

**Senate Standing Committee on Environment, Communications and the Arts  
Legislation Committee**

Answers to questions on notice

**Environment, Water, Heritage and the Arts portfolio**

Budget Estimates, May 2010

**Outcome:** 1 **Question No:** 10  
**Program:** 1.1  
**Division/Agency:** Bureau of Meteorology  
**Topic:** National average temperature measurement  
**Hansard Page ECA:** 36 (26/5/10)

**Senator ABETZ asked:**

**Dr Ayers**—We have selected 100 sites that are used to create the national average. The reason that they are selected is that they are sites that have records longer than a minimum of 30 years. This is the criterion that is used by the Bureau of Meteorology and is also recognised and used by the World Meteorological Organisation to define a length of record that can be considered useful for climate purposes rather than daily weather purposes. So paying attention to high quality records in regions that are not influenced, for example, by urban influences, provides the rationale for selecting a sufficient number of sites of high quality to provide an annual average. That is the process.

...

**Senator ABETZ**—Out of the selected 100 sites, could you take it on notice and provide a list of those 100 sites and those sites which are not used?

**Dr Ayers**—The sites are publicly available. They are on the bureau's website. I am happy to reply on notice.

**Senator ABETZ**—If you could, please. I do not want the reading out of a list of 100 sites.

**Answer:**

The Bureau of Meteorology uses 99 rural or semi-rural stations in assessing the national annual average temperature. A list of these stations is provided below:

**Non-urban annual high quality stations:**

Station name	Station no.	Latitude (°S)	Longitude (°E)	Elevation (m)	Start year
ALBANY AIRPORT	9741	-34.94	117.8	68	1910
ALICE SPRINGS AIRPORT	15590	-23.8	133.89	546	1910
AMBERLEY	40004	-27.63	152.71	27	1913
ARARAT PRISON	89085	-37.28	142.98	295	1910
ATHERTON SHIRE COUNCIL	31193	-17.26	145.48	752	1910
AYR DPI RESEARCH	33002	-19.62	147.38	12	1910
BARCALDINE POST OFFICE	36007	-23.55	145.29	266.9	1913
BOLLON	44010	-28.03	147.48	182.9	1910
BOULIA AIRPORT	38003	-22.91	139.9	161.8	1910
BOURKE AIRPORT	48245	-30.04	145.95	107.3	1910
BOWEN AIRPORT	33257	-20.02	148.22	5	1910

