

Rain Records

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Last Updated: May 7, 2021

1 Introduction

In March of 1991 I started a daily record of rainfall. We were in a drought at the time and on water restrictions, so the garden was suffering somewhat!

I have recently been asked *why* I collect the data, in a similar manner as if the person were asking me *why* I was wearing a fried egg on my head. Yes, I suppose I am mad, but I am also a keen gardener, and rain, or rather, the lack thereof, affects me greatly! :-)

It is somewhat difficult to intelligently present such a large body of data, but obviously the first thing is to establish a *season*, since calendar years are meaningless in the Summer rainfall areas! Hence the 2000 season runs from July 1999 to June 2000, much like SARS really :-) (I guess that now needs explaining: not Severe Acute Respiratory Syndrome, but the South African Revenue Service!!)

In all the years of recording, the split at July has let me down only a few times.

It is hard to make a LOT of sense out of the data. We supposedly have a 7 or so year dry cycle and a 7 or so year wet cycle. It is difficult to conclude that from my data. The cause of the cycle is apparently the “El-niño” effect in the Southern Pacific. It certainly has produced widespread drought, but the trouble is: South-West is where all the “weather” comes from, and this is interrupted by it.

If this pattern were to have continued, we would be in the hands of El-niño! The Tropical Complex from the North, however descends from the North, via Botswana, and has assisted us in Egoli for many years. As a direct result, the rainfall has been quite good when, for example, the northern VryStaat has been terrible. The “Usual” pattern would have catered for the Vrystaat before us!!

I have recently connected with another amateur rainfall recorder, Irwin Juckes who has shown that the rainfall in Edenvale, just a few km north of us, is consistently lower than with us in Kensington. Interesting Stuff. Microclimates indeed!

If *you* collect rainfall data on a daily basis, please contact us both, we would be very interested in comparing notes :-)

2 Current Season, cumulative, for the impatient :-)

3 Rain Data by Season

3.1 Totals by Season

Simply a plot of the annual total seasonal rainfall. Note that in 1996 we moved from Crosby to Kensington, ie west JHB to east JHB, but there shouldn't be much of a difference :-) <— See note above, I am changing my mind :-) The average values shown do not include the effects of the current (incomplete) season, as that would artificially affect them. Notice that in *very* dry years, less rain falls per day (obviously for far fewer days too) and on *very* wet years, more falls per day.

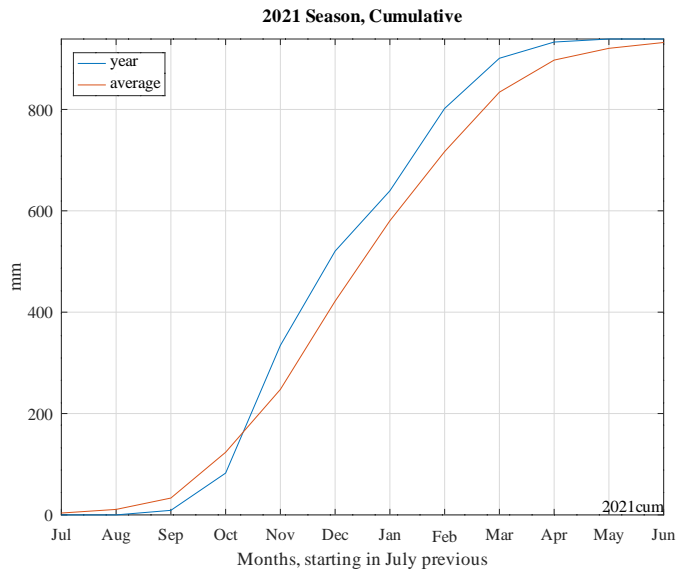


Figure 1: Cumulative current season

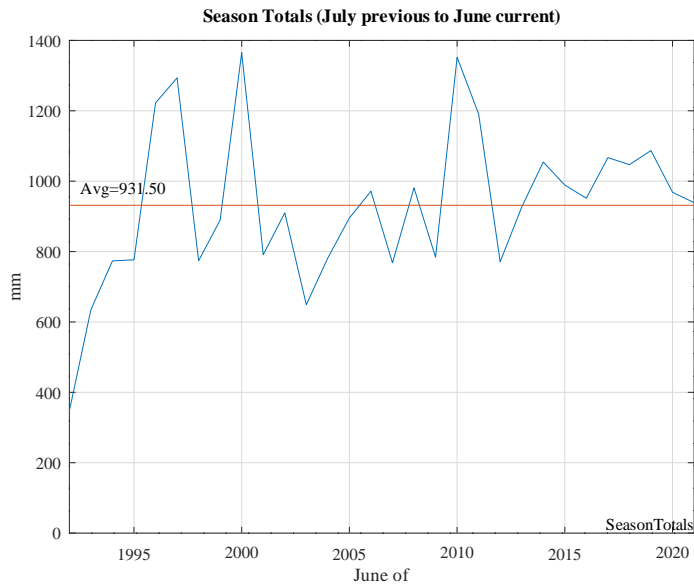


Figure 2: Season totals at the Clark's

But on other years which are not *extreme*, but do vary quite a lot in total rainfall, the *average* amount per rainy day is pretty constant!! I did not really expect the consistency.

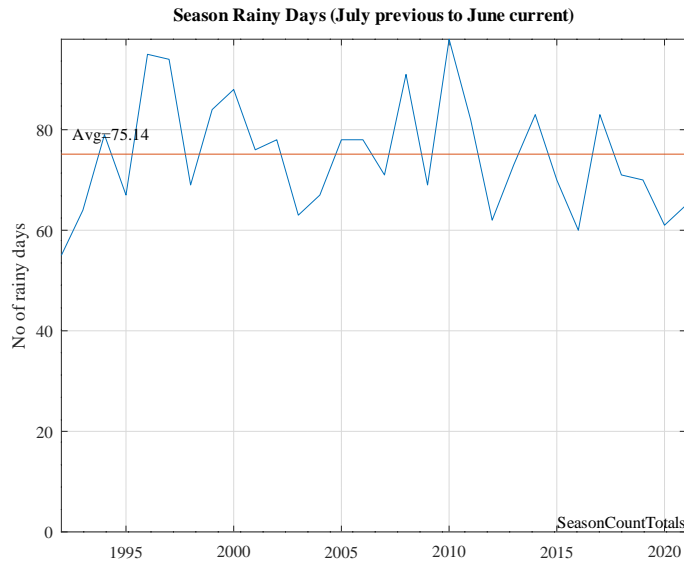


Figure 3: Season count totals (wet-days)

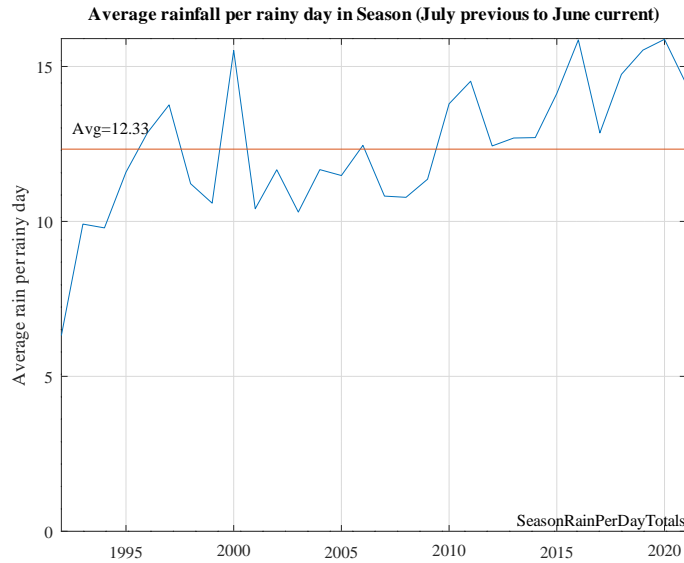


Figure 4: Average amount of rain per rainy day

Summary Table of Summed rainfall by Month

Season	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Total
1992	0.0	0.0	17.0	63.5	27.0	67.0	29.5	29.0	82.5	21.0	0.0	11.0	347.5
1993	0.0	28.0	12.0	37.5	160.0	143.0	61.5	52.5	104.0	36.0	0.0	0.0	634.5
1994	0.0	6.5	1.0	222.5	77.0	135.0	112.5	108.0	31.0	80.0	0.0	0.0	773.5
1995	0.0	4.0	6.5	79.0	48.0	128.0	192.0	75.0	136.0	67.0	41.0	0.0	776.5
1996	0.0	11.5	6.5	147.8	165.5	240.5	201.0	248.5	61.0	81.0	52.0	7.0	1222.2
1997	0.0	24.5	5.0	135.0	72.0	191.0	230.5	87.5	363.5	44.5	133.0	7.0	1293.5
1998	11.0	7.0	70.0	59.0	138.0	120.5	245.5	71.0	30.0	22.0	0.0	0.0	774.0
1999	0.0	0.0	29.5	98.0	239.0	155.5	90.5	89.0	77.5	65.0	37.0	8.5	889.5
2000	1.5	1.0	17.5	15.0	77.0	206.5	225.5	401.5	307.5	71.5	39.0	2.0	1365.5
2001	0.0	9.0	47.0	122.5	150.5	138.0	39.0	135.0	71.0	22.5	53.5	3.0	791.0
2002	0.0	3.0	100.0	114.0	158.0	142.0	107.0	95.0	96.0	19.0	12.0	64.0	910.0

Bottom right is the overall average.

3.2 Monthly Totals by Wet and Dry Months

It is difficult to present the monthly data, as there are now too many years of it, and we are running out of graph space :-)

It is to be noted that the really wet months are a tad random!! And yes, Feb 2000 was a reasonably damp month. Note too that May '97 in the “dry” months was rather special, leading to the pretty good seasonal total, even so late in the year.

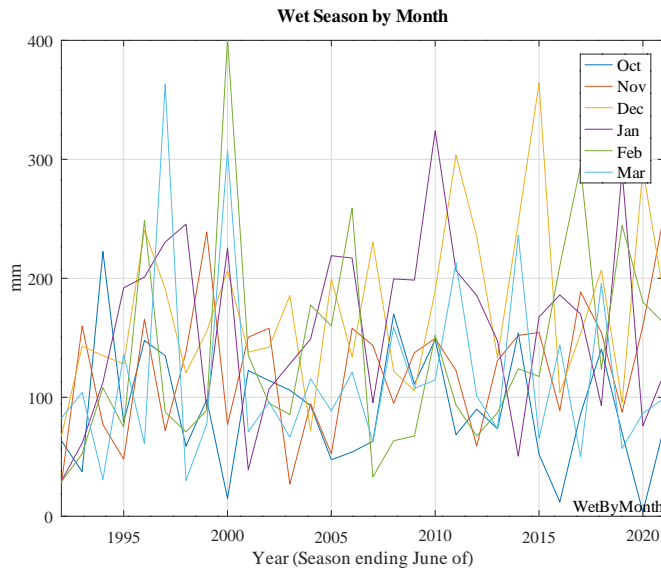


Figure 5: “Wet” part of the season—monthly totals

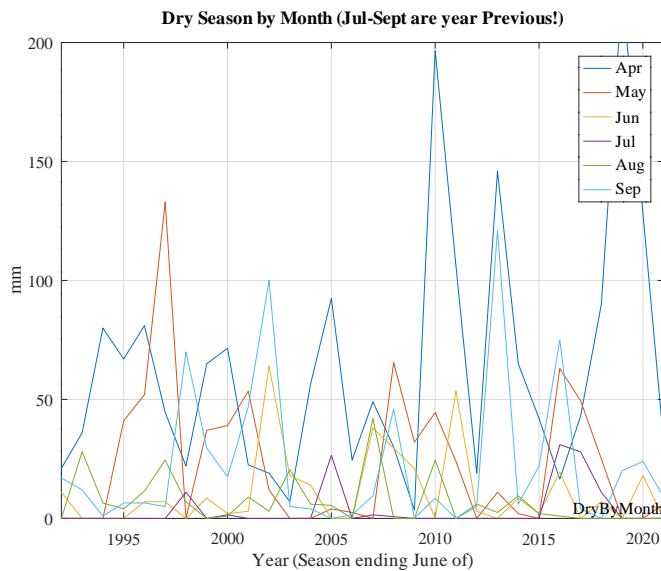


Figure 6: “Dry” part of the season—monthly totals

3.3 Lies, Damned lies, and Statistics

Another way of looking at this is the min/mean/max type of graph per month. I have also added the First Quartile, Median, Third Quartile. I think that the month of February shows beautifully the classic question so often asked by newcomers to statistics: “What is the difference between a mean and a median”. The difference between min/max and 1st and 3rd quartiles is *even more* marked. The difference is caused by a once-off 30mm in 1992, and a once-off 401.5mm in 2000.

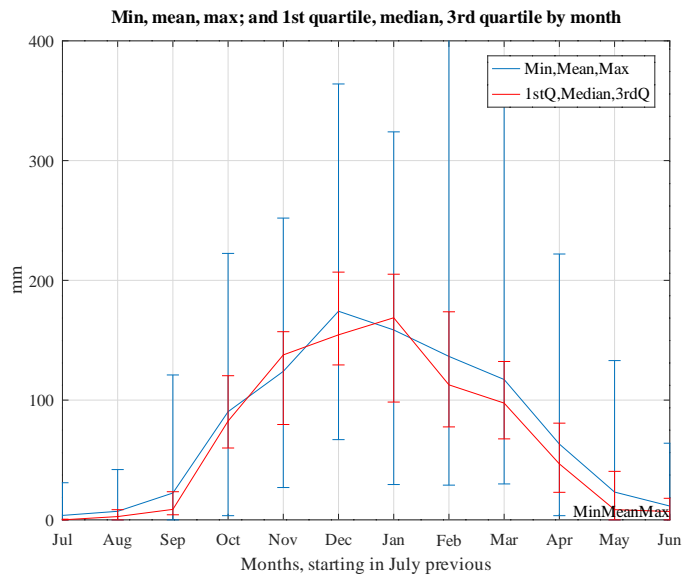


Figure 7: Min,mean,max and 1st quartile,median,3rd quartile by month.

