Climate Change Adaptation Workshops

Climate Change: Guidance for Tree Species Selection

Southern Interior

Ministry of Forests, Lands, and
Natural Resource Operations

2014

BRITISH COLUMBIA

This session's agenda

A brief history of species selection guidance

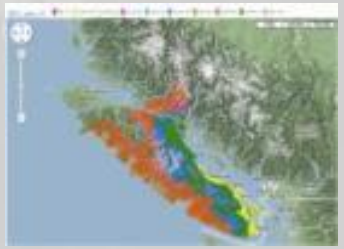
- The basics – feasibility, reliability, productivity

Climate Change – what to expect

- Ecological guidance including fire
- Seed Transfer
- FRPA tests
- Present direction and flexibility
- Questions and wrap up

Learning Objectives for the Session

1. Understand the importance of bringing climate change into the decision process for selecting species
2. Awareness of where to find ecologically based direction
3. Understand the rules surrounding seed transfer and use



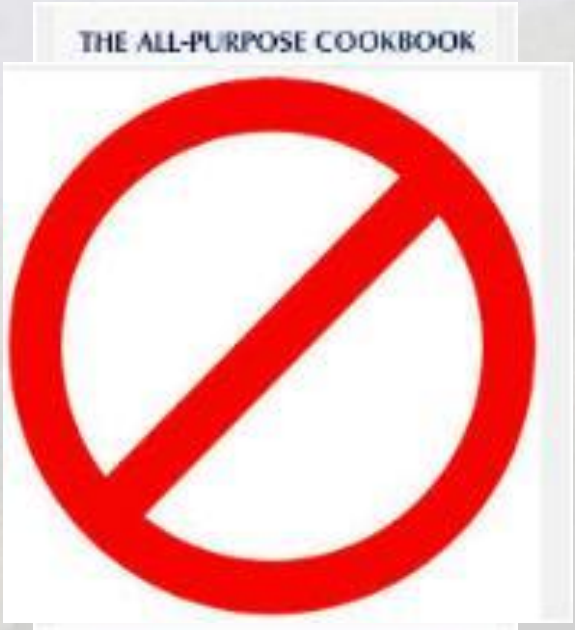
Species Selection and Climate Change 101 (lite)

- A correlated set of stocking standards were first created in 1993 – 20 years + ago to guide species use.
- They provided the following direction:

"Follow not the system as a blind man follows a wall"

Climate Change: Guidance for Tree Species Selection

Or more specifically - understand your objectives and options - through thoughtful deliberation choose species and mixes that meet the desired outcomes – there is no one cookbook answer.



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- Species guidance uses the following 3 key elements:
  - **Feasibility** – this is a critical component of all reforestation decisions and is amplified when Climate Change suggests moving some species into areas where they were not previously found
  - **Reliability** – again critical – what threats are there now and potentially in the future – this is addressed by the long term forest health test
  - **Productivity** – this is again key, the tree improvement branch is fully committed to climate based seed transfer – matching genetics to growing conditions

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Standards are to:

- Be based on ecologically appropriate species
- Be measurable
- Describe where and when it will apply
- Have clearly defined target conditions
- Maintain or improve forest health
- Maintain stand productivity or minimize the impacts to stand productivity
- Maintain or enhance the commercially valuable timber supply
- Define acceptable levels of variability

Species evaluation and categories

Primary – ecologically acceptable with a high rating for F, R, and P - managed as a major component of the stand

Secondary – ecologically acceptable but rank lower for one or more of F, R and P – managed as either a major or minor component of the stand

Tertiary – ecologically acceptable – usually only suitable as a minor component of the stand

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How to bring in climate change into the thought process?

What information is out there?

Climate Change: Guidance for Tree Species Selection

Global Circulation Models and Downscaling

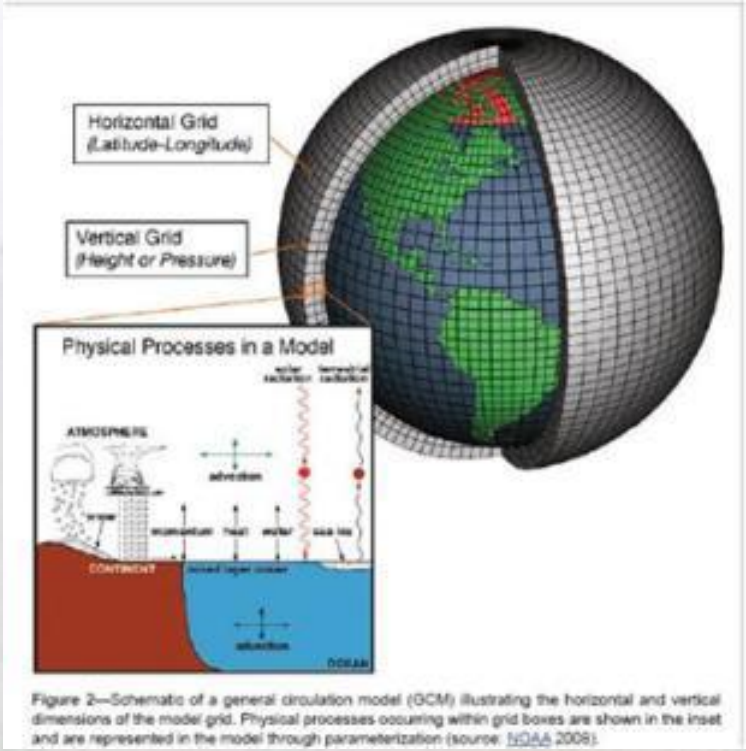
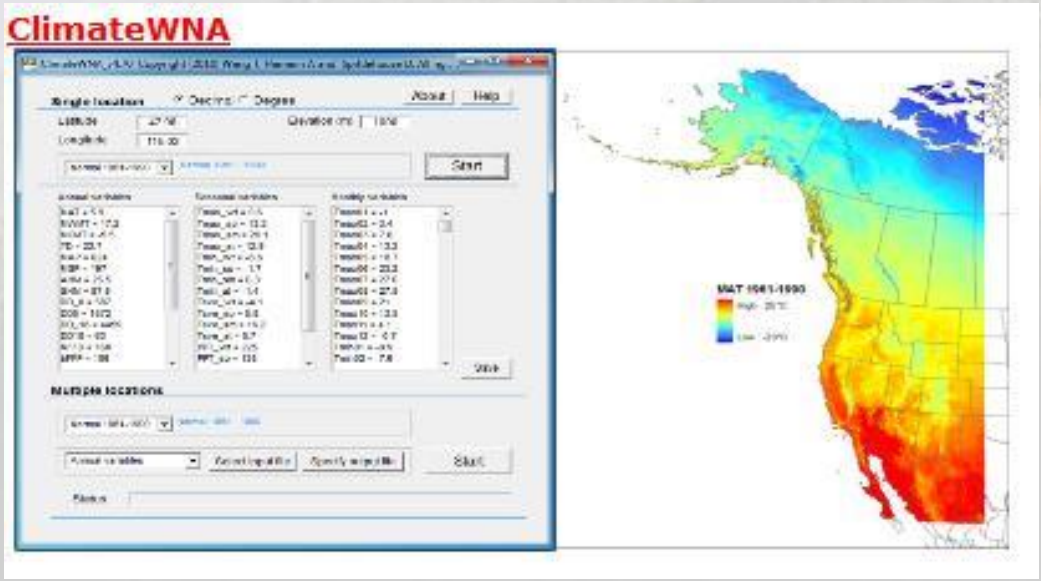


Figure 2—Schematic of a general circulation model (GCM) illustrating the horizontal and vertical dimensions of the model grid. Physical processes occurring within grid boxes are shown in the inset and are represented in the model through parameterization (source: NOAA 2008).

Mathematical representation of global climate system (the physics) – takes global climate and is downscaled for interpretation – e.g. Climate WNA



Natural Variation

Climate the bigger picture

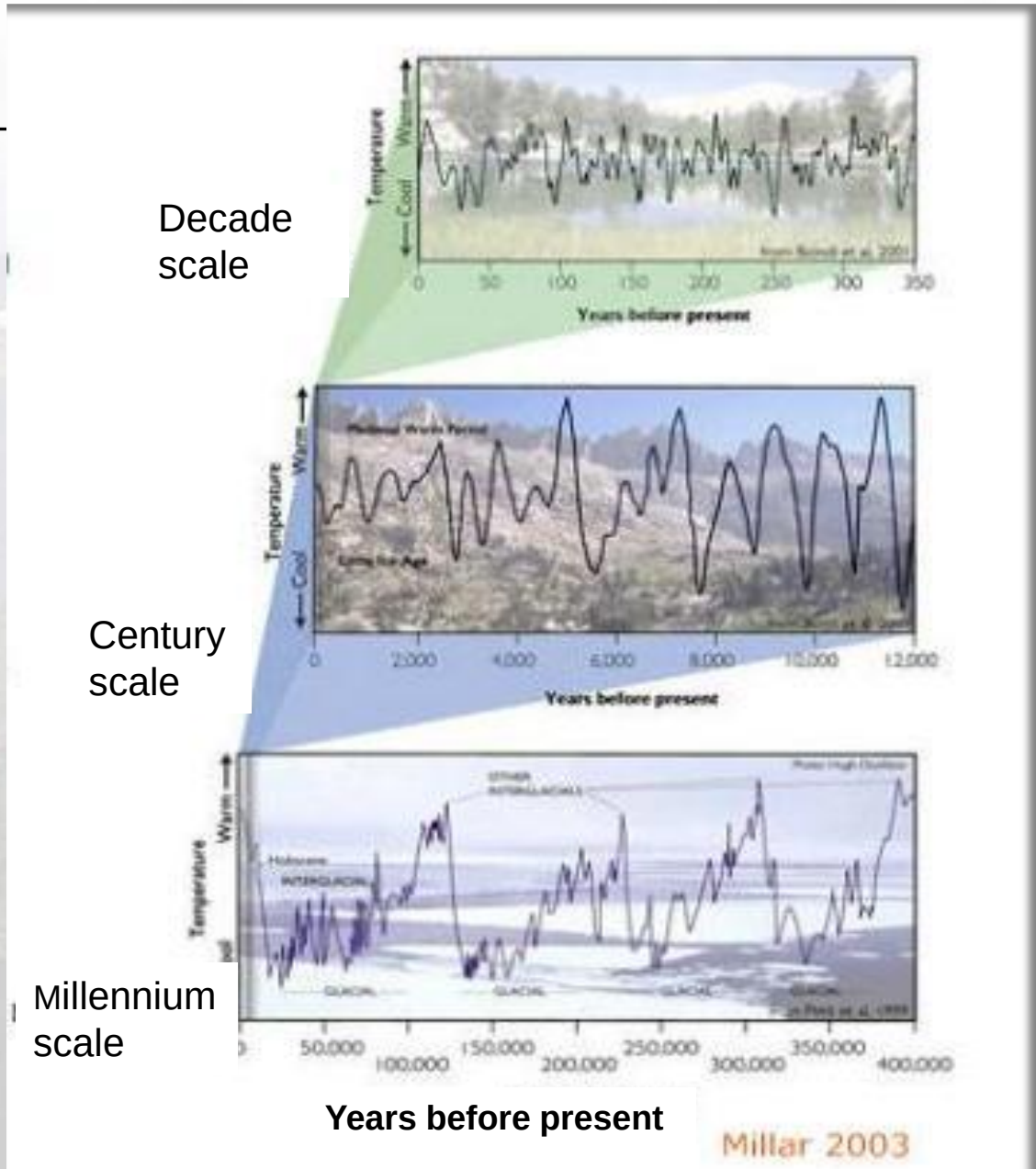
Earth's natural climate system varies over time

Climate changes over time with different patterns and modes.

