

Climate change assessment for Tribal lands in the Pacific Northwest – workshop report

Prepared by Janean Creighton 11/2/17

Workshop focus:

- 1) Present results from the research team assessment that identifies potential climatic changes to vegetation, fire, and ecosystem services across tribal lands and sacred places throughout the Pacific Northwest and
- 2) Interactively identify relevant adaptation strategies and tactics through a hands-on activity with session participants.

Workshop goals:

1. Start a dialog and give session participants a better understanding of future vegetation change.
2. Use the presented information together with participant expertise and knowledge to make clear links as to how these changes may impact important ecosystem services, such as traditional foods, hunting, timber production, non-timber forest resources, ranching quality, agricultural suitability, and cultural resources.
3. Participants will leave with spatial data, a tangible list of relevant actionable adaptation strategies, and a collaboration of similarly interested individuals.

Investigators:

- John Kim, PhD Biological Scientist, U.S. Forest Service, Pacific Northwest Research Station & WWETAC
- Becky Kerns, PhD Research Ecologist, U.S. Forest Service, Pacific Northwest Research Station
- Michael Case, PhD Research Scientist, Case Research, LLC/ University of Washington

Partnerships:

Skokomish Indian Tribe
Confederated Tribes of Warm Springs
Confederated Tribes of the Umatilla Indian Reservation
Bureau of Indian Affairs Northwest Region Office
Pacific Northwest Tribal Climate Change Project
University of Washington
Oregon State University

Tulalip Tribes
Confederated Tribes of Siletz
Confederated Tribes of Grand Ronde
Upper Snake River Tribes Foundation
Northwest Indian Fisheries Commission
Northwest Fire Science Consortium

Climate change assessment of vegetation, fire, and ecosystem services for Tribal lands in the PNW

October 12, 2017. Hotel Murano, Tacoma, WA.

8:00-8:45 Introductions, review agenda

8:45-9:45 Overview of the project and data

9:45-10:00 Overview of vulnerability assessments and adaptation planning

-- 15 min break --

10:15-10:30 Identify breakout groups – (species specific, habitat specific, or “sector-specific” like fisheries, forestry, grazing, etc)

10:30-12:00 Breakout group activity – *Rapid vulnerability assessment*

Define management objective(s); assess how climate change might impact that objective(s). Use data presented and/or identify how data could be applied to make the assessment.

-- Lunch on your own --

1:00-2:00 Breakout group activity continued – *Developing adaptation approaches and actions*

Using the info provided, develop a list of adaptation approaches and actions, identify the challenges to implementation, who could implement them, resources, needed, important partners, timeframe, where to implement them on the landscape, and the feasibility of success.

2:00-2:45 Report back

2:45-3:00 Wrap up, evaluations, and adjourn

Evaluation Results

81% of respondents (n=16) said the information they learned will be useful in their work, while 19% were not sure. 100% indicated that they would recommend this workshop to others. 69% said they would attend another workshop on the subject, and 31% were not sure.

On a 5-point Likert Scale:

- 87% indicated that the material that was presented was useful to very useful and 13% said it was somewhat useful.
- 80% said the level of specificity of the discussion was useful, and 20% said somewhat useful
- 93% indicated the overall delivery of material was useful to very useful and 7% said somewhat useful
- 100% indicated the opportunity to engage with others was very useful
- 100% said the mix of people at the workshop was very useful

94% of respondents were very satisfied with the workshop and 6% were somewhat satisfied

What did you find most useful about the workshop? (Responses to open ended questions)

- Talking with other PNW Tribes about Climate Change issues, impacts and adaptation opportunities.
- Meeting Federal partners/Tribal liaisons
- Variety of resource specialists, not only representing one field/occupation
- The group work and framework
- Networking/meeting Tribal reps
- How to understand what a vulnerability assessment is and how to numerically approach climate change impacts
- I found the connections with fellow attendees to work through this process as the most useful aspect of this workshop
- I was looking for ideas about how forests are likely to change and how to incorporate that info into adaptation planning. I will incorporate what I learned. Many good insights and ideas.
- Resources and maps – learning about maps, databases, etc. Also networking. Framework for VA was useful. More guidance on going from assessment to concrete adaptation/mgmt. actions would be helpful
- Rapid vulnerability workshop process. Lots of good conversations and thinking about how we can apply it to our own work
- The process of breaking down sensitivity/exposure/adaptive capacity into factors that can be measured
- Resource knowledge from others; planning focus on resource concerns
- Concepts and applications
- Good introduction/background material. Great questions/discussion among members
- Engagement with others with topics I was even unaware of
- Learning the assessment steps
- VA workshop

What would have made this workshop more valuable to you and your work?

- More time with the model
- A little more details on how to complete the questions
- Maybe more intro materials provided well ahead of the workshop
- Be more clear at the beginning what participants will take back home from the workshop and how it can serve them down the road
- More specificity and detail in advance regarding the agenda and materials to be presented. As a policy person, I was expecting more info on the possibilities of various climate change scenarios and how that would affect vegetation and fire management in various areas of the NW.
- I think the workshop approach of providing tools on how to assess climate change impacts on systems and species was probably more valuable for the biologists and ecologists who attended. I myself would have liked more spoon feeding of info as opposed to skills building.
- More time
- Data sharing with others through emails
- As a social/cultural person the material was really interesting but not specific to my work. It would be nice to see the process expand to include human components.
- More time to go through the vulnerability process and maybe less lecture time?
- I would encourage you to tell people to go to the breakout groups about which they know the most info, in order to fully take advantage of VA/adaptation plan exercise
- Specificity to my area and more examples
- Having more considerations of community, social, and political constraints on this type of planning
- More networking time with all folks
- Please share the agenda with the meeting invitation and cast a wide net for meeting invitations
- Are there ways to model soil moisture?
- List occupation and organization on name tags
- More info about Idaho please
- More networking opportunities

Comments about the materials:

- The materials were high quality; please add labels
- Some maps were not labeled
- A great overview and explanation of the models
- Great way to do hands-on assessment and not just presentations
- The materials provided were very useful and I will use them in the future as well
- Would be interesting to incorporate an additional element of “tribal priority” into VA to include that aspect of assessing tribal-specific VA’s
- Material was focused heavily on scientific/technical data – most people needed google for some of the specifics (i.e. plasticity)
- Great materials to focus on topic
- Interesting and potentially very useful
- Very useful maps, etc. A little difficult due to scale to understand implications at finer scales
- Useful prediction models. Very well elaborated; only needed names, titles to go with some predictions
- Pretty short time frame to present all the model info in

Identifying Adaptation Approaches and Actions

Focal Resource:

Management Objective:

Adaptation Approach	Action	Implementation Difficulty				Priority (<u>H</u> igh, <u>M</u> edium, <u>L</u> ow)
		●	■	◆	◆◆	

Action: _____

Who Could Implement	Resources Needed	Important Partners	Timeframe	Where to Prioritize Implementation on the Landscape?

Action: _____

Who Could Implement	Resources Needed	Important Partners	Timeframe	Where to Prioritize Implementation on the Landscape?

Vulnerability Assessment Worksheet

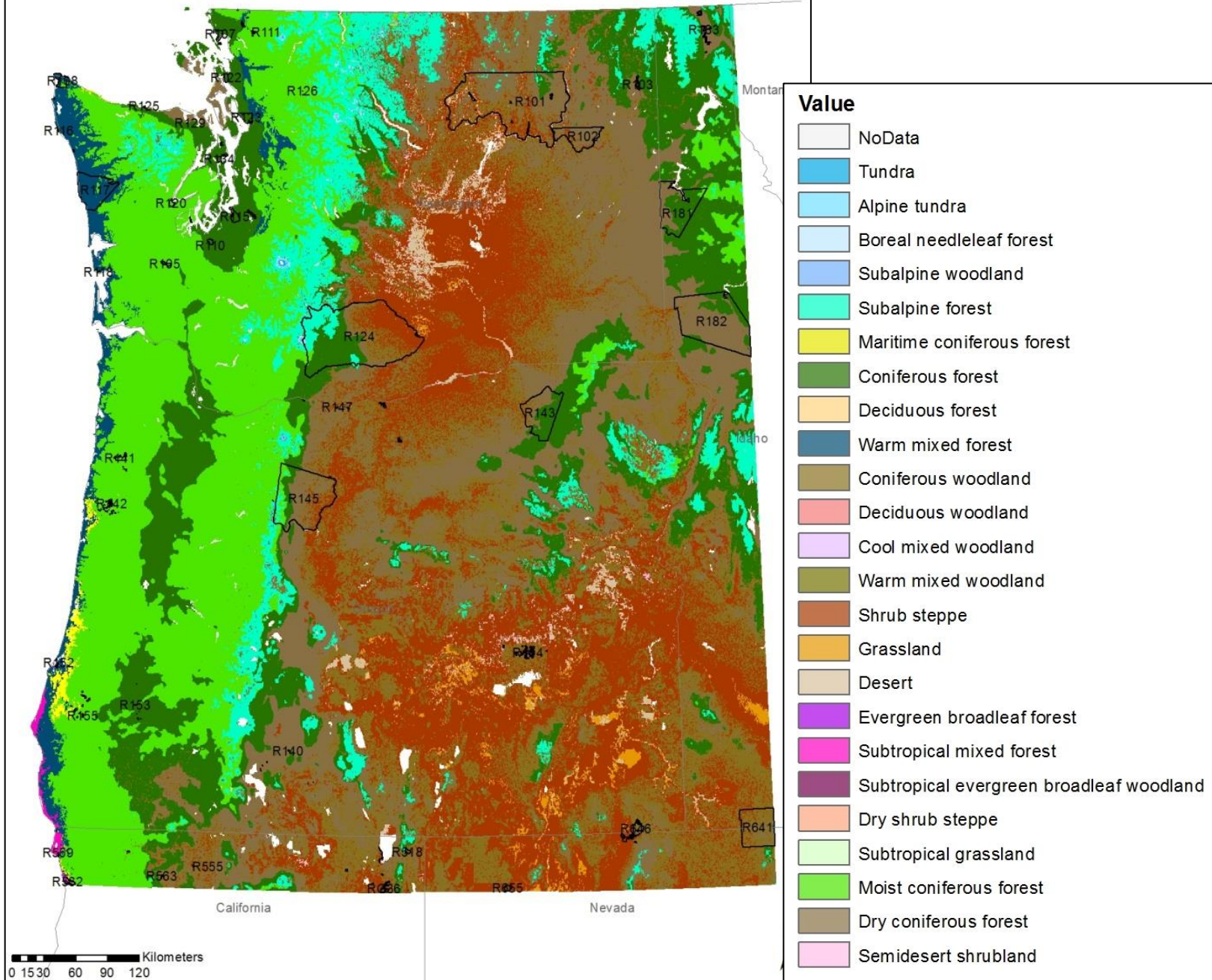
Sensitivity	Rank (1-5)	Confidence (1-5)
Generalist or specialist Physiological factors Life history Sensitive habitats Dispersal abilities Disturbance regimes Ecological relationships Interacting non-climatic factors Other		
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Average Score		

