Australian Bureau of Statistics

2010–11 4618.0

WATER USE ON AUSTRALIAN FARMS

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CONTENTS

INQUIRIES

For further information about these and related statistics, contact the National Information and Referral Service on 1300 135 070.

NOTES

BACKGROUND

This publication contains estimates on water use on Australian farms collected in the 2010-11 Agricultural Census.

Data at sub-state geographies such as Natural Resource Management (NRM) region, Statistical Division (SD), Statistical Local Area (SLA), Statistical Area 4 (SA4), Statistical Area 2 (SA2), River Basin and Drainage Division geographical levels will be released as separate datacubes attached to this publication in October 2012.

Climatic conditions affect both the availability of water for irrigation and the need to irrigate in order to supplement rainfall. Information from the Bureau of Meteorology outlining climatic conditions over the period July 2010 to June 2011 is presented in Appendix 1 to assist in interpreting the data in this publication.

Further data from the 2010–11 Agricultural Census collection are available in *Agricultural Commodities, Australia* (cat. no. 7121.0) and *Value of Agricultural Commodities Produced* (cat. no 7503.0).

CHANGES IN THIS ISSUE

The Agricultural Census produces more detailed data on irrigation practices in comparison to the Agricultural Resource Management Survey (ARMS). For further details refer to the Explanatory Notes.

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Australian Statistician

LIST OF TABLES AND MAPS

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ABBREVIATIONS

$'000	thousand dollars
ABN	Australian Business Number
ABR	Australian Business Register
ABS	Australian Bureau of Statistics
ABSBR	Australian Bureau of Statistics Business Register
ACT	Australian Capital Territory
ARMS	Agricultural Resource Management Survey
AS	Agricultural Survey
ATO	Australian Taxation Office
Aust.	Australia
BAS	Business Activity Statement
EVAO	Estimated Value of Agricultural Operations
ha	hectare
MDB	Murray-Darling Basin
ML	megalitre
ML/ha	megalitres per hectare
nec	not elsewhere classified
no.	number
NRM	natural resource management
NSW	New South Wales
NT	Northern Territory
Qld	Queensland
RSE	relative standard error
SA	South Australia
SD	statistical division
SE	standard error
Tas.	Tasmania
Vic.	Victoria
WA	Western Australia
°C	degrees Celsius

CHAPTER 1 SUMMARY OF AGRICULTURAL WATER USE

AGRICULTURAL WATER USE

Australia

Australia's total agricultural water use in 2010-11 was 7,551 gigalitres. Almost two thirds (64%) of this use was in the Murray-Darling Basin, which accounted for 4,815 gigalitres. The states using the most water were New South Wales with 2,982 gigalitres and Queensland with 1,960 gigalitres.

1.1 AGRICULTURAL WATER USE, by State and Territory—2010–11

	Agricultural businesses	*Irrigation*	*Other agricultural uses*	*Total water Use*
	no.	ML	ML	ML
NSW	43 541	2 745 896	236 239	2 982 135
Vic.	32 407	1 134 701	165 648	1 300 349
Qld	28 435	1 693 994	265 908	1 959 903
SA	14 059	621 308	77 721	699 029
WA	12 529	253 759	93 349	347 109
Tas.	4 085	172 709	28 490	201 199
NT	522	22 713	37 587	60 300
ACT	75	293	285	578
Aust.	**135 654**	**6 645 375**	**905 227**	**7 550 601**
MDB	53 588	4 507 454	307 481	4 814 935
Non-MDB	82 066	2 137 920	597 746	2 735 666

IRRIGATION ACTIVITY

Australia

Of the 410 million hectares of agricultural land in Australia in 2010-11, less than 1% was irrigated. However, 29% of all agricultural businesses irrigated during 2010-11, and the area of land irrigated increased 7% from 2009-10 to 2 million hectares. Water used for irrigation in Australia also increased by 1% to 6,645 gigalitres in 2010-11.

1.2 IRRIGATION ACTIVITY, by State and Territory—2006-07 to 2010-11

	Agricultural businesses	*Agricultural businesses irrigating*	*Area of agricultural land*	*Area irrigated*	*Volume applied*	*Application rate*
	no.	no.	ha	ha	ML	ML/ha
AUSTRALIA						
2006–07	150 817	41 787	425 449 341	1 922 982	7 636 194	4.0
2007–08	140 704	39 637	417 287 562	1 850 937	6 284 799	3.4
2008–09	135 996	39 940	409 028 747	1 760 758	6 500 577	3.7
2009–10	134 553	40 816	398 580 223	1 840 610	6 596 040	3.6
2010–11	135 654	38 752	409 672 625	1 962 569	6 645 375	3.4
2010–11						
NSW	43 541	10 389	58 326 346	674 064	2 745 896	4.1
Vic.	32 407	9 753	12 625 915	487 368	1 134 701	2.3
Qld	28 435	8 023	139 834 696	474 844	1 693 994	3.6
SA	14 059	5 428	52 786 439	180 533	621 308	3.4
WA	12 529	3 124	88 715 236	55 170	253 759	4.6
Tas.	4 085	1 770	1 654 943	84 216	172 709	2.1
NT	522	251	55 670 764	6 181	22 713	3.7
ACT	75	14	^ 58 286	193	293	1.5

^ estimate has a relative standard error of 10% to less than 25% and should be used with caution

State/Territory

In 2010-11, New South Wales was the largest user of water for irrigation at 2,746 gigalitres, followed by Queensland at 1,694 gigalitres. Together these two states used around two-thirds of the irrigation water used in Australia. The national application rate was 3.4ML/ha, with Western Australia having the highest rate at 4.6 ML/ha.

New South Wales had the greatest number of irrigating agricultural businesses in 2010-11 at 10,389, which is over a quarter of all agricultural businesses irrigating in Australia. The Northern Territory had the largest proportion of irrigators in Australia, with 48% of agricultural businesses irrigating in 2010-11.

Murray-Darling Basin

The Murray-Darling Basin (MDB) makes up 21% of all agricultural land in Australia at 85 million hectares. In 2010-11 the MDB accounted for 40% of Australia's agricultural businesses irrigating, 61% of all irrigated agricultural land and 68% of irrigation water used. The application rate for the MDB was 3.8 ML/ha, which was higher than the rest of Non-MDB, with an application rate of 2.8ML/ha.

Murray-Darling Basin continued

1.3 IRRIGATION ACTIVITY(a), by Murray–Darling Basin—2010–11

	Agricultural businesses	*Agricultural businesses irrigating*	*Area of agricultural land*	*Area irrigated*	*Volume applied*	*Application rate*
	no.	no.	ha	ha	ML	ML/ha
NSW MDB	26 586	6 014	48 402 339	597 891	2 584 061	4.3
Vic. MDB	15 967	6 009	7 768 823	354 870	837 256	2.4
Qld MDB	7 089	1 373	23 320 782	172 980	788 842	4.6
SA MDB	3 872	1 937	5 509 665	62 903	297 001	4.7
ACT MDB	75	14	^ 58 286	193	293	1.5
MDB	**53 588**	**15 347**	**85 059 894**	**1 188 837**	**4 507 454**	**3.8**
Non-MDB	82 066	23 405	324 612 731	773 732	2 137 920	2.8
Aust.	**135 654**	**38 752**	**409 672 625**	**1 962 569**	**6 645 375**	**3.4**

^ estimate has a relative standard error of 10% to less than 25% and should be used with caution

(a) State MDB regions based on geocoded data. Refer to the Explanatory Notes for further information.

CHAPTER 2 IRRIGATION WATER USE

PASTURES AND CROPS IRRIGATED

Australia

Australian agricultural businesses applied 6,645 gigalitres of irrigation water to agricultural land in 2010-11, which accounted for 88% of total water use on Australian farms for the year. Although the volume of irrigation water used increased nationally, the area irrigated increased by a greater proportion. As a result, the application in 2010-11 rate decreased from 3.6 ML/ha in 2009-10 to 3.4 ML/ha in 2010-11.

Pasture for grazing accounted for the greatest amount of irrigated land at 538,000 hectares followed by cotton at 359,000 hectares in Australia in 2010-11. These two commodities accounted for nearly half (47%) of all water applied for irrigation in Australia in 2010-11.

State/Territory

In New South Wales in 2010-11, the volume of water applied for irrigation increased 37% from the previous year to 2,746 gigalitres. Cotton and rice were the main users of irrigation water together accounting for 1,833 gigalitres of irrigation water, or 67% of all irrigation water in the state.

In Victoria in 2010-11, the volume of water applied for irrigation fell 25% from the previous year to 1,135 gigalitres. The main use of irrigation water was pasture for grazing, representing over 54% of all irrigation water used in the state. Other major uses of irrigation water were fruit trees, nut trees, plantation or berry fruits at 18%, and grapevines at 7%.

In Queensland, the use of irrigation water for cotton accounted for 48% of the 1,694 gigalitres of water used for irrigating in 2010-11. The irrigation of sugar cane was also a significant use of water in the state, representing 27% of all water used for irrigation in 2010-11.

In South Australia, irrigators applied 621 gigalitres in 2010-11, a decrease of 13% compared with the previous year. Pastures for grazing and grapevines accounted for 24% and 23% of the total respectively.

