Description	Symbol	Unit	References/sources
Upper and lower soil store parameters			FAO (2007) soil map; van Beek and Bierkens (2009)
– Soil thickness	Z_1 and Z_2	m	
– Residual soil moisture content	$\theta_{\text{r-1}}$ and $\theta_{\text{r-2}}$	$\text{m}^3\ \text{m}^{-3}$	
– Soil moisture at saturation	$\theta_{\text{s-1}}$ and $\theta_{\text{s-2}}$	$\text{m}^3\ \text{m}^{-3}$	
– Soil water storage capacity per soil layer: $\text{SC} = Z/(\theta_\text{s} - \theta_\text{r})$	SC_1 and SC_2	m	
– Soil matric suctions at saturation	$\psi_{\text{s-1}}$ and $\psi_{\text{s-2}}$	m	
– Exponent in the soil water retention curve	β_1 and β_2	dimensionless	
– Saturated hydraulic conductivities of upper and lower soil stores	K_1 and K_2	m day^{-1}	
– Total soil water storage capacities $= \text{SC}_{\text{upp}} + \text{SC}_{\text{low}}$	W_{max}	m	
Land cover fraction: land cover areas (including extent of irrigated areas) over cell areas	f_{lcov}	$\text{m}^2\ \text{m}^{-2}$	GLCC v2.0 map (USGS, 1997); Olson (1994a, b); MIRCA2000 data set (Portmann et al., 2010); FAOSTAT (2012)
Topographical parameters	DEM	m	HydroSHEDS (Lehner et al., 2008); Hydro1k (Verdin and Greenlee, 1996); GTOPO30 (Gesch et al., 1999)
– Cell-average DEM	DEM_{avg}	m	
– Floodplain elevation	DEM_{fpl}	m	
Root fractions per soil layer	Rf_{upp} & Rf_{low}	dimensionless	Canadell et al. (1996); van Beek and Bierkens (2009)
Arno scheme (Todini, 1999; Hagemann and Gates, 2003) exponents defining soil water capacity distribution	β_{arno}	dimensionless	Canadell et al. (1996); Hagemann et al. (1999); Hagemann (2002); van Beek (2008); van Beek and Bierkens (2009)
Ratio of cell-minimum soil storage to W_{max}	f_{wmin}	m m^{-1}	van Beek (2008); van Beek and Bierkens (2009)
Ratio of cell-maximum soil storage to W_{max}	f_{wmax}	m m^{-1}	van Beek (2008); van Beek and Bierkens (2009)
Parameters related to phenology			Hagemann et al. (1999); Hagemann (2002); van Beek (2008); van Beek and Bierkens (2009)
– Crop coefficient	K_c	dimensionless	
– Interception capacity	$S_{\text{int-max}}$	m	
– Vegetation cover fraction	C_v	$\text{m}^2\ \text{m}^{-2}$	
Groundwater parameters			GLHYMPS map (Gleeson et al., 2014); van Beek (2008); van Beek and Bierkens (2009)
– Aquifer transmissivity	KD	$\text{m}^2\ \text{day}^{-1}$	
– Aquifer specific yield	Sy	$\text{m}^3\ \text{m}^{-3}$	
– Groundwater recession coefficient	J^{-1}	day^{-1}	
Meteorological forcing			van Beek (2008); CRU (Harris et al., 2014); ERA40 (Uppala et al., 2005); ERA-Interim (Dee et al., 2011)
– Total precipitation	P	m day^{-1}	
– Atmospheric air temperature	T_{air}	°C or K	
– Reference potential evaporation and transpiration	$E_{\text{ref,pot}}$	m day^{-1}	
Others			
– Non-irrigation sectoral water demand (i.e. livestock, domestic, and industrial)		m day^{-1}	Wada et al. (2014)
– Desalinated water		m day^{-1}	Wada et al. (2011a); FAO (2016)
– Lakes and reservoirs			GLWD1 (Lehner and Döll, 2004); GRanD (Lehner et al., 2011)