Modeling Environmental Dynamics with Dinamica EGO:

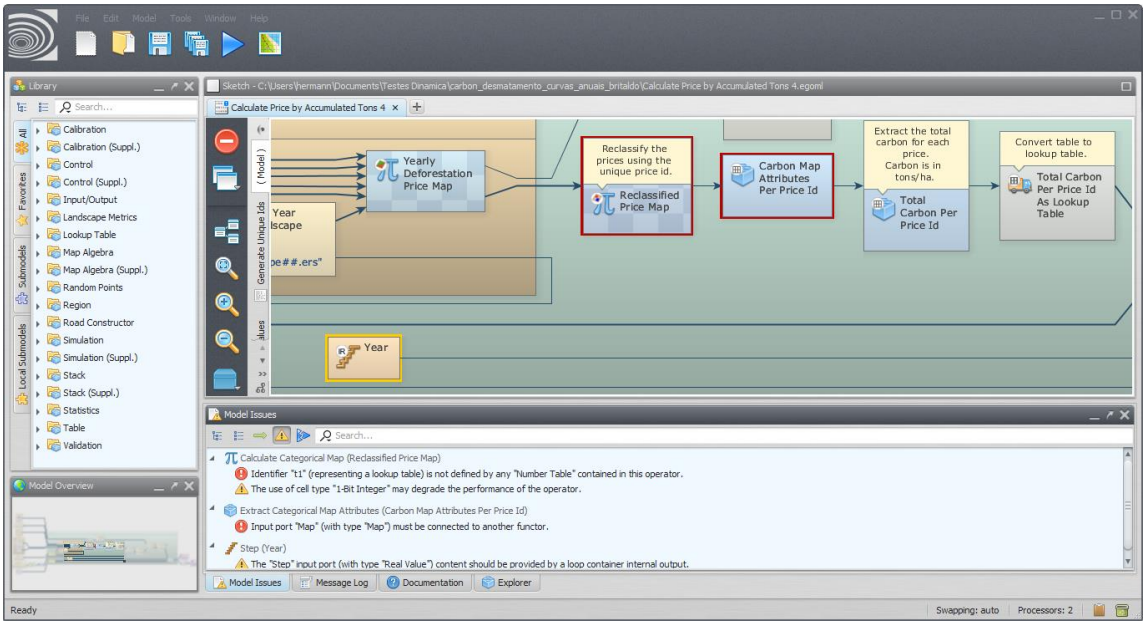
Training Session in PORTUGAL

The Centro Sensoriamento Remoto (CSR) of Universidade Federal de Minas Gerais (UFMG, Brazil) in association with the Portuguese Association of Landscape Ecology (APEP-AssociaçãoPortuguesa de Ecologia da Paisagem) will offer a training session on environmental modeling using DINAMICA EGO to be held in Portugal.

DINAMICA EGO software (www.csr.ufmg.br/dinamica) is a spatially explicit, high performance, modeling freeware used by many scholars around the world. Dinamica EGO modeling platform presents outstanding possibilities for the design of spatial models, from analytical to the very complex dynamic ones. These models can ultimately involve nested iterations, dynamic feedbacks, multi-region and multi-scale approach, manipulation and algebraic combination of data in several formats - such as maps, tables, matrices and constants - decision processes for bifurcating and joining execution pipelines, and a series of complex spatial algorithms for the analysis and simulation of space-time phenomena.

Dinamica EGO has been applied to numerous environmental studies, including the modeling of deforestation in the Amazon from local to basin-wide scales, urban dynamics, logging and other forestry rents in the Amazon, cattle ranching, forest fires, river regime, biodiversity offsets, and agricultural expansion in Brazil. See list of publication at www.csr.ufmg.br/dinamica/publications.

