Table Captions

Table 1 Addis Ababa station monthly amount weighted GNIP $\delta^{18}O$ (1990-2009), simulated and observed $\delta^{18}O$ of 2014 vs. Long year mean rainfall amounts (mm) (1964-2005) and Mean Rainfall amounts of 2014

Table 2 Debremarkos station monthly amount weighted GNIP $\delta^{18}O$ (1990-2009), simulated and observed $\delta^{18}O$ of 2014 vs. Long year mean rainfall amounts (mm) (1964-2005) and Mean Rainfall amounts of 2014

Table 3 Maximum, minimum and amount-weighted mean values of $\delta^{18}O$ in available observational data of daily precipitation and simulated $\delta^{18}O$ of three observational stations in the upper Blue Nile Basin (March – October, 2014). The missed observational precipitation which has no observational isotopic data was omitted from the calculation.

Table 4 Monthly weighted average d-excess (‰) in observed precipitation samples of three stations

Table 5 Linear Regression relationships of Hydrogen and Oxygen isotope of each month from available observational sample of Addis Ababa and Debremarkos in 2014

Table 6 Monthly weighted Mean of $\delta^{18}O$ in precipitation sampled in 2014 in the study area

Table 1 Addis Ababa station monthly amount weighted GNIP $\delta^{18}O$ (1990-2009), simulated and observed $\delta^{18}O$ of 2014 vs. Long year mean rainfall amounts (mm) (1964-2005) and Mean Rainfall amounts of 2014

Month	Amount weighted GNIP $\delta^{18}O$ (1990-2009)	Observational $\delta^{18}O$ (2014)	Simulated $\delta^{18}O$ (2014)	Mean Rainfall amounts (mm) of 2014	Mean Rainfall amounts (mm) (1964-2005)
Jan	-0.53	-	-	1.7	17.10
Feb	1.19	-	-	47.4	36.34
Mar	1.39	-1.00		61.5	67.19
Apr	0.87	0.99	-1.35	26.2	89.59
May	0.73	-0.70	-2.61	93.6	77.42
Jun	1.04	2.85	-1.19	66.7	119.22
Jul	-2.56	-0.32	-1.96	219.9	237.30
Aug	-3.32	-1.50	-3.82	262.4	236.26
Sep	-0.04	-1.01	-2.72	264.7	137.18
Oct	0.78	-1.43	-3.89	35	33.23
Nov	-0.84	-	-	-	5.92
Dec	-2.17	-	-	-	5.33

Table 2 Debremarkos station monthly amount weighted GNIP $\delta^{18}O$ (1990-2009), simulated and observed $\delta^{18}O$ of 2014 vs. Long year mean rainfall amounts (mm) (1964-2005) and Mean Rainfall amounts of 2014

Month	Observational $\delta^{18}O$ (2014)	Simulated $\delta^{18}O$ (2014)	Monthly Mean rainfall of 2014	Monthly Mean rainfall (1964-2005)
Jan	-	-	9.1	14.45
Feb	-	-	8.6	17.62
Mar	-	0.12	42.9	45.94
Apr	-	-0.80	138.4	61.36
May	-	-3.17	130.1	94.37
Jun	-	-1.47	101.9	159.53
Jul	-2.82	-1.94	274.6	284.86
Aug	-4.09	-3.74	257.1	294.86
Sep	-0.47	-2.79	255.5	210.12
Oct	-4.64	-3.95	100.5	80.23
Nov	-	-	9.2	23.20
Dec	-	-	9.2	17.46

Table 3 Maximum, minimum and amount-weighted mean values of $\delta^{18}O$ in available observational data of daily precipitation and simulated $\delta^{18}O$ of three observational stations in the upper Blue Nile Basin (March – October, 2014). The missed observational precipitation which has no observational isotopic data was omitted from the calculation.

	Addis Ababa Precipitation $\delta^{18}O$ (‰)		Entoto Hill Precipitation $\delta^{18}O$ (‰)		Debremarkos Precipitation $\delta^{18}O$ (‰)	
	Simulation	Observation	Simulation	Observation	Simulation	Observation
Maximum	3.62	7.79	3.62	5.26	3.62	4.08
Minimum	-7.24	-7.39	-8.01	-10.76	-8.01	-9.65
Mean	-2.54	**-0.45**	-2.67	**-2.03**	-2.64	**-2.57**
Difference	10.86	15.18	11.63	16.02	11.63	13.73

Table 4 Monthly weighted average d-excess (‰) in observed precipitation samples of three stations

Month	Addis Ababa (n=139)	Entoto Hill (n=82)	Debremarkos (n=80)
March	10.24	-	-
April	11.3	-	-
May	12.11	-	-
June	12.01	-	-
July	15.44	20.02	22.39
August	10.22	13.31	15.06
September	19.4	18.94	26.11
October	10.45	11.89	16.35

Table 5 Relationship between δ^2H and $\delta^{18}O$ for Addis Ababa (a), Debremarkos (b) and Entoto Hill (c) precipitation sampled in 2014 rainy season

(a) Addis Ababa		
Month	No of samples	Linear relationship between δ^2H and $\delta^{18}O$
Mar	9	$\delta^2H = 6.69*\delta^{18}O + 11.31$ (R^2=0.89)
Apr	5	$\delta^2H = 6.69*\delta^{18}O + 13.22$ (R^2=0.99)
May	16	$\delta^2H = 7.68*\delta^{18}O + 12.28$ (R^2=0.95)
June	17	$\delta^2H = 4.98*\delta^{18}O + 23.54$ (R^2=0.82)
July	28	$\delta^2H = 7.91*\delta^{18}O + 15.50$ (R^2=0.96)
Aug	30	$\delta^2H = 7.84*\delta^{18}O + 9.81$ (R^2=0.92)
Sep	27	$\delta^2H = 7.11*\delta^{18}O + 19.12$ (R^2=0.91)
Oct	7	$\delta^2H = 8.63*\delta^{18}O + 11.86$ (R^2=0.99)
(Mar, Apr, May)	30	$\delta^2H = 7.15*\delta^{18}O + 12.13$ (R^2=0.94)
(Jun, Jul, Aug, Sep)	102	$\delta^2H = 7.85*\delta^{18}O + 14.10$ (R^2=0.94)
(c) Debremarkos		
July	15	$\delta^2H = 7.63.\delta 18O + 21.20$ (R^2=0.95)
Aug	26	$\delta^2H = 7.64.\delta^{18}O + 13.65$ (R^2=0.86)
Sep	29	$\delta^2H = 7.21.\delta^{18}O + 21.38$ (R^2=0.88)
Oct	10	$\delta^2H = 8.23.\delta^{18}O + 17.37$ (R^2=0.98)
(e) Entoto Hill		
July	19	$\delta^2H = 7.79*\delta^{18}O + 19.59$ (R^2=0.88)
Aug	28	$\delta^2H = 7.86*\delta^{18}O + 12.78$ (R^2=0.95)
Sep	25	$\delta^2H = 6.27*\delta^{18}O + 17.40$ (R^2=0.91)
Oct	10	$\delta^2H = 9.02*\delta^{18}O + 16.23$ (R^2=0.99)

Table 6 Monthly weighted Mean of $\delta^{18}O$ in precipitation sampled in 2014 in the study area

Month	Addis Ababa (2355masl) (‰)	Entoto Hill (2634masl) (‰)	Debremarkos (2446masl) (‰)
Jul	-1.51	-2.27	-3.20
Aug	-1.50	-1.57	-3.76
Sep	-1.01	-1.79	-0.43
Oct	-1.43	-3.65	-4.57