# Total vegetation cover soil protection **Region:NRM West Gippsland VIC**

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

Date: July 2001

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 Jul 2001**

#### Land use and forest cover

Catchment Scale

of Australia (2018)

(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

using baseline from 2001 to

2019.

month of the map

Derived from

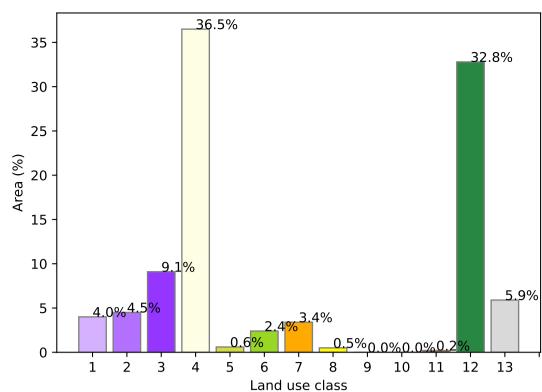
Use of Australia

Land Use and Forests

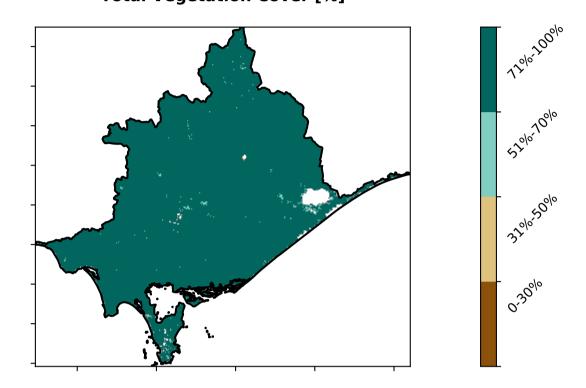
Catchment Scale Land

#### 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

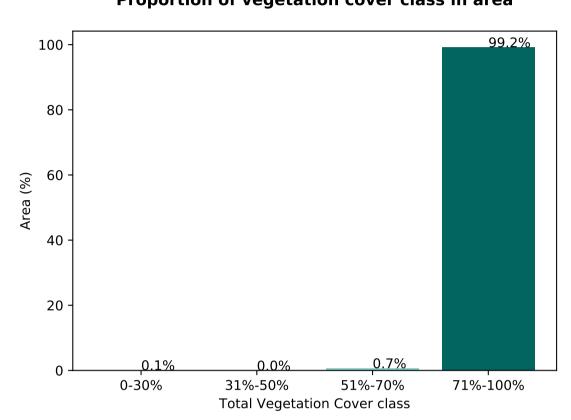
# Proportion of each land class in area



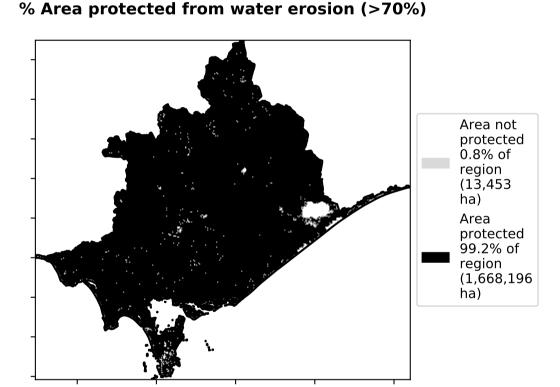
# **Total Vegetation Cover [%]**



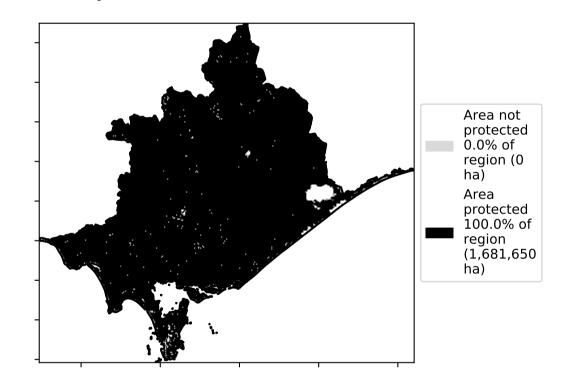
Proportion of vegetation cover class in area



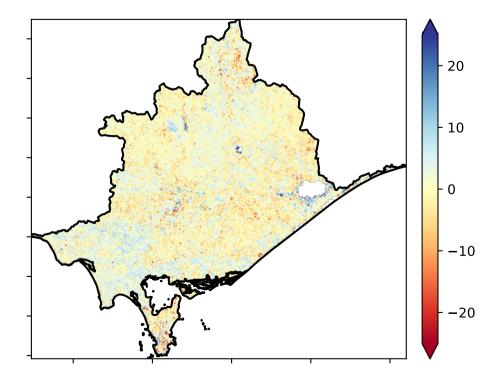
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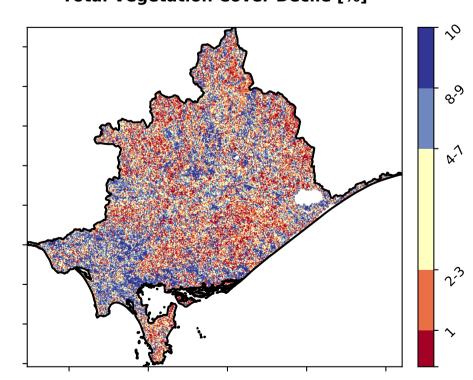
% Area protected from wind erosion (>50%)



### **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.





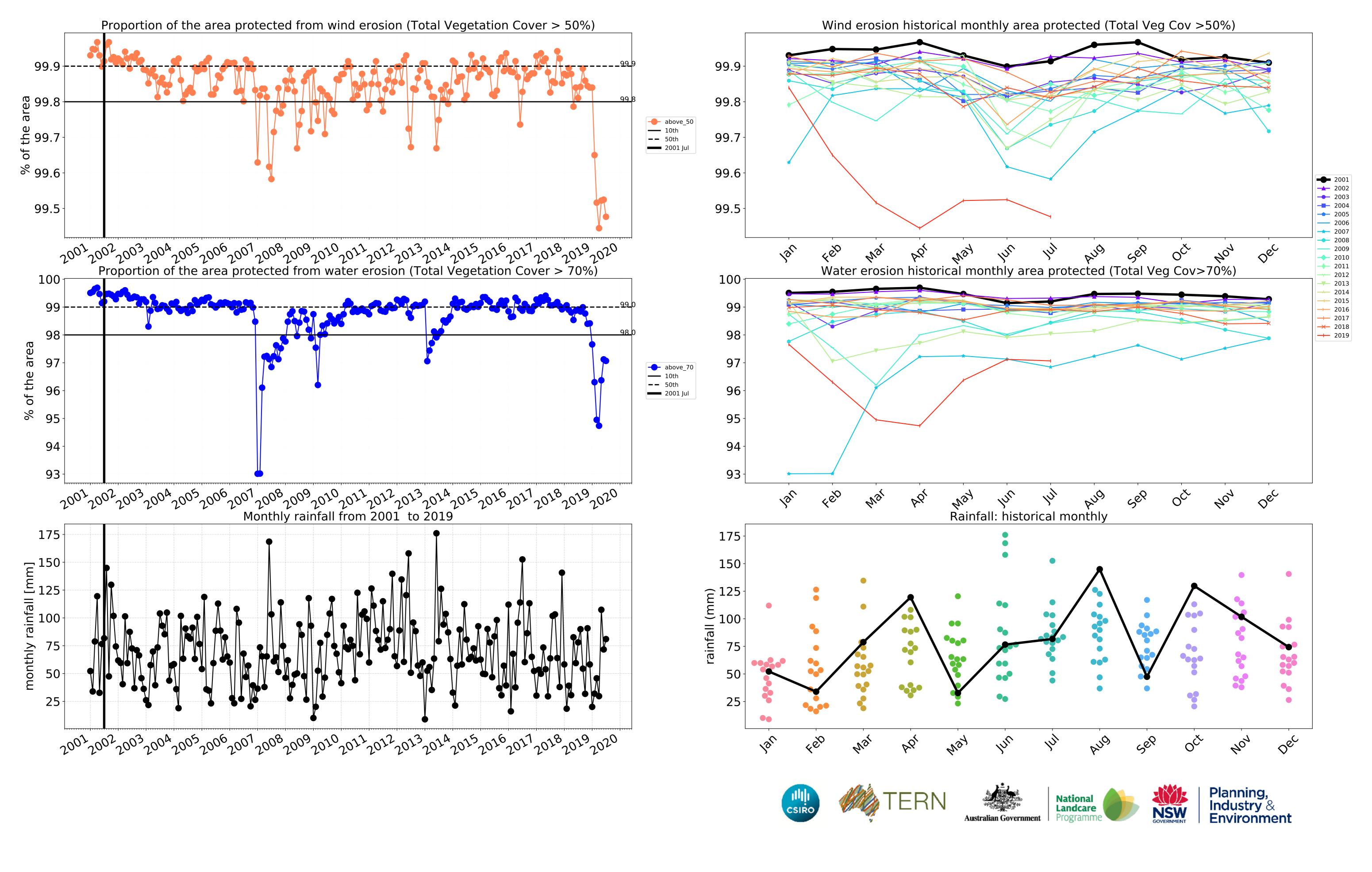


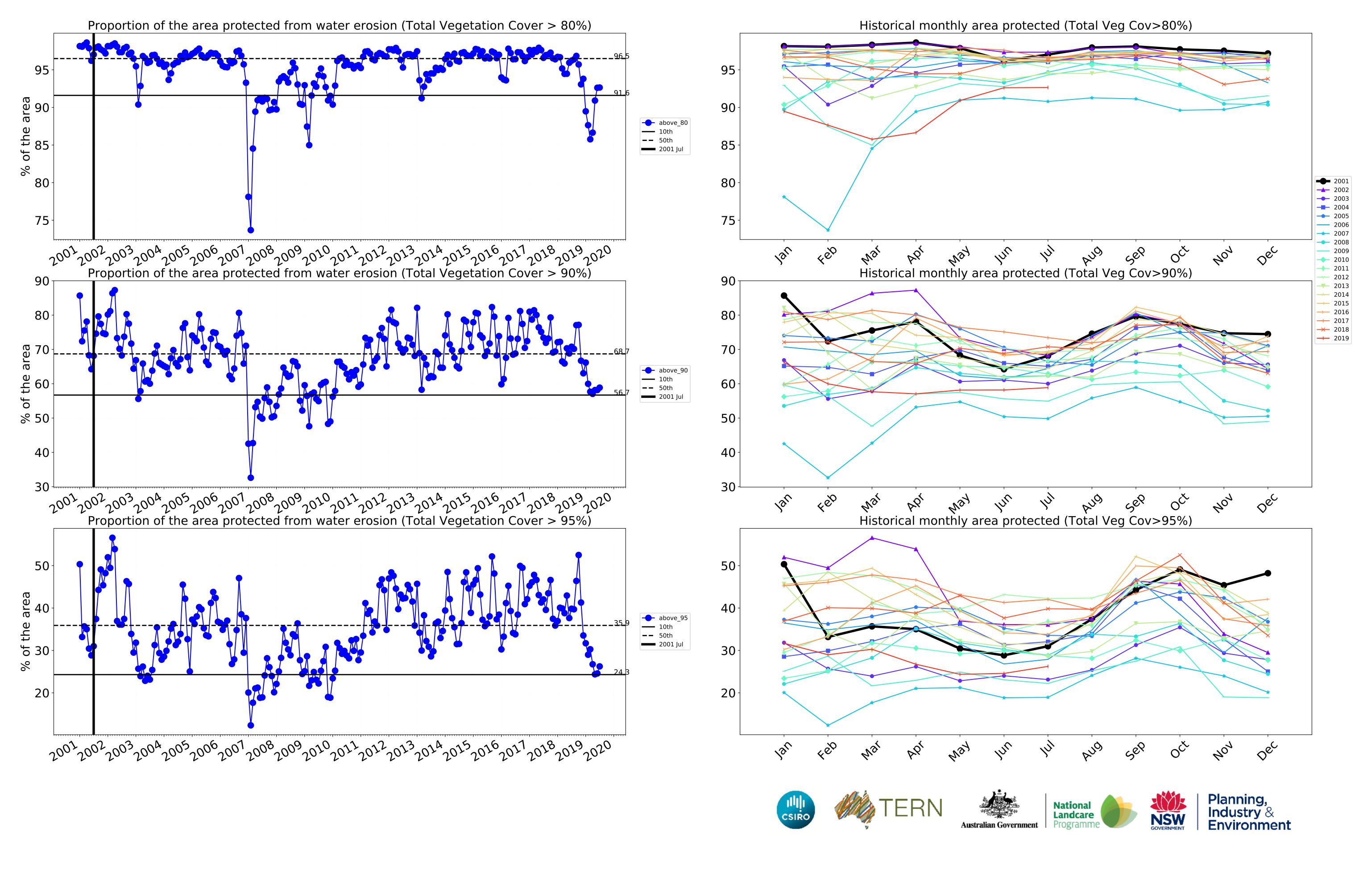










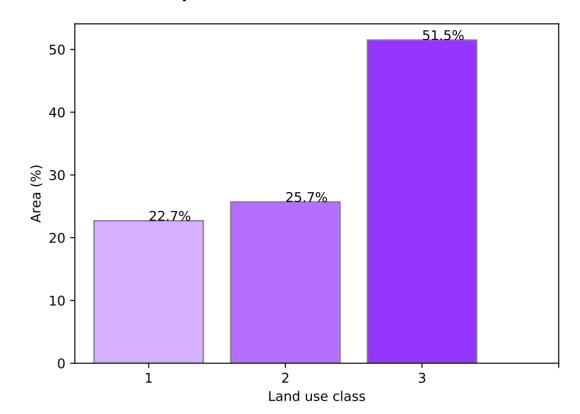


# **Conservation and natural environments**

# Catchment Scale 1 Conservation and natural environments - Non-2 Conservation and natural environments - Woodland 3 Conservation and natural environments - Non-woodland forest

Land use and forest cover

#### Proportion of each land class in area



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

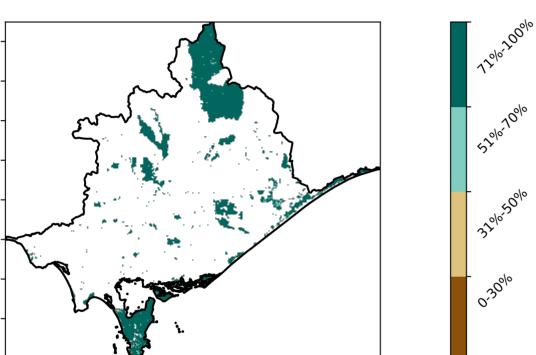
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pixel. The mean

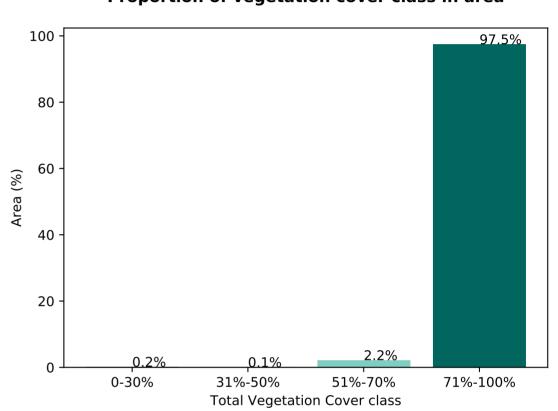
using baseline from 2001 to 2019.

is only for the month of the map

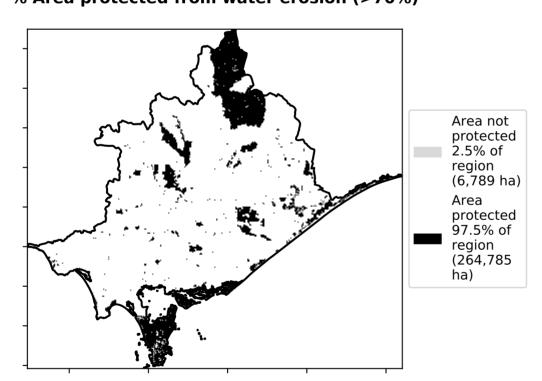




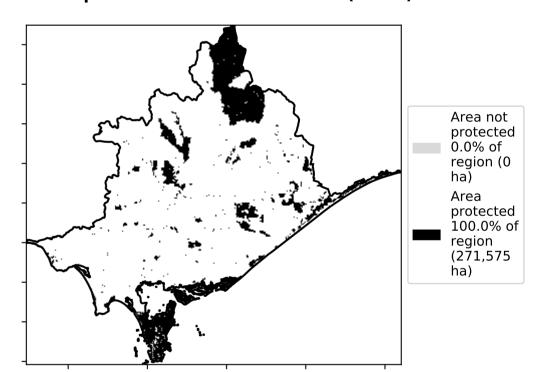
Proportion of vegetation cover class in area



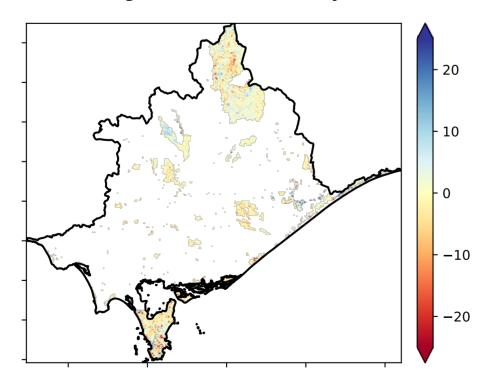
% Area protected from water erosion (>70%)



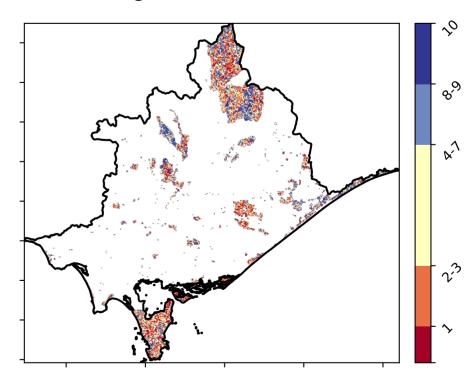
% Area protected from wind erosion (>50%)



