

Date: 2/15/2023

Calc. By:
CALCULATION FORM
Job No:
Chkd. By:
Job:
Drg no:
Recommended By:
Subject: Trend Analysis

Approved By:

Fiscal Year	Mean annual discharge	5-years moving average	10-years moving average	year	5-years moving average	year	10-years moving average
61-62	29.7			2065	27.2	2070	34.5
62-63	25.7			2066	28.3	2071	32.5
63-64	23.6			2067	31.5	2072	31.9
64-65	29.5			2068	33.4	2073	32.4
65-66	27.9	27.2		2069	40.4	2074	31.4
66-67	35.1	28.3		2070	43.5	2075	30.5
67-68	41.3	31.5		2071	37.6	2076	28.9
68-69	33.4	33.4		2072	32.3	2077	27.4
69-70	64.2	40.4		2073	31.1	2078	26.7
70-71		43.5	34.5	2074	20.3	2079	23.5
71-72	11.6	37.6	32.5	2075	20.0		
72-73	20.2	32.3	31.9	2076	21.9		
73-74	28.4	31.1	32.4	2077	23.5		
74-75	20.8	20.3	31.4	2078	23.2		
75-76	19.2	20.0	30.5	2079	26.1		
76-77	20.7	21.9	28.9				
77-78	28.2	23.5	27.4				
78-79	27.2	23.2	26.7				
79-80	35.4	26.1	23.5				
		27.9	23.5				
		30.3	25.0				
		31.3	25.7				
		35.4	25.2				
			26.1				
			27.9				
			30.3				
			31.3				
			35.4				

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Mean annual discharge

File: 'D:\...'TS_Andhikhola_Q_ann 2.txt'

Statistics : Start = 2061 End = 2078 Length = 15

Mean	SD	Skew	SE	CV
27.38	6.129	0.5360	1.582	0.2238

Summary : Start = 2061 End = 2078 Length = 15

Min	Q1	Median	Q3	Max
19.17	21.51	27.90	29.61	41.34

Persistence test :

Series Start = 2061 End = 2078 Length = 15

Null hypothesis: There is no lag-1 persistence in the series

 $r(1) = 0.450$

Alpha	0.10	0.05	0.02	0.01
UCL	0.425	0.506	0.601	0.665
LCL	-0.425	-0.506	-0.601	-0.665

Mann-Kendall trend test :

Series Start = 2061 End = 2078 Length = 15

Null hypothesis: There is no trend in the series

S = -25
tau = -0.2381
p = 0.2365

Since $p > 0.01$, there is no significant trend in data

Apparent trend : Start = 2061 End = 2078 Length = 15



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	Estimate	SE	t-stat	Pr(> t)
Const	30.22	2.987	10.12	<0.0001 ***
Slope	-0.4054	0.3631	-1.116	0.2844

Residual SE: 6.076 Regression DF: 13
R-squared: 0.08750 Adj R-squared: 0.01730

5-year moving average

File: 'D:\...\Andhi_khola_5-year_mean_annual_average.txt'

Statistics : Start = 2065 End = 2079 Length = 15

Mean	SD	Skew	SE	CV
29.35	7.252	0.4183	1.873	0.2471

Summary : Start = 2065 End = 2079 Length = 15

Min	Q1	Median	Q3	Max
20.00	23.28	28.30	33.13	43.50

Persistence test :

Series Start = 2065 End = 2079 Length = 15

Null hypothesis: There is no lag-1 persistence in the series

$r(1) = 0.807$

Alpha	0.10	0.05	0.02	0.01
UCL	0.425	0.506	0.601	0.665
LCL	-0.425	-0.506	-0.601	-0.665

Persistence test (pre-white) :

Series Start = 2065 End = 2079 Length = 15

Null hypothesis: There is no lag-1 persistence in the series



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$$r(1) = 0.366$$

Alpha 0.10 0.05 0.02 0.01

UCL 0.425 0.506 0.601 0.665

LCL -0.425 -0.506 -0.601 -0.665

Mann-Kendall trend test (pre-white) :

