Supplementary Materials

Figure S1. Average Monthly Precipitation for Chongwe River Catchment (1983 to 2017)

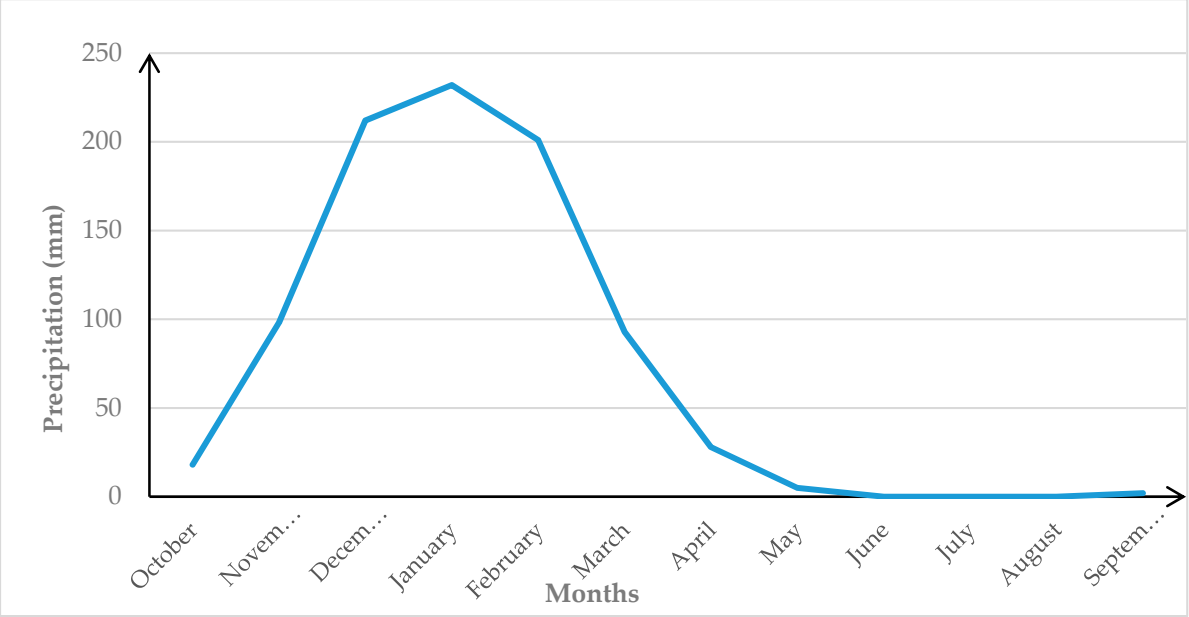


Figure S2. Monthly Temperature variation for Chongwe River Catchment (1983 to 2017) obtained from WEAP

