



# Protection of agricultural land against erosion in the Eyre Peninsula Region

## Seasonal Report November 2010

Issued by:

Department of Environment and Natural Resources

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### Summary

- Favourable growing conditions over most of the region provided a high bulk of dry matter and resulted in good surface cover in October.
- The level of protection of land in the region from wind and water erosion in October 2010 is at the maximum and equal to the long term average for the region since monitoring began.
- Mice were a problem for producers on Eyre Peninsula this year and could present a similar concern next year. It is possible that growers will use measures to get rid of crop and pasture residues in order to reduce mice numbers in the autumn.

### Seasonal Conditions

Rainfall deciles for the period May to October 2010 show that Eyre Peninsula received average to very much above average rainfalls for the growing season this year (Figure 1).

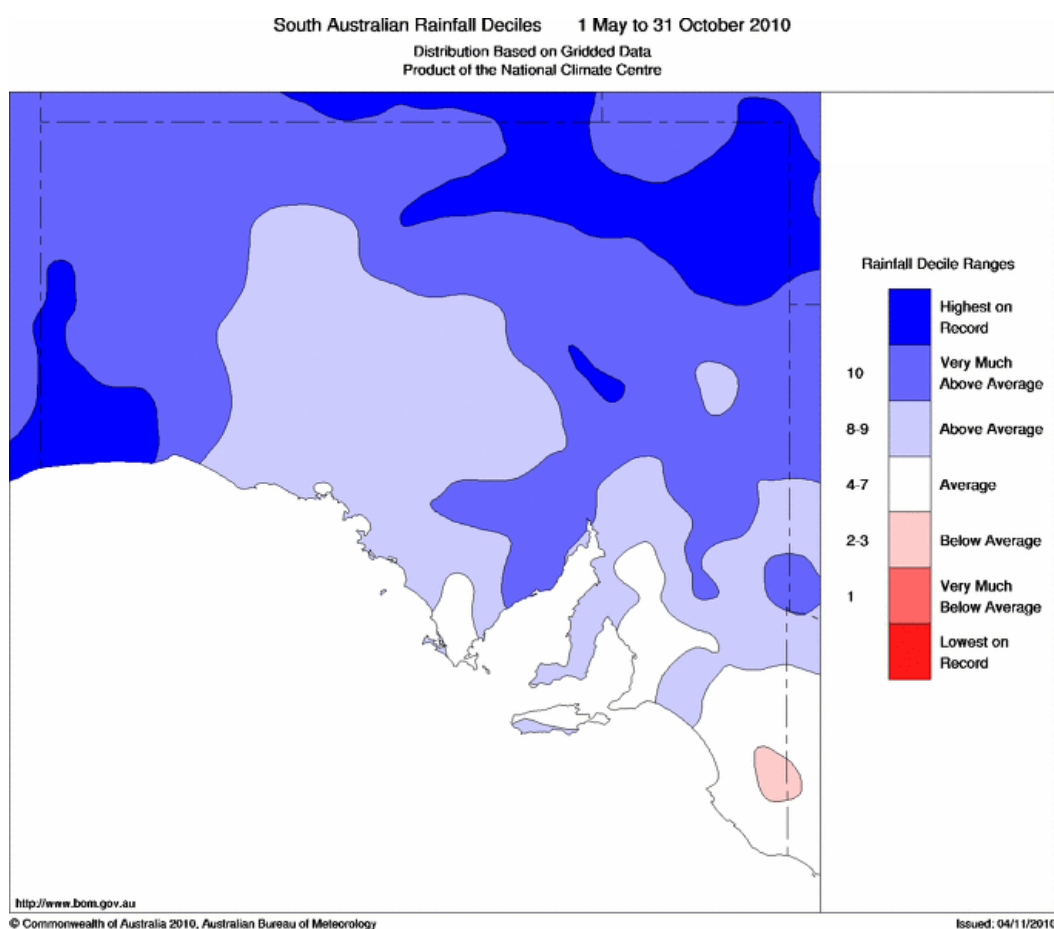
Widespread rain in March with scattered thunderstorm activity resulted in some storage of subsoil moisture. Lower Eyre Peninsula received further falls of up to 30 mm in April but most of the region recorded below average falls for the month. These dry conditions continued into mid-May. Dry conditions were particularly noted in the Franklin Harbour district and this along with other areas in Central Eyre Peninsula suffered wind erosion on mechanically fallowed paddocks in May.

Wetter weather and cool temperatures prevailed in August and waterlogging occurred around Cleve and on Lower Eyre Peninsula. These conditions continued in September. The cool weather slowed plant growth.

Falls of over 50 mm early in September led to significant run-off and some isolated occurrences of water erosion were noted in the Cleve and Koppio Hills areas.

Drier and warmer weather was observed in October with around average rainfall recordings for the month.

Figure 1:



Cumulative rainfall data for selected sites across Eyre Peninsula are shown in Appendix 1. Most sites recorded cumulative rainfall deciles above the median for the growing season.

## Soil surface cover levels

The Department of Environment and Natural Resources conducts a Land Condition Monitoring Program which assesses the risk of wind and water erosion on susceptible land in the cropping areas four times a year. Surface cover levels and soil disturbance are visually rated during these surveys.

The surface cover rating system used is based on a scale of 1-8 where 1 = full cover and 8 = bare ground.