In Western Australia in 2010-11, the volume of water applied for irrigation use remained steady at 254 gigalitres. The main uses for irrigation water were pasture for grazing at 33%, vegetables for human consumption at 22% and fruit trees, nut trees, plantation or berry fruits at 16% of the total irrigation water for the state.

In Tasmania in 2010-11, the volume of water applied for irrigation fell by 39% from the previous year to 173 gigalitres. The main use was pasture for grazing, which accounted for 49% of all irrigation water used.

In the Northern Territory, the volume of water applied for irrigation increased by 22% from 2009-10 to 23 gigalitres in 2010-11. The main use for irrigation water was for fruit trees, nut trees, plantation or berry fruits at 51% of the total for the Northern Territory.

State/Territory continued

In the Australian Capital Territory 293 ML of water was applied for irrigation in 2010-11. The largest uses were for nurseries, cut flowers and cultivated turf at 43% and pasture for hay at 34% of all irrigation water used. Prior to 2010-11, the Australian Capital Territory volumes were included in New South Wales.

Murray–Darling Basin

In 2010-11 the volume of water applied to agricultural land in the Murray-Darling Basin increased 26% compared with 2009-10, to 4,507 gigalitres. The area of agricultural land irrigated in the Murray-Darling Basin also increased, up 22% compared with last year, making the area irrigated in the MDB the largest since 2005-06.

Of the 4,507 gigalitres of water used for irrigation, cotton accounted for 40% of all water used. Other significant uses of irrigation water in the Murray-Darling Basin were rice (17%) and pasture for grazing (13%).

Irrigation water use outside the Murray-Darling Basin fell 29% from 2009-10 to 2,138 gigalitres in 2010-11. The biggest uses for irrigated water outside the Murray-Darling basins were pasture for grazing at 29% and sugar cane at 21%.

2.1 PASTURES AND CROPS IRRIGATED(a), Australia—2006–07 to 2010–11

	Agricultural businesses(b)	*Agricultural businesses irrigating*(b)	*Area of agricultural land*(c)	*Area irrigated*	*Volume applied*	*Application rate*
	no.	no.	ha	ha	ML	ML/ha
TOTAL						
2006–07	150 817	41 787	425 449 341	1 922 982	7 636 194	4.0
2007–08	140 704	39 637	417 287 562	1 850 937	6 284 799	3.4
2008–09	135 996	39 940	409 028 747	1 760 758	6 500 577	3.7
2009–10	134 553	40 816	398 580 223	1 840 610	6 596 040	3.6
2010–11	135 654	38 752	409 672 625	1 962 569	6 645 375	3.4
2010–11						
Pasture for grazing(d)	103 372	12 713	364 042 516	537 741	1 231 627	2.3
Pasture for hay	24 754	3 839	860 265	88 961	218 243	2.5
Pasture for seed production	1 334	631	120 060	29 542	103 248	3.5
Cereal crops for hay	10 631	807	520 358	21 311	43 103	2.0
Cereal crops for grain or seed	32 431	2 011	19 244 862	158 211	286 156	1.8
Rice	809	809	75 783	75 783	766 195	10.1
Sugar cane	3 792	1 378	323 235	129 462	459 405	3.5
Cotton	1 000	724	588 294	359 280	1 882 243	5.2
Other broadacre crops nec	16 561	1 431	4 487 602	61 468	138 052	2.2
Fruit trees, Nut trees and Plantation or Berry fruits	9 340	5 899	188 894	138 999	550 422	4.0
Vegetables for human consumption	5 753	4 864	124 615	112 728	372 472	3.3
Vegetables for seed	728	331	6 412	3 012	7 605	2.5
Nurseries, Cut Flowers and Cultivated Turf	3 108	2 577	17 320	12 796	54 337	4.2
Grapevines	7 740	6 125	176 879	151 903	355 719	2.3

(a) The number of agricultural businesses and the area under pasture or crop are included for irrigation crop categories where available. See the Explanatory Notes for further information.

(b) Total does not equal the sum as many establishments grow or irrigate more than one crop or pasture.

(c) Total includes other pastures or crops not elsewhere classified.

(d) From 2010-11 'Pasture for grazing' includes all pasture, whereas previously data was based upon improved pasture only. See Explanatory Notes for further information.

2.2 PASTURES AND CROPS IRRIGATED(a), New South Wales—2006–07 to 2010–11(b)

	Agricultural businesses(c)	*Agricultural businesses irrigating*(c)	*Area of agricultural land*(d)	*Area irrigated*	*Volume applied*	*Application rate*
	no.	no.	ha	ha	ML	ML/ha
TOTAL						
2006–07	47 869	10 689	58 660 611	680 011	2 605 019	3.8
2007–08	44 521	8 974	58 154 425	525 021	1 677 083	3.2
2008–09	43 212	10 128	57 309 461	503 630	1 910 033	3.8
2009–10	43 228	10 070	58 588 455	550 158	2 002 797	3.6
2010–11	43 541	10 389	58 326 346	674 064	2 745 896	4.1
2010–11						
Pasture for grazing(e)	35 502	3 175	46 419 229	130 380	232 629	1.8
Pasture for hay	5 441	1 105	165 217	25 420	78 406	3.1
Pasture for seed production	314	101	18 280	^ 3 092	6 281	2.0
Cereal crops for hay	2 869	277	104 019	6 809	13 989	2.1
Cereal crops for grain or seed	10 682	940	5 377 721	109 676	203 841	1.9
Rice	795	795	74 954	74 954	758 998	10.1
Sugar cane	424	^ 6	15 385	^ 54	^ 3	0.1
Cotton	517	390	329 665	196 233	1 073 849	5.5
Other broadacre crops nec	4 774	438	1 171 550	21 121	50 026	2.4
Fruit trees, Nut trees and Plantation or Berry fruits	3 028	1 417	49 842	25 050	94 237	3.8
Vegetables for human consumption	1 467	1 187	15 909	14 572	54 421	3.7
Vegetables for seed	153	62	878	328	^ 1 361	4.1
Nurseries, Cut Flowers and Cultivated Turf	973	819	4 529	3 609	17 596	4.9
Grapevines	1 580	1 297	44 155	39 152	106 594	2.7

^ estimate has a relative standard error of 10% to less than 25% and should be used with caution

(a) The number of agricultural businesses and the area under pasture or crop are included for irrigation crop categories where available. See the Explanatory Notes for further information.

(b) NSW totals for 2006 to 2009 are inclusive of ACT.

(c) Total does not equal the sum as many establishments grow or irrigate more than one crop or pasture.

(d) Total includes other pastures or crops not elsewhere classified.

(e) From 2010-11 'Pasture for grazing' includes all pasture, whereas previously data was based upon improved pasture only. See Explanatory Notes for further information.

2.3 PASTURES AND CROPS IRRIGATED(a), Victoria—2006–07 to 2010–11

	Agricultural businesses(b)	*Agricultural businesses irrigating*(b)	*Area of agricultural land*(c)	*Area irrigated*	*Volume applied*	*Application rate*
	no.	no.	ha	ha	ML	ML/ha
TOTAL						
2006–07	37 429	10 557	13 250 203	437 654	1 648 914	3.8
2007–08	34 177	10 309	12 535 698	427 584	1 332 045	3.1
2008–09	32 973	10 080	12 090 736	370 957	1 194 501	3.2
2009–10	32 741	10 579	12 851 527	440 719	1 504 742	3.4
2010–11	32 407	9 753	12 625 915	487 368	1 134 701	2.3
2010–11						
Pasture for grazing(d)	25 325	5 049	7 259 230	277 450	607 073	2.2
Pasture for hay	11 072	1 349	388 404	35 087	58 470	1.7
Pasture for seed production	272	133	24 429	5 585	8 482	1.5
Cereal crops for hay	2 944	241	128 401	8 341	12 948	1.6
Cereal crops for grain or seed	7 215	375	2 861 604	19 017	24 545	1.3
Rice	^ 3	^ 3	^ 240	^ 240	^ 1 660	6.9
Other broadacre crops nec	3 500	201	698 933	5 581	10 217	1.8
Fruit trees, Nut trees and Plantation or Berry fruits	1 487	1 043	51 458	46 100	199 189	4.3
Vegetables for human consumption	920	775	30 974	25 638	59 240	2.3
Vegetables for seed	181	94	2 076	1 086	1 421	1.3
Nurseries, Cut Flowers and Cultivated Turf	715	580	5 172	3 063	8 671	2.8
Grapevines	2 116	1 437	38 269	29 963	83 520	2.8

^ estimate has a relative standard error of 10% to less than 25% and should be used with caution

(a) The number of agricultural businesses and the area under pasture or crop are included for irrigation crop categories where available. See the Explanatory Notes for further information.

(b) Total does not equal the sum as many establishments grow or irrigate more than one crop or pasture.

(c) Total includes other pastures or crops not elsewhere classified.

(d) From 2010-11 'Pasture for grazing' includes all pasture, whereas previously data was based upon improved pasture only. See Explanatory Notes for further information.

