

JavaStics and Stics changes

Stics 9.2

- **Documentation**
 - Input parameters and output variables list (inputs.csv, outputs .csv)
- **Bugs fix in code**
 - Message number related to plant parameters checking
 - Nitrogen plant content calculation (fixing vine case)
 - N content initialization for falling dead leaves
 - Nitrogen plant content for vine
 - Report writing for the climatic simulations chaining case
 - Snow
 - depth days sum re-initialization for climatic chaining
 - up-scaling the variable dimension for storing snow depth days sums
- **Bugs fix in files**
 - Rounding precision fixes in some general parameters values
- **Improvements**
 - The parameter for forcing irrigation at emergence can now be used either for manual or for automatic irrigation calculation
 - New output variables
 - for residues and N plant content management (QNplantenp, dltaremobilN, restemp)
 - Some parameters moves into plant pool
 - Stabilization of harvested organs nitrogen content
 - Warning for residues list limitation to 10 in the crop management file
 - Fixing the residue type in case of soil incorporation
 - Increasing of significant digits for output variables (scientific format) either for daily or report files

JavaStics-1.41 / Stics 9.1

Model

- **Documentation**
 - Units for HR_vol
 - New calculation of crop residues incorporation depth into soil
 - Input parameters and output variables list (inputs.csv, outputs .csv)
- **Bugs fix in code**
 - Meteo data recalculation with snow module and wind speed recalculation when simulating intercrop usms
 - Chaining a sole crop usm after an associated crop usm
 - Some tests and variables types
 - Some variables initialization
 - Calculation of root dry matter and IRcarb for surgarbeet
 - Reading *.mod files according to outputs request and files existence
 - Snow depth lasting storage for climatic usms chaining
 - Taking account of the plastic mulch
 - Correction of units for the calculation of the capillary rise
- **Bugs fix in files**
 - Bounds values of **nbinflo** and **stdordebour** in plant files
 - Moving some parameters in DurumWheat_ALLUR.xml plant file
 - Fix nbfeuilplant value to 3 for sugarbeet plant file
 - Moving some parameters of the codazorac option for the plant files proto_sunflower,proto_turmeric and timothy
- **Improvements**
 - Some error messages (in PET calculation, ...)
 - Source code cleaning and refactoring
 - New parameter added for fixing mineralization minimum temperature
 - New option added for calculating crop residues incorporation depth into soil
 - New output variables
 - for drainage and leaching at the bottom of each soil layer and under profmes
 - etm/etr and etr/etm ratios
 - new output variables by soil profile
 - Chum, Nhum C_allresidues and N_allresidues

Interface

- **Improvements**
 - Optimization process can be performed now on vector parameters (for example, soil parameters attached to soil layers)
 - Correction of the Crespc unit in the inputs.csv file

JavaStics-1.41 / Stics 9.0

Interface

- **Improvements**

- Access to param_newform.xml has been restored
- New simulation unit examples for testing snow module use, and new plants (timothy, rice, turmeric)

Parameterization

- Values of parameters associated to unused options have been replaced with -999 values (parameters which have not been calibrated)
- Plant parameters : some of them have been moved:
 - **tgmin** and **nbfeuillplant** : outside of options in « emergence and starting » formalism
 - **tcmin** and **tcmax** : outside of options in « leaves » formalism
 - **vitircarb** and **irmax** : outside of options in « yield formation » formalism
 - **bdilmax** : outside of options in « nitrogen » formalism
- New usm example for the Timothy plant

Model

- **Documentation**
 - Formalisms : snow, mineralization
 - Model performances evaluations
- **Bugs fix**
 - Some variables initializations and tests
 - Conditional tests syntax according to variables types, types conversion for avoiding warnings, unused variables removed
 - Test for chaining an usm over years
- **Improvements**
 - Parameters consistency checks, bounds checks, values checks for activated options (-999 values)
 - New output variables (snow, N, ...) see JavaStics documentation
 - Specific module for projects simulations management
 - Formalisms / parameters
 - New humus mineralization formalism
 - Mixing/distribution of water and nitrogen soil content after a soil tillage
 - New module for producing snow cover: recalculation of minimum and maximum temperature, and precipitations
 - New modules for files management and system operations
 - Errors management (new specific log file)
 - Calculations: avoiding some loops
 - New plant files (timothy, rice, turmeric)

JavaStics-1.40 / Stics 8.50

Interface

- **Bugs fix**
 - Day of year checks for annual or 2 years' crops
 - Parameters optimization process: open variables list, usms selection (over 2)
- **Improvements**
 - Dialog box for exiting confirmation
 - Example scripts for using JavaStics command line
 - New executables for Mac OS platform: Stics model and utilities
 - Updates on OS detection for automatic executables selection (model, utilities)
 - Changing command line interface (from Stics.exe to JavaSticsCmd.exe)
 - Parameters optimization output file changes: lower criterion value and corresponding parameter values, usms list used in the processing