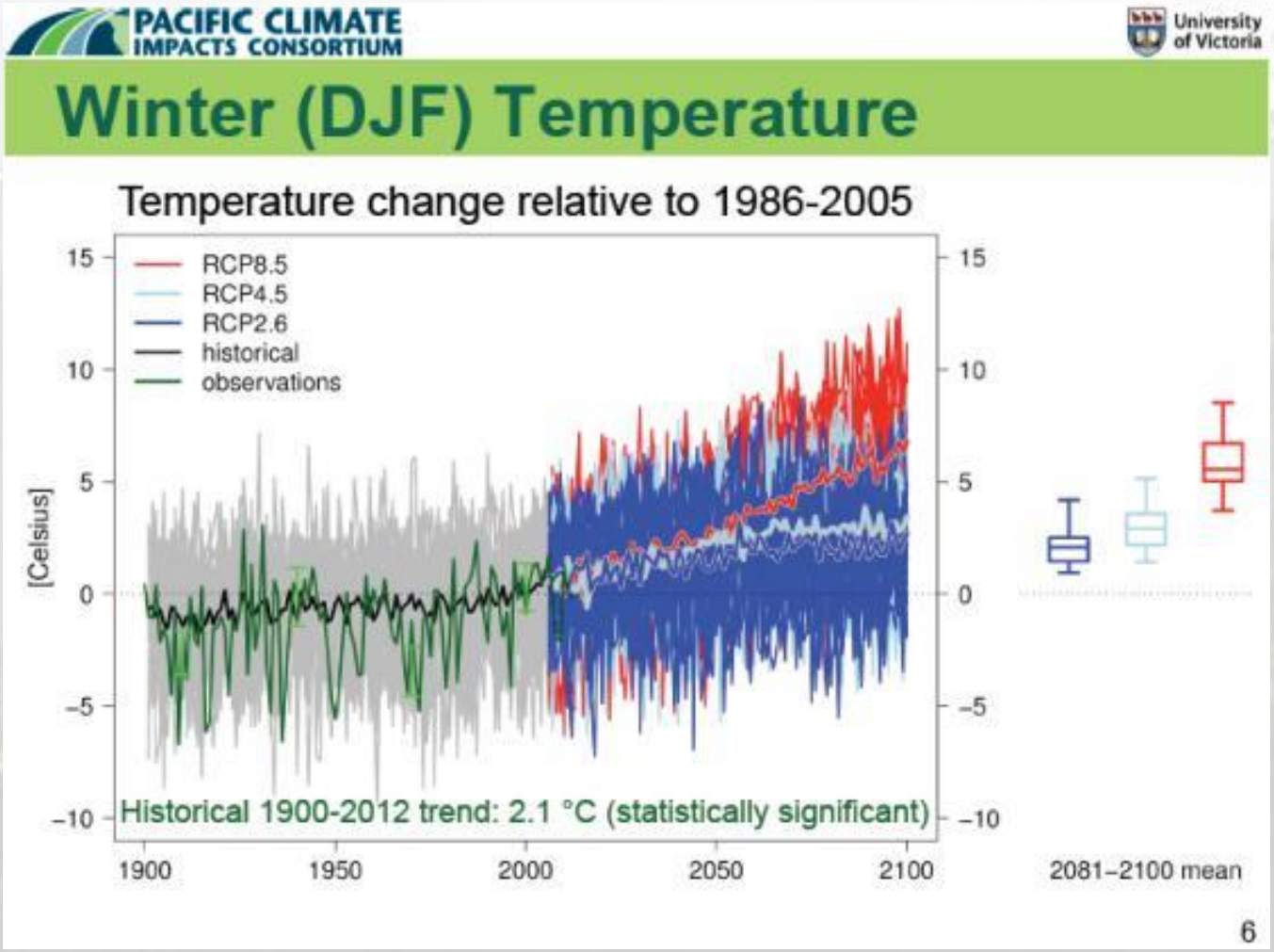
Modes are nested in annual, decadal, century and millennial scales

Note: Different mechanisms drive different modes

Source: Millar 2003

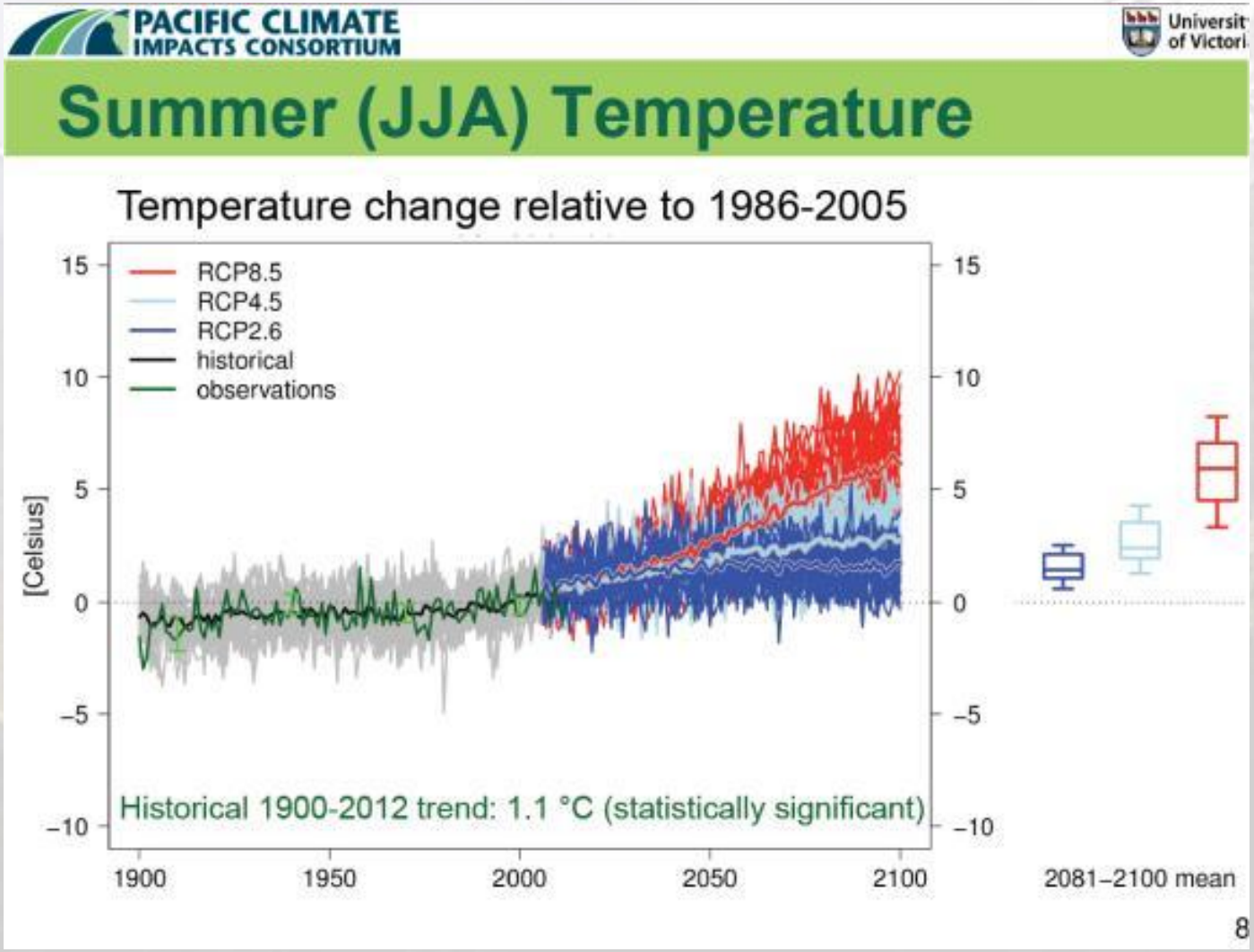


Natural Variation

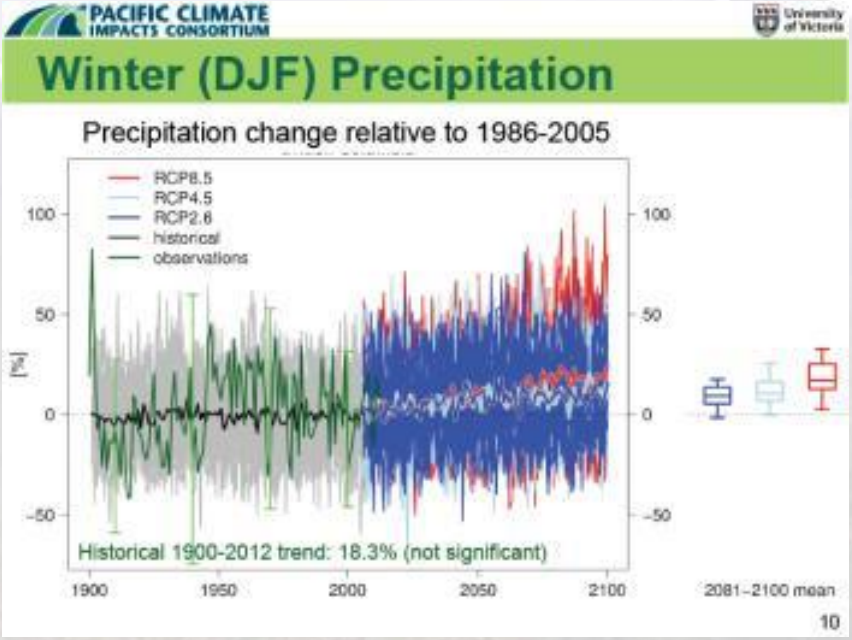


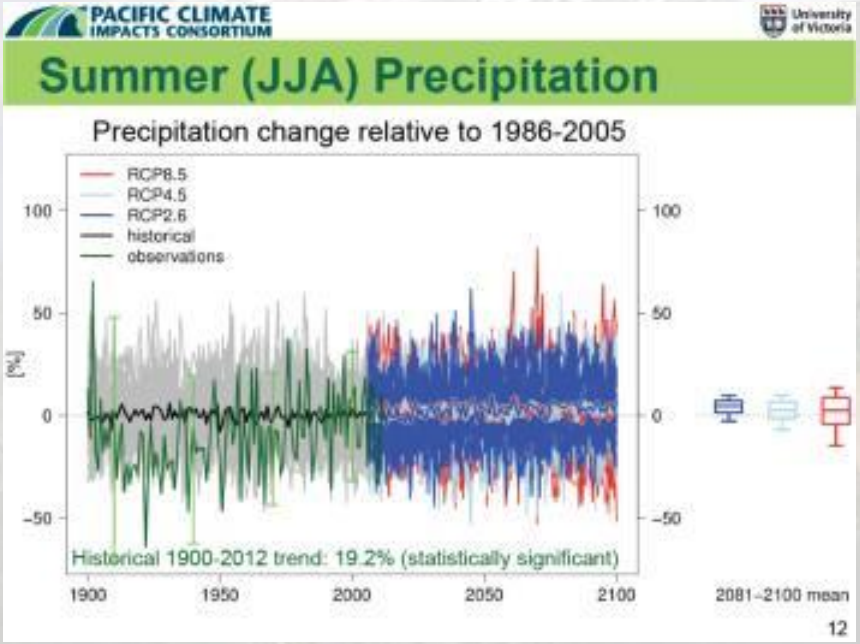
Source: http://www.climatechange2013.org/images/uploads/WGIAR5-SPM_Approved27Sep2013.pdf

Natural Variation



Natural Variation





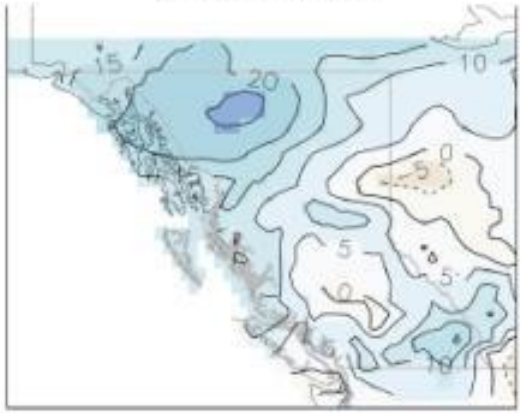
Natural Variation

PACIFIC CLIMATE IMPACTS CONSORTIUM

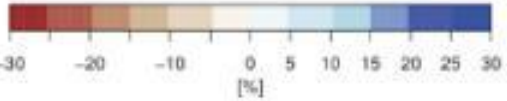
University of Victoria

Summer (JJA) precipitation trends

Observed Trend
1900-2012



Projected change
2046-2065 vs 1986-2005



Projections assume "RCP4.5"

