The Laboratory of Tree-Ring Research

presents a talk by

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VS-Growth Evolution Neural Network (VS-GENN)

Wednesday, March 9, 2016 - 12:00pm to 1:00pm
Room: Bannister 110

The tree-ring response to climate change is one of the most interesting problems in modern forest ecology. Despite the large number of papers on tree-ring response to environmental change (temperature increase, irrigation, drought, etc.) there is no reliable answer to how woody plants will respond to such change in different forest stands and biogeographic zones. The process-based tree-ring model developed by Vaganov & Shashkin (VS-model) can be a key to answering this question.Two new principal approaches are described:

1. VS-oscilloscope (visual approach to VS-model parameterization)
2. VS-Growth Evolution Neural Network (automatic-mode parameterizing of the VS-model) -- VS-GENN

The first approach allows control of "optimal" values of VS-parameters by taking into account direct field observations. The second approach is based on machine learning of a neural network, and is attractive for applications to large tree-ring data sets around the world.Both approaches have been tested and have yielded ecologically reasonable simulated tree-ring series in the Mediterranean, central Asia, central Siberia and eastern Siberia.

The University of Arizona