2.4 PASTURES AND CROPS IRRIGATED(a), Queensland—2006–07 to 2010–11

	Agricultural businesses(b)	*Agricultural businesses irrigating*(b)	*Area of agricultural land*(c)	*Area irrigated*	*Volume applied*	*Application rate*
	no.	no.	ha	ha	ML	ML/ha
Total						
2006–07	30 650	8 757	143 870 532	457 822	1 840 252	4.0
2007–08	29 121	9 047	141 057 855	512 774	1 842 729	3.6
2008–09	28 142	8 805	141 209 793	547 949	2 058 471	3.8
2009–10	27 578	9 402	129 667 586	502 600	1 823 870	3.6
2010–11	28 435	8 023	139 834 696	474 844	1 693 994	3.6
2010–11						
Pasture for grazing(d)	21 019	1 777	132 364 260	34 625	71 771	2.1
Pasture for hay	1 907	868	62 599	16 759	45 908	2.7
Pasture for seed production	132	52	^ 17 594	1 013	^ 2 333	2.3
Cereal crops for hay	735	212	21 458	4 512	11 141	2.5
Cereal crops for grain or seed	3 447	377	1 518 947	18 447	30 849	1.7
Rice	^ 7	^ 7	369	369	2 480	6.7
Sugar cane	3 367	1 369	307 850	129 402	459 334	3.5
Cotton	481	331	258 604	163 021	808 195	5.0
Other broadacre crops nec	1 449	307	294 242	13 817	26 270	1.9
Fruit trees, Nut trees and Plantation or Berry fruits	2 277	1 437	50 528	35 098	92 216	2.6
Vegetables for human consumption	1 508	1 253	37 409	34 865	90 995	2.6
Vegetables for seed	82	28	218	^ 64	^ 143	2.2
Nurseries, Cut Flowers and Cultivated Turf	736	645	4 343	3 326	12 371	3.7
Grapevines	202	142	3 011	2 777	6 539	2.4

^ estimate has a relative standard error of 10% to less than 25% and should be used with caution

(a) The number of agricultural businesses and the area under pasture or crop are included for irrigation crop categories where available. See the Explanatory Notes for further information.

(b) Total does not equal the sum as many establishments grow or irrigate more than one crop or pasture.

(c) Total includes other pastures or crops not elsewhere classified.

(d) From 2010-11 'Pasture for grazing' includes all pasture, whereas previously data was based upon improved pasture only. See Explanatory Notes for further information.

2.5 PASTURES AND CROPS IRRIGATED(a), South Australia—2006–07 to 2010–11

	Agricultural businesses(b)	*Agricultural businesses irrigating*(b)	*Area of agricultural land*(c)	*Area irrigated*	*Volume applied*	*Application rate*
	no.	no.	ha	ha	ML	ML/ha
TOTAL						
2006–07	15 835	6 447	50 064 634	200 594	966 057	4.8
2007–08	14 996	6 114	47 075 615	225 716	880 268	3.9
2008–09	14 454	5 821	49 126 060	196 215	827 230	4.2
2009–10	14 097	5 624	45 746 996	186 494	711 991	3.8
2010–11	14 059	5 428	52 786 439	180 533	621 308	3.4
2010–11						
Pasture for grazing(d)	8 599	1 143	47 178 396	40 809	149 590	3.7
Pasture for hay	2 315	262	95 230	7 563	23 320	3.1
Pasture for seed production	417	265	44 910	17 716	82 622	4.7
Cereal crops for hay	1 957	52	100 071	^ 954	1 450	1.5
Cereal crops for grain or seed	5 421	149	3 321 745	5 477	7 414	1.4
Other broadacre crops nec	2 875	115	592 056	2 479	6 287	2.5
Fruit trees, Nut trees and Plantation or Berry fruits	1 096	886	19 579	17 779	108 831	6.1
Vegetables for human consumption	622	560	14 327	13 833	79 117	5.7
Vegetables for seed	100	45	1 807	859	^ 3 149	3.7
Nurseries, Cut Flowers and Cultivated Turf	229	180	974	860	3 057	3.6
Grapevines	2 875	2 481	76 931	67 968	142 384	2.1

^ estimate has a relative standard error of 10% to less than 25% and should be used with caution

(a) The number of agricultural businesses and the area under pasture or crop are included for irrigation crop categories where available. See the Explanatory Notes for further information.

(b) Total does not equal the sum as many establishments grow or irrigate more than one crop or pasture.

(c) Total includes other pastures or crops not elsewhere classified.

(d) From 2010-11 'Pasture for grazing' includes all pasture, whereas previously data was based upon improved pasture only. See Explanatory Notes for further information.

2.6 PASTURES AND CROPS IRRIGATED(a), Western Australia—2006–07 to 2010–11

	Agricultural businesses(b)	*Agricultural businesses irrigating*(b)	*Area of agricultural land*(c)	*Area irrigated*	*Volume applied*	*Application rate*
	no.	no.	ha	ha	ML	ML/ha
TOTAL						
2006–07	13 608	2 935	96 741 958	53 268	293 186	5.5
2007–08	13 084	2 720	93 034 706	63 364	284 878	4.5
2008–09	12 658	2 865	93 645 885	47 804	226 085	4.7
2009–10	12 465	2 881	94 391 470	50 815	252 058	5.0
2010–11	12 529	3 124	88 715 236	55 170	253 759	4.6
2010–11						
Pasture for grazing(d)	9 079	834	75 114 267	16 082	84 231	5.2
Pasture for hay	1 943	83	85 673	1 387	^ 4 733	^ 3.4
Pasture for seed production	93	^ 12	^ 11 254	^ 26	*106	^ 4.1
Cereal crops for hay	2 051	20	164 569	381	^ 1 570	4.1
Cereal crops for grain or seed	5 232	88	6 141 327	^ 1 514	^ 11 713	7.7
Rice	^ 4	^ 4	*221	*221	*3 057	13.9
Sugar cane	*1	^ 3	*1	*6	*69	12.3
Cotton	^ 2	^ 2	*26	*26	*199	7.7
Other broadacre crops nec	3 351	39	1 706 950	^ 3 756	19 933	5.3
Fruit trees, Nut trees and Plantation or Berry fruits	994	757	9 480	8 101	40 047	4.9
Vegetables for human consumption	594	535	10 958	9 291	54 850	5.9
Vegetables for seed	71	28	521	^ 118	446	3.8
Nurseries, Cut Flowers and Cultivated Turf	316	259	1 717	1 516	11 297	7.5
Grapevines	791	643	12 686	10 538	13 431	1.3

^ estimate has a relative standard error of 10% to less than 25% and should be used with caution

* estimate has a relative standard error of 25% to 50% and should be used with caution

(a) The number of agricultural businesses and the area under pasture or crop are included for irrigation crop categories where available. See the Explanatory Notes for further information.

(b) Total does not equal the sum as many establishments grow or irrigate more than one crop or pasture.

(c) Total includes other pastures or crops not elsewhere classified.

(d) From 2010-11 'Pasture for grazing' includes all pasture, whereas previously data was based upon improved pasture only. See Explanatory Notes for further information.

2.7 PASTURES AND CROPS IRRIGATED(a), Tasmania—2006–07 to 2010–11

	Agricultural businesses(b)	*Agricultural businesses irrigating*(b)	*Area of agricultural land*(c)	*Area irrigated*	*Volume applied*	*Application rate*
	no.	no.	ha	ha	ML	ML/ha
TOTAL						
2006–07	4 783	2 060	1 659 163	87 472	263 029	3.0
2007–08	4 200	2 185	1 541 487	91 538	252 113	2.8
2008–09	4 000	1 962	1 630 432	88 028	262 296	3.0
2009–10	3 935	2 027	1 647 437	104 803	281 953	2.7
2010–11	4 085	1 770	1 654 943	84 216	172 709	2.1
2010–11						
Pasture for grazing(d)	3 500	715	1 250 227	37 942	85 371	2.3
Pasture for hay	2 021	166	52 043	2 614	6 457	2.5
Pasture for seed production	100	67	3 089	2 110	3 424	1.6
Cereal crops for hay	71	^ 4	1 124	153	504	3.3
Cereal crops for grain or seed	429	80	23 187	4 071	7 791	1.9
Other broadacre crops nec	608	329	23 835	14 695	25 189	1.7
Fruit trees, Nut trees and Plantation or Berry fruits	275	194	3 578	2 964	4 415	1.5
Vegetables for human consumption	564	481	13 528	13 262	28 701	2.2
Vegetables for seed	137	74	875	556	1 085	2.0
Nurseries, Cut Flowers and Cultivated Turf	110	69	477	325	756	2.3
Grapevines	165	117	1 498	1 176	1 013	0.9

^ estimate has a relative standard error of 10% to less than 25% and should be used with caution

(a) The number of agricultural businesses and the area under pasture or crop are included for irrigation crop categories where available. See the Explanatory Notes for further information.

(b) Total does not equal the sum as many establishments grow or irrigate more than one crop or pasture.

(c) Total includes other pastures or crops not elsewhere classified.

(d) From 2010-11 'Pasture for grazing' includes all pasture, whereas previously data was based upon improved pasture only. See Explanatory Notes for further information.

