

FOREST MONITORING IN TIMES OF CLIMATE CHANGE US/CANADA COMMENTS



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Critical Monitoring Information provides:

- Data,
- Analysis, and
- Tools

To Identify & Evaluate Trends in Conditions of Forests and Rangelands related to:

- Forested Area and Tree Cover,
 - Species Composition and Structure,
 - Fire, Insect, Disease & other Change Agents.



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Growing Demand for Monitoring Information

For over 130 years, high demand for forest area inventory and growth estimates.

- Initially: from forest industry & forest managers.
- In past 30 years: rapidly increasing demand from science, policy and management communities.



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Expanding Interest in Forest Monitoring:

Generated By:

- Rapid changes in global markets and trade.
- Climate and Land Use Changes.

Focuses on:

- Estimating scope, scale and impact where significant changes in forests are occurring.

Resulting In:

- National & International efforts to adopt common protocols. Examples:
 - UN Food and Agricultural Organization (FAO) Global Assessments and
 - Montreal Process Criteria & Indicators



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US and Canada are Well Positioned

With Inventory and Monitoring Programs in place, **we have data rather than anecdotes, to signal and measure actual changes.**

- Canada's National Forest Inventory
- North American Forestry Commission (NAFC) Inventory & Monitoring Programs with United States, Canada and Mexico
- United States' Forest Service:
 - Inventory and Analysis Program,
 - Forest Health Protection Aerial Surveys,
 - Remote Sensing Applications, and
 - Interagency Wildfire Coordination Centers

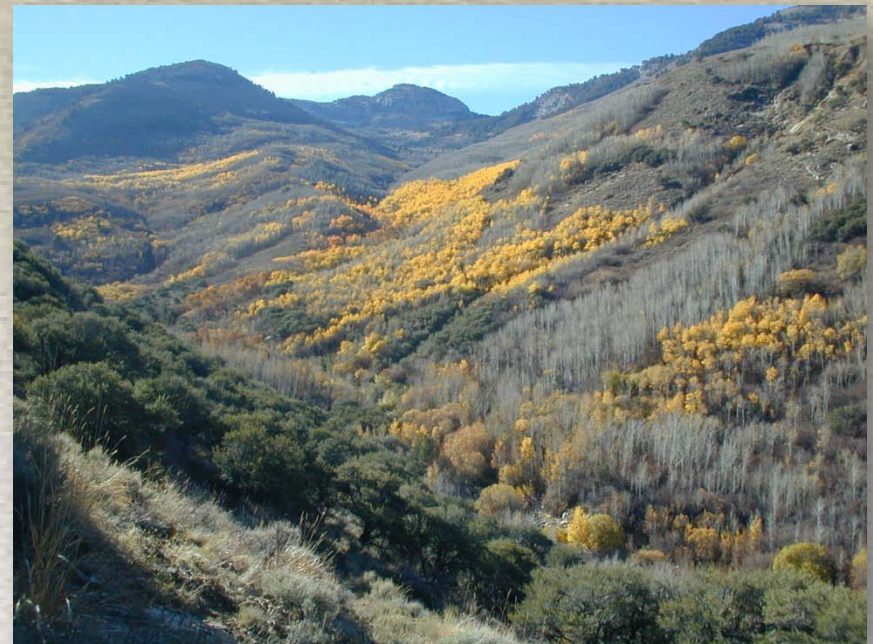


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US - Canada are Seeing Big Changes

New pressures to our forest landscapes:

- Loss of forest cover to development and urban pressures. These changes are superimposed on changes in global markets and trade.
- Weather and climate changes that influence duration and magnitude of insect and disease outbreaks and forest fires.



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U.S.-Canada Research & Development Actions

- Developing/Integrating Satellite, Aerial & Ground Monitoring Systems.
- Refining Disturbance Monitoring Protocol for Insects, Disease, Fire and Storms.
- Developing/Sharing Forest Carbon Calculator, Forest Certification, and Vegetation Simulator Programs
 - Expanding Change-Measurement Modules in Management Decision Support Systems.
 - Using Life Cycle Analysis to track wood from forest to disposal/use.



U.S. and Canada Operational Actions

Both countries benefit from having nationwide:

- Forest Inventory and Analyses Programs
- Forest Health Monitoring Programs
- U.N. FAO's Intergovernmental Group for Climate Change
 - Global Earth Observation System (GEOS)



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Actions for Global Solutions

- Increase efforts to integrate remote sensing and ground monitoring to detect large-scale changes.
- Emphasize need to integrate nations' Research and Development programs to facilitate more comprehensive inventory/monitoring programs, and get specialists working together.
- Focus on new innovations which will detect large scale changes with reasonable costs and timeliness.
 - Seek to accurately and efficiently detect forest changes in both directions ~ both gains and losses.



Actions for Global Solutions, Continued

- Enhance estimation of stocks (volume) to increase efficiency, accuracy, and timeliness of information delivery.
 - Increase statistical understanding of what forest change data means including variability and accuracy.
 - Endorse long term monitoring in order to pinpoint trends in forests, and results of management, both reductions and increases.



Actions for Global Solutions, Continued

- Promote Global coordination (e.g., common definitions, protocols, and data and analytical management, and reporting) in order to be capable of integrating data and trends.
- Support monitoring needs for developing countries:
 - International collaboration to develop workable protocols and assistance in the design and implementation of forest monitoring programs; all forested countries need to be included.
 - The goal is to provide better, more reliable and consistent, and properly scaled data for the FAO Forest Assessment which will then be available for scientists and managers worldwide.



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Conclusions

- Climate change is manifesting itself in a variety of responses on forested land through catastrophic disturbances; Techniques must be developed to mitigate and adapt to these changes.
- These disturbances have complex causes which can only be detected via innovative forest monitoring programs that are linked at the international level.
- Forest Research and Development must be responsive to national and international demands for new and consistent technology and protocols for forest monitoring in the face of climate change.



Conclusions, Continued...

- These increasing demands require a heightened level of integration among disciplines and partnerships among Research organizations as well as with management organizations, nationally and internationally.
 - Forest monitoring information must be delivered in new and creative ways (e.g., decision support systems) to the users of the information.

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