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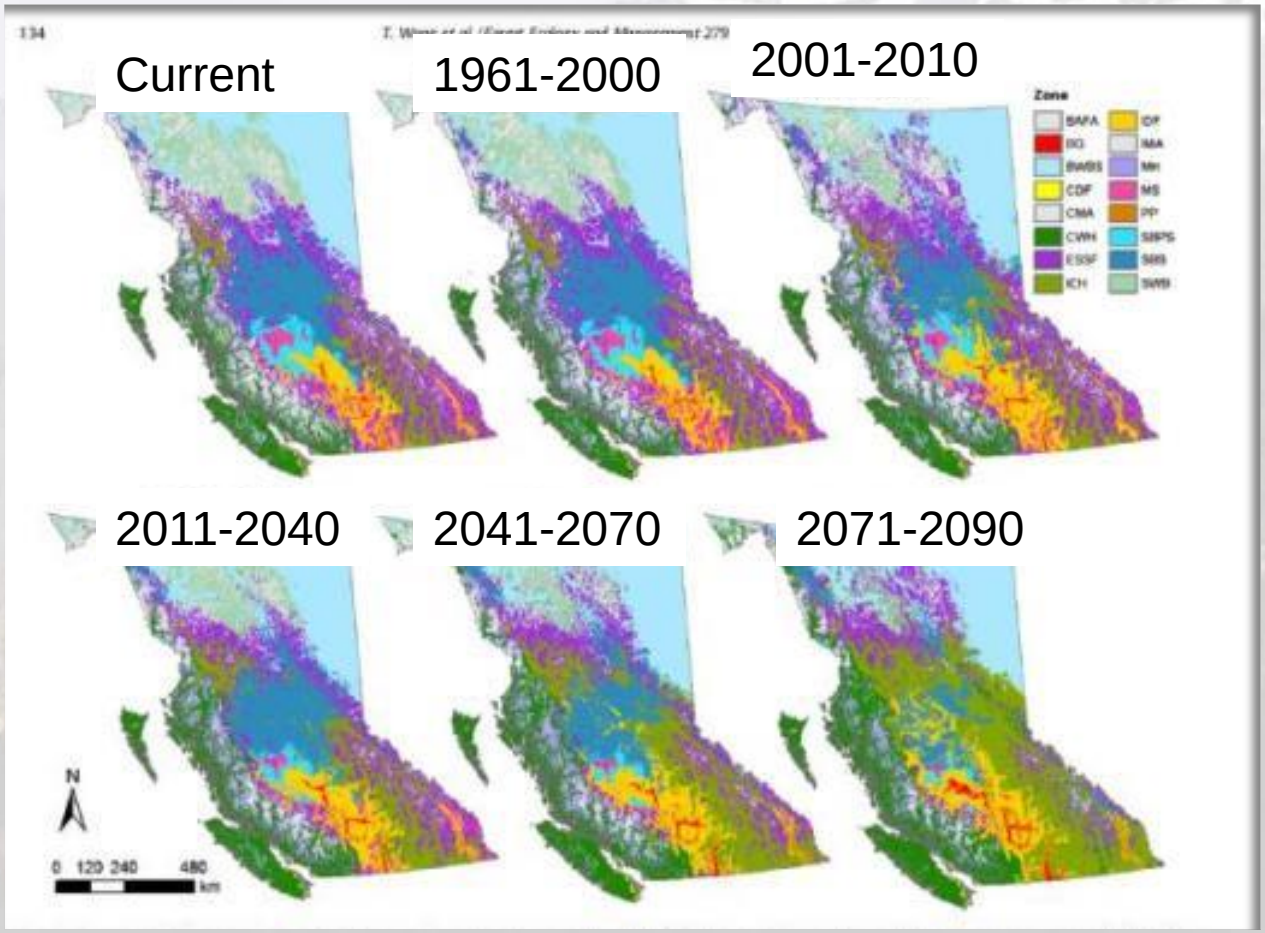
Shifts of climate envelopes – a visualization tool

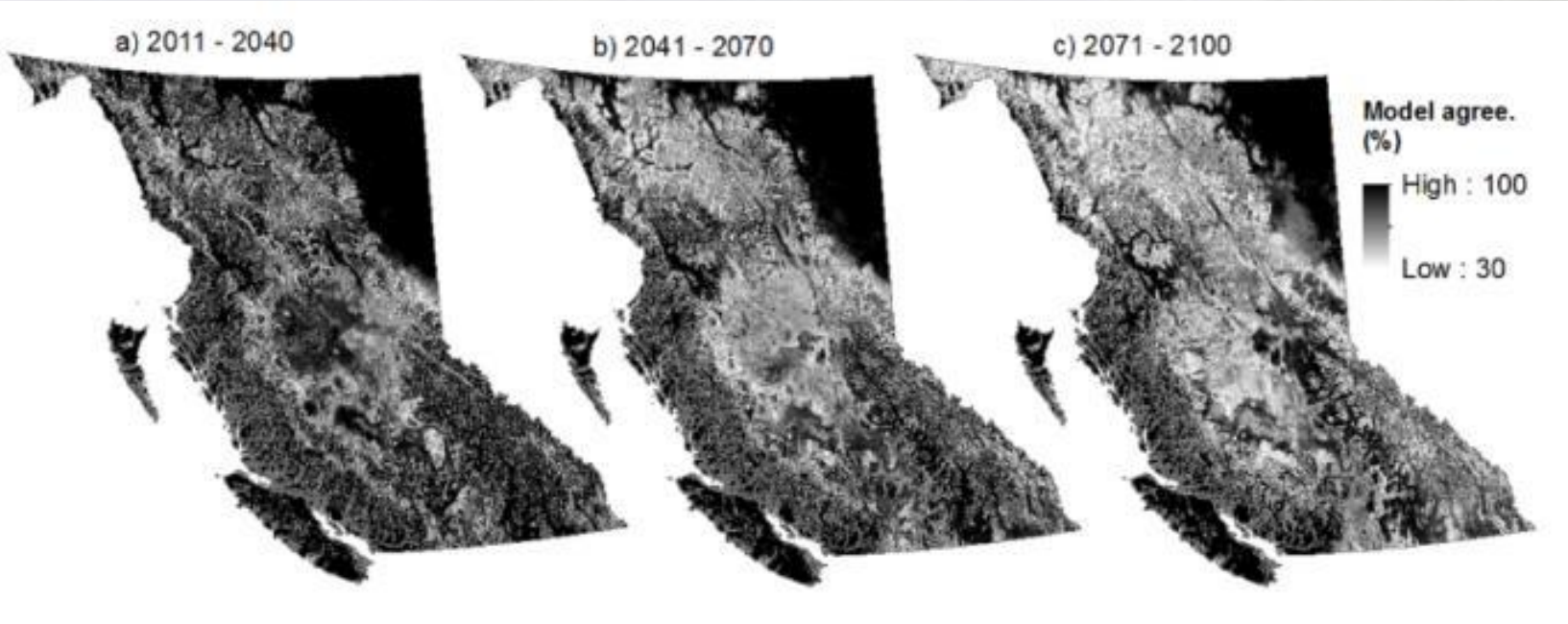
Note: This is one representation at the zonal level using BC analogues



Source: Tongli Wang et al 2012

Shifts of climate envelopes

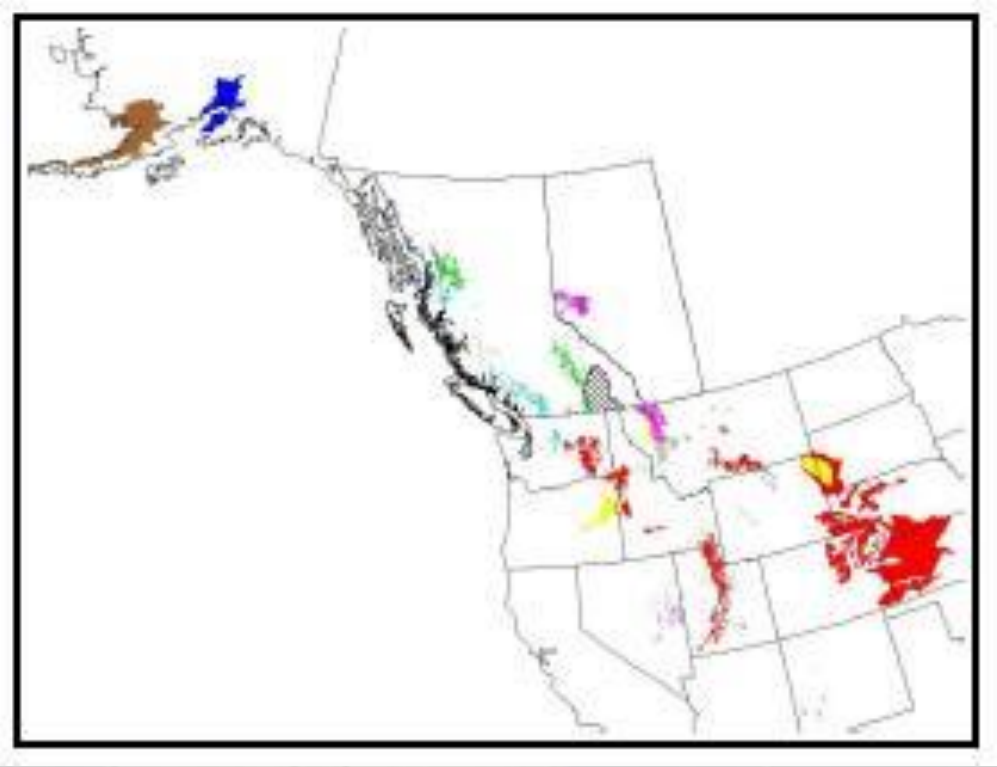
Model agreement (black) diminishes over time – (e.g., Future is more uncertain).



Source: Tongli Wang et al 2012

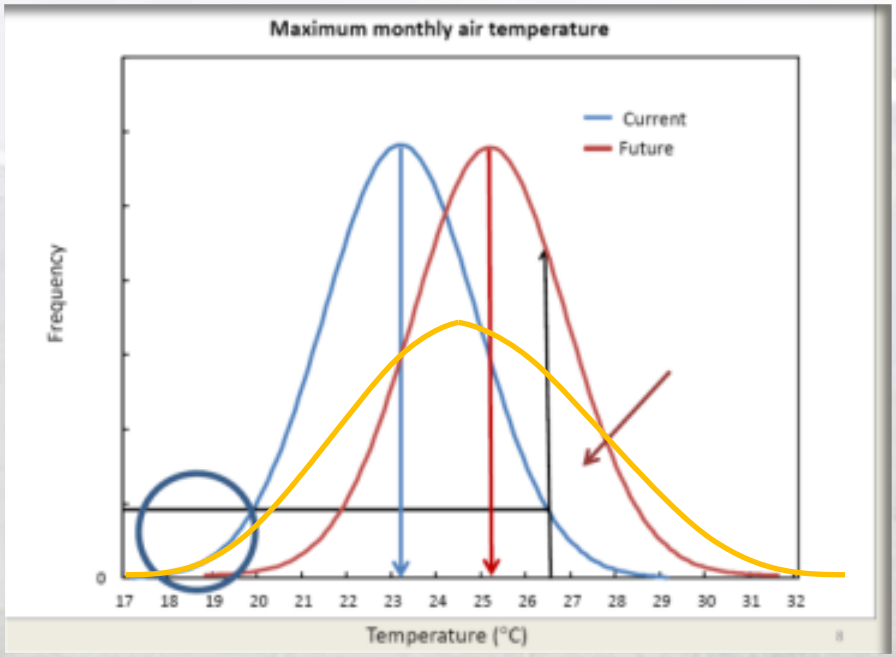
Shifts of climate envelopes

West Kootenay 2080 output - possible climate from outside BC



Source: http://www.kootenayresilience.org/Report5_BioclimateShift_Final.pdf

Regional plausible futures



E.g., Shift of the mean and extremes

(Spittlehouse 2012)

It is *virtually certain* that there will be more frequent hot and fewer cold temperature extremes over most land areas on daily and seasonal timescales as global mean temperatures increase. It is *very likely* that heat waves will occur with a higher frequency and duration. Occasional cold winter extremes will continue to occur (see Table SPM.1). {12.4} http://www.ipcc.ch/report/ar5/wg1/#.UkXFTzJrbGg

Use of Plan2Adapt

PACIFIC CLIMATE IMPACTS CONSORTIUM

PLAN2ADAPT

PCIC Home | Contact Us

- Summary
- Region & Time
- Temperature
- Precipitation
- Snowfall
- Growing DD
- Heating DD
- Frost-Free Days
- Impacts
- Notes
- References

Summary of Climate Change for South Coast in the 2050s

Climate Variable	Season	Projected Change from 1961-1990 Baseline	
		Ensemble Median	Range (10th to 90th percentile)
Mean Temperature (°C)	Annual	+1.7 °C	+1.0 °C to +2.5 °C
Precipitation (%)	Annual	+6%	-2% to +11%
	Summer	-14%	-23% to +3%
	Winter	+6%	-4% to +15%
Snowfall* (%)	Winter	-24%	-40% to -10%
	Spring	-52%	-73% to -13%
Growing Degree Days* (degree days)	Annual	+336 degree days	+205 to +519 degree days
Heating Degree Days* (degree days)	Annual	-593 degree days	-902 to -362 degree days
Frost-Free Days* (days)	Annual	+24 days	+13 to +36 days

The table above shows projected changes in average (mean) temperature, precipitation and several derived climate variables from the baseline historical period (1961-1990) to the **2050s** for the **South Coast** region. The ensemble median is a mid-point value, chosen from a PCIC standard set of Global Climate Model (GCM) projections (see the 'Notes' tab for more information). The range values represent the lowest and highest results within the set. Please note that this summary table does not reflect the 'Season' choice made under the 'Region & Time' tab. However, this setting does affect results obtained under each variable tab.

* These values are derived from temperature and precipitation. Please select the appropriate variable tab for more information.

© 2012 Pacific Climate Impacts Consortium

http://www.pacificclimate.org/tools-and-data/plan2adapt

Output from Plan2Adapt – list of impacts

Shorter access season where winter access requires frozen road

- Winter logging season will likely decrease
- More logs may need to be stockpiled for break-up

Opportunities for facilitated migration of tree species

- Increased growing season and changing frost dates
- Southerly species may be more suitable

Warmer and shorter cold season

- Increased growing season for some commodities
- Heating costs in cold season may decline

Earlier spring lake ice melt.

