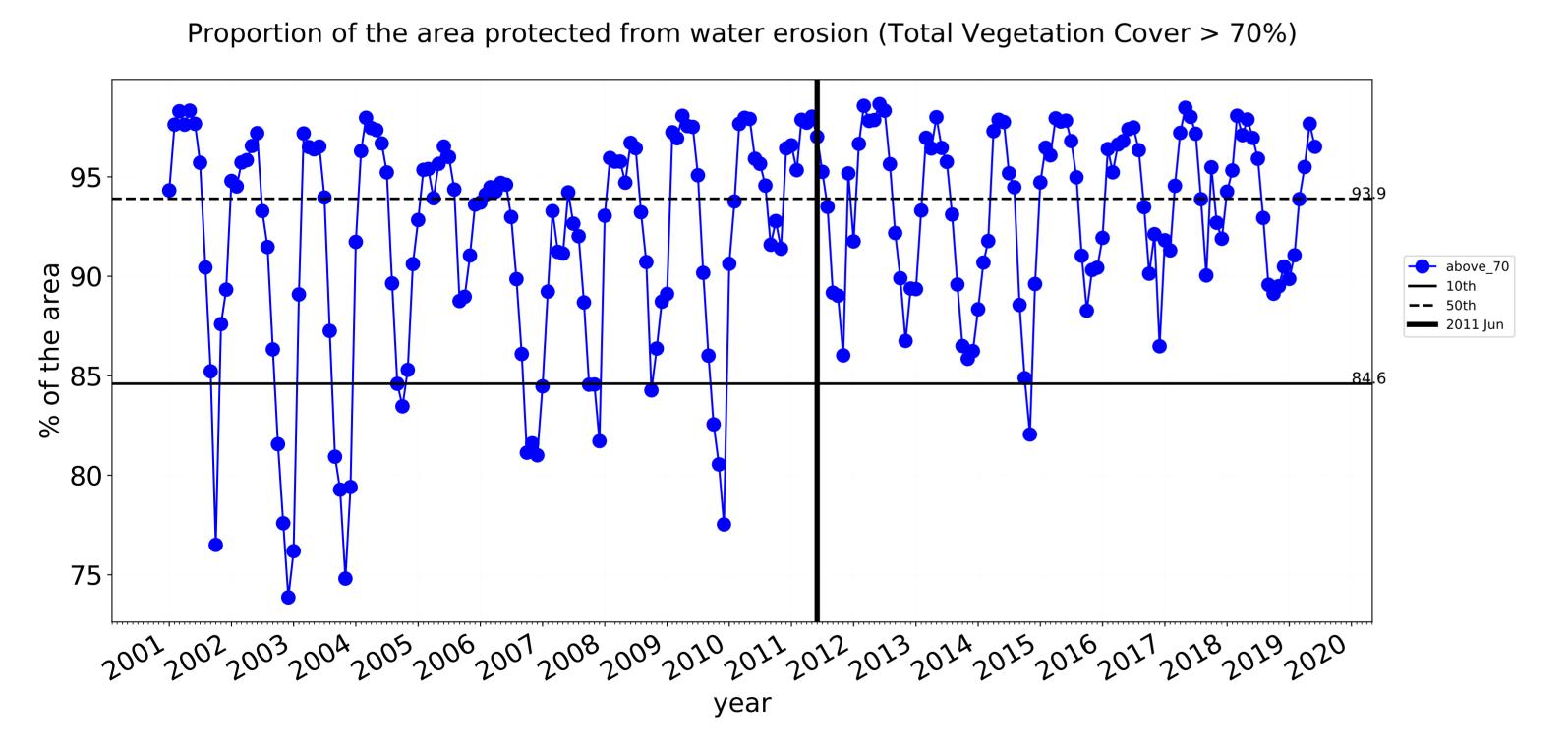


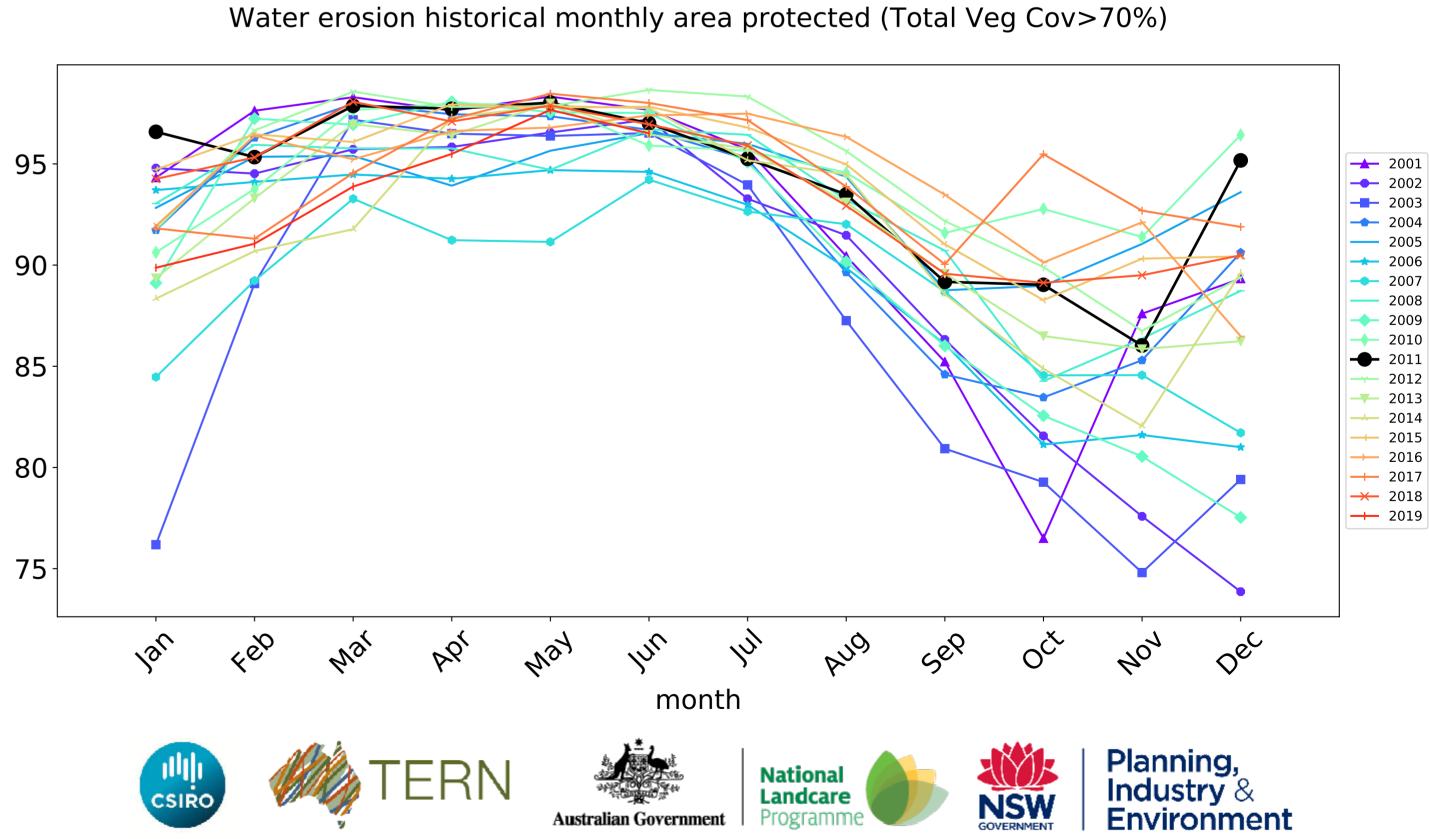


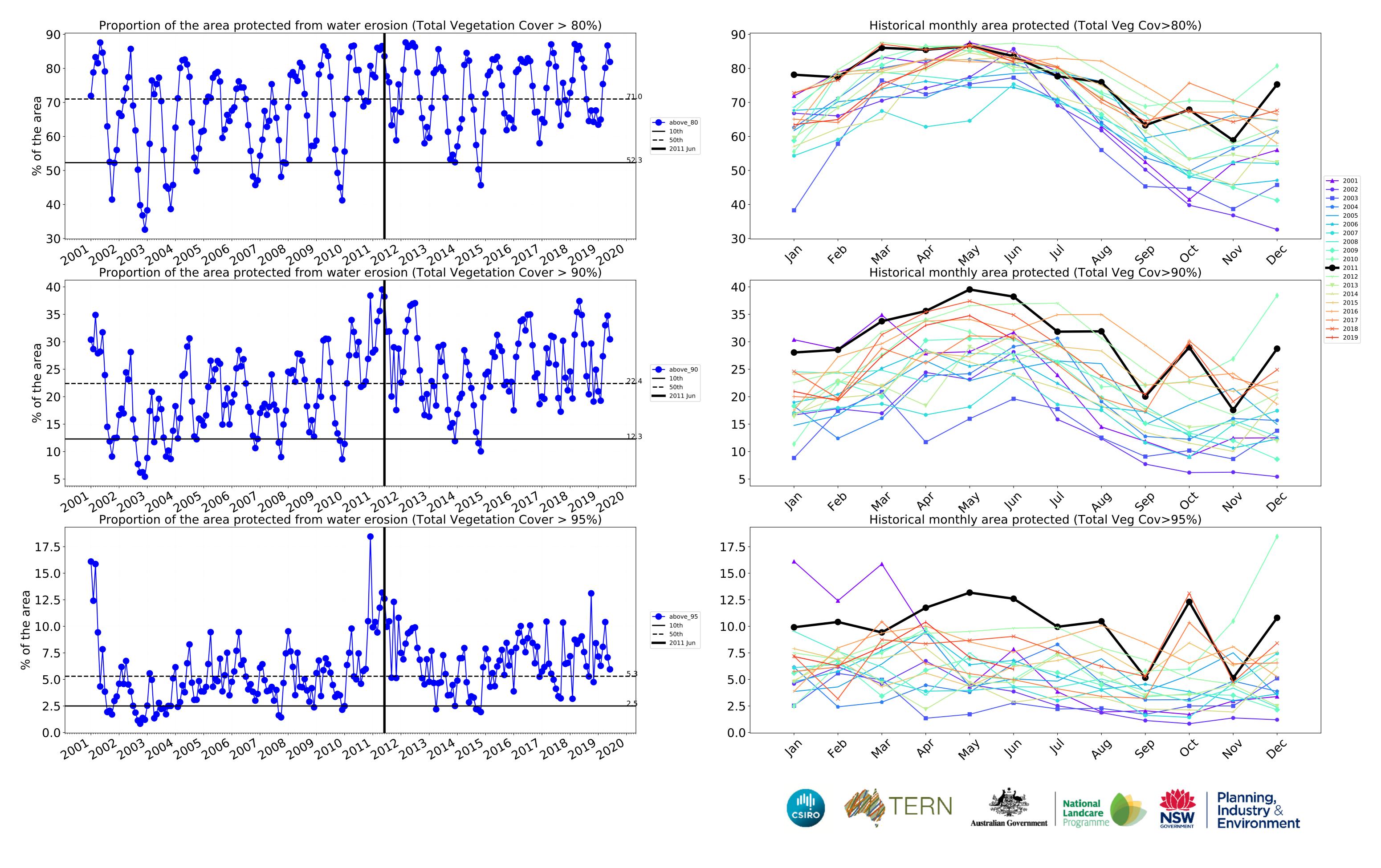
## **Irrigation timeseries**











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