Also of interest is a similar graph of the number of rainy days by month.

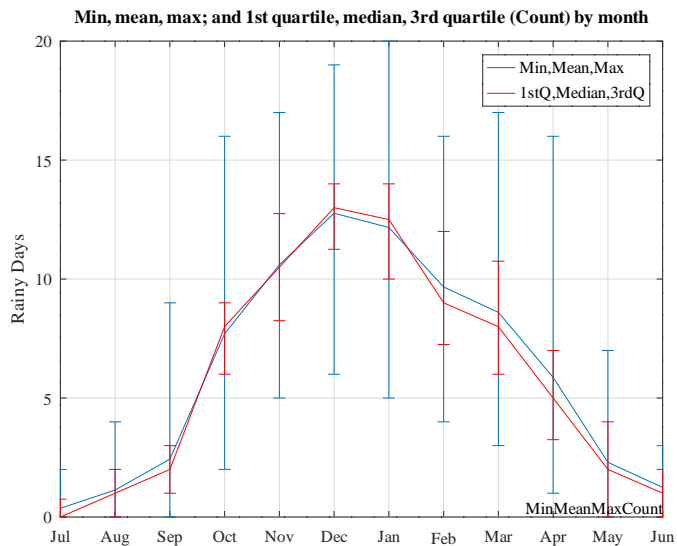


Figure 8: Min,mean,max and 1st quartile,median,3rd quartile rainy days by month.

4 Rain Data detail

For those oddballs that really like detailed stuff, here is the data on a yearly and a monthly basis.