- Lake productivity may decline
- Inland fisheries, sport fisheries and related tourism affected
- Salmon smolt migration timing may be affected

A General Perspective on Risk

Big risks may be a sufficiently compelling to apply treatments in spite of the uncertainties.

Appropriately weigh these risks and uncertainties:

- Treatments and timing
- Direction from higher level planning
  - realistic description of the current condition and direction
- Realistic expectation of treatment effect over time.
- Phase in
  - Learn by starting small, ramp up to have an effect

Likelihood	Consequences				
	Insignificant	Minor	Moderate	Major	Severe
Almost certain	M	H	H	E	E
Likely	M	M	H	H	E
Possible	L	M	M	H	E
Unlikely	L	M	M	M	H
Rare	L	L	M	M	H

Adapted from : Development of an Incremental Silviculture Investment Plan for the Tolko IFPA Area - FIA Project SOTSA29 9093 006 – Note there is no weblink at this time.

Climate Change: Guidance for Tree Species Selection

Managing Risk – information sources

Ministry of **Forests, Lands and Natural Resource Operations**

Tools

This page provides links to tools useful for:

- understanding changes underway in your area and
- adapting forest management so that BC forests remain resilient to climate change, variability and other stressors.

Credit for each of the tools belongs with each developer noted on the linked web pages.

- New link! (June 2013) **Stand Establishment Decision Aids (SEDAs)**: These SEDAS show *current* forest health risk and point to silvicultural tools and practices to deal with environmentally limiting factors within the context of BEC.
- New link! (June 2013) **Forest health change detection risk (hazard/severity) maps** in two formats:
  - **Mapped incidence of pests by TSA and cutblock from the RESULTS database** and,
  - **Regional maps of pest distribution** using the SEDA information.
- February 2013. FORREX Checklist for adapting BC's landscapes to a changing environment. This checklist summarizes the key considerations for buffering your managed forests against the impact of climate change during planning, harvesting, and reforestation. (3 pages).

This website is constantly being updated – note New! links

Climate Change: Guidance for Tree Species Selection

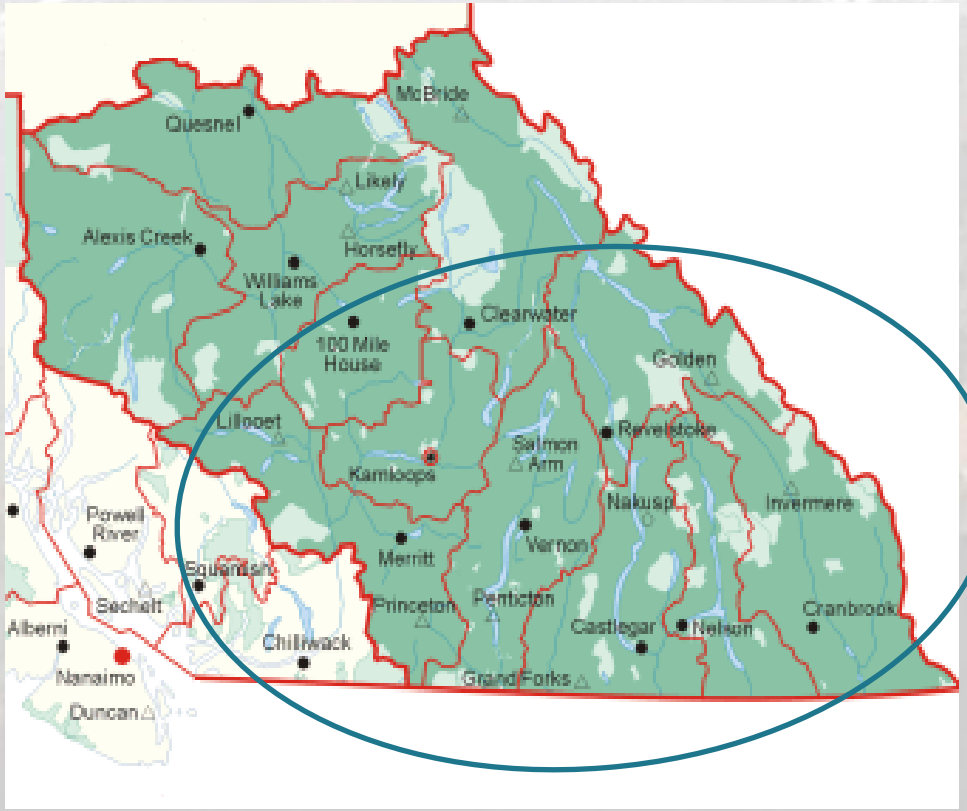
Ecological guidance

Southern - Southern Interior – Background and Recommended Guidance

Deb MacKillop and

Mike Ryan

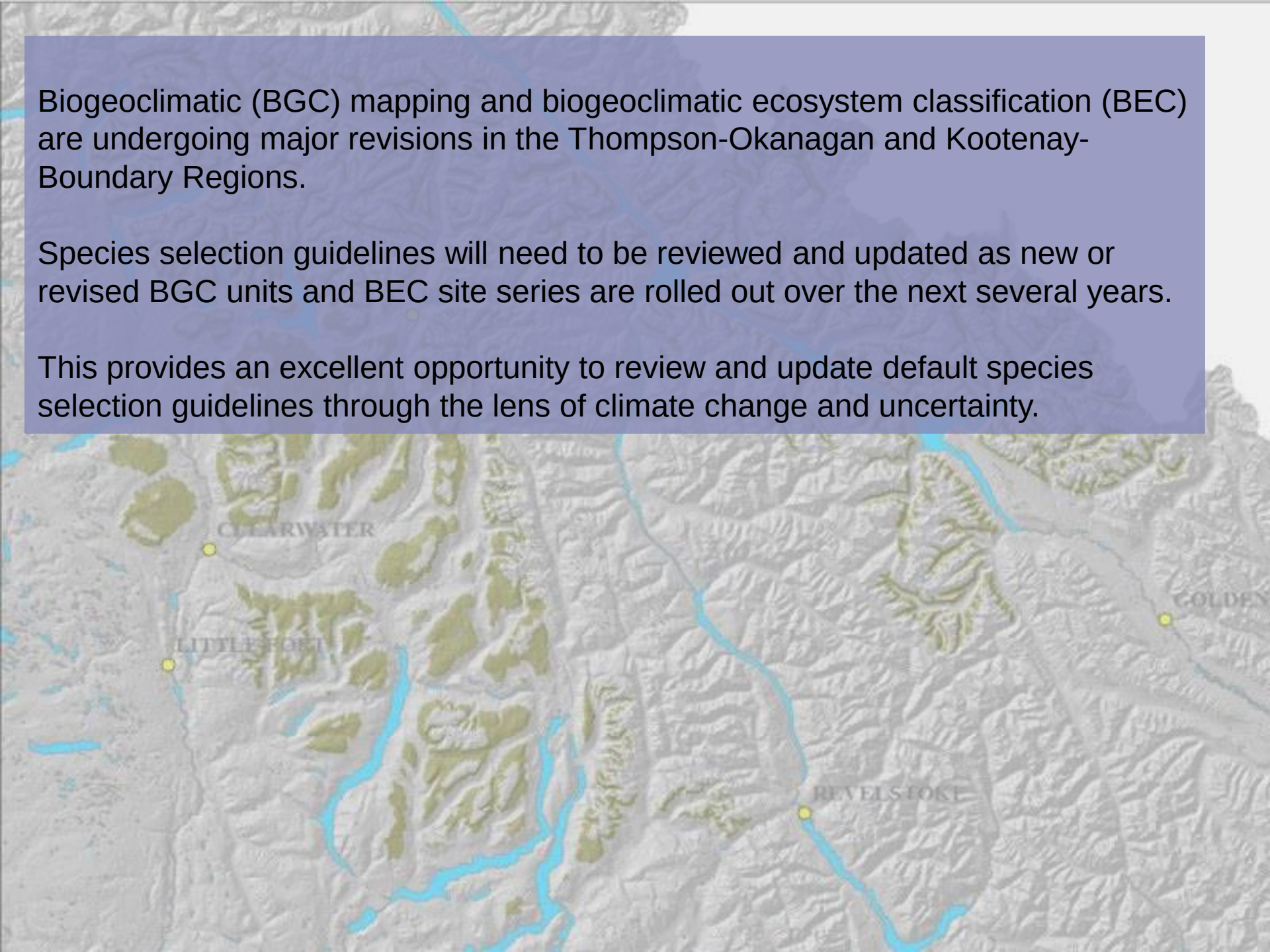
Regional Ecologists



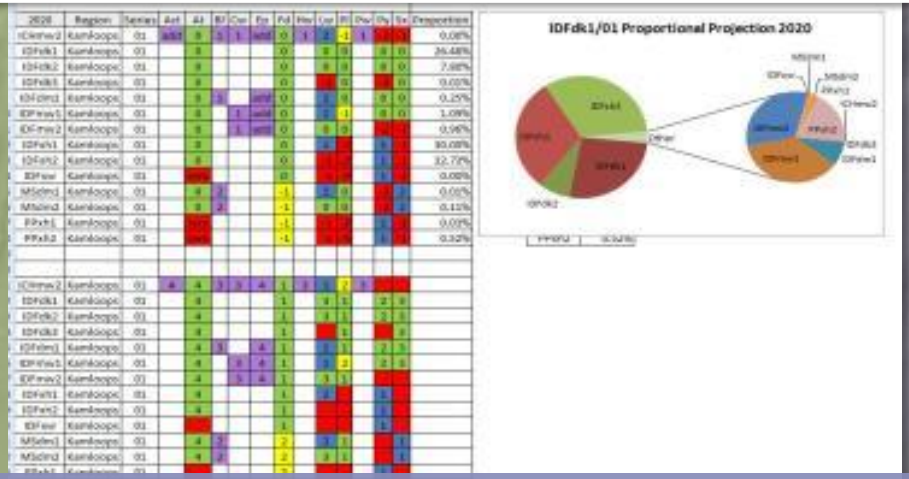
Biogeoclimatic (BGC) mapping and biogeoclimatic ecosystem classification (BEC) are undergoing major revisions in the Thompson-Okanagan and Kootenay-Boundary Regions.

Species selection guidelines will need to be reviewed and updated as new or revised BGC units and BEC site series are rolled out over the next several years.

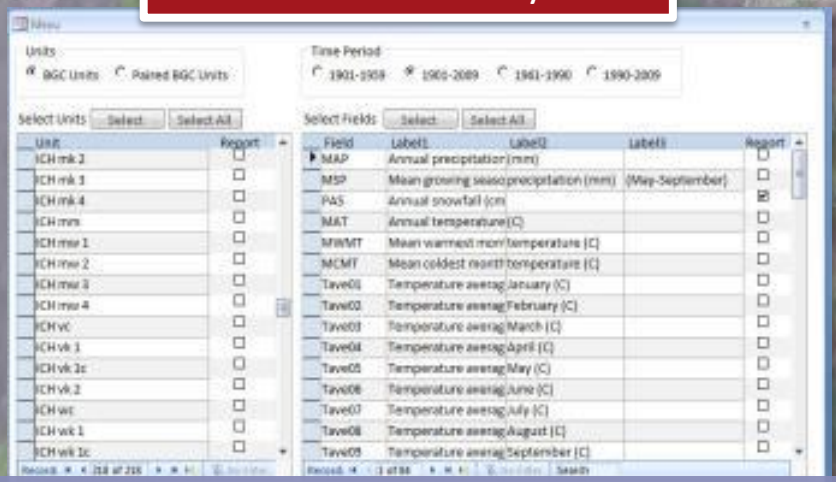
This provides an excellent opportunity to review and update default species selection guidelines through the lens of climate change and uncertainty.