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

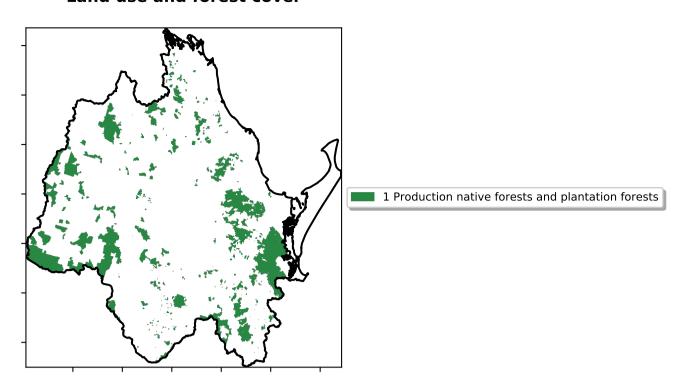
Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)

Anomaly show how many percetage points each pixel is from the mean. That

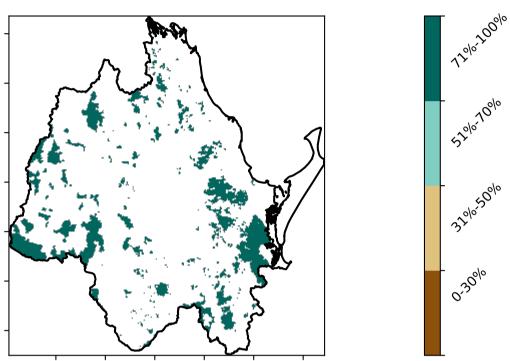
is only for the month of the map

using baseline from 2001 to 2019.

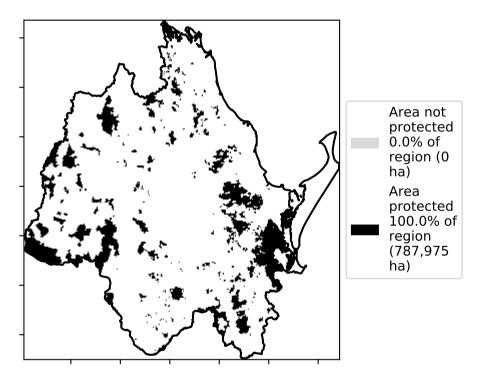
is, red pixels are about 20% lower than the mean of that pixel. The mean



