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airGRteaching

an R-package designed for teaching hydrology with lumped hydrological models

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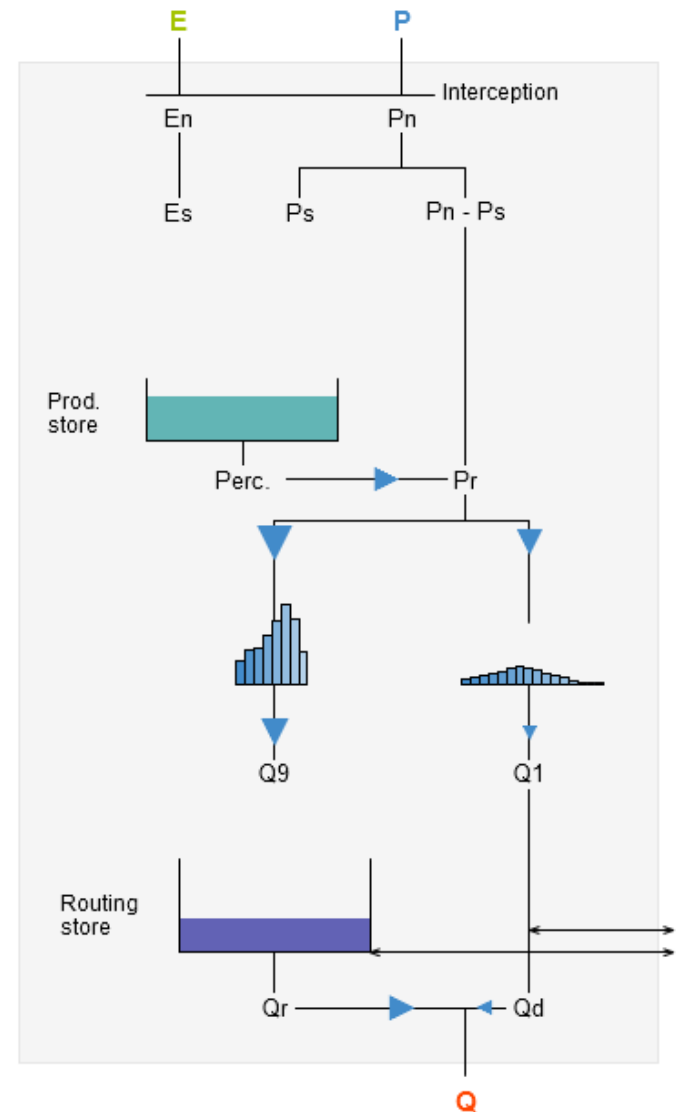
(3) University of Côte d'Azur, Géoazur, Nice, France

26th April 2017



Based on the airGR R-package:

- 3 daily models up to now (including GR4J)



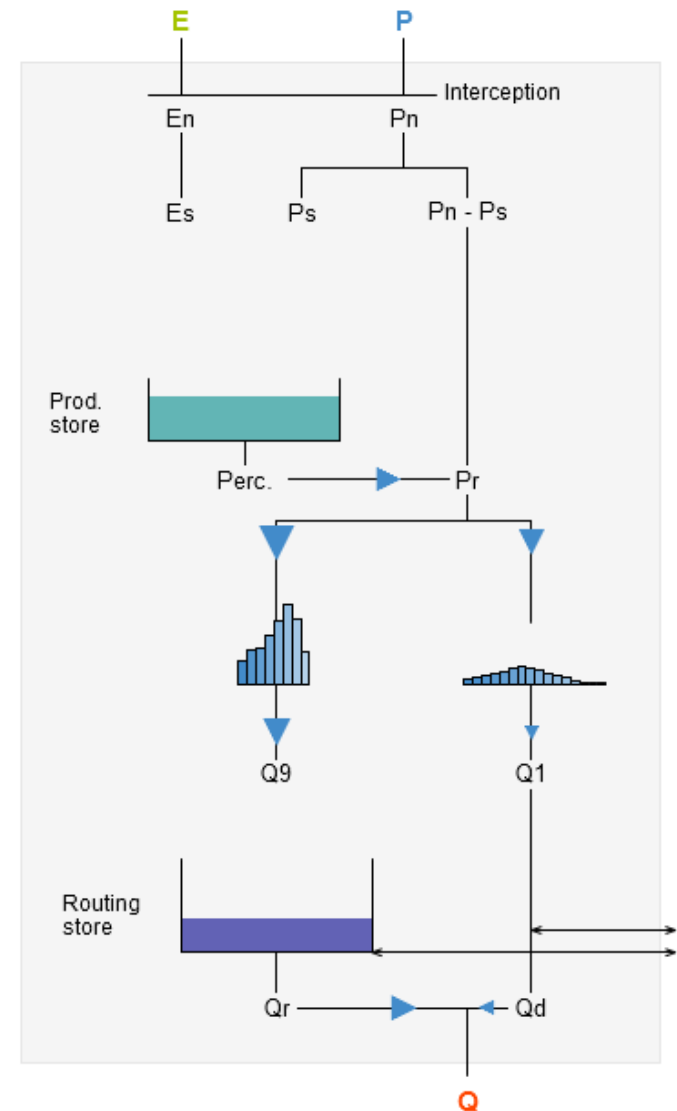
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- 3 daily models up to now (including GR4J)