Regional Guidance for Species Use based on Climate Change

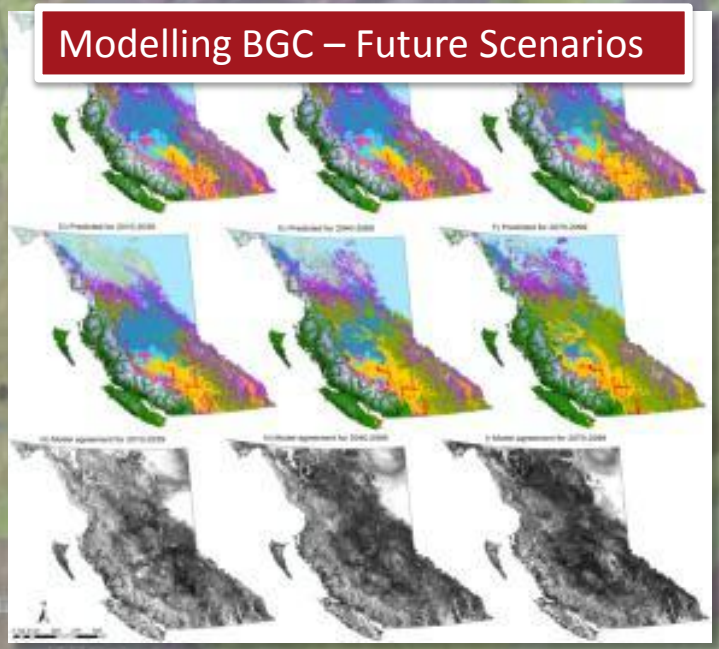


BEC Climate Summary Tool

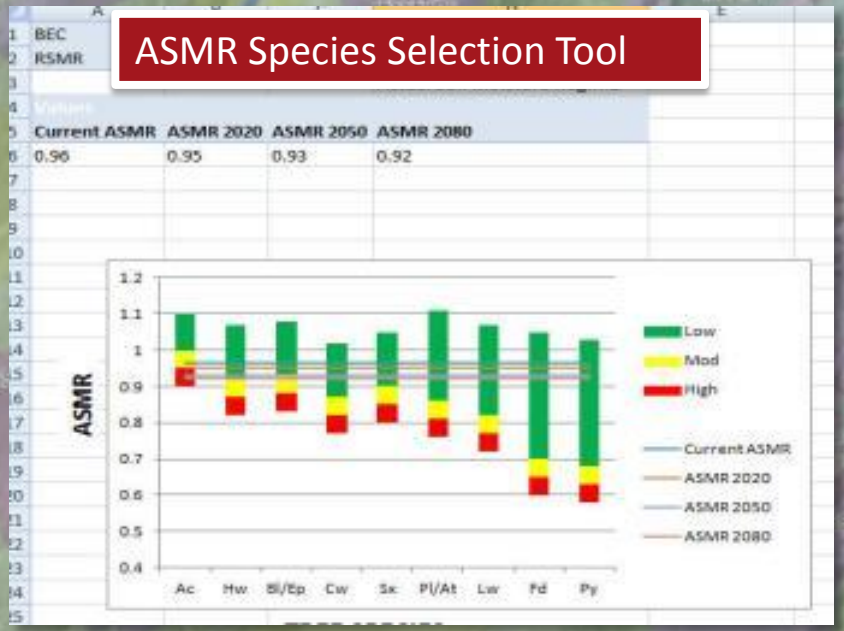


A number of tools are being developed to assist in reviewing potential changes to BGC units and BEC site series in response to changing climates.

Modelling BGC – Future Scenarios



ASMR Species Selection Tool



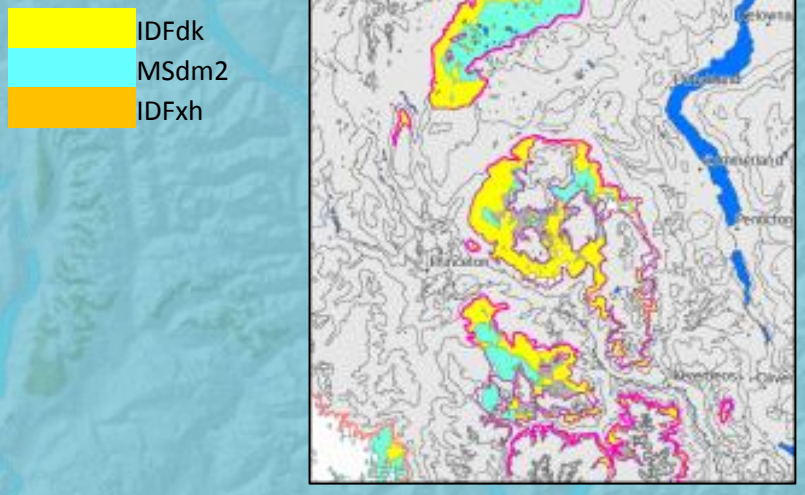
In the Thompson-Okanagan Region, Tongli Wang's latest BGC projections were used as a basis to identify which BGC units show the largest changes in response to climate change by 2020.

Identified BGC units were reviewed to identify common climate change trends and how species selection guidelines differ between the BGC unit that is currently mapped for these geographic areas and those of projected BGC units.

Based on this information, potential changes to existing species selection guidelines for a given site series were identified to accommodate future climate change and uncertainty.

Much of the **MSxk1** is forecast to shift to the IDFdk2 and MSdm2 by 2020.

ICH dw 1	IDF dk 1	IDF dk 2	IDF xh 1	MS dm 2
2%	15%	35%	4%	32%



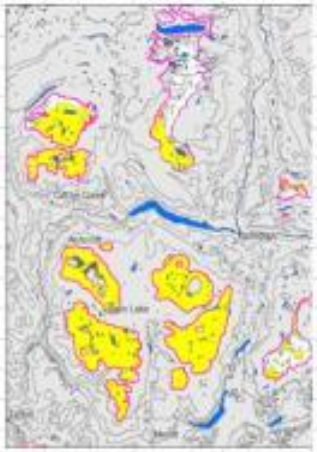
As an example....

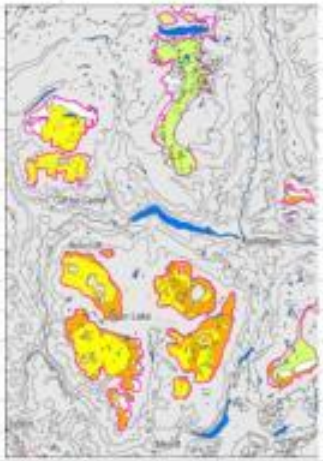
Climate Change and Guidance for Tree Species Selection

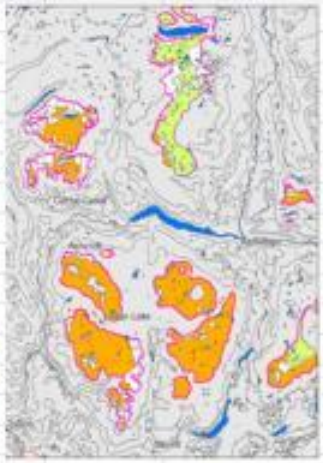
MSxk2/01

2020	IDF dk 1	IDF mw 1	IDF xh 1
	64%	2%	4%
2050	IDF dk 1	IDF mw 1	IDF xh 1
	37%	18%	25%
2080	IDF dk 1	IDF mw 1	IDF xh 1
	5%	17%	55%

MSxk2
IDFdk1
IDFxh1
IDFmw1







2020 2050 2080

Trends

Over 60% change in MSxk2 to IDFdk1 by 2020 and
about 40% by 2050 and 25% to IDFmw and 25% to IDFxh1.

Recommendations

Zone/SZ	Series	Primary	Preferred (p	Secondary	cceptable (a	Tertiary
MSxk2	01	Pl	Pl Fd^{8,14,32}	Fd^{8,14,32} Sx^{10,13}	Bl^{10,13} Sx^{10,13}	Bl^{10,13}

Increasing risk for Sx
Increasing risk for Bl
Continue use of Pl and Fd with footnotes
Leave Fd with footnotes as preferred species but move Sx to Acceptable species as it is unlikely to persist if much of BGC unit changes to IDF.

Comments

Potential for Lw in MSxk2 polygon south of Bonaparte Lake (IDFmw1)
See where BGC unit is shifting to IDFmw - may want to consider Cw for this area.

Current Species Selection Guidelines

BGC Classification		Regeneration Guide Species			
			Conifer		
Zone/SZ	Series	Primary	Preferred (p)	Secondary	Acceptable (a)	Tertiary
MSxk	01	Pl	Pl Fd^{8,14,32} Sx^{10,13}	Fd^{8,14,32} Sx^{10,13}	Bl^{10,13}	Bl^{10,13}
IDFdk1	01	Fd^{32} Pl	Fd^{32} Pl	Py^{8,14}	Py^{8,14} Sx^{10,13}	w^{8,14,23,32} Sx^{10,13}
IDFmw1	01	Fd Lw	Fd Lw	Pl Py^{8,14}	Pl Py^{8,14} Cw^{10,13} Sx^{10,13}	Cw^{10,13} Sx^{10,13}
IDFxh1	01	Fd^{27} Py	Fd^{27} Py	Lw^{1,10,13,32}	Lw^{1,10,13,32}	

1	elevated microsites are preferred
9	restricted to southerly aspects
14	restricted to lower elevations of biogeoclimatic unit
32	limited by growing-season frosts

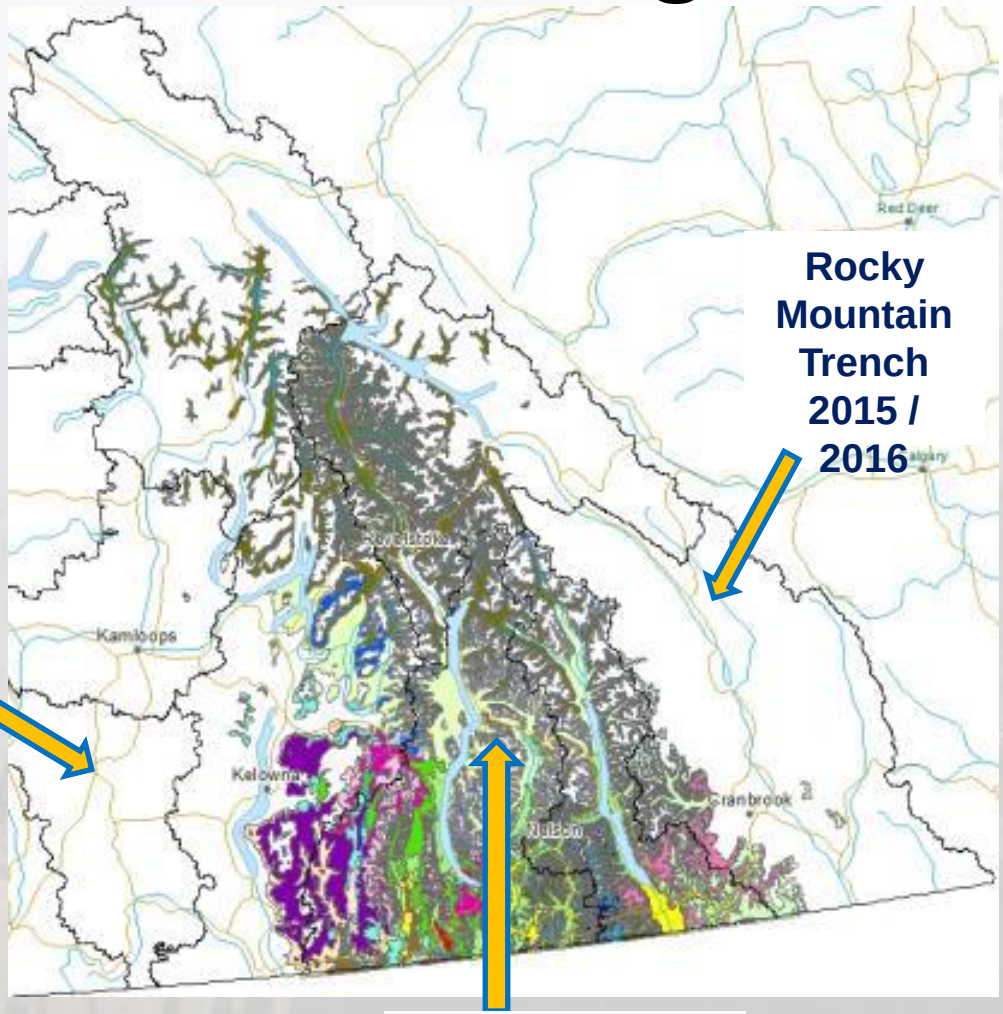
Proposed species selection guideline changes for the **MSxk2/101**

Species	Present Category	Suggested Category	Preferred/ Acceptable Recommendation	Promotion or Demotion	Rationale/Footnotes
Pl	1 Pl	1 Pl	Preferred	No change	No change – Pl remains a preferred species in most projected BGC units.
Fd	2 Fd ([9, 14, 32])	2 Fd ([9, 14, 32])	Preferred	Minor Promotion	Consider increased planting of Fd at low elevations on warm aspects particularly in southern portion of BGC unit
Sx	2 Sx([10 13])	2 Sx([10 13])	Acceptable	Minor Demotion	Increased risk to Sx due to drought.
Bl	3 Bl ([10 13])	3 Bl ([10 13])	Acceptable	Minor Demotion	Increased risk for Bl due to drought
Lw	**0**	**3 Lw ([14,23])**	**Acceptable**	**Promotion**	Consider planting Lw on trial basis in non-frost prone areas in the northeastern portion of the MSx2

Many of the proposed changes to the species selection guidelines are minor shifts in the emphasis placed on individual species. We must still consider what is possible under today's climatic conditions in terms of tree species suitability and not just what might be suitable 20 to 60 years from now.

This is a preliminary start to revising the species selection guidelines as new BGC units and site series are rolled out over the next several years in the Thompson-Okanagan and Boundary-Kootenay Regions.