Parameterization

- Updated sunflower and sugarbeet plant files
- Plant parameters files renamed : to distinguish prototypes files, cover crop files and inter crop files

Model

- **Bugs fix**
 - Calculation and controls of output dates for profiles
 - Grass:
 - Cutting management
 - Delayed cutting day calculation (when passing years)
 - Variables initialization over years
 - Seeded grass: restart stage for next year
 - Initialization in successive simulations case
 - Senescence calculation and effect
 - Automatic irrigations calculation based on upvt
 - Variables
 - Report file format
 - Plant density calculation for intercropping
 - Plastic mulch covering use
 - Water and nitrogen stress management
- **Improvements**
 - Parameters consistency checks
 - New output variables
 - Profile file content update
 - Formalisms / parameters
 - Nitrification and denitrification
 - Grass: roots death, cutting decision criterion,
 - Multiple thinning management
 - Multiple fertilizer types management

JavaStics-1.31 / Stics 8.41

Interface

- Climatic variables: bounds set to float, fix for vapor pressure check rule and maximum bound value
- Documentation: default value for CO2

Parameterization

- Parameters documentation fixes (names, definitions, bounds, codes)

Model

- **Bugs fix**
 - Variables names in var.mod file
 - Increasing message variable dimensions
- **Improvements**
 - Extension of optimizable parameters list

JavaStics-1.30 / Stics 8.40

Interface

- command line: adaptations to linux OS
- Stics files management
- climatic dialog for files formatting
- keeping selected input file name for creating new one, or copying it
- sorting parameter files list
- dates bounds for validation in usm run dialog
- confirm popup when exiting Javastics

Parameterization

- plants : vine et durumwheat plant files (special because one file by genotype) are renamed and cleaned
- parameters documentation fixes (names, definitions, bounds, codes)
- Param_new_form: add of parameters for coupling with pathogen models (not activated)

Model

- **Bugs fix**
 - last year simulation for yearly climatic sequence
 - variable names (AZamm(2), Qles), initializations (msrac, irazo, ircarb, Qnplante), type (CO2, real), calculation (qmulch)
 - getting residues of previous crop: test for artificial mulch activation, for all crop management systems
 - growth restarting calculation after harvest
 - dates conversion in report file
 - balance calculations for inter-crops:
 - 2 years crops: stages dates calculations for sowing in bissextile year
 - associated crops: mineralisation calculation, taking into account precipitations before sowing
 - abscission variables indexation
 - irrigations sums
 - leaves exposition: relative area use for previous day dry matter calculation, and in case of dominance inversion
- **Minor fixes**
 - balance informations: intermediate temperature sums, stages
 - tests: cultivars numbers,
 - warnings: profmes==profsol
 - exiting: if incompatible values for codebeso and codeetp
 - calculations: setting ndebdes with nrec value rather than nrecbutoir one when the given stage not reached, masec for strawberries after harvest
 - removing non ascii characters
- **Improvements**

- model execution: exiting code when errors (no more stop), message at the end of successful execution
- files path management (Record platform compatibility)
- variables
 - $co2(n)$, $fco2$, $fco2s$, $rendementsec$
 - Macsur project
 - cumulative variables from sowing date to maturity (*_from_plt)
 - water reserves available for plants or for a given depth (SoilAvW, SoilWatM)
 - for optional specific outputs in report file
 - Agmip project: stages dates to year days
- model version integration when compiling, getting it from command line
- variables: keeping matuber after harvest (beet), restoring lessiv
- messages: for tracking parameters and codes values (history file), removing useless and french messages
- report file: added location,
- balance file: Sum of Maximal ET (eos+eop) instead of sum of PET, changes for yield formatting
- soil profile file: increasing days numbers

JavaStics-1.21 / Stics 8.31

Interface

- command line: files generation, rotations run
- informations: development stages names in initialization, tables headers content and size
- usm sorting removed for selection in rotations case

Parameterization

- general parameters: updates about some parameters values, parameters names
- plant files parameters updates (rapeseed, ryegrass, mustard)
- parameters documentation fixes (definitions, bounds, codes)
- variables documentation fixes (definitions)

Model

- **Bugs fix**
 - vernalisation management
 - matuber value calculation
 - roots density distribution over profiles (nouvrac)
 - option management for shelter climatic conditions
 - climatic series management with uncomplete years
 - management of residues content (water, nitrogen)
 - senescence process for grass
 - management of PET calculation method and control
- **Improvements**
 - initial development stage in report file
 - new variables in profile (humirac_z et efNrac_z, up to 60 possible dates)
 - new daily output variables (rlj, efnrac_mean, humirac_mean, efda, efNrac)
 - added day in year number to profile file.
 - PET calculating method name in balance file