

Water Balance Analysis over the Niger Inland Delta-Mali: Spatio-Temporal Dynamics of the Flooded Area and Water Losses

Table S1. Data availability and periods of records for the main climatic variables and evaporation at Mopti synoptic station (longitude = -4.1 , latitude = 14.52 , Elevation = 272 m).

Data	Units	Periods of Records	Time scale
Air Temperature minimum & maximum	$^{\circ}\text{C}$	1980–2010	daily observed
Mopti pan evaporation	mm	1970–2009	monthly
Relative humidity minimum & maximum	%	1980–2010	daily observed
Wind speed	m/s	1980 - 2010	daily observed

Table S2. Inputs data of all potential ET methods used in this study.

ET Methods	Data Requirements	Variables Description
Hargreaves method (HARG)	T_a and R_s (mean daily air temperature and solar radiation respectively)	Air temperature measured at height of 1.2 m above the ground, ($^{\circ}\text{C}$); Solar radiation estimated for clear sky (no clouds) condition as the total incoming short-wave radiation.
Hamon method (HAM)	T_a and DL (mean daily air temperature and day length)	Day length the maximum possible daylight hours for a given day calculated from the sunset hour angle.
Oudin method (OUD)	T_a , R_e , λ , and ρ (mean daily air temperature, extraterrestrial radiation, latent heat flux and density of water)	The extraterrestrial radiation, R_e , is expressed in equivalent evaporation units for a given latitude and day; The latent heat is the energy used for phase change from liquid to vapor during the ET process; The water density is at 20 $^{\circ}\text{C}$.
Modified Turc method (TUR)	T_{\max} and S_t (daily maximum air temperature, solar radiation)	S_t is the total incoming short-wave Radiation
Penman-Monteith combination equation (PMO)	R_n , G , γ , λ , Δ , C_p , e_s , e (net solar radiation, soil heat flux, psychrometric constant, latent heat flux, slope of vapor pressure, specific heat, saturation vapor pressure and actual vapor pressure)	The net radiation is the difference between incoming and outgoing radiation; Soil heat flux is the sensible heat conducting into or out of the soil; Psychrometric constant is derived from the measured the atmospheric pressure in the area; Slope of vapor pressure is the gradient of the function de_s/dT_a ; C_p is the specific heat of the air at constant pressure; θ_s & θ are the maximum and actual partial pressure of water vapor in the air; Surface albedo is the proportion of incident solar radiation reflected by the surface
Priestley-Taylor method (PRT)	R_n , γ , λ , Δ and α_{PRT} (net solar radiation, psychrometric constant, latent heat flux, slope of vapor pressure, and surface albedo)	
Modified Makkink equation (MAK)	S_t , γ , and λ (solar radiation, psychrometric constant, and latent heat flux)	
Simple Abtew equation (ABT)	S_t , and λ (solar radiation and latent heat flux)	