

## Step-by-step solution to the analog downscaling exercise

1. Calculate the distance matrix

### Type equation for Euclidian distance

Microsoft Excel - Applications\_Analog\_Solution

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100% Arial

Reply with Changes... End Review...

MATCH

$$=SQRT((SE13-IS4)^2+(F13-IS5)^2+(G13-IS6)^2)$$

Euclidian distance between large scale predictors of 1 Mar 2051 and those of 1 April 2011

Make sure to fix with \$ the columns (for 2011) and the rows (for 2051), respectively

	A	B	C	D	E	F	G	H	I	J	K	L	M
1								YR	2051	2051	2051	2051	2051
2								MON	3	3	3	3	3
3								DAY	1	2	3	4	4
4								Z500	0.26	0.26	0.05	-0.21	-0.21
5								Z500zonal	-0.07	-0.25	-0.16	-0.16	-0.16
6								Z500merid	1.59	0.95	-0.04	-0.93	-0.93
7								MIN_DISTANCE					
8								ROW_NUMBER					
9								ADDRESS					
10								BEST ANALOG					
11													
12	YR	MON	DAY	PREC [mn	Z500	Z500zonal	Z500merid						
13	2011	4	1	0.00	0.47	0.44	-0.53						
14	2011	4	2	0.00	0.42	0.53	0.64						
15	2011	4	3	0.00	0.42	0.53	1.47						
16	2011	4	4	0.00	-0.31	-0.85	1.56						
17	2011	4	5	0.00	-0.49	-0.33	0.06						
18	2011	4	6	0.00	-0.85	-0.68	-0.02						

$$=SQRT((SE13-IS4)^2+(F13-IS5)^2+(G13-IS6)^2)$$

Drag the bottom right corner to fill the matrix

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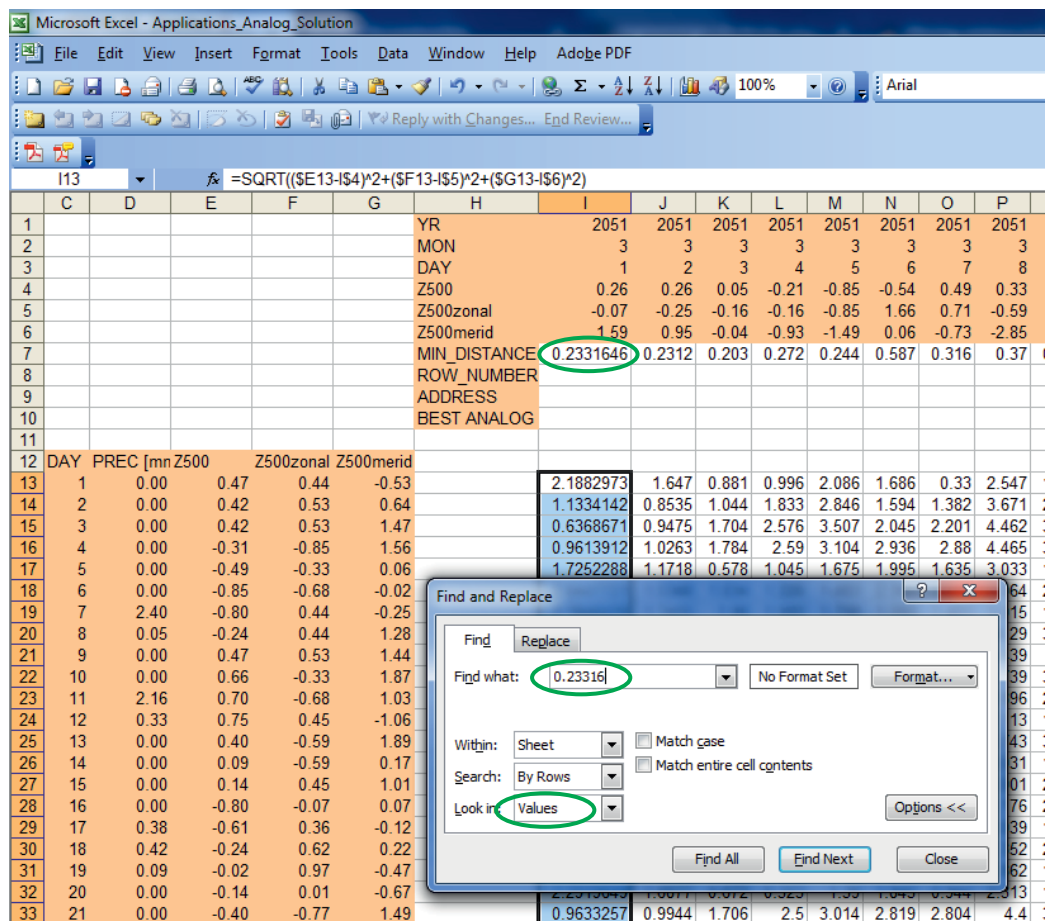
Reply with Changes... End Review...

