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**Abstract Proof****CONTROL ID:** 1191901**TITLE:** Remote Sensing of Forest Cover in Boreal Zones of the Earth**PRESENTATION TYPE:** Assigned by Committee (Oral or Poster)**CURRENT SECTION/FOCUS GROUP:** Global Environmental Change (GC)**CURRENT SESSION:** GC16. Regional Climate Impacts 7. Environmental, Socio-economic and Climatic Changes in Northern Eurasia and their Feedbacks to the Global Earth System: The Role of Remote Sensing and Integrative Studies**AUTHORS (FIRST NAME, LAST NAME):** Vladimir N. Sedykh¹**INSTITUTIONS (ALL):** 1. Sukachev Forest Institute , Novosibirsk, Russian Federation.

ABSTRACT BODY: Ecological tension resulting from human activities generates a need for joint efforts of countries in the boreal zone aimed at sustainable forest development, including: conservation of forests binding carbon and ensuring stability of the atmosphere gas composition; preservation of purity and water content of forest areas as conditions ensuring sustainability of the historically formed structure of forest landscapes; and preservation of all flora and fauna species composition diversity as a condition for sustainable existence and functioning of forest ecosystems. We have to address these problems urgently due to climate warming which can interact with the forest cover. In particular, in the forest zone of Siberia, the climate aridization will inevitably result in periodic drying of shallow bogs and upland forests with thick forest litter. This will bring fires of unprecedented intensity which will lead to catastrophic atmospheric pollution. In this connection, the above problems can be solved only by the united efforts of boreal-zone countries, through establishing a uniform system for remote sensing of forests aimed at obtaining and periodic update of comprehensive information for rational decision-making in prevention of adverse human effect on the forest. A need to join efforts in this field of natural resource management is determined by disparate data which were created expressly for economic accounting units used mainly for the solution of economic timber resource problems. However, ecological tasks outlined above can be solved appropriately

only by using uniform technologies that are registered within natural territorial complexes (landscapes) established throughout the entire boreal zone. Knowledge of forest state within natural territorial entities having specific physiographic conditions, with account for current and future anthropogenic load, allow one to define evidence-based forest growth potential at these landscapes to ensure development of historically formed ecological properties of the forest. Constantly updated information will permit the regulation of human pressure on forests to ensure that there is no reduction in their role in the biosphere processes of carbon accumulation and release. Satellite monitoring within identified landscape requires initial quantitative information about forest, about other biotic components of landscapes, and about their abiotic environment determined through both ground-based measurements and remote sensing. Thus, a kind of passport should be kept for each landscape as a starting point for subsequent updating of remote sensing monitoring of forests and their habitats and the assessment of their changes. Implementation of such monitoring across the entire boreal zone of the Earth is possible on the basis of geographical and genetic typology of forest and phyto-geomorphological method of aerospace image interpretation. Both approaches are based on the use of relationships between topography and vegetation, and were successfully applied by the author to aerospace monitoring of the forest cover of West Siberian Plain.

KEYWORDS: [1632] GLOBAL CHANGE / Land cover change, [1640] GLOBAL CHANGE / Remote sensing, [1637] GLOBAL CHANGE / Regional climate change.

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