# **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.







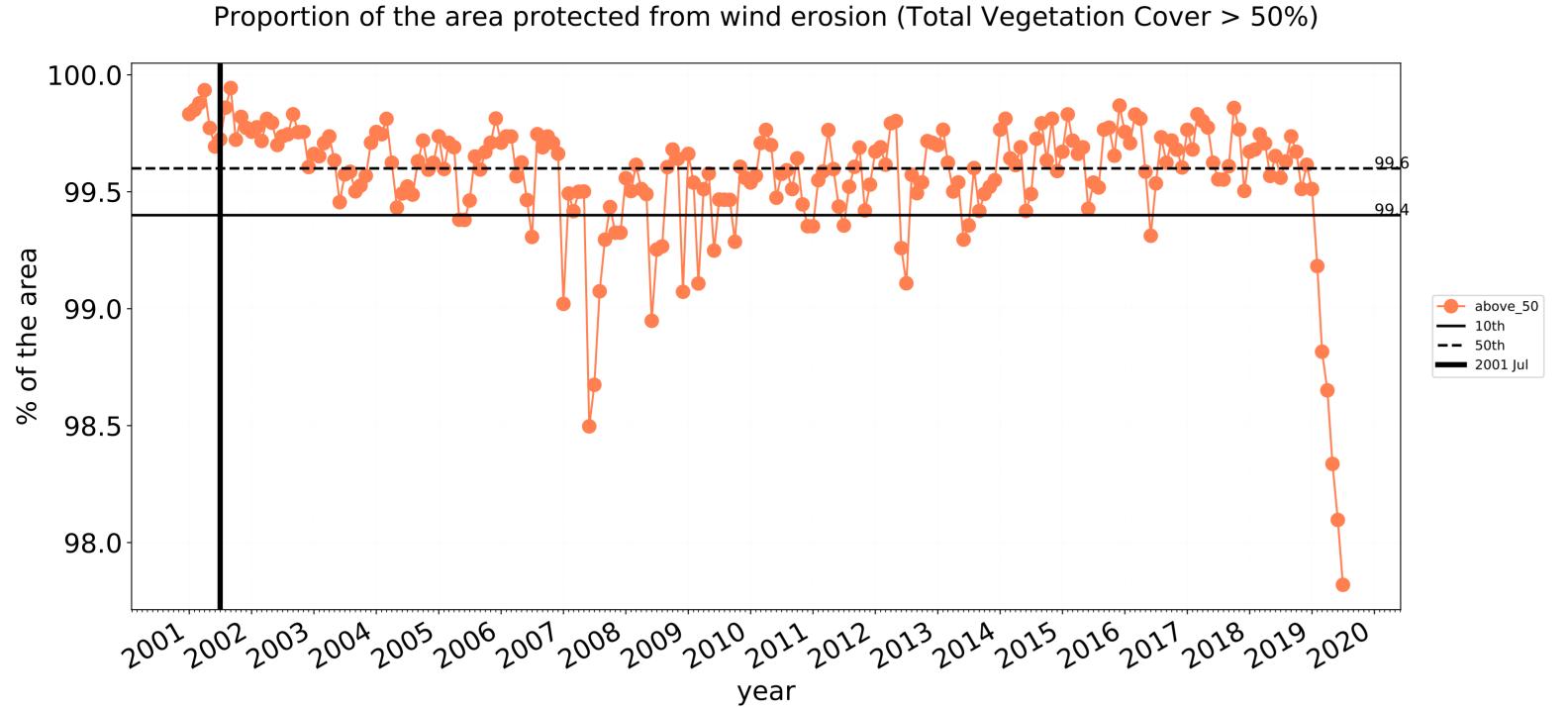


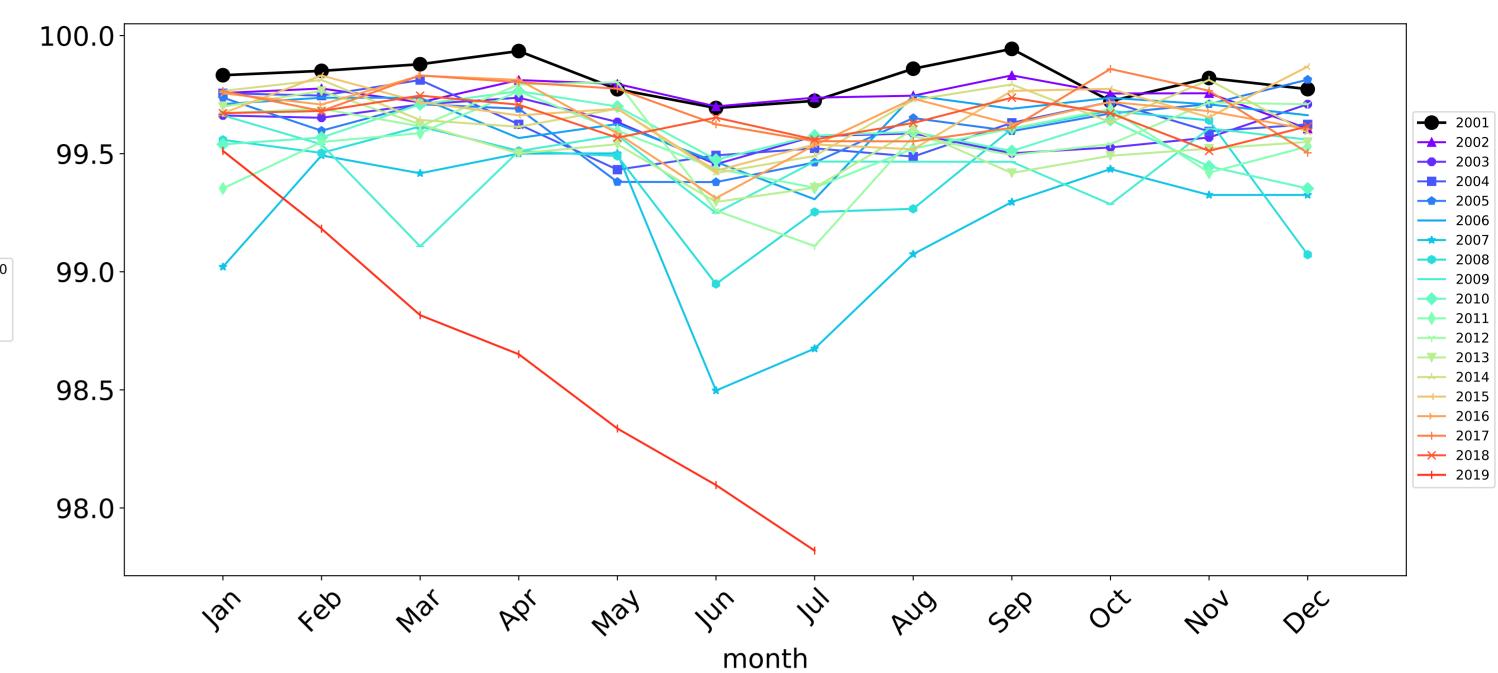




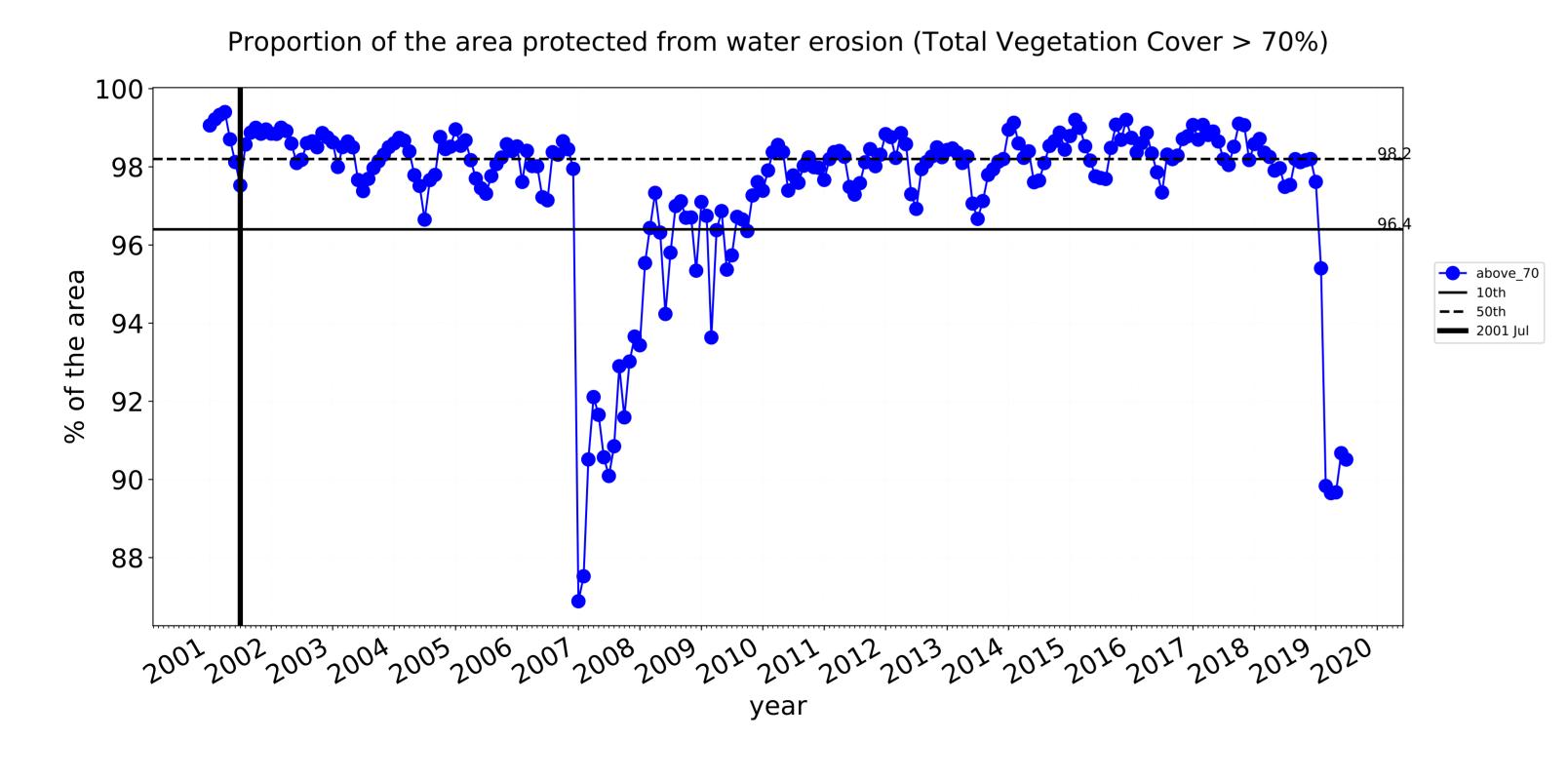


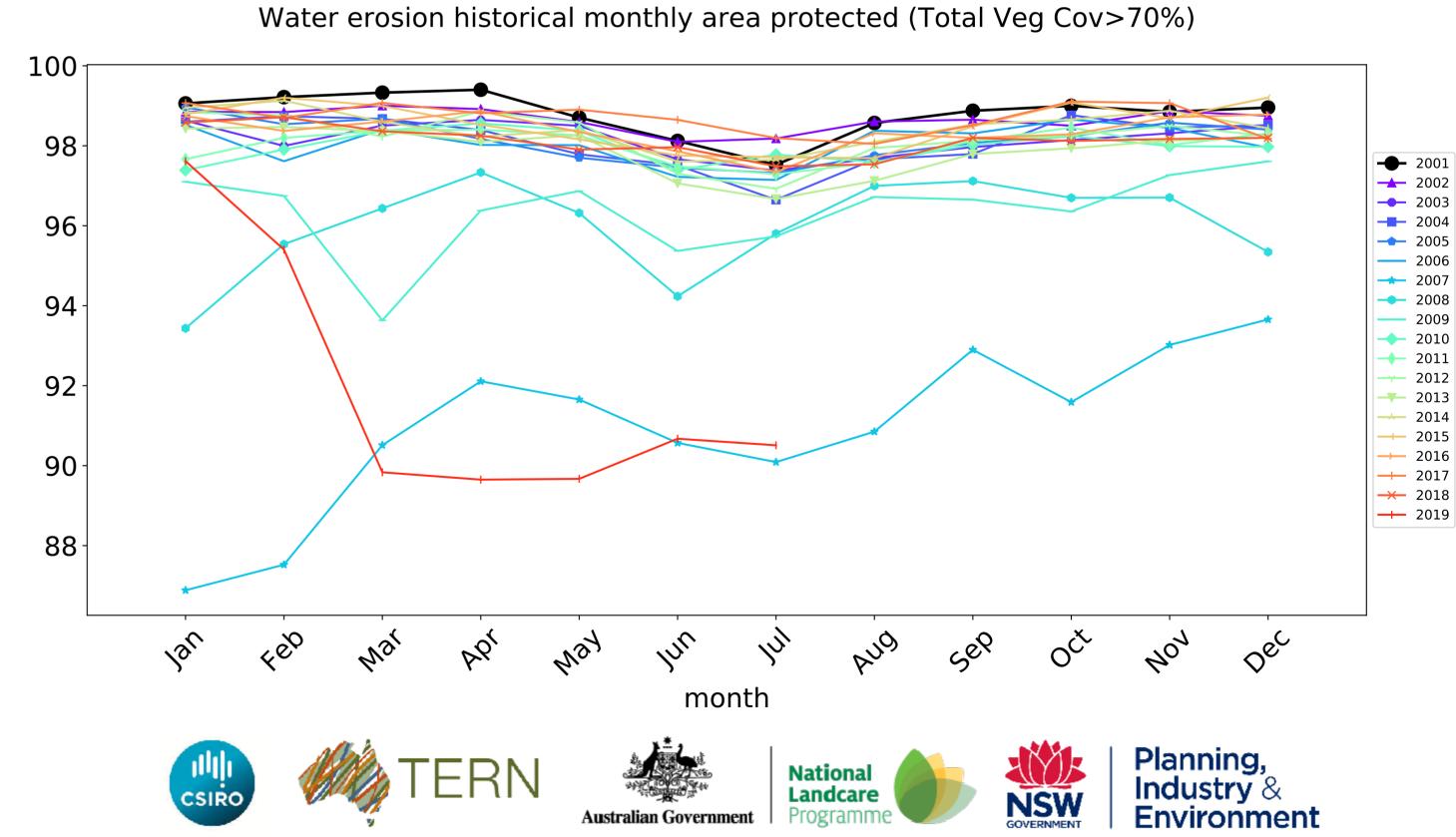
# **Conservation and natural environments timeseries**

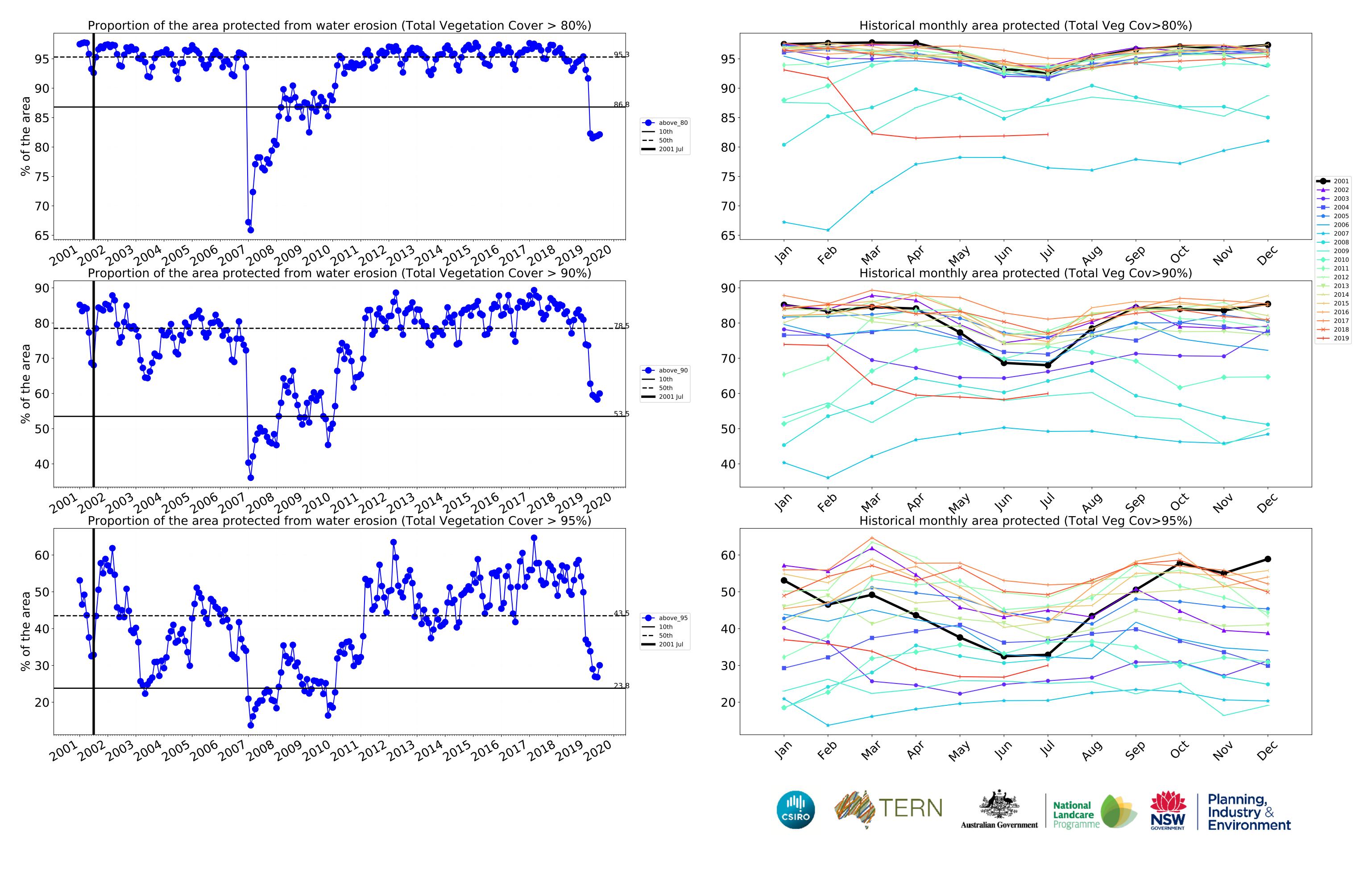




Wind erosion historical monthly area protected (Total Veg Cov >50%)







# **Conservation and natural environments non forest**

#### Land use and forest cover

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

Anomaly show how many percetage points each

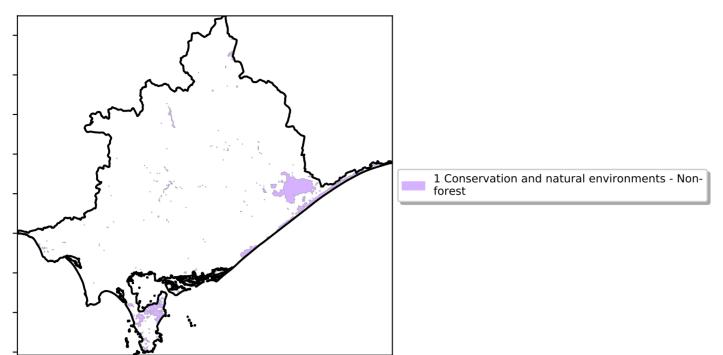
pixel is from

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

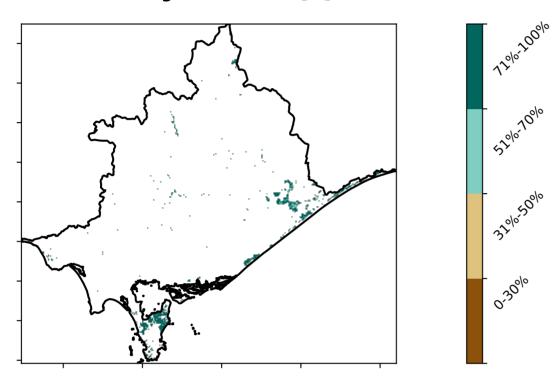
the mean. That

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

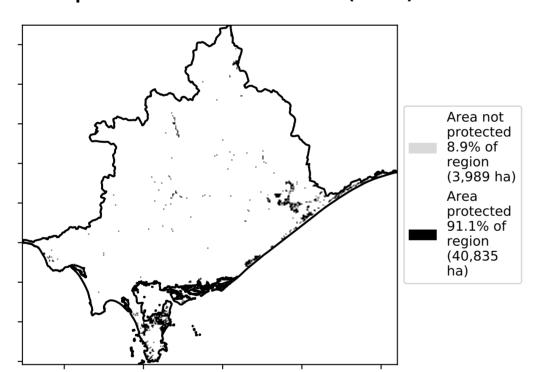
using baseline from 2001 to 2019.



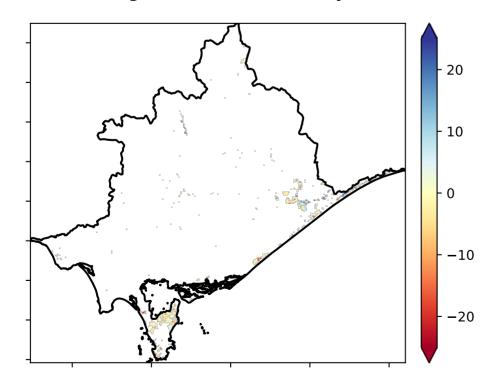
#### **Total Vegetation Cover [%]**



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

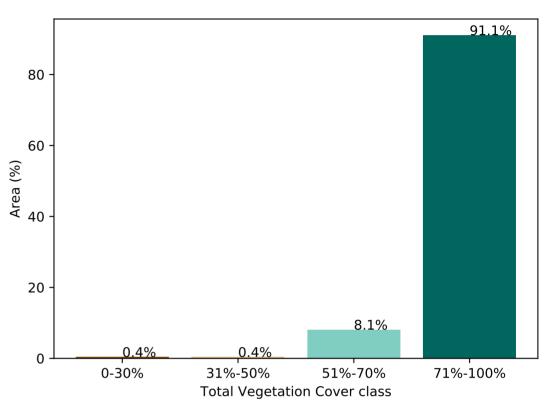


### Total Vegetation Cover Anomaly [%]

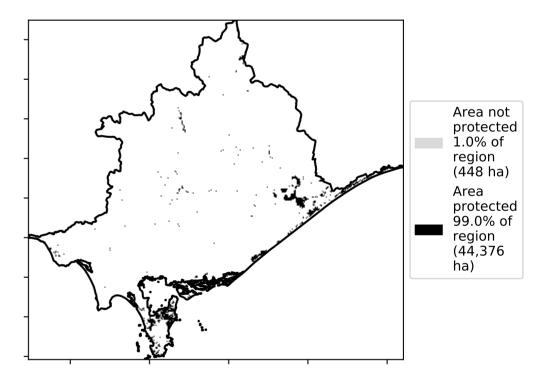


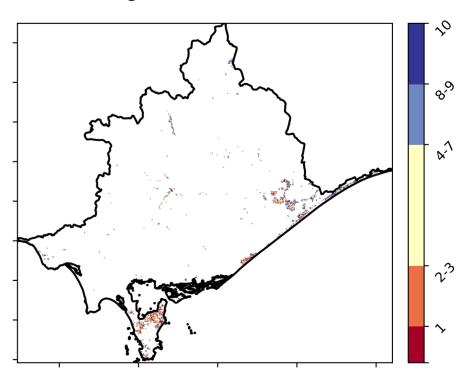
Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