Early rains in March and on Lower Eyre Peninsula in April initiated crop preparation activities in the region. Some paddocks were sown with cereals for grazing. More than 60% of paddocks in the Cleve Hills, Franklin Harbour and Arno Bay areas were observed in April to have been mechanically fallowed and significant burning of stubbles on Lower Eyre Peninsula was also noted.

High numbers of mice were present across Western and Central Eyre Peninsula and mild, dry conditions in May increased their numbers. A significant area of land from Warrambo to Minnipa was mechanically fallowed, reportedly to reduce mice

numbers. Seeding in the western part of the region was delayed because of mice, with the rest of the region completing seeding by mid-June. The pests continued to cause problems by damaging emerging crops and numbers did not fall until cold and wet conditions prevailed in September.

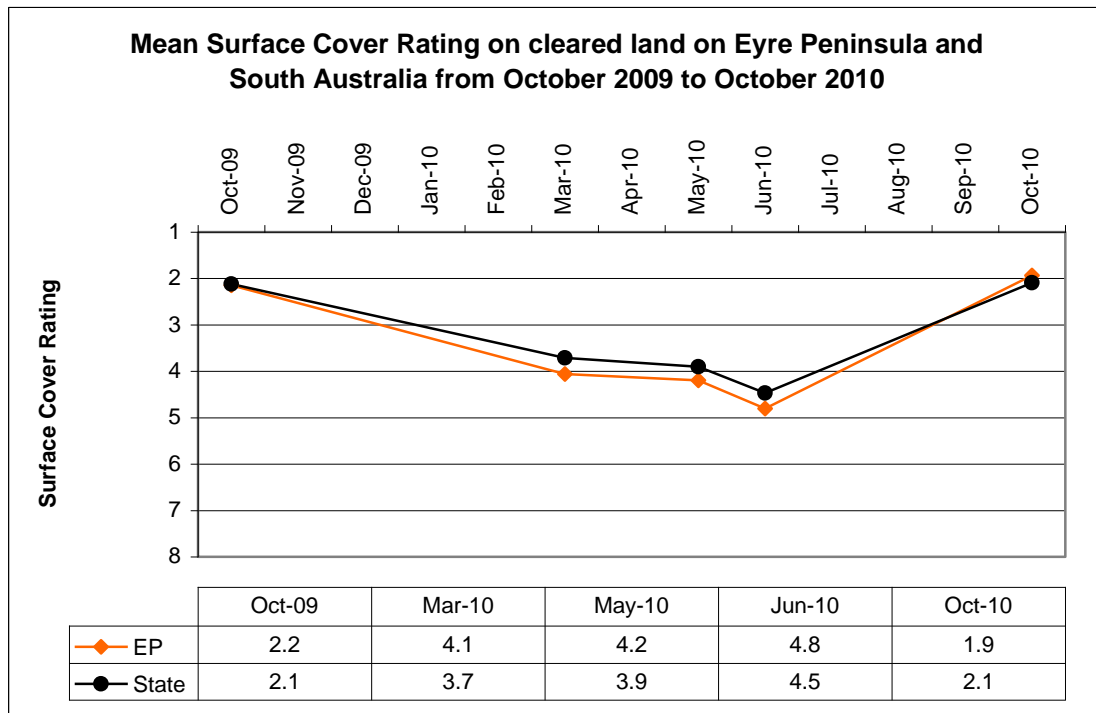
Good growing conditions in October produced a large bulk of crop and pasture biomass. Less area was cut for hay this year with producers encouraged by market prices to leave cereal crops for grain harvesting. A significant area of pastures has been “spray topped” with herbicides to reduce weed seed set resulting in earlier senescence and decay of residues.

Appendix 2 shows estimated pasture growth in kilograms per hectare per day for some district councils on Eyre Peninsula during the growing season. These estimates are derived using remote sensing of plant biomass combined with climate and soil data, and are available from the CSIRO’s “Pastures From Space” program. The model indicates that generally favourable growing conditions prevailed over most of Eyre Peninsula during the growing season.

Figure 2 shows how surface cover ratings changed over the 13 months to October 2010.

Surface cover is usually at its maximum in October. Cover levels in spring decline over summer and into autumn as plant residues break down. Grazing reduces cover levels further. The average change in cover rating between October and March is 1.4 so it is anticipated that by March 2011, surface cover levels will be around 3.3, less than the critical Cover Rating of 5, above which land is considered to be at risk of erosion.