Exposure	Rank (1-5)	Confidence (1-5)
Air temperature Water temperature Precipitation (amount) Precipitation (timing) Snowpack amount Timing of snowmelt & runoff Soil moisture Extreme events (fire, flooding, drought) Disease or pests Invasive species Other		
<hr/>		
Average Score		

Adaptive Capacity	Rank (1-5)	Confidence (1-5)
Population growth rates Genetic variability Phenotypic plasticity Behavioral plasticity Dispersal ability (distance & barriers) Landscape permeability Other		
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Average Score		

	Average Score	Average Confidence Score
Sensitivity		
Exposure		
Adaptive Capacity		
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Vulnerability (sensitivity + exposure – adaptive capacity)	<input type="text"/>	<input type="text"/>

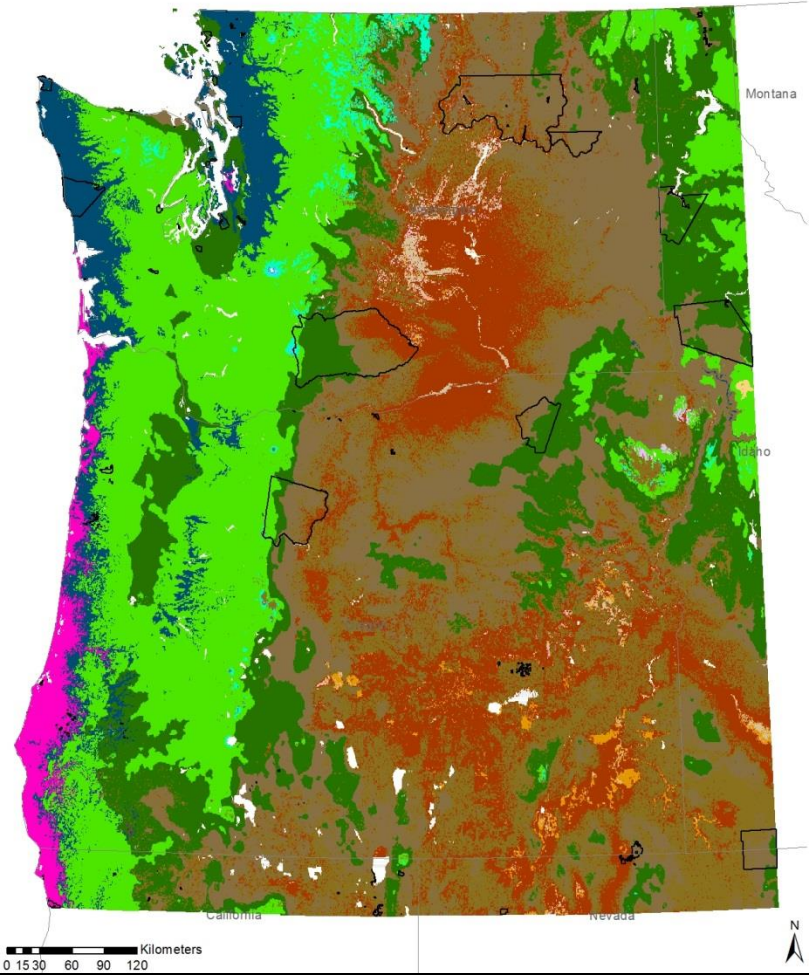
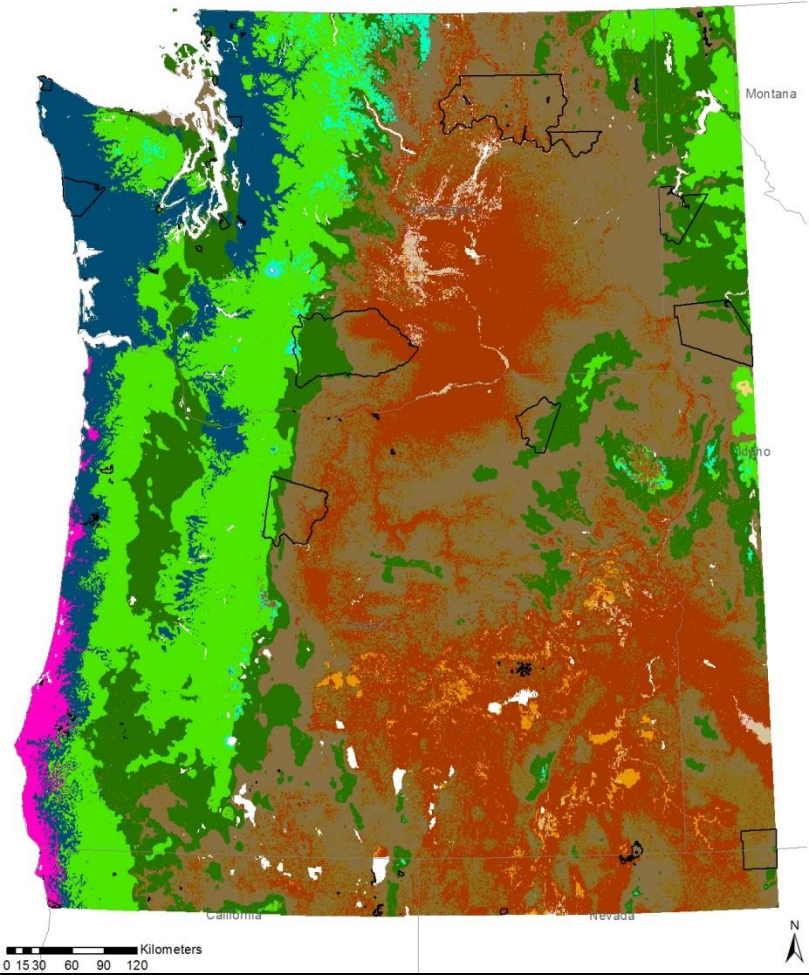
Historical Vegetation Types



BNU Vegetation Types 2050

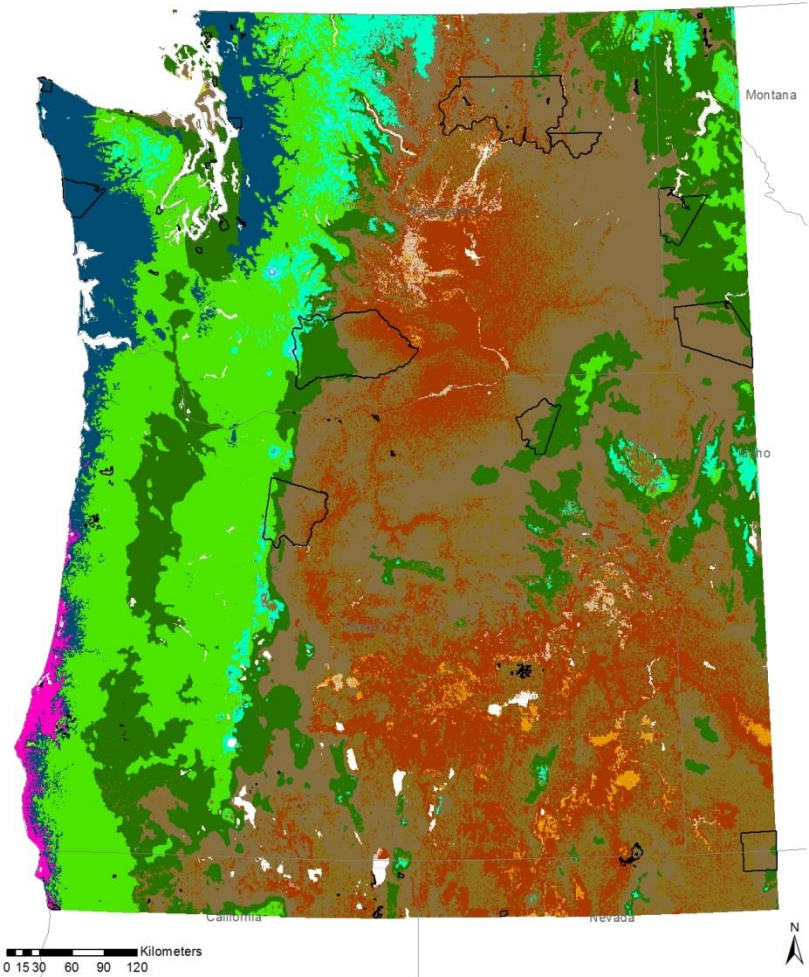
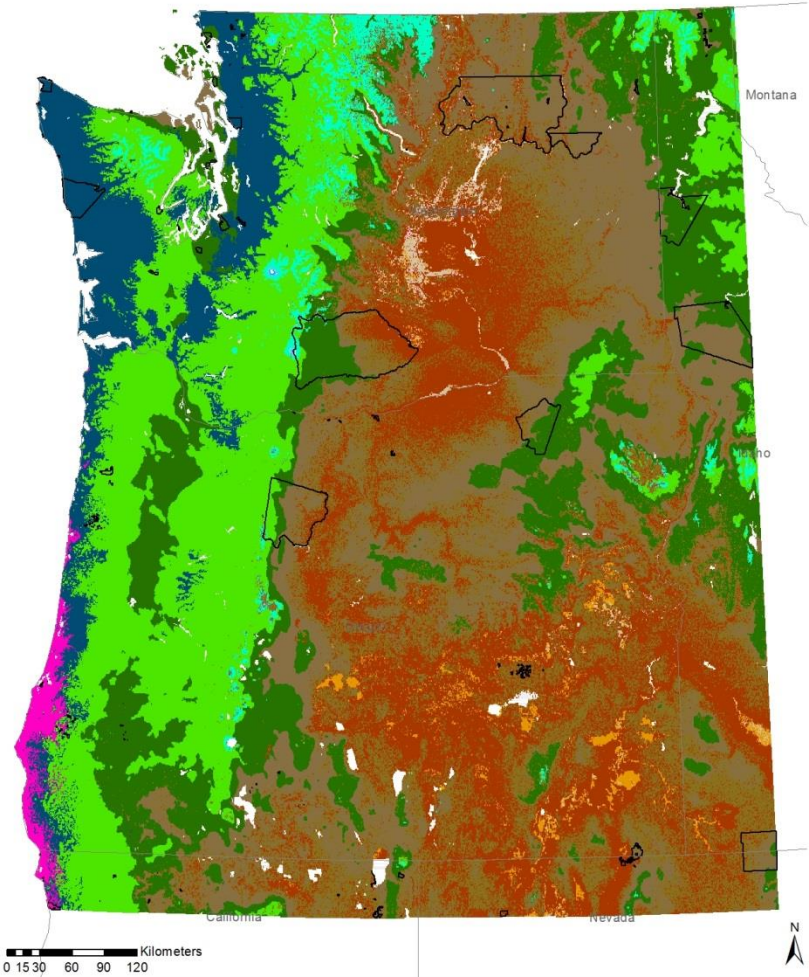
Future veg types (4 different GCMs)

