Abstract template for the conference "A century of national forest inventories – informing past, present and future decisions"

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On page two, you are asked to fill in your abstract in the format and font size indicated. Please remember to include authors affiliation information in the footer section of page two. The length of the abstract may not be more than one page including references.

Abstract title:		Using the 3PG model to project forest dynamics under different scenarios. An application to the Portuguese production forest using NFI data as input. Margarida Tomé et al.
Take-home message:		*Simple light use efficiency models are of high value to project NFI data to analyse future forest dynamics under alternative scenarios of demand, forest management and climate*
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General topic, see website: (please double click on the check box and activate the relevant one)	☐	Improving future NFIs by learning from the past
	☒	NFIs today and in the future
	☐	Cutting edge and futuristic inventory techniques and technologies
Preferred presentation form:	☒	Oral presentation
	☐	Poster
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Using the 3PG model to project forest dynamics under different scenarios. An application to the Portuguese production forest using NFI data as input.

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Introduction: The use of process-based models to produce growth and yield predictions is gaining relevance over traditional empirical models. Such models, integrating the main physical, biogeochemical and physiological processes involved in forest growth and development, give a mechanistic description of the interactions between the living plants and their environment and are able to assess the energy balance and the cycling of water, carbon and nutrients within a given ecosystem. This presentation analyses the use of the 3PG model, a simple process-based stand model requiring few parameter values and readily available data as input, to project NFI data.

Materials and methods: The 3PG model has been parameterized for growth simulation of eucalyptus and maritime pine in Portugal and is therefore available to be used in large scenario modelling exercises for this two species. For this purpose the 3PG model has been implemented in the standsSIM regional simulator. The NFI data was analysed in order to check its appropriateness to be used as input for the 3PG model and the need to complement it with soil data was identified. A GIS data base with a pixel size compatible with the NFI grids (500x500 m for the phot plots and 2x2 km for the field plots), including a large set of environmental information, including climate scenarios, was prepared to support the large scale simulations. The simulations based on the present climate were compared with similar simulations based on the GLOBULUS and PINASTER growth and yield models, for eucalyptus and maritime pine respectively, as a bench mark. Different scenarios of wood and biomass demand, forest policy, forest management and climate were prepared and the 3PG model under the standsSIM simulator used to compare a series of sustainability indicators among the different scenarios.

Results: Country level simulations provided by the GLOBULUS model were compatible with those provided by the 3PG model. Work for maritime pine are still on-going. The ability of the 3PG model to analyse the impact of alternative scenarios is discussed and suggestions for improvement proposed.

Conclusion: The use of the 3PG model for large scale simulations based on NFI data seems a good alternative to analyse the impact of alternative scenarios of wood and biomass demand, forest policy, forest management and climate.

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