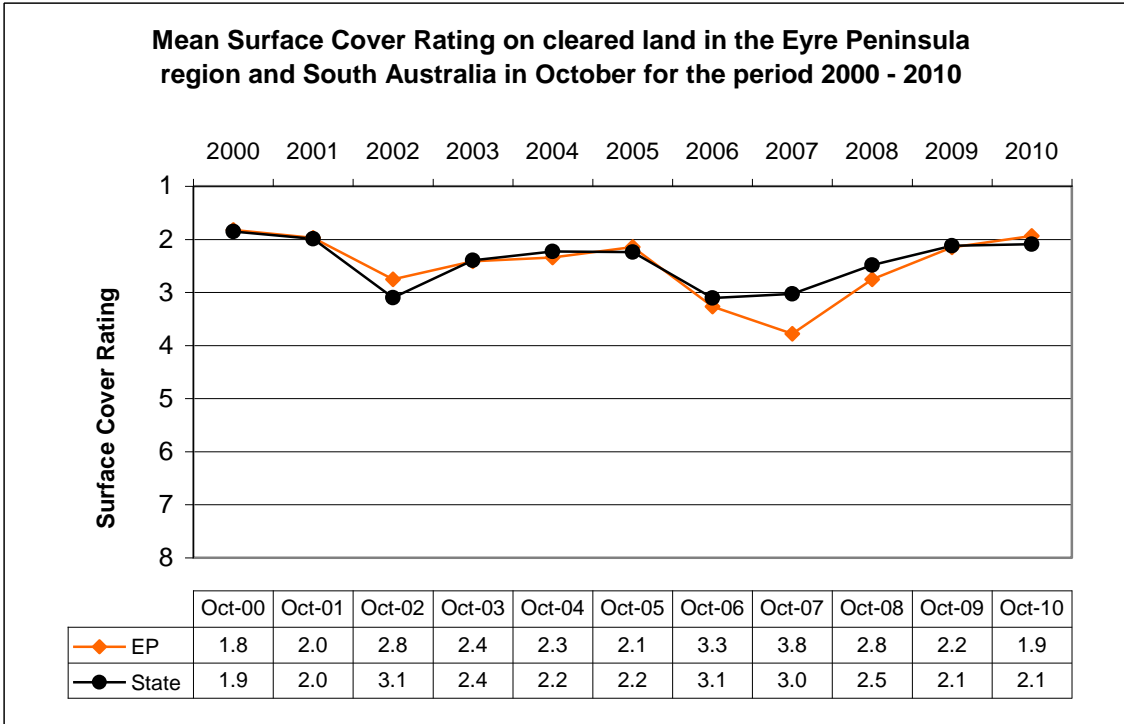
Figure 2:



Note: Cover rating of 1 = full cover; 8 = bare

The trend in soil surface cover levels in October since 2000 is shown in Figure 3. Surface cover on Eyre Peninsula in October this year was close to the same as October 2009 and better than the average of 2.5 for October since monitoring began.

Figure 3:



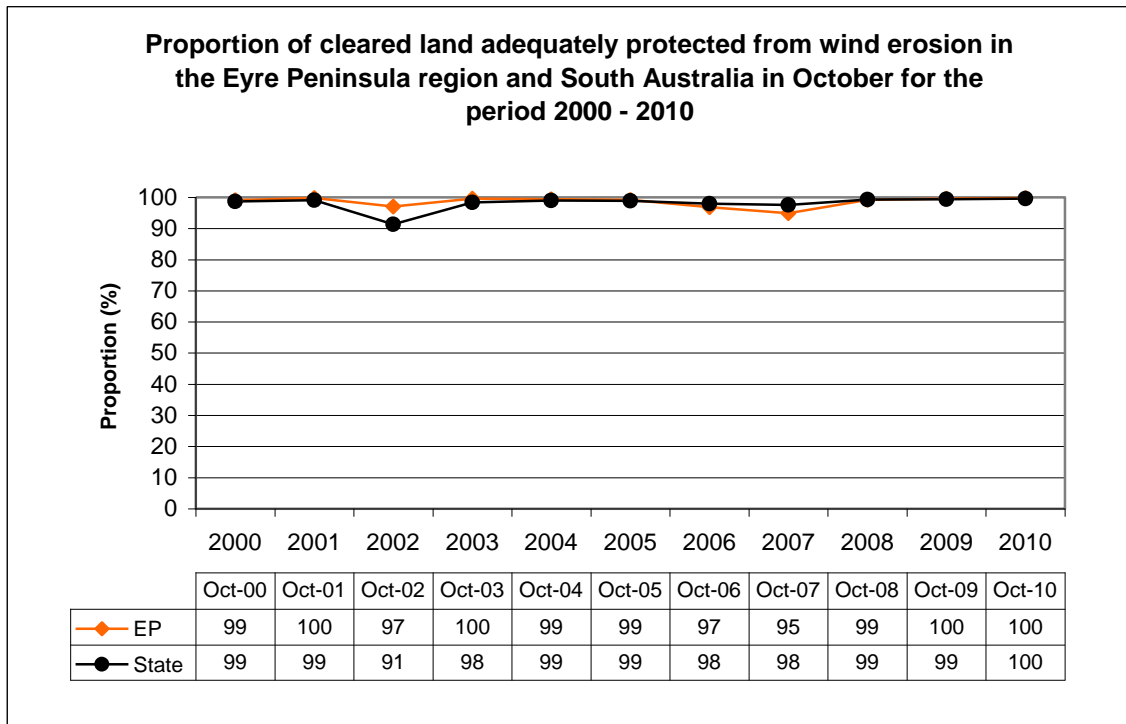
Note: Cover rating of 1 = full cover; 8 = bare

### Protection of land from wind erosion

The area of cleared land inherently susceptible to wind erosion due to soil type, rainfall and topographic features (Class III<sub>a</sub>, IV<sub>a</sub> and V<sub>a</sub>) is approximately 784,000 ha or 28% of cleared land in the Eyre Peninsula NRM Region. This is mainly found on the sandier soil types of Western, Central and Eastern Eyre Peninsula.

The proportion of land protected from wind erosion in October is 100%, equal to the average for the 2000 – 2010 period (Figure 4).

Figure 4:



At this time of the year, the main erosion risk is associated with the lack of surface cover as there is little soil disturbance due to tillage.

## Protection of land from water erosion

The area of cleared land inherently susceptible to water erosion due to soil type and topography (Class III<sub>e</sub>, IV<sub>e</sub> and V<sub>e</sub>), is approximately 226,000 ha or 8% of cleared land in the Eyre Peninsula NRM Region. It mainly occurs on the hilly land of Lower Eyre Peninsula.