4.1 Per Year

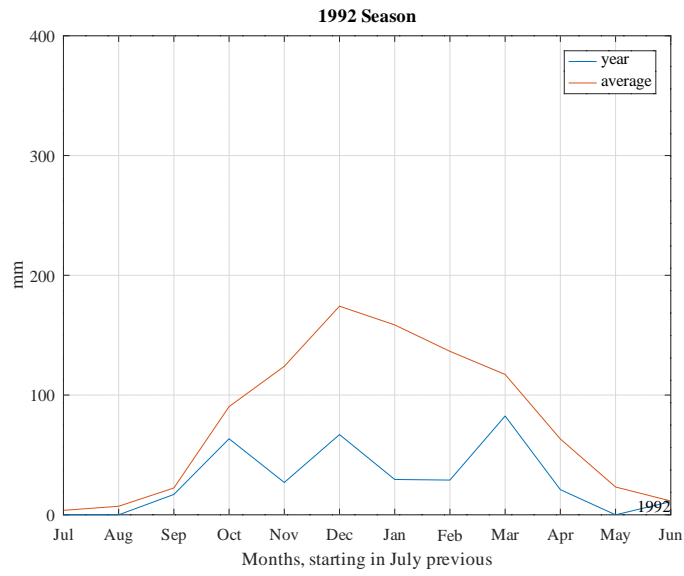


Figure 9: 1992 Season

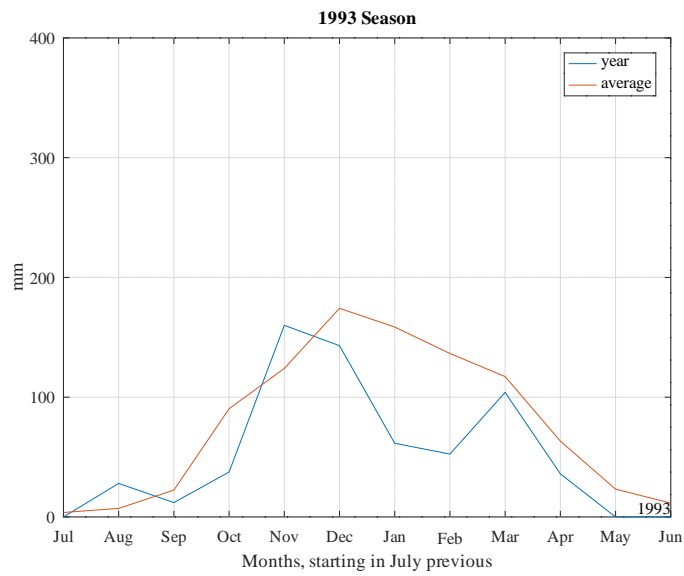


Figure 10: 1993 Season

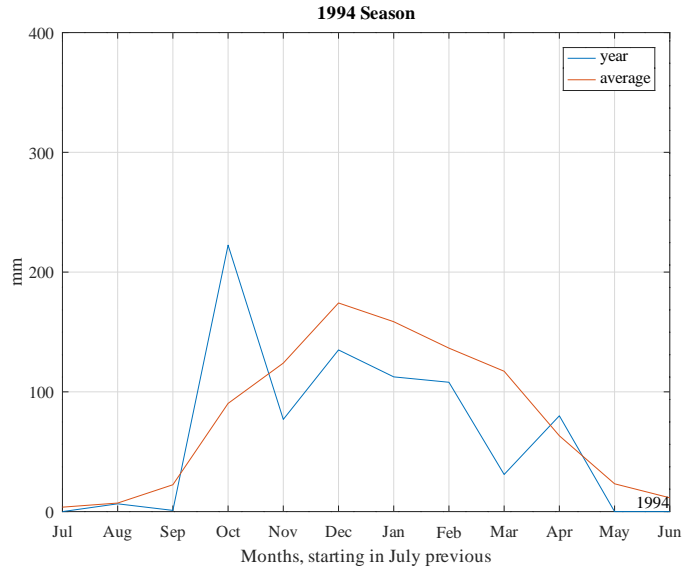


Figure 11: 1994 Season

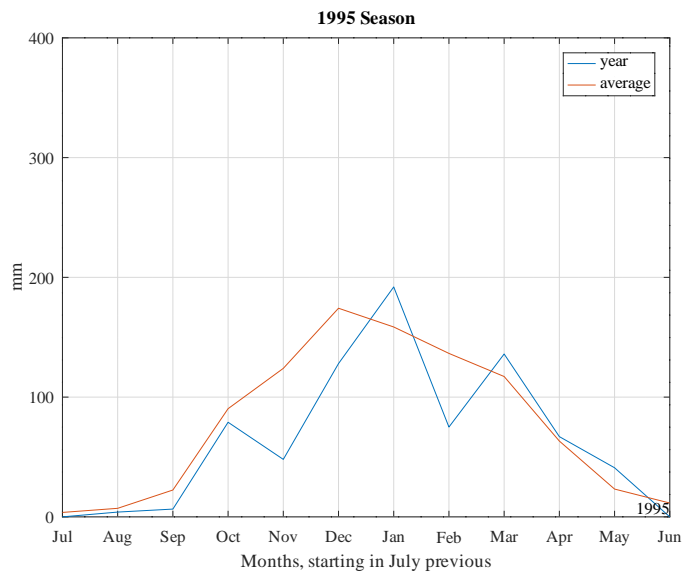


Figure 12: 1995 Season

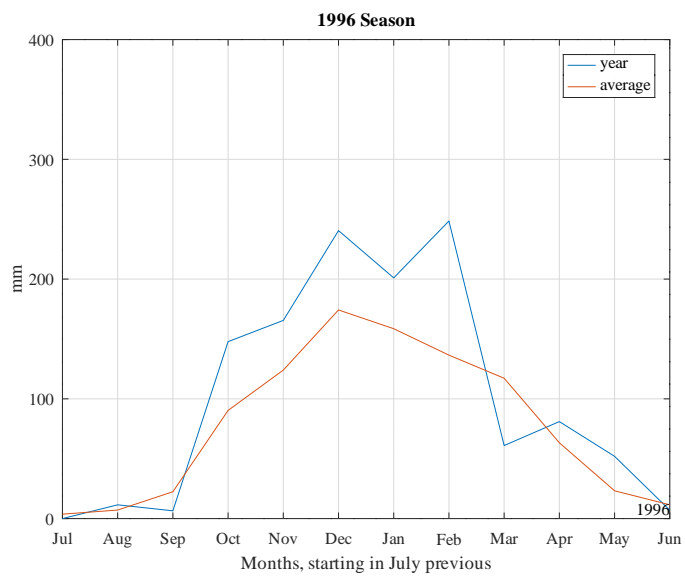


Figure 13: 1996 Season

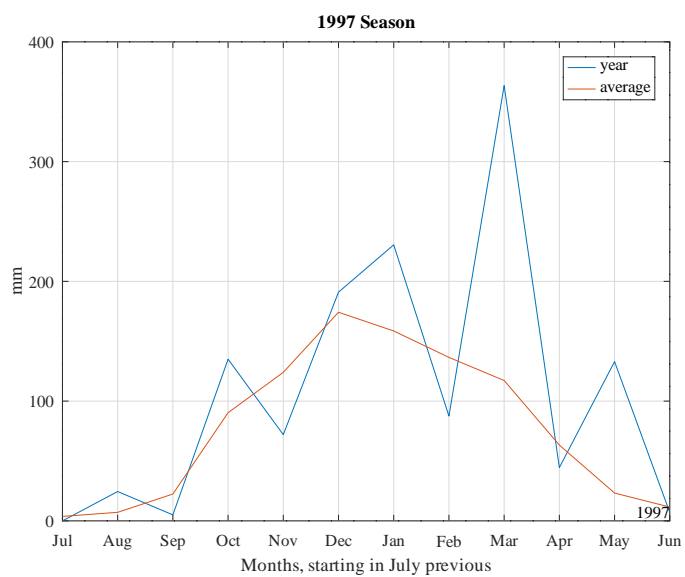


Figure 14: 1997 Season

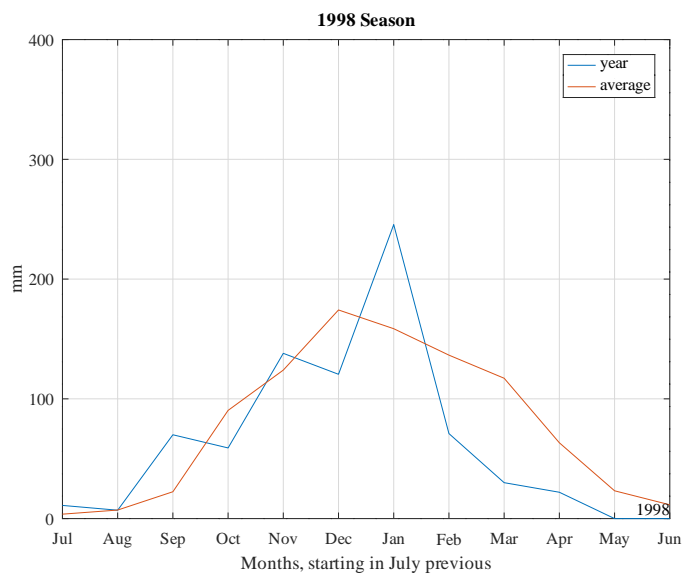


Figure 15: 1998 Season

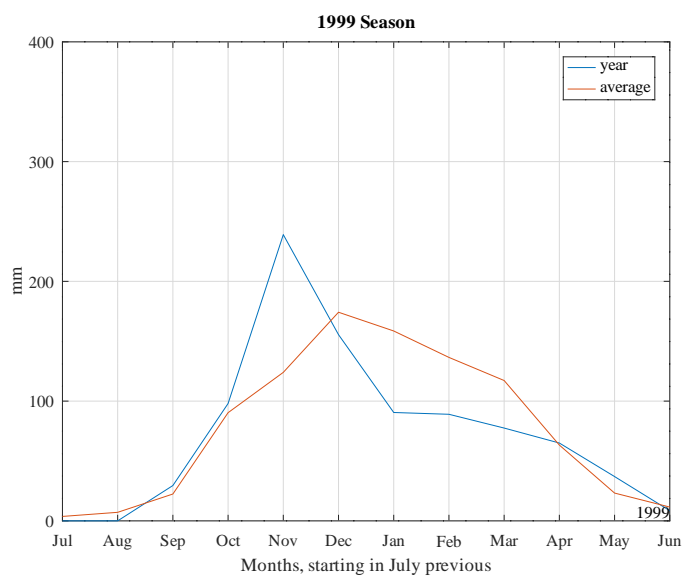


Figure 16: 1999 Season

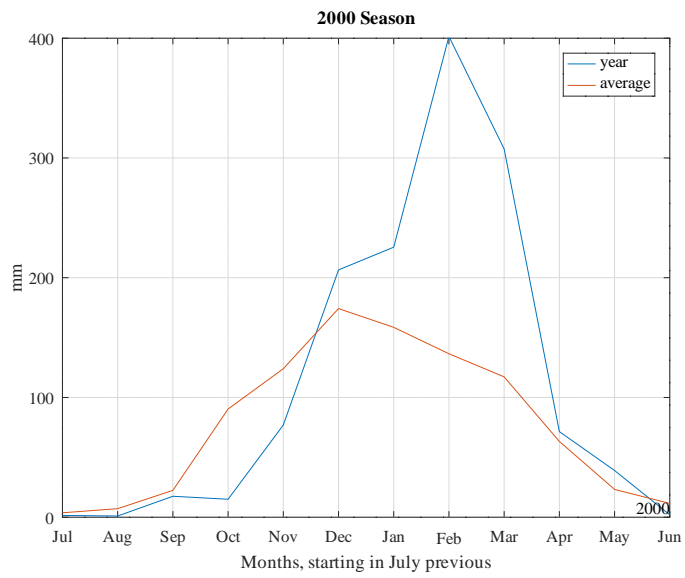


Figure 17: 2000 Season

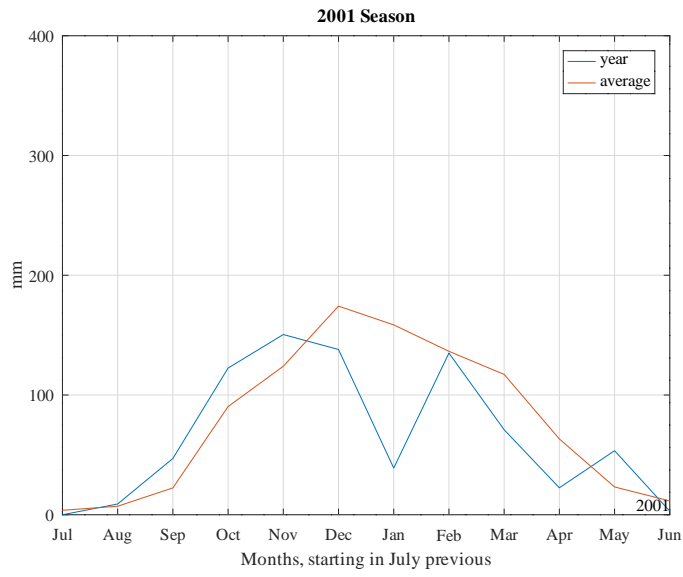


Figure 18: 2001 Season

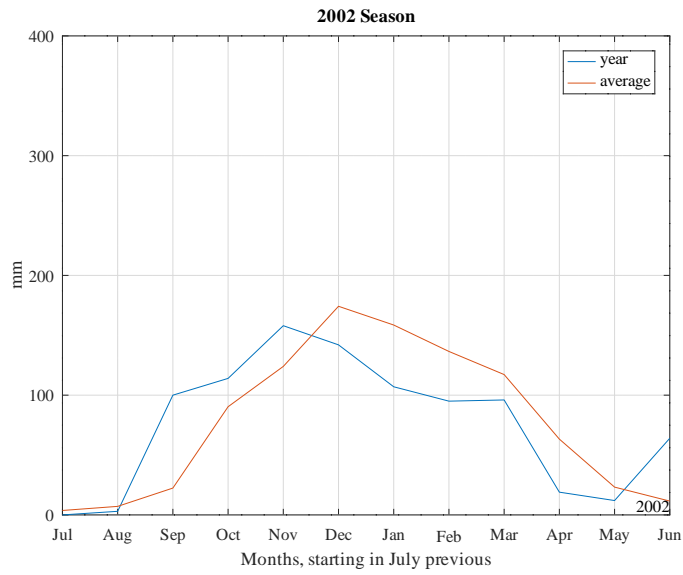


Figure 19: 2002 Season

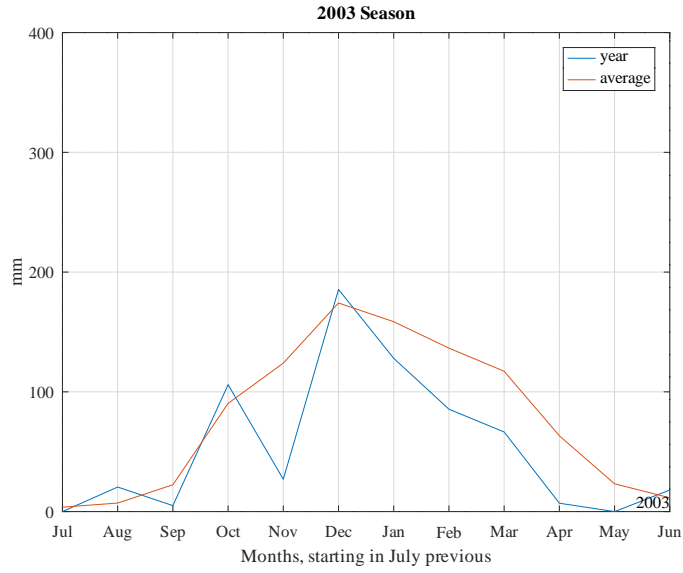


Figure 20: 2003 Season

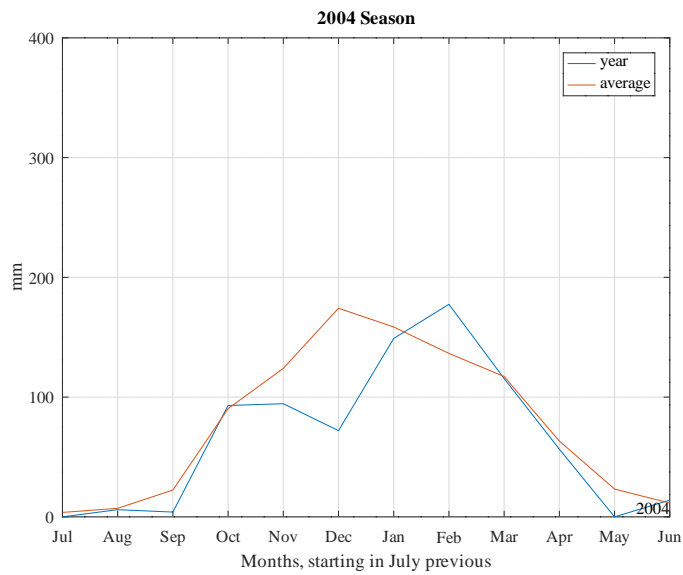


Figure 21: 2004 Season