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Station name	Station no.	Latitude (°S)	Longitude (°E)	Elevation (m)	Start year
BRIDGETOWN POST OFFICE	9510	-33.96	116.14	149.9	1910
BROOME AIRPORT	3003	-17.95	122.23	7	1910
CAIRNS AIRPORT	31011	-16.87	145.75	3	1910
CAPE BORDA	22801	-35.75	136.59	143	1910
CAPE BRUNY	94198	-43.49	147.14	59.7	1924
CAPE LEEUWIN	9518	-34.37	115.13	13	1910
CAPE MORETON LIGHTHOUSE	40043	-27.03	153.47	99.9	1913
CAPE NATURALISTE	9519	-33.54	115.02	109	1910
CAPE NORTHUMBERLAND	26005	-38.06	140.67	5	1910
CAPE OTWAY LIGHTHOUSE	90015	-38.86	143.51	82	1910
CARDWELL	32004	-18.26	146.02	5.7	1910
CARNARVON AIRPORT	6011	-24.89	113.67	4	1910
CASHMORE AIRPORT	90171	-38.32	141.47	80.9	1910
CEDUNA	18012	-32.13	133.71	15.3	1910
CHARLEVILLE AIRPORT	44021	-26.41	146.26	302.6	1910
CHARTERS TOWERS AIRPORT	34084	-20.04	146.27	290	1910
COBAR	48027	-31.49	145.83	260	1910
COOKTOWN AIRPORT	31017	-15.45	145.19	5.5	1910
COWEAL TOWNSHIP	37010	-19.92	138.12	231.2	1910
COWRA AIRPORT	65091	-33.85	148.65	300	1910
CUNNAMULLA POST OFFICE	44026	-28.07	145.68	188.7	1910
DENILQUIN POST OFFICE	74128	-35.55	144.95	93	1910
DERBY AIRPORT	3032	-17.37	123.66	6.2	1910
EAST SALE AIRPORT	85072	-38.11	147.13	4.6	1910
ESPERANCE	9789	-33.83	121.89	25	1910
GABO ISLAND LIGHTHOUSE	84016	-37.57	149.91	15.2	1910
GEORGETOWN POST OFFICE	30018	-18.29	143.55	291.7	1910
GERALDTON AIRPORT	8051	-28.8	114.7	33	1910
GILES METEOROLOGICAL OFFICE	13017	-25.04	128.29	598	1957
GLADSTONE RADAR	39123	-23.86	151.26	74.5	1910
GLEN INNES AIRPORT	56243	-29.68	151.69	1044.3	1910
GOONDIWINDI AIRPORT	41521	-28.52	150.33	217.6	1910
HALLS CREEK AIRPORT	2012	-18.23	127.66	422	1910
HAY	75031	-34.52	144.85	93.3	1910
HUGHENDEN AIRPORT	30022	-20.82	144.23	315.5	1910
JARRAHWOOD	9842	-33.8	115.66	130	1910
JERRYS PLAINS POST OFFICE	61086	-32.5	150.91	90	1910
KALGOORLIE-BOULDER AIRPORT	12038	-30.78	121.45	365.3	1910
KATANNING COMPARISON	10579	-33.69	117.56	310	1910
KELLERBERRIN	10073	-31.62	117.72	250	1910
KERANG	80023	-35.73	143.92	77.7	1910
KING ISLAND AIRPORT	98017	-39.88	143.88	36.2	1914
LAUNCESTON AIRPORT	91104	-41.54	147.2	170	1910
LAVERTON	87031	-37.86	144.75	16	1910

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LONGREACH AIRPORT	36031	-23.44	144.28	192.2	1910
LOW HEAD	91293	-41.06	146.79	3	1910
MARBLE BAR COMPARISON	4020	-21.18	119.75	182.3	1910
MEEKATHARRA AIRPORT	7045	-26.61	118.54	517	1910
MERREDIN	10092	-31.48	118.28	315	1913
MILDURA AIRPORT	76031	-34.23	142.08	50	1910
MILES	42112	-26.66	150.18	304.8	1910
MORUYA HEADS	69018	-35.91	150.15	17	1910
MOUNT GAMBIER AIRPORT	26021	-37.75	140.77	63	1910
MUDGEES AIRPORT	62101	-32.56	149.62	471	1910
NEWMAN AIRPORT	7176	-23.42	119.8	524	1916
NHILL	78031	-36.34	141.64	133	1910
NORMANTON AIRPORT	29063	-17.69	141.07	18.4	1910
OMELO	83025	-37.1	147.6	685	1910
PALMERVILLE	28004	-16	144.08	203.8	1910
POINT PERPENDICULAR LIGHT.	68034	-35.09	150.8	85	1910
PORT HEDLAND AIRPORT	4032	-20.37	118.63	6.4	1913
RAYVILLE PARK	21133	-33.77	138.22	109.1	1910
RICHMOND POST OFFICE QLD.	30045	-20.73	143.14	211.1	1910
RICHMOND RAAF N.S.W.	67105	-33.6	150.78	19	1910
ROBE	26026	-37.16	139.76	3.3	1910
ROCKHAMPTON AIRPORT	39083	-23.38	150.48	10	1910
ROEBOURNE	4035	-20.78	117.15	12	1910
ROMA AIRPORT	43091	-26.55	148.78	303.2	1910
ROTTNEST ISLAND	9193	-32.01	115.5	43.1	1910
RUTHERGLEN RESEARCH	82039	-36.11	146.51	167.6	1910
SANDY CAPE LIGHTHOUSE	39085	-24.73	153.21	99.1	1910
SOUTHERN CROSS	12074	-31.23	119.33	355	1910
STRAHAN AIRPORT	97072	-42.16	145.29	20	1910
STRATHALBYN RACECOURSE	24580	-35.29	138.89	62	1910
SWAN HILL AIRPORT	77094	-35.38	143.54	71	1910
TARCOOLA AIRPORT	16098	-30.71	134.58	123	1922
TENNANT CREEK AIRPORT	15135	-19.64	134.18	375.7	1911
TENTERFIELD	56032	-29.05	152.02	838	1910
TIBOOBURRA POST OFFICE	46037	-29.44	142.01	183	1910
WAGGA WAGGA	72150	-35.16	147.46	212	1910
WALGETT AIRPORT	52088	-30.04	148.12	133	1910
WANDERING	10917	-32.67	116.67	275	1910
WILCANNIA	46043	-31.56	143.37	75	1910
WILSONS PROMONTORY LIGHT.	85096	-39.13	146.42	88.7	1910
WOOMERA AIRPORT	16001	-31.16	136.8	166.6	1950
YAMBA PILOT STATION	58012	-29.43	153.36	29	1910
YONGALA	19062	-33.03	138.75	515	1910
YORK	10311	-31.9	116.77	179	1910