BEC Changes



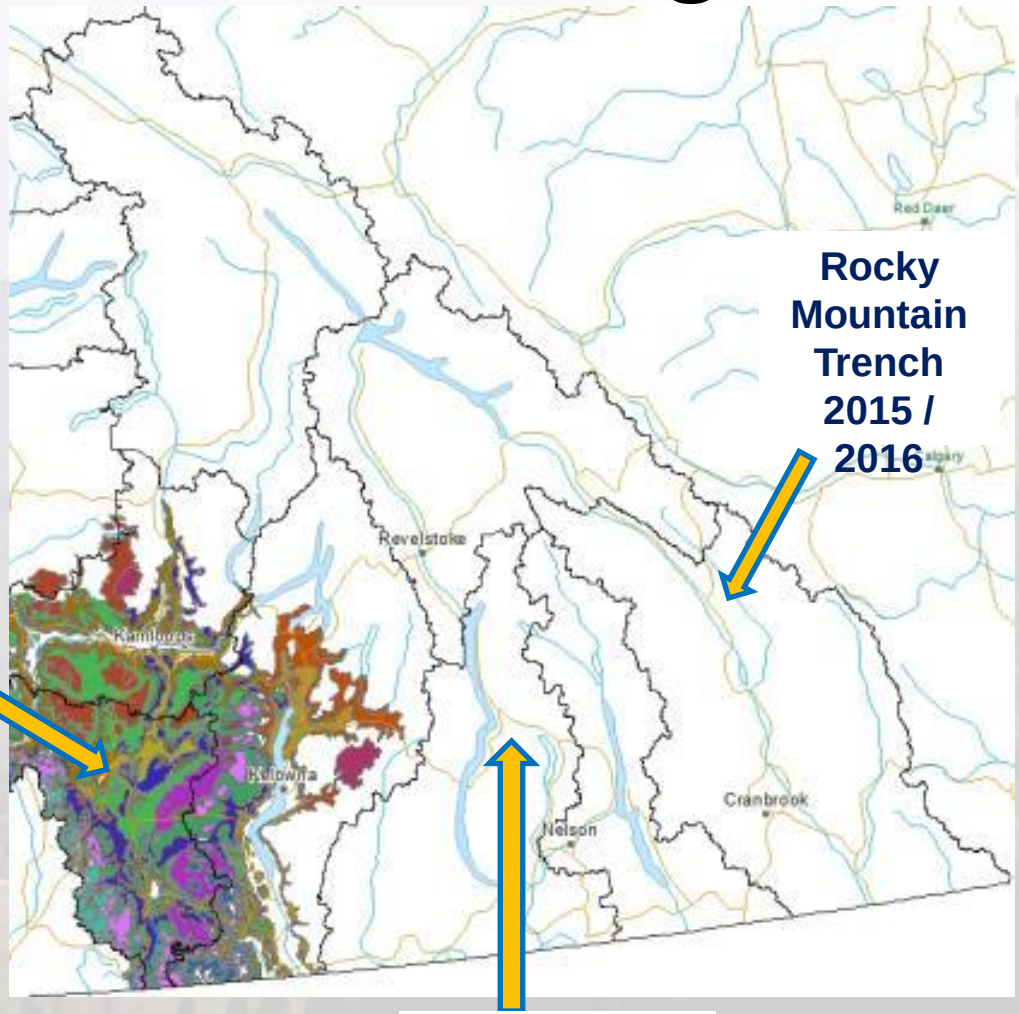
Rocky Mountain Trench 2015 / 2016

Merritt TSA 2014 / 2015

Columbia Mountains 2014 / 2015

New field guides, along with a new set of stocking standards, are expected over the next two – four years.

BEC Changes



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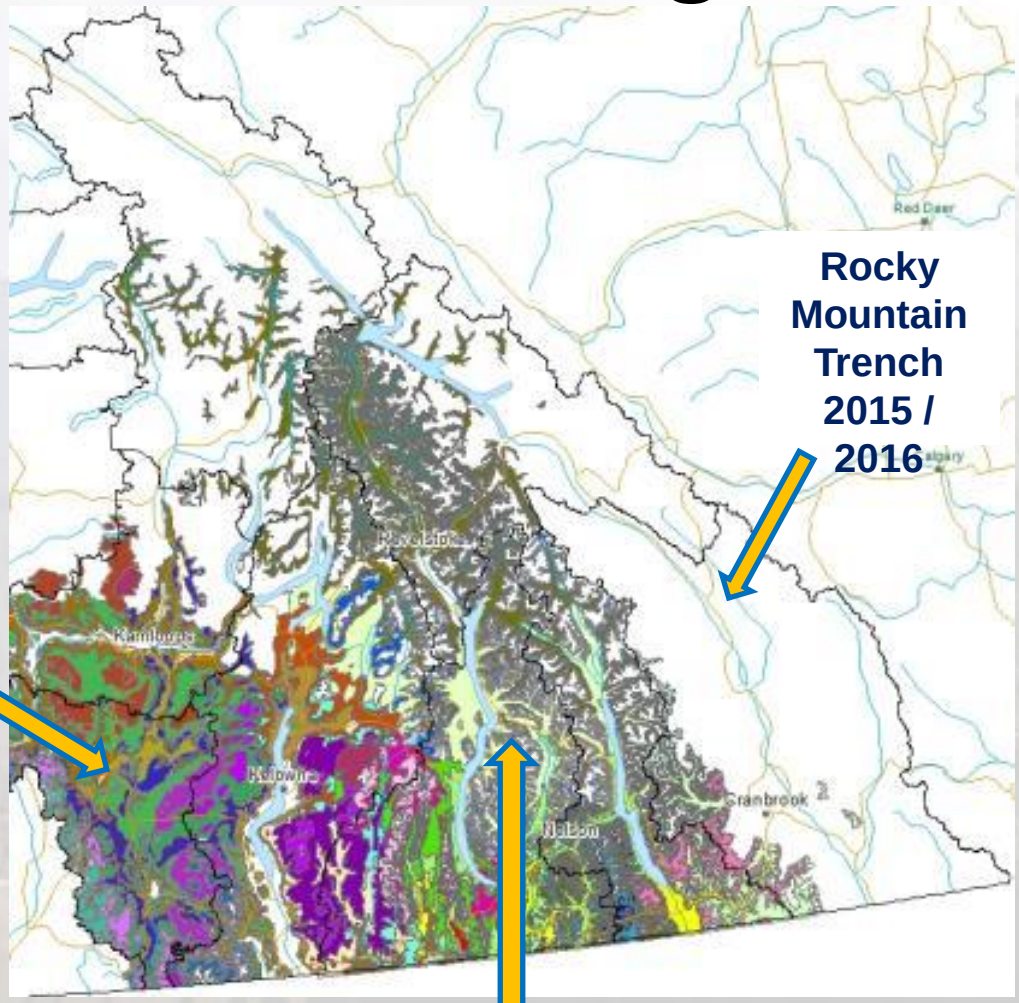

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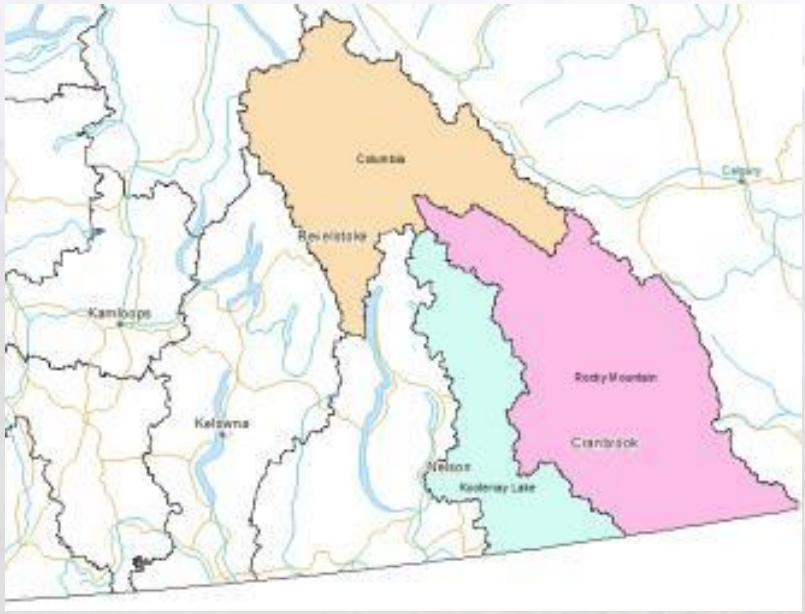
Stocking Standards



There is an opportunity to work together with Licensees, Districts, Branch, and Regional Scientists to develop new Chief Forester Reference Guide materials that can be applied in Forest Stewardship Plans. These new Stocking Standards will take climate change into account in their development and can be updated over time as new information becomes available.

Stocking Standards

District Staff and Ecologist initiate crosswalk from old stocking standards to new BEC

Licensees, Branch, Forest Health review preliminary list of stocking standards

Workshop to review and finalize proposed new stocking standards

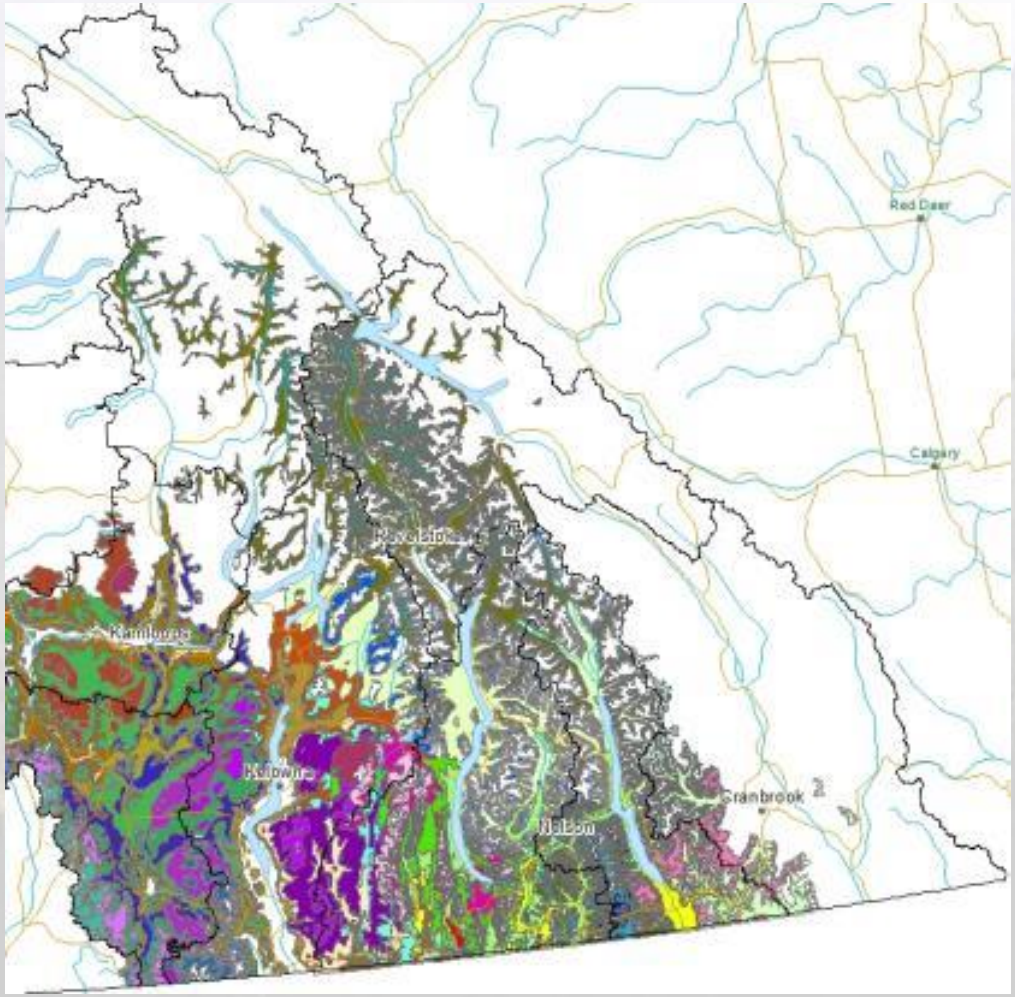
New Chief Forester`s Reference Guide, District Stocking Standards, and Licensee FSPs.

Advantages are many – by working together, we can develop a consistent set of stocking standards that are supported by Districts. This will reduce overall workload since each licensee will not have to develop their own (unless they choose to), and District staff will have `pre-reviewed` standards in the development stage.

Licensees will still be able to propose alternatives where desired.

Districts will still have the ability to review Stocking Standards, including alternatives and exceptional circumstances.