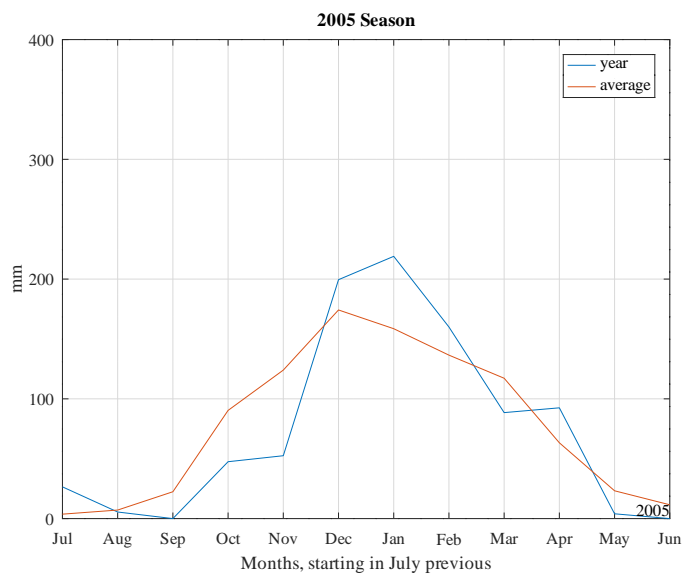


Figure 22: 2005 Season

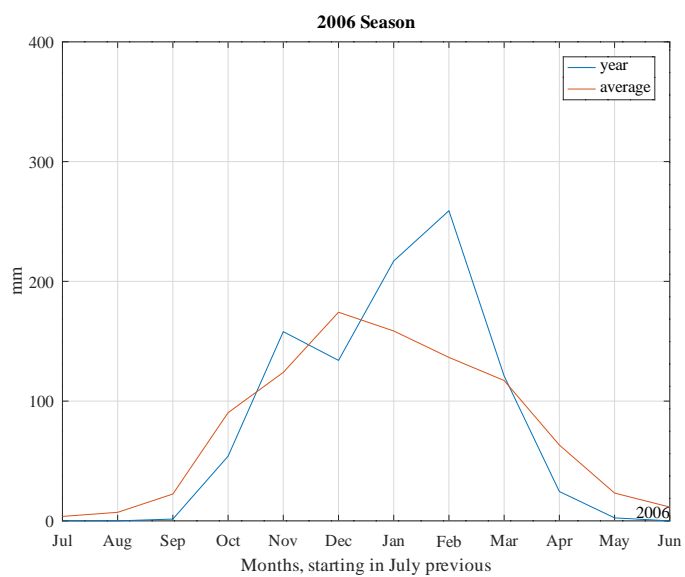


Figure 23: 2006 Season

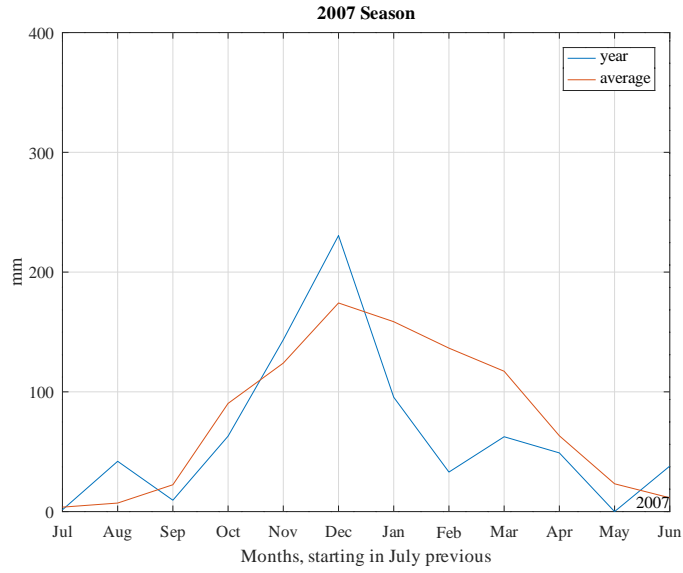


Figure 24: 2007 Season

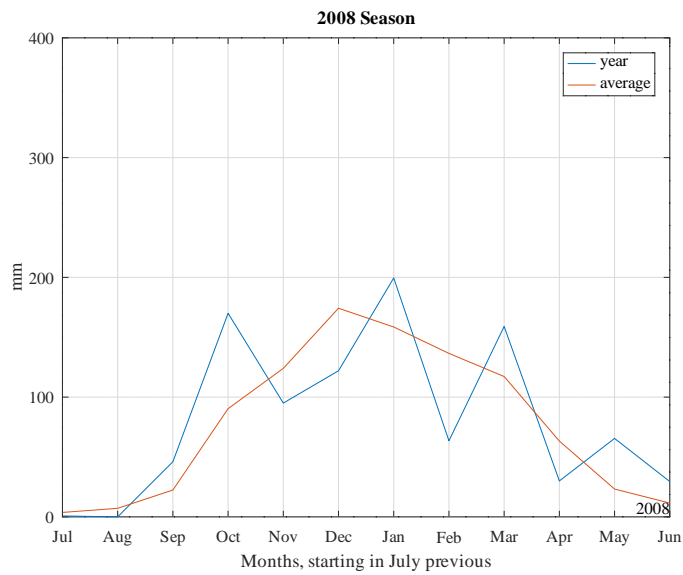


Figure 25: 2008 Season

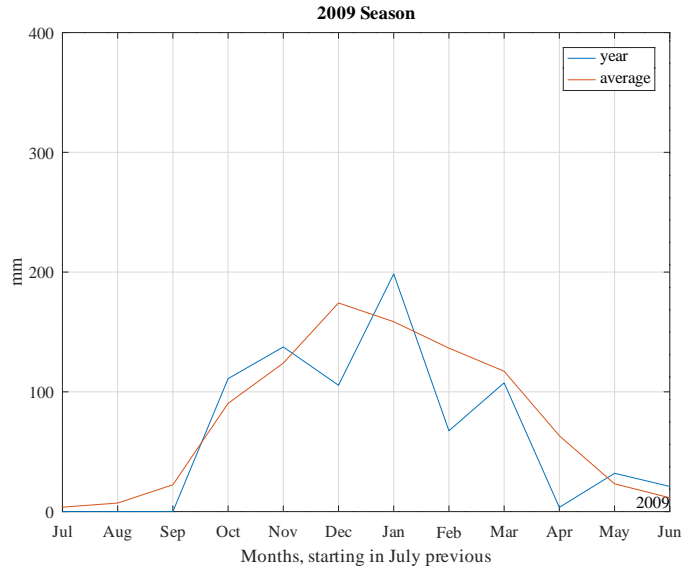


Figure 26: 2009 Season

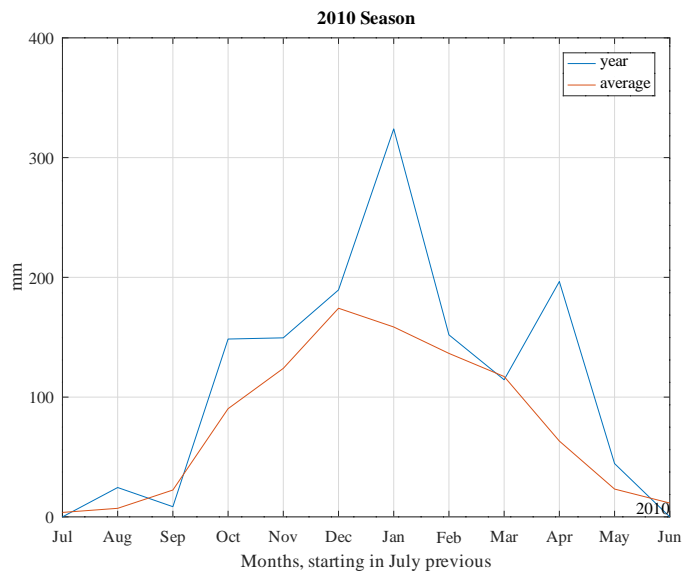


Figure 27: 2010 Season

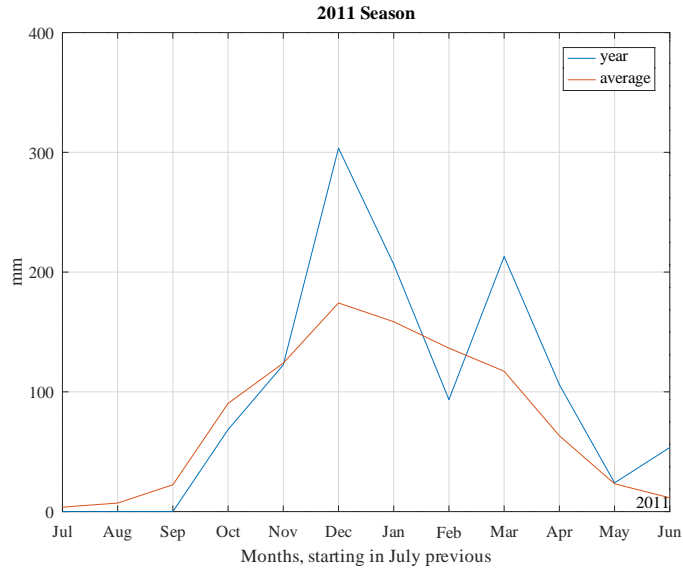


Figure 28: 2011 Season

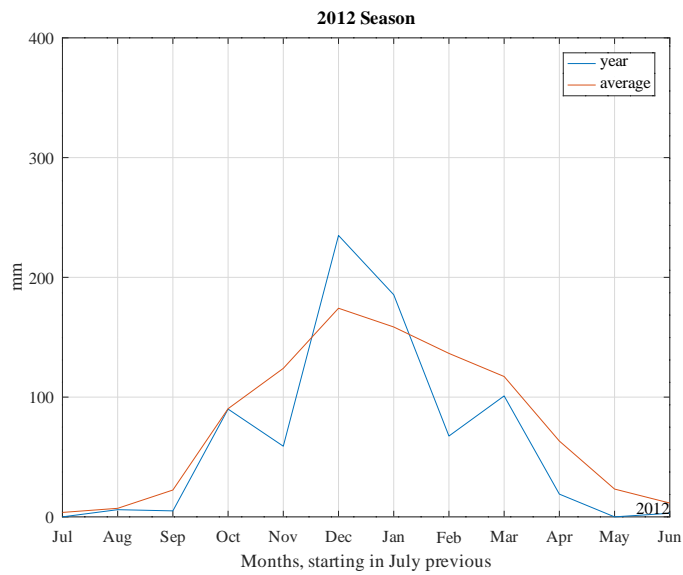


Figure 29: 2012 Season

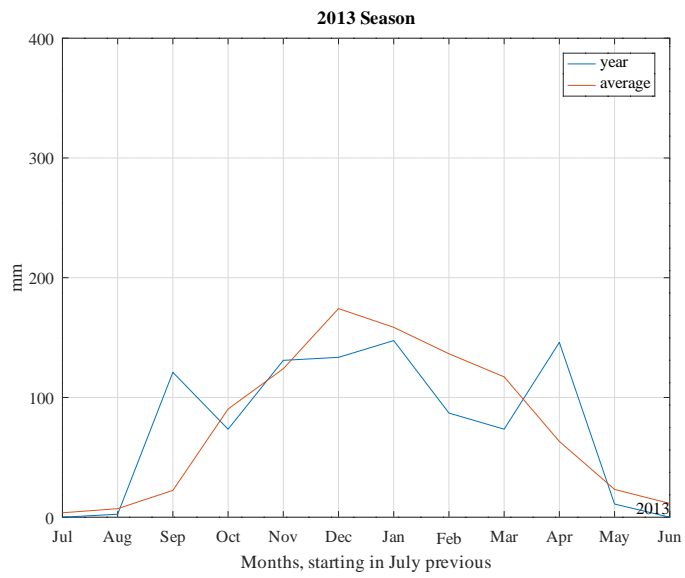


Figure 30: 2013 Season

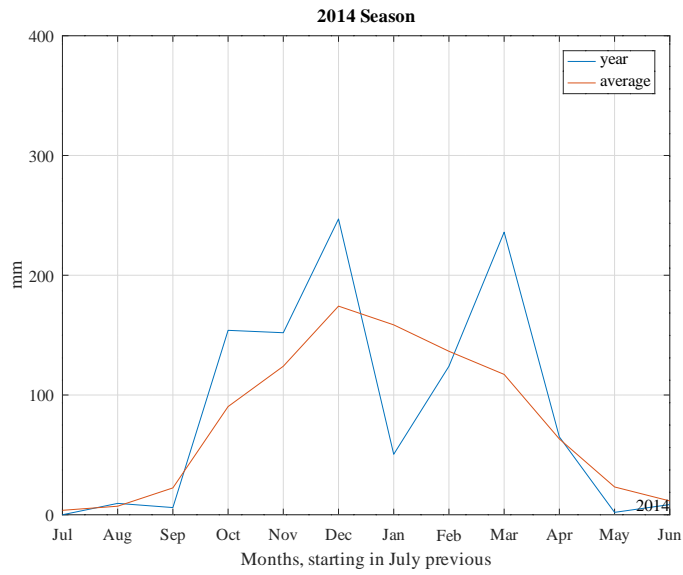


Figure 31: 2014 Season

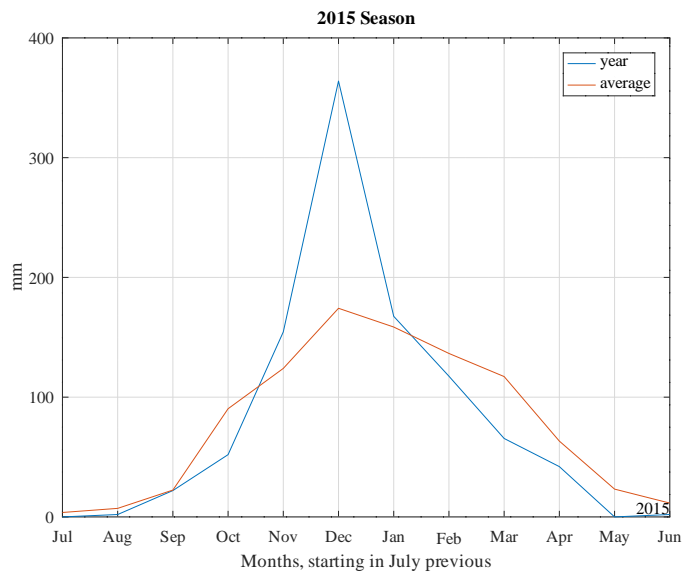


Figure 32: 2015 Season

4.2 Per Year Cumulative

The cumulative graphs show very nicely “when” the season “kicks-in”. Some “good” seasons are awful to begin with, some start off with a bang, but fizzle dimly.