2.8 PASTURES AND CROPS IRRIGATED(a), Northern Territory—2006–07 to 2010–11

	Agricultural businesses(b)	*Agricultural businesses irrigating*(b)	*Area of agricultural land*(c)	*Area irrigated*	*Volume applied*	*Application rate*
	no.	no.	ha	ha	ML	ML/ha
TOTAL						
2006–07	643	342	61 202 240	6 161	19 737	3.2
2007–08	605	288	^ 63 887 775	^ 4 940	^ 15 683	^ 3.2
2008–09	558	278	54 016 380	6 176	21 962	3.6
2009–10	510	234	55 686 751	5 021	18 628	3.7
2010–11	522	251	55 670 764	6 181	22 713	3.7
2010–11						
Pasture for grazing(d)	285	19	54 401 662	^ 421	^ 957	2.3
Pasture for hay	52	^ 6	11 021	^ 112	^ 849	7.6
Pasture for seed production	6	—	504	—	—	—
Cereal crops for hay	2	1	710	160	1 500	9.4
Cereal crops for grain or seed	^ 2	^ 1	^ 46	^ 7	^ 2	0.3
Other broadacre crops nec	2	2	19	19	129	6.8
Fruit trees, Nut trees and Plantation or Berry fruits	180	162	4 424	3 902	11 478	2.9
Vegetables for human consumption	74	72	1 498	1 257	5 119	4.1
Vegetables for seed	5	—	^ 37	—	—	—
Nurseries, Cut Flowers and Cultivated Turf	24	20	72	68	461	6.8
Grapevines	7	6	234	234	2 218	9.5

^ estimate has a relative standard error of 10% to less than 25% and should be used with caution

— nil or rounded to zero (including null cells)

(a) The number of agricultural businesses and the area under pasture or crop are included for irrigation crop categories where available. See the Explanatory Notes for further information.

(b) Total does not equal the sum as many establishments grow or irrigate more than one crop or pasture.

(c) Total includes other pastures or crops not elsewhere classified.

(d) From 2010-11 'Pasture for grazing' includes all pasture, whereas previously data was based upon improved pasture only. See Explanatory Notes for further information.

2.9 PASTURES AND CROPS IRRIGATED(a), Australian Capital Territory—2010–11(b)

	Agricultural businesses(c)	*Agricultural businesses irrigating*(c)	*Area of agricultural land*(d)	*Area irrigated*	*Volume applied*	*Application rate*
	no.	no.	ha	ha	ML	ML/ha
TOTAL						
2010–11	75	14	^ 58 286	193	293	1.5
2010–11						
Pasture for grazing(e)	62	1	^ 55 245	32	6	0.2
Pasture for hay	^ 3	1	^ 79	20	100	5.0
Cereal crops for hay	*1	—	*6	—	—	—
Cereal crops for grain or seed	^ 2	*1	*285	*2	*1	0.3
Other broadacre crops nec	*1	—	*18	—	—	—
Fruit trees, Nut trees and Plantation or Berry fruits	*3	*3	*5	*5	*9	^ 1.9
Vegetables for human consumption	^ 3	2	11	11	29	2.6
Nurseries, Cut Flowers and Cultivated Turf	^ 5	^ 5	38	28	127	4.5
Grapevines	^ 2	^ 2	95	95	22	0.2

^ estimate has a relative standard error of 10% to less than 25% and should be used with caution

* estimate has a relative standard error of 25% to 50% and should be used with caution

— nil or rounded to zero (including null cells)

(a) The number of agricultural businesses and the area under pasture or crop are included for irrigation crop categories where available. See the Explanatory Notes for further information.

(b) ACT totals for 2006 to 2009 are included in NSW.

(c) Total does not equal the sum as many establishments grow or irrigate more than one crop or pasture.

(d) Total includes other pastures or crops not elsewhere classified.

(e) From 2010-11 'Pasture for grazing' includes all pasture, whereas previously data was based upon improved pasture only. See Explanatory Notes for further information.

2.10 PASTURES AND CROPS IRRIGATED(a), Murray–Darling Basin—2006–07 to 2010–11

	Agricultural businesses(b)	*Agricultural businesses irrigating*(b)	*Area of agricultural land*(c)	*Area irrigated*	*Volume applied*	*Application rate*
	no.	no.	ha	ha	ML	ML/ha
TOTAL						
2006–07	59 685	17 062	97 160 318	1 101 410	4 458 279	4.1
2007–08	56 586	15 479	95 561 754	957 752	3 141 659	3.3
2008–09	54 098	15 077	96 041 055	929 074	3 492 407	3.8
2009–10	53 681	15 120	95 194 851	975 660	3 564 481	3.7
2010–11(d)	53 588	15 347	85 059 894	1 188 837	4 507 454	3.8
2010–11						
Pasture for grazing(e)	41 548	5 496	65 011 278	292 293	601 601	2.1
Pasture for hay	8 694	1 900	310 743	53 234	122 396	2.3
Pasture for seed production	445	153	36 482	5 072	9 675	1.9
Cereal crops for hay	6 080	584	260 020	16 929	32 081	1.9
Cereal crops for grain or seed	19 154	1 437	9 720 506	134 305	234 306	1.7
Rice	789	789	74 498	74 498	755 040	10.1
Sugar cane	^4	*1	*391	*—	*—	0.1
Cotton	904	649	542 024	331 826	1 789 397	5.4
Other broadacre crops nec	7 788	662	1 919 194	29 715	64 992	2.2
Fruit trees, Nut trees and Plantation or Berry fruits	3 120	2 290	93 351	80 300	379 361	4.7
Vegetables for human consumption	991	844	30 283	28 576	112 710	3.9
Vegetables for seed	142	75	1 447	706	^2 585	3.7
Nurseries, Cut Flowers and Cultivated Turf	369	285	3 387	1 844	7 168	3.9
Grapevines	4 057	3 356	104 979	94 224	303 341	3.2

^ estimate has a relative standard error of 10% to less than 25% and should be used with caution

* estimate has a relative standard error of 25% to 50% and should be used with caution

— nil or rounded to zero (including null cells)

(a) The number of agricultural businesses and the area under pasture or crop are included for irrigation crop categories where available. See the Explanatory Notes for further information.

(b) Total does not equal the sum as many establishments grow or irrigate more than one crop or pasture.

(c) Total includes other pastures or crops not elsewhere classified.

(d) MDB region for 2010-11 based on geocoded data. Refer to the Explanatory Notes for further information.

(e) From 2010-11 'Pasture for grazing' includes all pasture, whereas previously data was based upon improved pasture only. See Explanatory Notes for further information.

2.11 PASTURES AND CROPS IRRIGATED(a), Non-Murray Darling Basin—2006–07 to 2010–11

	Agricultural businesses(b)	*Agricultural businesses irrigating*(b)	*Area of agricultural land*(c)	*Area irrigated*	*Volume applied*	*Application rate*
	no.	no.	ha	ha	ML	ML/ha
TOTAL						
2006–07	91 132	24 725	328 289 023	821 572	3 177 915	3.9
2007–08	84 118	24 158	321 725 808	893 185	3 143 140	3.5
2008–09	81 899	24 863	312 987 692	831 684	3 008 170	3.6
2009–10	80 872	25 696	303 385 373	864 950	3 031 558	3.5
2010–11(d)	82 066	23 405	324 612 731	773 732	2 137 920	2.8
2010–11						
Pasture for grazing(e)	61 824	7 217	299 031 238	245 448	630 025	2.6
Pasture for hay	16 060	1 940	549 522	35 727	95 846	2.7
Pasture for seed production	888	477	83 579	24 470	93 574	3.8
Cereal crops for hay	4 551	223	260 338	4 382	11 022	2.5
Cereal crops for grain or seed	13 277	574	9 524 356	23 907	51 850	2.2
Rice	20	20	1 285	1 285	^ 11 155	8.7
Sugar cane	3 789	1 377	322 844	129 462	459 405	3.5
Cotton	96	75	46 271	27 454	92 846	3.4
Other broadacre crops nec	8 774	769	2 568 408	31 753	73 060	2.3
Fruit trees, Nut trees and Plantation or Berry fruits	6 221	3 608	95 544	58 699	171 061	2.9
Vegetables for human consumption	4 762	4 020	94 332	84 152	259 763	3.1
Vegetables for seed	586	256	4 965	2 305	5 020	2.2
Nurseries, Cut Flowers and Cultivated Turf	2 739	2 293	13 933	10 952	47 169	4.3
Grapevines	3 683	2 769	71 900	57 679	52 378	0.9

^ estimate has a relative standard error of 10% to less than 25% and should be used with caution

(a) The number of agricultural businesses and the area under pasture or crop are included for irrigation crop categories where available. See the Explanatory Notes for further information.

(b) Total does not equal the sum as many establishments grow or irrigate more than one crop or pasture.

(c) Total includes other pastures or crops not elsewhere classified.

(d) Non-MDB region based on geocoded data for 2010-11. Refer to the Explanatory Notes for further information.

(e) From 2010-11 'Pasture for grazing' includes all pasture, whereas previously data was based upon improved pasture only. See Explanatory Notes for further information.

CHAPTER 3 WATER SOURCES

SOURCES OF AGRICULTURAL WATER

Australia

In 2010-11, 29% of Australia's agricultural water came from irrigation channels, and 27% was sourced from rivers, creeks and lakes. Around 21% of agricultural water came from groundwater, whilst farm dams and tanks accounted for 18% of agricultural water.

State/Territory

Irrigation channels were the major source of agricultural water in Victoria and New South Wales in 2010-11, with 46% and 38% of agricultural water coming from these respectively.

Farm dams and tanks was the main source of water in Tasmania (45%) and Queensland (31%). While groundwater was the main source in the Northern Territory (67%), South Australia (53%) and Western Australia (37%).

