

## SUPPLEMENTARY

for the manuscript entitled as

### “HYDROCLIMATE IMPACT ANALYSES AND WATER MANAGEMENT IN CENTRAL RIFT VALLEY BASIN IN ETHIOPIA”

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The supplementary files are detailed and additional tables and figures to enrich the manuscript submitted. **N.B.** These files need to be read in line with the manuscript.

#### Supplementary Tables

Table S1. Some physical properties of major soils in the CRV sub-basins.

SWAT Soil Names	Area in CRVB (ha)	(%) in CRVB	(%) in Ketar	(%) in Meki	(%) in Shalla	Texture	Hydrology group	No. of layers
FLUVISOLS	55600.20	3.63	0.65	1.37	0.0	Loam	B	3
EUVERTISOLS	547949.29	35.81	33.04	22.97	14.3	Clay	D	3
LEPTOSOLS	512179.96	33.47	1.55	3.77	4.7	Loamy sand	B	2
LTLEPTOSOLS	293937.73	19.21	53.60	16.21	15.1	Sandy loam	A	1
WATER	120529.15	7.88	NA	NA	NA	Water	D	1

Note: The digitalized soil shape file data was obtained from Ministry of Agriculture and Natural Resources

Table S2. Location of meteorological stations used for the analysis of the weather parameters in the CRVB.

No.	Station name	Latitude	Longitude	Elevation	Ownership
1	Arsi-Nagelle	7.35°N	38.68°E	1800	NMA
2	Assella	7.97°N	39.08°E	2413	NMA
3	Awassa	7.06°N	38.48°E	1694	NMA
4	Butajira	8.11°N	38.38°E	2131	NMA
5	Shashemane	7.2°N	38.61°E	1927	NMA
6	Ziway	7.93°N	38.7°E	1640	NMA

Table S3. SWAT land use code and their description

Object ID	LANDUSE	Land use descriptions
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1	AGRR	Cultivated Land; Rainfed; Cereal Land Cover System; lightly stocked
2	RNGB	Shrubland; Open (20-50% woody cover)
3	RNGE	Grassland; lightly stocked
4	RNGE	Grassland; unstocked (woody plant)
5	AGRR	Cultivated Land; Rainfed; Cereal Land Cover System; moderately stocked
6	AGRR	Cultivated Land; Rainfed; Cereal Land Cover System; unstocked (woody pl)
7	RNGE	Grassland; moderately stocked
8	WATR	Wetland; Open water
9	RNGB	Shrubland; Dense (>50% woody cover)
10	BARR	Bare land; Exposed sand / soil
11	BARR	Bare land; Exposed rock
12	RNGE	Woodland; Dense (>50% tree cover)
13	FRSE	Forest; Montane coniferous; Open (20-50% crown cover)
14	RNGE	Woodland; Open (20-50% tree cover)
15	ORCD	Forest; Plantation Forest; Open (20-50% crown cover)
16	AGRL	Cultivated Land; Shifting cultivation; lightly stocked
17	AGRL	Cultivated Land; Shifting cultivation; moderately stocked
18	FRSE	Forest; Riparian; Open (20-50% crown cover)
20	URMD	Urban
21	WETN	Wetland; Seasonal Swamp / Marsh
22	AGRC	Cultivated Land; Irrigated
23	FRST	Forest; Montane mixed; Open (20-50% crown cover)
24	RNGB	Afro-alpine; Erica / Hypericum
25	RNGE	Afro-alpine; Grassland / Moorland
26	WETN	Wetland; Perennial Swamp / Marsh
27	FRSD	Forest; Montane broadleaf; Open (20-50% crown cover)
28	FRSE	Forest; Bamboo; Highland Bamboo; Dense (50-80% crown cover)
29	FRSE	Forest; Riparian; Dense (50-80% crown cover)
30	FRSE	Forest; Bamboo; Highland Bamboo; Open (20-50% crown cover)
32	FRSE	Forest; Montane coniferous; Dense (50-80% crown cover)
33	ORCD	Forest; Plantation Forest; Closed (>80% crown cover)
34	FRST	Forest; Montane mixed; Closed (>80% crown cover)
35	FRSD	Forest; Montane broadleaf; Dense (50-80% crown cover)
37	AGRR	Cultivated Land; Perennial crops; Enset/Root LC System; lightly stocked
38	FRSE	Forest; Lowland semi-evergreen; Closed (>80% crown cover)
39	FRSE	Forest; Lowland semi-evergreen; Dense (50-80% crown cover)
40	FRSE	Forest; Lowland semi-evergreen; Open (20-50% crown cover)
42	FRSD	Forest; Montane broadleaf; Closed (>80% crown cover)
43	FRST	Forest; Montane mixed; Dense (50-80% crown cover)

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