### Proportion of vegetation cover class in area



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











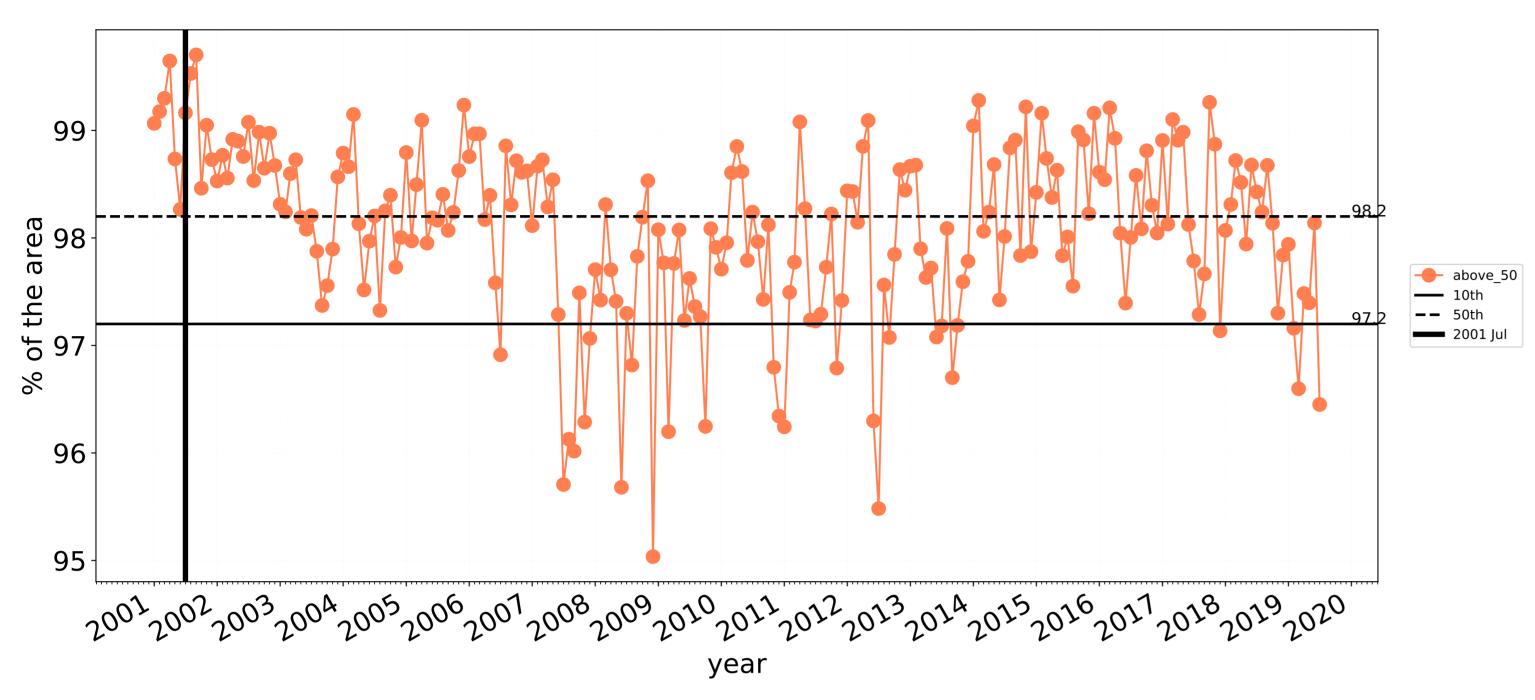




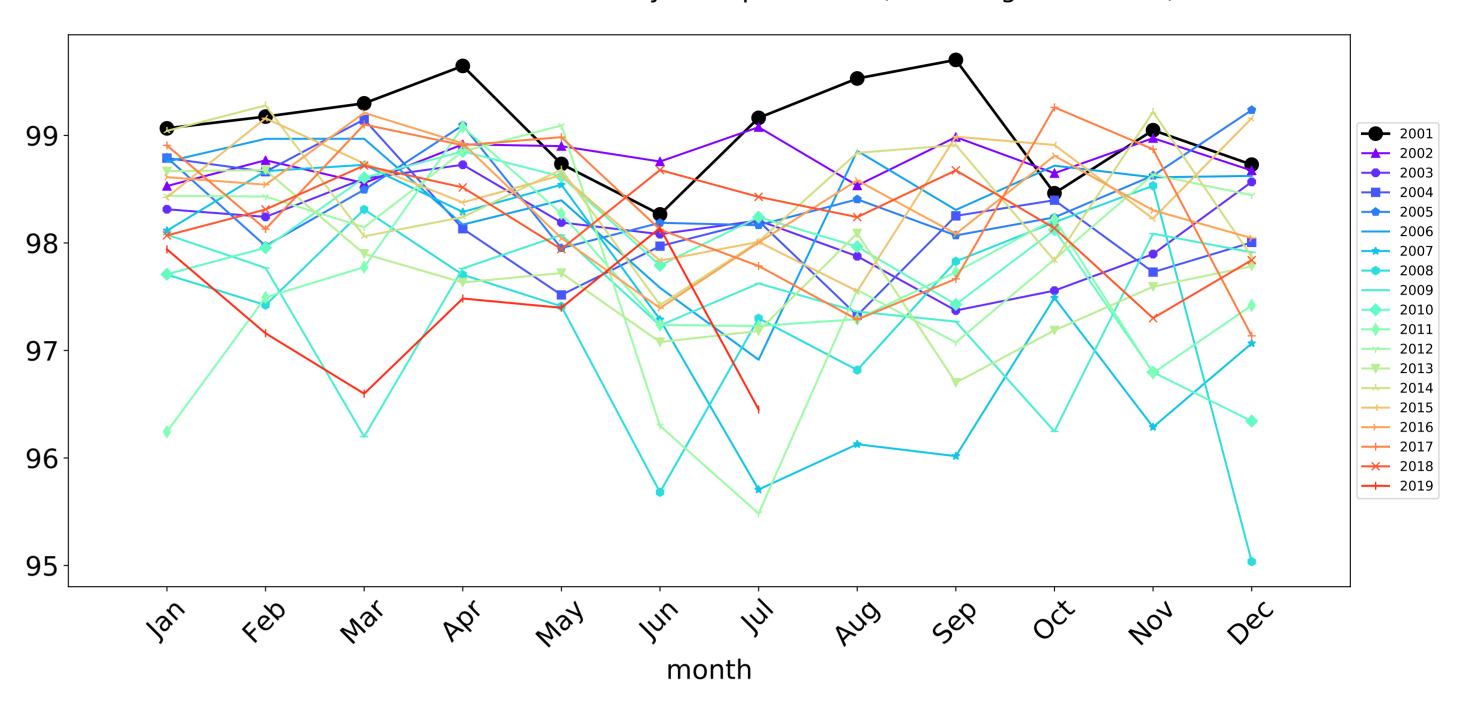


# Conservation and natural environments non forest timeseries

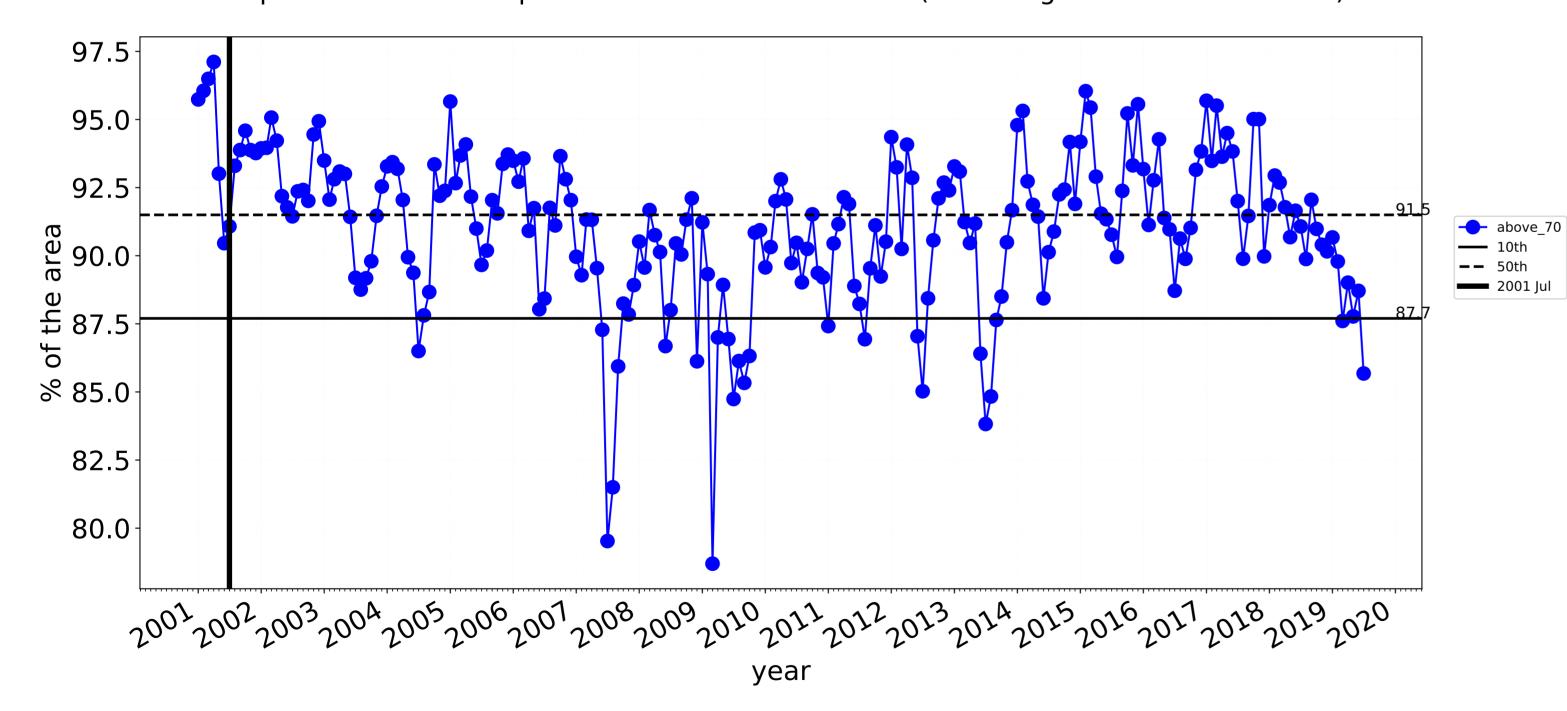




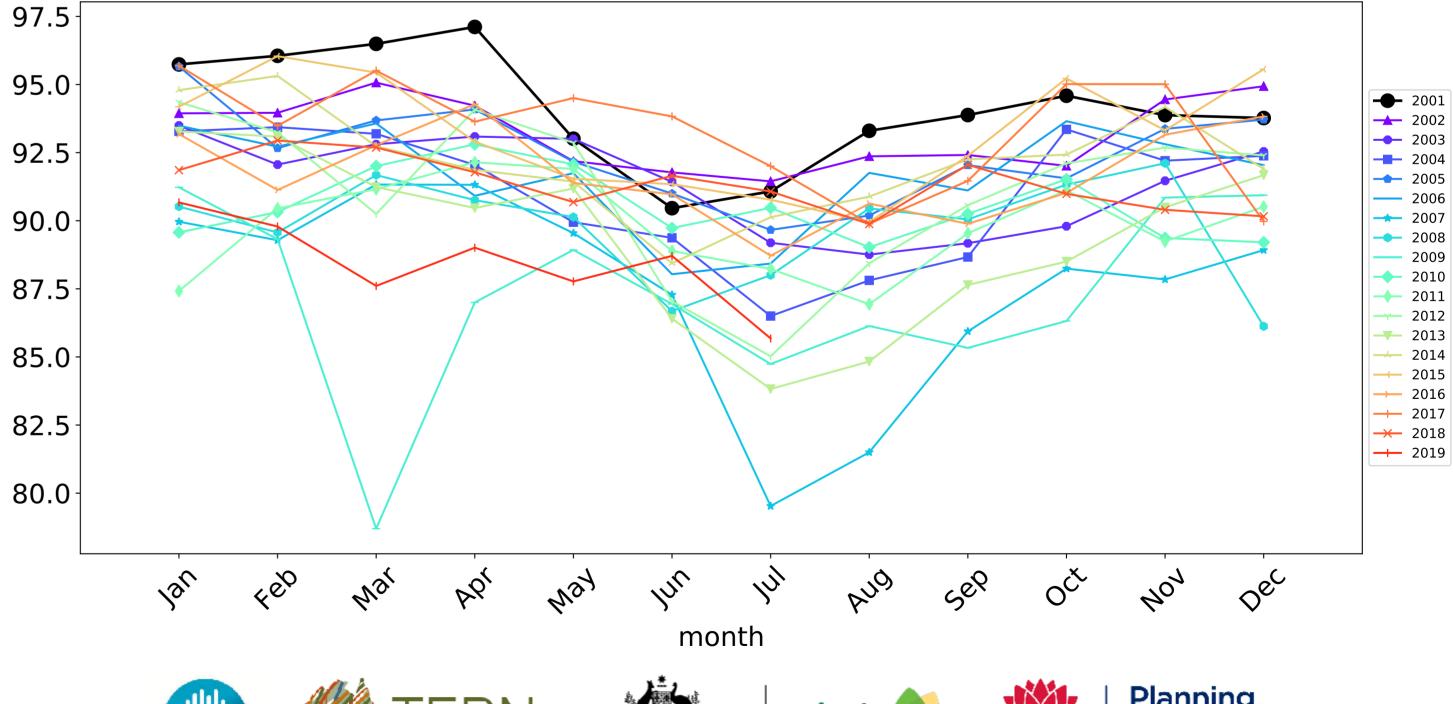
# Wind erosion historical monthly area protected (Total Veg Cov >50%)



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



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



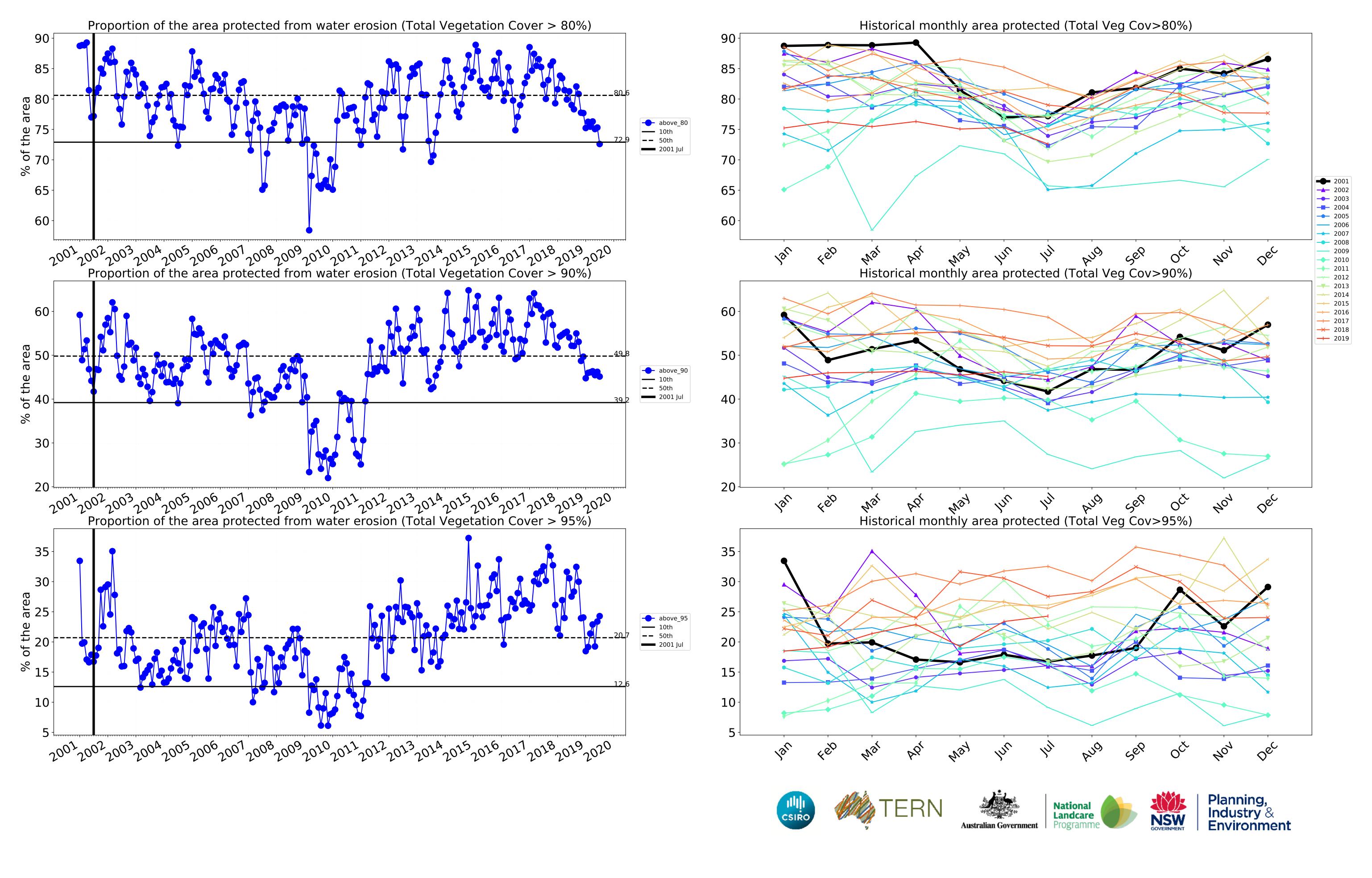












# **Conservation and natural environments Woodland forest**

#### 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

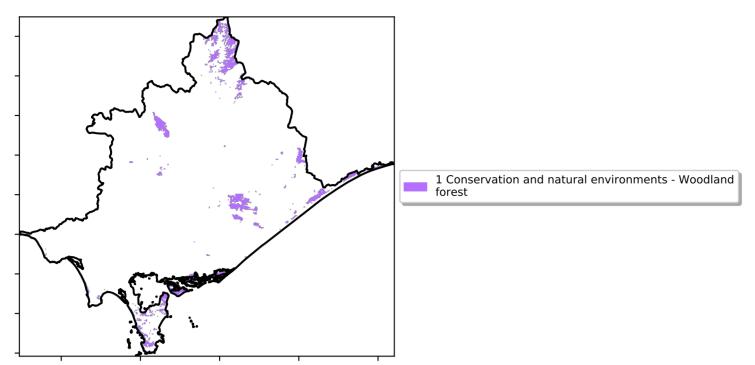
is, red pixels are about 20% lower than the mean of that

the mean. That

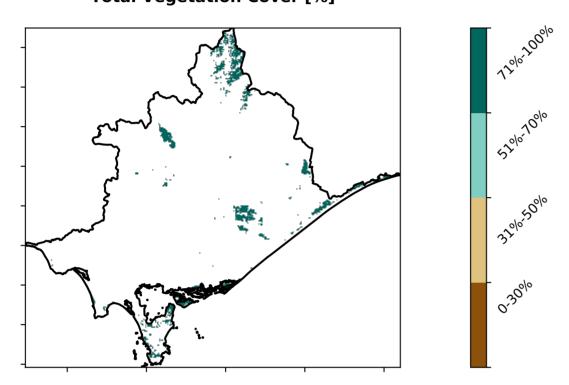
pixel. The mean

using baseline from 2001 to 2019.

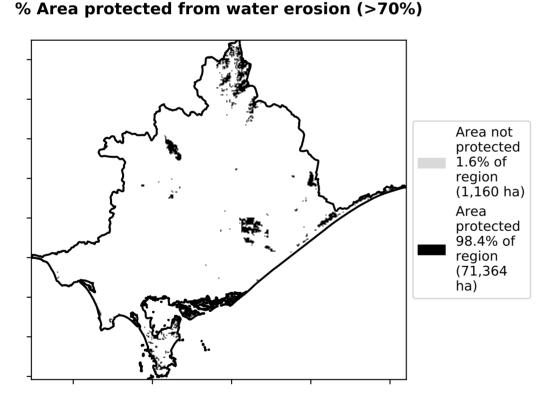
is only for the month of the map



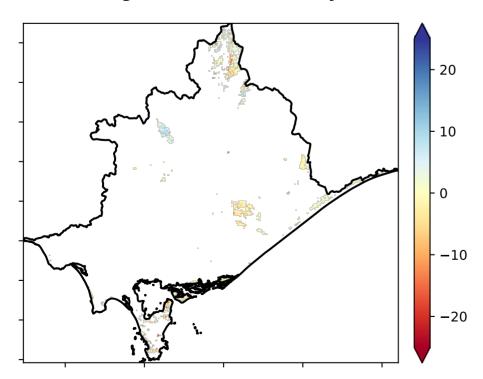
### **Total Vegetation Cover [%]**



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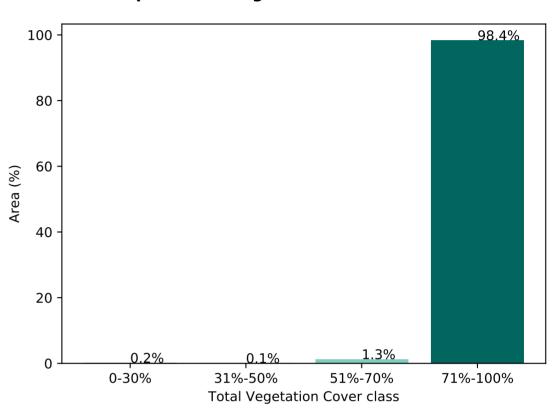


# Total Vegetation Cover Anomaly [%]

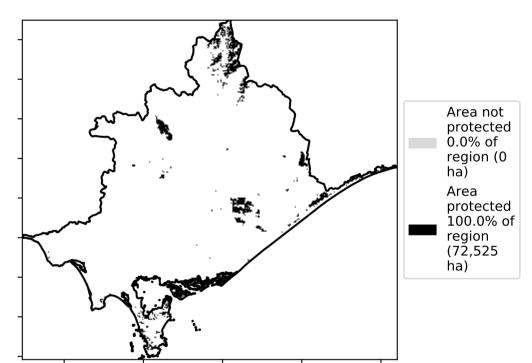


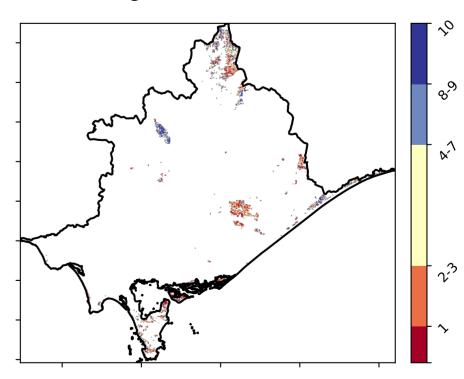
Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

