



# Truffles and Mushrooms

(Consulting Ltd)

Climatic information for some areas where  
some edible ectomycorrhizal mushrooms are  
found

**Ian R. Hall**

P.O. Box 268, Dunedin 9054, NEW ZEALAND  
truffle1@trufflesandmushrooms.co.nz  
www.trufflesandmushrooms.co.nz

and

**Allison Frith and Wayne Haslam**

c/o 63 Goolabri Drive, Sutton Park, Sutton  
NSW 2620, AUSTRALIA

April 2017

© Truffles & Mushrooms (Consulting) Ltd

DOI: 10.13140/RG.2.1.3699.8002

## Introduction

The following table provides a rough climatic comparison of some centres adjacent to or with similar climates to where a few of the edible ectomycorrhizal mushrooms fruit:

- Périgord black truffle (*Tuber melanosporum*),
- Italian white truffle (*T. magnatum*),
- Burgundy truffle (*T. aestivum*),
- Bianchetto truffle (*T. borchii*),
- Porcini (*Boletus edulis*),
- Saffron milk cap (*Lactarius deliciosus*)
- Painted bolete (*Suillus lakei*)

This was originally assembled by [Ian R. Hall](#) but later modified to include information from more Australian climate stations by [Allison Frith](#) and with thanks to [Wayne Haslam](#) of the [Australian Truffle Growers Association](#).

Accumulated degree days =  $\sum ((\text{mean monthly temperature} - 10) * \text{days in month})$  omitting months that were negative.

## Origin of the data

Some of the publications and web sites that were useful in preparing the table below are:

- Arléry, R. 1970. The climate of France, Belgium, The Netherlands, and Luxembourg. In: Wallén, C.C., ed. World Survey of Climatology. Vol. 5, Climates of Northern and Western Europe. Elsevier, Amsterdam. Pp. 135–193.
- Australian Bureau of Meteorology. 2012. Climate and past weather. [www.bom.gov.au/climate/averages/](http://www.bom.gov.au/climate/averages/)
- BBC weather. Country guides. [http://news.bbc.co.uk/weather/hi/country\\_guides](http://news.bbc.co.uk/weather/hi/country_guides)
- Cantù, V. 1977. The climate of Italy. In: Wallén, C.C., ed. World Survey of Climatology. Vol. 6, Climates of Central and Southern Europe. Elsevier, Amsterdam. Pp. 127–183.
- Chinamaps.org. 2012. China climatic maps: China Climate Map - average temperature in January, average temperature in July. [www.chinamaps.org/china/china-temperature-map.html](http://www.chinamaps.org/china/china-temperature-map.html)
- China Meteorological Administration. 2012. World weather information service, China. <http://www.worldweather.org/001/m001.htm>
- CIA. 2012. World Fact Book. <https://www.cia.gov/library/publications/the-world-factbook/>
- Climate zone.com. 2012. <http://www.climate-zone.com/>
- Environment Canada. 2012. Canadian Climate Normals or Averages 1971-2000. [http://climate.weatheroffice.gc.ca/climate\\_normals/index\\_e.html](http://climate.weatheroffice.gc.ca/climate_normals/index_e.html)
- Euro Weather. 2012. Climate averages. [www.eurometeo.com/english/climate/](http://www.eurometeo.com/english/climate/)
- Government of Nepal, Weather forecasting division. 2012. Normal (Average) maximum, minimum temperature (°C) and rainfall (mm) through 2000 year. <http://www.mfd.gov.np/pdf/normal2006.pdf>
- Grow Otago. 2012. Climatic tables. [http://growotago.orc.govt.nz/docs/climate\\_tables.html](http://growotago.orc.govt.nz/docs/climate_tables.html)
- Hong Kong Observatory. 2012. Climatological information for China and Mongolia. [www.hko.gov.hk/wxinfo/climat/world/eng/asia/china/china\\_e.htm](http://www.hko.gov.hk/wxinfo/climat/world/eng/asia/china/china_e.htm)
- Instituto de Meteorologia. 2008. Climatological normals [1971-2000]. <http://www.meteo.pt/en/oclima/clima.normais/>
- Meteo-France. 2012. Le réseau des stations météorologiques actuellement en service. <http://climatheque.meteo.fr/aide/climatheque/reseauPostes/>
- Meteorologisk institutt met, Norway. 2012. E.g. Weather statistics for Östra Vi, Gotland (Sweden). [www.yr.no/place/Sweden/Gotland/Östra\\_Vi~2685177/statistics.html](http://www.yr.no/place/Sweden/Gotland/Östra_Vi~2685177/statistics.html)

