EUPORIAS WP23: Impact Models for impact predictions

- `AQUATOOL`: It is a Water Management Tool with different modules (SIMGES, OPTIGES, SIMRISK). ?Model URL: http://www.upv.es/aquatool/index_E.html
- `MORDOR`: It is a hydrological model for catchments in France.
- `E-HYPE`: This model simulates water flow and substances on their way from precipitation through soil, river and lakes to the river outlet. The catchment is divided into sub-basins, which in turn are divided into classes depending on land use, soil type and elevation. This Pan-European hydrological model with high resolution is operational in the SMHI production environment. It is operational to deliver real-time and forecast hydrological and nutrient data from the entire European coastline. ?Model URL: http://www.smhi.se/en/2.575/Hydrology/european-hydrological-predictions-for-the-environment-1.12711
- `VIC (Variable Infiltration Capacity model)`: It is a hydrological impact model. ?Model URL: http://www.hydro.washington.edu/Lettenmaier/Models/VIC/index.shtml
- `CGMS (Crop Growth Modelling System)`: Is is a detailed crop model with representation of specific crop varieties. ?Model URL: http://www.marsop.info/marsopdoc/cgms92/5_en.htm
- `LPJml`: This model will be used for hydrological impacts and agricultural impacts. ?Model URL: http://www.pik-potsdam.de/research/projects/lpjweb
- `JULES`: The Joint UK Land Environment Simulator. It is a community land surface model that has evolved from the Met Office Surface Exchange Scheme (MOSES).

All these Impact Models require different variables with different temporal frequencies as input data:

Variables	Time Frequency	Impact Models	Optional for
Precipitation	Daily	AQUATOOL, CGMS, LPJml, JULES, ULUND, UNILEEDS	IC3
	Monthly	-	IC3
	Max hourly rate	ULUND	-
Rainfall rate	Daily	E-HYPE	-
Air temperature	Daily	AQUATOOL, E-HYPE, CGMS, LPJml, JULES, ULUND	IC3
	Monthly	-	IC3
	Daily maximum	CGMS, ULUND, UNILEEDS	AQUATOOL
	Daily minimum	CGMS, ULUND, UNILEEDS	AQUATOOL
Surface temperature (skin temp)	Daily	E-HYPE, Meteoswiss	-
1.5M TEMPERATURE OVER TILES	Daily	-	ULUND
	Daily maximum	-	ULUND
	Daily minimum	-	ULUND
Specific humidity	Daily	JULES	AQUATOOL, ULUND, UNILEEDS
1.5M SPECIFIC HUMIDITY OVER TILES	Daily	-	ULUND
Relative humidity	Daily	CGMS, E-HYPE	-
Wind speed (at 10m)	Daily	CGMS, JULES	AQUATOOL
	Daily maximum	-	ULUND
50 METRE WIND U-COMPONENT B GRID	Daily	IC3	-
	Monthly	IC3	-
50 METRE WIND V-COMPONENT B GRID	Daily	IC3	-
	Monthly	IC3	-
WIND GUST	Daily maximum	-	ULUND
Surface air pressure	Daily	E-HYPE, JULES	IC3
	Monthly	-	IC3
Surface downwelling shortwave flux in air	Daily	CGMS, LPJml, JULES, UNILEEDS	-
Surface downwelling longwave flux in air	Daily	CGMS, LPJml, JULES	-
Dew point temperatur	Daily	E-HYPE	-
CLEAR-SKY (II) DOWN SURFACE SW FLUX	Daily	IC3	ULUND
	Monthly	IC3	-
Surface snow amount	Daily	ULUND	-
Snowfall flux	Daily	ULUND, E-HYPE	-
GRIDBOX OUTFLOW	Daily	Metoffice	-
NET PRIMARY PRODUCTIVITY	Daily	Metoffice	-
NET PRIMARY PRODUCTIVITY ON PFTS	Daily	Metoffice	-
NET DOWN SURFACE LW RAD FLUX (used for rlus)	Daily	-	JULES
DIFFUSE FLUX	Daily	-	JULES
Ozone	Daily	-	JULES
Water sublimation flux	Daily	E-HYPE	-
Moisture in Upper Portion of Soil Column	Monthly	-	AQUATOOL
Total Soil Moisture Content	Daily	-	AQUATOOL
Transpiration	Monthly	-	AQUATOOL
TRANSPIRATION+SOIL EVP ON TILES	Daily	-	AQUATOOL
CANOPY THROUGHFALL RATE	Daily	-	AQUATOOL
SUB-SURFACE RUNOFF RATE	Daily	-	AQUATOOL
Evaporation from Canopy	Daily	-	AQUATOOL
Water Evaporation from Soil	Monthly	-	AQUATOOL
Water Content of Soil Layer	Monthly	-	AQUATOOL
Soil Frozen Water Content	Monthly	-	AQUATOOL
Total Runoff	Monthly	-	AQUATOOL
Surface Runoff	Daily	-	AQUATOOL