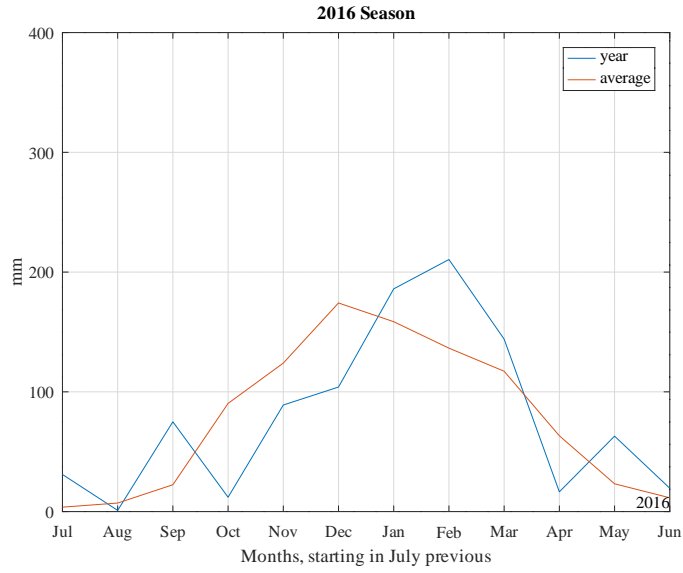


Figure 33: 2016 Season

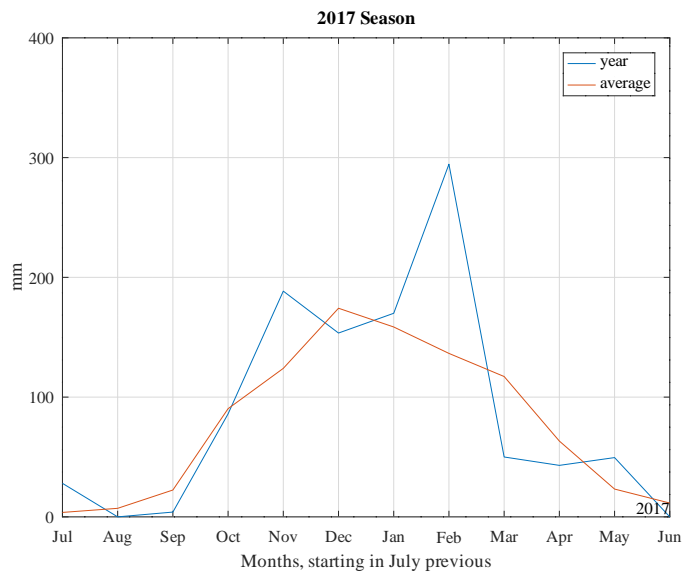


Figure 34: 2017 Season

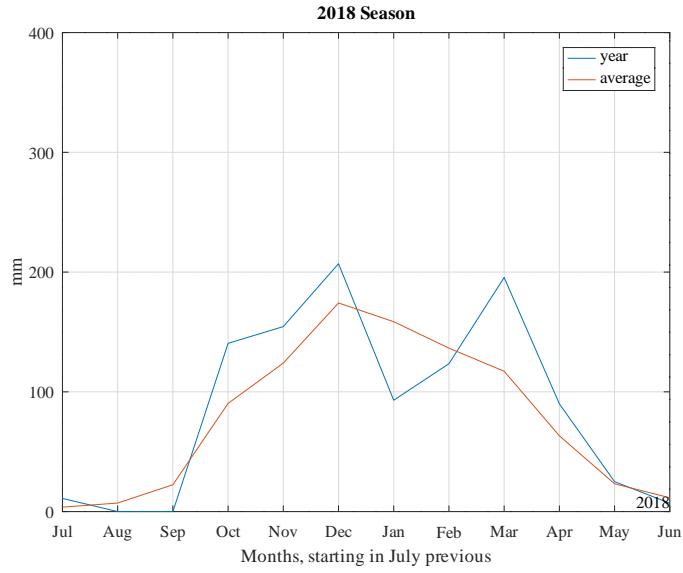


Figure 35: 2018 Season

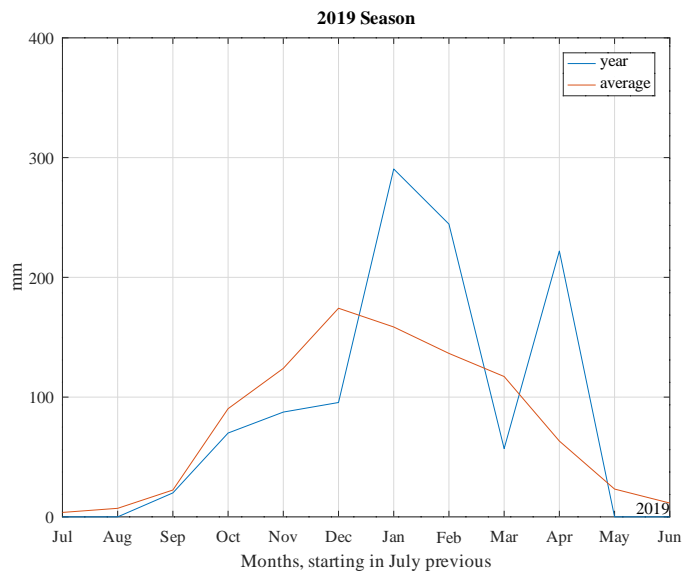


Figure 36: 2019 Season

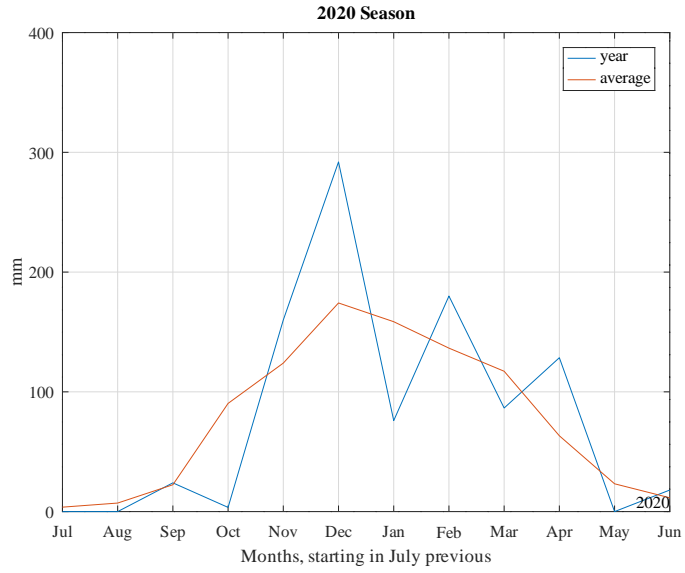


Figure 37: 2020 Season

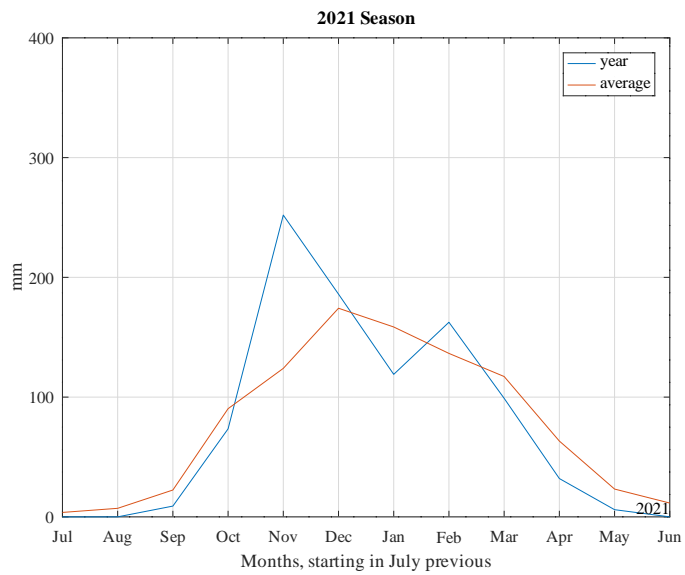


Figure 38: 2021 Season

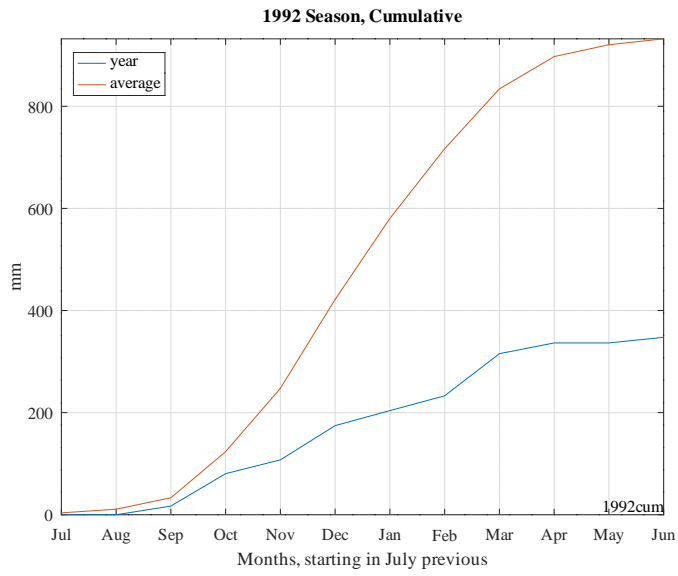


Figure 39: 1992 Season

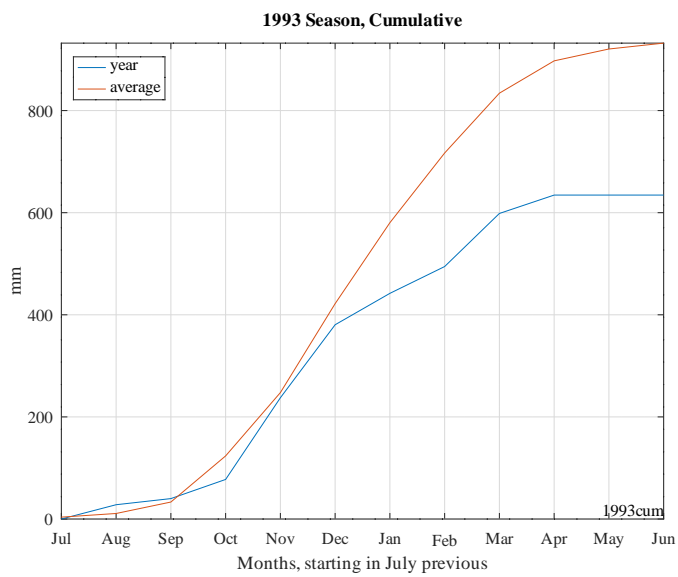


Figure 40: 1993 Season

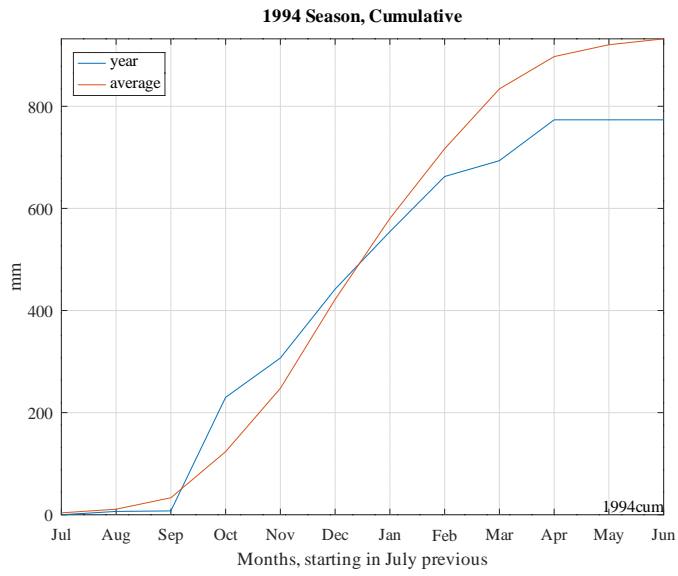


Figure 41: 1994 Season

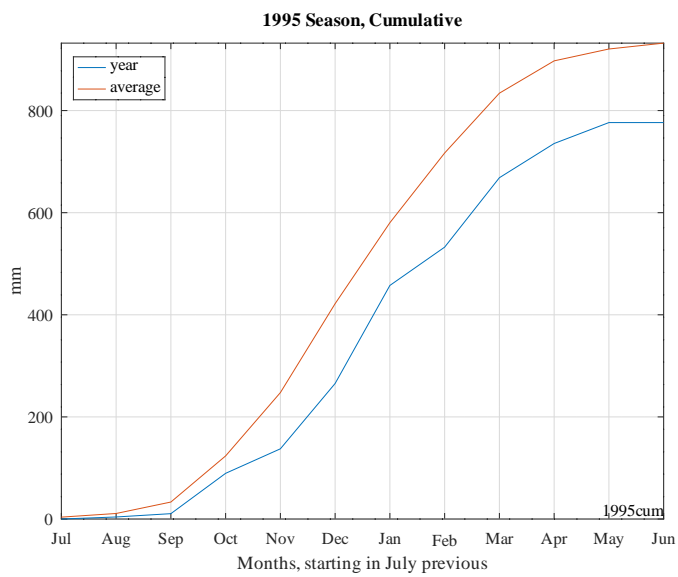


Figure 42: 1995 Season

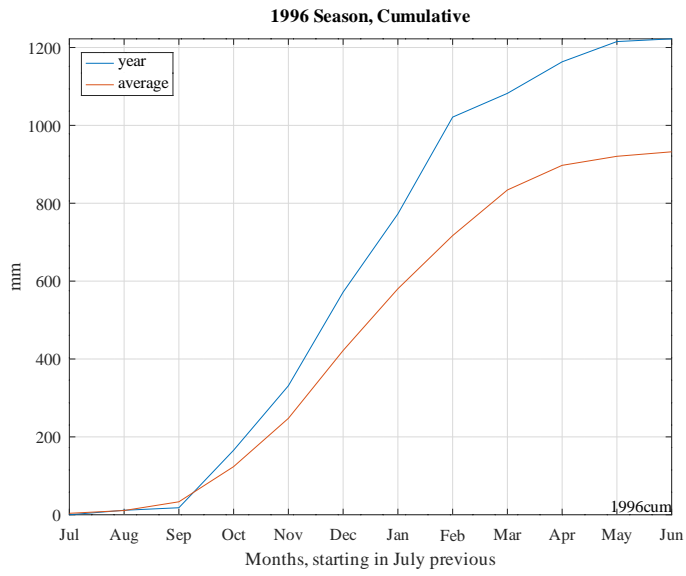


Figure 43: 1996 Season