The proportion of land protected from water erosion in October was 100%, which equals the average for the period 2000 to 2010.

## Conclusions

A favourable season enabled strong crop and pasture growth resulting in high amounts of surface cover in October.

Mice affected surface cover levels in the autumn and winter in some parts of the region. This effect was directly as they ate residues, and indirectly when farmers used burning and tillage to eliminate mice food supplies and habitat.

It is possible that mice will again be a problem on Eyre Peninsula in 2011 given the good season experienced this year.

The level of protection from wind and water erosion in October 2010 is at the maximum and equal to the long term average for the region since monitoring began.

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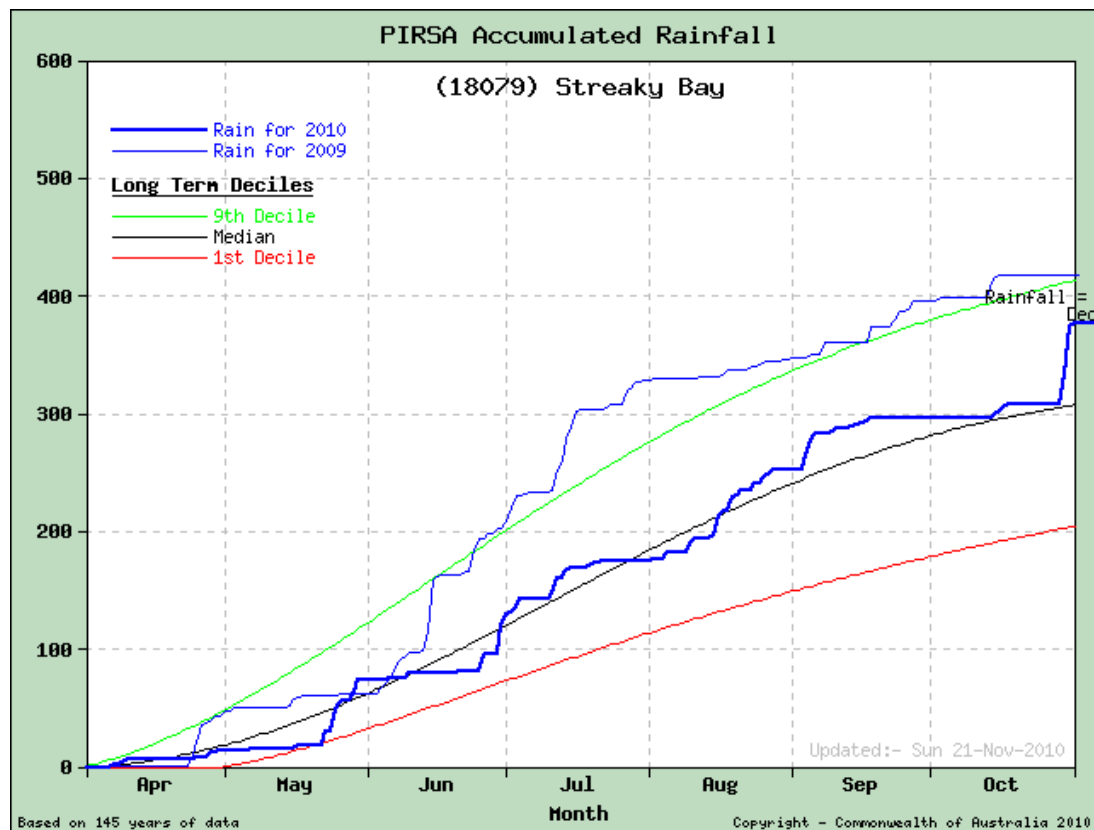
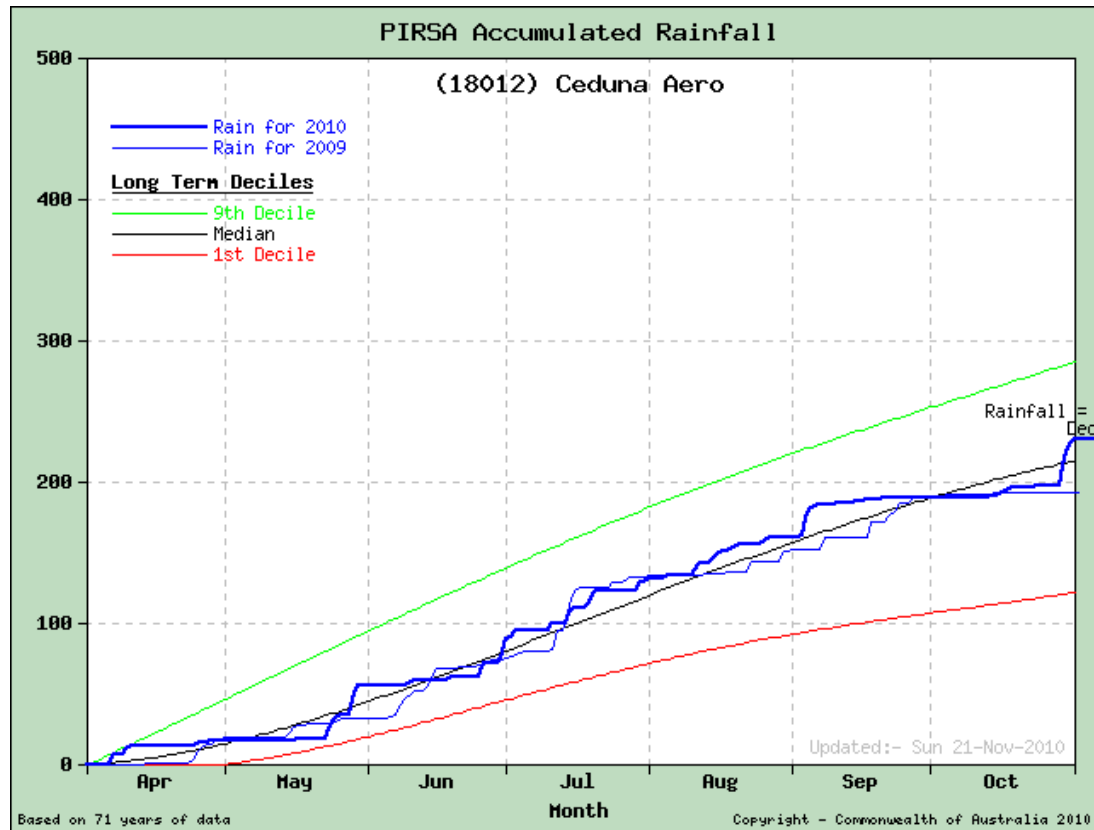
Although surface cover levels decline over summer as plant residues decay and are grazed, cover levels would normally be expected to be at an adequate level for protection against erosion, given the rate of decline observed in previous seasons.