Series Start = 2065 End = 2079 Length = 15

Null hypothesis: There is no trend in the series

S = -15

tau = -0.1429

p = 0.4923

Since $p > 0.01$, there is no significant trend in data

	Estimate	SE	t-stat	Pr(> t)
Const	35.31	3.149	11.21	<0.0001 ***
Slope	-0.8514	0.3828	-2.224	0.04447 **

Residual SE: 6.405 Regression DF: 13

R-squared: 0.2757 Adj R-squared: 0.2199

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10-year moving average

File: 'D:\..\Andhi_kholaz-10-year_mean_annual_average.txt'

Statistics : Start = 2070 End = 2079 Length = 10

Mean	SD	Skew	SE	CV
29.97	3.320	-0.5200	1.050	0.1108

Summary : Start = 2070 End = 2079 Length = 10

Min	Q1	Median	Q3	Max
23.50	27.40	30.95	32.40	34.50

Persistence test :

Series Start = 2070 End = 2079 Length = 10

Null hypothesis: There is no lag-1 persistence in the series

 $r(1) = 0.575$

Alpha	0.10	0.05	0.02	0.01
UCL	0.520	0.620	0.736	0.815
LCL	-0.520	-0.620	-0.736	-0.815

Mann-Kendall trend test :

Series Start = 2070 End = 2079 Length = 10

Null hypothesis: There is no trend in the series

S = -43
tau = -0.9556
p = <0.0001 ***

Since $p < 0.01$, there is significant trend in data.

but sample size is small. (only 10 data in 10-years moving average)

Apparent trend : Start = 2070 End = 2079 Length = 10



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	Estimate	SE	t-stat	Pr(> t)
Const	34.70	0.5864	59.18	<0.0001 ***
Slope	-1.052	0.1098	-9.574	<0.0001 ***

Residual SE: 0.9976 Regression DF: 8

R-squared: 0.9197 Adj R-squared: 0.9097

CALCULATION FORM

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Subject: Trend Analysis

Baishakh	Fiscal year
2.7775	61-62
3.45	62-63
4.445333	63-64
3.254	64-65
1.665333	65-66
2.650123	66-67
3.313763	67-68
3.117221	68-69
	69-70
	70-71
4.040232	71-72
1.928774	72-73
3.877516	73-74
4.311601	74-75
6.486357	75-76
6.589915	76-77
3.182864	77-78
4.800898	78-79
	79-80

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Open a time series file to start

File: 'D:\...Baishakh_average.txt'

Statistics : Start = 2061 End = 2078 Length = 16

Mean	SD	Skew	SE	CV
3.743	1.381	0.6558	0.3453	0.3690

Summary : Start = 2061 End = 2078 Length = 16

Min	Q1	Median	Q3	Max
1.665	2.947	3.382	4.378	6.590

Persistence test :

Series Start = 2061 End = 2078 Length = 16

Null hypothesis: There is no lag-1 persistence in

$r(1) = 0.351$

Alpha	0.10	0.05	0.02	0.01
UCL	0.411	0.490	0.582	0.644
LCL	-0.411	-0.490	-0.582	-0.644

Mann-Kendall trend test :

Series Start = 2061 End = 2078 Length = 16

Null hypothesis: There is no trend in the series

S = 42
tau = 0.3500
p = 0.06257 *

Since $p > 0.01$, there is no significant trend in data



CALCULATION FORM

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Apparent trend : Start = 2061 End = 2078 Length

	Estimate	SE	t-stat	Pr(> t)	
Const	2.629	0.5864	4.484	0.0005152	***
Slope	0.1485	0.06662	2.229	0.04268	**

Residual SE: 1.228 Regression DF: 14

R-squared: 0.2620 Adj R-squared: 0.2093



Subject: Trend Analysis

Jestha	Fiscal year
5.465	61-62
43.90633	62-63
13.686	63-64
9.753226	64-65
7.165667	65-66
5.083965	66-67
17.82135	67-68
4.815711	68-69
	69-70
	70-71
10.1866	71-72
9.615231	72-73
10.44226	73-74
9.349018	74-75
14.90804	75-76
14.90804	76-77
16.40328	77-78
23.03409	78-79
	79-80

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Recommended By:

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File: 'D:\.\Jestha_average.txt'