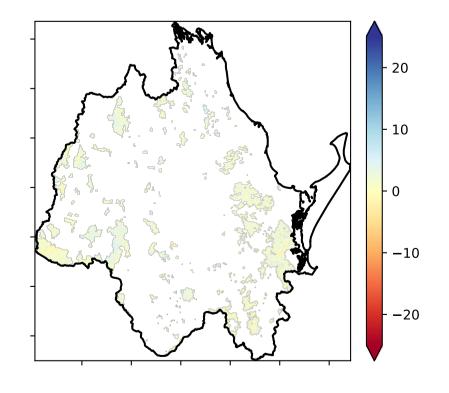
#### **Total Vegetation Cover [%]**



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

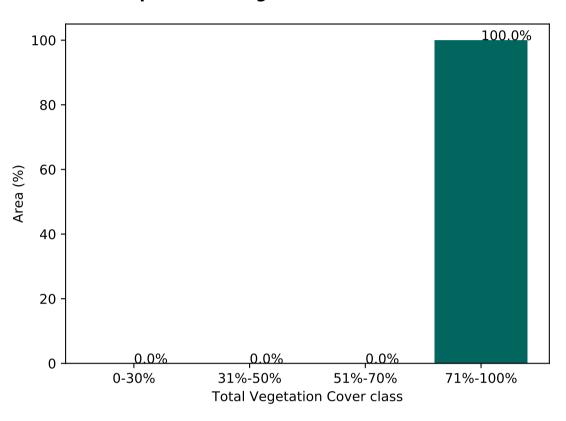


#### **Total Vegetation Cover Anomaly [%]**

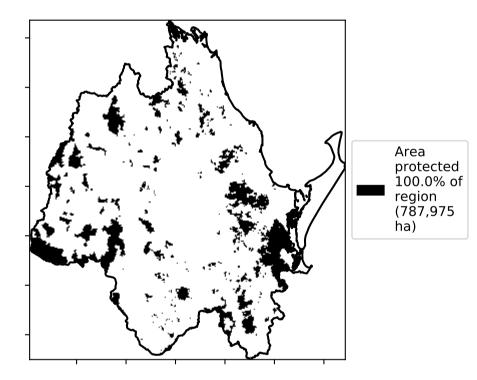


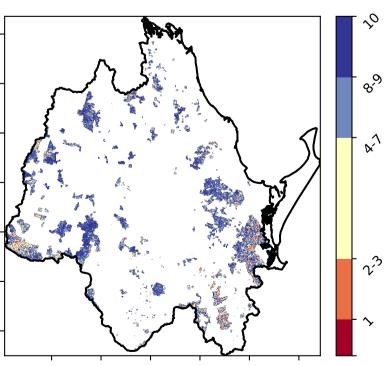
Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