Basic level of programming required

Only 3 simple functions for a full modelling exercise

- Preparation of data
- Model calibration
- Model simulation



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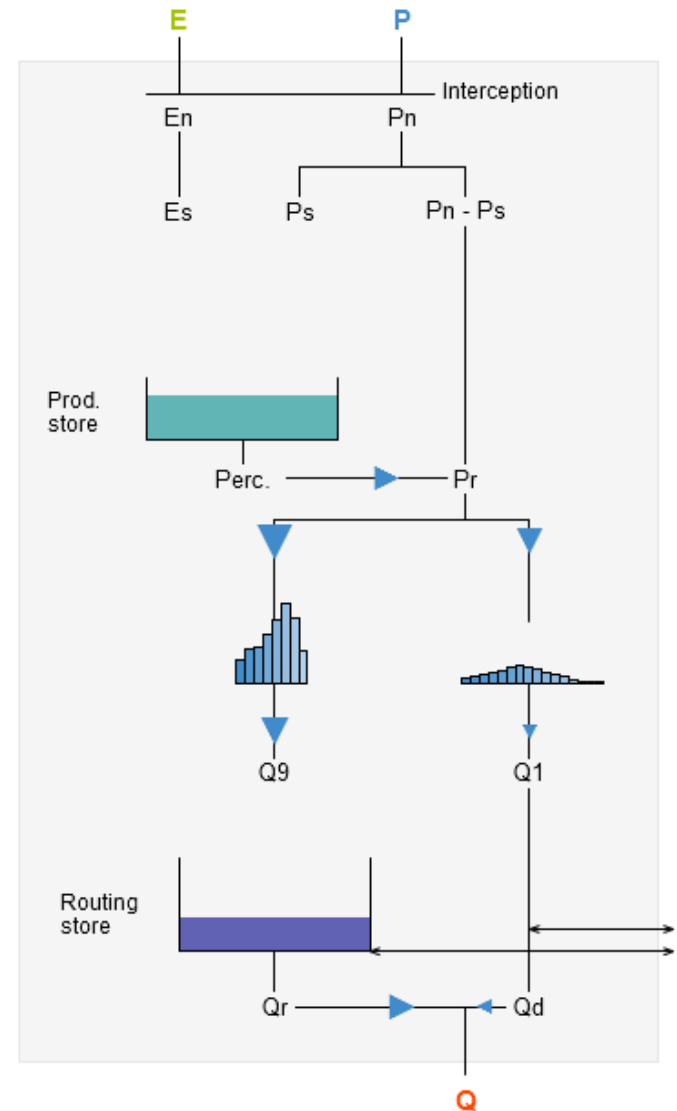
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Pre-defined graphical plots