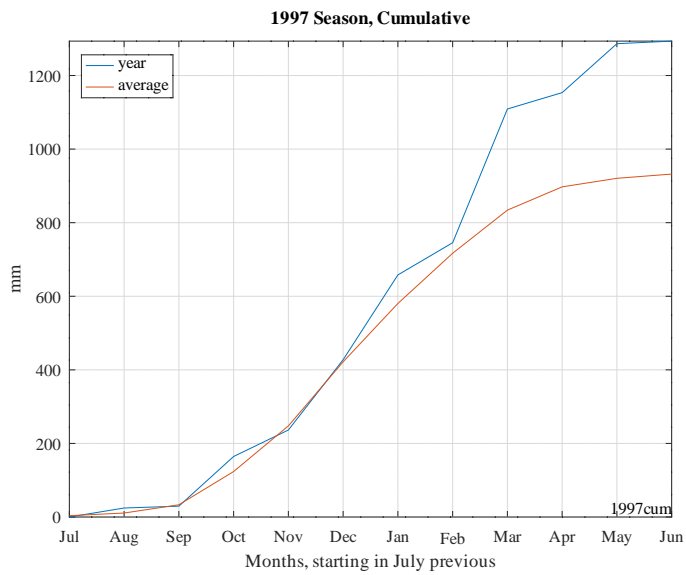


Figure 44: 1997 Season

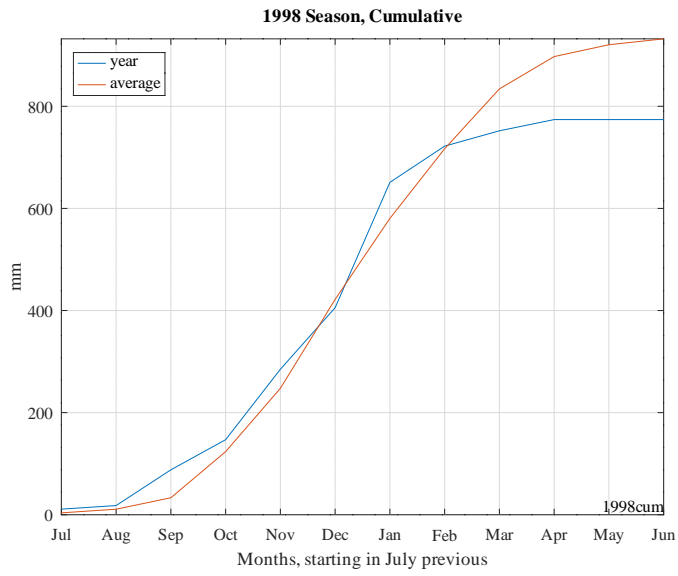


Figure 45: 1998 Season

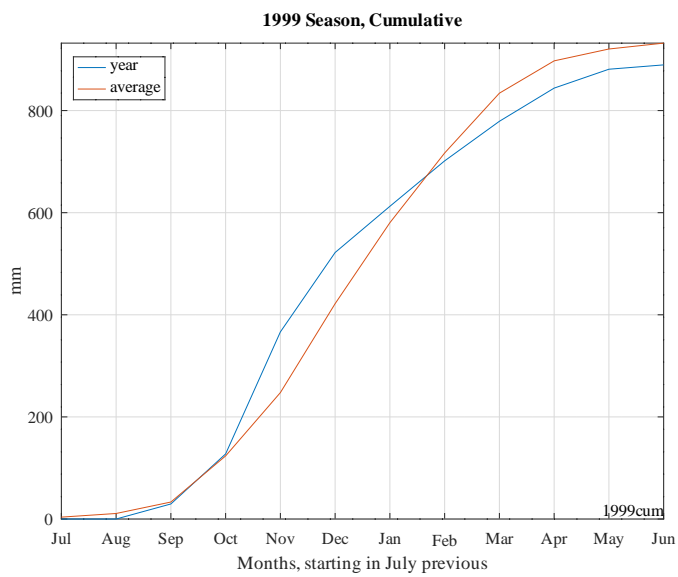


Figure 46: 1999 Season

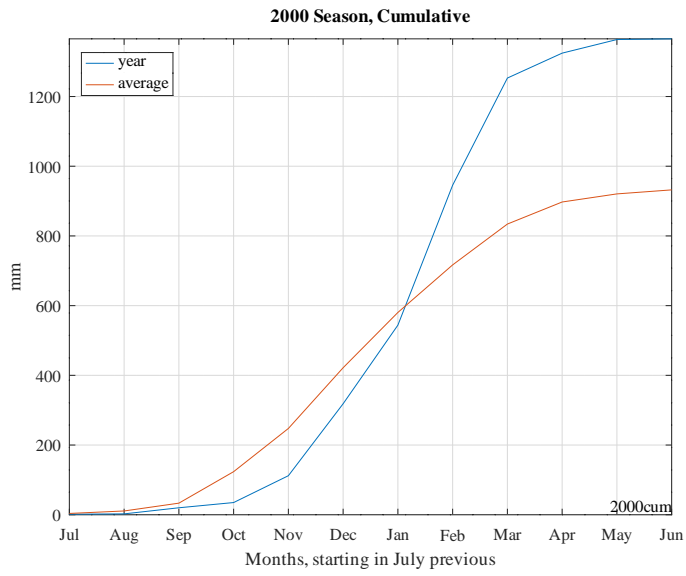


Figure 47: 2000 Season

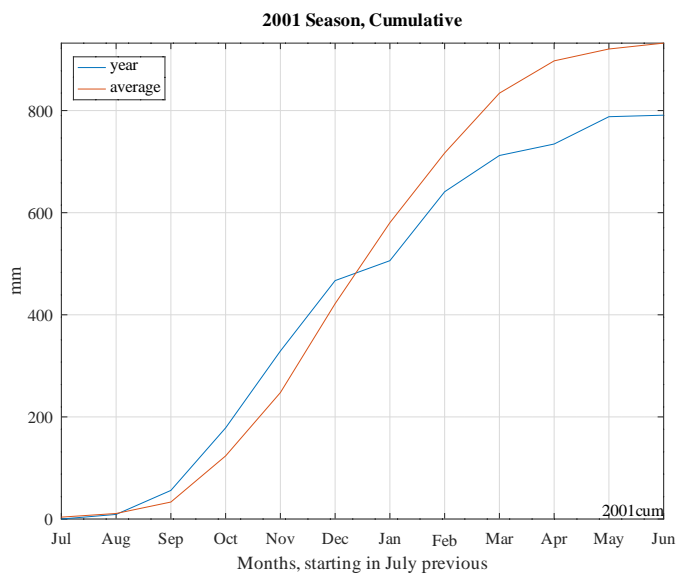


Figure 48: 2001 Season

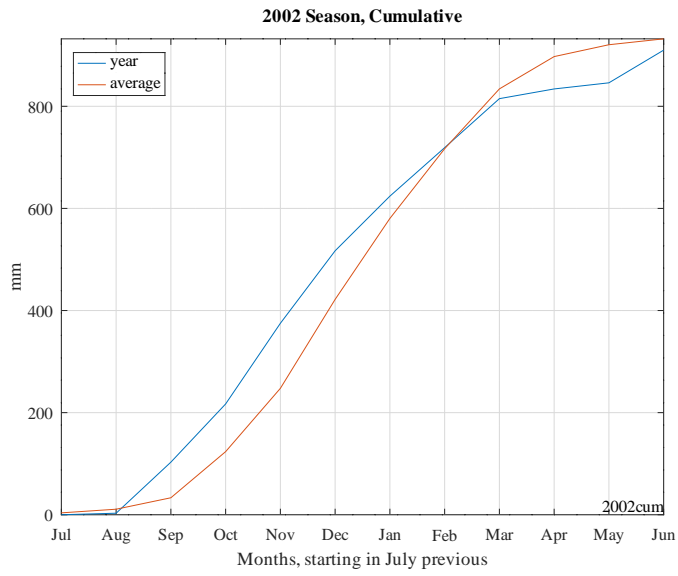


Figure 49: 2002 Season

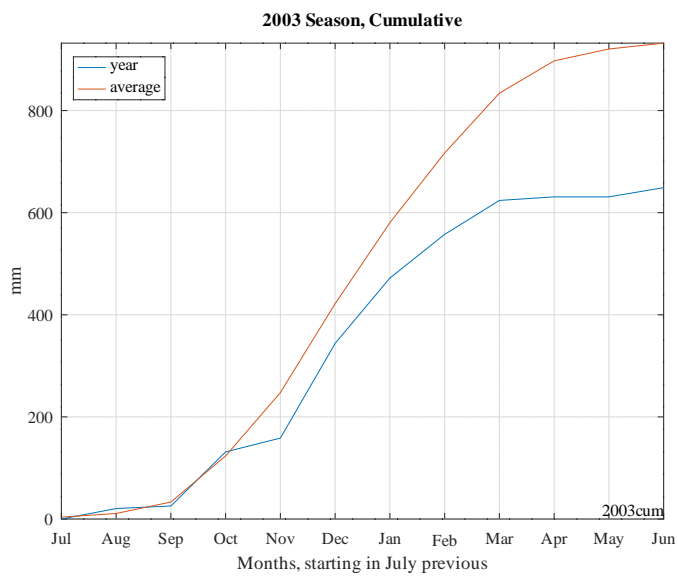


Figure 50: 2003 Season

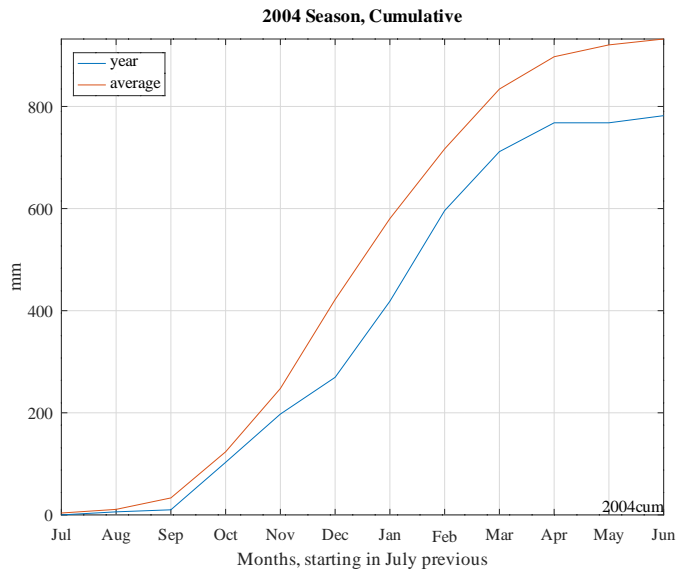


Figure 51: 2004 Season

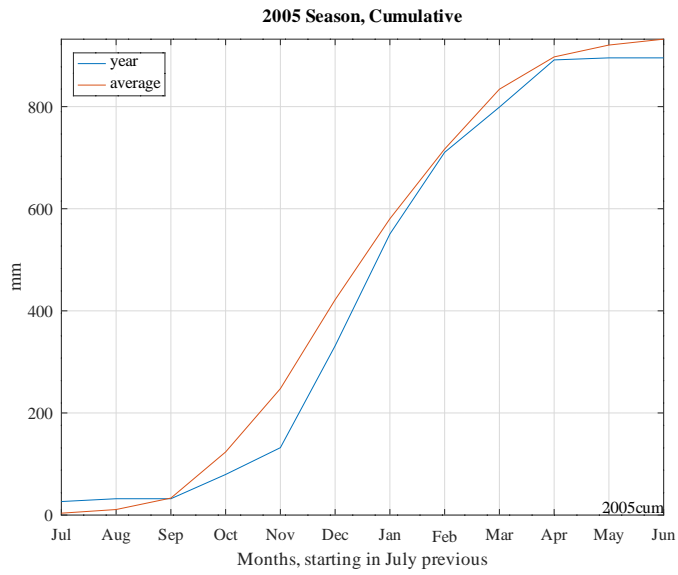


Figure 52: 2005 Season

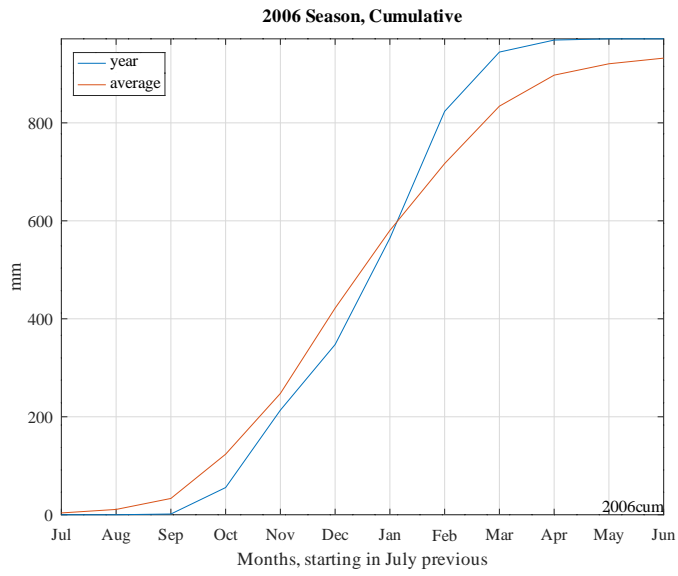


Figure 53: 2006 Season

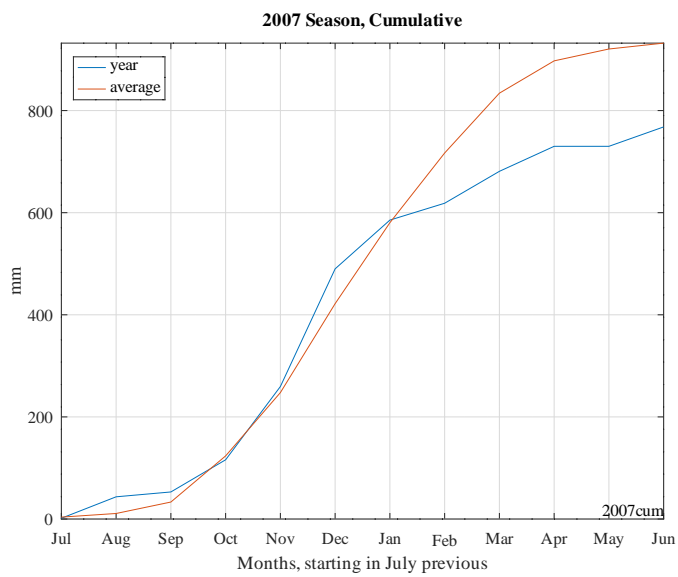


Figure 54: 2007 Season

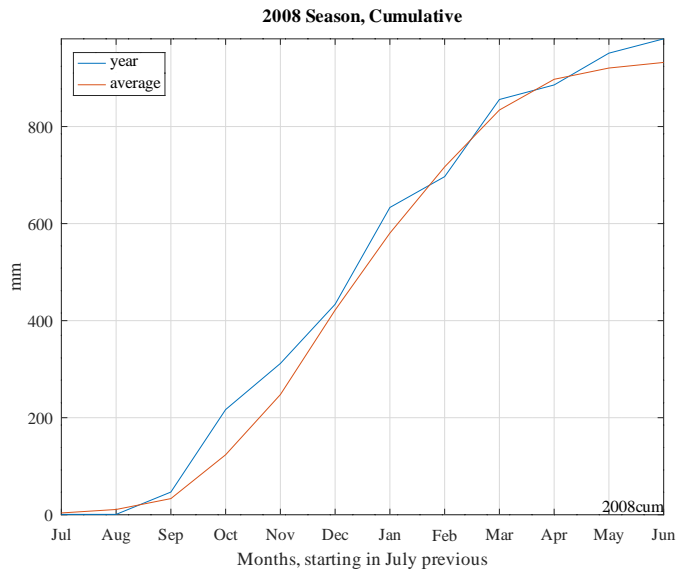