CAN-ESM2 Vegetation Types 2050



CESM1-CAM5 Vegetation Types 2050

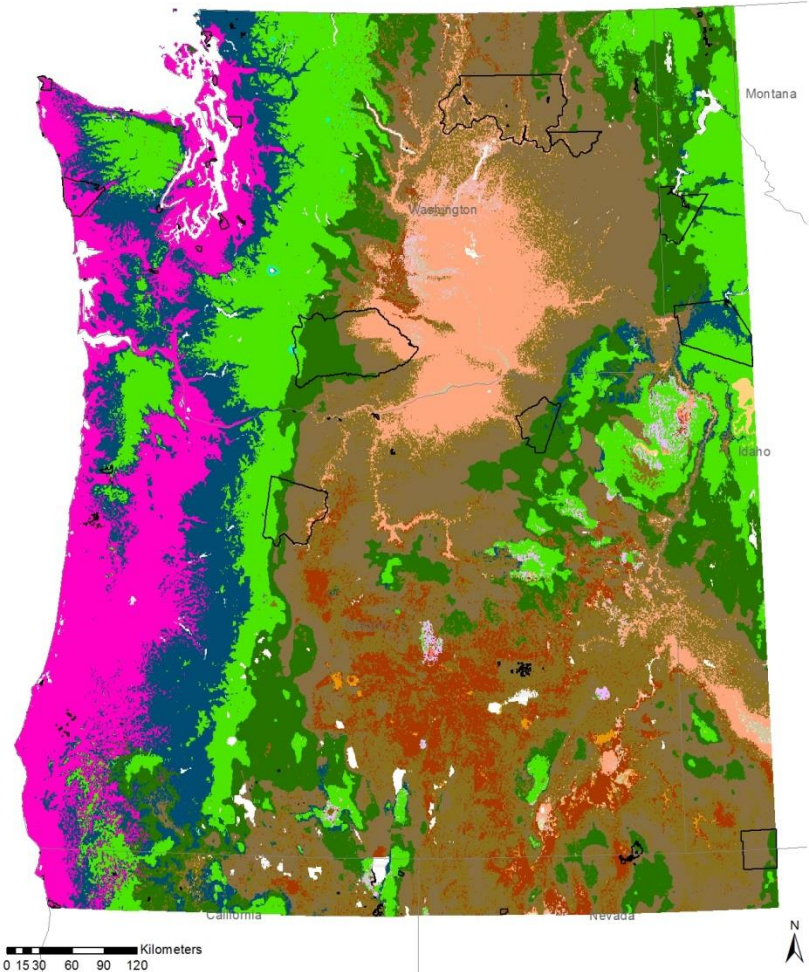
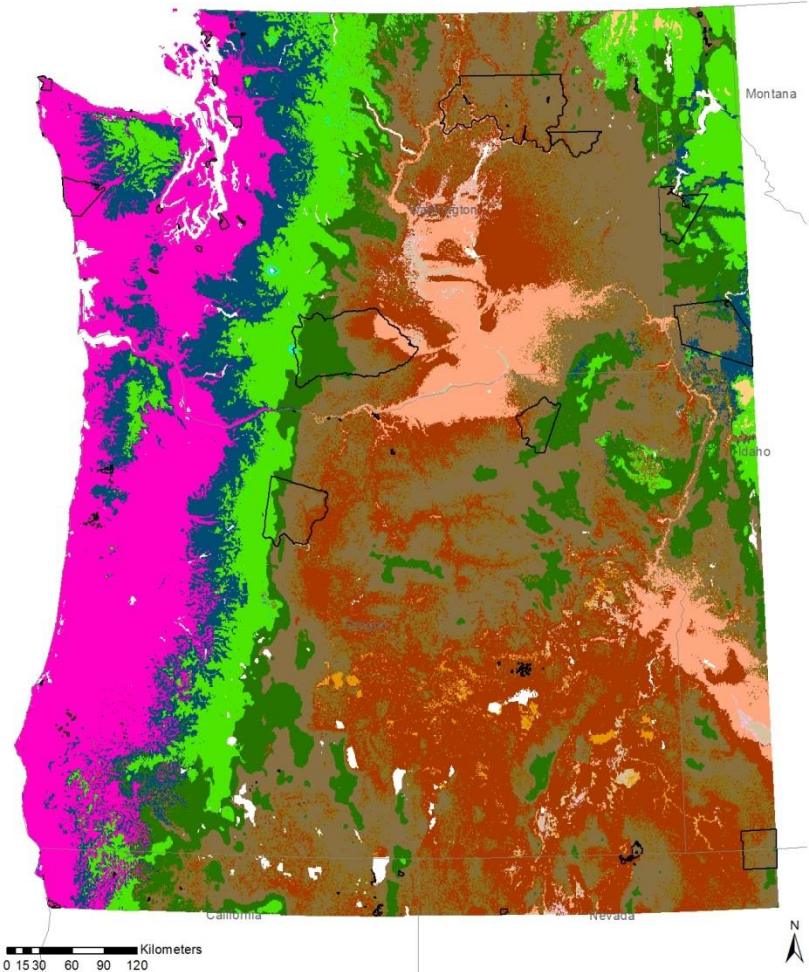
MRI-CGCM3 Vegetation Types 2050



BNU Vegetation Types 2100

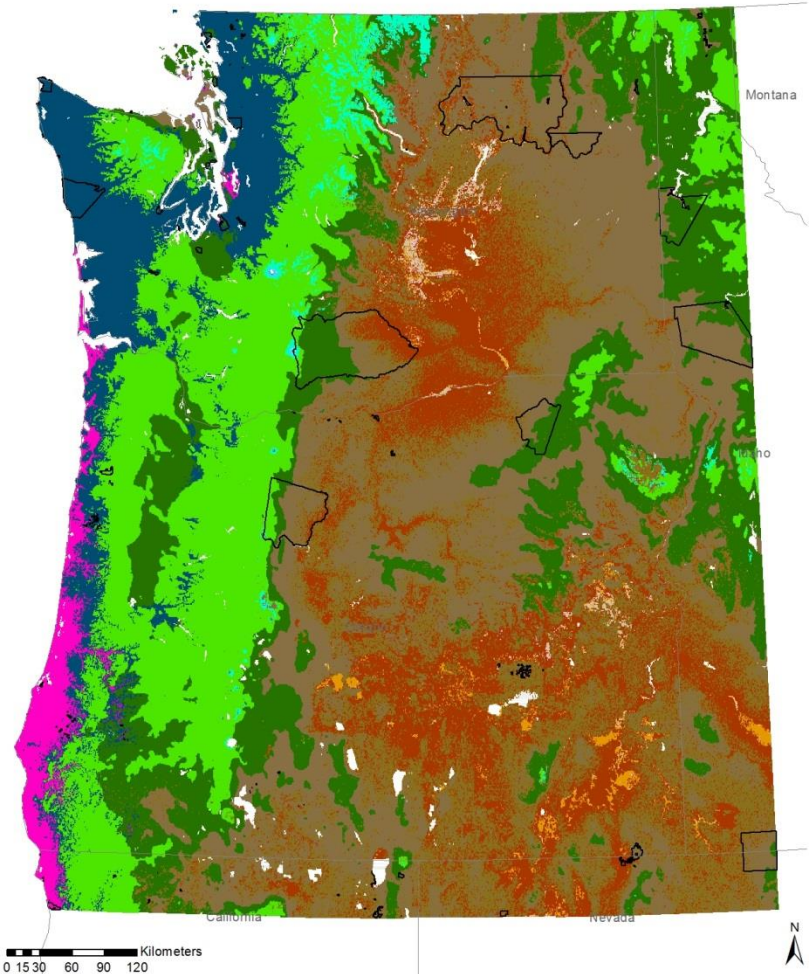
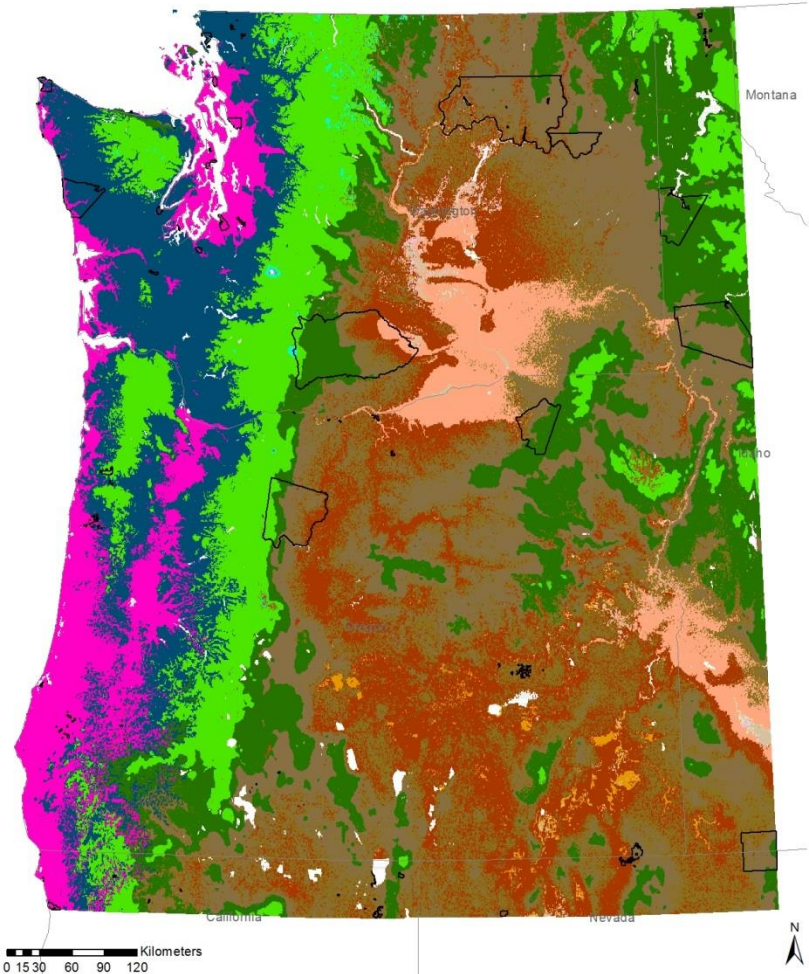
Future veg types (4 different GCMs)

