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.

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<tr><td>Abstract title:</td><td></td><td colspan="2">Effective forest inventories in small private forests - identifying and describing climate sensitive forest stands</td></tr>
<tr><td>Take-home message:</td><td></td><td colspan="2">An approach to support small and medium size private forest owners in climate changes adaptation in their forests in Germany is under development and will be accompanied by an implementation concept.</td></tr>
<tr><td>Presenter name:</td><td></td><td colspan="2">Jonas Werle</td></tr>
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<tr><td rowspan="3">General topic, see website:

(please double click on the check box and activate the relevant one)</td><td></td><td>☐</td><td>Improving future NFIs by learning from the past</td></tr>
<tr><td>☐</td><td>NFIs today and in the future</td></tr>
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Effective forest inventories in small private forests - identifying and describing climate sensitive forest stands

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Introduction: Climate change is threatening the stability and productivity of traditionally managed forests in central Europe. While public forest administrations in Germany actively address this issue, small-scaled private forest owners lack knowledge and resources to adapt forests to warmer and dryer climates. Here, forest cooperatives present suitable organisations to provide forest management services to lower the risks caused by advancing climate change. However, forest cooperatives often do not have the relevant data at hand, in order to provide forest management services in an efficient manner. This study aims at evaluating different approaches to effectively identify and describe climate sensitive forest stands using terrestrial forest inventory, remote sensing, and other available geodata in order to support small-scaled private forests in the conversion into climate-adapted, low-risk forests.

Materials and methods: Study sites were selected in the Black Forest, the Alpine foreland, and the North Brandenburg Plateaux and Upland within the areas of three forest cooperatives. On each site, a terrestrial forest inventory was conducted. Digital orthophotos, aerial imagery, and digital terrain models of the state survey administrations, as well as various other available geodata describing management type, forest and site. Digital surface models were processed from the aerial imagery using image matching. Models of present and future climate conditions were acquired and intersected with the above-mentioned data, resulting in the identification of climate sensitive forest stands. As a next step, silvicultural measures aiming at a long-term adaptation of the stands will be determined based on these data.

Results: These work steps will be bundled in an automated process enabling the creation of a new consultancy service for climate adaptation of forests to be provided by forest cooperatives to private forest owners. In the long term, this should result in a broad anchorage of climate-adapted silviculture in small-scaled private forests.

Conclusion: This study elaborates an automated process for the acquisition of relevant data for small-scaled and mostly scattered privately owned forests. It is based on a combination of terrestrial and remote sensing inventory techniques. The gathered data are intersected with current and future climate models, which allows the identification of vulnerable forest stands requiring urgent silvicultural adaptation measures. This results in an efficient consultancy product to be offered by forest cooperatives to private forest owners and thus enables in the long term the safeguarding of resilient forest stands.

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