Statistics : Start = 2061 End = 2078 Length = 16

Mean	SD	Skew	SE	CV
13.53	9.536	1.923	2.384	0.7046

Summary : Start = 2061 End = 2078 Length = 16

Min	Q1	Median	Q3	Max
4.816	8.257	10.31	15.66	43.91

Persistence test :

Series Start = 2061 End = 2078 Length = 16

Null hypothesis: There is no lag-1 persistence in the series

$r(1) = -0.104$

Alpha	0.10	0.05	0.02	0.01
UCL	0.411	0.490	0.582	0.644
LCL	-0.411	-0.490	-0.582	-0.644

Mann-Kendall trend test :

Series Start = 2061 End = 2078 Length = 16

Data contain ties: using z-score

Null hypothesis: There is no trend in the series

$S = 31$
 $\tau = 0.2594$
 $SD = 22.19$
 $z = 1.352$
 $p = 0.1764$

Since $p > 0.01$, there is no significant trend in data

Apparent trend : Start = 2061 End = 2078 Length = 16

	Estimate	SE	t-stat	Pr(> t)
Const	13.66	4.713	2.898	0.01168 **
Slope	-0.01668	0.5353	-0.03115	0.9756

Residual SE: 9.871 Regression DF: 14

R-squared: 6.932e-05 Adj R-squared: -0.07135

Subject: Trend Analysis

Ashadh	Fiscal year
54.35033	61-62
53.33129	62-63
36.86258	63-64
76.89467	64-65
63.51933	65-66
69.62457	66-67
89.65745	67-68
104.6862	68-69
	69-70
	70-71
29.11283	71-72
73.2002	72-73
66.51487	73-74
41.92625	74-75
55.8871	75-76
55.52683	76-77
80.59851	77-78
64.63693	78-79
	79-80

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Chkd. By:

Recommended By:

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File: 'D:\.\Ashadh_average.txt'

Statistics : Start = 2061 End = 2078 Length = 16

Mean	SD	Skew	SE	CV
63.52	19.43	0.2013	4.856	0.3058

Summary : Start = 2061 End = 2078 Length = 16

Min	Q1	Median	Q3	Max
29.11	53.84	64.08	75.05	104.7

Persistence test :

Series Start = 2061 End = 2078 Length = 16

Null hypothesis: There is no lag-1 persistence in the series

$r(1) = -0.076$

Alpha	0.10	0.05	0.02	0.01
UCL	0.411	0.490	0.582	0.644
LCL	-0.411	-0.490	-0.582	-0.644

Mann-Kendall trend test :

Series Start = 2061 End = 2078 Length = 16

Null hypothesis: There is no trend in the series

S = 12
tau = 0.1000
p = 0.6238

Since $p > 0.01$, there is no significant trend in data

Apparent trend : Start = 2061 End = 2078 Length = 16

Estimate	SE	t-stat	Pr(> t)
Const	60.95	9.566	6.371 <0.0001 ***



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Slope 0.3432 1.087 0.3158 0.7568

Residual SE: 20.04 Regression DF: 14

R-squared: 0.007074 Adj R-squared: -0.06385

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Shrawan	Fiscal year
66.57677	61-62
67.35484	62-63
55.10718	63-64
85.75129	64-65
101.1052	65-66
149.7109	66-67
140.2317	67-68
111.198	68-69
117.6706	69-70
	70-71
	71-72
56.72225	72-73
114.5402	73-74
75.38422	74-75
55.85688	75-76
42.28323	76-77
77.85248	77-78
63.62974	78-79
65.40967	79-80

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Calc. By:

Job No:

Chkd. By:

Drg no:

Recommended By:

Approved By:

File: 'D:\...\Shrawan_average.txt'

Statistics : Start = 2061 End = 2079 Length = 17

Mean	SD	Skew	SE	CV
85.08	31.75	0.6177	7.700	0.3731

Summary : Start = 2061 End = 2079 Length = 17

Min	Q1	Median	Q3	Max
42.28	61.90	75.38	112.0	149.7

Persistence test :

Series Start = 2061 End = 2079 Length = 17

Null hypothesis: There is no lag-1 persistence in the series

$r(1) = 0.503$

Alpha	0.10	0.05	0.02	0.01
UCL	0.399	0.475	0.564	0.625
LCL	-0.399	-0.475	-0.564	-0.625