CAN-ESM2 Vegetation Types 2100

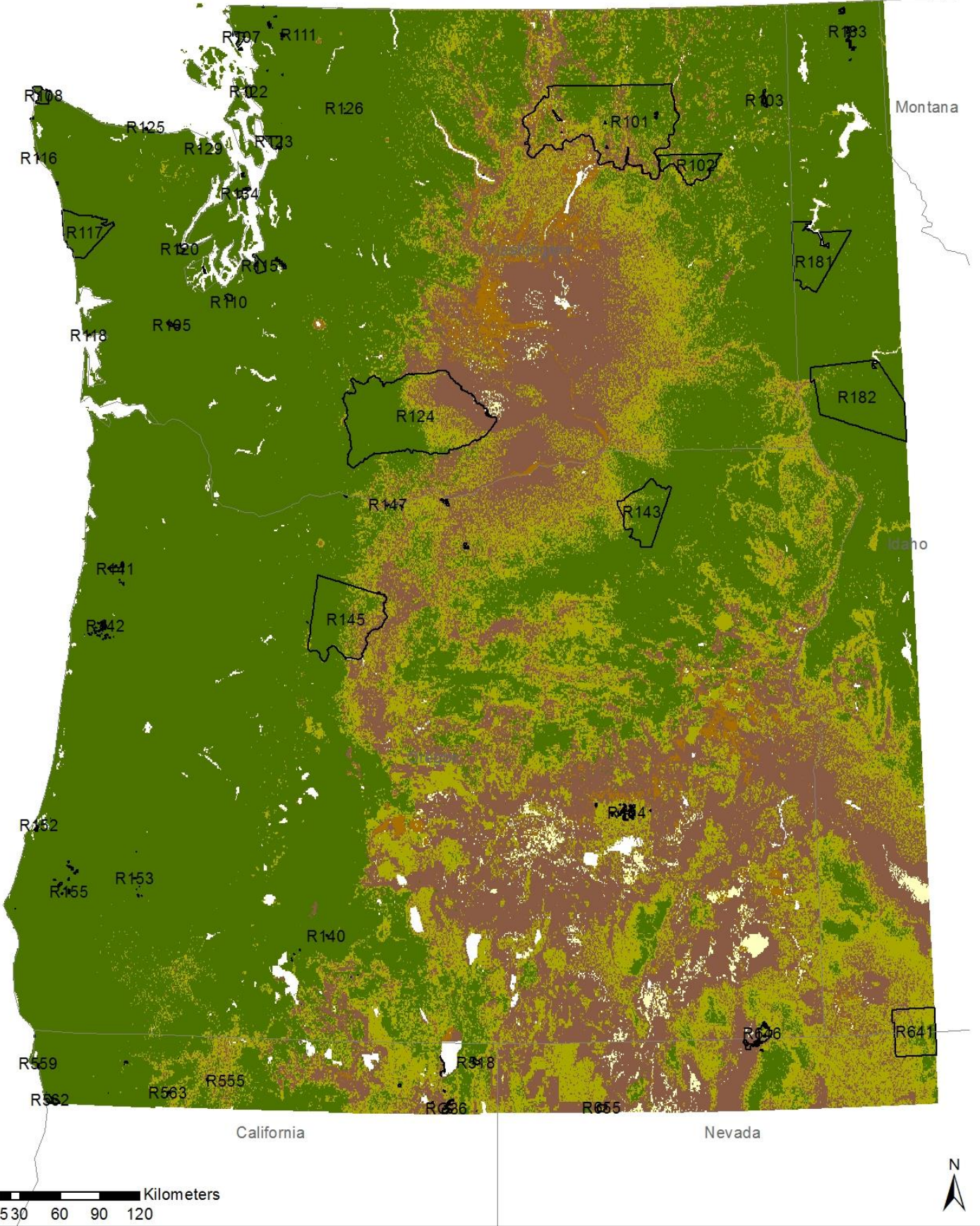
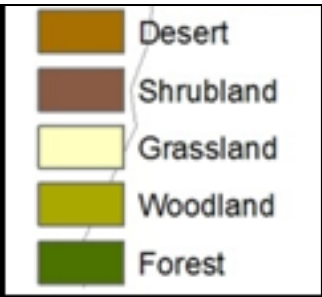