#### Proportion of vegetation cover class in area



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







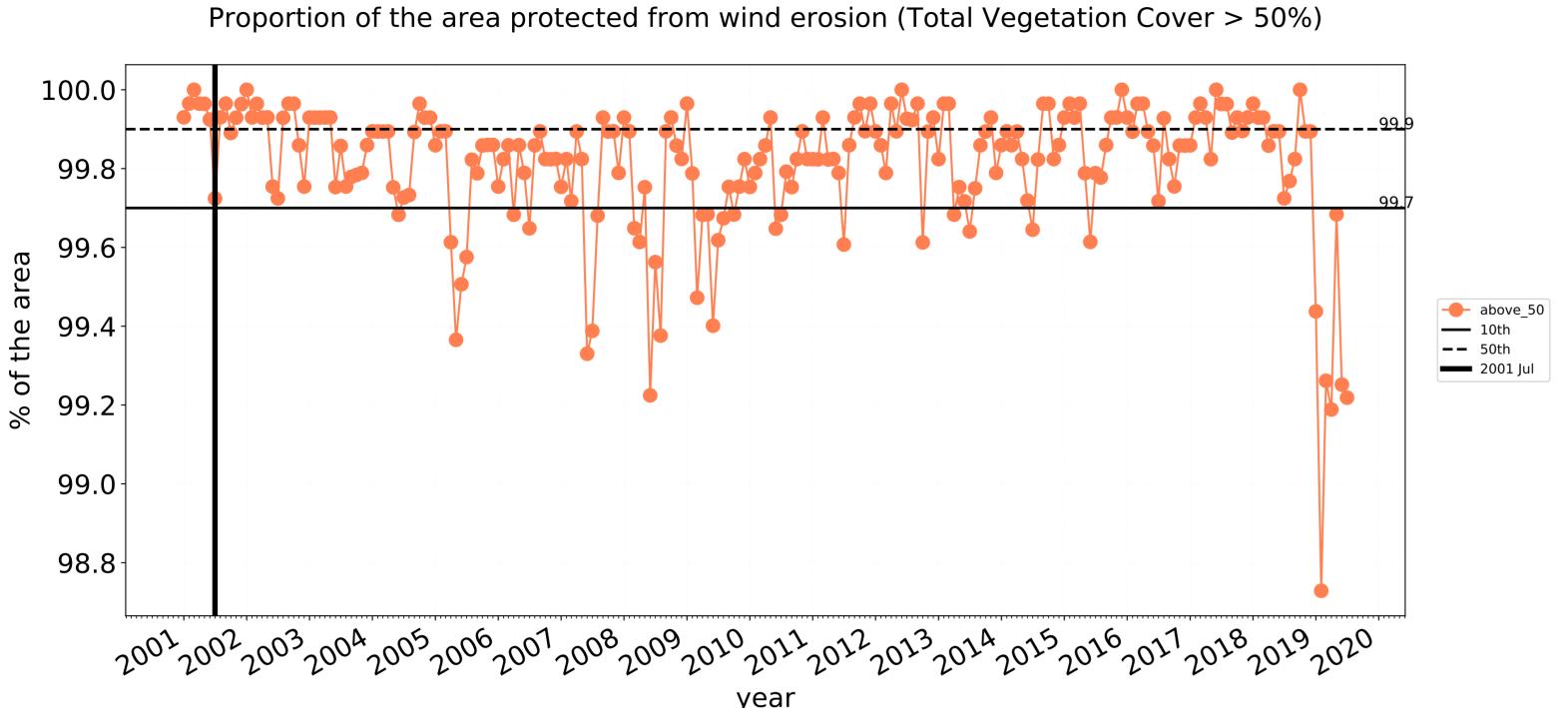


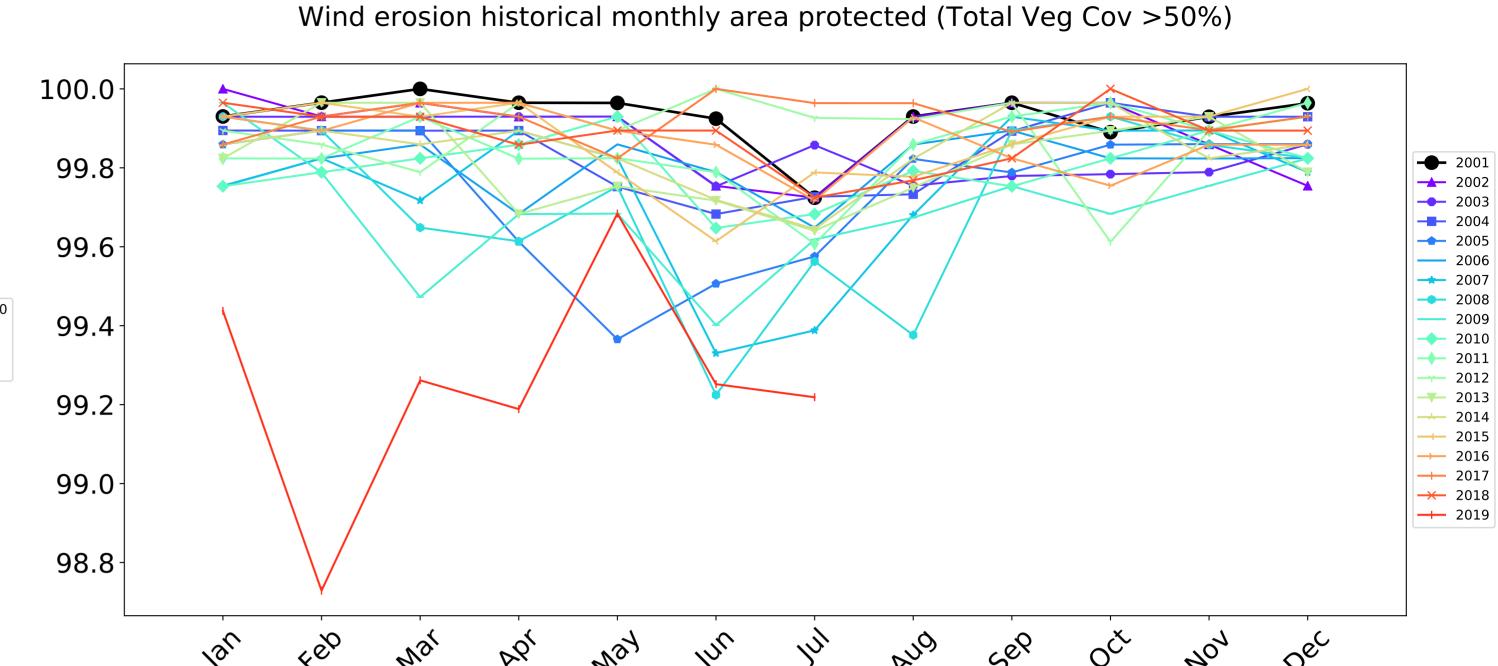




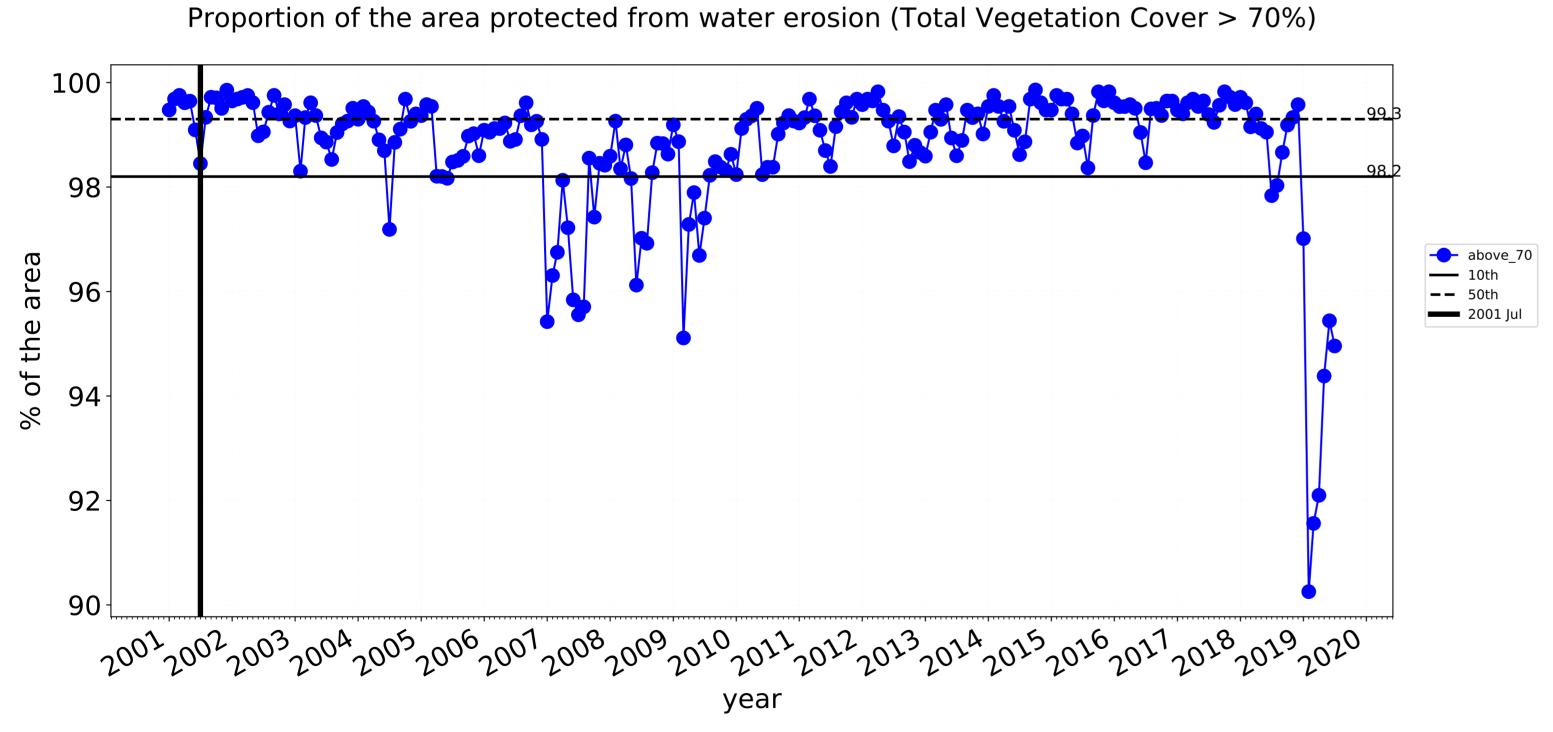


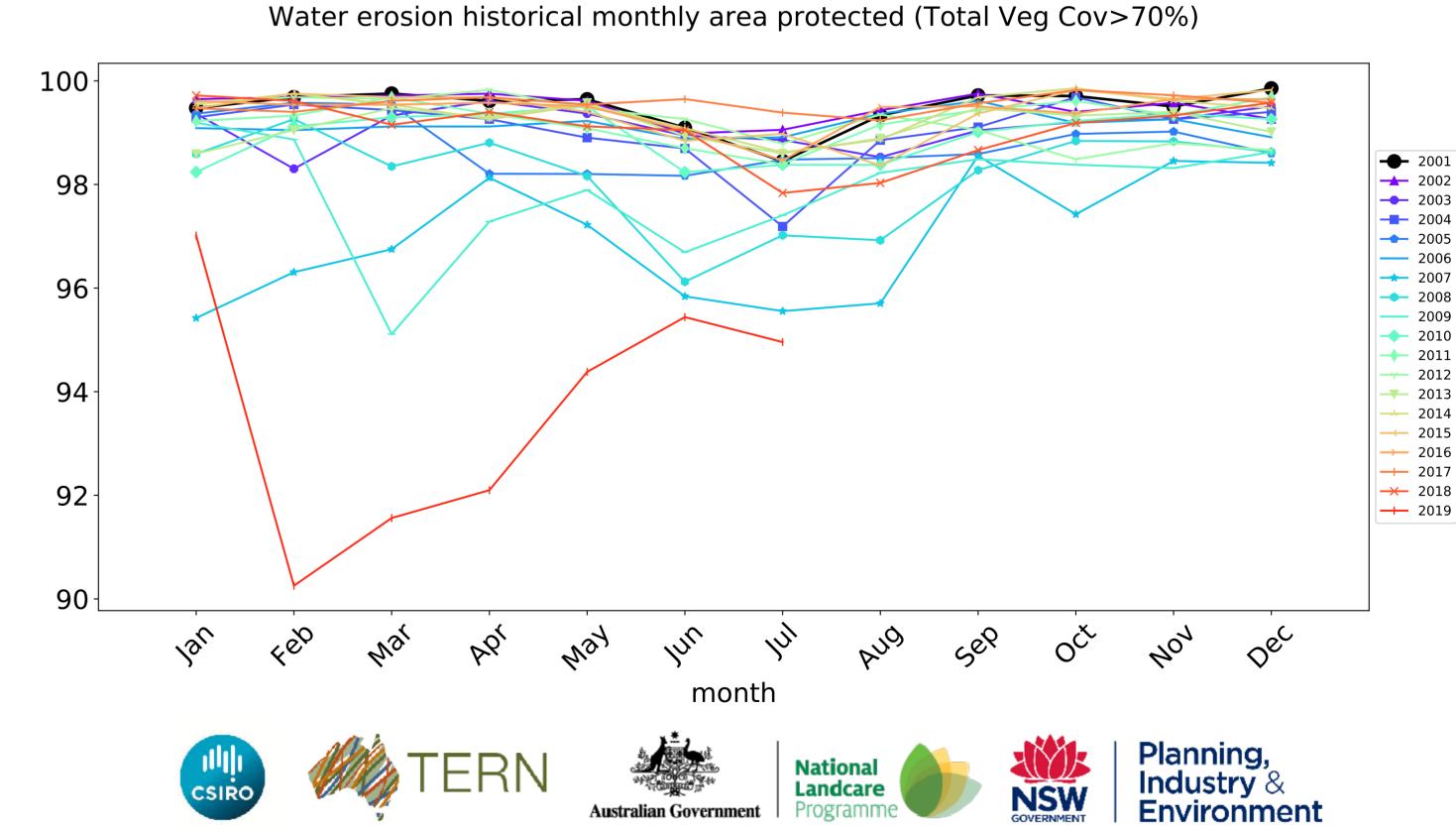


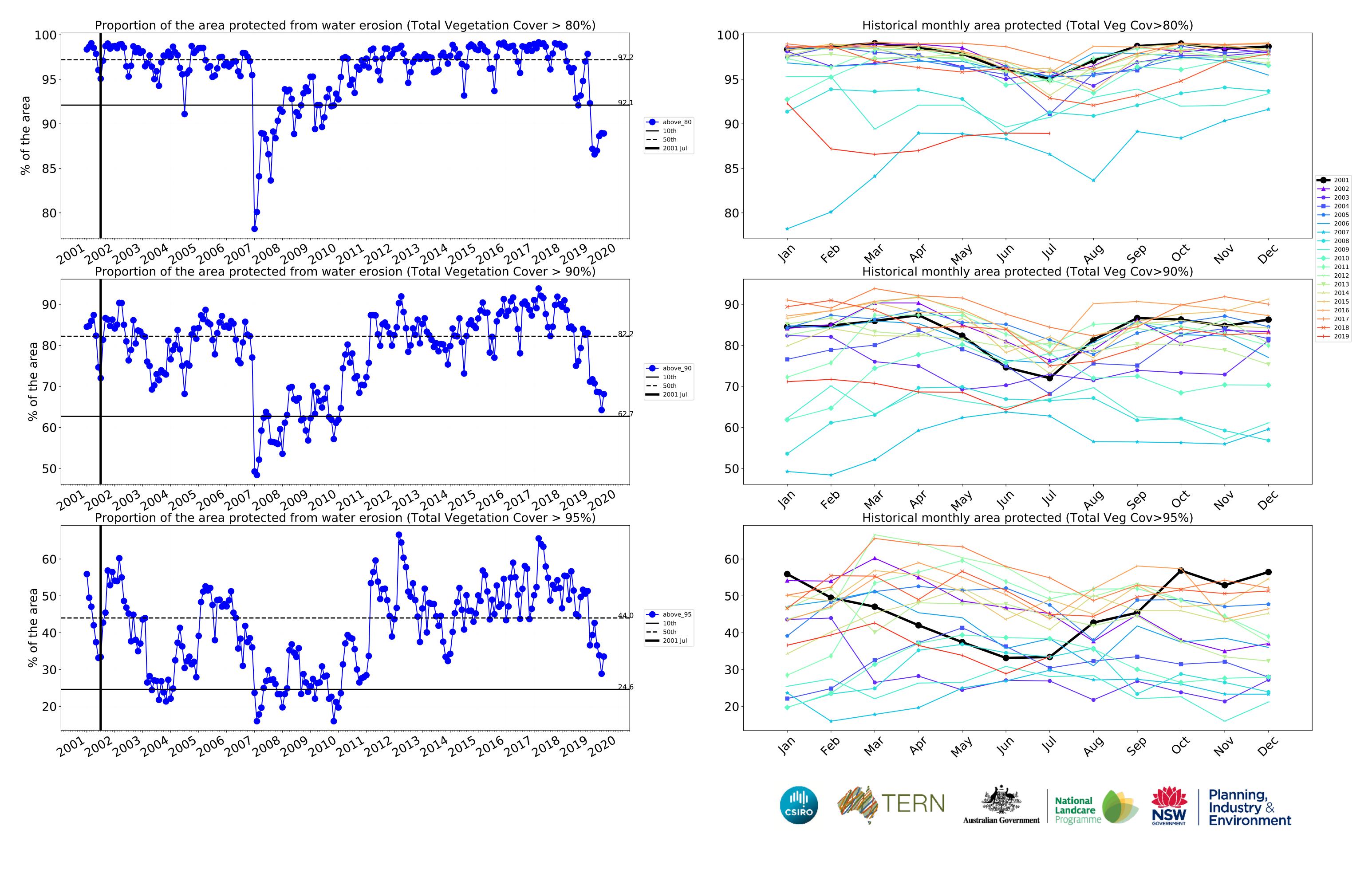




month







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

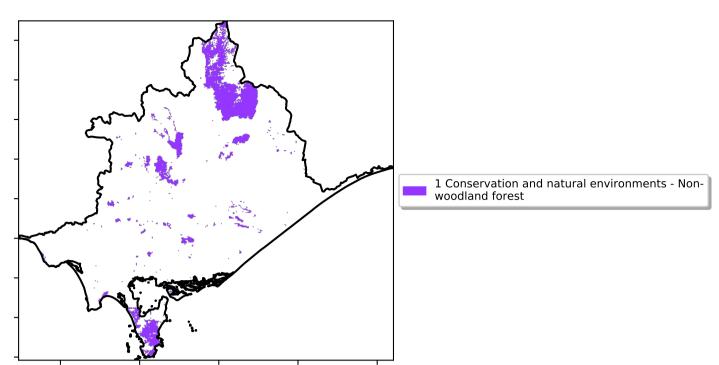
#### Land use and forest cover

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

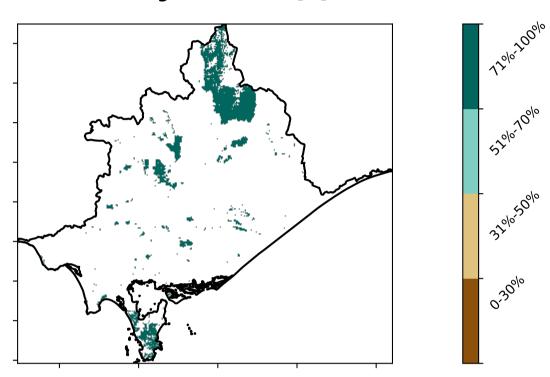
Anomaly show how many percetage points each pixel is from the mean. That

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

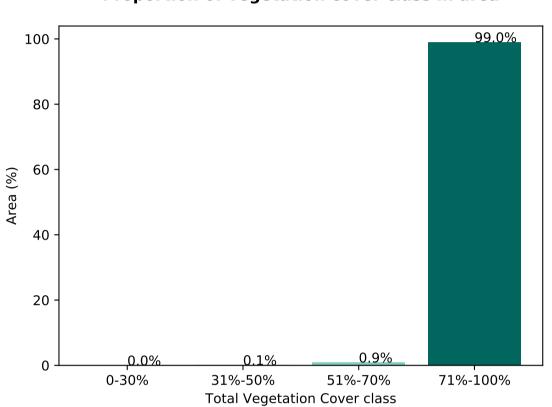
is, red pixels are about 20% lower than the mean of that



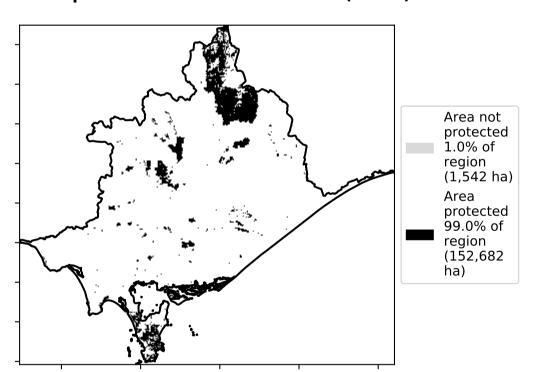
#### **Total Vegetation Cover [%]**



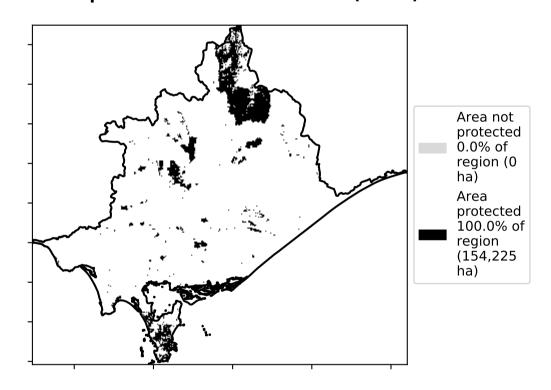
# Proportion of vegetation cover class in area



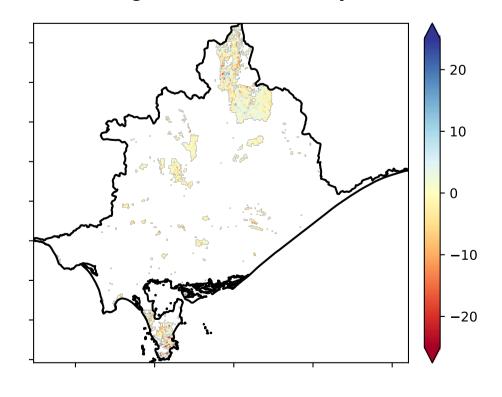
### % Area protected from water erosion (>70%)



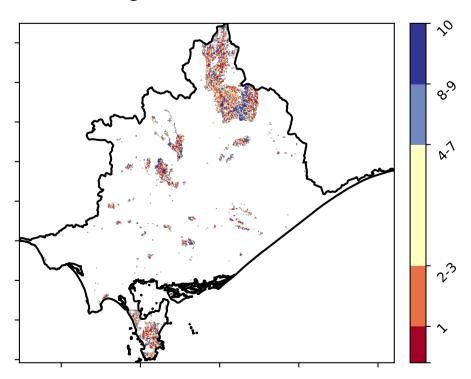
% Area protected from wind erosion (>50%)