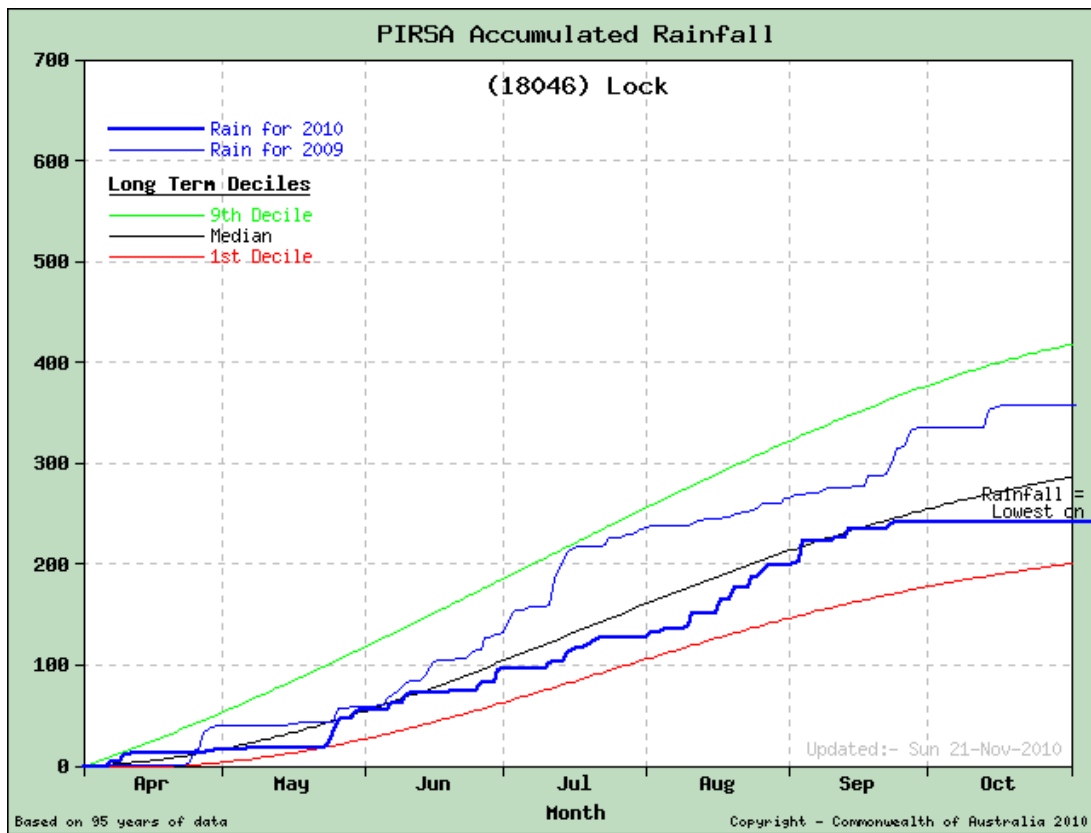
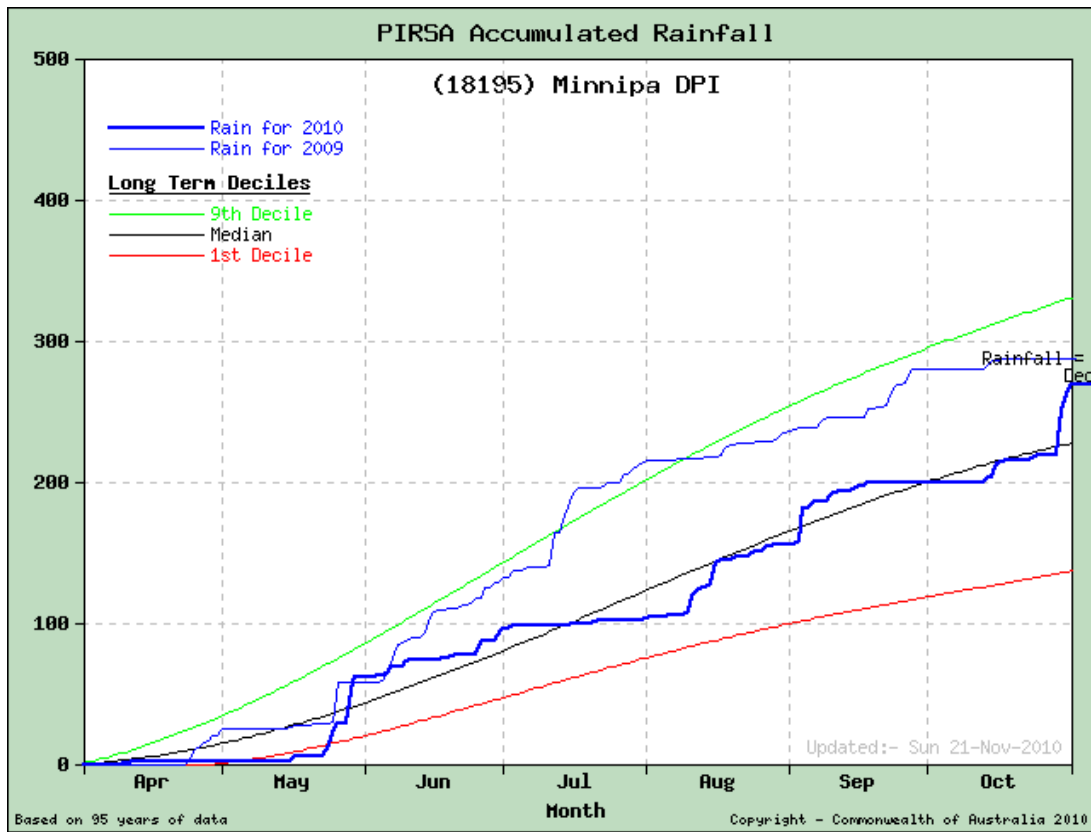
However, because of problems with mice this year, producers might decide to remove crop and pasture residues by burning and tillage to reduce mice numbers in autumn. This could increase the risk of erosion, particularly in sandier soils prone to wind erosion.