CESM1-CAM5 Vegetation Types 2100

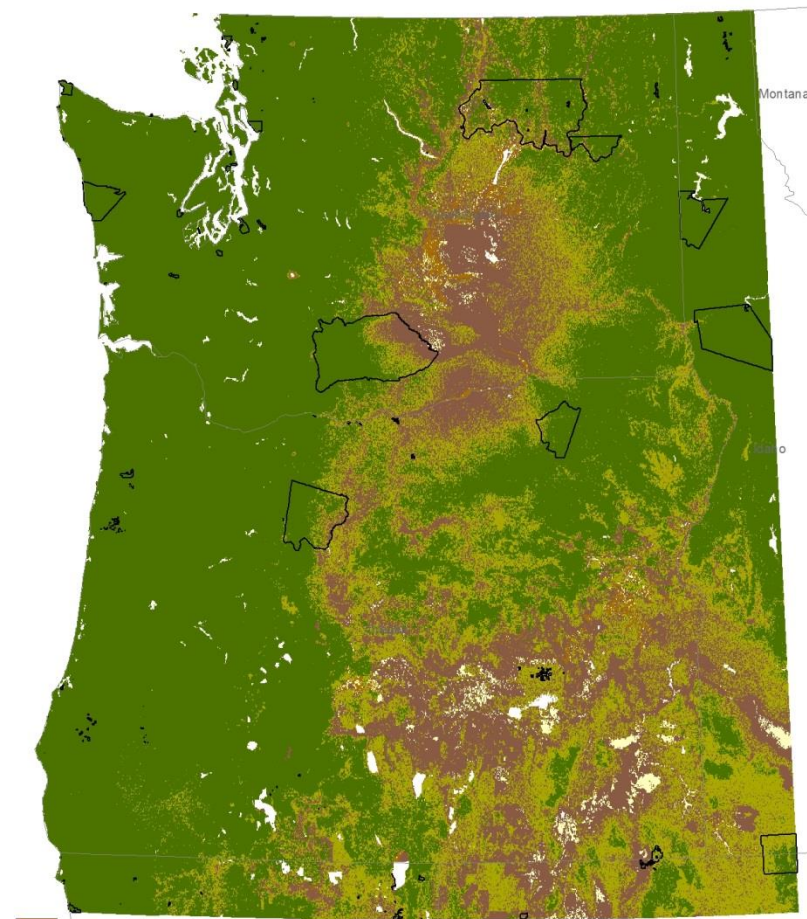
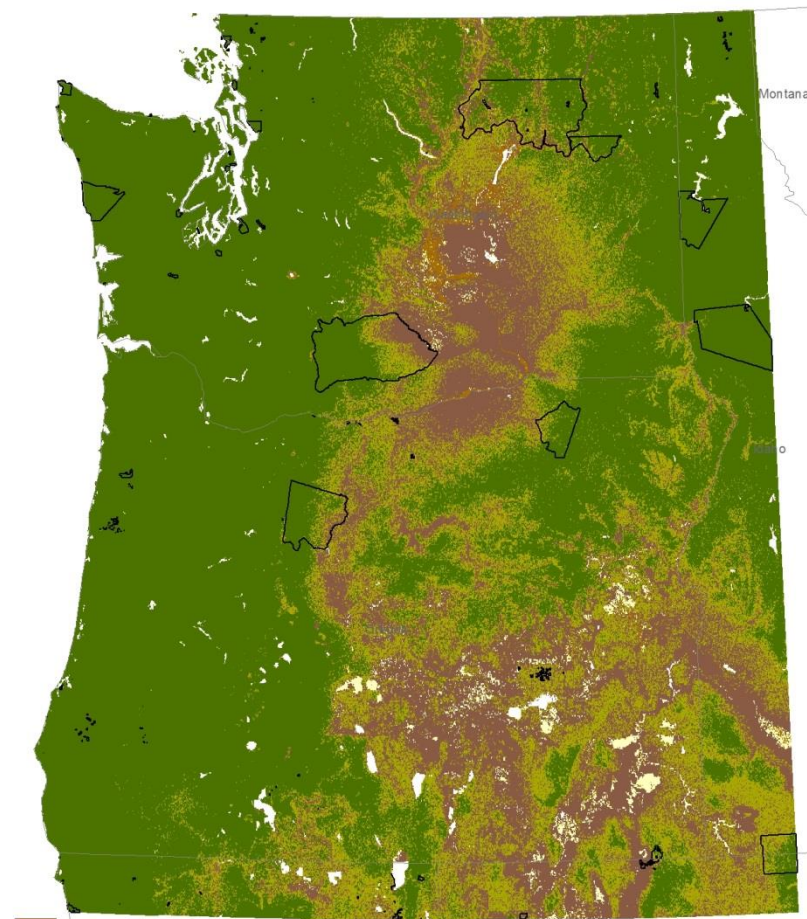
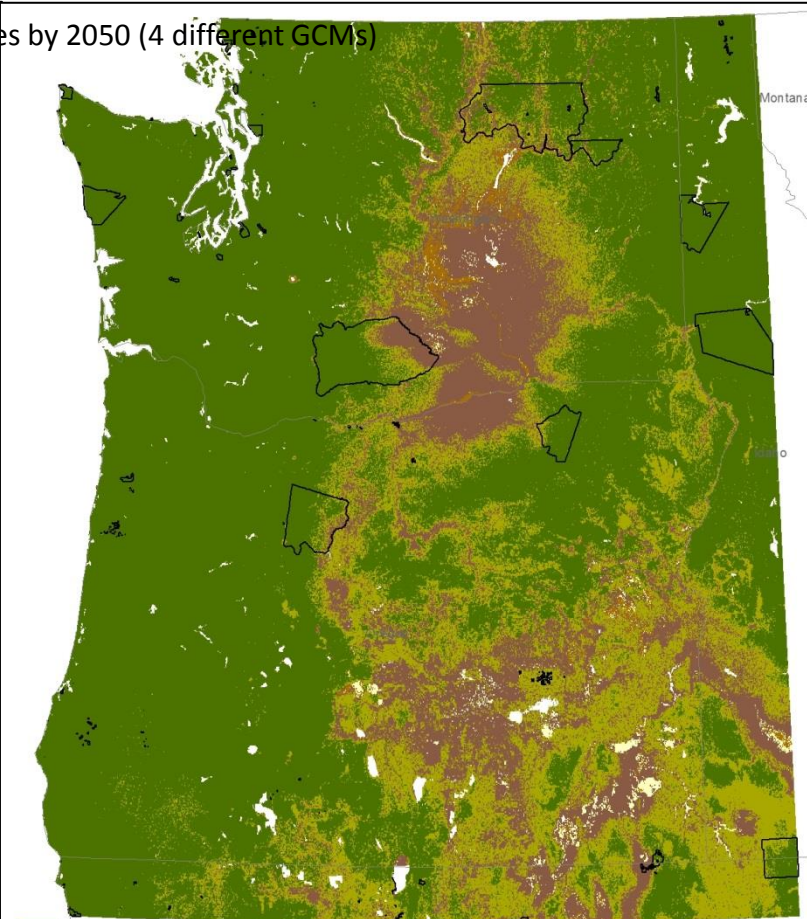
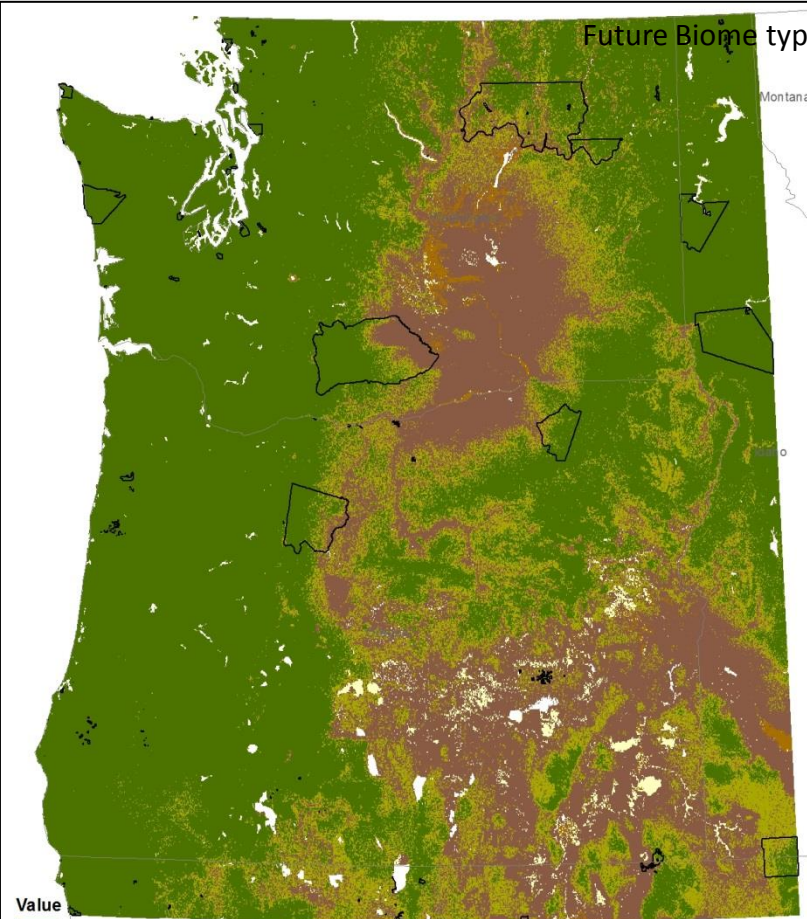
MRI-CGCM3 Vegetation Types 2100



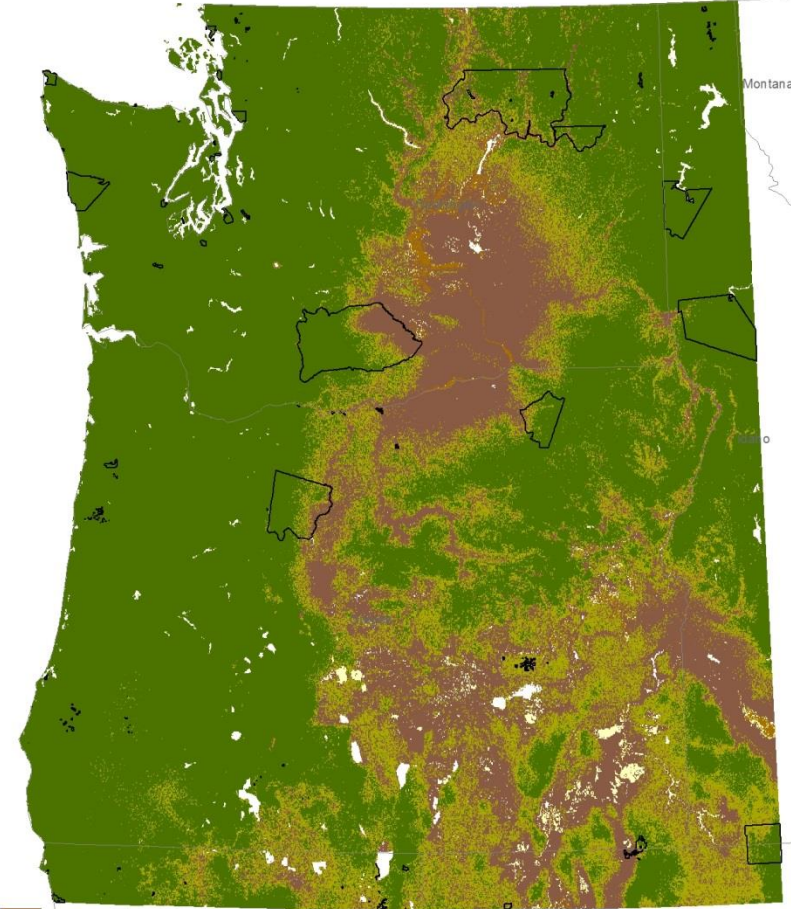
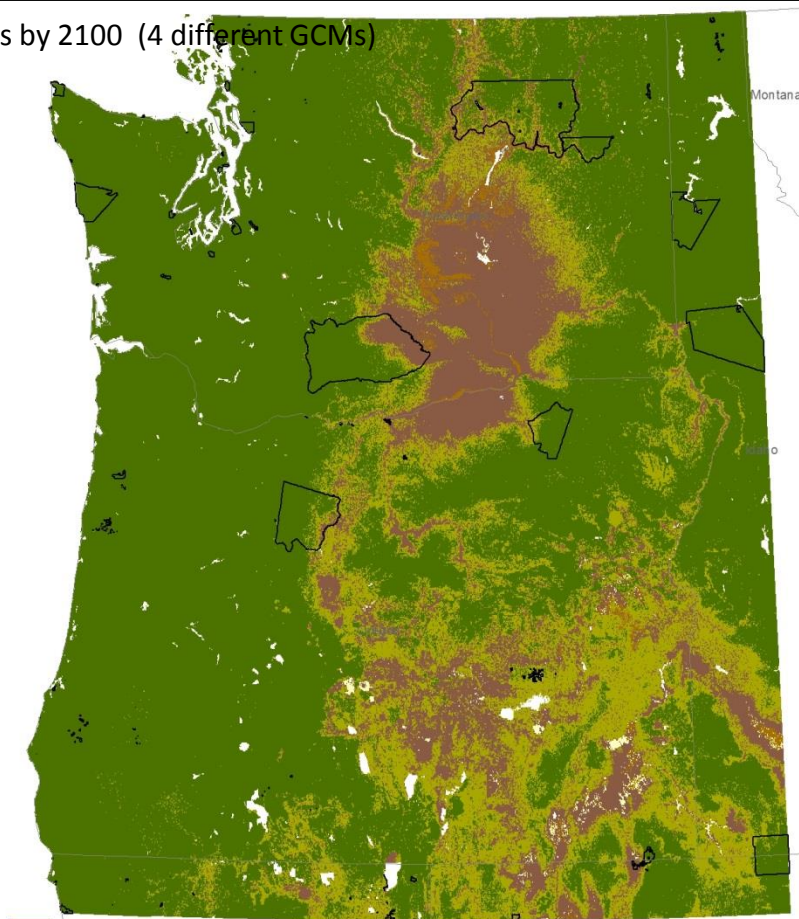
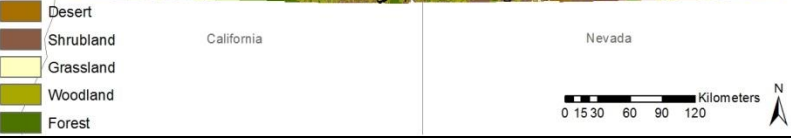
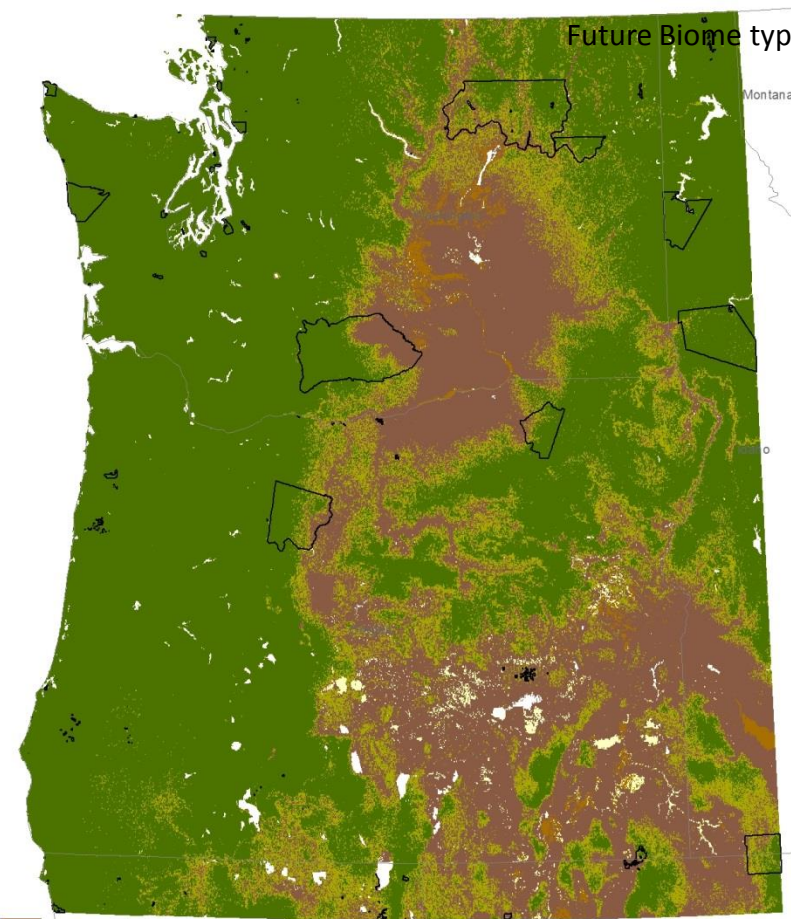
Historical Biomes