Figure 55: 2008 Season

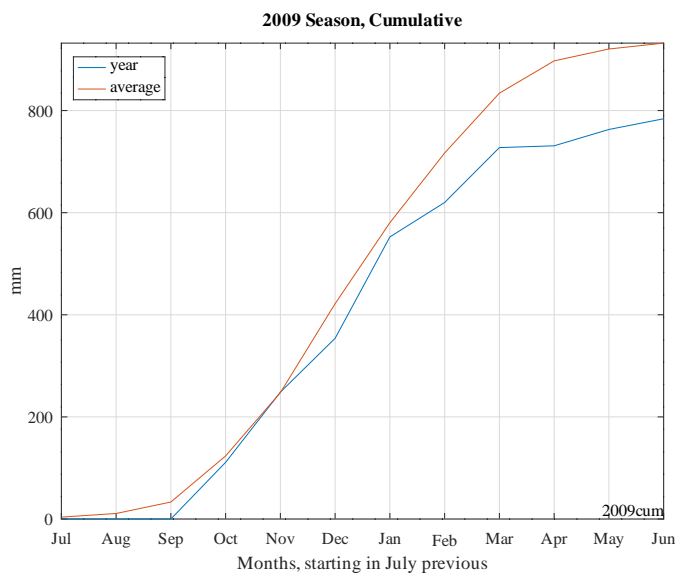


Figure 56: 2009 Season

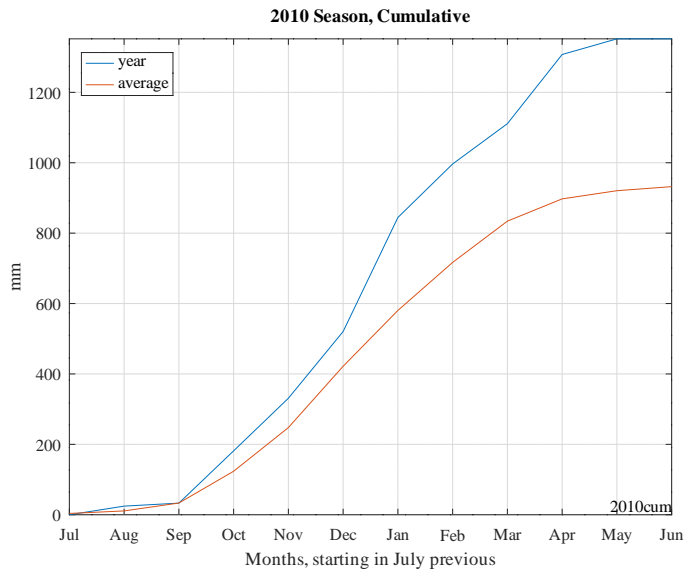


Figure 57: 2010 Season

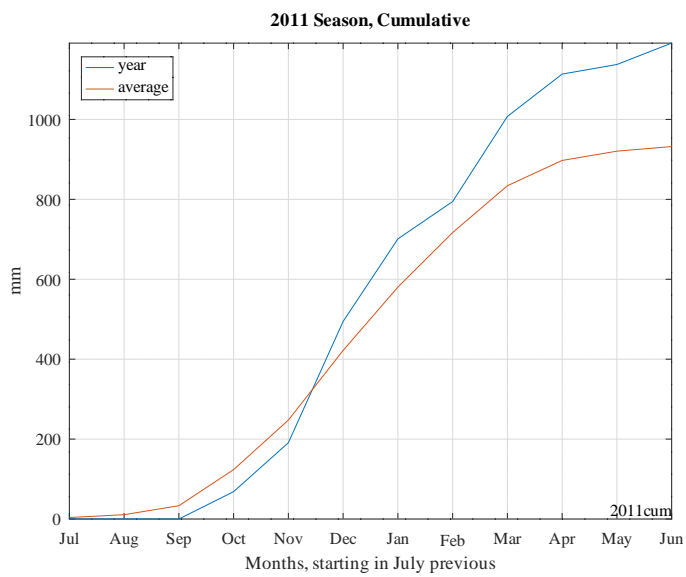


Figure 58: 2011 Season

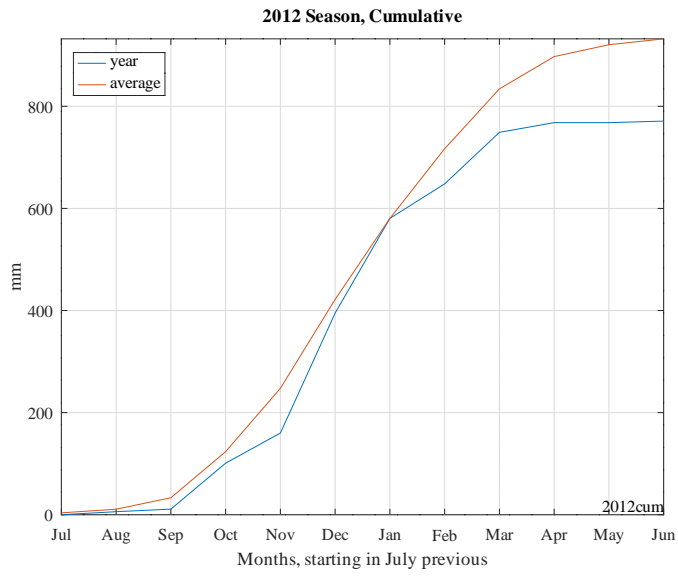


Figure 59: 2012 Season

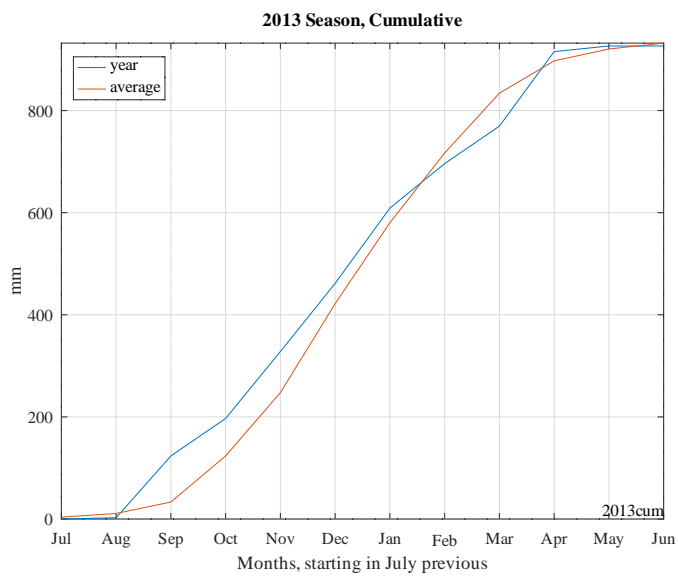


Figure 60: 2013 Season

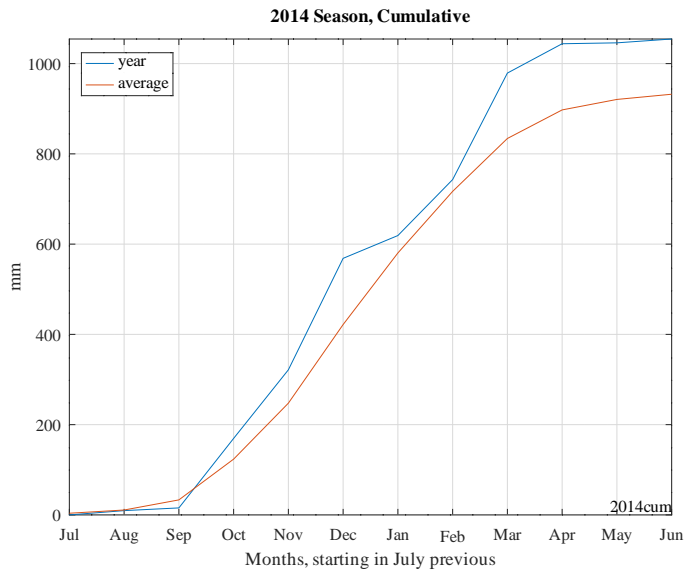


Figure 61: 2014 Season

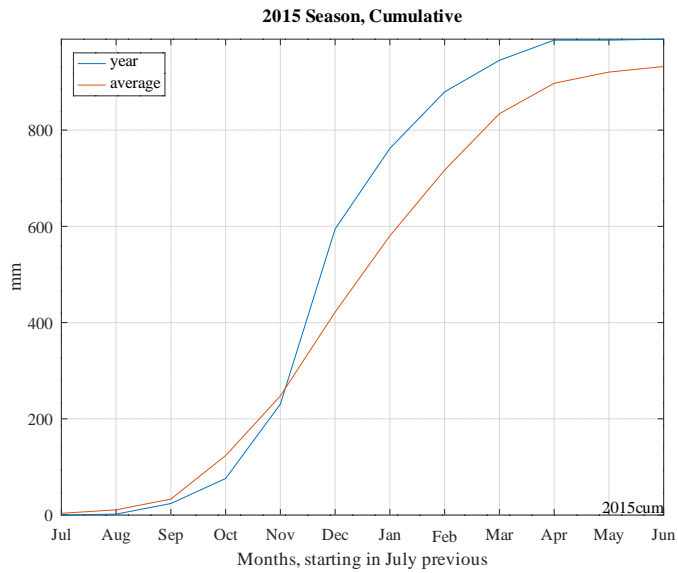


Figure 62: 2015 Season

4.3 Per Month

Note the scale changes: “Wet” and “Dry” months have different maxima on the y-axes, but are consistent within those classifications for comparison purposes.

The online version is ”<http://ytdp.ee.wits.ac.za/rain.html>”

