Data requirement for the Soil & Water Assessment Tool (SWAT)

To successfully apply the SWAT model a series of data is required along with data for calibration and validation of the model simulations. Some data types are similar to those needed for the lake model listed above. Some of the data mentioned below are available through various open source, sources. However, data from locale sources would improve the modelling results and should preferably be used. For further SWAT information see: http://swatmodel.tamu.edu/

SWAT input data

Data type	Variables and units red: critical (must have) yellow: important green: optional (but good to have)	Sampling frequency	Mark with X if available	Notes
Catchment surface	**DEM** **Land use map** **Soil map** **Continuous River network** **Lake map**	**Once**		Note: 30m x 30m ASTER data is available Note: World land cover map is available Note: FAO Soil map available As GIS layer As GIS layer For local soil map: A SWAT soil parameterisation data set must be available.
Climate data	**Temperature (°C)** **Precipitation (mm day^{-1})** **Global radiation (W (m^2×day)$^{-1}$)** **Wind speed (m s^{-1})** **Relative humidity (%)**	**Daily averages or finer**		Climate data from as many climate stations as possible within the catchment. Geographical coordinates and elevation info on all climate stations. Climate data is a "must have" but the model can generate weather data if observations are missing for a period.
Agricultural management data	**Dominant crop types** **Crop yields (kg ha^{-1})** **Fertilizer application (timing, characteristics and amount (kg ha^{-1}))** **Soil treatment practice (timing and equipment used)** **Sowing dates** **Harvesting dates** **Irrigation practice (amount, location, timing, techniques)**	**Crop rotation info** **Monthly or finer**		**If relevant**: information on regional differences in crop types. **If relevant**: information on regional differences in farm management/agricultural intensity. **If relevant**: information on differences in farming intensity.

Point source data (sewers, wastewater treatment plants, industry etc.)	**Water (m^3 day^{-1})** **TN (kg day^{-1})** **TP (kg day^{-1})** **CBOD (kg day^{-1})**	**As often as possible**	Location of point source outlet. Nutrient data should preferably be split on organic and inorganic components and NO_3^- and NH_4.
Other input data	**Average lake depth (m)** **Reservoir operation data**	**Monthly or finer**	
Calibration and validation data	**River flow (m^3 s^{-1})**	**Daily or finer**	Preferably from the same time period as climate
	River TN concentration (mg N L^{-1})	**As often as possible**	Preferably all components from the same monitoring site, in larger river tributaries to the lake.
	NO_3 (mg N L^{-1})	**As often as possible**	
	NH_4 (mg N L^{-1})	**As often as possible**	
	PON (mg N L^{-1})	**As often as possible**	
	DON (mg N L^{-1})	**As often as possible**	
	River TP concentration (mg P L^{-1})	**As often as possible**	
	PO_4 (mg P L^{-1})	**As often as possible**	
	POP (mg P L^{-1})	**As often as possible**	
	DOP (mg P L^{-1})	**As often as possible**	
	River Suspended Sediment (mg SS L^{-1})	**As often as possible**	

Note that the assigned color codes (red, green and yellow) are subject to expert opinion and may differ somewhat between scientists and between model applications.