Producers' management of livestock grazing is critical in maintaining adequate levels of surface cover over summer and into autumn. Cultivating land as close as practical to or at seeding time, will leave cover on the soil surface for a longer period of time. Summer rains can stimulate plant growth leading to better cover of the soil however soil moisture retention and weed control is achieved by killing off this growth. Using herbicides rather than tillage to do this is better for retaining surface cover. Where summer plant growth is grazed, attention will still have to be paid to maintaining adequate surface cover.

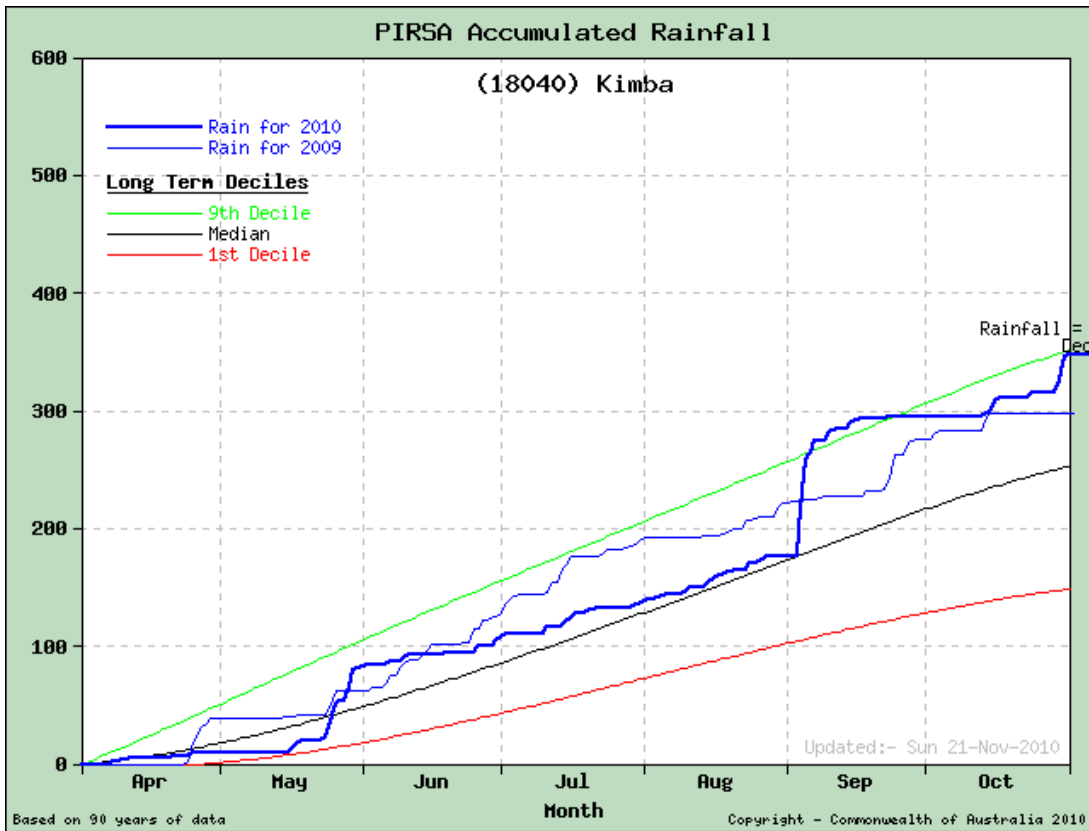
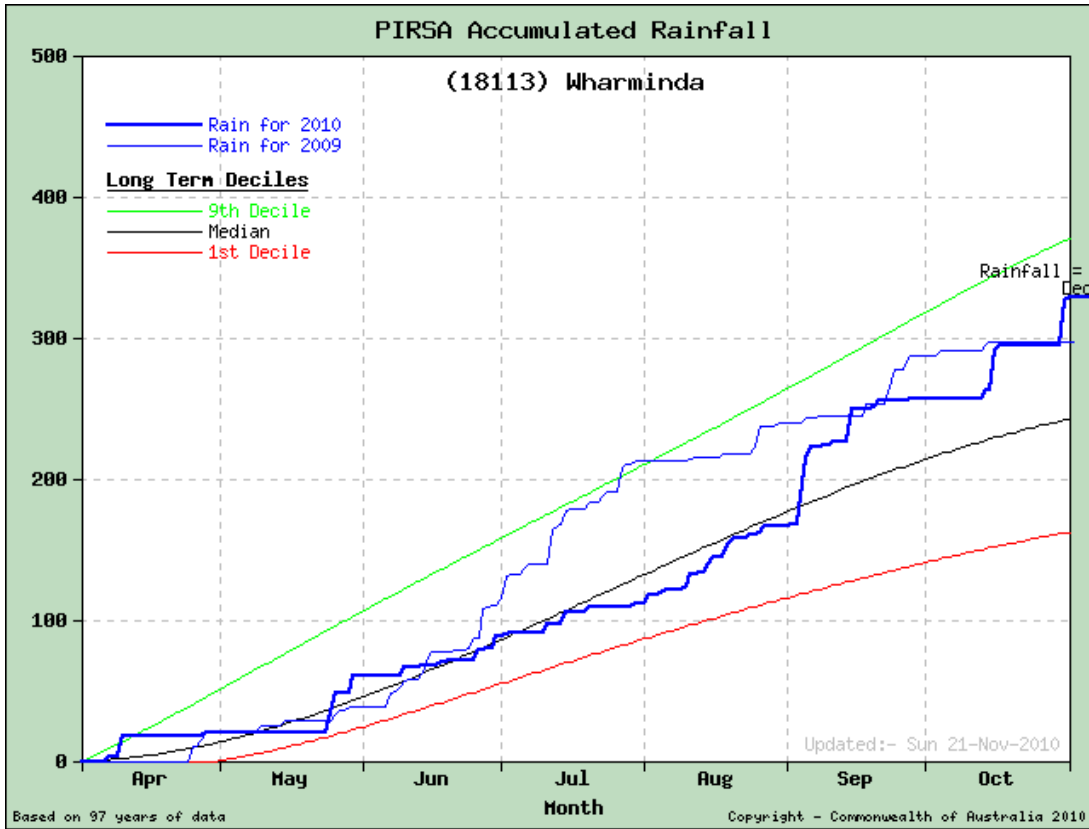
Appendix 1