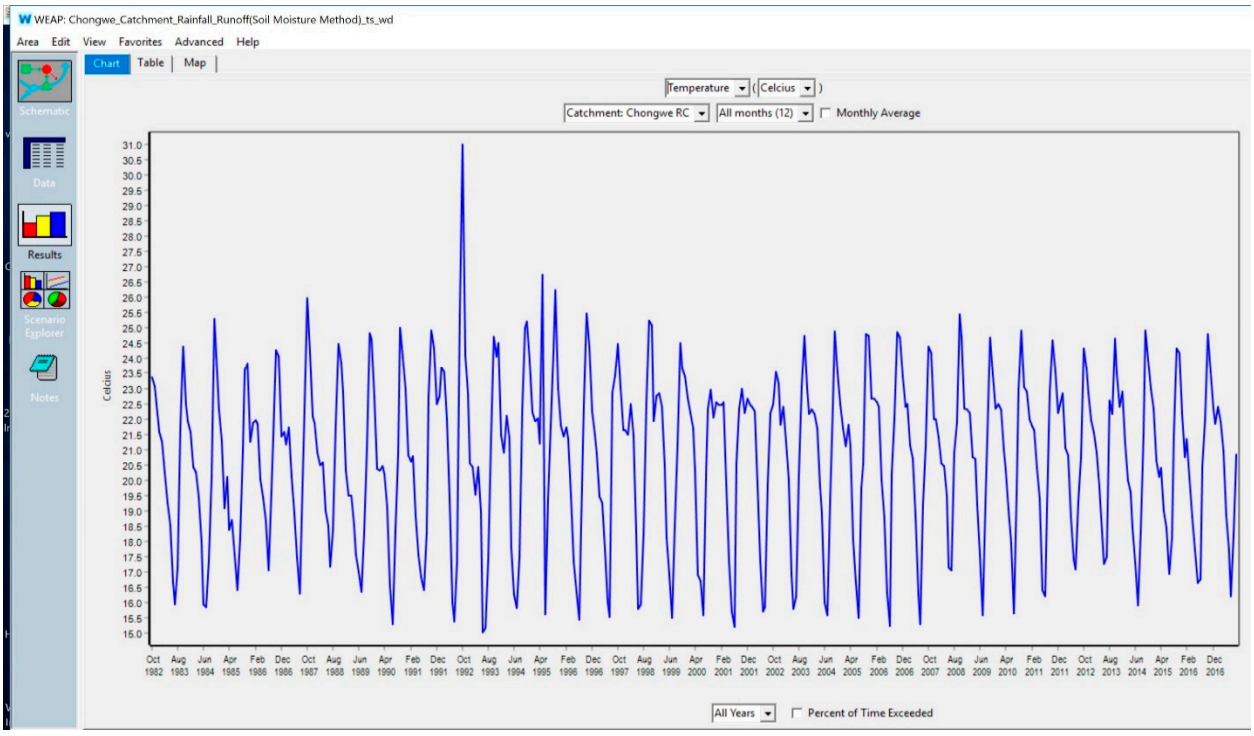
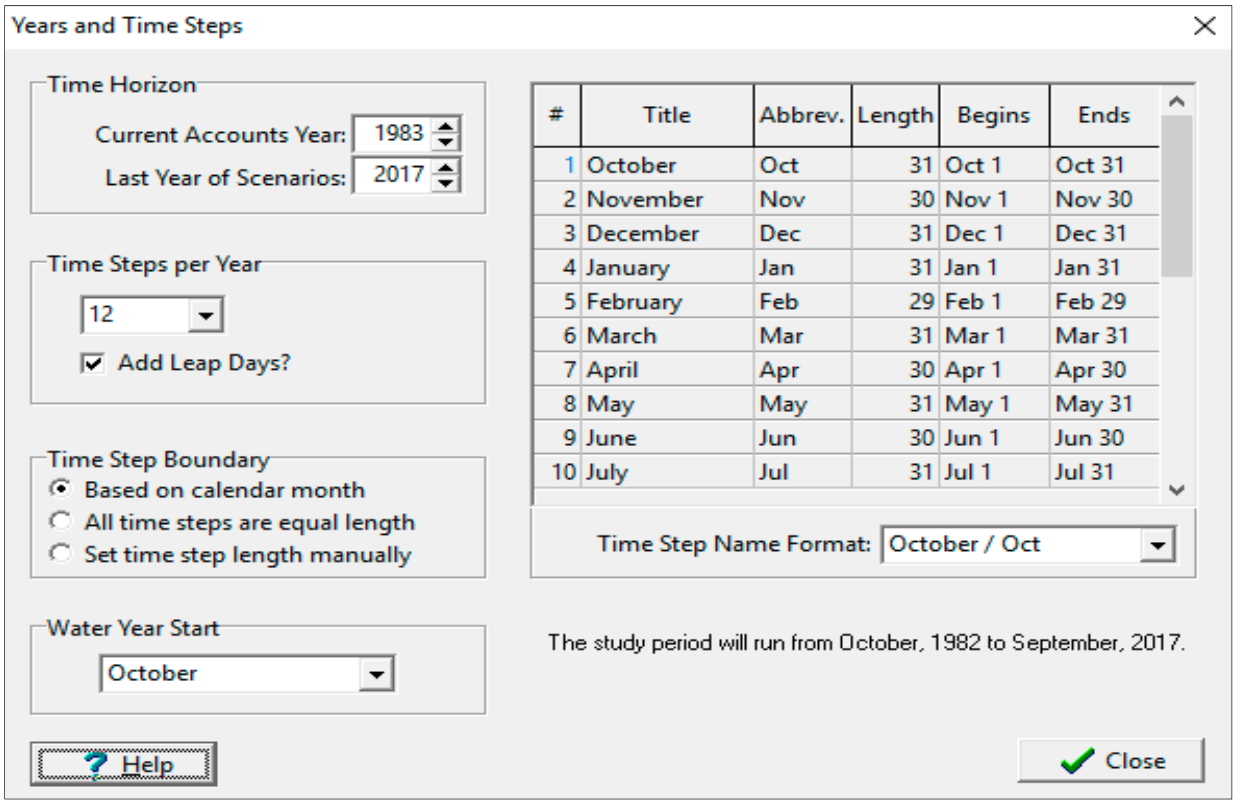