Timing for Stocking Standards Development



District / TSA	Timing for Stocking Standards Development
Boundary	Fall 2014
Arrow	Summer 2014
Kootenay Lake	Spring 2014
Revelstoke	Fall 2014
Rocky Mountain	2015
Golden	2015
Merritt	2014
OK-Shuswap - Wet Belt	Summer 2014
OK-Shuswap - Dry Belt	2015
Lillooet	2017
Kamloops	2016

Climate Change: Guidance for Tree Species Selection

http://www.for.gov.bc.ca/hfp/silviculture/Reference_Guide_2013.xlsm

BGC Classification			Regeneration Guide				
			Species				
			Conifer				
Zone/SZ	Series	Standards ID	Primary	Preferred (p)	Secondary	Acceptable (a)	Tertiary
MSxk	01	82198	Pl	Pl $Fd^{9,14,32}$ $Sx^{10,13}$	$Fd^{9,14,32}$ $Sx^{10,13}$	$Bl^{10,13}$	$Bl^{10,13}$
Climate Change 2013	01		Pl	Pl $Fd^{9,14,32}$ ~~$Sx^{10,13}$~~	$Fd^{9,14,32}$ $Sx^{10,13}$	$Bl^{10,13}$ $Sx^{10,13}$ $Lw^{14,23,32}$	$Bl^{10,13}$ $Lw^{14,23,32}$
	02	82199	Pl	Pl $Fd^{9,14}$	$Fd^{9,14}$	$Bl^{10,13}$	

Stocking Standards Reference Guide updates

Ecologically based climate change recommendations were added where considered applicable. Added as a green shaded row beneath previous guidance.

Previous guidance that is unchanged remains in black font, changes are in red, where a species was removed from a category it has a line through it.

Where as species was added to a unit it was highlighted in red. Where footnotes were modified the species and footnotes were highlighted in red.

See the companion document UPDATES TO THE REFERENCE GUIDE FOR FDP STOCKING STANDARDS (2014): CLIMATE-CHANGE RELATED STOCKING STANDARDS

What about climate effects on species use?

What is being done?

Type 4 Silviculture Strategies have species direction at the Subzone level as desired trends and or targets, e.g., for SBSdw in the Quesnel TSA

SBSdw

Pl			Sx			Fd		
Current	Trend	Target	Current	Trend	Target	Current	Trend	Target
68 / 80	◇	20 - 30	25 / 11	◇	15 - 20	5 / 5	⇧	30 - 40

Promote Fd where possible; maintain reduced dependence on Pl, increased use of Sx over harvest.

- Current – proportions planted / logged
- Trend – whether it is desired to
  - increase ⇧
  - decrease or ⇩
  - maintain the proportion planted / logged ◇
- Target – a biological target for the unit to trend towards where feasible

What about climate and wildfire – our options?

Fire Management Stocking Standards

Ed Korpela
Fire Management Specialist
Wildfire Management Branch

www.environmentdebate.wordpress.com

What about climate and wildfire – our options?

Fire Management Stocking Standards

- Ability to provide win/win scenarios
  - Ecosystem restoration
  - Hardwood production
  - Fire hazard reduction
- Consistent with Chief Forester Guidance on:
  - Incorporating mixedwood and broadleaves
  - Tree species composition at stand and landscape scales
  - Maintaining/recruiting habitat
  - Use of western larch
  - Immediate and long-term forest health issues

What about climate and wildfire – our options?

Fire Management Stocking Standards - Key Questions

- Why – Protection of life and property and enhancement of the delivery of ecosystem goods and services from forests within BC
- Where – where should fire management stocking standards apply?
- When – at what point(s) in the life of a stand should stocking standards apply?

What about climate and wildfire – our options?

Fire Management Stocking Standards - Where

- Relative to values negatively impacted by fire on the landbase
  - Within approx 2 km of interface
    - Provincial strategic threat analysis (PSTA) map
  - Within approx 2 km of other high value infrastructure on the landbase
    - Fire Management Plan Values Maps
    - Additional defined by Designated Decision Maker
  - Where identified by fuels management plan within the fire management plan
    - Based on landscape scale fire management objectives

What about climate and wildfire – our options?

Fire Management Stocking Standards - Where cont.

- Does not necessarily have to be applied to entire harvest blocks
  - Usually adjacent to value to be protected
  - On other appropriate standard units
  - More than one fire management standard could be developed
    - May be desirable to create a diversity of fuel types
    - Spatial arrangement of fuel types is important – locally and landscape

What about climate and wildfire – our options?

Fire Management Stocking Standards - When

- At different forest sucessional stages
  - Regeneration/ Free growing
  - Partial harvest with regeneration objectives
  - Intermediate Cut
- When identified by fuels management plan within a fire management plan
  - Based on landscape scale fire management objectives
  - May apply to any/all phases of forest production

What about climate and wildfire – our options?

Fire Management Objectives

- May be Landscape or Local
  - Landscape
    - Reduce fire size
    - Reduce fire behaviour
  - Local
    - Reduce fire behaviour
    - Reduce likelihood of crown fire
    - Reduce fire intensities
    - Reduce rate of spread
- In both cases – typically include enhanced suppression effectiveness and success as an objective

What about climate and wildfire – our options?

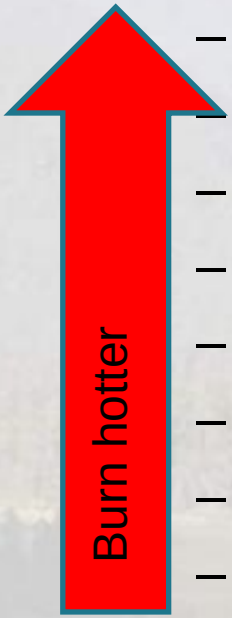
Stand Structure Considerations

- Include:
  - Species
    - Species fire characteristics
    - Species fire resistance
  - Inter-tree distance
    - Density and canopy bulk density
  - Canopy base height
  - Ecological suitability
  - Genetics
  - Tree/competition height ratios
  - Climate change considerations
  - Forest succession and in-growth including understory

What about climate and wildfire – our options?

Species Considerations

- Representative Canopy Bulk Densities (kg/cubic meter) for a single tree of the same size (approx 30cm dbh and 20 m tall) In order of decreasing bulk density – higher means hotter



  - Douglas-fir 0.00077
  - Western red-cedar 0.00075
  - Grand fir 0.00060
  - Western hemlock 0.00054
  - Lodgepole pine 0.00033
  - Western white pine 0.00026
  - Ponderosa pine 0.00022
  - Western larch 0.00017

What about climate and wildfire – our options?

Species Considerations

- Fire Resistance
  - **High** - western larch, ponderosa pine, Douglas-fir
  - **Moderate** - western white pine, lodgepole pine, western red-cedar
  - **Low** - western hemlock, grand fir, Pacific silver fir
  - Notes - Highly dependent on bark thickness (thicker is better), rooting habit (deep is better), branching habit (self pruning is better), foliage density (less is better) and associated species. Relationships and categorization vary with age and opinion.
- Flammability
  - Deciduous species are generally far less flammable than coniferous species.
  - Western red-cedar may be considered the most flammable of the coniferous species considered due to tendency to retain foliage and oil.

What about climate and wildfire – our options?

A Fire Management Stocking Standard

- Then becomes the combination of:
  - Fire management objectives
  - Stand structure considerations
  - And other compatible objectives (e.g. Timber production, ecosystem restoration, hardwood production, etc)

What about climate and wildfire – our options?

Fire Management Stocking Standard Development Approaches

- Development of new stocking standards
- Approved variance(s) on existing standards
- Planning to develop guidance for approved variances – option 2.

Managing Risk and Exploring Options

LOTS OF THOUGHT ON THIS ONE

The BC Wildland Fire Management Strategy 2010

Framework for achieving fire resilient landscapes.

Forest Sector Strategy for BC 2012

...Province will implement landscape fire management planning...

The BC Forest Stewardship Action Plan for Climate Change

...Manage risks and capture opportunities for fire resilience

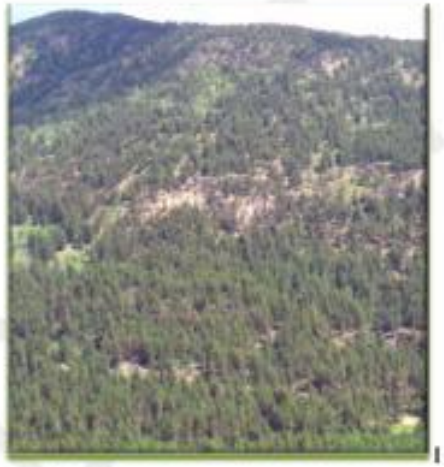
- ***Need to bring this into some thoughtful operational strategic planning***

Climate Change: Guidance for Tree Species Selection

What can be done now?

Available guidance

UPDATES TO THE REFERENCE GUIDE FOR FDP STOCKING STANDARDS (2013): CLIMATE-CHANGE RELATED STOCKING STANDARDS



Resources Practices Branch:

Ministry of Forests, Lands and Natural Resources Operations

DRAFT V 3.2

January 16, 2014

Ecological Guidance
An example

KAMLOOPS – THOMPSON OKANAGAN

ESSFwc2/01 (Kamloops)

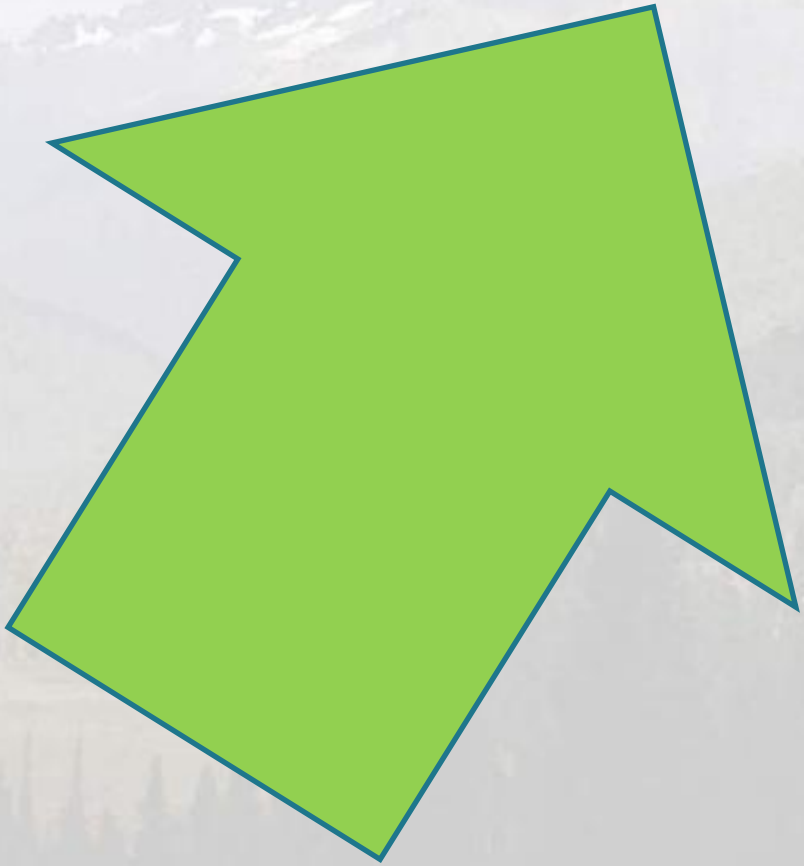
Trends and Comments

- ESSFwc2 encompasses 617,608 ha.
- About 50% of the ESSFwc2 is proposed to shift to ICH by 2020 and 75% by 2050.
- This is one of the largest changes by area for BGC units in the Thompson Okanagan Region
- Consider use of lower-elevation genetic stock of spruce (Sx)

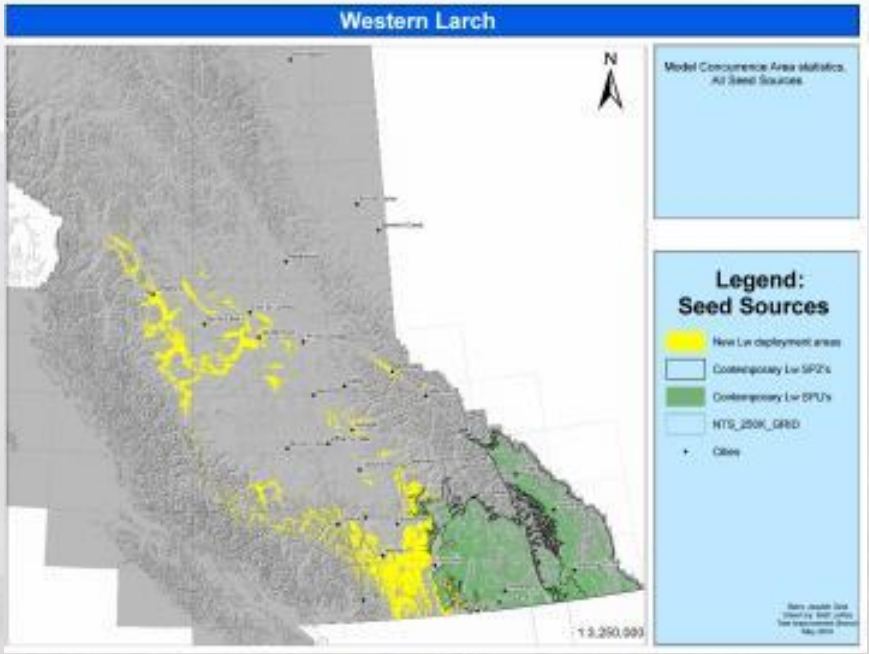
Species	Present Category	Suggested Category	Preferred/ Acceptable Recommendation	Promotion or Demotion	Rationale/Footnotes
Bl	1	1	Preferred	No change	
Pl	3 Pl [17, 34]	0	Not suitable	Demotion	Not a suitable species.
Fd	0	3 Fd [9, 14, 32]	Acceptable	Promotion	May consider use on warm aspects at low elevations where growing-season frosts are not expected
Cw	0	3 Cw [14, 32]	Acceptable	Promotion	Consider using Cw at lowest elevations
Hw	0	3 Hw [14,32]	Acceptable	Promotion	Consider using Hw at lowest elevations
Pw	0	3 Pw [31, 9, 14]	Acceptable	Promotion	Use blister-resistant stock on warm aspects at low elevations

