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*Supplement of*

## **Sediment concentration rating curves for a monsoonal climate: upper Blue Nile**

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**Table S1:** Theissen weight derived from the Theissen polygon method for estimating areal rainfall

<b>Watershed</b>	<b>Rainfall stations and Theissen weight</b>		
	<b>Station Id.</b>	<b>Rainfall station</b>	<b>Theissen weight</b>
<b>Gilgel Abay</b>	1	Adet	0.01
	2	Sekela	0.47
	3	Injibara	0.20
	4	Dangila	0.31
<b>Gumara</b>	<b>Station Id.</b>	<b>Station Name</b>	<b>Theissen weight</b>
	1	Agere Genet	0.04
	2	Debre Tabor	0.54
	3	Nifas Mewucha	0.01
	4	Wanzaye	0.41
<b>Ribb</b>	<b>Station Id.</b>	<b>Station Name</b>	<b>Theissen weight</b>
	1	Addis Zemen	0.34
	2	Debre Tabor	0.37
	3	Nefas Mewucha	0.21
	4	Woreta	0.08
<b>Megech</b>	<b>Station Id.</b>	<b>Station Name</b>	<b>Theissen weight</b>
	1	Amba Giorgis	0.31
	2	Gonder	0.68
	3	Maksegnt	0.01

**Table S2:** Observed discharge and sediment data measured at the gauging station of Gilgel Abay watershed.

Date	Discharge(m <sup>3</sup> /s)	Sediment concentration, g/l
6/28/1968	70.8	1.77
7/22/1968	150.7	1.39
8/12/1968	171.7	1.04
8/26/1968	195.9	1.3
8/18/1983	117.9	0.78
8/30/1985	75.9	1.91
2/10/1986	3.5	0.14
4/11/1986	1.9	0.07
4/25/1987	2.18	0.03
10/23/1987	48.8	0.51
5/20/1988	10.9	0.21
7/20/1988	213.45	2.06
9/8/1988	123.6	0.84
8/2/1990	195.9	3.13
5/7/1993	3.6	0.17
8/23/1995	173.5	1.56
2/17/1996	2.6	0.12
8/19/2004	149.5	3.22
8/22/2004	119.4	2.22
8/23/2004	179.5	3.15
2/17/2005	2.8	0.13
6/7/2005	3.5	2.17
12/6/2007	9.8	0.31

**Table S3:** Observed discharge and sediment data measured at the gauging station of Gumara watershed.

Date	Discharge (m <sup>3</sup> /s)	Sediment concentration, g/l
7/27/1964	195	6.5
8/1/1964	189	7.21
7/22/1968	3.5	2.11
7/28/1968	43.5	0.02
7/23/1968	108.9	1.65
8/6/1968	138.1	1.73
8/21/1968	34.8	0.78
9/3/1968	53.1	0.61
8/6/1980	141.3	1.39
9/24/1980	26.6	0.1
8/17/1983	182.7	2.58
9/2/1985	55.9	2.91
2/11/1986	0.7	0.22
9/5/1986	92.4	2.6
3/1/1987	0.4	0.86
10/29/1987	12.1	0.73
5/25/1988	0.4	0.39
7/21/1988	132.9	4.12
11/17/1988	9.1	0.08
12/22/1988	3.1	0.06
2/10/1989	1.4	0.06
2/10/1990	1.2	0.15
7/1/1992	37.6	10.07
6/1/1992	0.3	0.37
5/3/1993	0.5	0.54
9/3/1994	35.8	0.03
8/3/1995	181.9	0.26
8/16/1995	258.7	6.89
8/24/1996	197.5	2.54
7/30/1996	218.8	5.33
11/14/1996	3.6	0.16
11/14/1996	3.6	0.12
11/14/1996	3.6	0.09
8/16/2004	117.1	3.44
8/17/2004	207.8	5.86
9/5/2005	95.2	5.05
9/6/2005	146.5	3.3
9/7/2005	152.7	3.9
7/17/2006	50.1	2.9
7/18/2006	62.9	6.1
7/28/2006	73.7	3.83
8/10/2007	129.8	3.13
8/14/2007	122.7	2.15
8/22/2007	73.4	0.78

Table B2 continued

8/23/2007	129.3	3.09
8/24/2007	152.3	2.36
8/25/2007	180.5	6.37
8/11/2007	118.1	1.66
12/4/2007	3.2	0.15
8/2/2008	176.5	5.28
8/3/2008	221.3	4.98
8/4/2008	171.1	2.62
8/5/2008	276.4	3.99