	C	D	E	F	G	H	I	J	K	L
1						YR	2051	2051	2051	2051
2						MON	3	3	3	3
3						DAY	1	2	3	3
4						Z500	0.26	0.26	0.05	-0.05
5						Z500zonal	-0.07	-0.25	-0.16	-0.16
6						Z500merid	1.59	0.95	-0.04	-0.04
7						MIN_DISTANCE				
8						ROW_NUMBER				
9						ADDRESS				
10						BEST ANALOG				
11										
12	DAY	PREC [mn	Z500	Z500zonal	Z500merid					
13	1	0.00	0.47	0.44	-0.53		2.1882973	1.647	0.98	0.98
14	2	0.00	0.42	0.53	0.64		1.1384142	0.8535	1.044	1.044
15	3	0.00	0.42	0.53	1.47		0.6368671	0.9475	1.704	1.704
16	4	0.00	-0.31	-0.85	1.56		0.9613912	1.0263	1.784	1.784
17	5	0.00	-0.49	-0.33	0.06		1.7252288	1.1718	0.578	0.578
18	6	0.00	-0.85	-0.68	-0.02		2.0447721	1.5348	1.034	1.034
19	7	2.40	-0.80	0.44	-0.25		2.1846426	1.7455	1.06	1.06
20	8	0.05	-0.24	0.44	1.28		0.7799221	0.9082	1.478	1.478
21	9	0.00	0.47	0.53	1.44		0.6559143	0.9434	1.693	1.693
22	10	0.00	0.66	-0.33	1.87		0.554501	1.0047	2.018	2.018