In the Australian Capital Territory, 55% of water was sourced from rivers, creeks and lakes.

Murray–Darling Basin

In 2010-11, irrigation channels were the major source of water for agriculture in the Murray-Darling Basin, accounting for 35% of agricultural water sourced in the region. Rivers, creeks and lakes were the next biggest source at 33%, followed by farm dams and tanks at 17%. Outside the Murray-Darling Basin, groundwater was the major source of water for agriculture at 38%.

3.1 SOURCES OF AGRICULTURAL WATER, by State and Territory—2010–11

	NSW	*Vic.*	*Qld*	*SA*	*WA*	*Tas.*	*NT*	*ACT*	*Australia*
	ML	ML	ML	ML	ML	ML	ML	ML	ML
Irrigation channels	1 118 708	599 330	373 595	26 798	87 138	11 369	*3	—	2 216 942
Farm dams and tanks	394 649	154 301	603 586	30 575	94 183	90 165	7 181	182	1 374 822
Rivers, creeks and lakes	941 302	278 613	511 229	207 600	19 022	80 149	12 142	317	2 050 372
Groundwater	441 370	191 821	424 561	372 545	128 290	12 124	40 629	14	1 611 355
Town or country reticulated mains supply	21 988	23 726	5 613	38 556	13 502	2 234	30	37	105 686
Recycled or reused water from off farm sources	56 792	39 613	32 877	9 859	1 848	^3 306	^270	28	144 592
Other	7 327	12 945	8 442	13 096	3 125	^1 853	^45	—	46 832
Total all sources(a)	**2 982 135**	**1 300 349**	**1 959 903**	**699 029**	**347 109**	**201 199**	**60 300**	**578**	**7 550 601**

^ estimate has a relative standard error of 10% to less than 25% and should be used with caution

* estimate has a relative standard error of 25% to 50% and should be used with caution

— nil or rounded to zero (including null cells)

(a) Where figures have been rounded, discrepancies may occur between sums of the component items and totals.

3.2 SOURCES OF AGRICULTURAL WATER, by Murray–Darling Basin—2010–11(a)

	MDB	*Non-MDB*	*Total*
	ML	ML	ML
Irrigation channels	1 705 363	511 579	2 216 942
Farm dams and tanks	824 051	550 771	1 374 822
Rivers, creeks and lakes	1 572 513	477 860	2 050 372
Groundwater	569 717	1 041 638	1 611 355
Town or country reticulated mains supply	40 246	65 440	105 686
Recycled or reused water from off farm sources	75 457	69 135	144 592
Other	27 589	19 242	46 832
Total all sources(b)	**4 814 935**	**2 735 666**	**7 550 601**

(a) MDB region for 2010-11 based on geocoded data. Refer to the Explanatory Notes for further information.

(b) Where figures have been rounded, discrepancies may occur between sums of the component items and totals.

EXPLANATORY NOTES

INTRODUCTION

1 This publication contains estimates on water use on Australian farms collected in the 2010-11 Agricultural Census.

2 Data at sub-state geographies such as Natural Resource Management (NRM) region, Statistical Division (SD), Statistical Local Area (SLA), Statistical Area 4 (SA4), Statistical Area 2 (SA2), River Basin and Drainage Division geographical levels will be released as separate datacubes attached to this publication in October 2012.

GENERAL

3 The Agricultural Census is conducted once every five years, with the Agriculture and Resource Management Survey (ARMS) and the Agricultural Survey (AS) conducted in alternate years between the Censuses. The main objective of the Agricultural Census is to provide benchmark information on the agriculture sector for small geographic areas. The 2010-11 Agricultural Census provides estimates for a range of agricultural commodity items, including broadacre cropping, horticultural production, livestock and water use.

4 Where figures have been rounded, discrepancies may occur between sums of the component items and totals.

SCOPE AND COVERAGE

5 The scope of the 2010-11 Agricultural Census included all businesses undertaking agricultural activity recorded on the ABS Business Register (ABSBR) above a minimum size cut-off of $5,000.

6 The measure of size was based on the ABS' Estimated Value of Agricultural Operations (EVAO) or a derived value based on Business Activity Statement (BAS) turnover if EVAO was not available.

7 While the ABSBR does not include all agricultural businesses in Australia, it provides improved coverage from the former ABS maintained Agricultural Survey frame, as most businesses and organisations in Australia need to obtain an Australian Business Number (ABN) from the ABR for their business operations. The Australian Business Register (ABR)-based register is also more up-to-date as it excludes agricultural businesses with cancelled ABNs and incorporates regularly updated information on agricultural businesses from the ABR and ATO.

8 For the 2010-11 Agricultural Census, a response rate of 88% was achieved from an in-scope population of approximately 165,000 agricultural businesses. This was the first agricultural collection to use an e-form, and the e-form achieved a take up rate of 11%.

AGRICULTURAL BUSINESSES AND AREA UNDER PASTURE OR CROP

9 The number of agricultural businesses and the area under pasture or crop are included for irrigation crop categories where these are available. In some cases, the number of agricultural businesses and the area under pasture or crop are not available or may not be directly comparable with the categories used for irrigated crops. More information is available upon request.

10 In this publication 'Pasture for grazing' refers to all pastures, whereas previous releases have included only improved pastures. As such, 'Pastures for grazing' data for 2010-11 may not be directly comparable to previous years.

11 The number of businesses in this publication refers to the total number of businesses that operated during the 2010-11 year. More info is available upon request.

MURRAY-DARLING BASIN GEOGRAPHY

12 The Murray-Darling Basin (MDB) data used in *Water Use on Australian Farms*, for 2010-11 and 2005-06 (cat. no. 4618.0) were derived from geocoded data. However, data for the MDB region in other survey years were derived from a concordance of NRM regions falling mostly within the MDB region. Therefore, there may be small differences when comparing these data to 2006-07, 2007-08, 2008-09 and 2009-10 MDB data.

RELIABILITY OF ESTIMATES (SAMPLE ERROR)

13 The estimates in this publication are based on information obtained from the agricultural businesses that responded to the Agricultural Census. However, since not all of the businesses that were selected provided data, the estimates are subject to sampling variability; that is, they may differ from the figures that would have been produced if all businesses had provided data. One measure of the likely difference is given by the standard error (SE) which indicates the extent to which an estimate might vary by chance because only a sample was taken. There are about two chances in three that a 'sample' estimate will differ by less than one SE from the figure that would have been obtained if all businesses had responded, and about nineteen chances in twenty that the difference will be less than two SEs.

14 In this publication, 'sampling' variability of the estimates is measured by the relative standard error (RSE) which is obtained by expressing the SE as a percentage of the estimate to which it refers.

15 Most published national estimates have RSEs less than 5%. For some states with limited production of certain commodities, RSEs are greater than 10%. Estimates that have an estimated RSE between 10% and 25% are annotated with the symbol '^'. These estimates should be used with caution as they are subject to sampling variability too high for some purposes. Estimates with an RSE between 25% and 50% are annotated with the symbol '*', indicating that the estimate should be used with caution as it is subject to sampling variability too high for most practical purposes. Estimates with an RSE greater than 50% are annotated with the symbol '**' indicating that the sampling variability causes the estimates to be considered too unreliable for general use. Separate indication of the RSEs of all estimates is available on request.

16 A table with RSEs for selected commodities follows:

RELATIVE STANDARD ERRORS OF SELECTED ESTIMATES, by State and Territories—2010-11

	NSW	*Vic.*	*QLD*	*SA*	*WA*	*Tas.*	*NT*	*ACT*	*Aust.*
	%	%	%	%	%	%	%	%	%
Total area irrigated (ha)	0.8	1.0	1.0	0.8	1.6	1.1	3.4	2.6	0.4
Total volume applied (ML)	0.9	1.2	1.3	0.9	1.6	1.7	2.8	3.1	0.5
Pasture for grazing, area irrigated (ha)	1.9	0.9	2.5	2.0	3.4	1.5	15.7	—	0.7
Pasture for grazing, volume applied (ML)	2.2	1.1	2.7	2.2	2.7	2.0	17.6	—	0.7
Rice, area irrigated (ha)	1.5	10.7	6.5	—	27.9	—	—	—	1.4
Rice, volume applied (ML)	1.6	12.3	6.2	—	29.5	—	—	—	1.6
Sugar cane, area irrigated (ha)	13.9	—	1.3	—	27.0	—	—	—	1.3
Sugar cane, volume applied (ML)	14.0	—	2.2	—	32.4	—	—	—	2.2
Cotton area irrigated (ML)	1.5	—	2.2	—	35.9	—	—	—	1.4
Cotton volume applied (ha)	1.5	—	2.4	—	31.1	—	—	—	1.4

— nil or rounded to zero (including null cells)

ACKNOWLEDGMENT

17 ABS publications draw extensively on information provided freely by individuals, businesses, governments and other organisations. Their continued cooperation is very much appreciated: without it, the wide range of statistics published by the ABS would not be available. Information received by the ABS is treated in strict confidence as required by the *Census and Statistics Act 1905*.

ACKNOWLEDGMENT *continued*

18 The summary of the Australian Climate Conditions in 2010-11 is compiled for the ABS by the Australian Bureau of Meteorology.