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



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





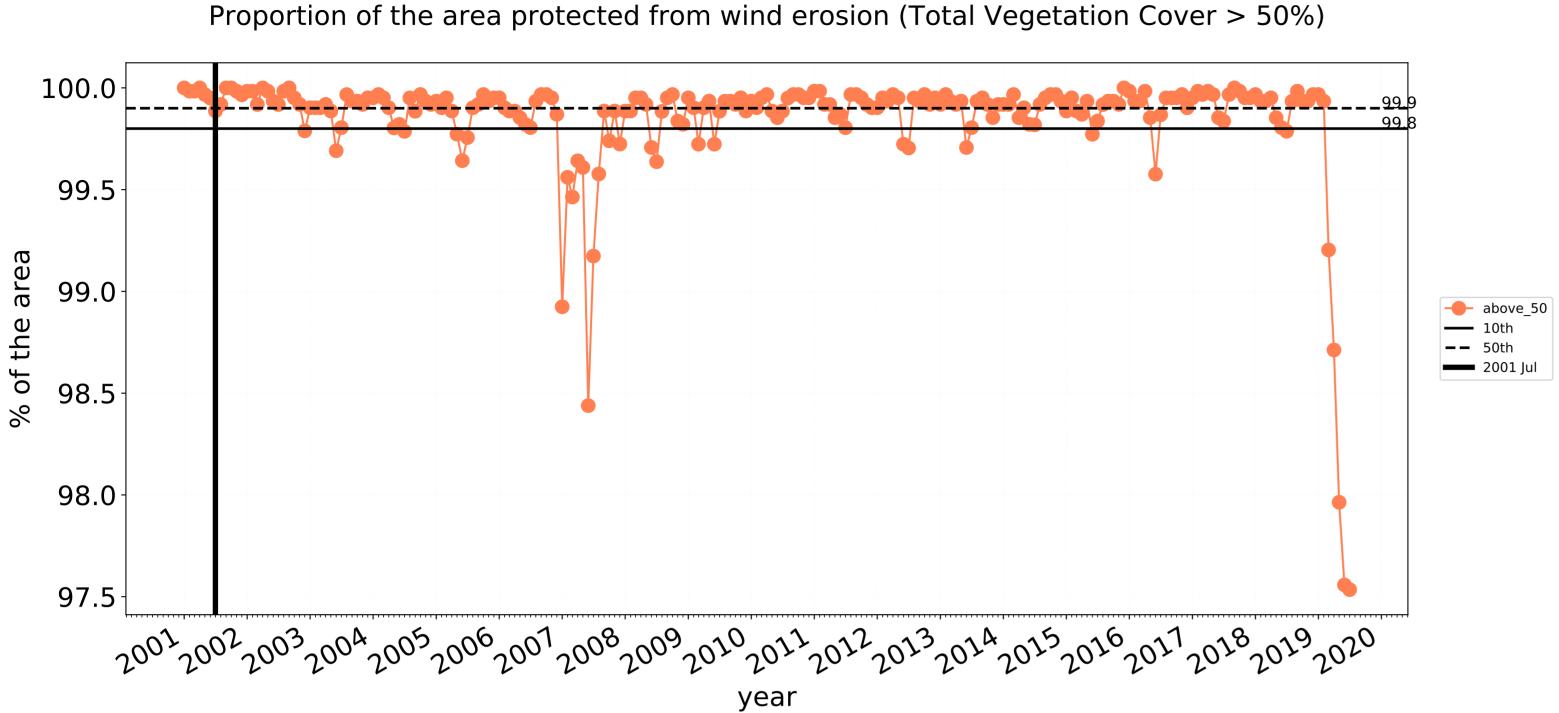


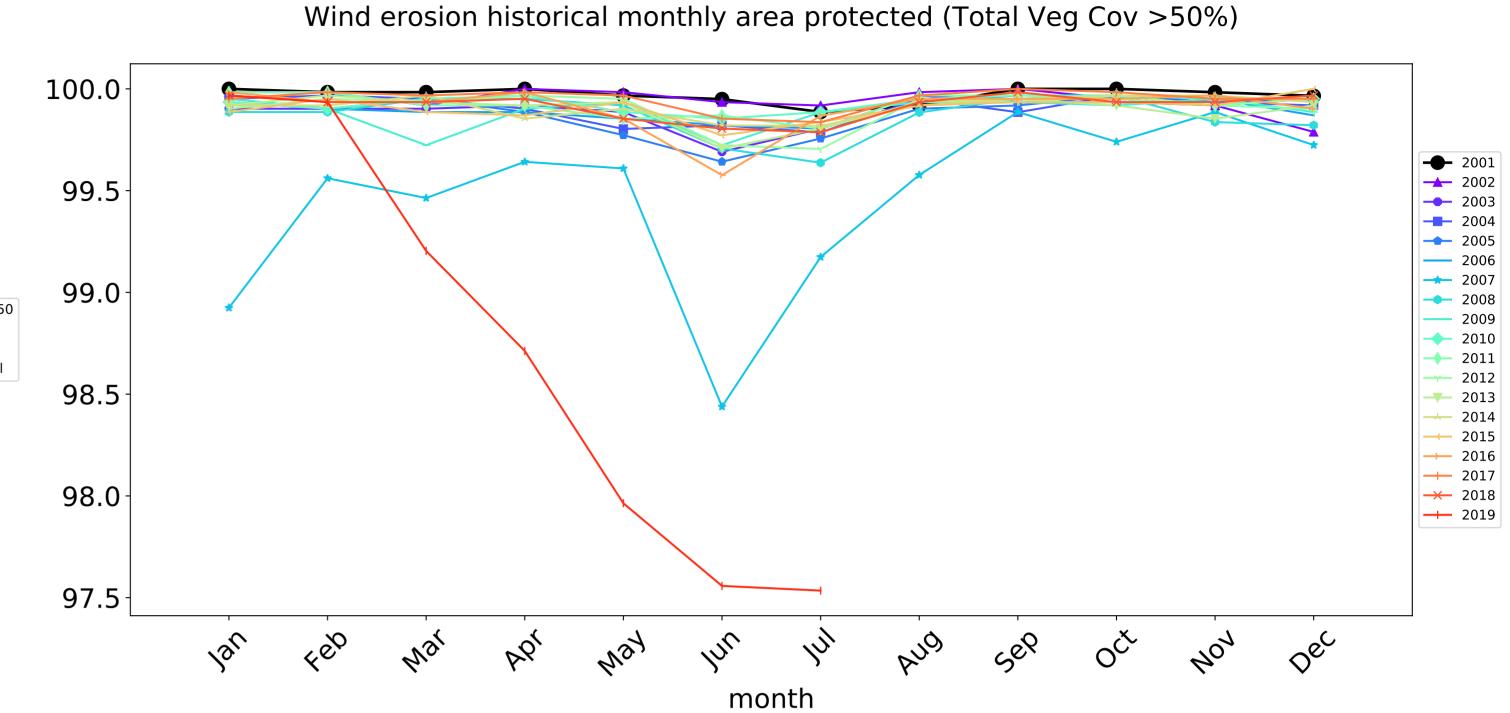


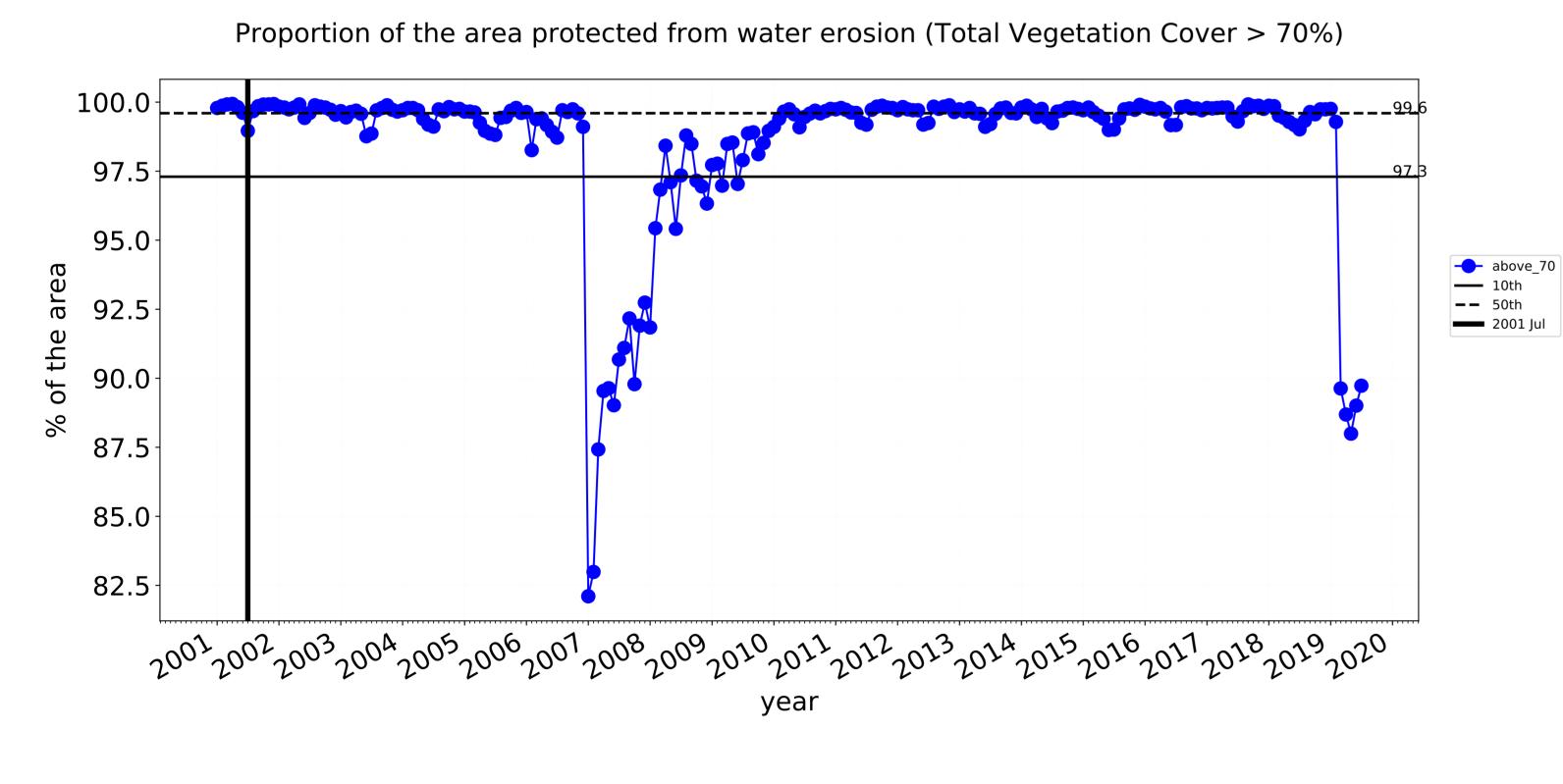


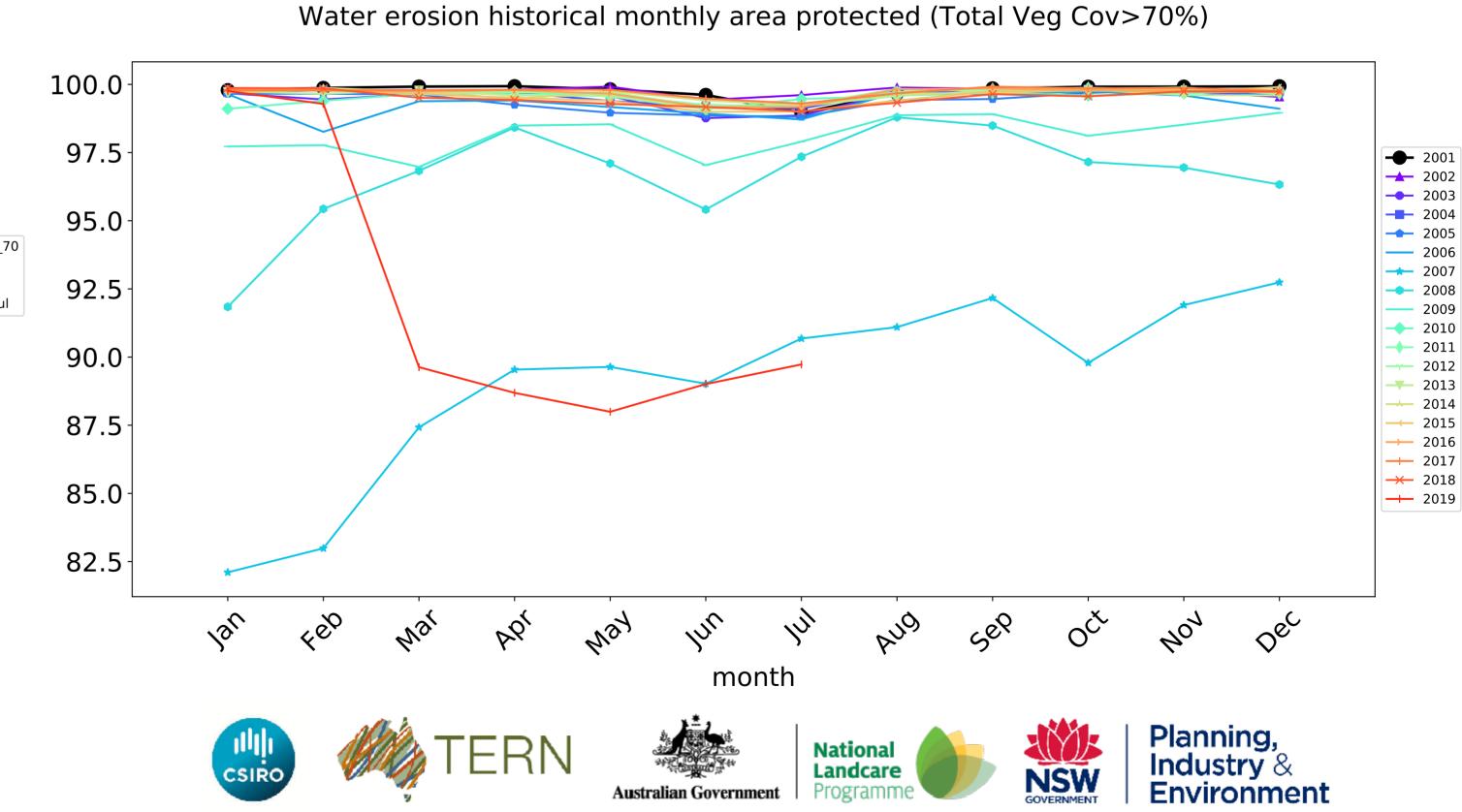


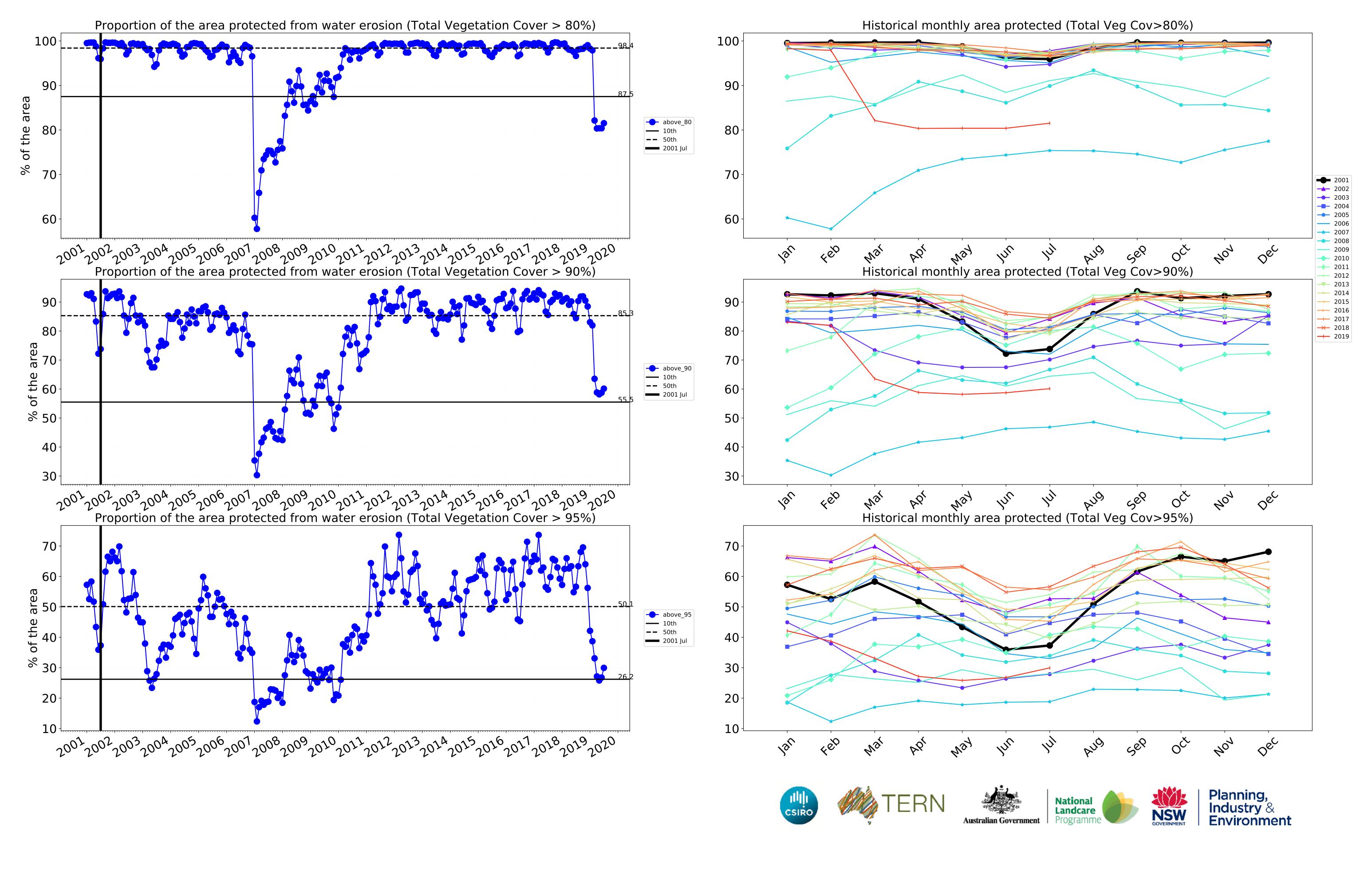












# **Agriculture**

#### 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

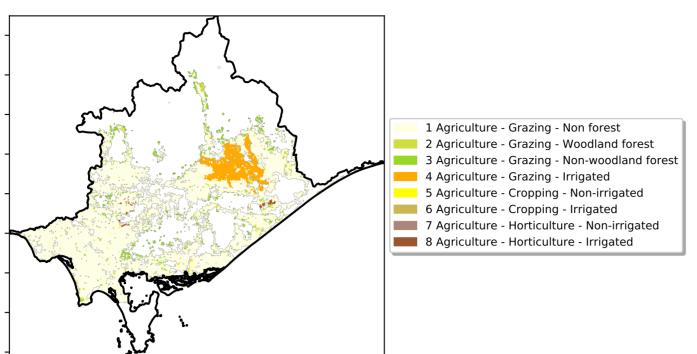
is, red pixels are about 20% lower than the mean of that

the mean. That

pixel. The mean

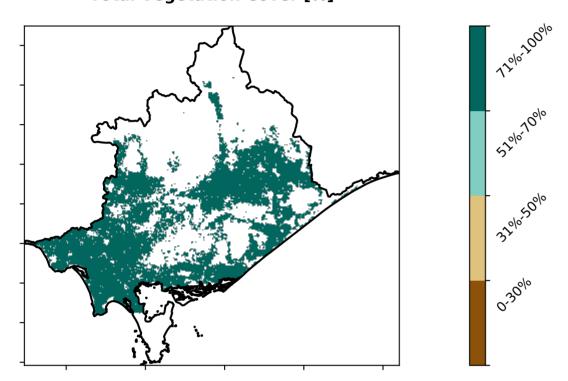
using baseline from 2001 to 2019.

is only for the month of the map

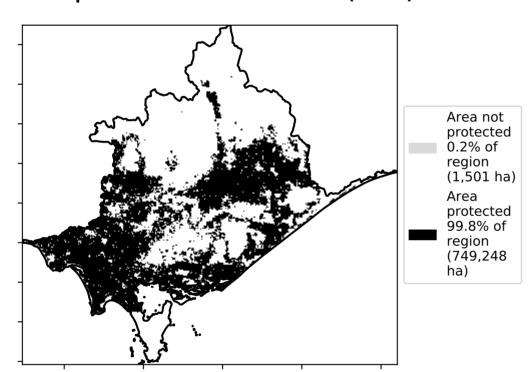


# **Total Vegetation Cover [%]**

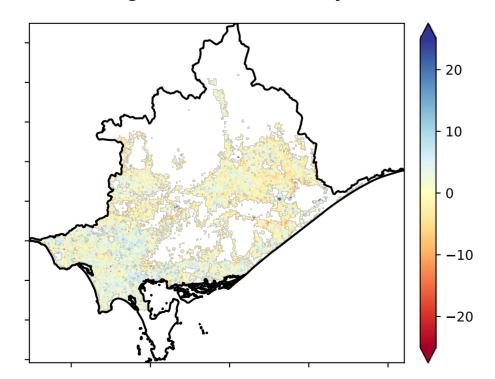
Land use and forest cover



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

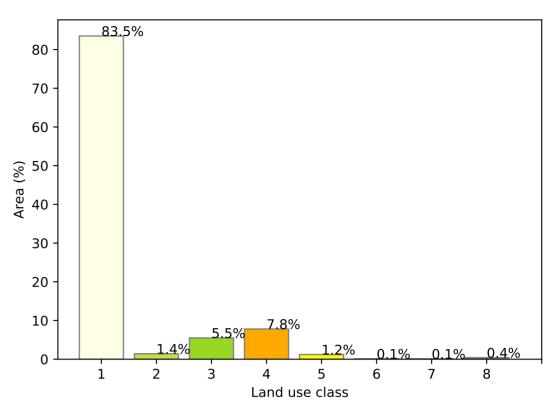


# Total Vegetation Cover Anomaly [%]

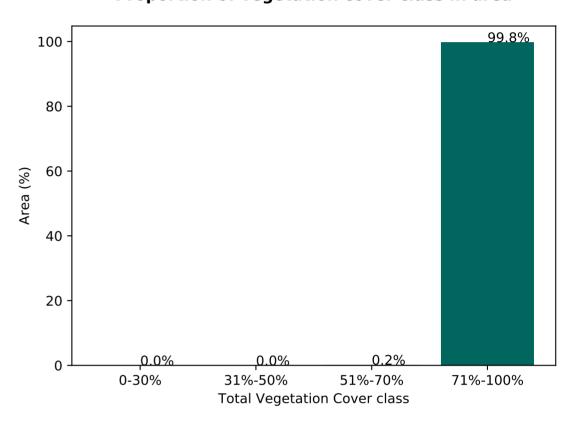


Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

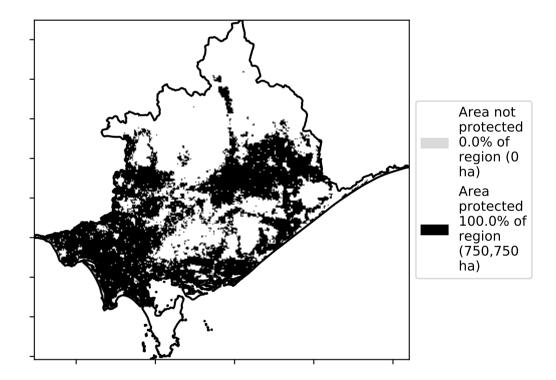
#### Proportion of each land class in area

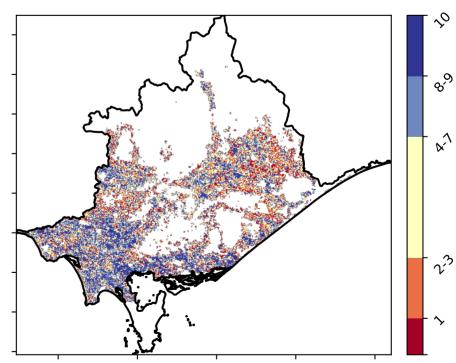


### Proportion of vegetation cover class in area



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









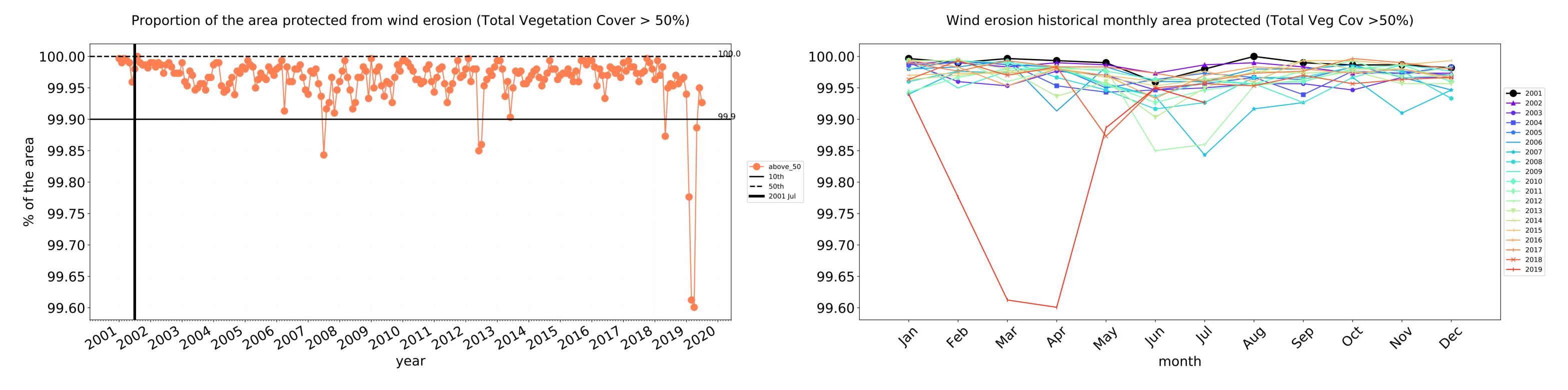


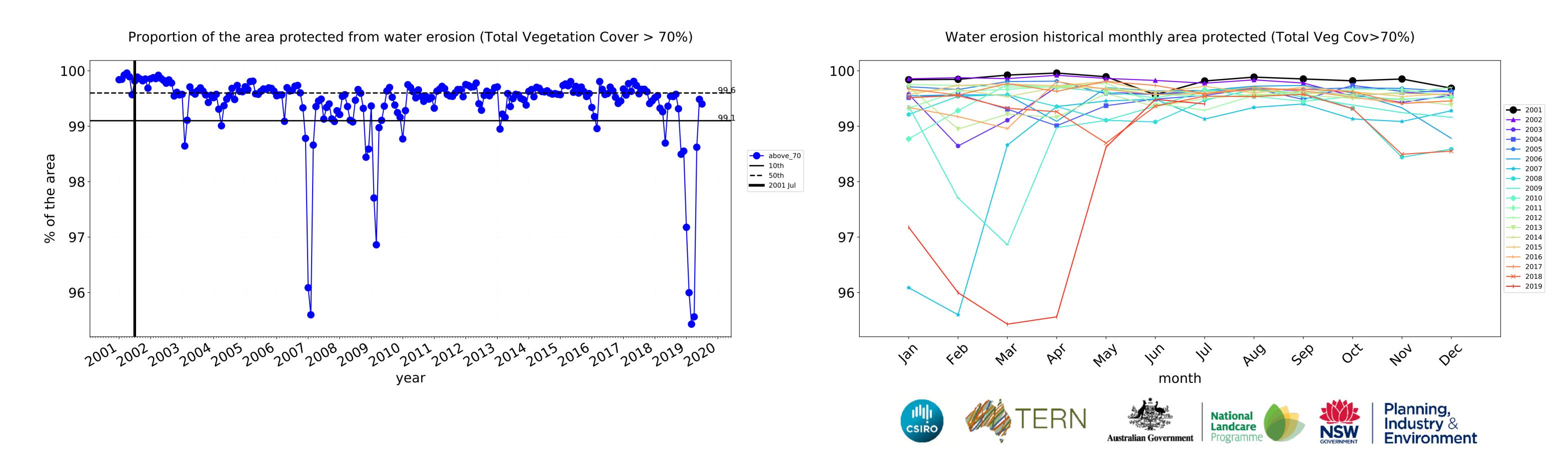


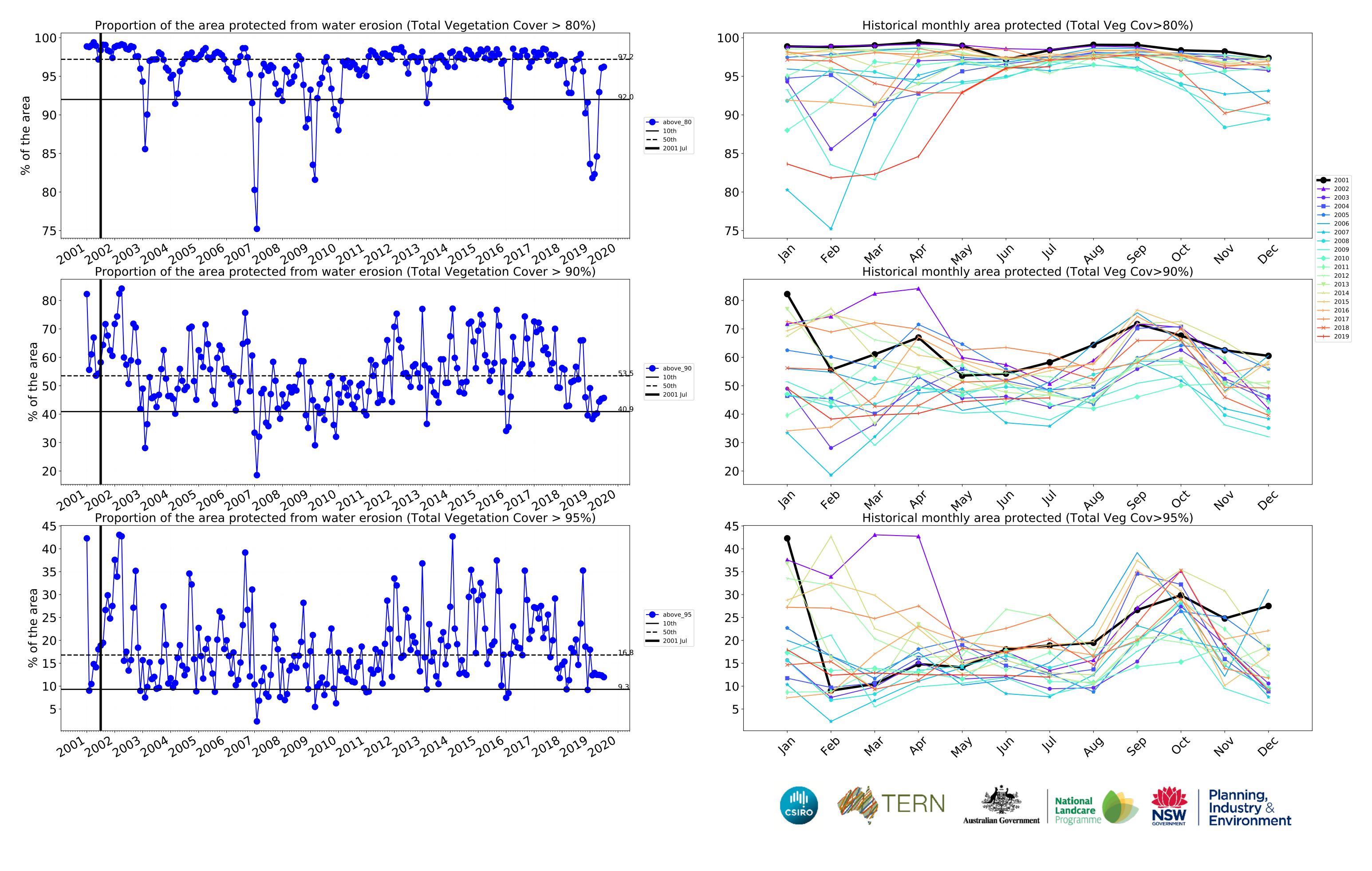




# **Agriculture timeseries**







# Grazing

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

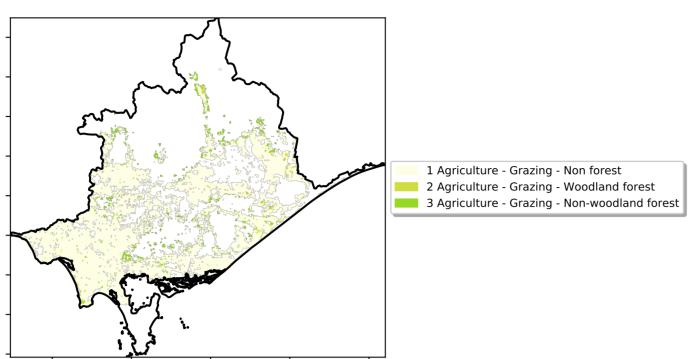
Anomaly show how many percetage points each

pixel is from the mean. That

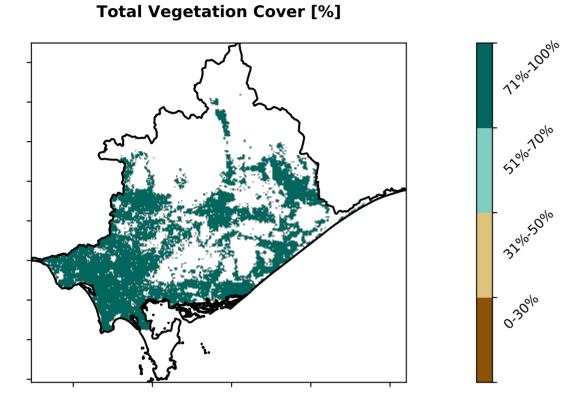
pixel. The mean

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

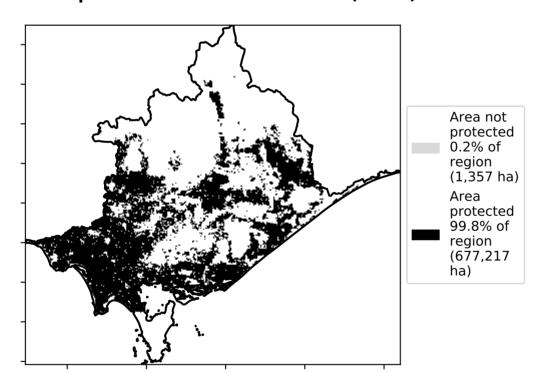
is, red pixels are about 20% lower than the mean of that



