

ClimateNews is a snapshot of new and emerging climate change adaptation and mitigation activities in the Natural Resource Sector.

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Funding Announcement for Forest Enhancement Society

The B.C. government has announced \$150 million for the Forest Enhancement Society to support the Forest Carbon Initiative. This funding will help deliver forest carbon activities on the provincial public forest land base, creating greenhouse gas (GHG) benefits as well as local jobs.

These activities can begin as soon as late spring 2017.

For more information contact:

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<http://fesbc.ca/reforestation-investment.htm>

Recent and Ongoing Climate Change Workshops

The Ministry of Forests, Lands and Natural Resource Operations (FLNRO) Climate Action Branch (CAB) has been involved in a number of recent and ongoing regional workshops all with a climate change focus:

1) Regional FLNRO Forest Carbon Initiative workshops

CAB is carrying out at least three regional workshops to provide staff with information on the Forest Carbon Initiative (FCI). Two workshops have been held in Prince George and Kamloops. A third session is scheduled for Richmond on April 27 with the possibility of other workshops as well.

These workshops cover the following information:

- FCI program objectives, vision and goals
- General information on forest carbon
- Description of activities that are eligible under FCI
- Description of activities that sequester carbon and reduce GHGs, and how they work
- Identification of areas eligible for FCI and treatment options

For more information contact:

dennis.paradine@gov.bc.ca

2) Regional Adaptation in Decision Making workshops

CAB has completed two workshops in FLNRO Skeena and West Coast regions to move forward with embedding climate change considerations (both adaptation and mitigation) into the daily business of the ministry. Following on previous workshops that helped develop climate action plans and related implementation plans, goal of these workshops is to show where climate change needs to be inserted into the way FLNRO makes decisions and participates in planning/policy processes. We are also identifying the information needs to enable climate change to be properly considered, as well as barriers that may prevent this from working.

This is an important step in changing the way day-to-day decisions are made, as well as ensuring ministry staff has the information and tools needed to make sound decisions regarding adaptation and mitigation to climate change.

These workshops will continue into the 2017-18 fiscal year covering all the remaining FLNRO regions and Victoria-based program areas.

For more information contact:
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3) First Nations Forestry Council workshops

CAB has participated in a series of four workshops developed with the BC First Nations Forestry Council. Workshops were held in North Vancouver, Nanaimo, Prince George and Kamloops during February and March 2017, with approximately 30-40 participants in each session. The CAB component presented on regional climate impacts and projections, as well as a description of the work FLNRO has been doing to address climate change mitigation and adaptation.

Informal discussion groups centred on how FLNRO and First Nations can work together to share information on climate change that is mutually beneficial. It is hoped that results from these sessions can help shape an approach for FLNRO to work collaboratively with First Nations on climate change issues, recognizing that First Nations resource use will be impacted by climate change and that First Nations have valuable observations of the land base that are important for overall resource management.

These workshops had a high level of engagement, with several First Nations requesting FLNRO provide more information on climate change to their communities, which has already occurred in some cases.

For more information contact:
dave.aharonian@gov.bc.ca

First Nations Adapt Program (INAC)

The Indigenous and Northern Affairs Canada (INAC) First Nations Adapt program supports community projects that develop and build the capacity of First Nations on reserve to address climate change impacts on their communities. A central goal of this program is to increase First Nations community resilience to climate change.

The program is focusing efforts on supporting communities that are experiencing climate change impacts in four key areas:

- Inland flooding
- Forest fires
- Sea level rise and coastal flooding
- Winter roads

First Nations Adapt supports different activities or studies, depending on specific community requirements. Generally, the first step is to improve understanding of how climate change may be impacting community infrastructure or emergency management by conducting a vulnerability assessment. This assessment involves identifying and quantifying community vulnerabilities to climate change related impacts. The next step is adaptation planning to prioritize options and to develop adaptation recommendations that will lessen current or potential climate impacts. What can follow is a cost-benefit analysis of various adaptation options, which can provide information on the financial consequences of inaction in comparison to different adaptive measures.

Projects need to be community-driven, build capacity, and incorporate traditional knowledge in all stages. Projects must also show a clear link to

infrastructure or emergency management because of the profound impacts that failures of these systems have on community well-being.

Applications can only be made by:

- First Nation communities
- Band or tribal councils
- Indigenous organizations

There is no deadline for application and up to \$3 million is available for the 2017-18 fiscal year.

Applications will be reviewed continually until all funding has been allocated.

If you are from a First Nation or are aware of a First Nation that can take advantage of this program, more info can be found [here](#).

For full guidelines on funding and the application process send an email to:

adaptation@aadnc-aandc.gc.ca.

New research results on climate change effects on forest productivity and carbon: Case study of the Copper-Pine Creek Valley

Background: Responding to concerns expressed for greater climate change mitigation and adaptation, FLNRO has initiated a research program into projecting potential climate change impacts on natural resources and assessing adaptive management strategies. We have completed the initial phase of a project within this larger program – the Copper-Pine Creek Impact Assessment. For a 73,400 hectare (ha) valley west of Smithers, we assessed the climate change impacts and risks to timber supply and carbon sinks until 2050. This was done using simulation modelling of four different

productivity scenarios, with and without climate change.