- MSN. 2012. News and weather. E.g.  
<http://weather.uk.msn.com/local.aspx?wealocations=wc:8562304&q=Langogne%2c+FRA>
- Rebetez, M.; Mayer, H.; Dupont, O.; Schindler, D.; Gartner, K.; Kropp, J.P.; Menzel, A. 2006. Heat and drought 2003 in Europe: a climate synthesis. *Annals of forestry science* 63: 569-577. DOI: 10.1051/forest:2006043
- Servicio Meteorológico Nacional (Argentina). 2011. Mapas normales.  
[www.smn.gov.ar/?mod=clima&id=64](http://www.smn.gov.ar/?mod=clima&id=64)
- Southeast regional climate centre. 2012. Historical climate summaries. The University of North Carolina, Chapel Hill, NC, USA.  
[www.sercc.com/climateinfo/historical/historical.html](http://www.sercc.com/climateinfo/historical/historical.html)
- The weather channel. 2012. <http://www.weather.com>
- United Kingdom Met Office. 2012. Climate averages.  
[www.metoffice.gov.uk/climate/uk/averages/](http://www.metoffice.gov.uk/climate/uk/averages/)
- Wallén, C.C. (Ed.) 1969-1995. *World Survey of Climatology*. Amsterdam, Elsevier.
- Weatherreports.com 2012. [www.weatherreports.com](http://www.weatherreports.com)
- Western regional climate centre, USA. 2012. California, Nevada, Oregon.  
[www.wrcc.dri.edu/summary/Climsmnca.html](http://www.wrcc.dri.edu/summary/Climsmnca.html)
- Western regional climate centre, USA. 2012. Regional Climate Centers of the USA.  
[www.wrcc.dri.edu/rcc.html](http://www.wrcc.dri.edu/rcc.html)
- Wikipedia. 2012. E.g. Clima Bahía Blanca (Argentina).  
[http://en.wikipedia.org/wiki/File:Clima\\_Bahía\\_Blanca\\_\(Argentina\).PNG](http://en.wikipedia.org/wiki/File:Clima_Bahía_Blanca_(Argentina).PNG)
- Wunderground.com 2012. [www.wunderground.com/history](http://www.wunderground.com/history)
- Zoover. 2011. Comentarios de vacaciones, e.g. Tiempo Córdoba (Argentina) | Prevision Meteorologica Córdoba (Argentina) | Parte Meteorológico y Clima.  
[www.zoover.es/argentina/argentina/cordoba-argentina/tiempo](http://www.zoover.es/argentina/argentina/cordoba-argentina/tiempo)
- Zoover. 2012. Holiday reviews, e.g. Franschoek, South-Africa.  
[www.zoover.co.uk/south-africa/westelijke-kaap-western-cape/Franschoek/weather](http://www.zoover.co.uk/south-africa/westelijke-kaap-western-cape/Franschoek/weather)