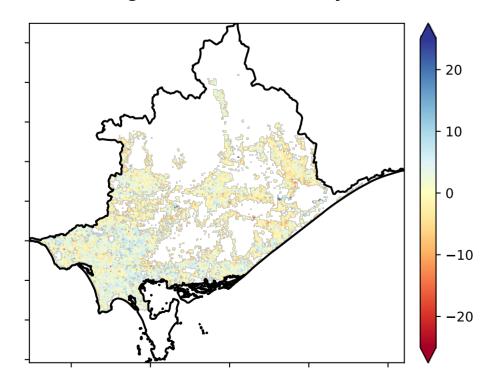
Land use and forest cover



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

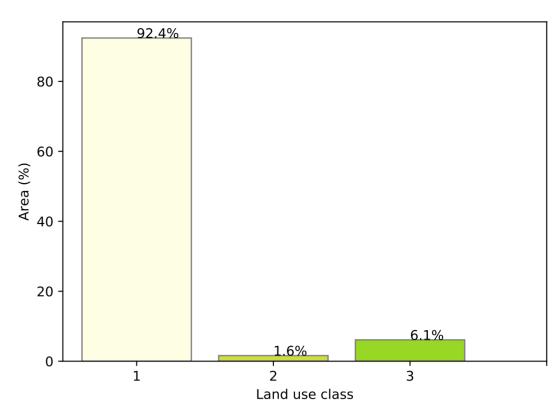


# Total Vegetation Cover Anomaly [%]

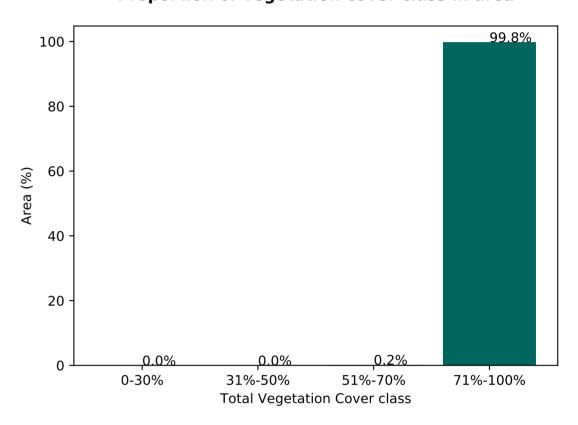


Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

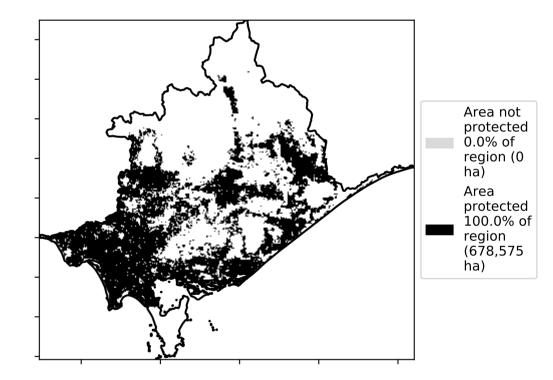
#### Proportion of each land class in area

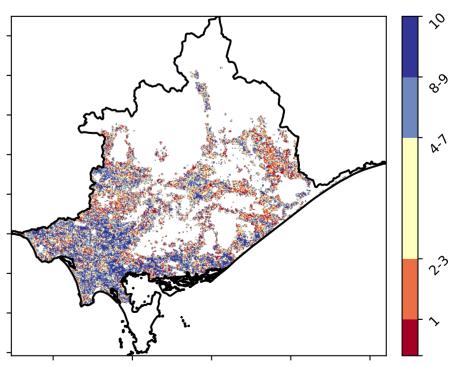


### Proportion of vegetation cover class in area



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









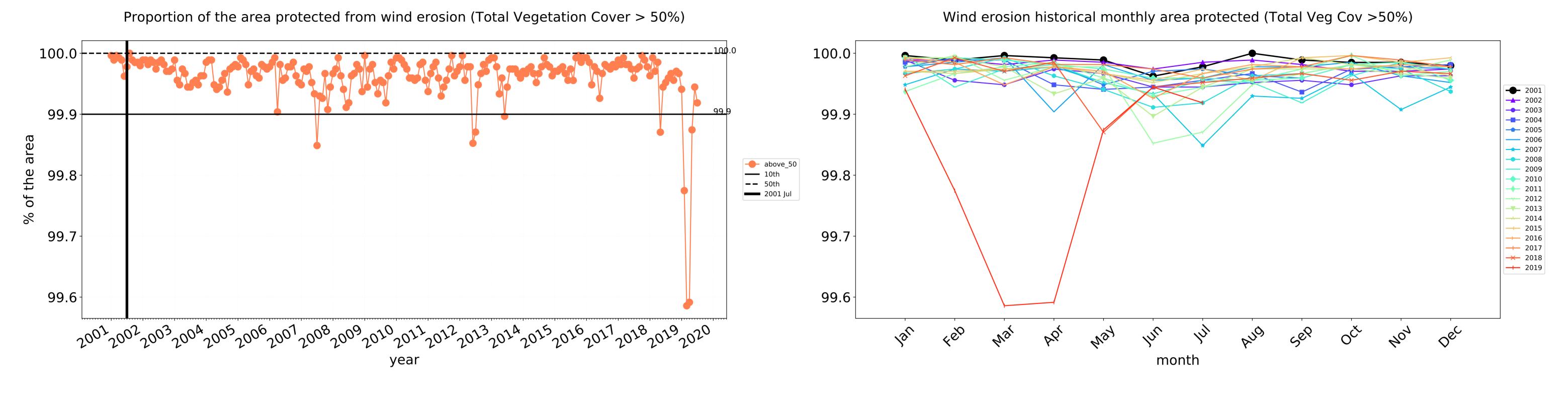


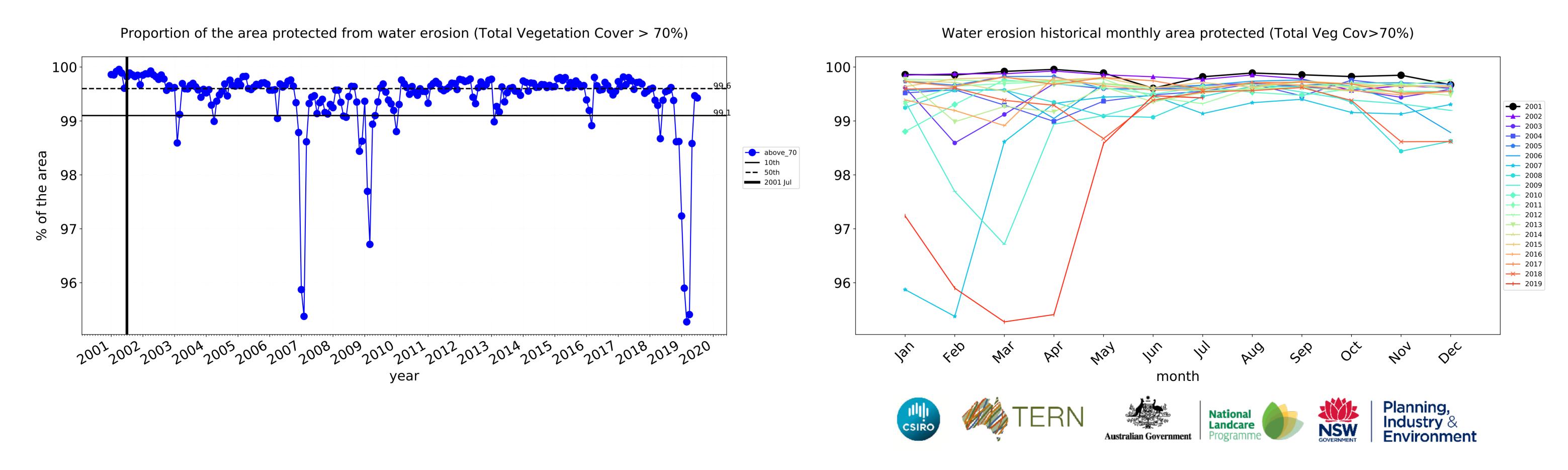


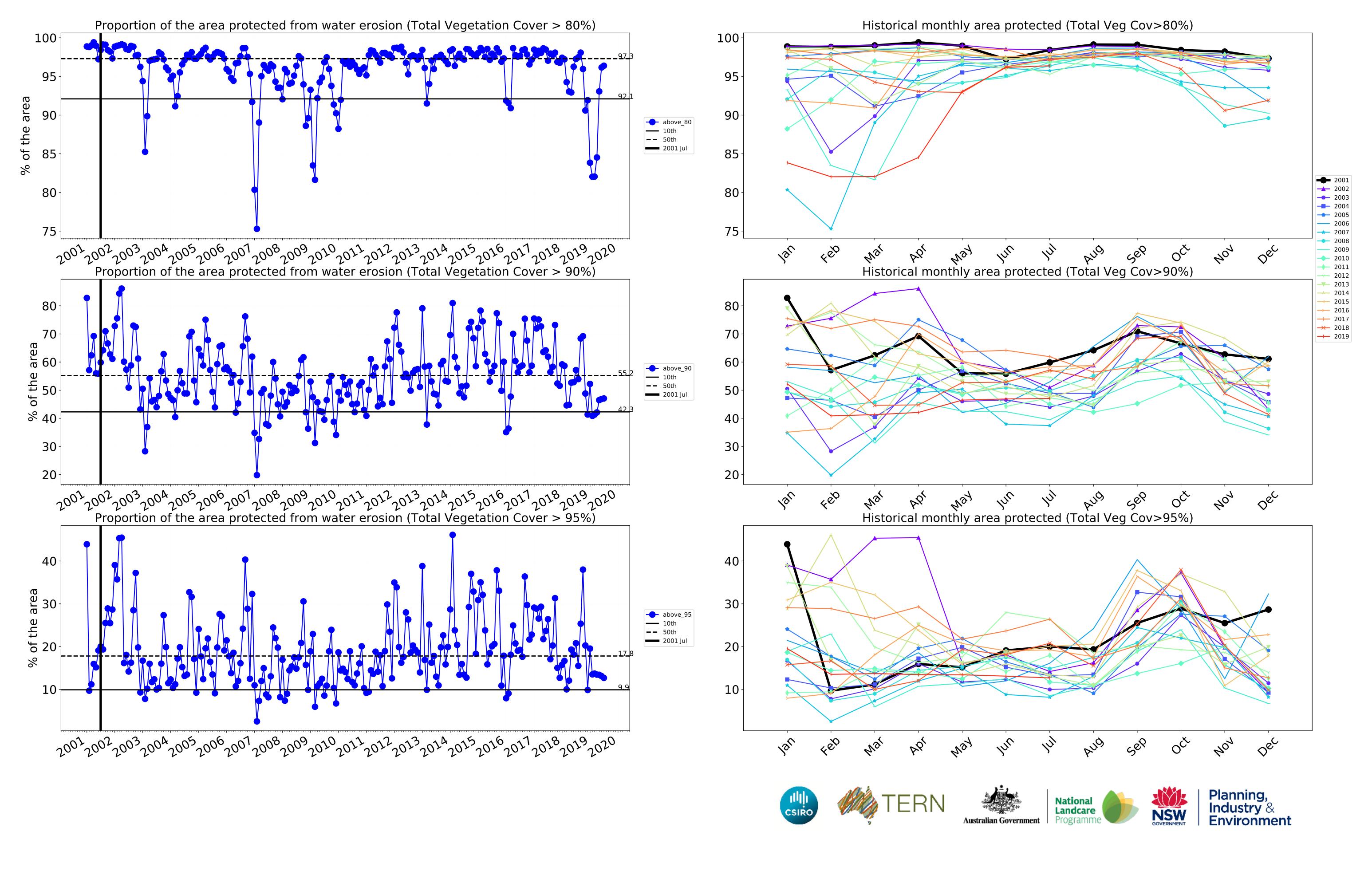




# **Grazing timeseries**







# **Grazing non forest**

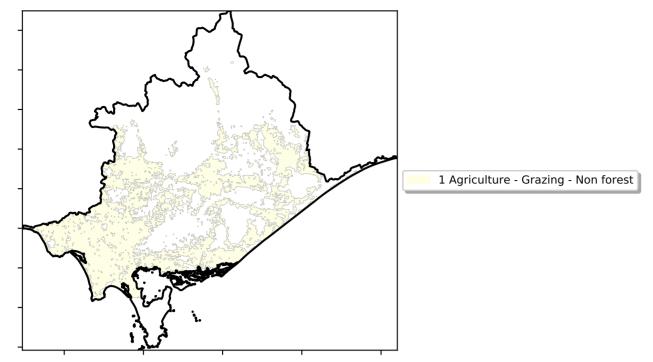
#### Land use and forest cover

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

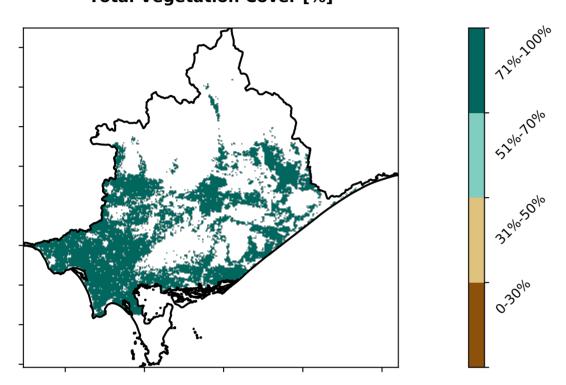
Anomaly show how many percetage points each

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

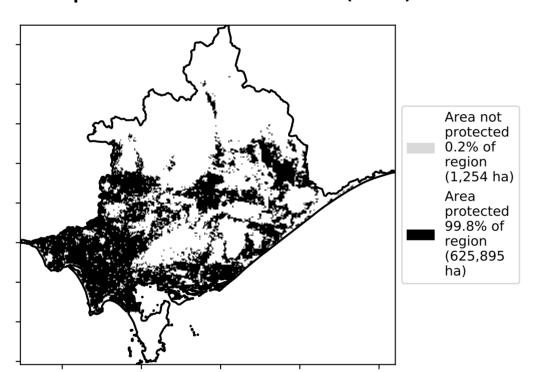
pixel. The mean is only for the month of the map using baseline from 2001 to 2019.



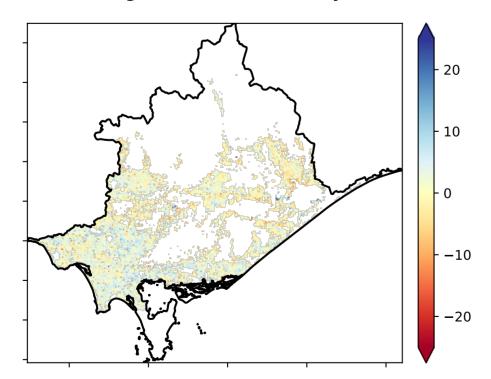
### **Total Vegetation Cover [%]**



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

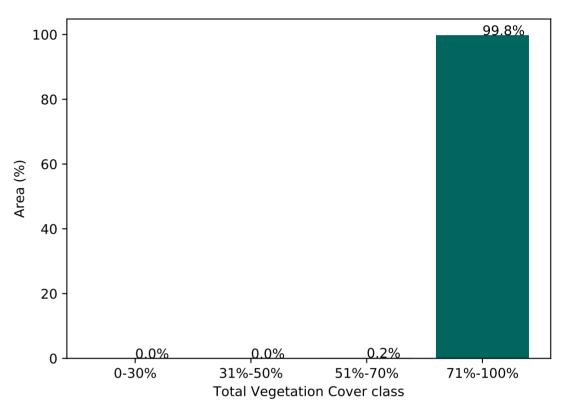


# Total Vegetation Cover Anomaly [%]

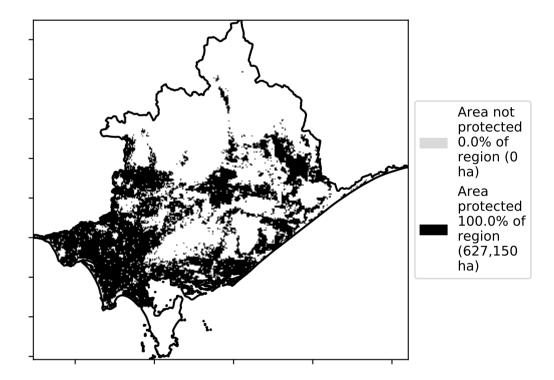


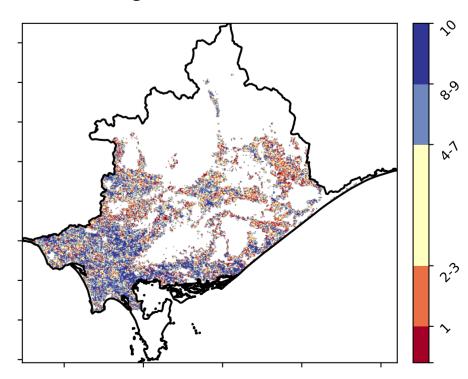
Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

