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The environmental impact on sustainable forest management. Preliminary report.

Forest is an important natural, economic, and recreation resource. The development of reliable models for the rational exploitation of forests belongs to significant open issues of the natural resource modeling. The suggested model of forest dynamics is described by a system of PDEs and integral equations and is flexible enough to consider benefits from carbon sequestration and revenue from timber production and, on the other side, to reflect changes in the environment and different climate scenarios. One of the research goals is to understand how fluctuations in the environment impact natural / biological processes of the forest growth and carbon sequestration and economic regimes of forest management. The results of a collaborative research with Spanish environmental economists are presented. The outcomes of the model investigation are approbated on real data on forestry in Spain and can be implemented in corresponding long-term policies and regulations. (Received September 08, 2011)