	<i>Tuber melanosporum</i>	<i>Tuber magnatum</i>	<i>Tuber aestivum</i>	<i>Tuber borchii</i>	<i>Boletus edulis sensu lato</i>	<i>Lactarius deliciosus</i>	<i>Suillus lakeit</i>	Latitude (° : ')	Elevation (m)	Annual rainfall (mm)	Accumulated degree days (>10°C)	Mean daily air temperature in summer July/January (°C)	Mean daily air temperature in winter January/July (°C)	Annual sunshine hours	"Summer" sunshine hours (April-Sept./Sept.- April)
<b>Sweden</b>															
Gotland	■	■						57 : 40	51	514	570	15.9	-1.1	1579	1148
<b>Denmark</b>															
Copenhagen (Schleswig*)			■	■				55 : 36	5	525	671	16.4	0.1	1597	1197*
<b>UK</b>															
Edinburgh		■	■	■	■	■	■	56 : 00	35	668	432	14.5	3.2	1286	888
Durham		■	■	■	■	■	■	54 : 40	102	643	489	15.2	3.4	1375	932
Sheffield		■	■	■	■	■	■	53 : 20	131	825	685	16.6	4.0	1381	1001
Anglesey (Valley)		■	■	■	■	■	■	53 : 25	10	830	662	15.7	5.8	1621	1152
Lyneham (Wiltshire)		■	■	■	■	■	■	51 : 30	145	719	676	16.6	3.9	1565	1102
Wye (Kent)		■	■	■	■	■	■	51 : 50	56	728	756	16.8	4.3	1603	1123
Yeovilton		■	■	■	■	■	■	51 : 00	20	725	751	16.8	4.8	1523	1078
Eastbourne		■	■	■	■	■	■	50 : 30	7	790	895	17.2	5.7	1849	1309
<b>France</b>															
Caen		■	■	■	■	■	■	49 : 18	67	711	852	17.0	4.5	1762	1191
Bourges		■	■	■	■	■	■	47 : 06	166	723	1115	19.2	3.3	1827	1279
Dijon	■	■	■	■	■	■	■	47 : 18	227	732	1137	19.7	1.6	1831	1307
Clermont Ferrand		■	■	■	■	■	■	45 : 50	329	563	1102	19.2	2.7	1990	1317
Lyon	■	■	■	■	■	■	■	45 : 42	201	825	1312	20.7	2.6	1975	1411
Orange (Marseille*)	■	■	■	■	■	■	■	44 : 08	60	810	1562	22.0	4.0	2837	1814
Toulouse	■	■	■	■	■	■	■	43 : 36	153	655	1513	21.3	5.4	2051	1350
<b>Switzerland</b>															
Lugano, Ticino		■	■	■	■	■	■	46 : 00	273	1545	1421	21.3	3.1	2028	1245
<b>Croatia</b>															
Istria (Rijeka, *Trieste)	■	■	■	■	■	■	■	45 : 13	85	1045*	1837	23.0	5.0	2388	1405*
<b>Italy</b>															
Cuneo (*Torino)	■	■	■	■	■	■	■	44 : 55	384	948	1379	22.0	3.5	1989*	1246*
Bologna		■	■	■	■	■	■	44 : 30	84	589	2009	24.6	2.4	2064	1458
Rimini	■	■	■	■	■	■	■	44 : 00	13	702	1746	22.6	3.3	-	-
Arezzo	■	■	■	■	■	■	■	43 : 28	249	755	1349	21.0	4.0	-	-
Perugia		■	■	■	■	■	■	43 : 06	493	816	1622	22.4	4.4	2061	1457
Campobasso	■	■	■	■	■	■	■	41 : 36	807	628	1436	21.5	3.8	2113	1365
<b>Spain</b>															
Buenavista de Valdavia (Burgos)		■					■	43 : 00	926	573	910	18.4	2.6	2219	1513
Pamplona, Navarra	■	■					■	43 : 48	449	963	1342	20.0	4.5	-	-
Perarrua, Huesca (*Zaragoza)	■	■					■	42 : 16	517	644	1479	21.7	2.9	2638*	1689*
Arroyo Cerezo, Valencia	■	■					■	40 : 07	1344	552	749	18.9	3.1	-	-
Cuenca, Cuenca (*Madrid)	■	■					■	40 : 05	1001	569	1352	21.7	3.1	2678*	1714*
Santiago de la Espada, (*Albacete)	■	■					■	38 : 20	1328	673	1547	23.2	3.3	2705*	1713*
<b>North America</b>															
Nanaimo, BC, Canada	■	■						49 : 06	38	1508	858	17.5	2.6	1866	1324
Chapel Hill, N.C. (Washington*)	■							36 : 10	190	1054	2341	25.5	4.0	2173*	1545*
Ukiah, California	■							39 : 20	189	943	2341	23.0	8.5	≈ 3000	
Placerville, California	■							38 : 43	570	979	1832	23.5	6.7	≈ 3400	
<b>Australia</b>															
Warwick, QLD								28 : 22	477	692	2729	23.6	10.4	≈ 2920	1582
Stanthorpe, QLD	■							28 : 66	787	767	2034	21.5	7.9	≈ 2920	1582
Pallamana, SA	■							35 : 03	76	345	1909	21.0	9.5	≈ 2920	1703