RELATED PUBLICATIONS

19 A range of publications relevant to the Agriculture sector are produced by the ABS, including:

- *Principal Agricultural Commodities, Australia, Preliminary* (cat. no. 7111.0)
- *Value of Principal Agricultural Commodities Produced, Australia, Preliminary* (cat. no. 7501.0)
- *Stocks of Grain Held by Bulk Handling Companies and Grain Traders, Australia* (cat. no. 7122.0.55.001)
- *Wheat Stocks and Exports, Australia* (cat. no. 7307.0)
- *Livestock Products, Australia* (cat. no. 7215.0)
- *Livestock and Meat, Australia* (cat. no. 7218.0.55.001)
- *Agricultural Commodities, Australia* (cat. no. 7121.0)
- *Gross Value of Irrigated Agricultural Production* (cat. no. 4610.0.55.008)
- *Value of Agricultural Commodities Produced, Australia* (cat. no. 7503.0)
- *Vineyards Estimates, Australia* (cat. no. 1329.0.55.002)

20 For more information on other products released by the ABS, please refer to the ABS website <http://www.abs.gov.au>. The ABS also issues a daily Release Advice on the web site which details products to be released in the week ahead.

APPENDIX 1 CLIMATE CONDITIONS

AUSTRALIAN CLIMATE CONDITIONS-2010-11

One of the wettest periods in Australia was recorded in 2010-11, as a result of a very strong La Niña event in the Pacific Ocean, which ran from mid-2010 until autumn 2011 (before redeveloping later in 2011). Every month from September 2010 to March 2011 was much wetter than normal, with March and February ranking as Australia's third and fifth wettest months on record, respectively. The extreme wet conditions ended in March 2011 with rainfall generally close to normal in the April-June 2011 quarter.

The full 12-month period from July 2010 to June 2011 was the second wettest on record, with the national area-averaged total of 827 mm (78% above the 1961-1990 mean), just 4 mm behind the record set in 1973-74. It was the wettest such period on record for the Northern Territory (1,087 mm, 101% above normal) and Victoria (975 mm, 48% above normal), with South Australia (98% above normal), Queensland (82% above normal) and Western Australia (76% above normal) all ranking second. Tasmania (12% above normal) was the only state where statewide rainfall was close to normal.

Detailed spatial analysis shows that rainfall for the 12 months from July 2010 to June 2011 was above the 1961-1990 normal throughout almost all of the continent, except for the southwest corner of Western Australia south of a line extending from Geraldton to Kalgoorlie. There were also small areas where rainfall was slightly below normal on the New South Wales coast south of Sydney, and in southwestern Tasmania. Over large parts of the outback rainfall was more than double normal; these included the southern and central Northern Territory, the Kimberley and eastern border areas in Western Australia, northern South Australia, and the west of Queensland and New South Wales. In parts of far southwest Queensland and northeast South Australia, normally one of the driest parts of Australia, rainfall in 2010-11 was three to four times the average.

Record 12-month rainfalls were set in many different parts of Australia. These included: the Top End of the Northern Territory; areas near the southern Northern Territory/Queensland border; the Kimberley and the west Gascoyne region in Western Australia; the Nullarbor; much of the western half of Victoria; extending into southwest New South Wales; large areas of inland southern Queensland; and parts of coastal and northern Queensland. These rainfalls resulted in widespread and severe flooding. The most damaging floods occurred in southeast and central Queensland and in northern Victoria, but the majority of rivers in eastern Australia (including northern Tasmania) reached major flood level at least once during the year, and there were also severe floods around Carnarvon and in the Kimberley region in Western Australia.

In total contrast, the southwest of Western Australia was severely affected by drought. It was the second-driest 12-month period on record for the region (27% below normal), despite some moderation in conditions in May and June 2011. Record lows were set locally around Perth and in the far southwest, while parts of the southern wheatbelt received only about half their usual rainfall for the year.

AUSTRALIAN CLIMATE CONDITIONS-2010-11 continued

As a result of extensive rain and abnormal cloud cover, particularly in inland Australia, daytime maximum temperatures were well below normal over most areas. Averaged over the continent, maximum temperatures for the July 2010-June 2011 period were 0.88°C below the 1961-1990 average, making it the coolest 12 months in the post-1950 period. Records were also set in the Northern Territory (1.66°C below average) and Queensland (1.07°C below average). Maximum temperatures were at least 1°C below average over an area which encompassed most of the outback and extended east to cover most of inland Queensland, and were 2-3°C below average over much of the southern half of the Northern Territory, the east Kimberley, and parts of central Queensland. It was the coolest year on record over much of the Northern Territory and Kimberley. The one period when temperatures were consistently above average was late January and early February, when a significant heatwave affected much of the southern half of Australia, including a record run of seven consecutive days over 30°C in Sydney. Whilst 2010-11 was a particularly extreme example, below-normal maximum temperatures are typical of strong La Niña events.

As for rainfall, maximum temperatures in western parts of Western Australia contrasted with those in the remainder of the country. They were more than 2°C above average around Shark Bay and records were set along much of the west coast from Carnarvon southwards; a major contributing factor was unusually warm ocean temperatures along this coast which resulted in a weakening of the usual moderating influence of sea breezes. The only other regions where maximum temperatures for the 12 months were above normal, mostly by small margins, were Cape York Peninsula, and parts of Tasmania and coastal New South Wales.

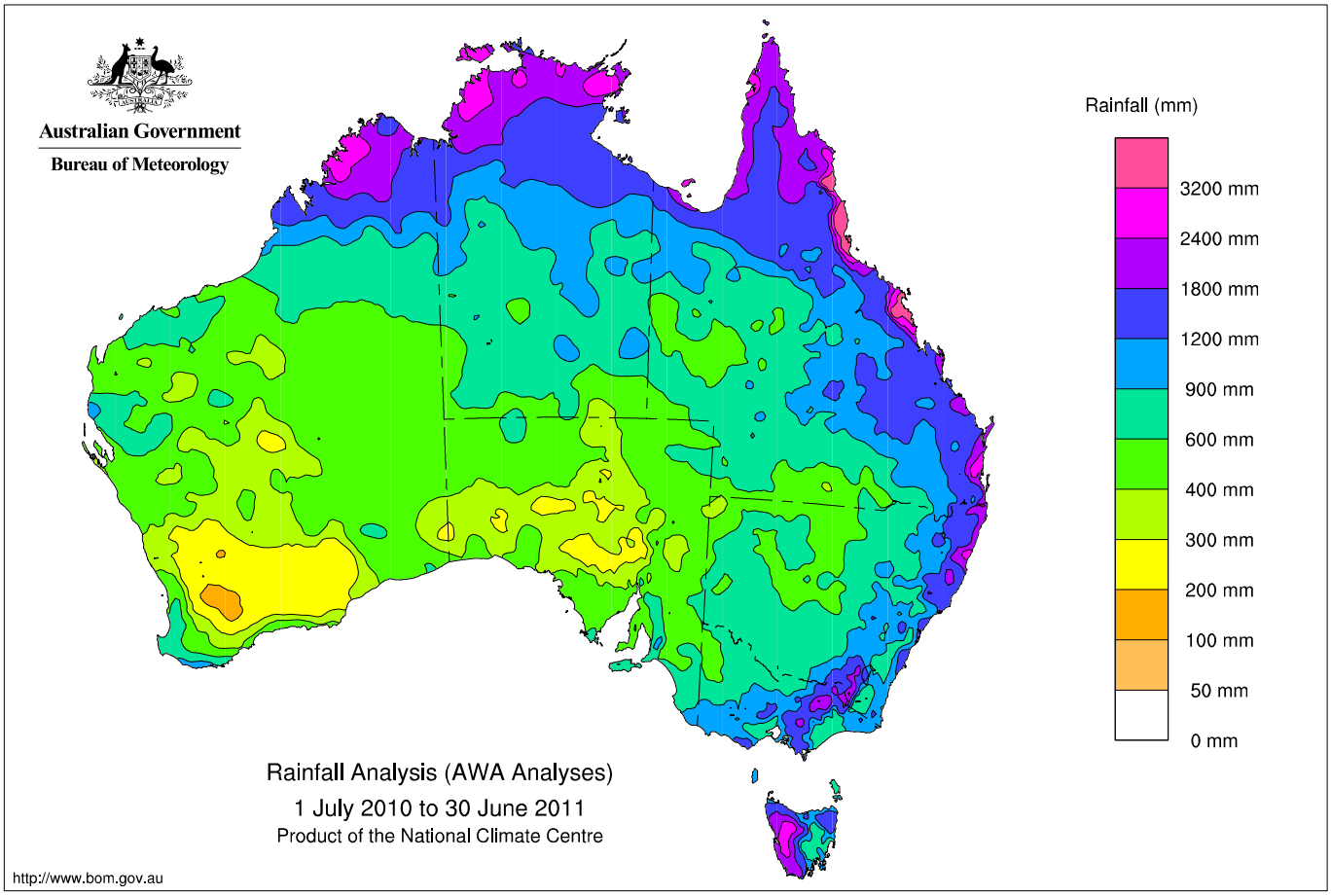
Overnight minimum temperatures were close to normal over most of the continent, except in the Northern Territory and the far west of Queensland where they were generally below normal. The national mean was 0.04°C below the 1961-1990 average. There were only a few areas where minimum temperatures were not within 1°C of normal; they were more than 1°C below normal in parts of the central Northern Territory, and more than 1°C above normal on the west coast between Karratha and Geraldton, and locally in far north Queensland. A few records were set in the far west and on the Torres Strait Islands. Overnight temperatures were especially warm in the northern tropics in July and August 2010, including a national July record of 26.9°C at Cape Don in the Northern Territory; conversely, they were very cool through the tropics in May and June 2011 with numerous site records set.

