RETINA Documentation

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## What is the RETINA project

### Intro to the pieces of the RETINA project

## What are the main pieces of code that make up the RETINA project

1. The RETINA app
   * primarily php code
   * collects the data from the user
   * shows sensor data to the user
   * shows model run results to the user
2. The RETINA database
   * PSQL **data catalogue** dedicated to storing RETINA project specific information such
     + as user login information
     + site details
     + site management
     + records of model runs triggered through the RETINA app
   * The data in the RETINA database is supposed to be separate from the BETY database (described below.)
3. The PECAN code
   * A bundle of R packages that handle
     + processing and preparing the data collected from the app and other sources to
       - use it as model inputs or
       - compare with model outputs
     + reading model outputs and preparing them for visualizations, comparison with collected data and further analysis
   * For each model that is used in the RETINA project, there is a specific R PEcAn package that contains (at minimum)
     + script for preparing climate data for the model
     + script(s) for preparing configuration (i.e. parameterization) files for the model
     + script to execute the model
     + script to read the output of the model and translate it from model specific format into a standardized format so that it can be easily comparable with other model outputs
4. The RETINA R package
   * A series of helper scripts written in R that are specific to the RETINA project and JHI and thus shouldn’t be merged back in with the pecan project
   * These scripts complement the tasks listed more generally with the PECAN code.
5. The BETY database
   * PSQL database.
   * While BETY does house some data, it is better to think of it as a **metadatabase** that primarily holds information on the location and format of data
   * The BETY database is used to track the full provenance of all data used when a model run is generated by the RETINA app including:
     + records of all raw data and processed data used for drivers, parameterization and benchmarking (for every step of processing)
     + records of run settings and model specific parameterization for model runs
     + records of model run status and output files