Goulbourn, NSW						34 : 75	670	642	1546	20.6	6.5	≈ 2555	1490
Canberra, ACT						41 : 54	578	617	1476	20.5	5.6	2811	1623
Armidale, NSW						30 : 52	980	792	1612	20.3	6.3	≈ 2920	1582
Manjimup, WA						34 : 25	287	1011	1811	20.0	10.4	≈ 2555	1582
Cooma, NSW						36 : 23	812	502	1292	19.3	4.5	≈ 2555	1582
Orange, NSW						33 : 38	948	886	1168	19.0	5.0	≈ 2920	1764
Healesville, VIC						37 : 68	131	1021	1438	18.6	8.2	≈ 2190	1490
Colac, VIC						38 : 34	134	731	1293	18.2	8.2	≈ 2190	1369
Launceston, TAS						41 : 54	166	677	891	16.7	6.6	≈ 2555	1521
Deloraine, TAS						41 : 52	237	950	568	14.5	5.7	≈ 2555	1460
<b>Chile</b>													
Talca						35 : 26	102	749	1496	20.0	6.0	2518	1725
Temuco						38 : 15	120	1179	784	16.0	7.5	1728	1454
Panguipulli						39 : 39	287	2430	921	17.0	7.5	2032	1454
<b>New Zealand</b>													
Kaitaia (* Kaitaia Airport)						35 : 07	8	1337	2154	19.7	11.7	2113*	1206*
Nr Warkworth, Northland (*Leigh)						36 : 26	72	1514	1658	18.8	10.3	2108*	1239
Te Puke (*Tauranga)						38 : 00	91	1754	≈ 1400	18.7	9.3	2277*	1320*
Opotiki						38 : 00	6	1400	1493	18.5	9.2	2169	1227
Gisborne						38 : 40	9	1058	1430	18.3	9.0	2172	1283
Te Kuiti						38 : 20	61	1531	1377	18.3	8.2	1749	1061
Taumarunui						38 : 55	171	1443	1292	18.3	7.9	1704	1079
Hastings (* Napier)						39 : 39	12	764	1414	19.1	8.4	2245*	1326*
Waipukurau						40 : 00	137	847	1089	17.6	7.1	1992	1166
Levin						40 : 39	46	1120	1178	17.1	8.3	1865	1109
Paraparaumu						40 : 55	7	1054	1167	17.1	8.3	2043	1227
Nelson						41 : 15	10	986	1038	17.2	6.5	2397	1377
Blenheim Airport (* Blenheim)						41 : 31	27	738	1179	17.7	7.0	2447*	1413*
North Canterbury (*Christchurch)						43 : 05	64	729	1049	17.5	6.5	1999*	1175*
West Melton (*Christchurch Airport)						43 : 29	30	648	974	17.0	5.6	1999*	1175*
Ashburton						43 : 54	101	757	896	16.5	5.2	1892	1092
Lake Hawea (*Queenstown)						44 : 50	350	765	860	16.9	3.7	1921*	1260*
Shotover River (*Cromwell, **Alexandra)						45 : 00	805	661*	926*	17.3*	3.8*	2064**	1267**
Oamaru						44 : 58	30	537	800	15.1	5.5	1792	1037
Shag Point, Waianakarua (Palmerston)						45 : 29	21	631	573	14.8	5.4	1784	1034
Naseby (*Waipiata)						45 : 01	610	611	337	13.5	1.6	2046*	1223*
Invercargill Airport						46 : 25	0	1037	425	13.7	5.1	1621	1011

Périgord black truffle	Italian white truffle	Burgundy truffle	Bianchetto truffle	Porcini†	Saffron milk cap†	Painted boletus†	Latitude (° : ')	Elevation (m)	Annual rainfall (mm)	Accumulated degree days (>10°C)	Mean daily air temperature in summer July/January (°C)	Mean daily air temperature in winter January/July (°C)	Annual sunshine hours	"Summer" sunshine hours (April-Sept./Sept.- April)
------------------------	-----------------------	------------------	--------------------	----------	-------------------	------------------	------------------	---------------	----------------------	---------------------------------	--	--	-----------------------	--

† Data incomplete