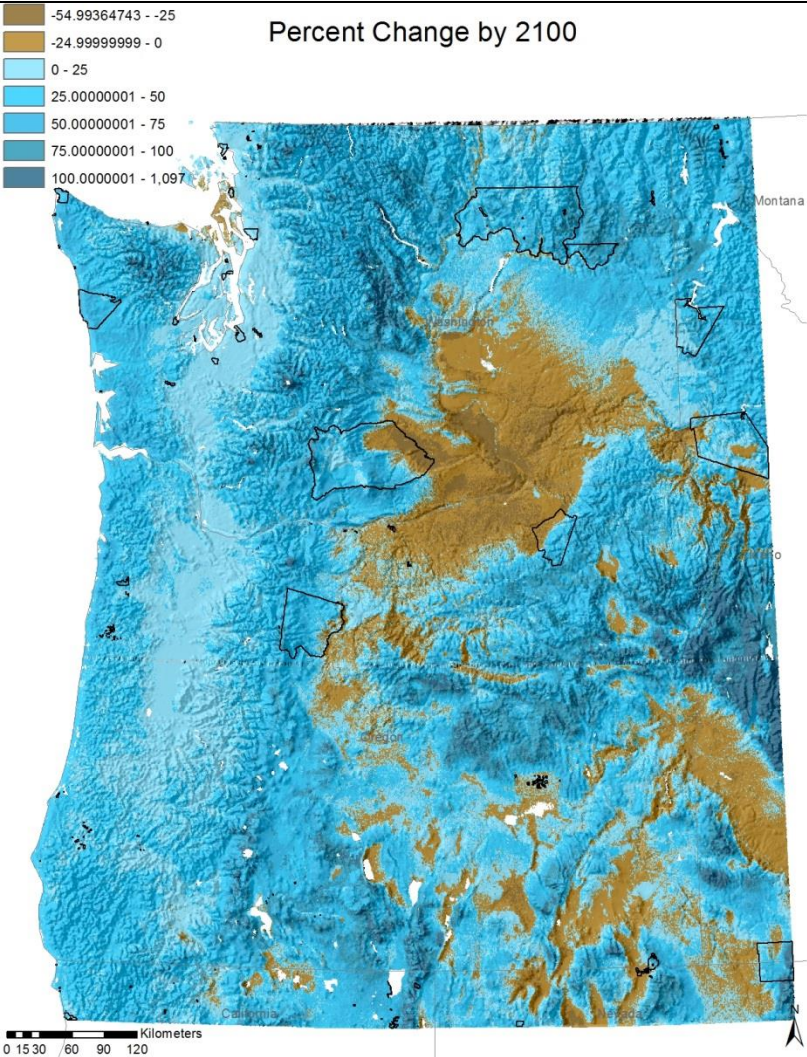
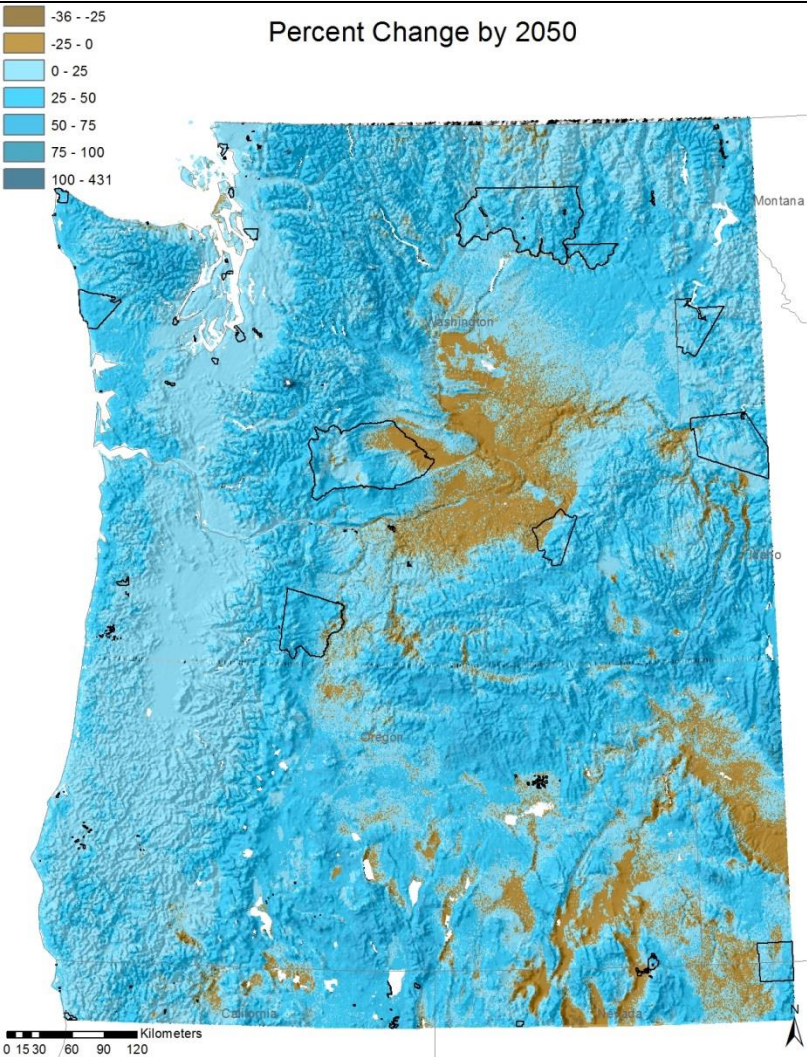
Future Biome types by 2050 (4 different GCMs)



Future Biome types by 2100 (4 different GCMs)

