What does it do?

RivTool is an innovative software that integrates river network information with environmental data. Designed to be a straightforward and user-friendly software it facilitates: (1) obtaining information that characterises the network based only on its topographic structure; and (2) by linking environmental data to freshwater networks acquire new data through mathematical calculations that account for the hierarchical nature of these systems. The software is table driven and was developed to work with two distinct basic units: segment and sub-basin.

What can we obtain?

Depending on provided files there is the possibility of obtaining information to characterise a river network based solely on its topological features or perform a network analysis using network and environmental data (e.g., for a given segment a user can calculate maximum channel slope towards the mouth or compute the average temperature in the upstream drainage area).

Topological features of a network

Enables the identification of segments or/and catchments that belong to the main river of a basin

MainRiver function

Sub-basinID function

Considering a main river course, enables the aggregation of segments and/or catch-

ments in its natural sub-basins

Original River

Network

Computations along a network

- Sum/average considering all upstream/ downstream segments (e.g., upstream drainage area)
- Relative occupancy in Upstream Drainage Area
- Distance between segments
- Conditional Sub-basin
- Relative Distance to Mouth
- Stream Power (rate of potential energy expenditure over a reach)

Why is it advantageous to use RivTool?

Takes full advantage of river network databases Straightforward link between environmental and river network data Extensive set of functions, all in one program No topological restrictions as it is database driven Fast performance even with large datasets Universal applicability Works with segment or sub-basin as a basic analysis unit A set of ready-to-use libraries User-friendly and with straightforward implementation

River Network Toolkit

Gonçalo Duarte, Tiago Oliveira, Pedro Segurado, Paulo Branco, Gertrud Haidvogl, Didier Pont & Maria Teresa Ferreira

How to use in 5 steps?

2. Load a variables file $\frac{1}{2}$ Data Load custom Load from library Visualize data

3. Define segments to be used in calculations

🔰 1. Load a map file

x UDA x rel_dist

0.99 0.99 0.99

0.99 0.995

0.99

0.977

0.98

0.997

AGRONOMIA

avg_temp_UD/

903545

9006226

900542 900543 19033 10050

10255

10856

05

× dist_mout

Endings

Source

Source

Source

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4. Specify the calculations to be performed (+)

Adiacency matrix Brucation ratio O Distance between segment Distance to mouth O Distance to source O Main river O Relative distance O Shreve order O Source ID O Strahle Conditional O Sub-basin ID O Sub-basin main river O Sub-basin sou Total mouth segments O Total source segment



Download the trial version



http://bit.ly/RivTool beta

The current beta version, though available, is still under testing procedures.

Let us know your comments and/or suggestions. Help us improve:

Info@rivtoolkit.com



Network map

Load from library

Segments information

Create new man

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Load custom