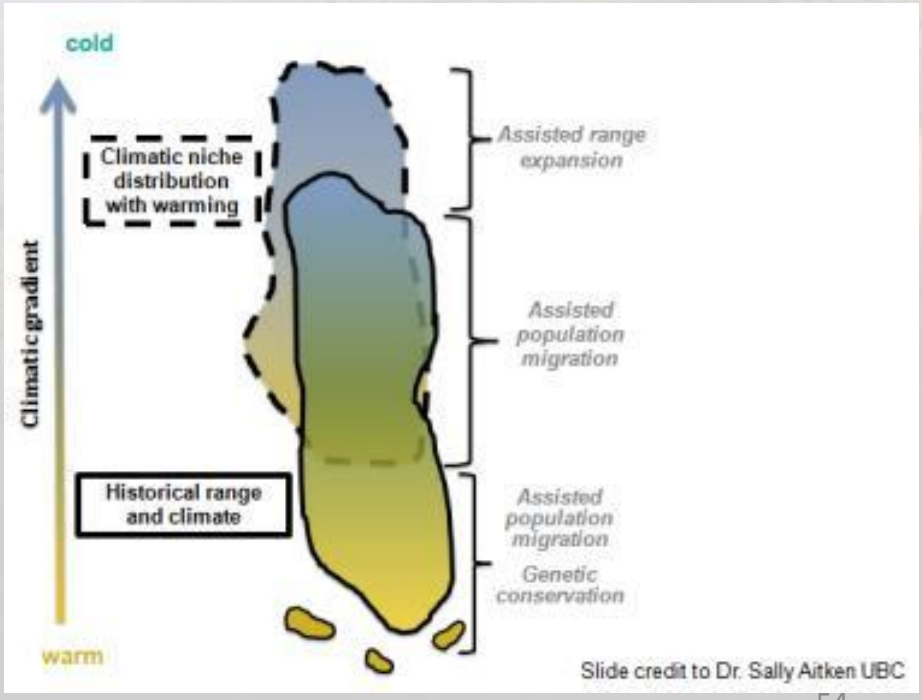
Available guidance

Link to guidance document to show specific examples – query participants



Available guidance – added range for Lw

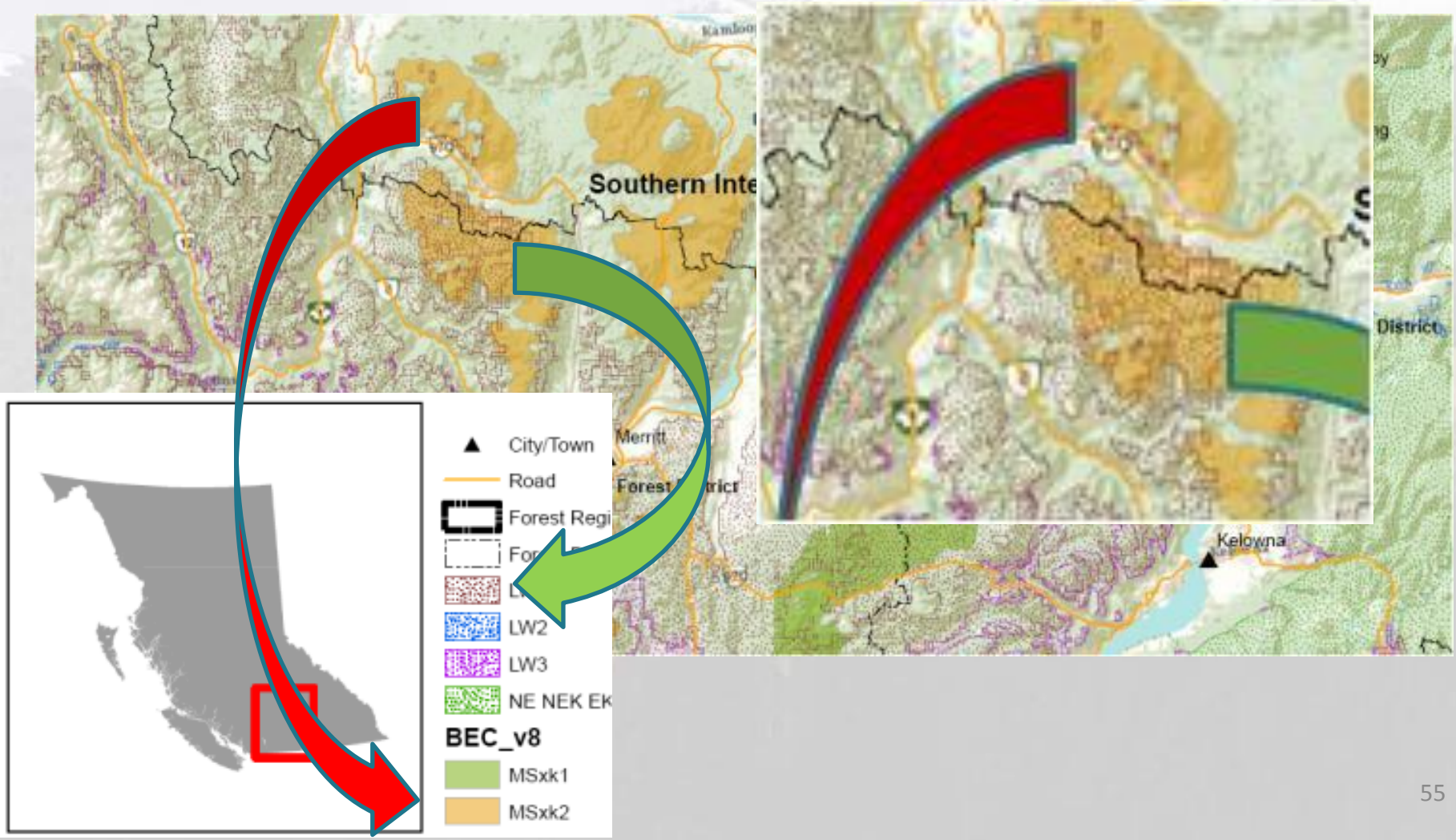




Climate Change: Guidance for Tree Species Selection

What can be done now?

Not all area is available within the present transfer rules



Climate Change: Guidance for Tree Species Selection

What can be done now?

Available guidance – you have 5% or if you desire more

What to do now if you wish to transfer outside of the defined seed zones

Call Lee – she will help guide you through the process

Lee Charleson

Lee.Charleson@gov.bc.ca

1 250 387-4839

Climate Change: Guidance for Tree Species Selection

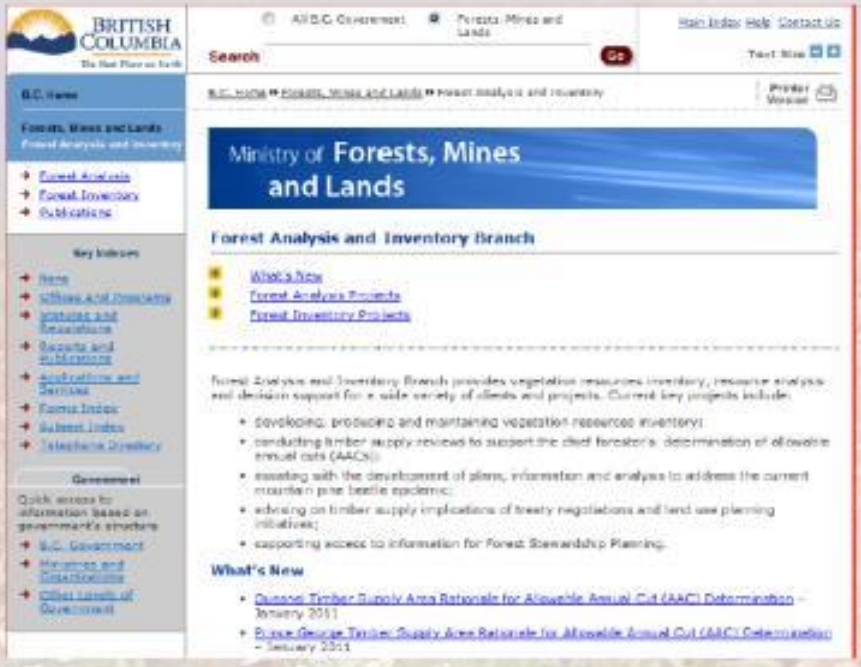
What can be done now? - FRPA tests

Stocking Standards

The Tests

After the overview need to be confident that the other tests have been met

FPPR s.26 / FRPA s.16



The Tests

1. Addresses established objectives. Meets content requirements.
2. Includes ecologically suitable species
3. Poses no immediate or long-term forest health risks.
4. Maintains or enhances an economically valuable supply of commercial timber.
5. **Is consistent with TSR analysis and assumptions.**

Climate Change: Guidance for Tree Species Selection

What can be done now? FRPA tests

Stocking Standards

Consistent with TSR analysis and assumptions

What if it is not consistent?

DDM MAY confer with licensee and:

- Consider for discretionary approval
- Must be deemed reasonable according to criteria

The Tests

1. Addresses established objectives. Meets content requirements.
2. Includes ecologically suitable species
3. Poses no immediate or long-term forest health risks.
4. Maintains or enhances economically valuable commercial timber supply.
5. **Is consistent with TSR analysis and assumptions.**

Climate Change: Guidance for Tree Species Selection

What can be done now? FRPA tests

Stocking Standards

Consistent with TSR analysis and assumptions

Test 5

- **Sec 26 (5)**

Discretionary Approval

PURPOSE:

- **New situations, priorities etc**
- **Allows for innovation**
- **Situations where appropriate standards are not currently consistent with TSR.**

Discretionary Approval – where the standards are reasonable having regard for the future timber supply for the area.

Climate Change: Guidance for Tree Species Selection

What can be done now? FRPA tests

Stocking Standards

Consistent with TSR analysis and assumptions

Discretionary Approval

Section 26 (5)The minister may approve the stocking standards...even though they do not conform to subsection (3) or (4) of this section, if the minister is satisfied that the regeneration date and stocking standards are reasonable, having regard to the future timber supply for the area

Must Approve if it: *FPPR s.26(1,3,4)*

1. **Addresses established objectives. Meets content requirements.**
2. **Includes ecologically suitable species**
3. **Poses no immediate or long-term forest health risks.**
4. **Maintains or enhances economically valuable commercial timber supply.**
5. Is consistent with TSR analysis and assumptions. *FPPR s.26(3)(ii)*

Climate Change: Guidance for Tree Species Selection

What can be done now? FRPA tests

Stocking Standards

Consistent with TSR analysis and assumptions

Discretionary Approval

1. Has it been successfully used on similar sites?, or,
   - Is it suitable for a trial on a limited area, with monitoring plan.
2. Rationale shows neutral or positive TSR impact
   - Or negative impact is offset by other positive benefits

Climate Change: Guidance for Tree Species Selection

What can be done now?

Guidance http://www.for.gov.bc.ca/hfp/silviculture/stocking_stds.htm

From: Tom Ethier
Assistant Deputy Minister
Resource Stewardship Division

Re: Consideration of Climate Change When Addressing Long-Term Forest Health in Stocking Standards

This memo builds on the Chief Forester's "Guidance on Tree Species Composition at the Stand and Landscape Level" released on September 24, 2009, and highlights mechanisms within the existing legislative framework that can be used to manage risks associated with innovative and/or unproven practices.

BRITISH COLUMBIA
The Best Place on Earth

Ministry of Forests and Range — Forest Stewardship Division — MEMORANDUM

File: 280-30/TREESP
Ref. 119378

SEP 24 2009

To: Distribution List

From: Jim Snetsinger, R.P.F.
Chief Forester

Re: Guidance on Tree Species Composition at the Stand and Landscape Level

Lessons Learned

What are you going to do differently based on what you learned today?

Change is here Think, Learn, Act, Think again …

Thanks