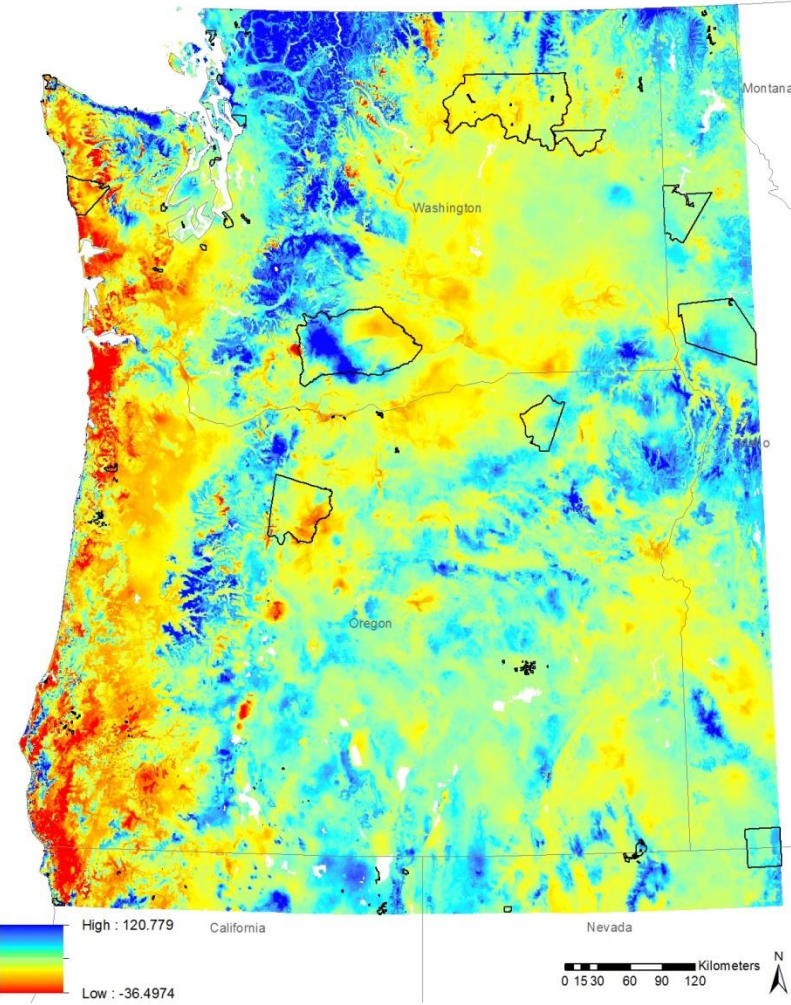


Net Primary Productivity

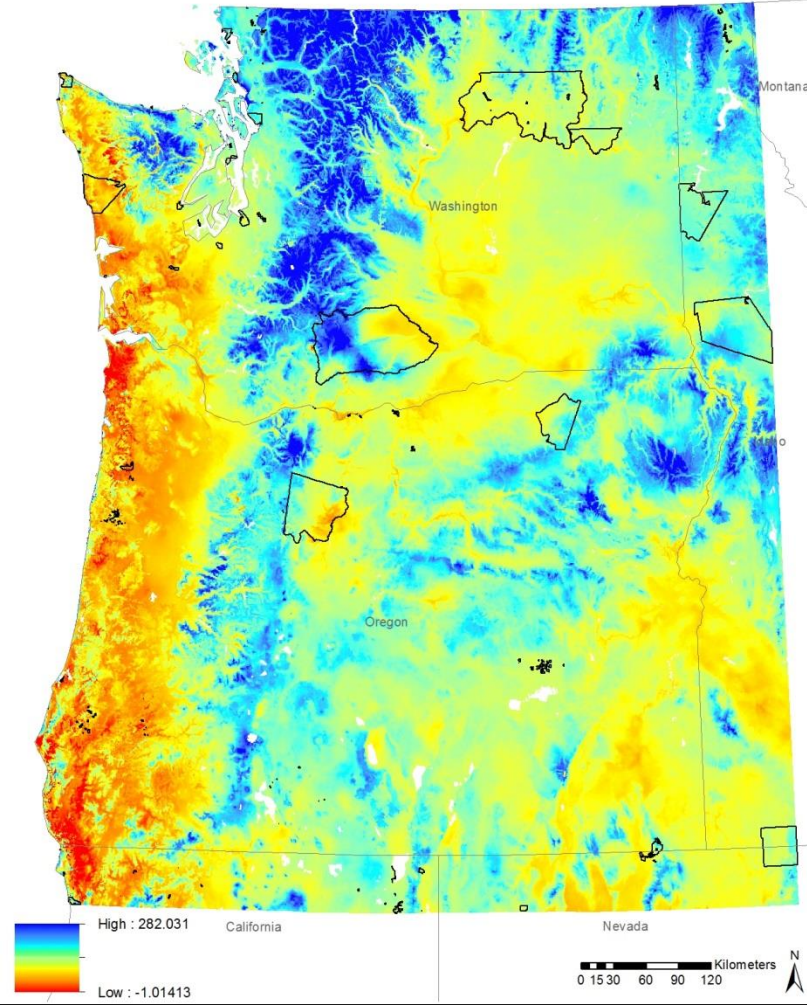


Potential Evapotranspiration

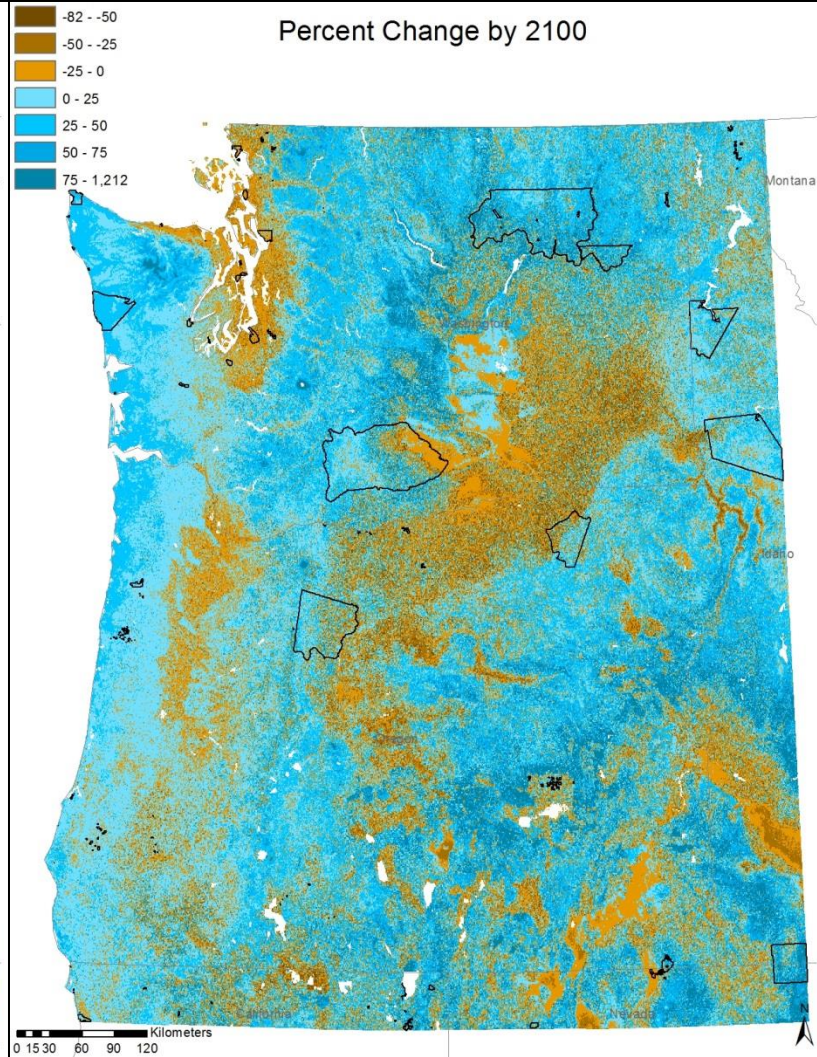
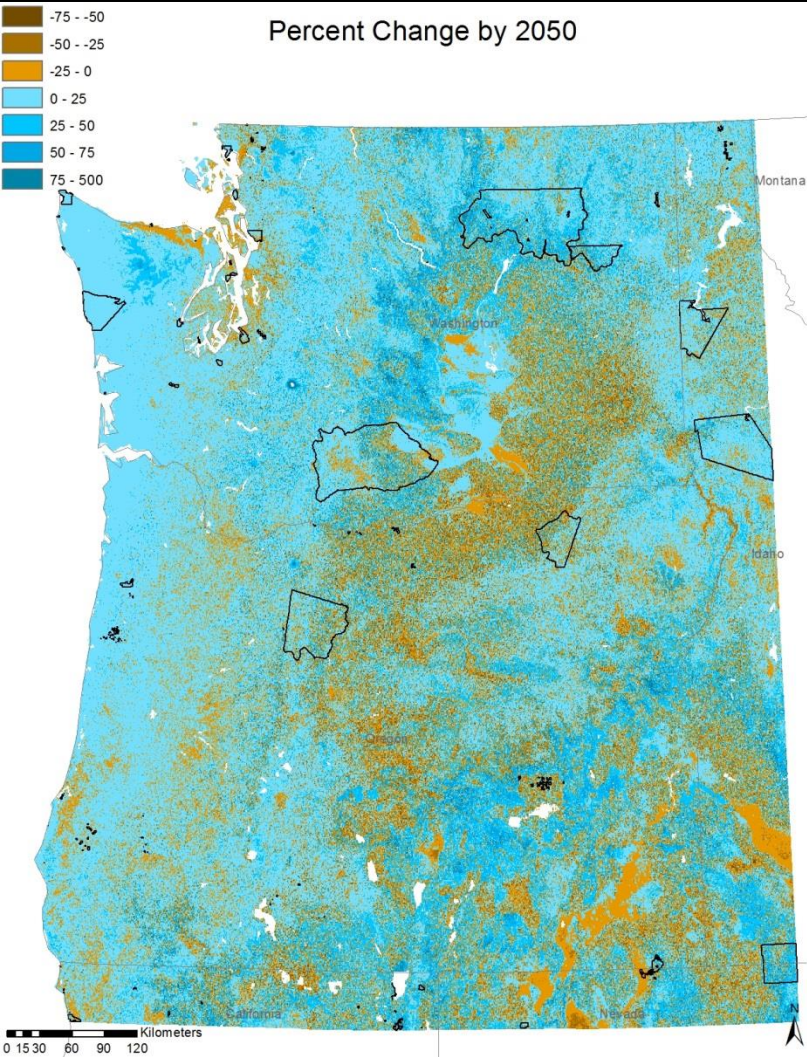
Percent Change in PET by 2050