Figure S3. WEAP Model Years and Time Steps



#	Title	Abbrev.	Length	Begins	Ends
1	October	Oct	31	Oct 1	Oct 31
2	November	Nov	30	Nov 1	Nov 30
3	December	Dec	31	Dec 1	Dec 31
4	January	Jan	31	Jan 1	Jan 31
5	February	Feb	29	Feb 1	Feb 29
6	March	Mar	31	Mar 1	Mar 31
7	April	Apr	30	Apr 1	Apr 30
8	May	May	31	May 1	May 31
9	June	Jun	30	Jun 1	Jun 30
10	July	Jul	31	Jul 1	Jul 31

Figure S4. WEAP Schematic Map Demand and Supply Nodes for Chongwe River Catchment

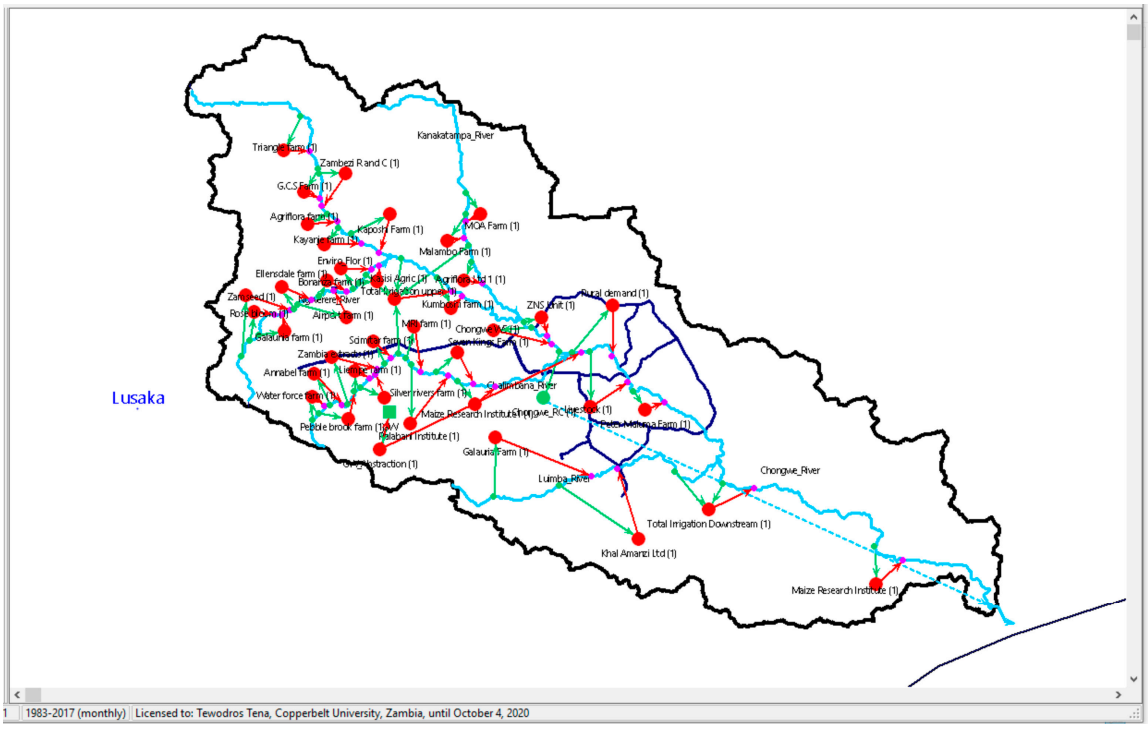


Figure S5. Annual actual evapotranspiration (ET), potential ET and precipitation for Chongwe River catchment