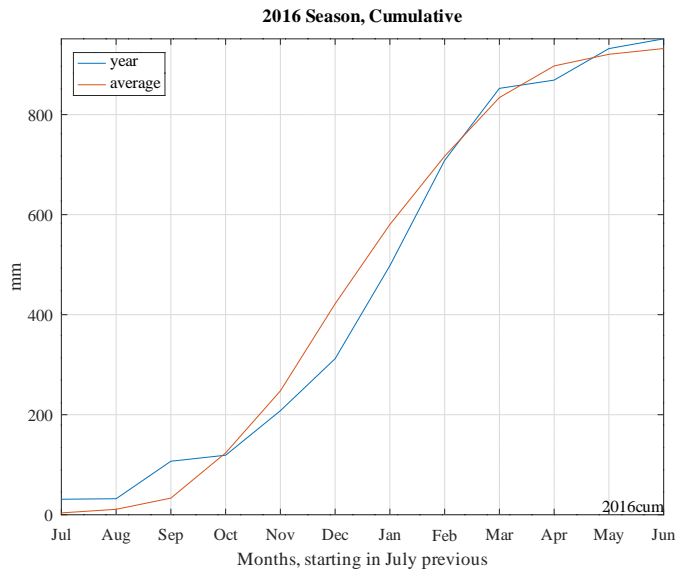


Figure 63: 2016 Season

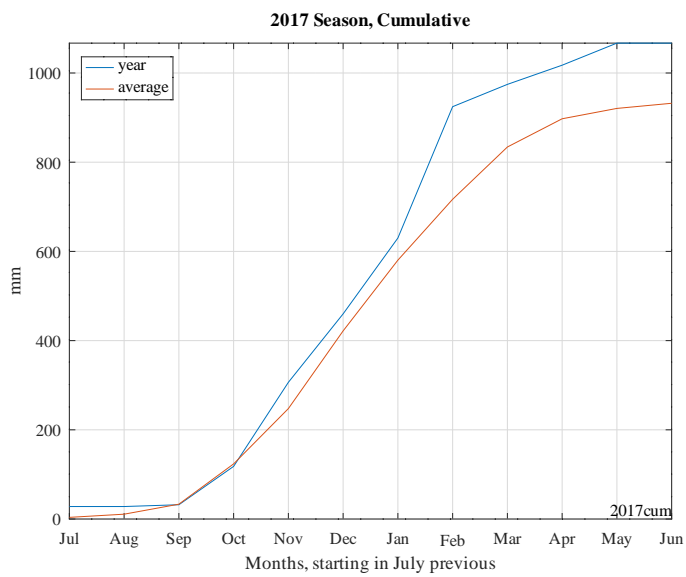


Figure 64: 2017 Season

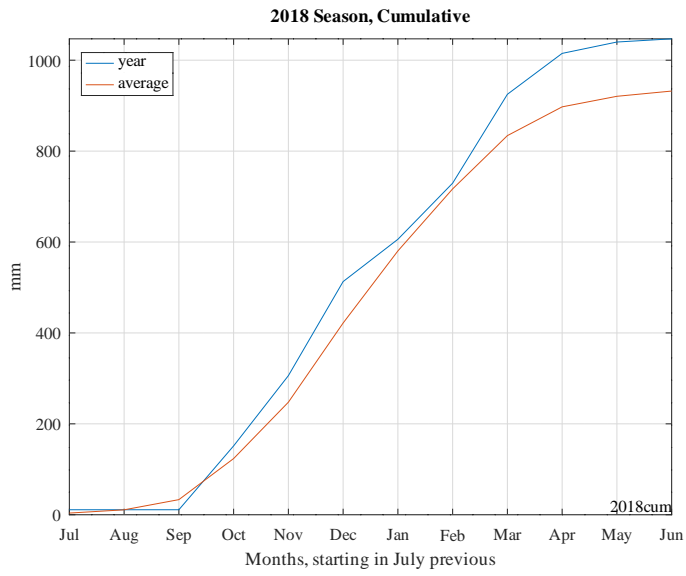


Figure 65: 2018 Season

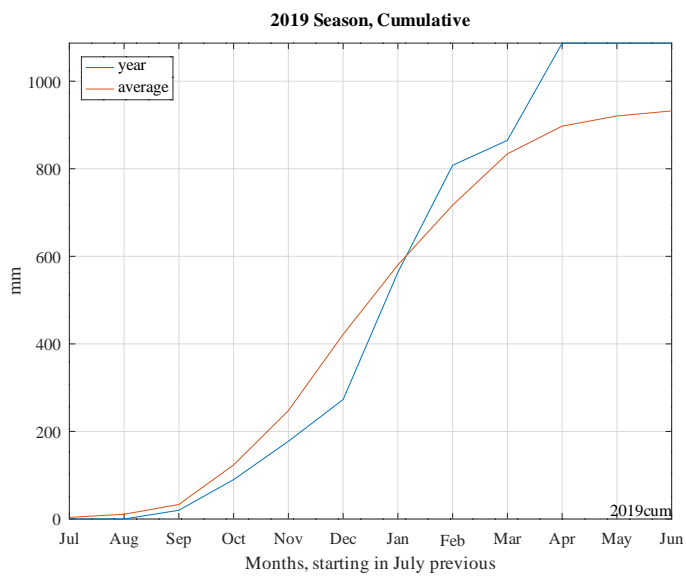


Figure 66: 2019 Season

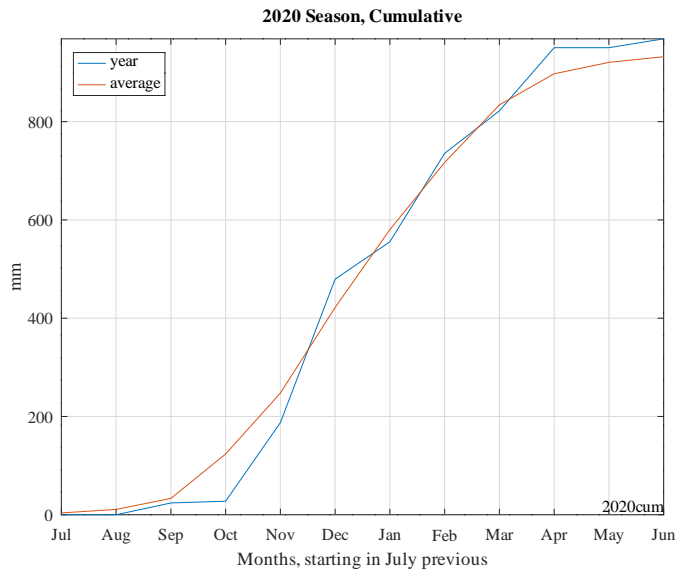


Figure 67: 2020 Season

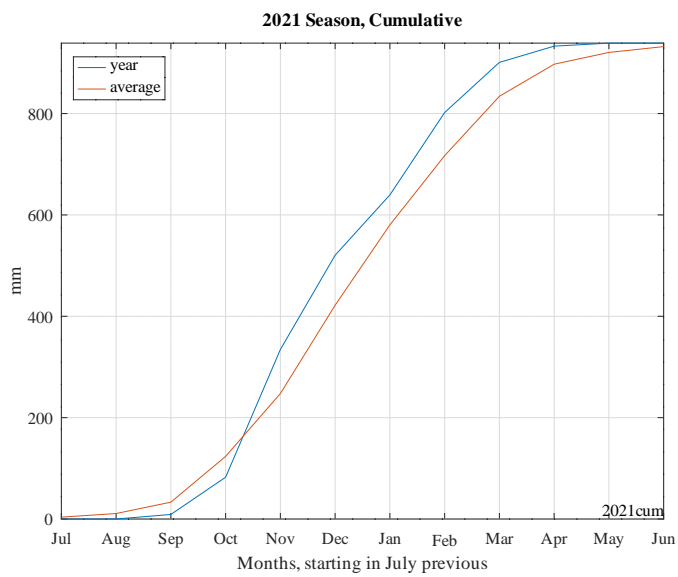


Figure 68: 2021 Season

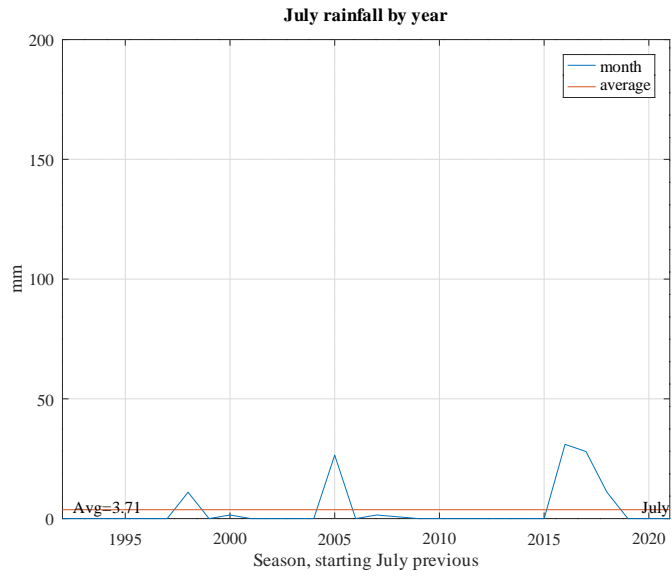


Figure 69: July

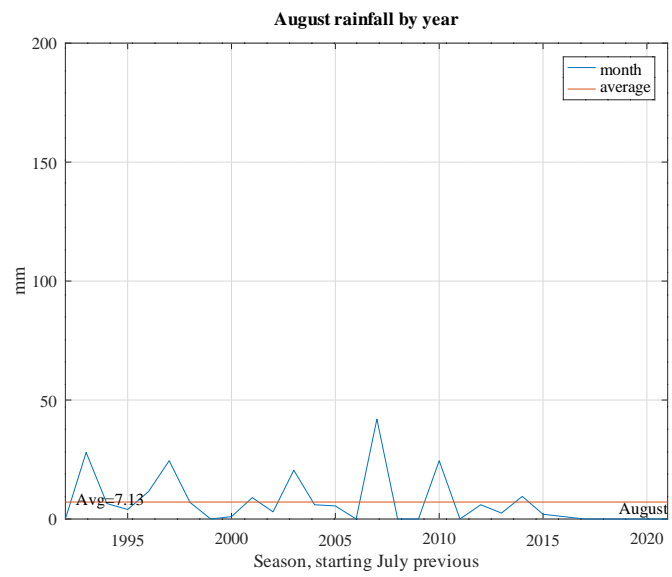


Figure 70: August

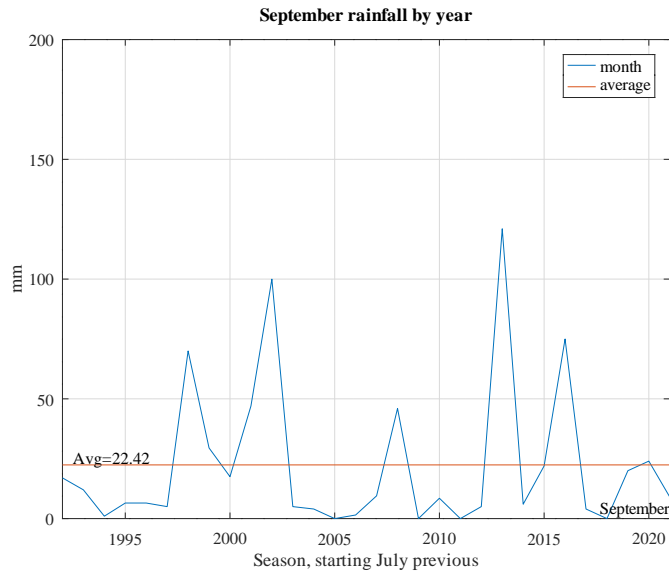


Figure 71: September

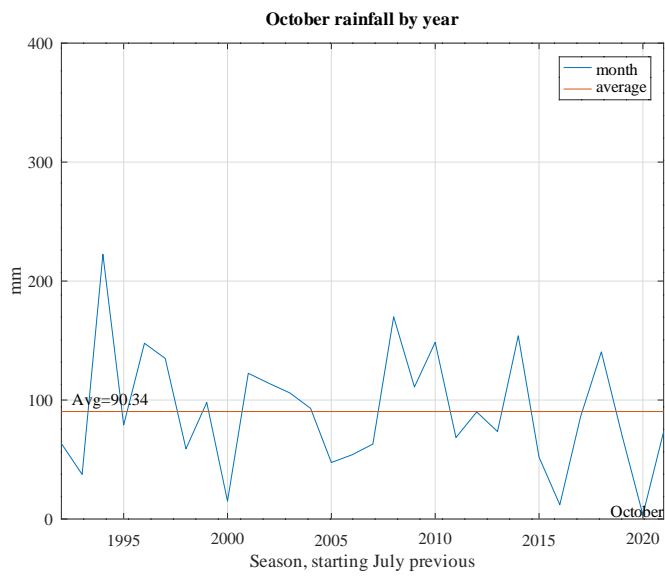


Figure 72: October

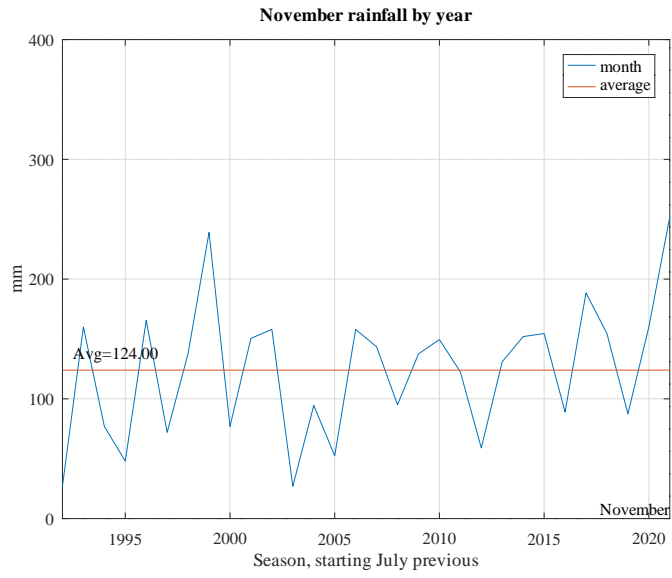


Figure 73: November

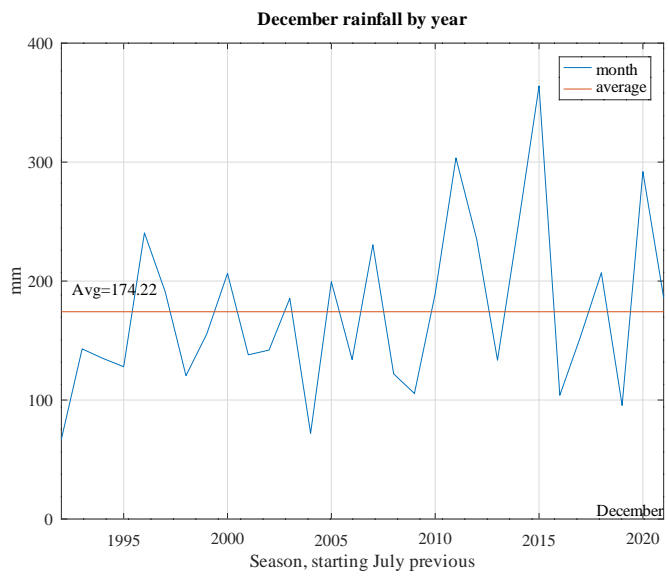


Figure 74: December

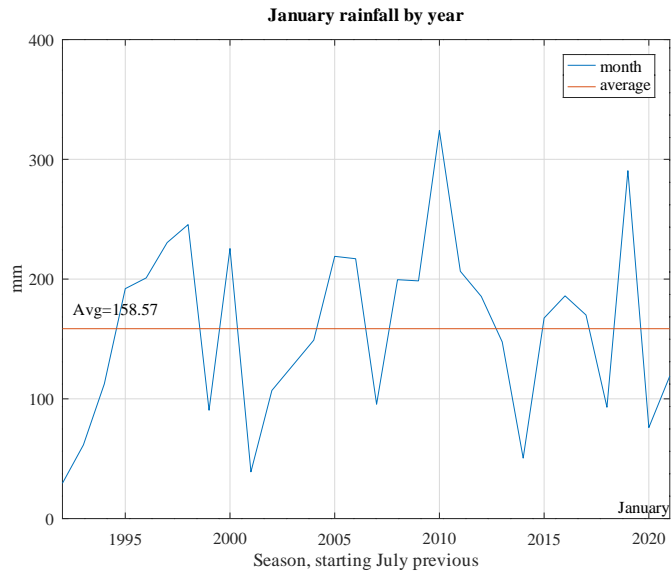


Figure 75: January

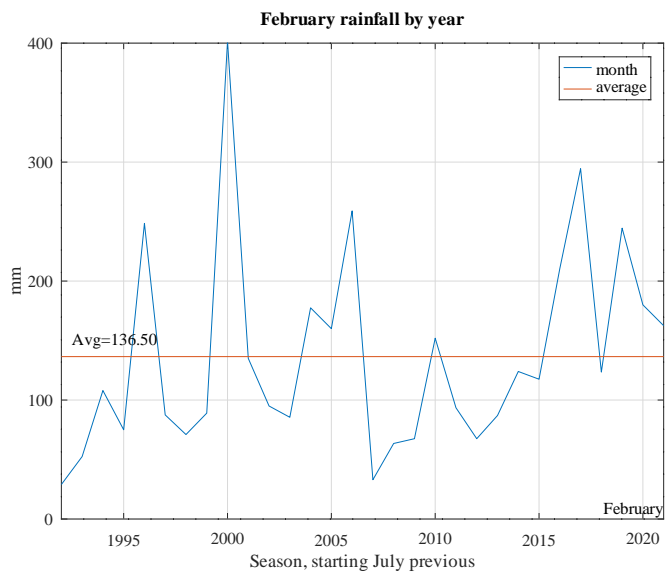


Figure 76: February

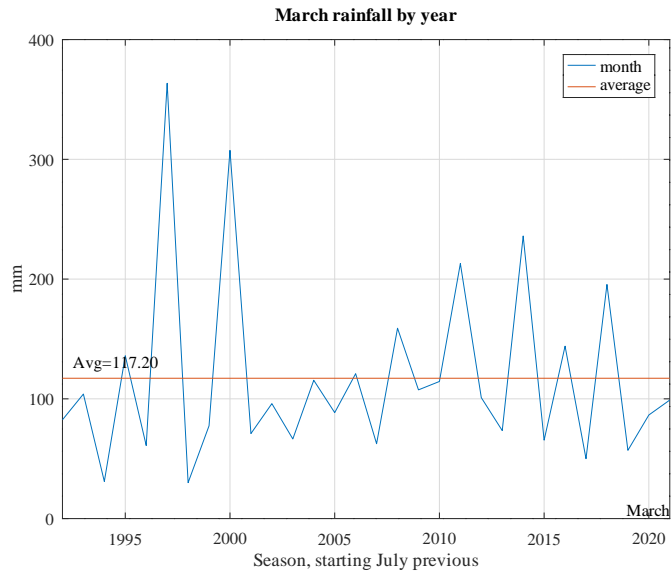


Figure 77: March

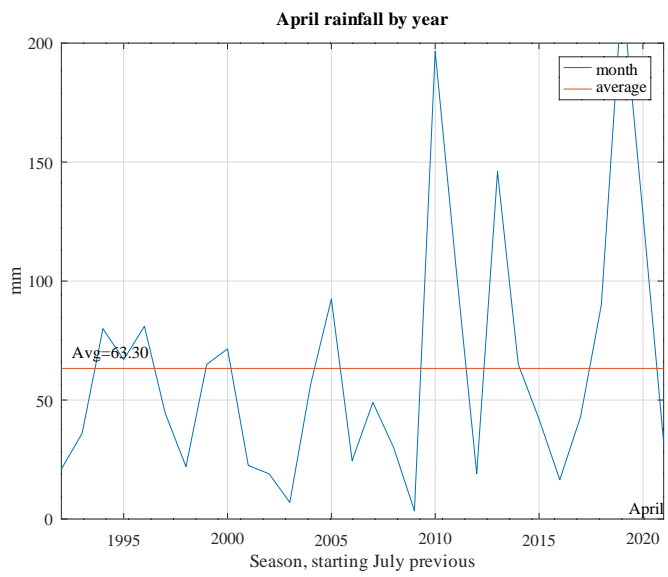


Figure 78: April

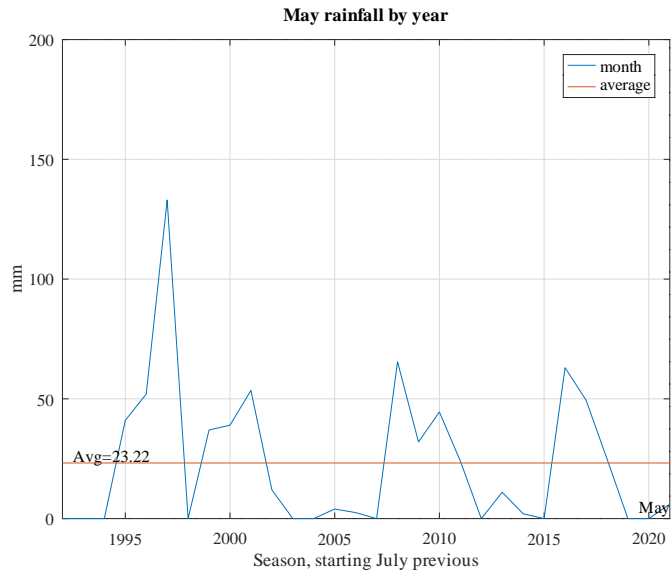


Figure 79: May

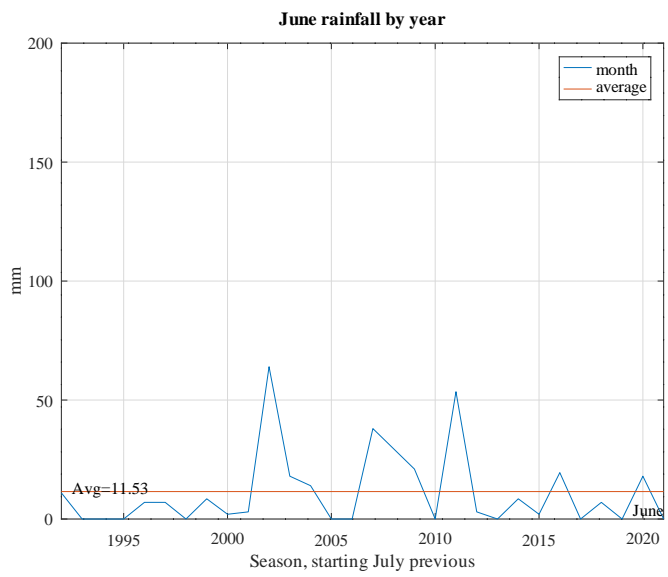


Figure 80: June

