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"GlassEel2D": a software to simulate glass eel behavior in estuaries

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"GlassEel2D" is the **Graphical User Interface** of a code implementing the **two-dimensional glass eel behavior model** described in [1], allowing the **simulation of glass eel migration in tidal estuaries**.

As shown as below **specific hydroclimatic input data** are needed by the GlassEel2D interface to produce results.

year	month	day	hour	min	sec	height (m)
1999	11	1	0	0	0	3.132
1999	11	1	1	0	0	2.769
1999	11	1	2	0	0	2.353
1999	11	1	3	0	0	1.986
1999	11	1	4	0	0	1.770
1999	11	1	5	0	0	1.772
1999	11	1	6	0	0	1.998
1999	11	1	7	0	0	2.389
1999	11	1	8	0	0	2.839
1999	11	1	9	0	0	3.236
1999	11	1	10	0	0	3.491
1999	11	1	11	0	0	3.551
1999	11	1	12	0	0	3.403
1999	11	1	13	0	0	3.075
...
2000	3	31	5	0	0	2.442
2000	3	31	6	0	0	2.084
2000	3	31	7	0	0	1.829
2000	3	31	8	0	0	1.727
2000	3	31	9	0	0	1.810
2000	3	31	10	0	0	2.074

river flow - turbidity - nebulosity

Daily river flows, turbidities and nebulosities:

ddMM/yyyy	Flow (m3/s)	Turbidity (NTU)	Nebulosity
08/11/1999	860.830	14.786	weak
09/11/1999	139.830	11.463	weak
10/11/1999	145.430	12.342	weak
11/11/1999	137.550	11.091	weak

Injections during defined times

Injection number: 1

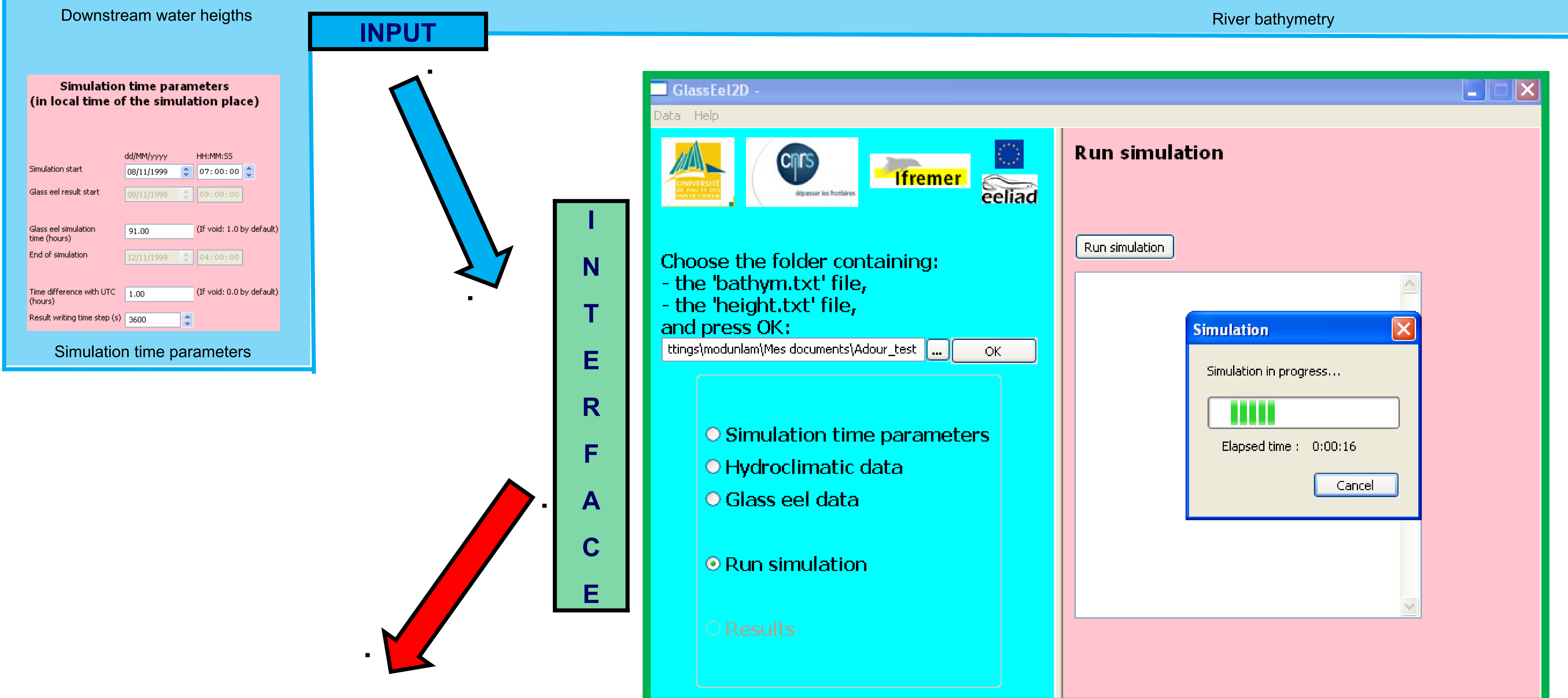
Injection type: Dirac Uniform Weibull

Injected mass (g): 0.000

Injection start: 01/01/2000 00:00:00

Injection end: 01/01/2000 00:00:00

River bathymetry



OUTPUT

Visualization of glass eel evolution as successive images or as a movie.

Extraction of the hydrodynamic data (heights of water and currents) used by the model at chosen fixed points of the estuary.

POSSIBLE APPLICATIONS

- This tool can be used by managers:
- to estimate the **upstream migration speed of glass eels** according to hydrological data,
 - to detect the **environmental conditions** that stop or slow down their displacement into the estuary,
 - to assess the **catchability of glass eel runs in estuaries** according to the hydroclimatic conditions observed a given day and a given fishing season.

REFERENCES

- [1] Analysis and visualization of the glass eel behavior (*Anguilla anguilla*) in estuary and estimate of its upstream migration speed. P. Prouzet, M. Odunlami, E. Duquesne and A. Boussouar. *Aquatic Living Resources*, vol. 22 n. 4, October/December 2009. DOI: 10.1051/alr/2009041.
- [2] GlassEel2D website: <https://redmine.univ-pau.fr/projects/show/glasseel2d>