Mann-Kendall trend test :

Series Start = 2061 End = 2079 Length = 17

Null hypothesis: There is no trend in the series

S = -20
tau = -0.1471
p = 0.4372

Since $p > 0.01$, there is no significant trend in data

Apparent trend : Start = 2061 End = 2079 Length = 17



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	Estimate	SE	t-stat	Pr(> t)
Const	97.36	14.77	6.593	<0.0001 ***
Slope	-1.535	1.574	-0.9749	0.3451

Residual SE: 31.80 Regression DF: 15

R-squared: 0.05958 Adj R-squared: -0.003113

CALCULATION FORM
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Bhadra	Fiscal year
138.9647	61-62
75.2	62-63
109.3757	63-64
101.3637	64-65
68.892	65-66
89.2918	66-67
158.8042	67-68
78.89238	68-69
81.16405	69-70
	70-71
	71-72
58.29707	72-73
55.92505	73-74
63.29781	74-75
36.30102	75-76
45.00781	76-77
61.70509	77-78
68.17774	78-79
57.53444	79-80

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Chkd. By:
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File: 'D:\...\Bhadra_average.txt'

Statistics : Start = 2061 End = 2079 Length = 17

Mean	SD	Skew	SE	CV
79.31	32.28	1.030	7.830	0.4071

Summary : Start = 2061 End = 2079 Length = 17

Min	Q1	Median	Q3	Max
36.30	58.11	68.89	92.31	158.8

Persistence test :

Series Start = 2061 End = 2079 Length = 17

Null hypothesis: There is no lag-1 persistence in the series

 $r(1) = 0.285$

Alpha	0.10	0.05	0.02	0.01
UCL	0.399	0.475	0.564	0.625
LCL	-0.399	-0.475	-0.564	-0.625

Mann-Kendall trend test :

Series Start = 2061 End = 2079 Length = 17

Null hypothesis: There is no trend in the series

S	=	-74
tau	=	-0.5441
p	=	0.06738 *

Since $p > 0.01$, there is no significant trend in data

Apparent trend : Start = 2061 End = 2079 Length = 17

Estimate	SE	t-stat	Pr(> t)
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Const	112.7	11.73	9.609	<0.0001	***
Slope	-4.174	1.250	-3.339	0.004489	***

Residual SE: 25.25 Regression DF: 15

R-squared: 0.4263 Adj R-squared: 0.3881

CALCULATION FORM
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Ashwin	Fiscal year
49.65517	61-62
22.61567	62-63
32.732	63-64
37.81379	64-65
61.21367	65-66
68.74389	66-67
52.48486	67-68
63.28053	68-69
46.96583	69-70
	70-71
	71-72
17.83671	72-73
54.79104	73-74
30.14698	74-75
20.24943	75-76
34.60707	76-77
50.13841	77-78
46.76963	78-79
60.08953	79-80

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Recommended By:
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File: 'D:\...\Ashwin_average.txt'

Statistics : Start = 2061 End = 2079 Length = 17

Mean	SD	Skew	SE	CV
44.13	15.74	-0.2085	3.818	0.3567

Summary : Start = 2061 End = 2079 Length = 17

Min	Q1	Median	Q3	Max
17.84	32.09	46.97	56.12	68.74

Persistence test :

Series Start = 2061 End = 2079 Length = 17

Null hypothesis: There is no lag-1 persistence in the series

 $r(1) = 0.249$

Alpha	0.10	0.05	0.02	0.01
UCL	0.399	0.475	0.564	0.625
LCL	-0.399	-0.475	-0.564	-0.625

Mann-Kendall trend test :

Series Start = 2061 End = 2079 Length = 17

Null hypothesis: There is no trend in the series

S	=	2
tau	=	0.01471
p	=	0.9675

Since $p > 0.01$, there is no significant trend in data

Apparent trend : Start = 2061 End = 2079 Length = 17

Estimate	SE	t-stat	Pr(> t)
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Const	43.72	7.549	5.792	<0.0001	***
Slope	0.05019	0.8048	0.06237	0.9511	