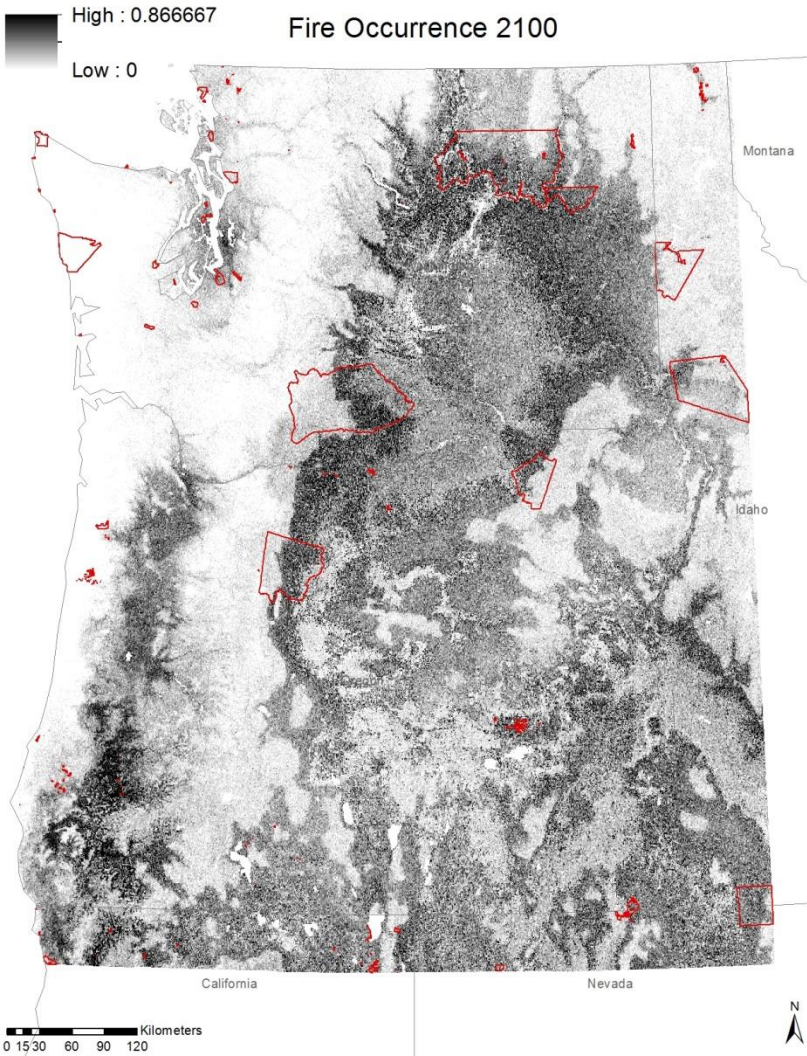
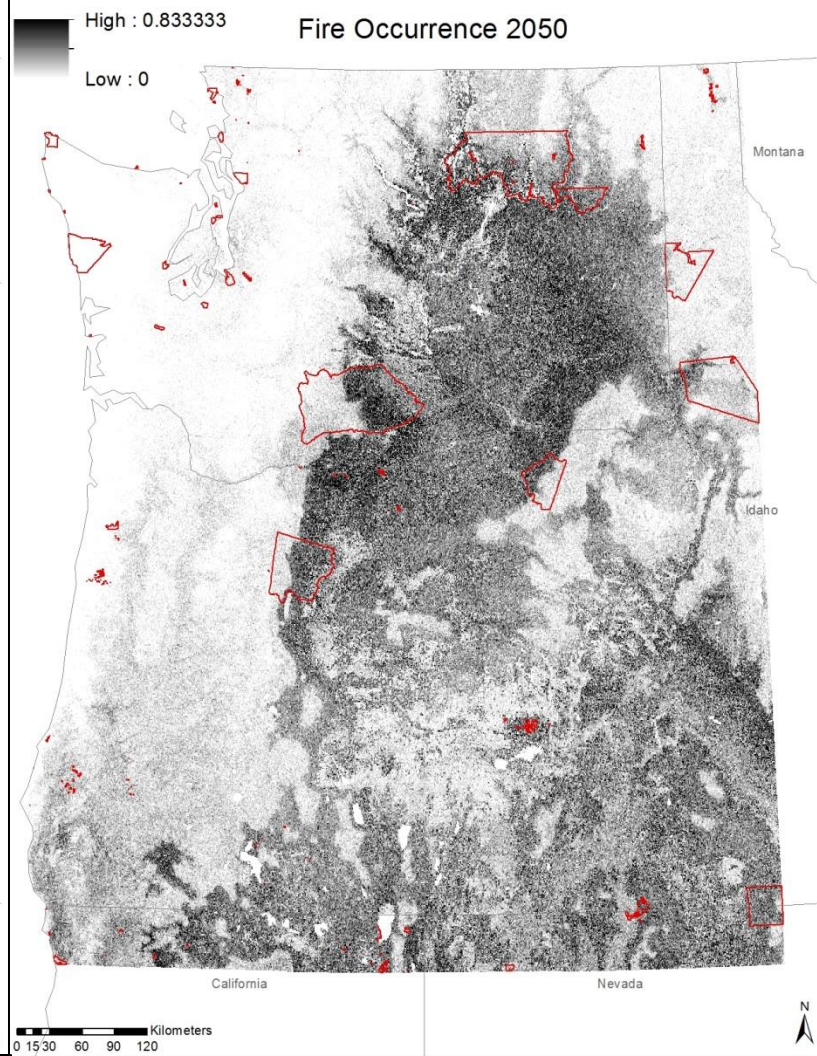
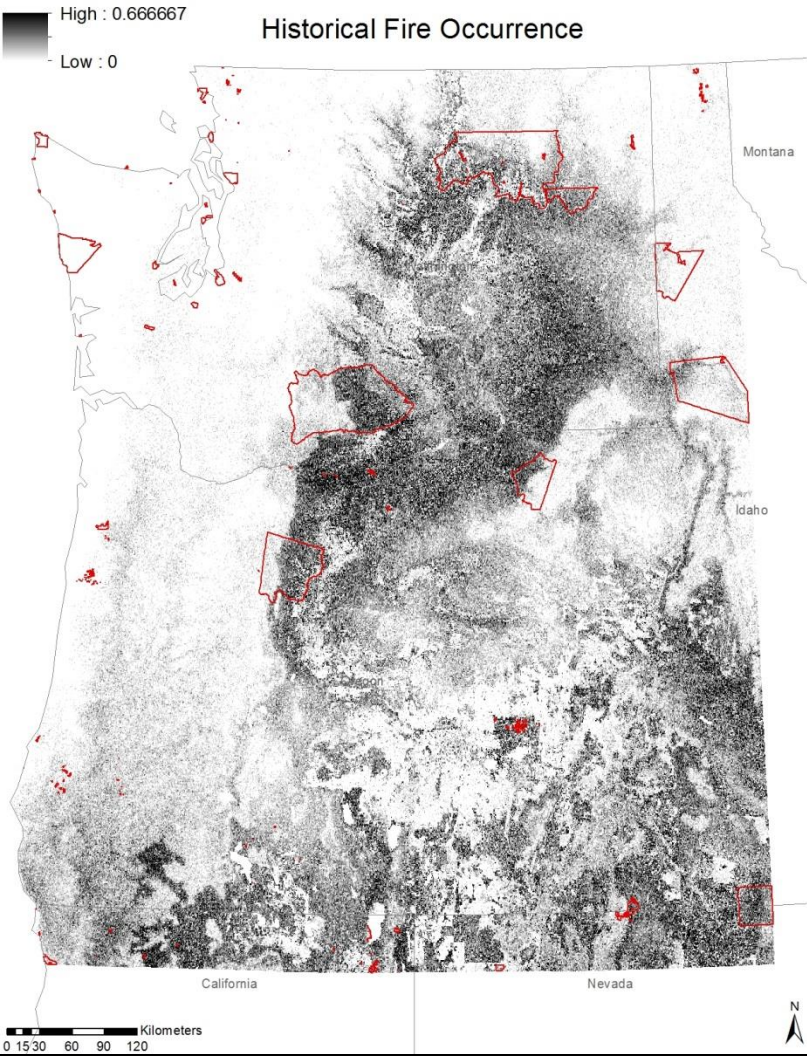


Percent Change in PET by 2100

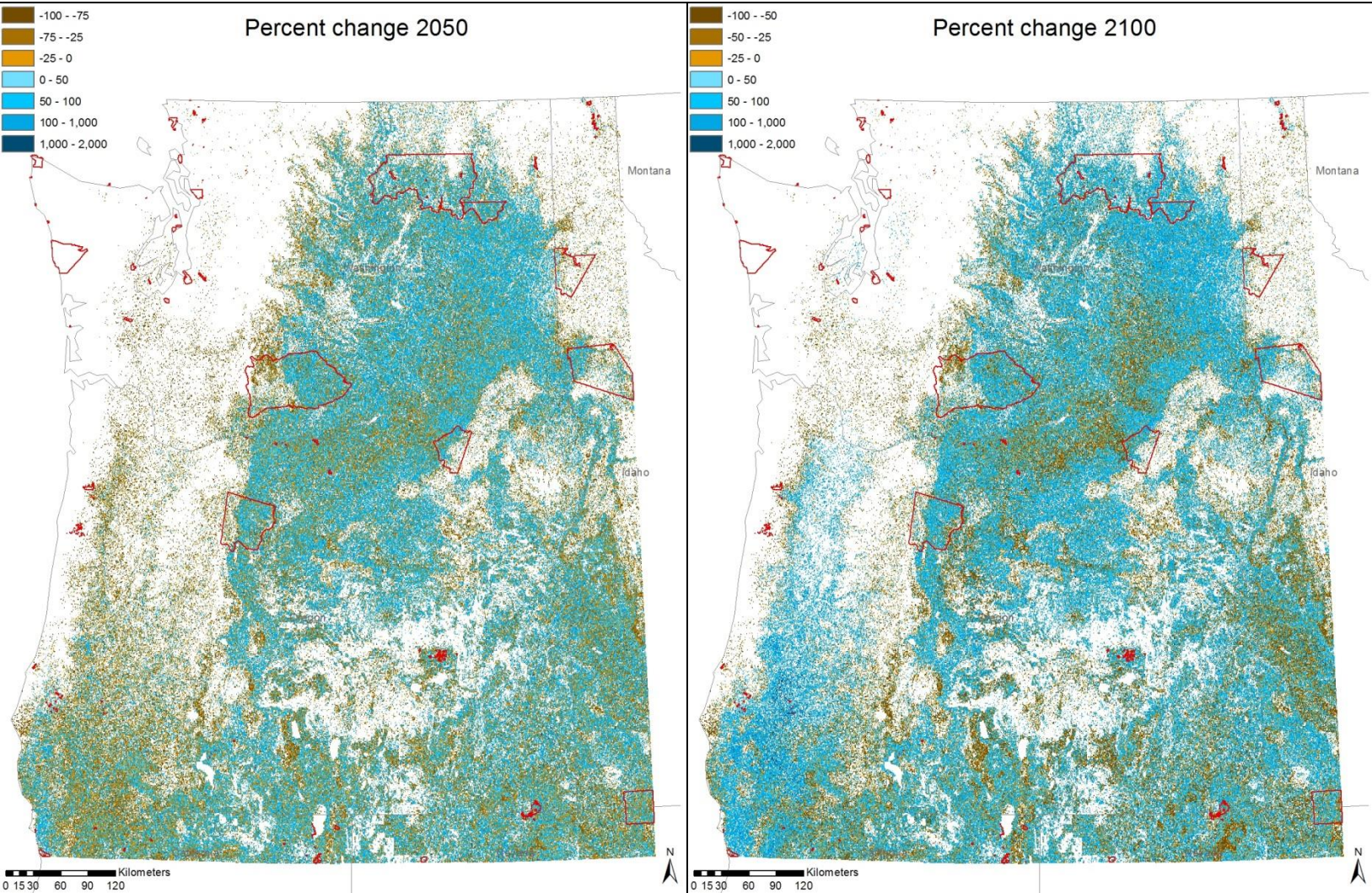


Live vegetation carbon





Percent change in fire occurrence



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