- Mouse events and interactive graphics



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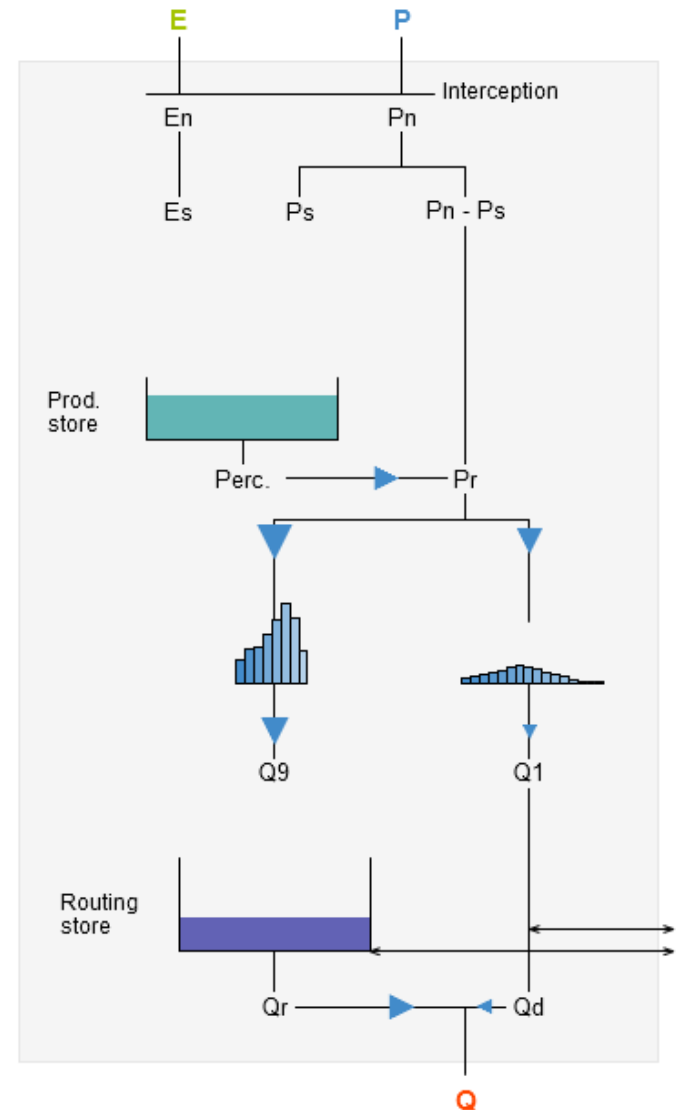
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Graphical interface based on a Shiny interface

- Interactive flow simulation with parameters modifications
- Automatic calibration
- Internal variables evolution
- Time period selection



Choose a dataset:
 Low-land basin

Choose a model:
Hydrological model: GR4J
Snow module: None

Parameters values:

X1 (production store capacity): 200 [mm] (range 0 to 2,500)

X2 (intercatchment exchange coeff.): 0 [mm/d] (range -4 to 4)

X3 (routing store capacity): 100 [mm] (range 0 to 1,000)

X4 (unit hydrograph time constant): 2 [d] (range 0.5 to 10)

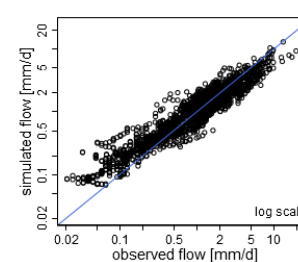
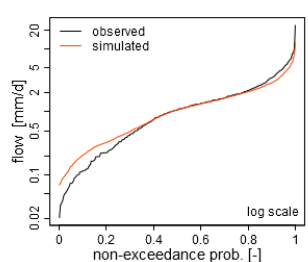
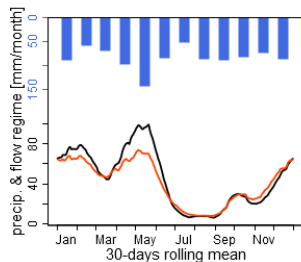
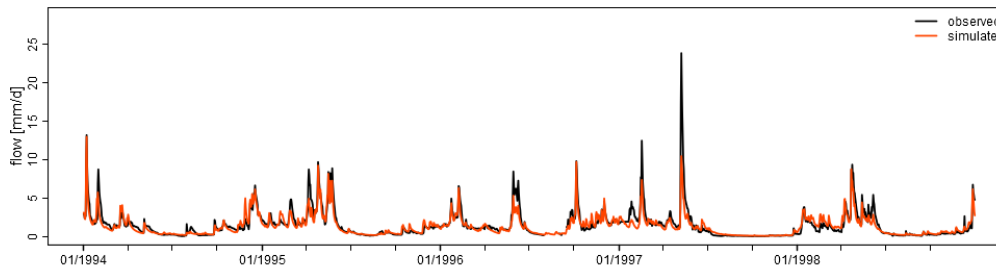
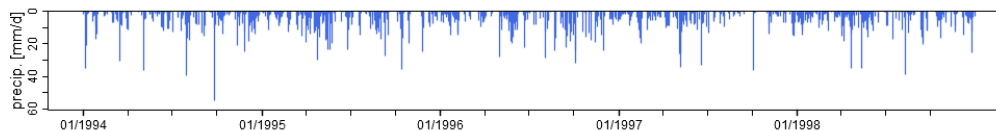
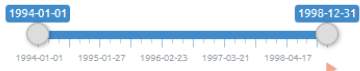
Automatic calibration (with KGE [Q]):

Run

Choose a plot:

Model performance

Select the time window:



Criteria	Value
NSE [Q]	0.78
NSE [log(Q)]	0.87
NSE [sqrt(Q)]	0.86
KGE [Q]	0.71
KGE [log(Q)]	0.54
KGE [sqrt(Q)]	0.82