### Proportion of vegetation cover class in area



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









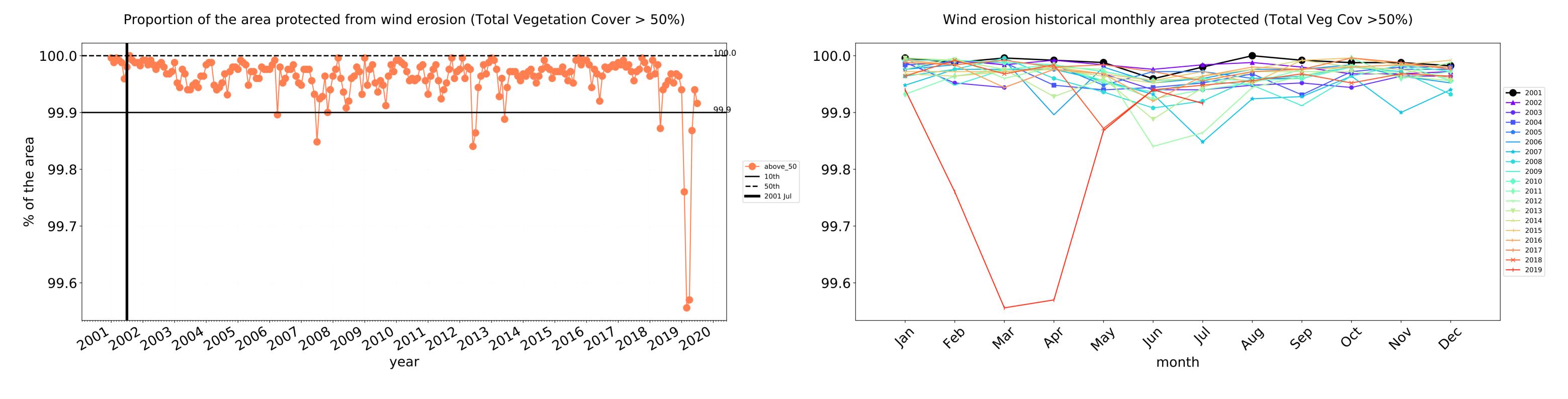


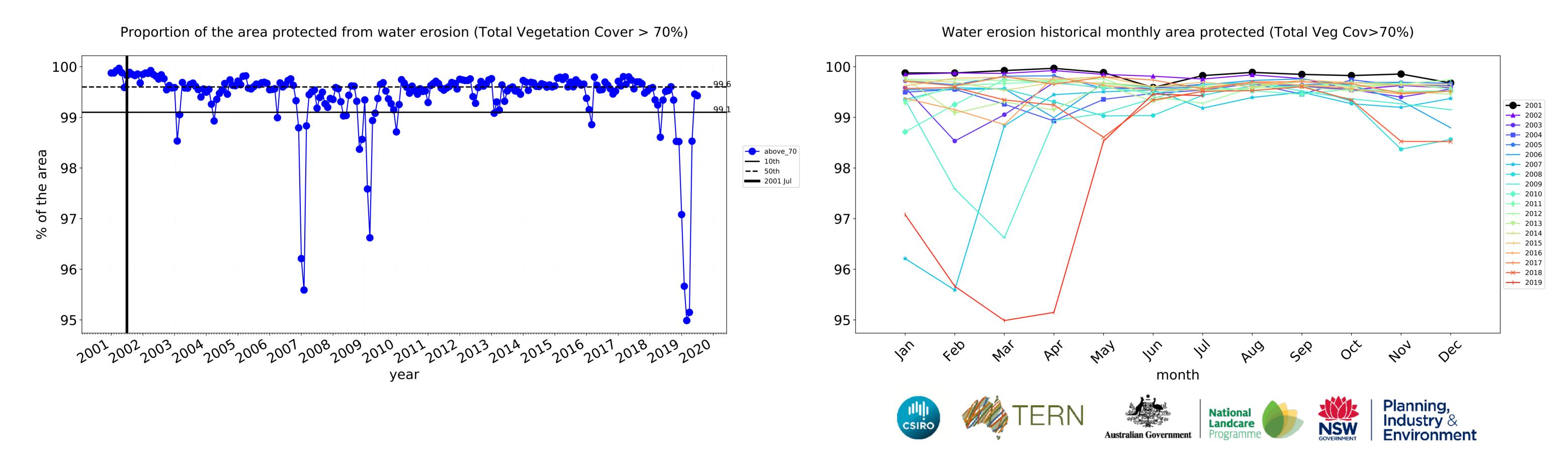


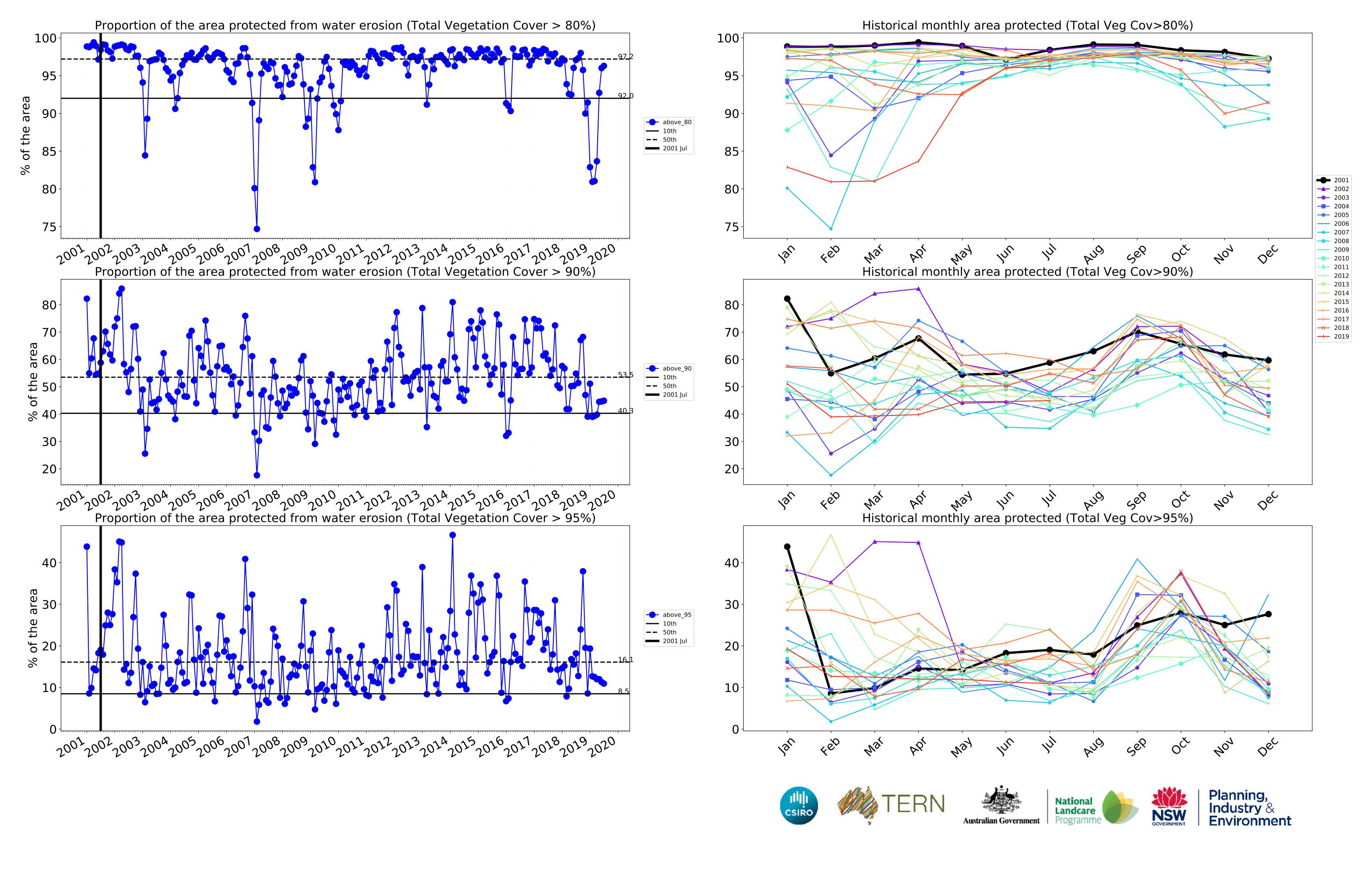




# **Grazing non forest timeseries**







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

#### Land use and forest cover

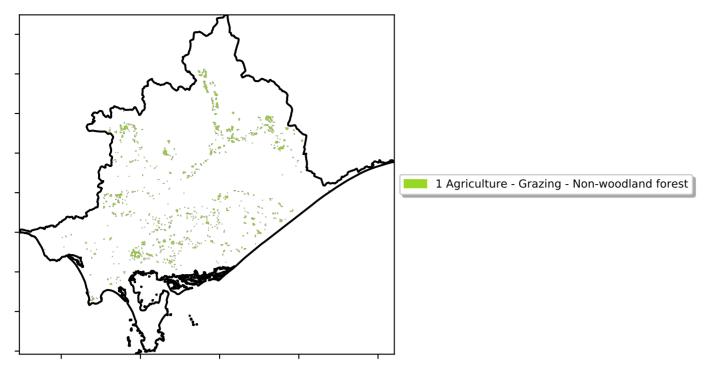
Catchment Scale Land Use and Forests of Australia (2018) Derived from Catchment Scale Land Use of Australia (2018) and Forests of Australia (2018)

Anomaly show how many percetage points each

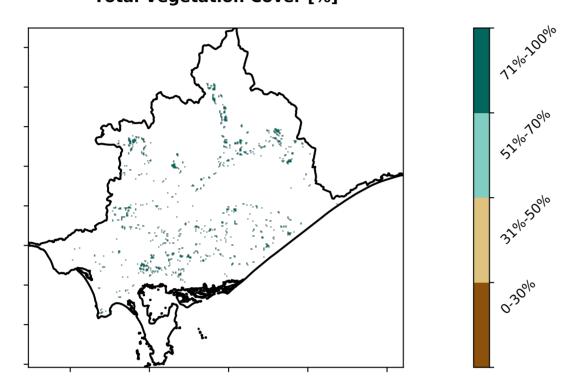
pixel is from the mean. That

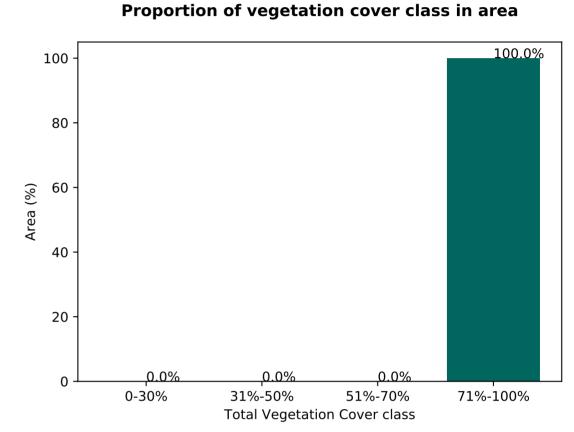
is, red pixels are about 20% lower than the mean of that pixel. The mean

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

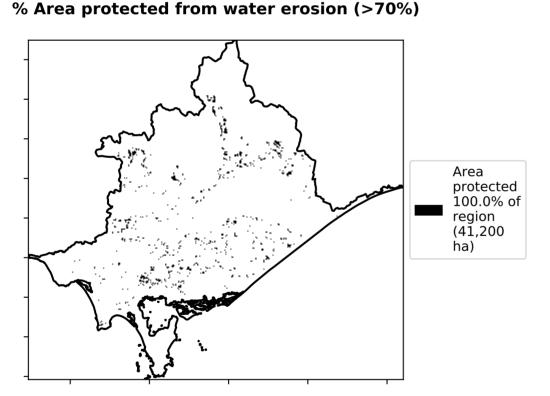


### **Total Vegetation Cover [%]**

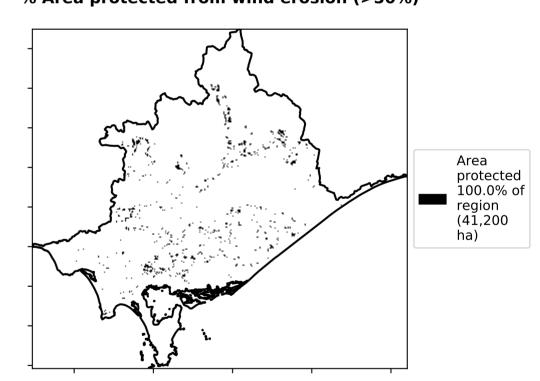




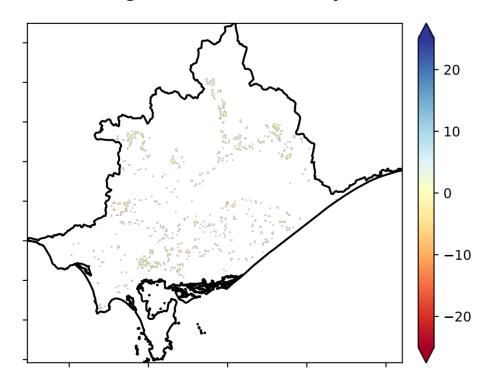
#### 0/ Aven weets stad from weets a section (> 700/)



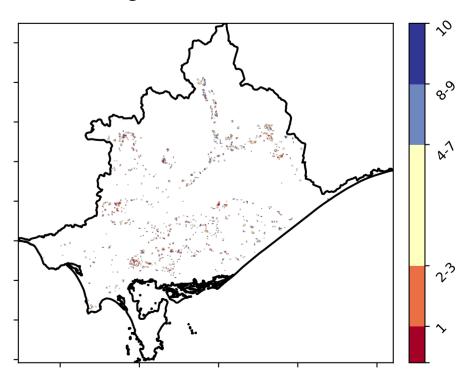
% Area protected from wind erosion (>50%)



### **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.





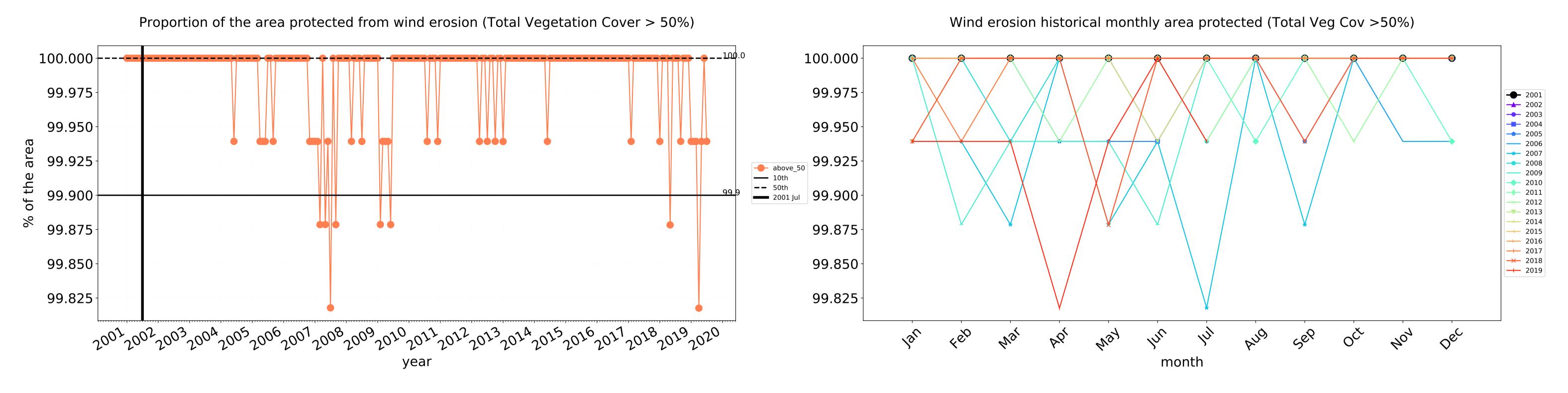


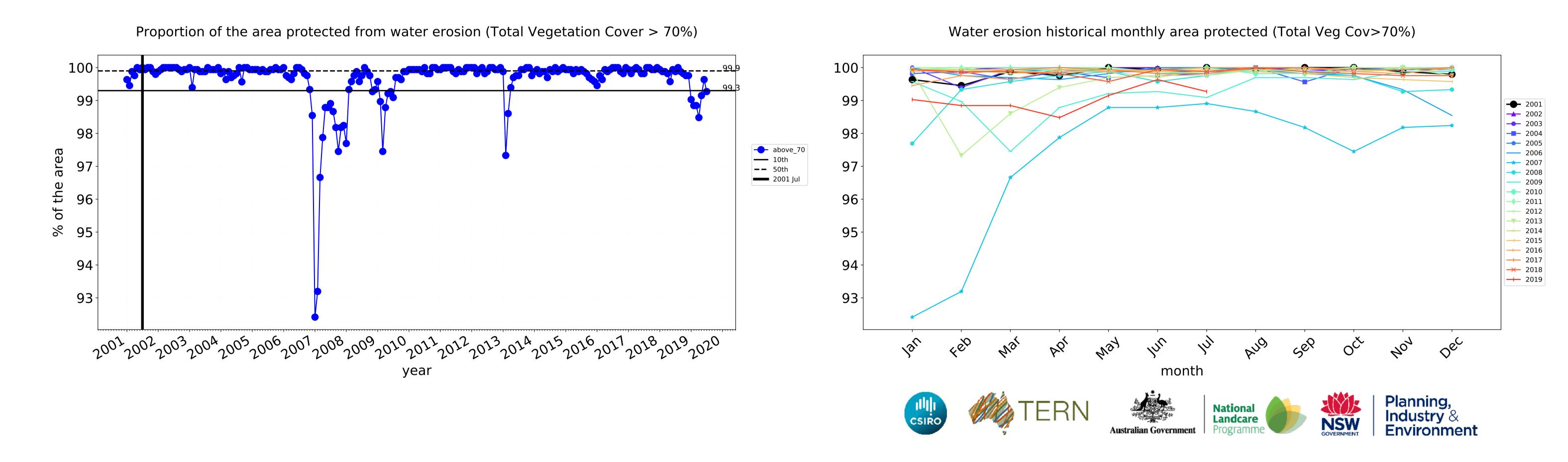


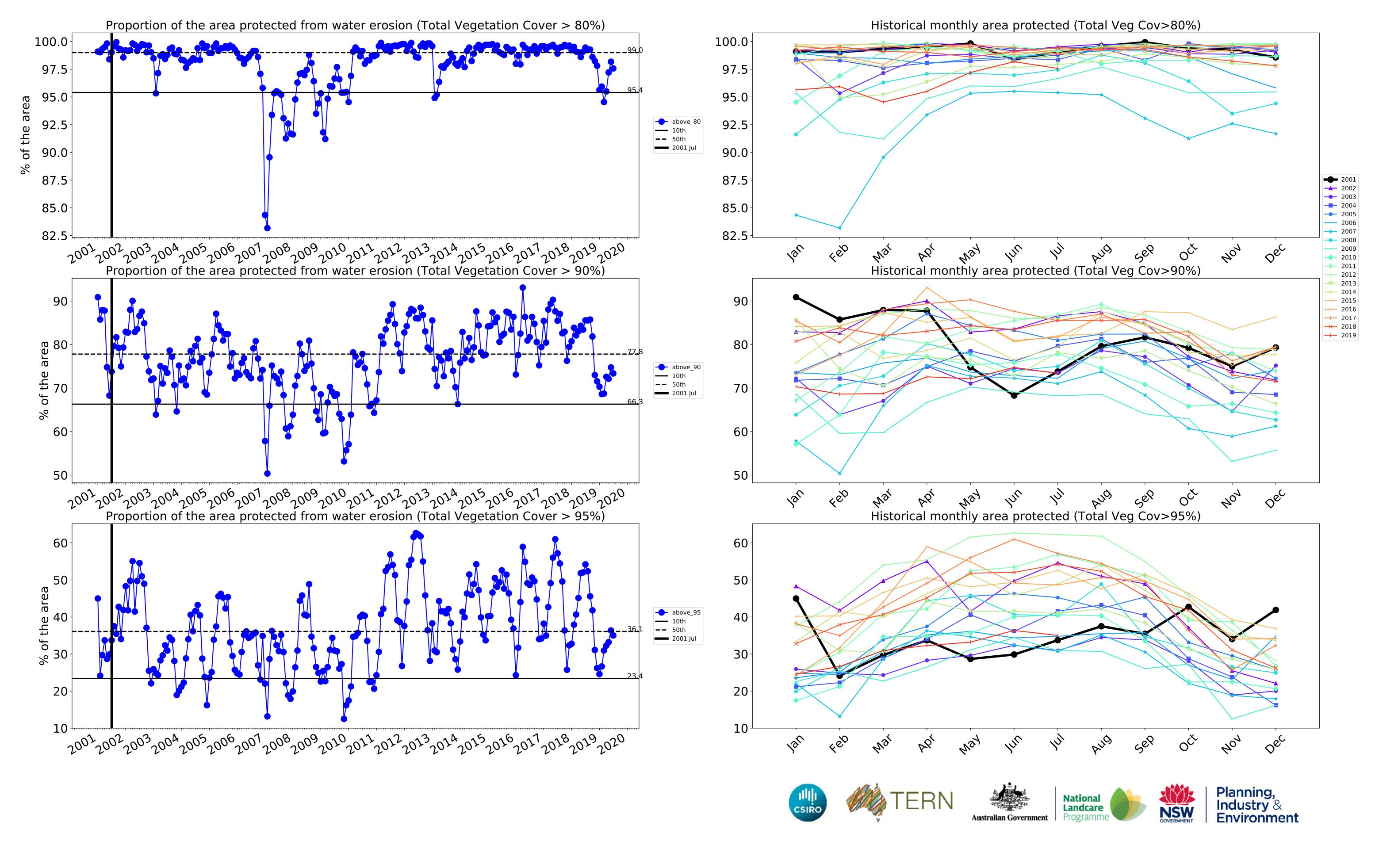












# Irrigation

#### 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

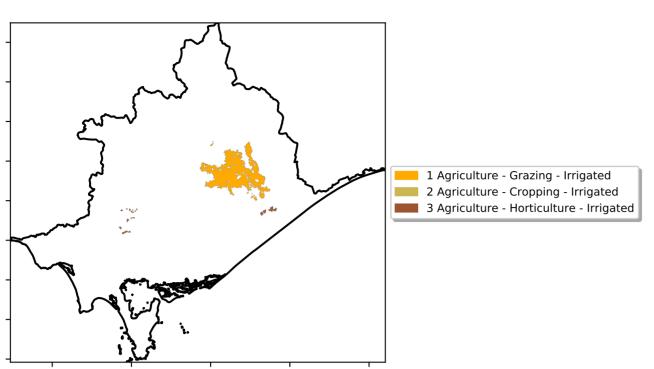
is, red pixels are about 20% lower than the mean of that

the mean. That

pixel. The mean

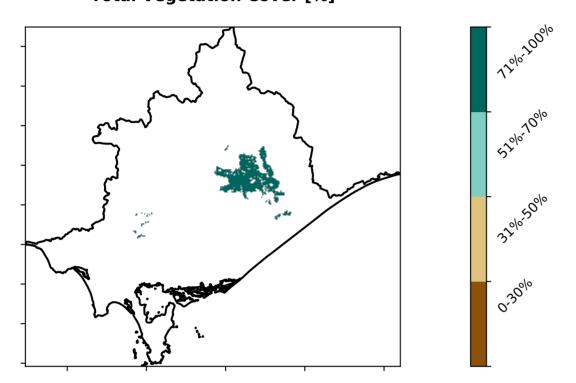
using baseline from 2001 to 2019.

is only for the month of the map

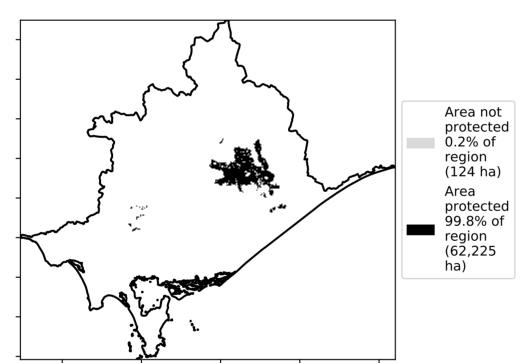


# **Total Vegetation Cover [%]**

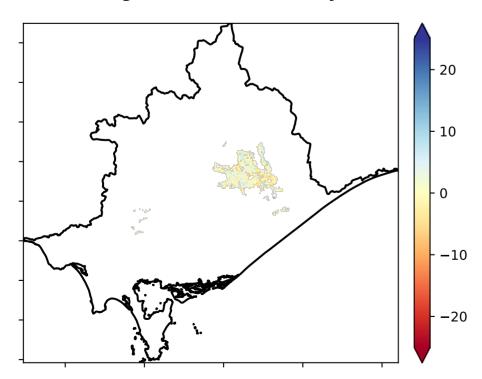
Land use and forest cover



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

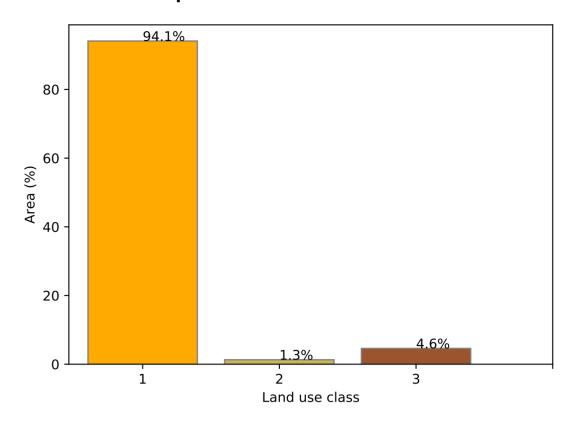


Total Vegetation Cover Anomaly [%]

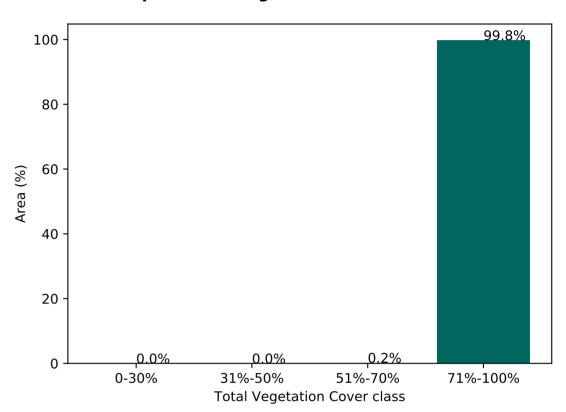


Deciles show where the pixel value lies in the record, from highest to lowest, for that month. That is, red pixels are in the lowest 10% of records for that month of the map using baseline from 2001 to 2019.