Results: The projections indicated that forest productivity and growing stock is expected to increase for the higher elevation variants (ESSFmc, ESSFwv and ICHmc1) due to warmer conditions (click [here](#) to learn about biogeoclimatic ecosystem classification and a guide to the acronyms). However, the sub-boreal Spruce dry cool zone (SBSdk) productivity and growing stock may decrease or remain the same as it has historically been. The productivity and growing stock of the sub-boreal Spruce (SBSmc2) was projected to increase under some scenarios, and decrease under others. Over much of the valley, the increased productivity was projected to result in greater carbon sinks. However, in some scenarios, the interior Cedar-Hemlock and sub-boreal Spruce zones (ICHmc1, SBSmc2 and SBSdk) were net sources of carbon to the atmosphere. Due to the short time frame of the simulations (to 2050) and the age class distribution of the forests, harvest rates were unaffected by climate change impacts because we are harvesting the existing, mature stands. Western hemlock biomass increased under climate change, but it showed no signs of spread, possibly due to the short time period.

Conclusion: There are large uncertainties associated with any future projections; therefore, tree productivity needs to continue to be monitored to determine the appropriate adaptive management. If the productivity of the ESSF variants increases, greater harvest rates may be sustainable. Furthermore, it may be desirable to diversify the reforestation of SBS variants to include species or provenances from warmer areas of B.C. that may be able to counter the loss in productivity and sources of carbon emissions projected in this study. Climate change impacts varied among species and site conditions, indicating that both of these components

need to be taken into account in when considering climate change mitigation activities and adaptive management.

Next steps: The next phase of this project will lengthen the projections to 2100 and assess different management strategies, risks to lodgepole pine from insects and diseases, and implications for wildlife habitat.

Dymond, C.C., Beukema, S., Nitschke, C.R., Coates, K.D., & Scheller, R.M. (2015). *Carbon sequestration in managed temperate coniferous forests under climate change*. Biogeosciences Discussions 12, 20283-20321.

<http://www.biogeosciences-discuss.net/12/20283/2015/bgd-12-20283-2015.html>

Article: Lessons in the Ashes

Two geographers in Idaho are studying wildfire destruction in an effort to make forests more resilient to climate change.

Crystal Kolden is an assistant professor of Geography at the University of Idaho. Kolden manages teams that collect after-fire information from all across the USA Pacific Northwest. She combines the on-the-ground data they collect with information from Landsat data to answer several key questions relating to wildfire and areas known as “unburned islands,” which are areas within a wildfire that are not burned. One of these questions is whether fires have been, or will become, more intense due to climate change. To date, there is no consensus on the answer to this because fire intensity can be a hard thing to measure, or even define.

Kolden studies unburned islands to see if their size and frequency can be used as a measure for the intensity of wildfire events.

Jason Kreitler, a U.S. Geological Survey research geographer, is examining the wildfire problem with a different lens – using economics and social science. Kreitler’s research is showing that one key tactic is to incorporate costs into fuel treatment planning. Although it’s not common practice, incorporating costs can substantially increase returns on fuel treatment expenditures.

Kreitler is also working as part of an interdisciplinary team funded by the Northwest Climate Science Center to model expected changes in sedimentation caused by future wildfire in watersheds of the Western U.S.

The full article can be read here:

<https://www.nwclimatescience.org/nw-climate-magazine/lessons-ashes>

Increasing net ecosystem biomass production of Canada's boreal and temperate forests despite decline in dry climates

Robbie A. Hember et al.

Repeated measurements of tree biomass at field plots describe recovery from disturbances, sampling artifacts, and potential effects of environmental change on forest ecosystems. Challenges in differentiating between intrinsic and extrinsic sources of variation, both in theory and in practice, continue to confound claims of an anthropogenic carbon sink in forest biomass. Observations at 10,307 plots across southern ecozones of Canada were observed to investigate temporal trends in stand-level biomass growth, biomass loss due to

mortality, and net ecosystem biomass production of intact stands.

The increase in net ecosystem biomass production was confined to wet regions, while the biomass sink in dry regions decreased, suggesting that large expanses of northern forests, historically located near the boundary between wet and dry climates, may be at high risk of decline under continued increases in evaporative demand. These results have important implications for the greenhouse gas balance of Canada's forest sector.

The full paper can be read here:

<http://onlinelibrary.wiley.com/doi/10.1002/2016GB005459/full>

The Local Environmental Observer Network (LEO)

As climate change impacts communities around the globe, the LEO network is one way to share observations about unusual wildlife, environment and climate events.

The LEO network was designed by the Alaska Native Tribal Health Consortium to communicate environmental changes observed by local and indigenous peoples. The purpose of the network is to increase understanding about environmental change and to help identify effective ways to adapt to those changes.

Observations of unusual environmental changes are posted on an online, map-based database via website and mobile app with descriptions, photos, video and audio information. Scientific and indigenous experts then review observations and respond with additional information and links. Over time, these observations can provide important information to identify emergent trends in ecosystems. In Alaska, the LEO network has grown to include hundreds of participants, communities and institutions. The network is now actively expanding within British Columbia.

More information on how to use the network is available at their website:

<https://www.leonetwork.org/en/>