Residual SE: 16.26 Regression DF: 15

R-squared: 0.0002592 Adj R-squared: -0.06639

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Kartik	Fiscal year
14.7069	61-62
23.16071	62-63
10.96655	63-64
15.61103	64-65
11.27138	65-66
15.48941	66-67
14.26439	67-68
12.99446	68-69
11.01898	69-70
	70-71
	71-72
7.741729	72-73
14.49961	73-74
8.165092	74-75
6.884016	75-76
12.94935	76-77
8.735107	77-78
31.44691	78-79
17.71964	79-80

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File: 'D:\...\Kartik_average.txt'

Statistics : Start = 2061 End = 2079 Length = 17

Mean	SD	Skew	SE	CV
13.98	6.057	1.364	1.469	0.4333

Summary : Start = 2061 End = 2079 Length = 17

Min	Q1	Median	Q3	Max
6.884	10.41	12.99	15.52	31.45

Persistence test :

Series Start = 2061 End = 2079 Length = 17

Null hypothesis: There is no lag-1 persistence in the series

 $r(1) = 0.015$

Alpha	0.10	0.05	0.02	0.01
UCL	0.399	0.475	0.564	0.625
LCL	-0.399	-0.475	-0.564	-0.625

Mann-Kendall trend test :

Series Start = 2061 End = 2079 Length = 17

Null hypothesis: There is no trend in the series

S	=	-22
tau	=	-0.1618
p	=	0.3901

Since $p > 0.01$, there is no significant trend in data

Apparent trend : Start = 2061 End = 2079 Length = 17

Estimate	SE	t-stat	Pr(> t)
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Const 13.76 2.904 4.738 0.0002644 ***

Slope 0.02721 0.3096 0.08790 0.9311

Residual SE: 6.254 Regression DF: 15

R-squared: 0.0005148 Adj R-squared: -0.06612

CALCULATION FORM
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Mangsir	Fiscal year
7.87931	61-62
7.44	62-63
5.823929	63-64
7.793214	64-65
7.416552	65-66
7.266666	66-67
7.604683	67-68
7.41938	68-69
	69-70
	70-71
	71-72
5.197405	72-73
6.353827	73-74
5.046304	74-75
4.691589	75-76
10.01536	76-77
	77-78
8.775524	78-79
6.946417	79-80

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File: 'D:\...\Mangsir_average.txt'

Statistics : Start = 2061 End = 2079 Length = 15

Mean	SD	Skew	SE	CV
7.045	1.434	0.07439	0.3703	0.2036

Summary : Start = 2061 End = 2079 Length = 15

Min	Q1	Median	Q3	Max
4.692	5.956	7.417	7.746	10.02

Persistence test :

Series Start = 2061 End = 2079 Length = 15

Null hypothesis: There is no lag-1 persistence in the series

 $r(1) = 0.149$

Alpha	0.10	0.05	0.02	0.01
UCL	0.425	0.506	0.601	0.665
LCL	-0.425	-0.506	-0.601	-0.665

Mann-Kendall trend test :

Series Start = 2061 End = 2079 Length = 15

Null hypothesis: There is no trend in the series

S	=	-21
tau	=	-0.2000
p	=	0.3252

Since $p > 0.01$, there is no significant trend in data

Apparent trend : Start = 2061 End = 2079 Length = 15

Estimate	SE	t-stat	Pr(> t)
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CALCULATION FORM

Job:

Subject: Trend Analysis

Date: 2/15/2023

Calc. By:

Job No:

Chkd. By:

Drg no:

Recommended By:

Approved By:

Const 7.077 0.7316 9.674 <0.0001 ***

Slope -0.004679 0.08893 -0.05261 0.9588

Residual SE: 1.488 Regression DF: 13

R-squared: 0.0002129 Adj R-squared: -0.07669

CALCULATION FORM
Job:
Subject: Trend Analysis

Poush	Fiscal year
4.592857	61-62
3.822857	62-63
3.928621	63-64
4.962414	64-65
5.1375	65-66
4.726009	66-67
4.188466	67-68
4.724389	68-69
	69-70
	70-71
	71-72
3.837241	72-73
4.416018	73-74
3.776223	74-75
3.400098	75-76
9.283349	76-77
3.654314	77-78
3.753097	78-79
4.881664	79-80