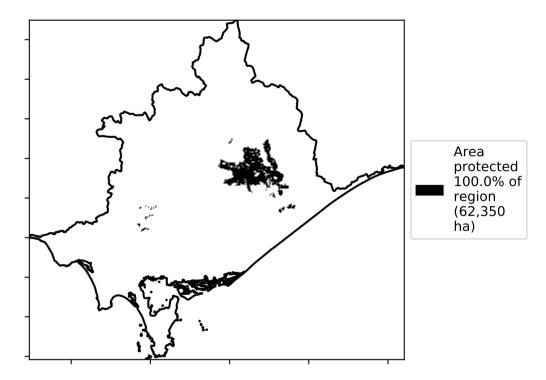
#### Proportion of each land class in area

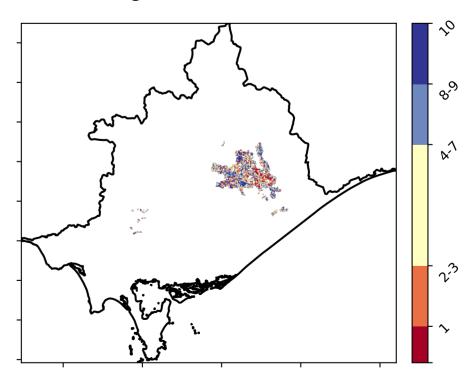


Proportion of vegetation cover class in area



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









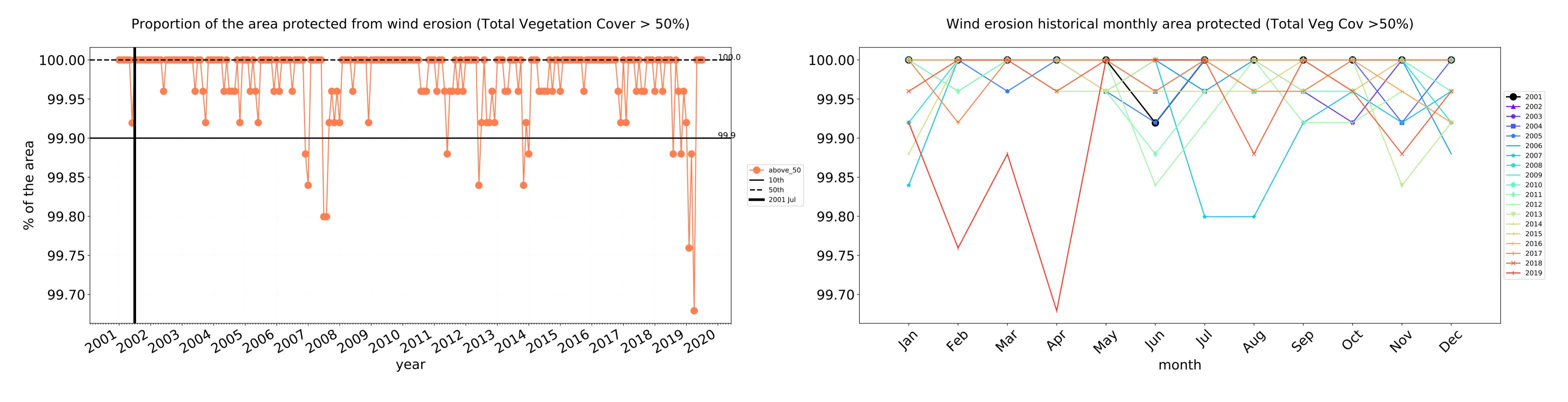


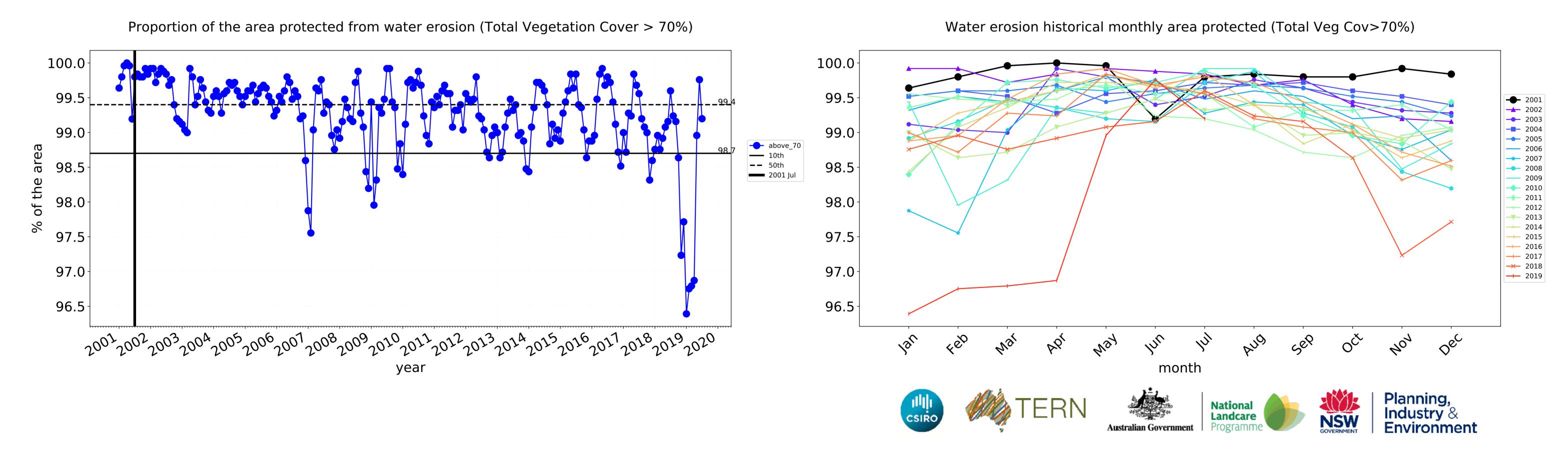


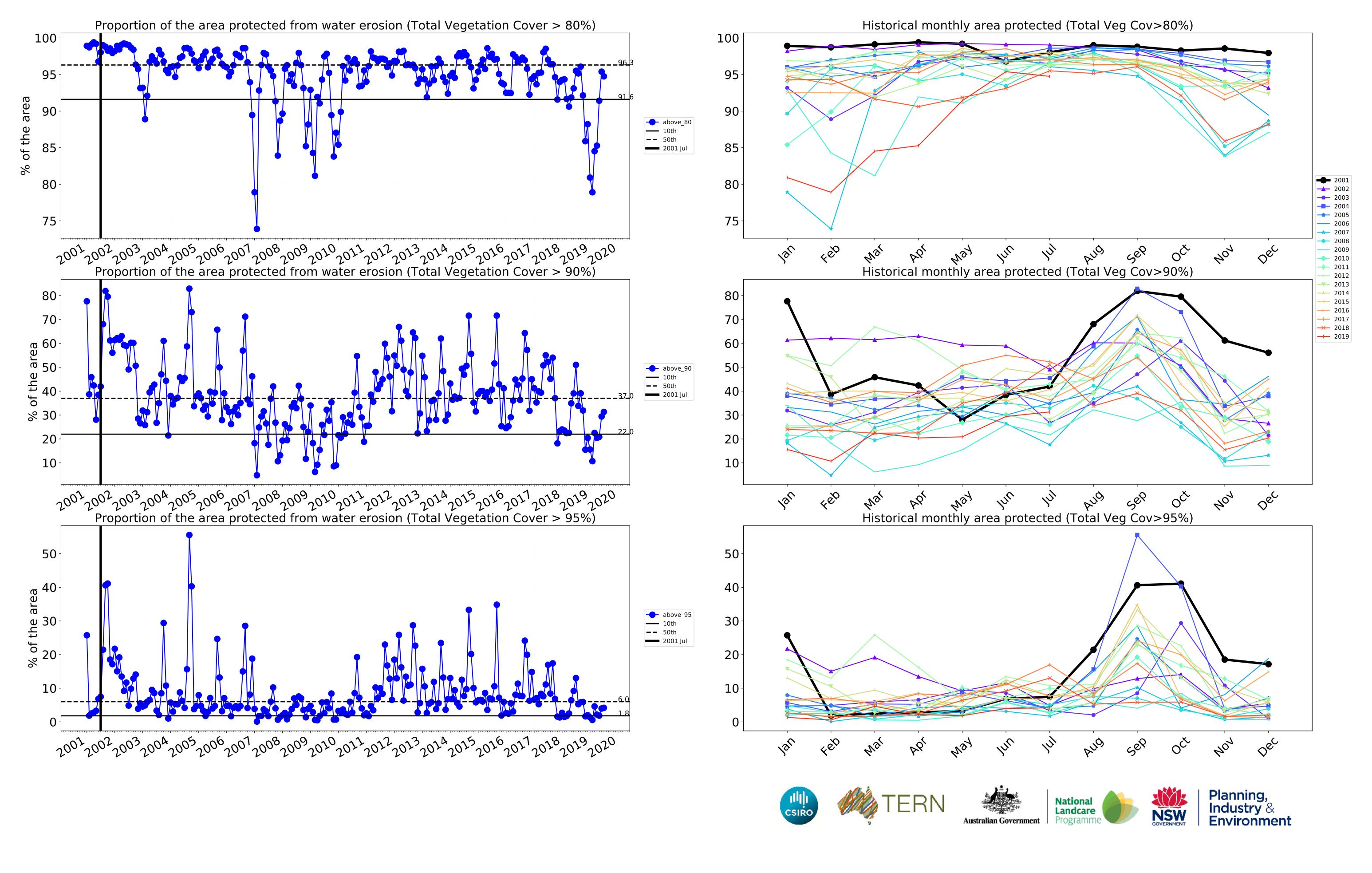




# **Irrigation timeseries**







# **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

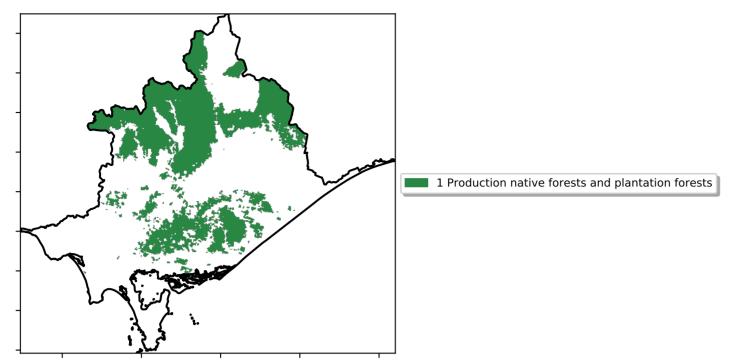
pixel is from the mean. That

pixel. The mean

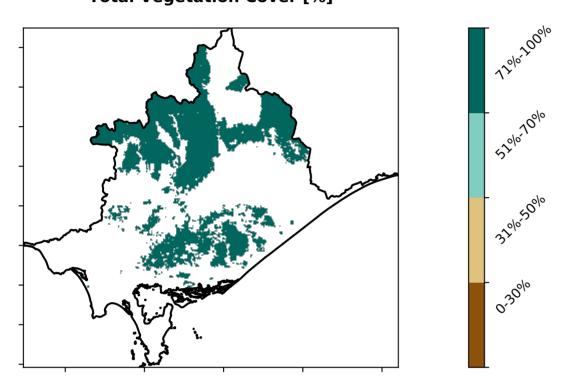
using baseline from 2001 to 2019.

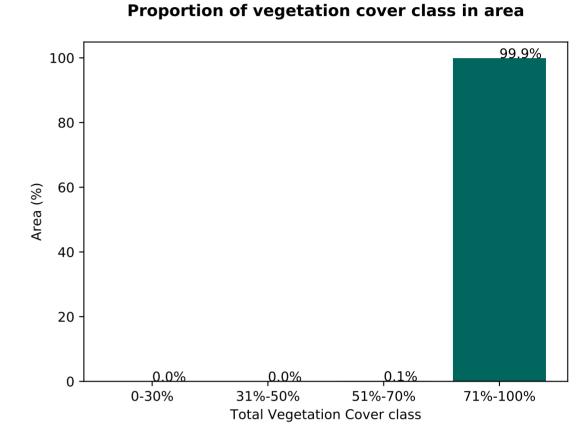
is only for the month of the map

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

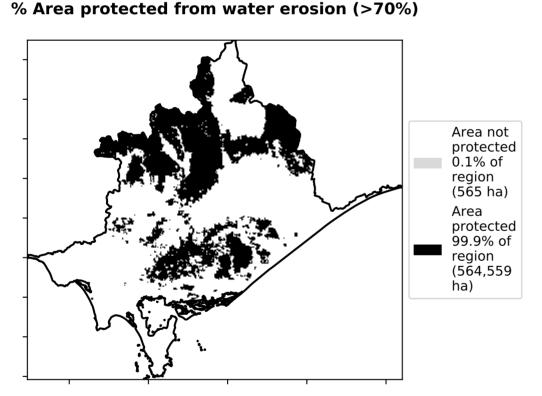


### **Total Vegetation Cover [%]**

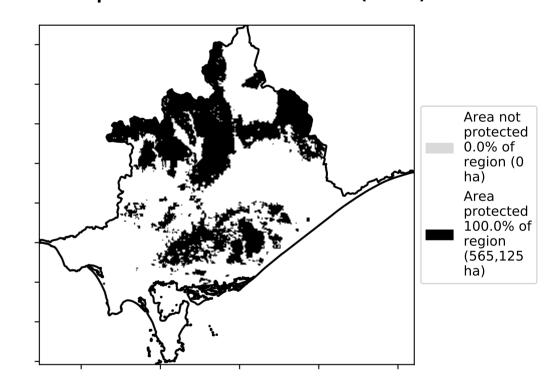




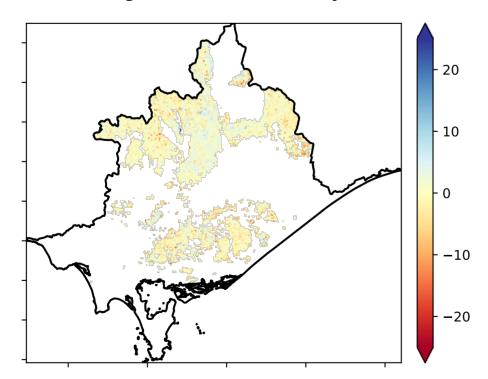
#### 0/ Aven weets stad from weets a section (> 700/)



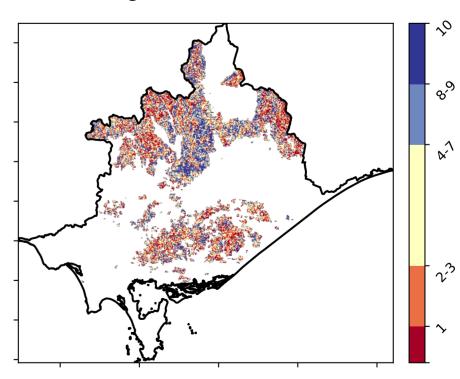
% Area protected from wind erosion (>50%)



# 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.







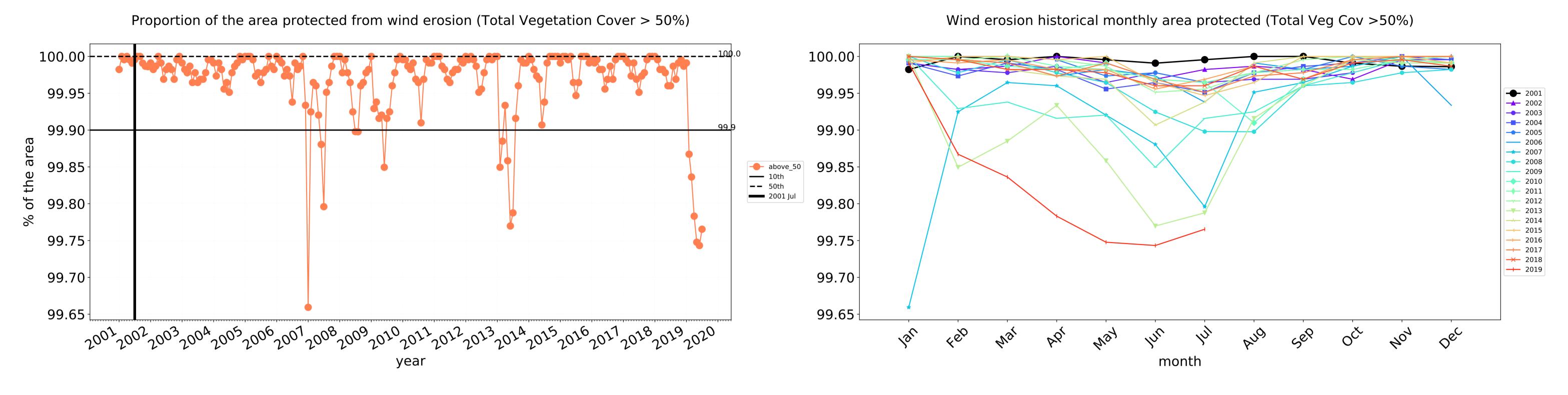


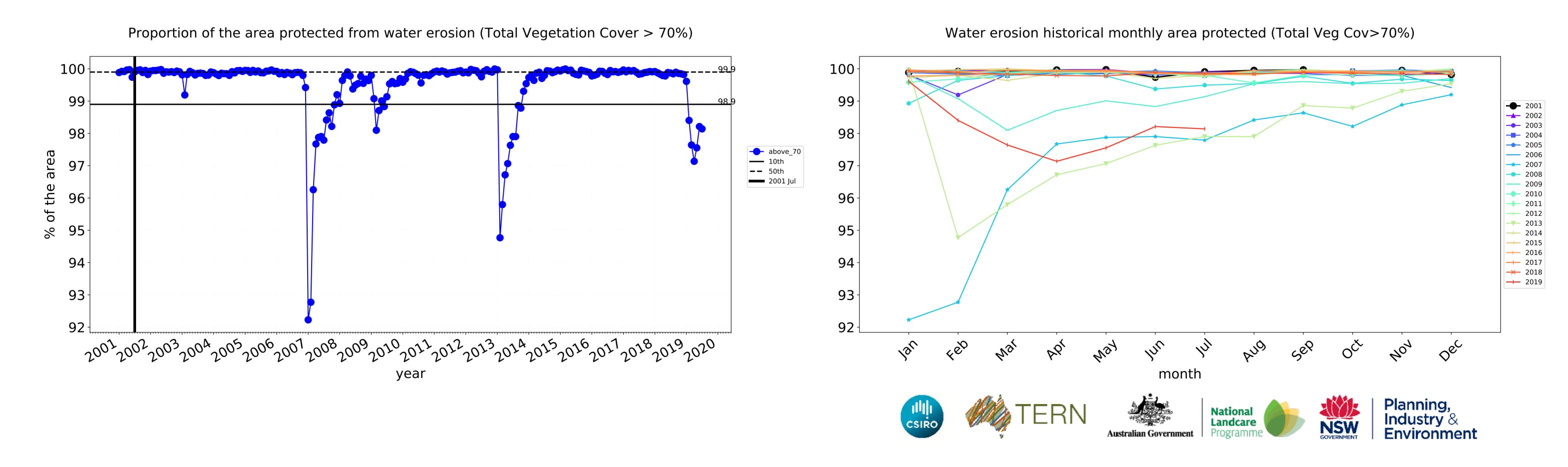


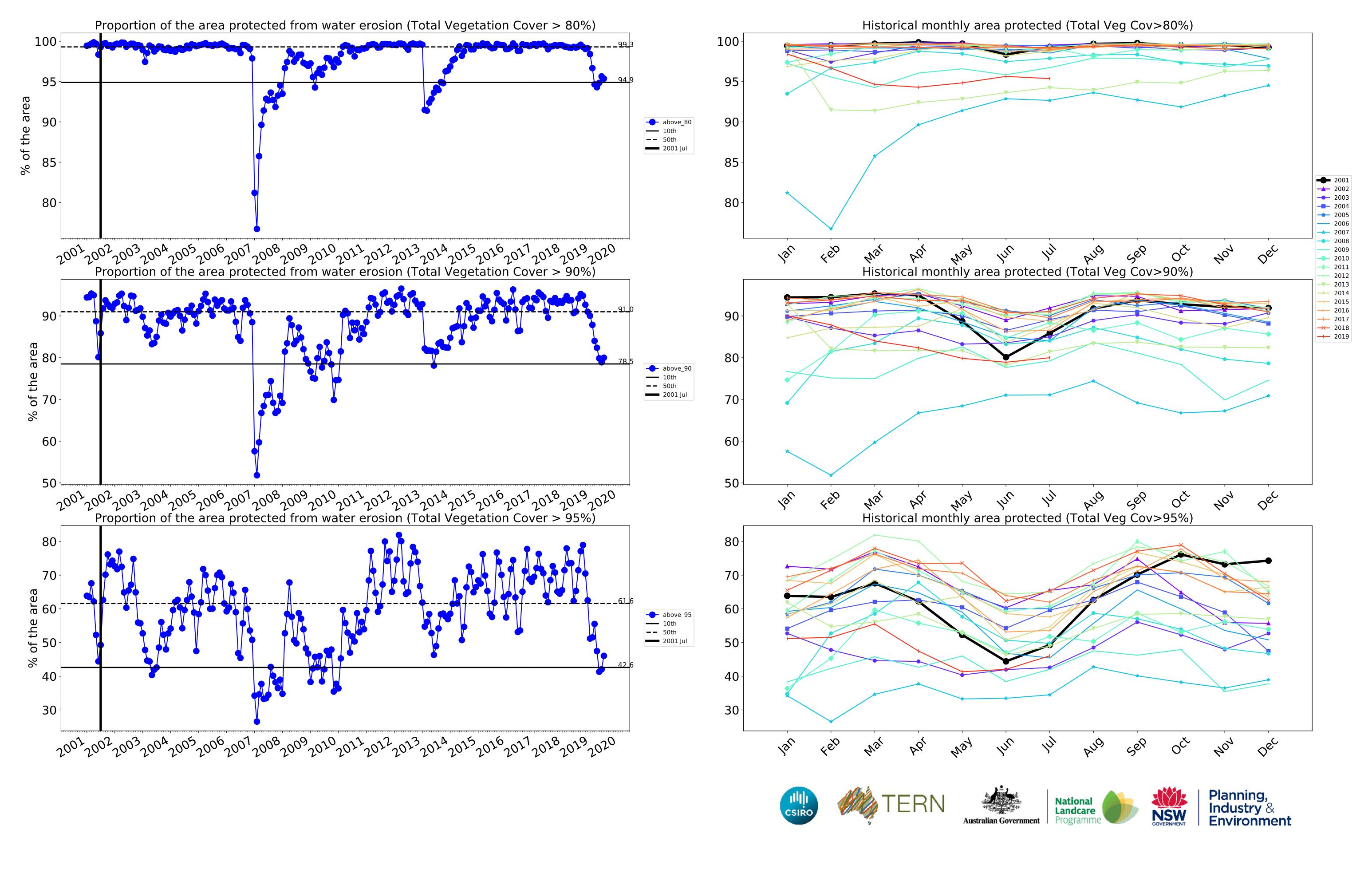




# **Production native forests and plantation forests timeseries**







# West Gippsland (1,681,650 ha and no data 43,994 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	1,681,650	100.0% 1,680,926	99.9% 1,680,203	99.2% 1,668,203	97.0% 1,631,731	68.1% 1,145,697	31.0% 521,284
Conservation and natural environments	271,575	99.8% 271,150	99.7% 270,825	97.5% 264,850	92.6% 251,500	68.0% 184,725	32.9% 89,275
Conservation and natural environments non forest	44,825	99.6% 44,625	99.2% 44,450	91.1% 40,825	77.2% 34,600	41.7% 18,700	16.7% 7,500
Conservation and natural environments Woodland forest	72,525	99.8% 72,375	99.7% 72,325	98.4% 71,400	95.1% 68,950	72.0% 52,225	33.4% 24,225
Conservation and natural environments Forest (non woodland)	154,225	100.0% 154,150	99.9% 154,050	99.0% 152,625	95.9% 147,950	73.8% 113,800	37.3% 57,550
Agriculture	750,750	100.0% 750,675	100.0% 750,600	99.8% 749,375	98.4% 738,625	58.2% 437,275	18.9% 141,700
Grazing	678,575	100.0% 678,500	100.0% 678,425	99.8% 677,350	98.4% 667,850	59.9% 406,225	20.0% 135,725
Grazing non forest	627,150	100.0% 627,075	100.0% 627,025	99.8% 626,050	98.4% 617,150	58.8% 368,850	19.0% 119,425
Grazing - Forest (non woodland)	41,200	100.0% 41,200	100.0% 41,200	100.0% 41,200	99.0% 40,800	73.8% 30,400	33.7% 13,900
Irrigation	62,350	100.0% 62,350	100.0% 62,350	99.8% 62,225	98.0% 61,125	41.9% 26,150	7.5% 4,650
Production native forests and plantation forests	565,125	100.0% 565,125	100.0% 565,100	99.9% 564,600	99.3% 561,025	85.9% 485,225	49.3% 278,500











