Self-Reflection on Group project

From GGR337 course, I have learned how remote sensing technique can be applied to understand the behaviour of wildfire spread across Alberta and whole Canada. From Lecture 1 and Lecture 2 notes, discussed about the different electromagnetic spectrum and the interaction of electromagnetic radiation with the atmosphere helped me understand how images and maps are obtained. Visible light (violet, blue, green, yellow, orange and red wavelengths) is the only spectrum can be detected by human eyes and only portion of the spectrum we can associate with the concept of colours. Image created by capturing visible light reflected off the surface land/water, showing water as blue colour and vegetation as green colour. In addition, we see objects of the image when the visible light source hitting the objects, some of the wavelengths are bounced back from the target, the rest wavelengths are absorbed by the target. Wavelengths that are bounced back shows the visual representation of the objects thus, the maps of forest fire/heat waves is created for Alberta and Canada. Learning about the image classification: unsupervised versus supervised classification was important to work on the

For our group project, I have discussed briefly about the prescribed fire burning technique. Paul Hessburg, a research ecologist who studies the large forest landscape behaviour discussed (in his TED Talk 2017 presentation on "Why wildfires have gotten worse – and what we can do about it") that in the last three decades large megafires is happening more frequently in western North American regions. Paul mentioned (during his presentation) that large wildfires are burning more than hundred thousand of acres in the western region. Homes and communities are also getting destroyed from these wildfires. Poor fire-management practice is bringing destruction to the forest ecosystem. He suggested the fire crews to use the prescribed burning technique in the

forest to put the right kind of fire into the ecosystem to recover the lost trees from the wildfire. Tools and special training required to thin out the tree branches, which is going to create already burned patches on the landscape that will resist the flow of future fires. Another advantage of this technique is that it creates less smoke than wildfire does to the area. In the end of his TED talk, Paul said that the public support of using this technique is poor. This is a social problem and needs human to solve it by working together, increase awareness to policy and lawmakers.

During our group presentation, I have also talked about the tools needed to function in the targeted forest area. First, you need drip torches that contains gasoline to give ignition and diesel to give its longevity to stick and burn dry grasses, dead stalks and leaves of last year's plants because native plant communities need fire to enrich the soil. Prescribed fire helps control invasive plant species that competes with native plants and encourages a wider variety of species to grow. I believe the 'urban planning' group has mentioned about growing 'Norway maples' problem in the Canadian forest and how these trees have demonstrated invasive characteristics that enable them to spread aggressively to the native Canadian maples. Me and my group members were quite interested and unaware about this particular specie even existed in Canada. Now going back to the tools needed for prescribed burning, you need trucks carrying supplies such as shovel, garden metal rack, and backpack air blower to remove litters and vegetations that you don't want on fire. These tools are useful especially for creating fire lines/breaks. Third, you need to have truck carrying tank of water available to diminish the fire burned. Controlled burns are done mostly in early spring and autumn, while dead vegetation are still on the ground. However, prescribed burns can't take place during wet conditions (late spring rains or winter snow) so weather must be dry with little wind to support flames. Forest fire crews need to

estimate the dryness of fuels and readiness to burn. I have also mentioned how weather and wind plays a crucial role in fire behaviour. Weather plays a strong influence on ground monitoring: how wet fuels are, how dry fuels are. On the other hand, wind influences the spread of fire: higher wind pushes fire faster.

In my group project, I have contributed some discussions about the benefits of bringing the prescribed burning tools into the forest biological diversity at Alberta and British Columbia. Controlled burns in a large forest landscape helps clear forest zones (such as removing in-growth by lodgepole pine and immature Douglas-fir) to prepare for planting (such as Douglas-fir grasslands). It removes undesirable plants (such as shrub and tree encroachment in Montane grassland meadows) that competes with wanted species for nutrients. Controlled burns also develop and enhance wildlife habitat. For example; grizzly bears, new nesting sites for birds (such as western bluebirds) in standing trees, habitat for small mammals (such as beavers) where trees have fallen to the ground and where new growth has been stimulated from nutrient release from decaying trees. Finally, prescribed burn controls insect population such as Bark Beetle infestation, where Monica (one of my talented team members) discussed heavily on beetle and extensive insect outbreaks as a result of drought and heat stress across western Canada and U.S.

To successfully drive the project to its final destination, I was responsible for creating the WhatsApp group chat and google doc for the group members to share their remarkable ideas and discussions for our topic, booked rooms to prepare my group members for the presentation, led project-related discussions after class, edited the google slides, enrolled tasks to each members, appointed Monica and Xingcheng as co-leaders to email and receive any feedbacks or advice from professor, Dr. Alex Kalynychenko.

Reference:

Hessburg, P. (2017). TEDx event: 'Why wildfires have gotten worse – and what we can do about it.' https://www.ted.com/talks/paul_hessburg_why_wildfires_have_gotten_worse_and_what_we_can_do_about_it/up-next

Kalynychenko, A. Week 1 and Week 2 lecture slides.