Date: 2/15/2023
Calc. By:
Job No:
Chkd. By:
Drg no:
Recommended By:
Approved By:

File: 'D:\...\Poush_average.txt'

Statistics : Start = 2061 End = 2079 Length = 16

Mean	SD	Skew	SE	CV
4.568	1.367	2.464	0.3417	0.2992

Summary : Start = 2061 End = 2079 Length = 16

Min	Q1	Median	Q3	Max
3.400	3.800	4.302	4.804	9.283

Persistence test :

Series Start = 2061 End = 2079 Length = 16

Null hypothesis: There is no lag-1 persistence in the series

 $r(1) = -0.281$

Alpha	0.10	0.05	0.02	0.01
UCL	0.411	0.490	0.582	0.644
LCL	-0.411	-0.490	-0.582	-0.644

Spearman rank-order trend test :

Series Start = 2061 End = 2079 Length = 16

Null hypothesis: There is no trend in the series

S	=	838.000
rho	=	-0.2324
p	=	0.3852

Since $p > 0.01$, there is no significant trend in data

Mann-Kendall trend test :

Series Start = 2061 End = 2079 Length = 16



CALCULATION FORM

Job:

Subject: Trend Analysis

Date: 2/15/2023

Calc. By:

Job No:

Chkd. By:

Drg no:

Recommended By:

Approved By:

Null hypothesis: There is no trend in the series

$$S = -22$$

$$\tau = -0.1833$$

$$p = 0.3474$$

Apparent trend : Start = 2061 End = 2079 Length = 16

	Estimate	SE	t-stat	Pr(> t)
Const	4.323	0.6710	6.443	<0.0001 ***
Slope	0.03262	0.07622	0.4279	0.6752

Residual SE: 1.406 Regression DF: 14

R-squared: 0.01291 Adj R-squared: -0.05759

CALCULATION FORM
Job:
Subject: Trend Analysis

Magh	Fiscal year
5.739643	61-62
2.995172	62-63
2.990714	63-64
4.209286	64-65
3.291786	65-66
3.514929	66-67
3.0335	67-68
3.730817	68-69
	69-70
	70-71
	71-72
3.348929	72-73
3.778479	73-74
3.156774	74-75
	75-76
8.909565	76-77
3.020083	77-78
4.497933	78-79
	79-80

Date: 2/15/2023

Calc. By:
Job No:
Chkd. By:
Drg no:
Recommended By:
Approved By:

File: 'D:\..\Magh_average.txt'

Statistics : Start = 2061 End = 2078 Length = 14

Mean	SD	Skew	SE	CV
4.016	1.601	2.034	0.4280	0.3988

Summary : Start = 2061 End = 2078 Length = 14

Min	Q1	Median	Q3	Max
2.991	3.034	3.432	4.209	8.910

Persistence test :

Series Start = 2061 End = 2078 Length = 14

Null hypothesis: There is no lag-1 persistence in the series

 $r(1) = -0.268$

Alpha	0.10	0.05	0.02	0.01
UCL	0.440	0.524	0.622	0.688
LCL	-0.440	-0.524	-0.622	-0.688

Mann-Kendall trend test :

Series Start = 2061 End = 2078 Length = 14

Null hypothesis: There is no trend in the series

S	=	13
tau	=	0.1429
p	=	0.5154

Since $p > 0.01$, there is no significant trend in data

Apparent trend : Start = 2061 End = 2078 Length = 14

Estimate	SE	t-stat	Pr(> t)
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HYDRO-CONSULT
ENGINEERING

CALCULATION FORM

Job:

Subject: Trend Analysis

Date: 2/15/2023

Calc. By:

Job No:

Chkd. By:

Drg no:

Recommended By:

Approved By:

Const	3.549	0.8302	4.275	0.001079 ***
Slope	0.07179	0.1085	0.6615	0.5208

Residual SE: 1.637 Regression DF: 12

R-squared: 0.03518 Adj R-squared: -0.04522

CALCULATION FORM
Job:
Subject: Trend Analysis

Falgun	Fiscal year
2.947241	61-62
2.536786	62-63
4.17931	63-64
3.353793	64-65
2.478276	65-66
2.923328	66-67
2.715946	67-68
2.985939	68-69
	69-70
	70-71
	71-72
2.604828	72-73
2.912124	73-74
2.748411	74-75
3.308032	75-76
5.04234	76-77
2.64482	77-78
3.760525	78-79
	79-80

Date: 2/15/2023

Calc. By:
Job No:
Chkd. By:
Drg no:
Recommended By:
Approved By:

File: 'D:\...\Dscreen\Falgun_average.txt'

Statistics : Start = 2061 End = 2078 Length = 15

Mean	SD	Skew	SE	CV
3.143	0.7063	1.372	0.1824	0.2247

Summary : Start = 2061 End = 2078 Length = 15

Min	Q1	Median	Q3	Max
2.478	2.663	2.923	3.342	5.042

Persistence test :

Series Start = 2061 End = 2078 Length = 15

Null hypothesis: There is no lag-1 persistence in the series

 $r(1) = -0.119$

Alpha	0.10	0.05	0.02	0.01
UCL	0.425	0.506	0.601	0.665
LCL	-0.425	-0.506	-0.601	-0.665

Mann-Kendall trend test :

Series Start = 2061 End = 2078 Length = 15

Null hypothesis: There is no trend in the series

S	=	13
tau	=	0.1238
p	=	0.5565

Since $p > 0.01$, there is no significant trend in data

Apparent trend : Start = 2061 End = 2078 Length = 15

Estimate	SE	t-stat	Pr(> t)
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CALCULATION FORM

Job:

Subject: Trend Analysis

Date: 2/15/2023

Calc. By:

Job No:

Chkd. By:

Drg no:

Recommended By:

Approved By:

Const	2.864	0.3487	8.214	<0.0001 ***
Slope	0.03982	0.04239	0.9395	0.3646

Residual SE: 0.7093 Regression DF: 13

R-squared: 0.06358 Adj R-squared: -0.008458

CALCULATION FORM
Job:
Subject: Trend Analysis

Chaitra	Fiscal year
2.200323	61-62
2.212667	62-63
2.538276	63-64
2.925862	64-65
1.637667	65-66
1.8366	66-67
1.973793	67-68
2.964004	68-69
	69-70
	70-71
2.92625	71-72
2.144483	72-73
3.052948	73-74
2.610581	74-75
2.909671	75-76
3.285055	76-77
1.819525	77-78
2.86296	78-79
	79-80

Date: 2/15/2023
Calc. By:
Job No:
Chkd. By:
Drp no:
Recommended By:
Approved By:

File: 'D:\..\Chaitra_average.txt'

Statistics : Start = 2061 End = 2078 Length = 16

Mean	SD	Skew	SE	CV
2.494	0.5187	-0.1742	0.1297	0.2080

Summary : Start = 2061 End = 2078 Length = 16

Min	Q1	Median	Q3	Max
1.638	2.059	2.574	2.926	3.285

Persistence test :

Series Start = 2061 End = 2078 Length = 16

Null hypothesis: There is no lag-1 persistence in the series

 $r(1) = -0.026$

Alpha	0.10	0.05	0.02	0.01
UCL	0.411	0.490	0.582	0.644
LCL	-0.411	-0.490	-0.582	-0.644

Mann-Kendall trend test :

Series Start = 2061 End = 2078 Length = 16

Null hypothesis: There is no trend in the series

S	=	28
tau	=	0.2333
p	=	0.2254

Since $p > 0.01$, there is no significant trend in data

Apparent trend : Start = 2061 End = 2078 Length = 16

Estimate	SE	t-stat	Pr(> t)
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CALCULATION FORM

Job:

Subject: Trend Analysis

Date: 2/15/2023

Calc. By:

Job No:

Chkd. By:

Drg no:

Recommended By:

Approved By:

Const	2.204	0.2397	9.196	<0.0001 ***
Slope	0.03862	0.02723	1.419	0.1779

Residual SE: 0.5020 Regression DF: 14

R-squared: 0.1257 Adj R-squared: 0.06324