



THE LABORATORY OF TREE-RING RESEARCH

presents a talk by

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Low-frequency streamflow signal from cottonwood tree rings

Wednesday, March 18, 2015 - 12:00pm to 1:00pm

Room: Bannister 110

Tree-ring reconstructions from ring widths of upland trees are a longstanding source of information on variability of streamflow. Such trees sense variations in net precipitation in runoff-producing parts of a watershed. While riparian trees are much less commonly applied in streamflow reconstruction, large multi-aged populations of riparian trees offer the opportunity to improve reconstructions of streamflow through alternative standardization methods and a direct pathway of response of growth to changes in stream level. Ring widths of more than 300 plains cottonwood (*Populus deltoides*, ssp. *monilifera*) trees in the North Unit of Theodore Roosevelt National Park, North Dakota, are applied in combination with ring widths from upland conifers to reconstruct streamflow along the Little Missouri River, North Dakota, USA, to 1658. The signal for April-July flow is found to be stronger in the cottonwood than in the conifers, and to best represented by a model including conifers in combination with young (ages 5-35 yr) cottonwood. Age-banded chronologies for both young (5-35 yr) and older (36-165 yr) cottonwood have lower growth rates before than after 1900, possibly related to low-frequency hydroclimatic variation masked in the upland conifer chronologies by growth-trend removal.