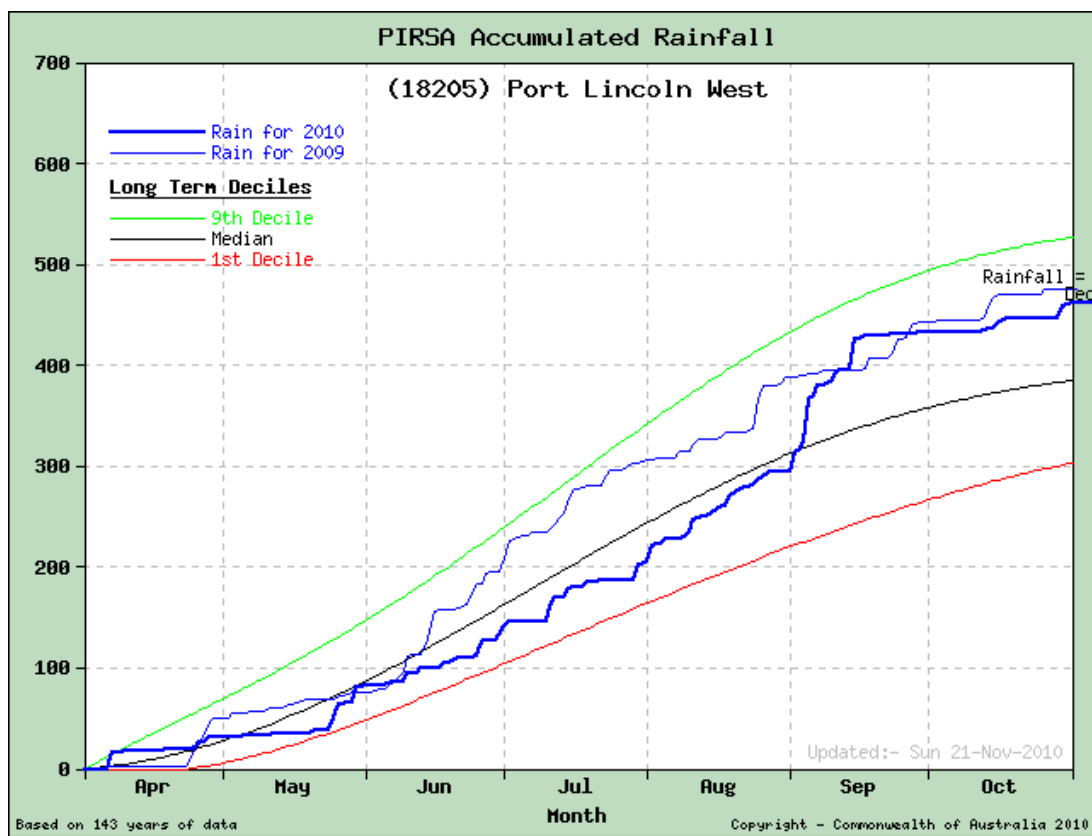
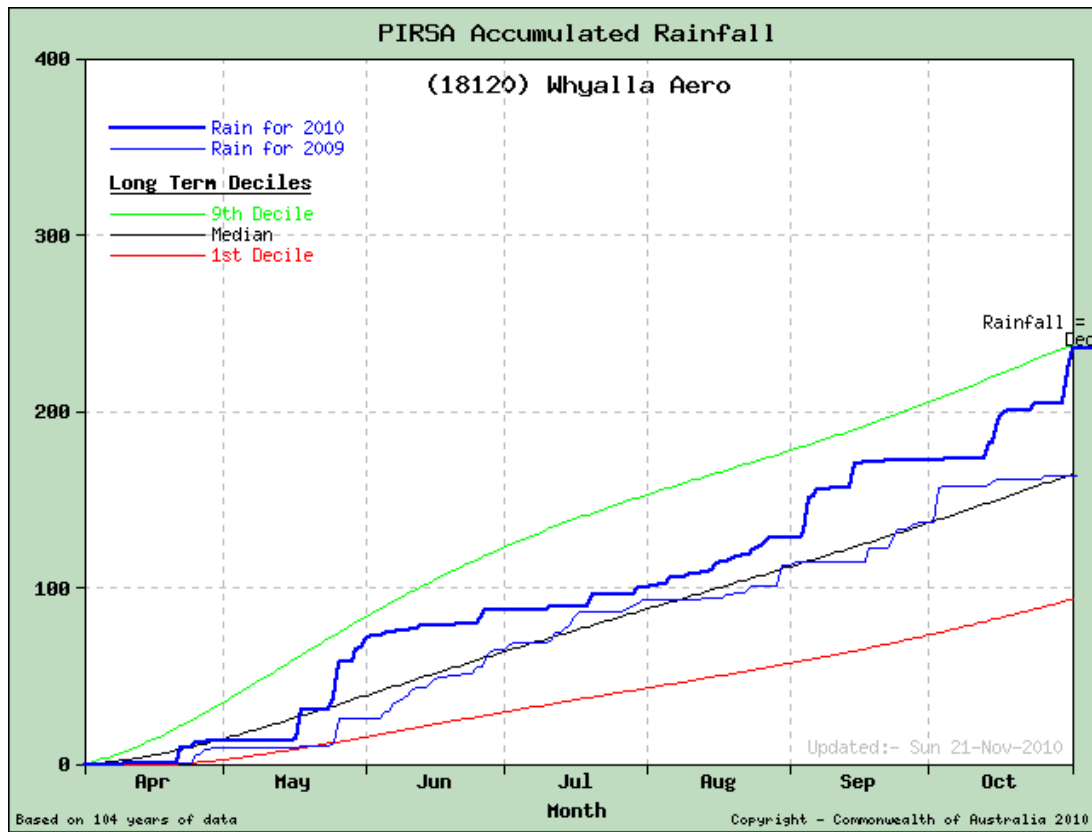
Cumulative rainfall data for selected sites across the Eyre Peninsula Region  