Tropical cyclone activity in the Australian region during the period was close to normal. However, Cyclone Yasi, which crossed the Queensland coast near Mission Beach in early February, was the most intense cyclone to make landfall on the east coast since at least 1918, and caused widespread damage.

AUSTRALIAN CLIMATE CONDITIONS-2010-11

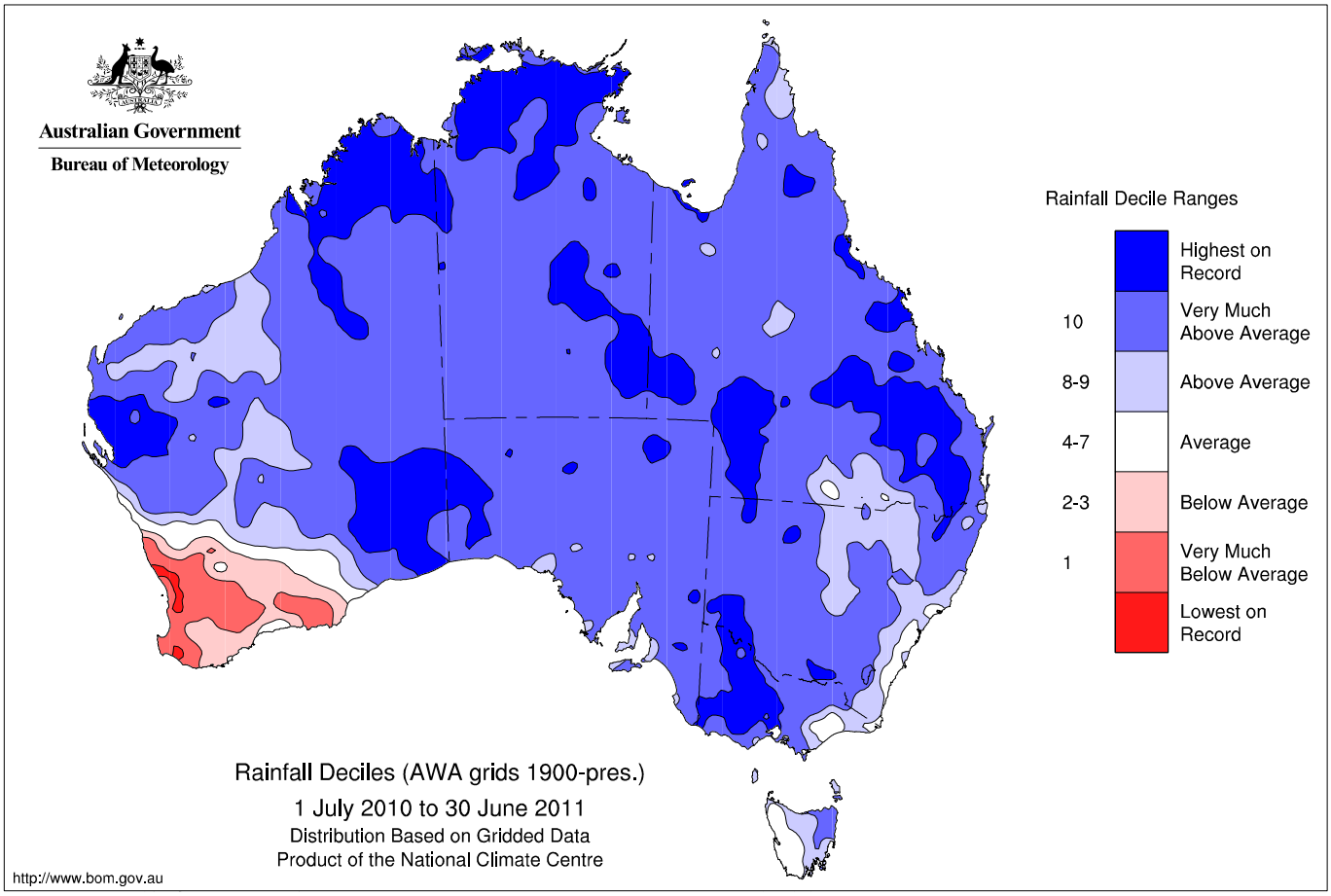
continued

A1.1 AUSTRALIAN RAINFALL ANALYSIS, 2010-11



AUSTRALIAN CLIMATE CONDITIONS-2010-11
continued

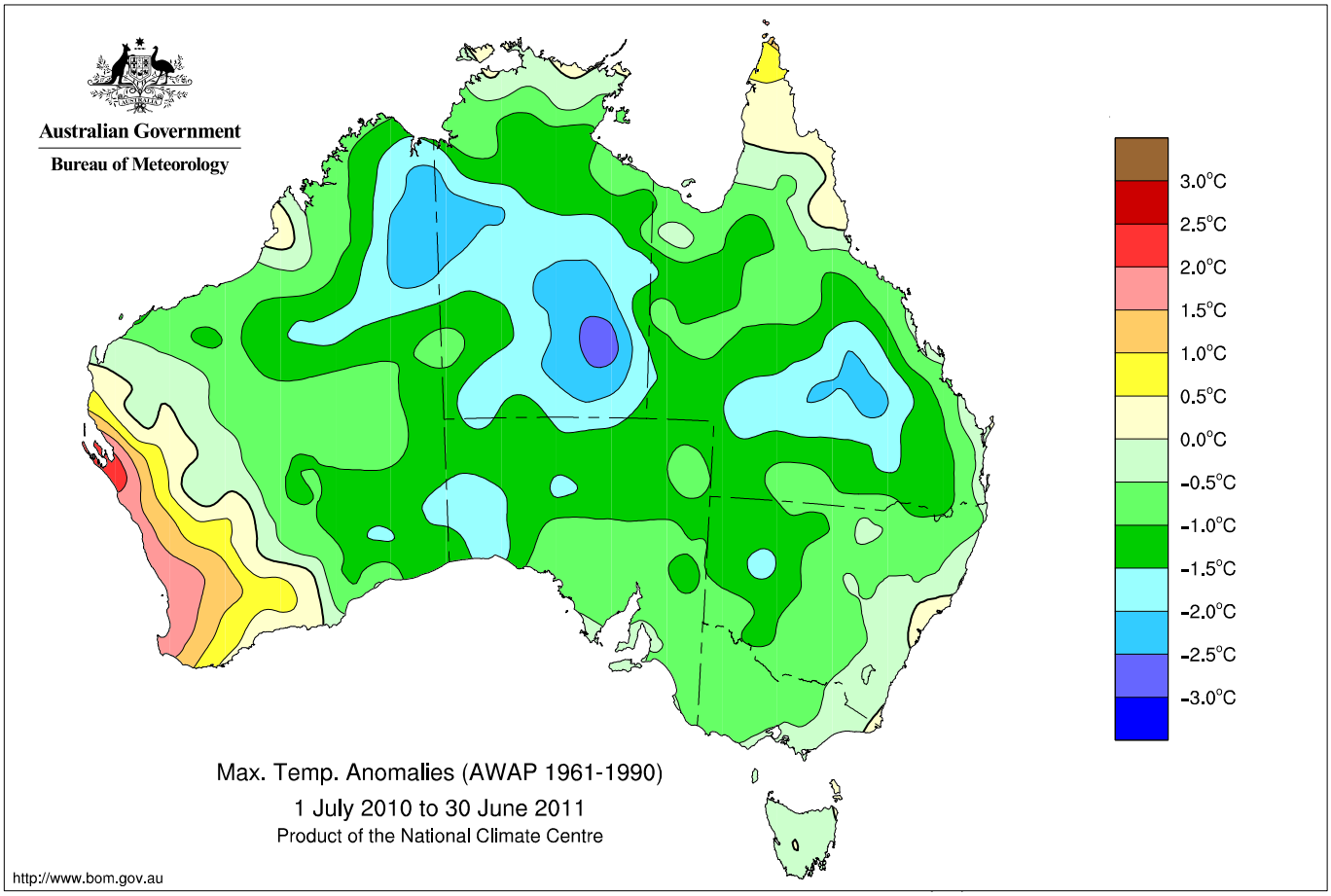
A1.2 AUSTRALIAN RAINFALL DECILES, 2010-11