**Table S4:** Observed discharge and sediment data measured at the gauging station of Ribb watershed.

Date	Discharge (m <sup>3</sup> /s)	Sediment concentration, g/l
7/3/1968	32.5	7.33
7/23/1968	44.7	2.73
8/7/1968	96.7	3.37
8/20/1998	123	3.53
9/3/1968	320	3.34
8/7/1980	34.6	2.12
9/24/1980	6.8	0.17
8/15/1983	134.9	0.08
9/3/1985	27.31	3.02
2/11/1986	0.1	0
8/7/1986	77.7	0.22
9/5/1986	24.6	0.55
4/29/1987	0.7	0.22
10/29/1987	16	0.37
5/25/1988	0.1	2.06
7/22/1988	60.3	3.35
9/2/1988	56	3.87
11/18/1988	2.6	0.16
12/22/1988	1.1	0.09
2/11/1989	0.6	0.1
2/12/1990	0.4	0.27
7/6/1990	46.1	10
5/23/1992	0.5	0.94
7/20/1992	36.3	19
8/25/1992	62.2	2.97
5/12/1993	0.3	0.35
7/20/1993	90.6	13.83
8/26/1994	113.9	8.34
8/3/1995	138.2	3.11
8/24/1996	212.7	7.7
8/12/1996	57.6	0.73
10/2/1996	2.1	0.02
8/9/2004	104.1	5.31
8/16/2004	90.6	5.44
9/5/2005	57.3	2.98
9/6/2005	40.7	1.46
9/7/2005	91.4	8.38
7/17/2006	50.9	13.7
7/18/2006	38.1	6.79
7/28/2006	56.5	6.57
8/10/2007	96.2	6.24
8/14/2007	98.6	8.59
8/22/2007	73.9	3.79
8/23/2007	75.4	3.66

Table B3 continued

8/24/2007	103.3	5.15
8/25/2007	81.1	5.86
8/26/2007	85.63	3.96
8/27/2007	85.63	4.1
8/28/2007	85.63	4.19
8/1/2008	95.81	4.34
8/3/2008	37.98	6.63
8/4/2008	78.28	4.78

**Table S5:** Megech observed discharge and sediment data.

Date	Discharge (m <sup>3</sup> /s)	Sediment concentration, g/l
2/21/1990	0.04	0.23
8/10/1990	8.96	0.59
5/27/1992	0.05	0.37
5/14/1993	0.19	0.63
10/6/1994	2.61	0.19
3/11/2005	0.11	0.29
9/2/2005	9.61	0.28
9/3/2005	9.78	0.21
9/4/2005	8.67	0.22
8/15/2007	17.24	0.65
8/16/2007	46	2.07
8/18/2007	49.33	2.67
8/19/2007	21.41	0.5
8/20/2007	23.99	0.85
8/21/2007	41.82	1.26
11/22/2007	0.7	0.26



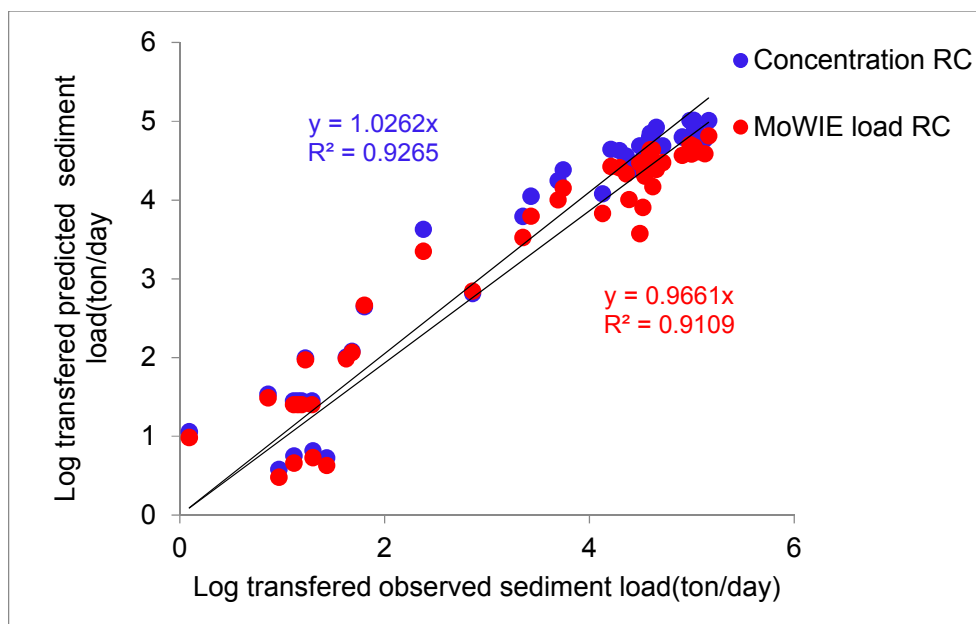


Figure S1: Log log transformed values of sediment load predicted by concentration and MoWIE load rating curves for Gumara watershed