#### Proportion of vegetation cover class in area



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









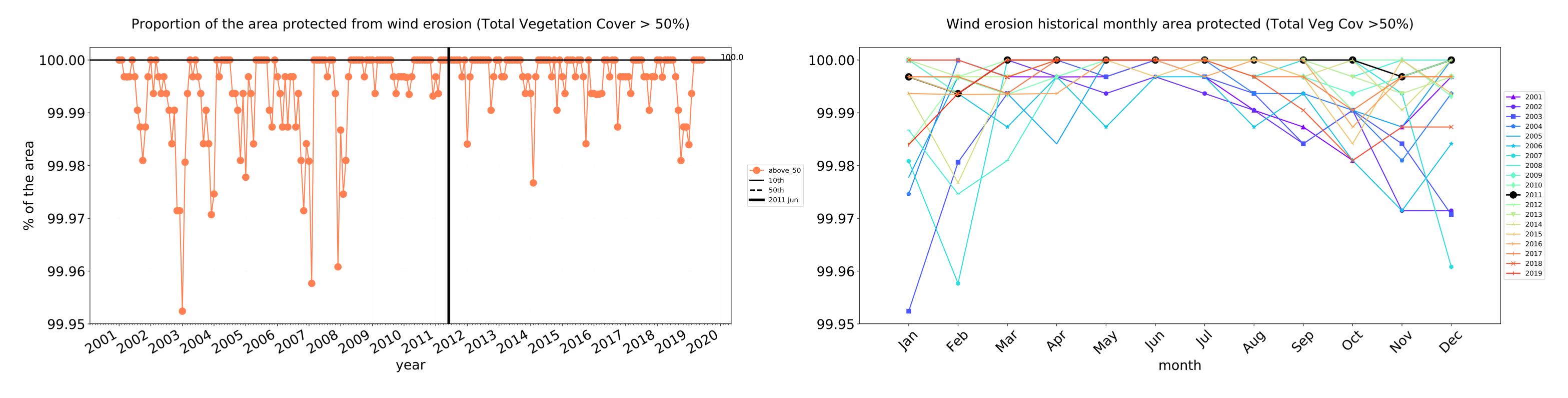


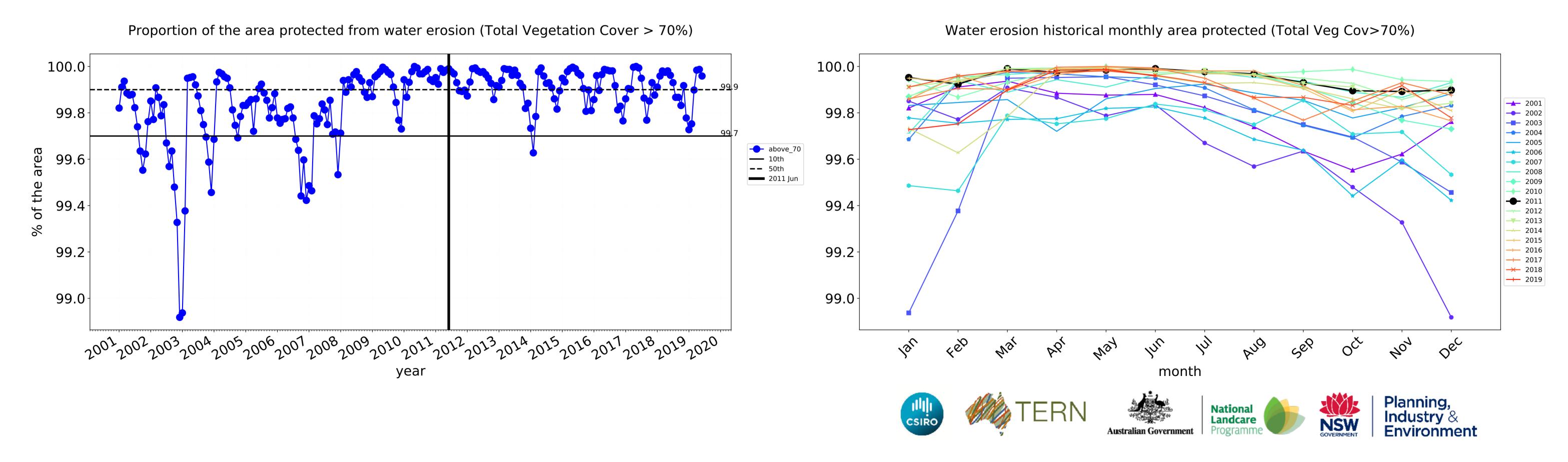


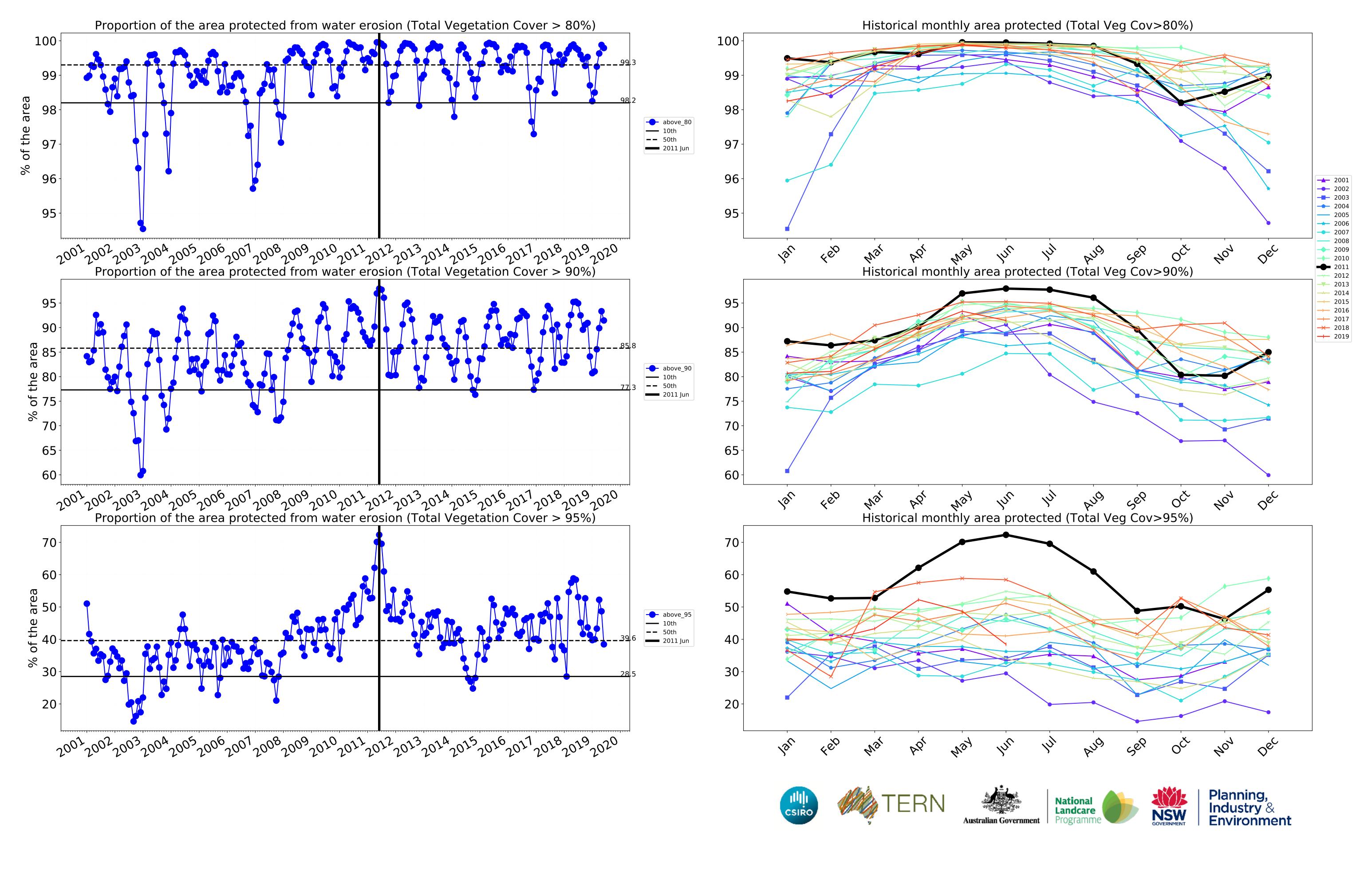




## **Production native forests and plantation forests timeseries**







# Burnett Mary (5,559,875 ha and no data 16,980 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	5,559,875	100.0% 5,558,650	99.9% 5,556,450	99.6% 5,537,753	98.4% 5,473,039	91.1% 5,062,405	62.4% 3,469,938
Conservation and natural environments	677,100	99.8% 675,900	99.6% 674,175	99.0% 670,375	98.4% 666,025	95.5% 646,875	79.3% 536,950