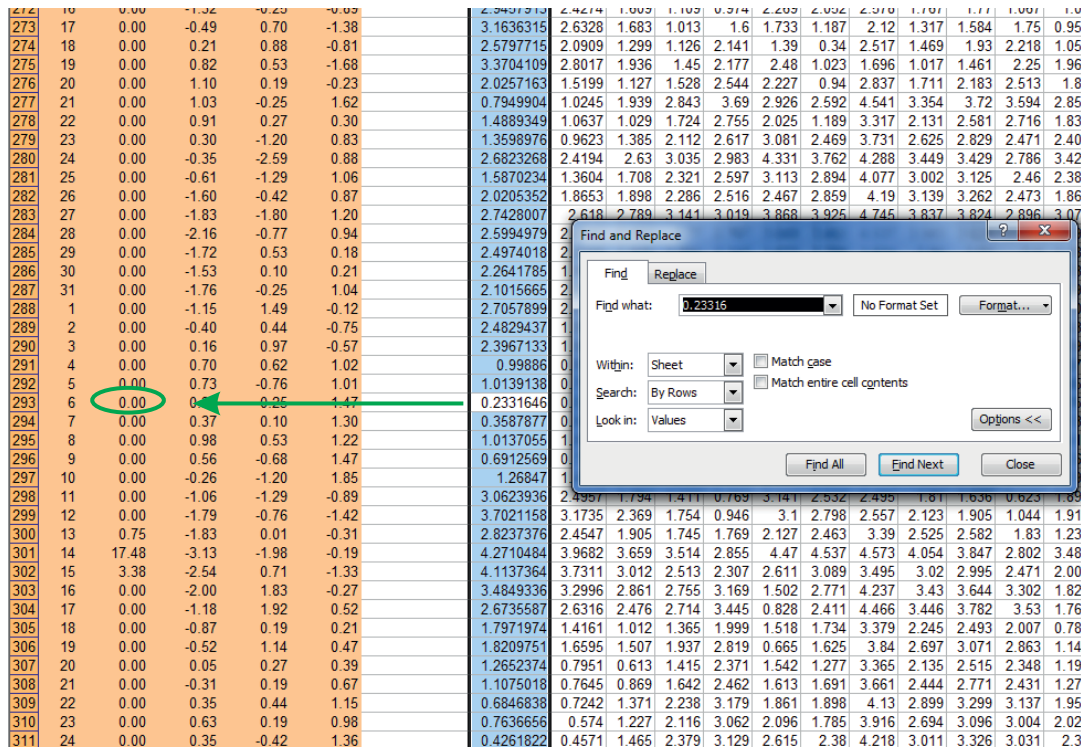
Drag to fill row



Mark the column, be sure to look in values only

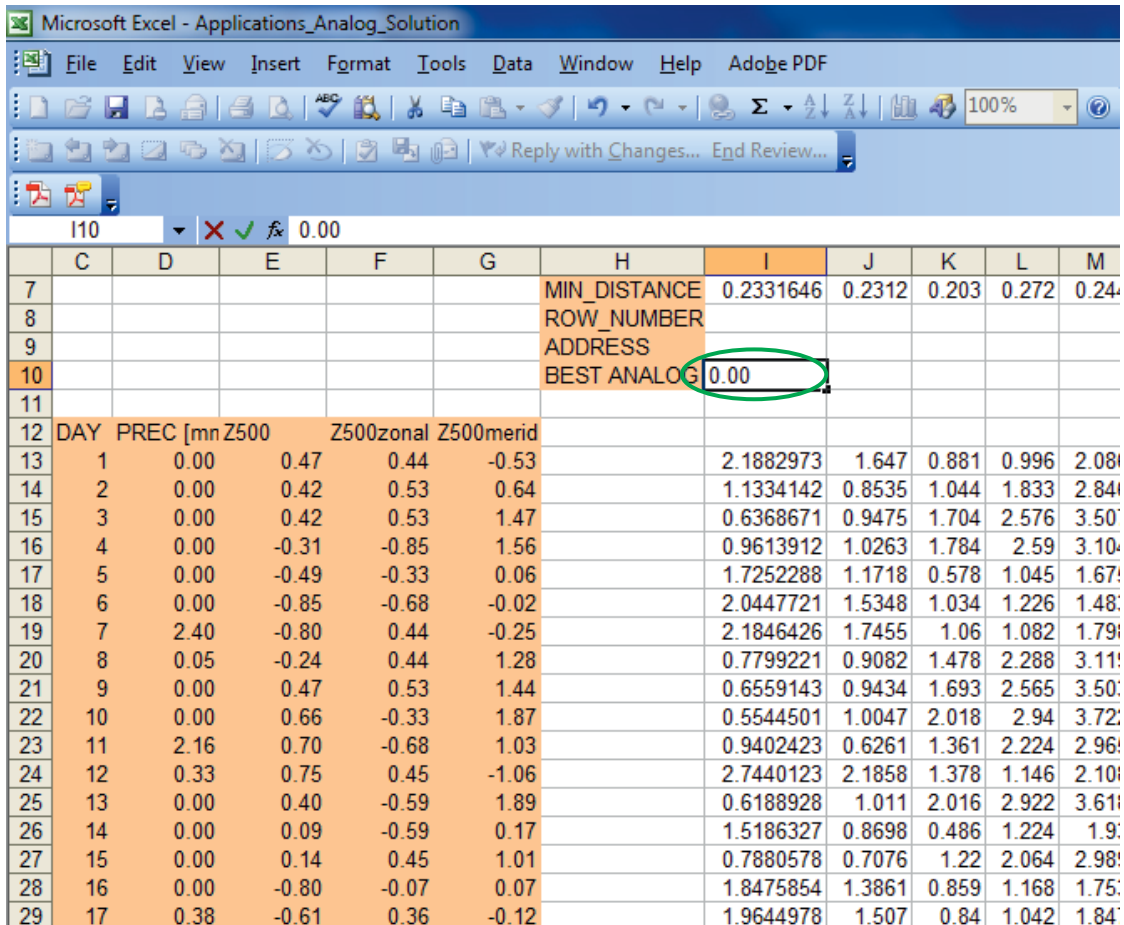


#### 4. Copy the precipitation of that day...



Day	Precip	Z500zonal	Z500merid
1	0.00	0.47	0.44
2	0.00	0.42	0.53
3	0.00	0.42	0.53
4	0.00	-0.31	-0.85
5	0.00	-0.49	-0.33
6	0.00	-0.85	-0.68
7	2.40	-0.80	0.44
8	0.05	-0.24	0.44
9	0.00	0.47	0.53
10	0.00	0.66	-0.33
11	2.16	0.70	-0.68
12	0.33	0.75	0.45
13	0.00	0.40	-0.59
14	0.00	0.09	-0.59
15	0.00	0.14	0.45
16	0.00	-0.80	-0.07
17	0.38	-0.61	0.36

#### 5. ...to the candidate day



Day	Precip	Z500zonal	Z500merid
1	0.00	0.47	0.44
2	0.00	0.42	0.53
3	0.00	0.42	0.53
4	0.00	-0.31	-0.85
5	0.00	-0.49	-0.33
6	0.00	-0.85	-0.68
7	2.40	-0.80	0.44
8	0.05	-0.24	0.44
9	0.00	0.47	0.53
10	0.00	0.66	-0.33
11	2.16	0.70	-0.68
12	0.33	0.75	0.45
13	0.00	0.40	-0.59
14	0.00	0.09	-0.59
15	0.00	0.14	0.45
16	0.00	-0.80	-0.07
17	0.38	-0.61	0.36