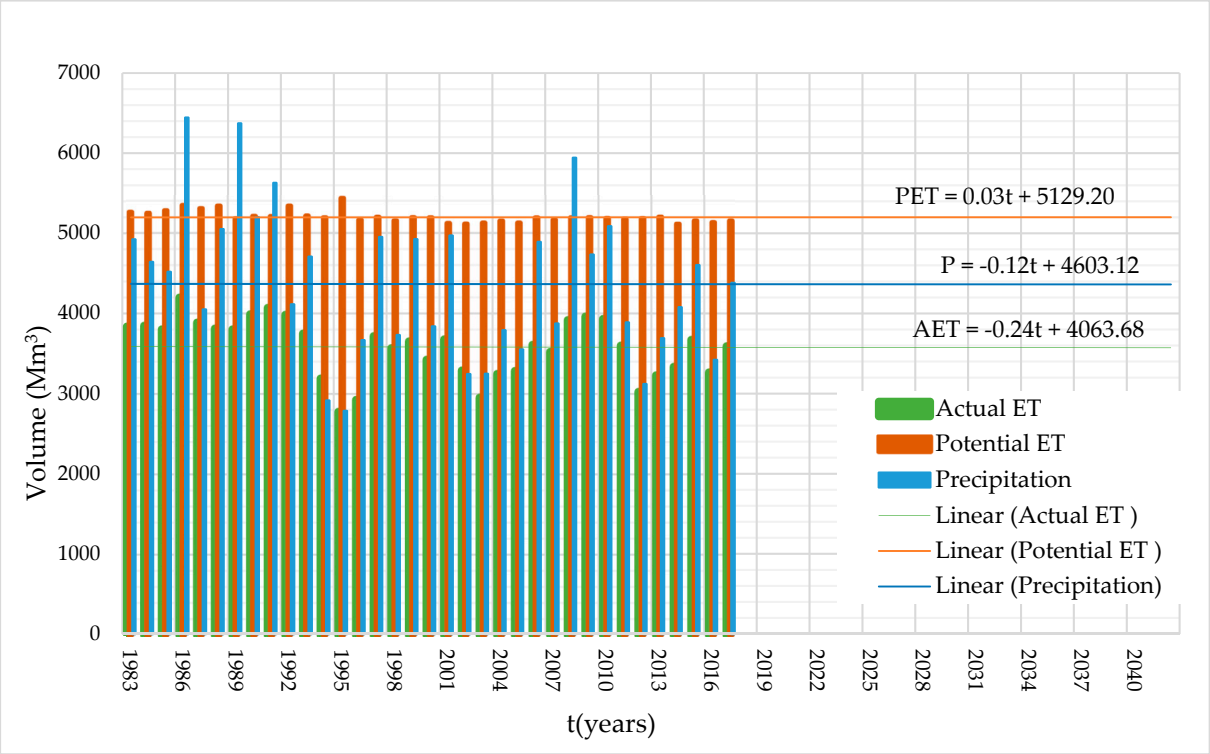


Table S1. Computation of Nash-Sutcliffe model efficiency coefficient (NSE)

Months	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Sum
Q_o (m³/s)	1.15	2.29	6.03	15.63	24.06	20.16	8.88	5.03	3.59	3.10	2.32	1.45	93.69
Q_s (m³/s)	1.22	2.05	5.30	22.10	36.76	23.34	12.20	4.61	4.28	3.97	1.32	0.80	117.96
$(Q_s{}^t - Q_o{}^t)^2$	0.01	0.06	0.52	41.86	161.15	10.09	11.02	0.17	0.48	0.75	0.99	0.42	227.52
$(Q_0{}^t - \bar{Q}_0)^2$	44.32	30.44	3.17	61.20	264.22	152.66	1.16	7.74	17.81	22.12	30.09	40.48	631.09
NSE													**0.64**

*based on the formula ; $\text{NSE} = 1 - \frac{\sum_{t=1}^{T}(Q_s{}^t - Q_0{}^t)^2}{\sum_{t=1}^{T}(Q_0{}^t - \bar{Q}_0)^2}$

where, $\bar{Q}_0$ is the mean of the observed streamflow, $Q_s{}^t$ and $Q_0{}^t$ are simulated and observed streamflow at time t respectively.

Table S2. Computation of Percentage bias (PBIAS)

Months	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Sum
Q_o (m3/s)	1.15	2.29	6.03	15.63	24.06	20.16	8.88	5.03	3.59	3.10	2.32	1.45	93.69
Q_s (m3/s)	1.22	2.05	5.30	22.10	36.76	23.34	12.20	4.61	4.28	3.97	1.32	0.80	117.96
$Q_s{}^t - Q_o{}^t$	0.01	0.06	0.52	41.86	161.15	10.09	11.02	0.17	0.48	0.75	0.99	0.42	227.52
	0.07	-0.24	-0.73	6.47	12.70	3.18	3.32	-0.42	0.69	0.870	-1.00	-0.65	24.26
PBIAS													25.89