Conservation and natural environments Woodland forest	181,475	99.9% 181,250	99.7% 180,875	98.9% 179,500	97.9% 177,575	94.2% 170,950	76.1% 138,100
Conservation and natural environments Forest (non woodland)	466,825	100.0% 466,775	100.0% 466,625	99.8% 465,725	99.5% 464,650	97.4% 454,675	82.6% 385,575
Agriculture	3,882,925	100.0% 3,882,925	100.0% 3,882,750	99.7% 3,873,175	98.6% 3,827,800	89.9% 3,488,850	58.6% 2,275,050
Grazing	3,620,750	100.0% 3,620,750	100.0% 3,620,700	100.0% 3,620,100	99.8% 3,612,275	93.6% 3,388,900	62.0% 2,243,225
Grazing non forest	2,316,050	100.0% 2,316,050	100.0% 2,316,000	100.0% 2,315,400	99.7% 2,308,050	91.0% 2,106,525	54.9% 1,270,550
Grazing Woodland forest	711,300	100.0% 711,300	100.0% 711,300	100.0% 711,300	100.0% 711,025	97.7% 694,950	64.5% 458,675
Grazing - Forest (non woodland)	593,400	100.0% 593,400	100.0% 593,400	100.0% 593,400	100.0% 593,200	99.0% 587,425	86.6% 514,000
Cropping	81,725	100.0% 81,725	100.0% 81,725	95.4% 77,925	78.4% 64,075	35.9% 29,350	9.5% 7,775
Irrigation	174,775	100.0% 174,775	99.9% 174,650	97.0% 169,550	83.6% 146,075	38.2% 66,800	12.6% 22,025
Production native forests and plantation forests	787,975	100.0% 787,975	100.0% 787,975	100.0% 787,900	99.9% 787,575	97.9% 771,800	72.3% 569,900











