in a design-based inference framework was examined. The authors are also testing estimators that rely primarily on Landsat within a model-based inference framework. Contributions from Landsat are current (e.g., 2013) spectral response and metrics describing disturbance history derived from a time-series leading up to the current date. An advantage of the model-based framework is its extension back in time (e.g., to 1990) using a consistent approach based on disturbance history as an indicator of biomass density. This requires use of the older, MSS archive to be fully effective in estimating biomass for the 1990 baseline. The United States, though not a REDD country, is party to the UNFCCC and has a need for similar NGHGI baseline information. The various components of the authors' MRV system will be tested in the United States, where sufficient data are available for parsing the uncertainty contributions of the several system components being tested.

Longitudinal and radial variation of the wood density in an unmanaged stand of *Araucaria angustifolia.* Curto, R. (*Federal University of Paraná, Brazil; rafaellacurto@yahoo.com.br*), Mattos, P., Muñoz-Braz, E. (*EMBRAPA, Brazil; patricia.mattos@embrapa.br; evaldo.braz@embrapa.br*), Pellico Netto, S. (*Federal University of Paraná, Brazil; sylviopelliconetto@gmail.com*), Zachow, R. (*Brazilian Forest Service, Brazil; randolfzachow@hotmail.com*).

The objective was to evaluate the wood density variation of *Araucaria angustifolia* in a 66-year-old stand. Thinning was carried out only between 1970 and 1980, without records after this period. Nine trees in three diameter classes (suppressed, intermediate, and dominant) were selected randomly. Wood density was determined at six different heights (0, 20, 40, 60, 80, and 100% of commercial stem) and in the radial direction in five samples, for each height. The average wood density along the stem presented no statistical difference among the three diameter classes, when comparing similar height percentages. Average wood density differed significantly, decreasing in the longitudinal direction. However, it was observed that the average wood density at 60% was greater than at 40%, suggesting that this is an effect related to the thinning carried out in the past. Management of *Araucaria angustifolia* stands, aiming at balanced tree competition with periodic thinning, will enable the production of wood with lower density variability, and will reduce problems in mechanical processing.

Forest carbon storage and tree biomass dynamics under the Natural Forest Protection Project in the northeastern forest region of China. Dai, L. (*Chinese Academy of Sciences, China; lmdai@iae.ac.cn*).

The role of forest ecosystem carbon storage and biomass dynamics under the Natural Forest Protection Project (NFPP) in China's forests remains unknown. This study collected forest inventory data and used plot databases in northeastern China to calculate forest ecosystem carbon storage in the region. Results showed that under the NFPP trees in the northeastern region functioned as a carbon sink from 1998 to 2008, with a carbon storage accumulation of 6.3 Tg C/yr. Most of the C storage was in natural forests (5.1 Tg C/yr), but simultaneously, planted forests also acted as a carbon sink, with accumulation of 1.2 Tg C/yr. In addition, the existing total ecosystem carbon storage in the region was 4 603.8 Tg C, of which 4 393.3 Tg C was stored in natural forests and 210.5 Tg C in planted forests. Tree carbon density of natural forests was also higher than in planted forests. Soil contained the largest carbon storage and contributed 69.5–77.8% of total carbon storage. Tree and forest floor carbon pools accounted for 16.3–23.0% and 5.0–6.5%, respectively. Understory pools, which ranged from 1.9 to 42.9 Tg C, accounted for only 0.9% of total carbon storage under the NFPP in northeastern China.

Using inventory-based tree-ring data as a proxy for historical climate: investigating the Pacific decadal oscillation and teleconnections. DeRose, R. (*U.S. Forest Service, USA; rjderose@gmail.com*), Wang, S. (*Utah State University, USA; simon.wang@usu.edu*), Shaw, J. (*U.S. Forest Service, USA; jdshaw@fs.fed.us*).

In 2009, the Interior West Forest Inventory and Analysis (FIA) program of the U.S. Forest Service started to archive approximately 11 000 increment cores collected in the Interior West states during the periodic inventories of the 1980s and 1990s. The two primary goals for use of the data were to provide a plot-linked database of radial growth to be used for growth model development and other biometric analyses, and to develop a gridded dendroecological database that could be used to analyze regional patterns of climate, disturbance, and other ecosystem-scale processes. Early analysis related to the latter goal showed that the finely gridded data could be used to map past climatic patterns with more detail than is possible using traditional chronologies. FIA-based Douglas-fir and pinyon pine chronologies showed high temporal coherence with previously published tree-ring chronologies, and the spatial and temporal coherence between the FIA data and water year precipitation was strong. FIA data also captured the El Niño-Southern Oscillation (ENSO) dipole and revealed considerable latitudinal fluctuation over the past three centuries. Finally, the FIA data confirmed the coupling between wet/dry cycles and Pacific decadal variability known to exist for the Intermountain West. These results highlight the further potential for high-spatial-resolution climate proxy data sets for the western United States.

Adaptability of ecosystem-based management to climate-induced increase in fire frequency and growth anomalies in an eastern Canadian boreal forest. Dhital, N., Raulier, F. (*Laval University, Canada; narayan-prasad.dhital.1@ulaval.ca; Frederic.Raulier@sbf.ulaval.ca*), Bernier, P. (*Natural Resources Canada; pbernier@nrcan-rncan.gc.ca*), Lapoint-Garant, M. (*Université du Québec à Montréal, Canada; lapointe-garant.marie-pierre@courrier.uqam.ca*), Bergeron, Y. (*Université du Québec en Abitibi-Témiscamingue, Canada; yves.bergeron@uqat.ca*), Rodriguez, G. (*Laval University, Canada; gereroba@gmail.com*).

Adaptability of ecosystem-based management (EBM) to the potential impact of climate change was evaluated with attention to the role of climate on forest growth and fire regime in a boreal forest of eastern Canada. A climate-sensitive growth index model was calibrated for three commercial species (black spruce (*Picea mariana* (Mill) B.S.P.), jack pine (*Pinus banksiana* Lamb.), and trembling aspen (*Populus tremuloides* Michx.). The model was used to project the evolution of merchantable volume over time under conventional sustained yield timber production and EBM under two climate scenarios. Current burn rate and burn rates under future climate scenarios were also considered. Under the projected climate scenarios, the periodic timber supply responded with long-term reduction by up to 79%. An interaction between the response of growth and fire to the projected climate scenarios was also revealed. EBM emerged a better management strategy in the context of projected climate. It maintained a higher mean standing inventory age, a lower proportion of area under younger age, and a higher level of periodic timber supply. However, further adaptation strategies are needed to deal with the projected climate scenarios and their potential impact on growth and disturbance dynamics.