



A measuring tool for tree-rings analysis

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A special tool has been created for the annual tree-ring widths measurement and analysis. It consists of professional scanner, computer system and software. This created complex in many aspects does not yield the similar systems (LINTAB, WinDENDRO), but in comparison to manual measurement systems, it offers a number of advantages: productivity gain, possibility of archiving the results of the measurements at any stage of the processing, operator comfort. It has been developed a new software, allowing processing of samples of different types (cores, saw cuts), including those which is difficult to process, having got a complex wood structure (inhomogeneity of growing in different directions, missed, light and false rings etc.). This software can analyze pictures made with optical scanners, analog or digital cameras. The complex software program was created on programming language C++, being compatible with modern operating systems like Windows X. Annual ring widths are measured along paths traced interactively. These paths can have any orientation and can be created so that ring widths are measured perpendicular to ring boundaries. A graphic of ring-widths in function of the year is displayed on a screen during the analysis and it can be used for visual and numerical cross-dating and comparison with other series or master-chronologies. Ring widths are saved to the text files in a special format, and those files are converted to the format accepted for data conservation in the International Tree-Ring Data Bank. The created complex is universal in application that will allow its use for decision of the different problems in biology and ecology. With help of this complex it has been reconstructed a long-term juniper (1328-2004) and pine (1445-2005) tree-ring chronologies on the base of samples collected at Kola Peninsula (northwestern Russia).