Table S2 Hydrologic modeling of modern and paleo-lake systems, Lake Nasser end-member

Lake systems			***Paleolake:***			**modern Lake**	
			Darfur	***Fezzan***	***Chad***	***Nasser***	**reference**
measured physical parameters	**symbol**	**units**					
lake area	A_w	km^2	32288	126500	344724	NA	(1)
land area	A_L	km^2	91912	203000	1185802	NA	(1)
lake area ratio	a_w	-	0.26	0.38	0.23	1.00	(1)
land area ratio	a_b	-	0.74	0.62	0.77	0.00	
lake highstand elevation	masl	m	573	521	325	179	
pressure	P	kPa	94.78	95.37	97.59	99.28	
mean annual air temperature	MAT	°C	NA	NA	NA	24.69	(2)
mean annual lake temperarature	MALT	°C	NA	NA	NA	21.3	(2)
wind speed	U	$m\ sec^{-1}$	NA	NA	NA	3.9	(2)
Lake Nasser end-member							
Radiation							
clear sky radiation (no clouds)	R_0	$MJ\ m^{-2}\ day^{-1}$	27.15	26.13	27.34	27.15	(2)
fractional cloud cover	c	-	0.10	0.10	0.10	0.10	
clear sky radiation (with clouds)	R_{sw}	$MJ\ m^{-2}\ day^{-1}$	24.43	23.52	24.61	27.05	
surface albedo	α	-	0.07	0.07	0.07	0.07	(3)
net shortwave absorbed at surface	$R_{sw}(1-\alpha)$	$MJ\ m^{-2}\ day^{-1}$	22.72	21.87	22.89	25.15	
surface emissivity	ε	-	0.96	0.96	0.96	0.96	(5)
net longwave emitted from surface	R_{LW}	$MJ\ m^{-2}\ day^{-1}$	1.3	1.1	1.3	5.2	(6)
net radiation at surface	$R_n=R_{sw}(1-\alpha)-R_{LW}$	$MJ\ m^{-2}\ day^{-1}$	21.5	20.7	21.6	20.0	
angstom ratio	A	-	0.146	0.146	0.146	0.146	(4,5)
assumed physical parameters							
surface air temperature	T	°C	24.69	24.69	24.69	24.69	(2)
surface water temperature	T	°C	21.33	21.33	21.33	21.33	(2)
wind speed assumed	U	$m\ sec^{-1}$	3.97	3.97	3.97	3.97	(2)
Models							
Hastenrath and Kutzbach							
Bowen ratio	B	-	0.2			0.21	(6)
evaporation (latent heat equiv.)	LE=R/(1+B)	$W\ m^{-2}$	18			17	

evaporation rate	E	mm yr^{-1}	2933			2708	
Priestly-Taylor							
slope of sat vapor curve	Δ	kPa °C^{-1}	0.19	0.19	0.19	0.19	(7)
T-P constant	α (P-T)	-	1.26	1.26	1.26	1.26	(7)
psychometric constant	γ	kPa °C^{-1}	0.06	0.06	0.07	0.07	(7)
latent heat of vaporization	λ	MJ kg^{-1}	2.44	2.44	2.44	2.44	(7)
evaporation rate	E	mm yr^{-1}	3018	2909	3016	2777	(7)
Penman combination							
sat. vapor pressure	e_s	kPa	3.11	3.11	3.11	3.11	(7)
vapor pressure measured	e_a	mb	2.00	2.00	2.00	2.00	(7)
wind speed	Y	m sec^{-1}	1.95	1.95	1.95	1.95	(7)
psychometric constant	γ	kPa °C^{-1}	0.07	0.07	0.07	0.07	(7)
evaporation due to wind	Ea	mm day^{-1}	0.59	0.59	0.59	0.59	(7)
slope of saturation vs T de/dT	Δ	kPa °C^{-1}	0.19	0.19	0.19	0.19	(7)
Evaporation rate	E	mm day^{-1}	6.73	6.60	6.81	6.54	(7)
Evaporation rate	E	mm yr^{-1}	2455	2409	2486	2388	(7)
Results							
assumed Nasser runoff coefficient	k	-	0.005	0.005	0.005	0.005	
Precipitation	**P**	**mm yr^{-1}**	**2420**	**2390**	**2444**	**2388**	constant run-off coefficient

References

(1) DEM this study
(2) Omar & El-Bakry (1983)
(3) Abtew & Malesse (2013)
(4) Lettau (1978)
(5) Sellars (1965)
(6) Budyko (1974)
(7) Supplemental text