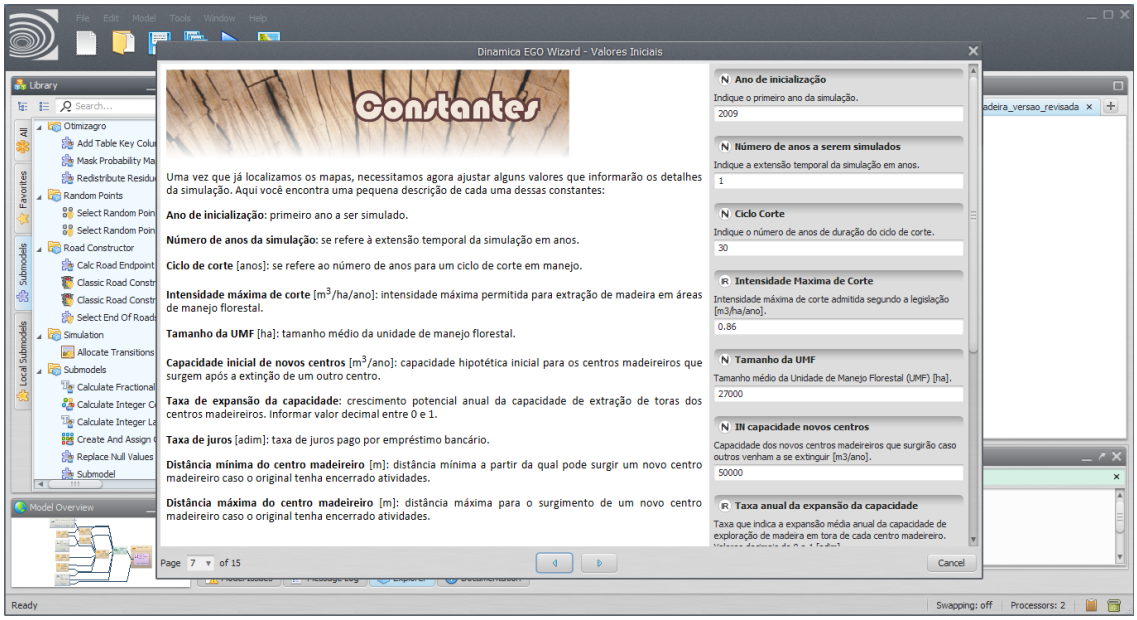
The course aims to introduce the vast possibilities of **Dinamica EGO** for the design of space-time models.



How Dinamica EGO works?

Dinamica EGO is written in C++ and Java. It holds a series of algorithms called functors. Each functor performs an operation. These functors are sequenced to establish data flow in the form of graphs. Through the Dinamica EGO graphical interface one can create models by simply dragging and connecting functors via their ports, which represent connectors to types of data, such as maps, tables, matrices, mathematical expressions and constants. Functors can be enveloped by “containers”, a special type of functor that is used, for example, to execute iterations or process data from specific regions of a map. Thus, models can be designed as a diagram and execution follows a data flow chain. This friendly interface permits the design of simple to very complex spatial models that are saved in a script language in XML format or EGO programming language.

In sum, Dinamica EGO software favors simplicity, flexibility and good performance, optimizing speed and computer resources, such as memory and parallel processing. Most of its algorithms are designed to take advantage of multicore processor architecture. In addition, Dinamica EGO handles large raster format using disk paging. On the other hand, if memory is available, it can load all the input maps at the beginning of a model execution and keep them in memory only while they are needed. In this way, the software only accesses the disk at the end of an execution to write the final outputs or, if specified by the modeller, at the end of an iteration to save the output maps from each time step.



