efam: Automated modeling software for environmental risk assessment

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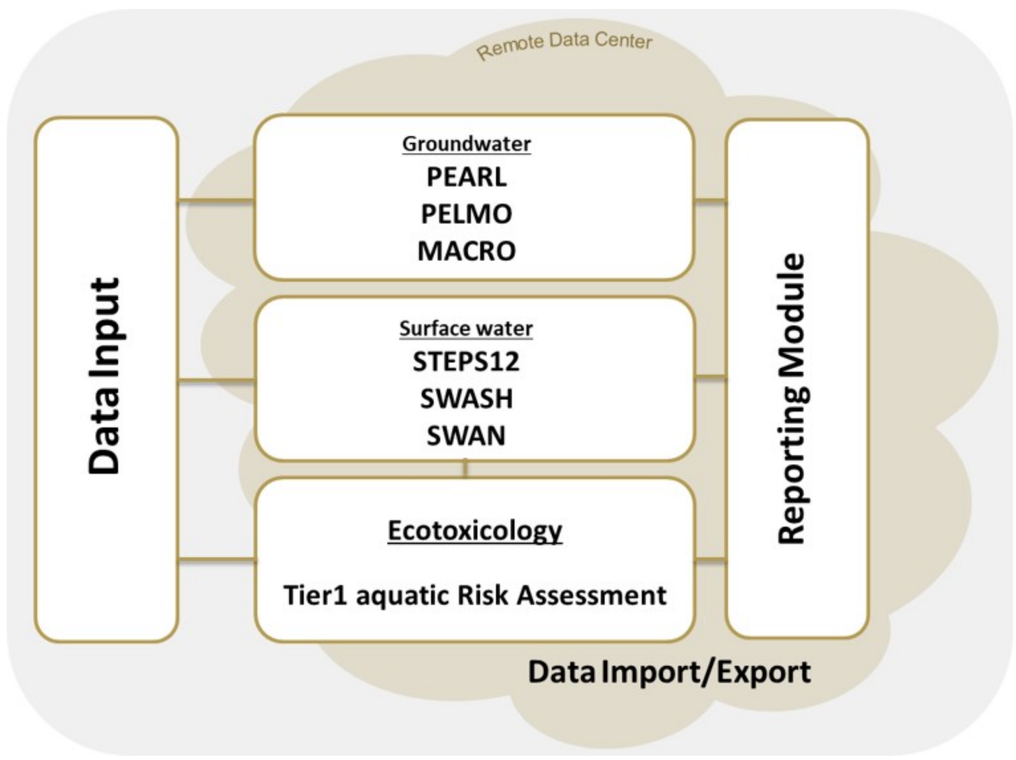

efam schematic overview

We developed the software package efam (environmental fate automated modeling) to facilitate automated modeling and reporting. The aim was to create a software application that can drive regulatory relevant computer models and evaluate the results from one single platform. In the current efam version all relevant Surface Water (**STEPS12, SWASH, SWA**N) and Groundwater (**MACRO, PEARL, PELMO**) models are implemented. Most recent versions are available (e.g. **PEARL 5.5.5** and **PELMO 6.6.**4), but older versions can also be used. Model calculations are performed on powerful and remote server located in a secured data center. efam is developed to automate model parameterization and model simulations, extract the results and transfer outputs to formatted tables suitable for dossier/report incorporation. Further, efam is equipped with an **ecotoxicology module** enabling for **Tier-1 aquatic risk assessment**. Regulatory Acceptable Concentrations (RAC) for substances (parent and metabolites) can be derived based on toxicity endpoints and assessment factors for the respective organism groups and test species. Defined RACs can directly be compared with the relevant Predicted Environmental Concentration (PEC) in order to calculate PEC/RAC ratios. Further,efam can report these ratios in regulatory relevant format (e.g.Part B, Section9 Word tables). The development is of interest, not only in terms of speeding up modeling and report generation, but also it will optimize the organization of data, reduce the occurrence of manual input errors and reduce the effort required for quality control. Simplified data exchange with relevant stakeholders is currently under discussion as further field of application.

Characteristics

- Flexible modular structure
- Individual integration of modelling tools possible
- Adaptation at modular-level enabled
- Calculations can be run on more powerful remote server instead of using desktop PC
- Significant runtime reduction through automated parallelisation of model runs

Advantages

- Faster handling of your modelling tasks
- Higher quality due to less amount of manual work
- Concentrate on your projects – not on tool development
- Safe use within knoell secured IT infrastructure
- Integration of any further model possible
- Basis for spatial explicit higher tier modelling

efam can help

- Centralise input data for several models in one database
- Reduce implementation errors often caused by manual work
- Optimise quality assurance procedures
- Speed up exposure modelling and report generation
- Automatically generate result tables suitable for submission dossiers and scientific reports
- Reduce time needed for model parametrisation and documentation