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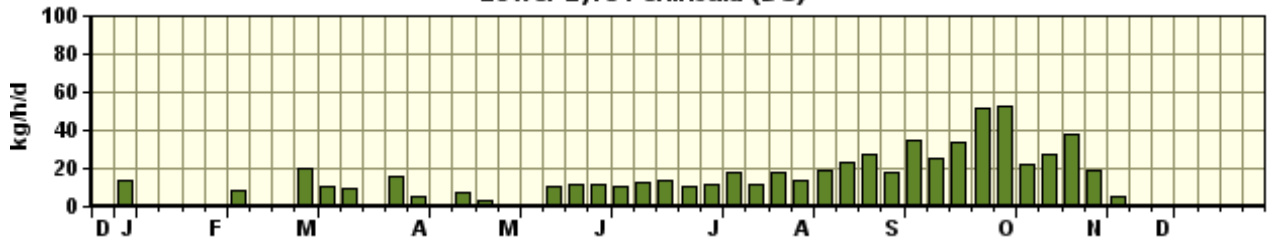




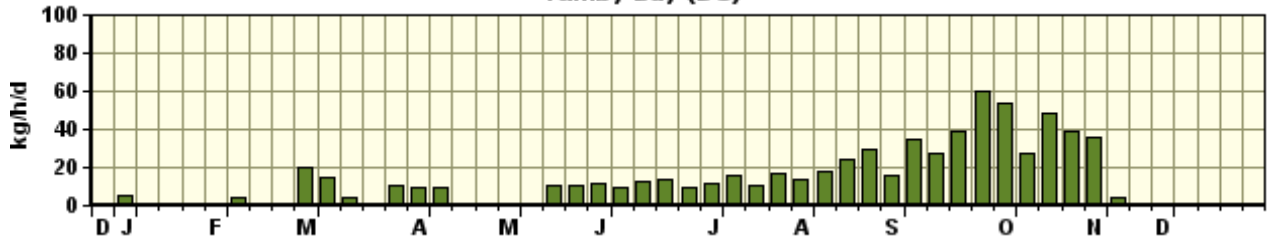




Lower Eyre Peninsula (DC)



Tumby Bay (DC)



Port Lincoln (C)

