

## **Wikiprint Book**

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**Subject:** TracMeteo - [udg/ecommerce/EndUserNeeds/ImpactModels](#)

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## Table of Contents

EUPORIAS WP23: Impact Models for impact predictions

3

## 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](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](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](http://www.hydro.washington.edu/Lettenmaier/Models/VIC/index.shtml)
- **CGMS (Crop Growth Modelling System):** Is a detailed crop model with representation of specific crop varieties. [?Model URL: http://www.marsop.info/marsopdoc/cgms92/5\\_en.htm](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](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).
- **GUESS:** Impact model used by University of Lund.
- **GLAM:** This model is used by University of Leeds.

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

| Variables                                    | Time Frequency  | Impact Models  | Optional for             | Comments                                |
|--|-----------------|--|--------------------------|---|
| Precipitation                                | Max hourly rate | GUESS  | -                        |   |
|  | Daily mean      | AQUATOOL, E-HYPE, CGMS, LPJML, JULES, GUESS, GLAM, MORDOR, VIC | IC3                      |   |
|  | Monthly         | -  | IC3                      |   |
| Air temperature                              | Daily mean      | AQUATOOL, E-HYPE, CGMS, LPJML, JULES, GUESS, MORDOR, VIC       | IC3                      |   |
|  | Daily maximum   | CGMS, GUESS, GLAM, VIC   | AQUATOOL, E-HYPE, MORDOR |   |
|  | Daily minimum   | CGMS, GUESS, GLAM, VIC   | AQUATOOL, E-HYPE, MORDOR |   |
|  | Monthly         | -  | IC3                      |   |
|  | Monthly         | -  | IC3                      |   |
| Skin temperature                             | Daily mean      | MeteoSwiss   | -                        |   |
| 1.5M TEMPERATURE OVER TILES                  | Daily mean      | -  | GUESS                    |   |
|  | Daily maximum   | -  | GUESS                    |   |
|  | Daily minimum   | -  | GUESS                    |   |
| Deep pore temperature                        | Daily mean      | -  | E-HYPE                   |   |
| Specific humidity                            | Daily mean      | JULES  | AQUATOOL, GUESS, GLAM    |   |
| 1.5M SPECIFIC HUMIDITY OVER TILES            | Daily mean      | -  | GUESS                    |   |
| Relative humidity                            | Daily mean      | CGMS   | E-HYPE                   |   |
| Wind speed (at 10m)                          | Daily mean      | CGMS, JULES, VIC   | AQUATOOL, E-HYPE         |   |
|  | Daily maximum   | -  | GUESS                    |   |
| 50 METRE WIND U-COMPONENT @ GRID             | Daily mean      | IC3  | MORDOR                   |   |
|  | Monthly         | IC3  | -                        |   |
|  | Daily mean      | IC3  | MORDOR                   |   |
| 50 METRE WIND V-COMPONENT @ GRID             | Daily mean      | IC3  | MORDOR                   |   |
|  | Monthly         | IC3  | -                        |   |
|  | Daily mean      | IC3  | MORDOR                   |   |
| WIND DUST                                    | Daily maximum   | -  | GUESS                    |   |
| Surface air pressure                         | Daily mean      | JULES  | IC3, E-HYPE              |   |
|  | Monthly         | -  | IC3                      |   |
| Surface downwelling shortwave flux in air    | Daily mean      | CGMS, LPJML, JULES, GLAM, VIC                                  | MORDOR                   |   |
| Surface downwelling longwave flux in air     | Daily mean      | CGMS, LPJML, JULES, VIC  | -                        |   |
| CLEAR-SKY (H) DOWN SURFACE SW FLUX           | Daily mean      | IC3  | GUESS                    | What does (H) refer to?                 |
|  | Monthly         | IC3  | -                        |   |
| Geopotential height at 700hPa                | Daily at 12 UTC | MORDOR   | -                        |   |
| Geopotential height at 1000hPa               | Daily at 12 UTC | MORDOR   | -                        |   |
| Surface snow amount                          | Daily mean      | GUESS  | -                        |   |
| Snowfall flux                                | Daily mean      | GUESS  | E-HYPE                   |   |
| GRIDBOX OUTFLOW                              | Daily mean      | -  | MetOffice                | This variable needs clarification       |
| NET PRIMARY PRODUCTIVITY                     | Daily mean      | -  | MetOffice                | What does it mean?                      |
| NET PRIMARY PRODUCTIVITY ON PFTS             | Daily mean      | -  | MetOffice                | What does it mean?                      |
| NET DOWN SURFACE LW RAD FLUX (used for flux) | Daily mean      | -  | JULES                    |   |
| DIFFUSE FLUX                                 | Daily mean      | -  | JULES                    |   |
| Ozone  | Daily mean      | -  | JULES                    |   |
| SUB-SURFACE RUNOFF RATE                      | Daily mean      | -  | AQUATOOL                 |   |
| Surface Runoff                               | Daily mean      | -  | AQUATOOL                 |   |
| Total Runoff                                 | Monthly         | -  | AQUATOOL                 | Monthly?                                |
| Water sublimation flux                       | Daily mean      | -  | -                        |   |
| Moisture in Upper Portion of Soil Column     | Monthly         | -  | AQUATOOL                 | What does Upper Portion mean?, Monthly? |
| Total Soil Moisture Content                  | Daily mean      | -  | AQUATOOL                 |   |
| TRANSPARATION-SOIL EVAP ON TILES             | Daily mean      | -  | AQUATOOL                 |   |
| Transpiration                                | Monthly         | -  | AQUATOOL                 | Monthly?                                |
| CANOPY THROUGHFALL RATE                      | Daily mean      | -  | AQUATOOL                 |   |
| Evaporation from Canopy                      | Daily mean      | -  | AQUATOOL                 |   |
| Water Evaporation from Soil                  | Monthly         | -  | AQUATOOL                 | Monthly?                                |
| Water Content of Soil Layer                  | Daily           | -  | GUESS                    |   |
| Soil Frozen Water Content                    | Monthly         | GUESS  | AQUATOOL                 | Monthly?                                |
|  | Daily           | -  | GUESS                    |   |
| Soil frozen Water Content                    | Monthly         | GUESS  | AQUATOOL                 | Monthly?                                |