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The full Australian weather observing network consists of approximately 6200 stations reporting rainfall, and approximately 770 location recording temperature. For expediency, these have not been listed here, but can be obtained from the Bureau of Meteorology website [www.bom.gov.au](http://www.bom.gov.au).

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<b>Outcome:</b>	1	<b>Question No:</b>	11
<b>Program:</b>	1.1		
<b>Division/Agency:</b>	Bureau of Meteorology		
<b>Topic:</b>	National Plan for Environmental Information		
<b>Hansard Page ECA:</b>	40 (26/5/10)		

**Senator BIRMINGHAM asked:**

**Senator BIRMINGHAM**—In relation to the additional funding provided to the bureau in this area, large amounts of it appear to be capital funding as well. What are the capital expenses related to development of this plan?

**Dr Vertessy**—They fall at least into two categories that I can think of. The first will be computing infrastructure, so servers, disk storage, et cetera, that would prepare us to accept large influxes of new data. The second would be in the capitalisation of staff expenses to actually build the information system, as it were. There may be others, but I cannot think of them right at the moment.

**Senator BIRMINGHAM**—They run into the sums of a couple of million dollars out into the forward years. I understand there are start-up costs for you, but it is the ongoing capital costs that are of interest.

**Answer:**

The capital component, including capitalised employee entitlements, over the four-year National Plan for Environmental Information program is budgeted at \$7.615 million. The budgeted expenditures for each of the next four years are \$1.941 million, \$2.027 million, \$2.258 million and \$1.389 million.

These funds will be used to:

- extend the operational computing infrastructure at the Canberra Data Centre, providing more computational power, more disk space, more web servers, and additional enterprise-grade software;
- cover the cost of 2.3 Bureau employees and 3.7 private industry contractors involved in the build of the Environmental Information System outlined in the plan; and
- cover the cost of an office fit-out extension to accommodate new staff and contractors involved in the project.

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<b>Outcome:</b>	1	<b>Question No:</b>	12
<b>Program:</b>	1.1		
<b>Division/Agency:</b>	Bureau of Meteorology		
<b>Topic:</b>	Bureau of Meteorology Training Centre staff		
<b>Hansard Page ECA:</b>	41 (26/5/10)		

**Senator MARSHALL asked:**

**Dr Ayers**—Yes. To be a forecaster in the bureau, you have to have a science degree with second-year maths and physics, and then do a graduate diploma through the Bureau of Meteorology Training Centre.

...

**Senator MARSHALL**—How many people are employed by the training college?

**Dr Ayers**—How many people are employed in that area? That is not a point of detail that I have with me.

**Answer:**

As at 15 June 2010, the Bureau of Meteorology Training Centre employed 29 staff.