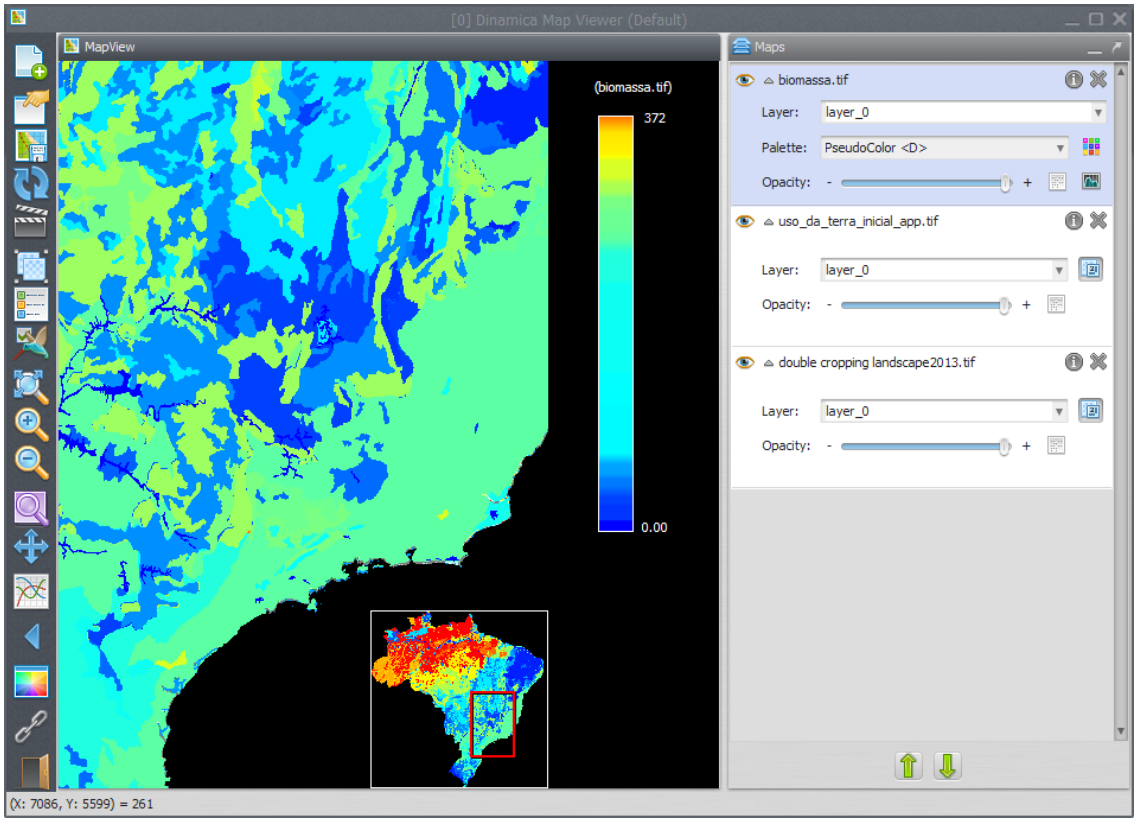
Program of the course

- Brief theory on land use change modeling
- Visual interface, library of analytical and simulation algorithms, and high level programming language of Dinamica EGO.
- Designing and use of submodels.
- Design, calibration, validation, and operation of land use change model.
- Examples of applications of Dinamica EGO, including fire spread, carbon cycling and emissions, fluvial regime, spatially-explicit land use rent models, and other econometric models.

Requirement: Experience with GIS or environmental modeling

Duration: 3 days (8 hours per day).

Language: Portuguese



Data and location of the course

- 26 to 29 of September

Registration FEE

- 100 Euros for APEP associates

- 150 Euros Non Member of APEP

Price includes: coffee breaks, course certificate

Requirements

Each participant has to bring its own laptop with the latest version of the Dinamica EGO software installed (http://csr.ufmg.br/dinamica/).

Training Team

Dr. Britaldo Silveira Soares-Filho is full professor of Department of Cartography, Institute of Geosciences of Federal University of Minas Gerais (UFMG), Brazil. His research focuses on modeling and analysis of land-use policy scenarios, including integrated simulation of land-use changes in tropical forest regions and the assessment of their impacts on climate, river regime, carbon balance, agriculture and forestry rents, and biodiversity. In addition, Dr. Britaldo coordinates the development of DINAMICA EGO software (www.csr.ufmg.br/dinamicaEGO), an environmental modeling freeware used by many scholars worldwide.

William Leles de Souza Costa is a research associate at CSR/UFMG. His work focuses on environmental modeling, geoprocessing, geodesign and digital cartography. He holds a degree in Surveying Engineering by Engineering Faculty of Minas Gerais, two specializations: Geoprocessing and Software Engineering; and a master degree in Analysis and Modeling of Environmental Systems by Federal University of Minas Gerais (UFMG), Brazil.

Registration

NAME_____

ADDRESS_____

EMAIL_____

NIF_____

APEP MEMBER

☐ YES, 100 Euros

☐ NO, 150 Euros

Please send this registration form to apep@apep.pt or sonia.carvalhoribeiro@gmail.com

REGISTRATION IS VALID AFTER PAYMENT DUE TO 1st August 2016 to the following bank account:

Associação Portuguesa de Ecologia da Paisagem

IBAN: PT50 0010 0000 2159 8690 0014 0

Organization