 ID code: IGMapAWAPDeciles Issued: 20/04/2012

AUSTRALIAN CLIMATE CONDITIONS-2010-11
continued

A1.3 MAXIMUM TEMPERATURE ANOMALY (C°), 2010-11



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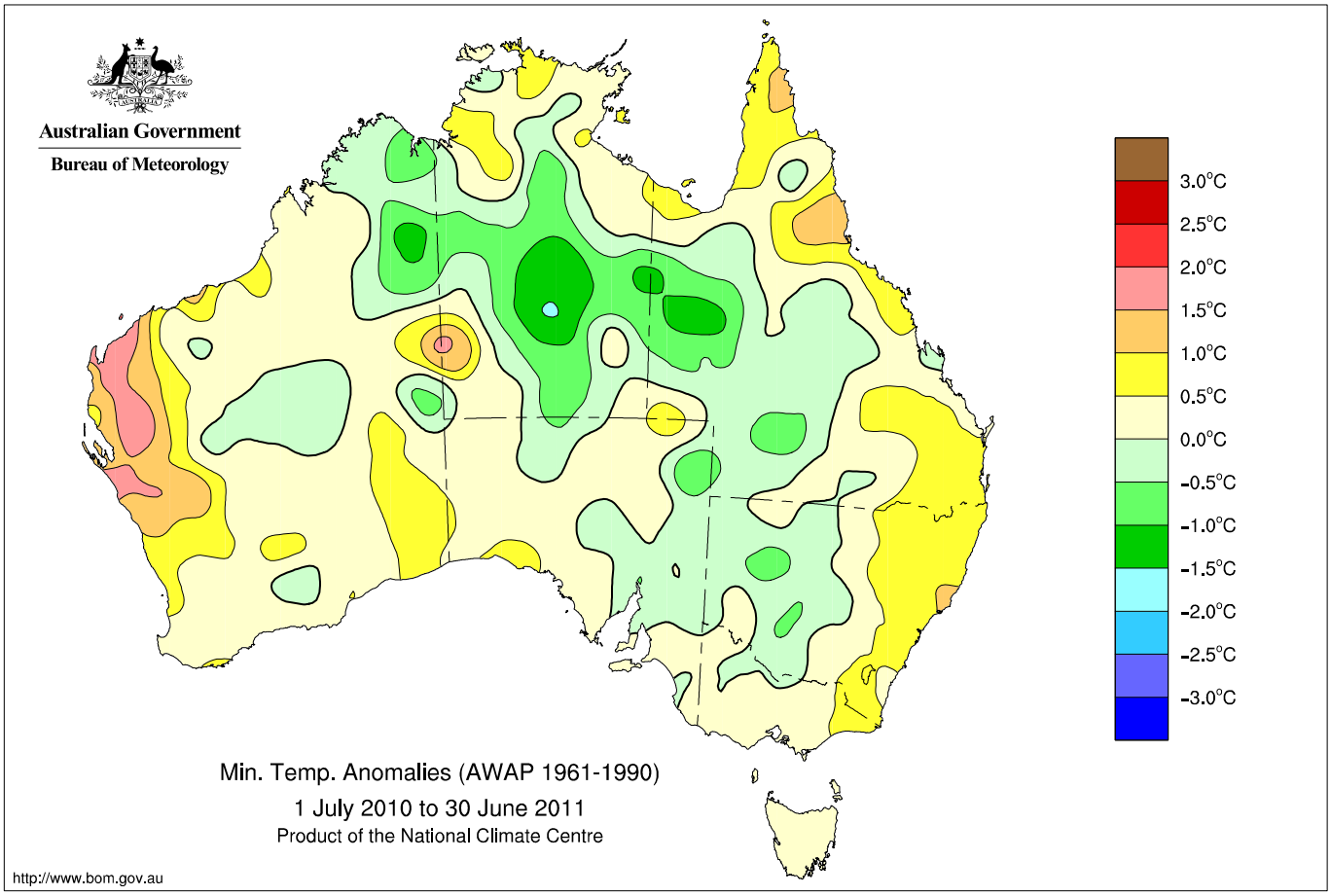
AUSTRALIAN CLIMATE CONDITIONS-2010-11
continued

A1.4 MINIMUM TEMPERATURE ANOMALY (C°), 2010-11



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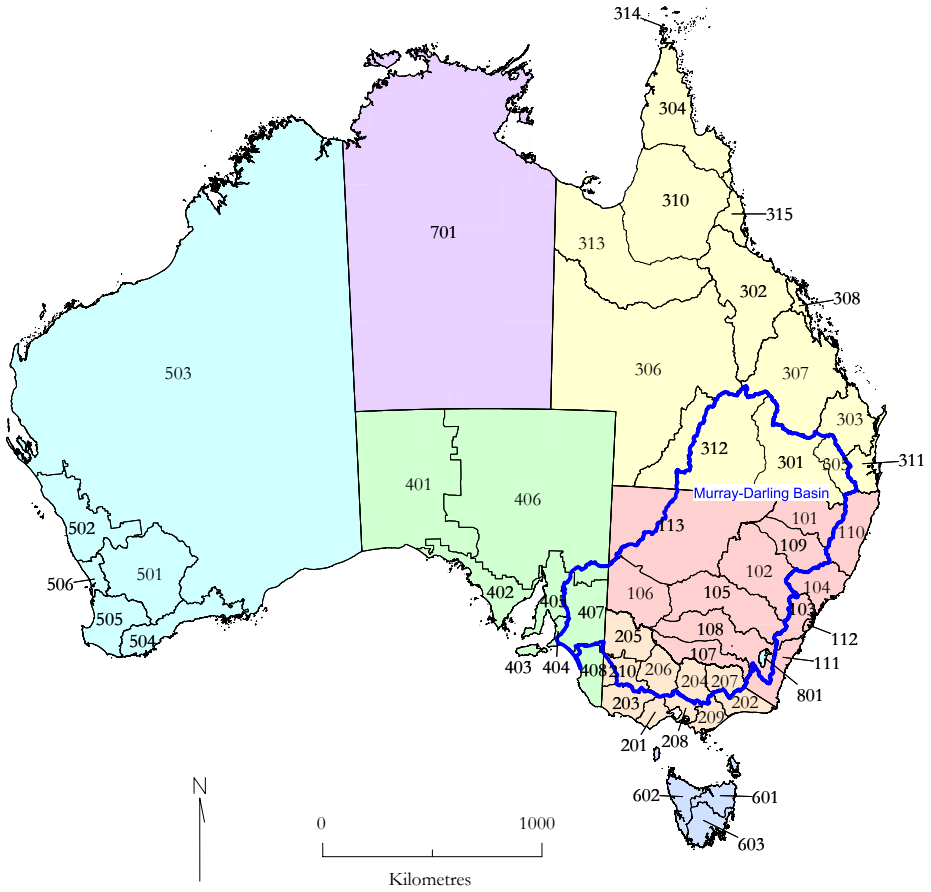

NRM Region *

NSW
- 101: Border Rivers-Gwydir
- 102: Central West
- 103: Hawkesbury-Nepean
- 104: Hunter-Central Rivers
- 105: Lachlan
- 106: Lower Murray-Darling
- 107: Murray
- 108: Murrumbidgee
- 109: Namoi
- 110: Northern Rivers
- 111: Southern Rivers
- 112: Sydney Metro
- 113: Western

VIC
- 201: Corangamite
- 202: East Gippsland
- 203: Glenelg Hopkins
- 204: Goulburn Broken
- 205: Mallee
- 206: North Central
- 207: North East (VIC)
- 208: Port Phillip and Westernport
- 209: West Gippsland
- 210: Wimmera

QLD
- 301: Border Rivers Maranoa-Balonne
- 302: Burdekin
- 303: Burnett Mary
- 304: Cape York
- 305: Condamine
- 306: Desert Channels
- 307: Fitzroy
- 308: Mackay Whitsunday
- 310: Northern Gulf
- 311: South East (QLD)
- 312: South West (QLD)
- 313: Southern Gulf
- 314: Torres Strait
- 315: Wet Tropics

SA
- 401: Alinytjara Wilurara
- 402: Eyre Peninsula
- 403: Kangaroo Island
- 404: Adelaide and Mount Lofty Ranges
- 405: Northern and Yorke
- 406: SA Arid Lands
- 407: SA Murray Darling Basin
- 408: South East (SA)

WA
- 501: Avon
- 502: Northern Agricultural Region
- 503: Rangelands (WA)
- 504: South Coast Region
- 505: South West Region
- 506: Swan

TAS
- 601: North (TAS)
- 602: North West (TAS)
- 603: South (TAS)

NT
- 701: Northern Territory

ACT
- 801: ACT

*Numbers used are NRM codes.
Source: Department of the Environment and Heritage - 2008.

GLOSSARY

Agricultural business	A business which is engaged in agricultural activities above a minimum size ($5,000, based on EVAO or a derived value based on Business Activity Statement (BAS) Turnover). Agricultural business counts in this publication refer to all businesses that operated during the 2010-11 year.
Application rate	The rate at which water is applied to an area or crop. Measured in megalitres per hectare, application rate is calculated by dividing the total area of interest by the total volume applied to the area.
Area of agricultural land	Refers to the area of agricultural holding of in-scope agricultural businesses. This is not equal to the area under pasture or crop as not all land on agricultural holdings is under pasture or crop, for example sheds or roads.
Estimated value of agricultural operations (EVAO)	An estimation of the value of agricultural activity undertaken by an agricultural business. Three-year average weighted prices are applied to livestock turnoff and livestock numbers on the farm, and to area and production data for crops. The resultant aggregation of these commodity values is EVAO. It is not an indicator of the value of receipts of individual farms, but rather, an indicator of the extent of agricultural activity.
Gigalitre	One thousand million litres.
Megalitre	One million litres.
Pasture for grazing	Includes all areas used for grazing. In previous publications, this has only included improved pastures.

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