

Linking Adaptation & Emissions Reduction

Exploring how to address adaptation and
mitigation together



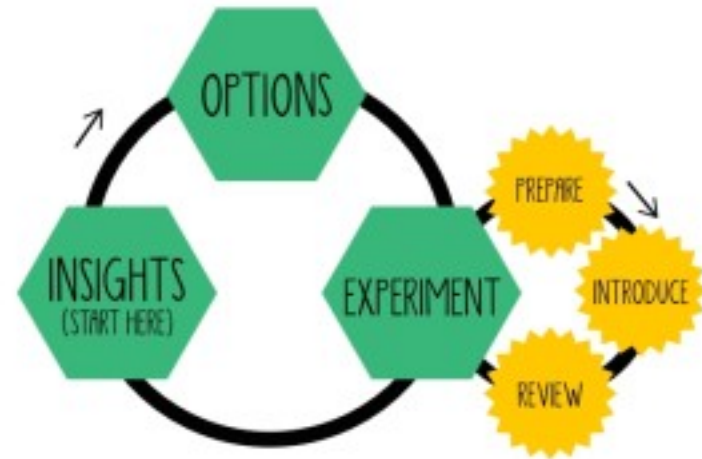
Climate Change Adaptation 101

Wondering how to bring adaptation into your business? You're the expert at change management!



We've all seen & responded to lots of changes.

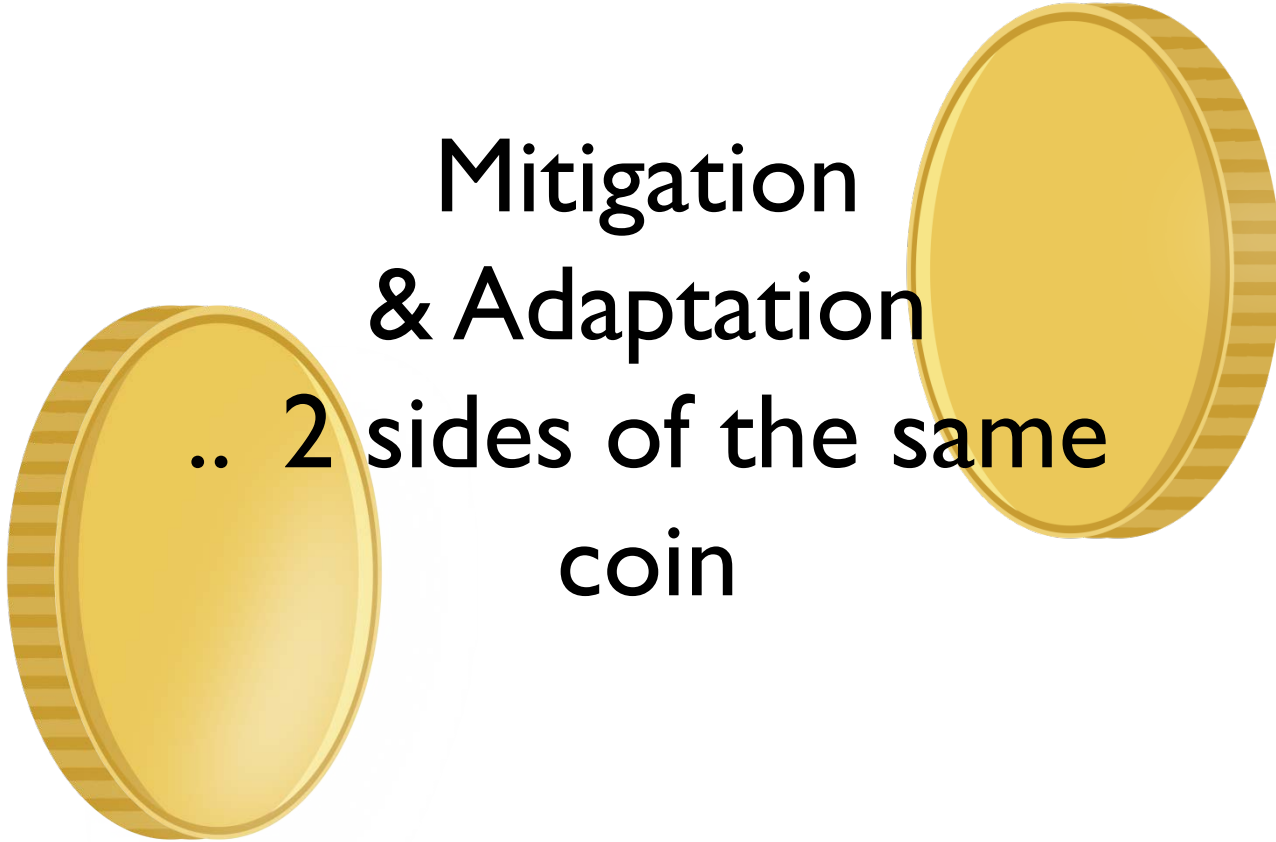
How we understand and respond to the need for change will likely be familiar.



Climate Action & Adaptation

Mitigation
& Adaptation

.. 2 sides of the same
coin





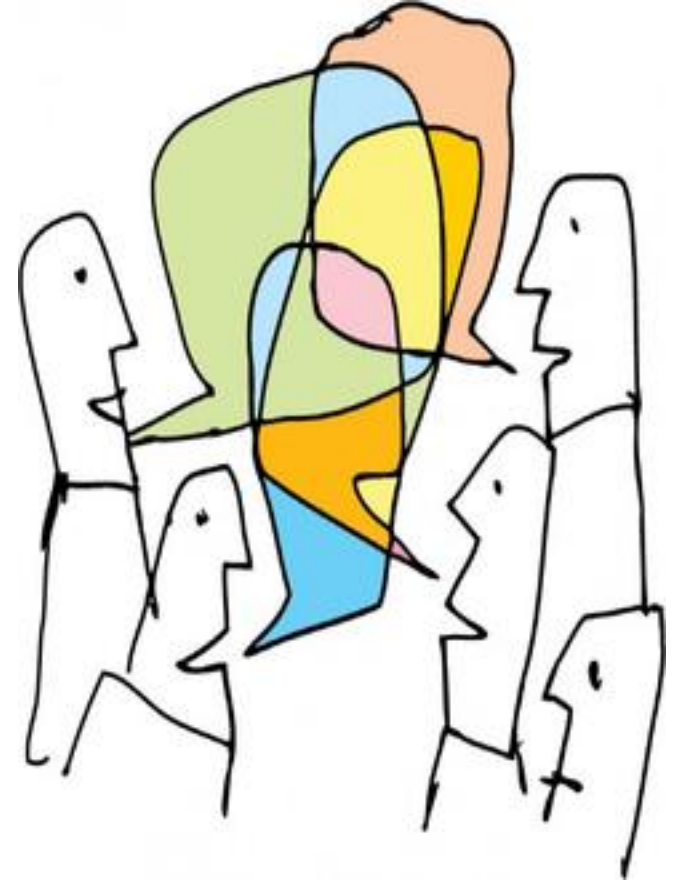
Climate Action & Adaptation

- Adaptation: responses enabling effective performance under dynamic & uncertain conditions (including climate change)
- Includes
 - Adapting to anticipated events
 - Adapting to unanticipated events



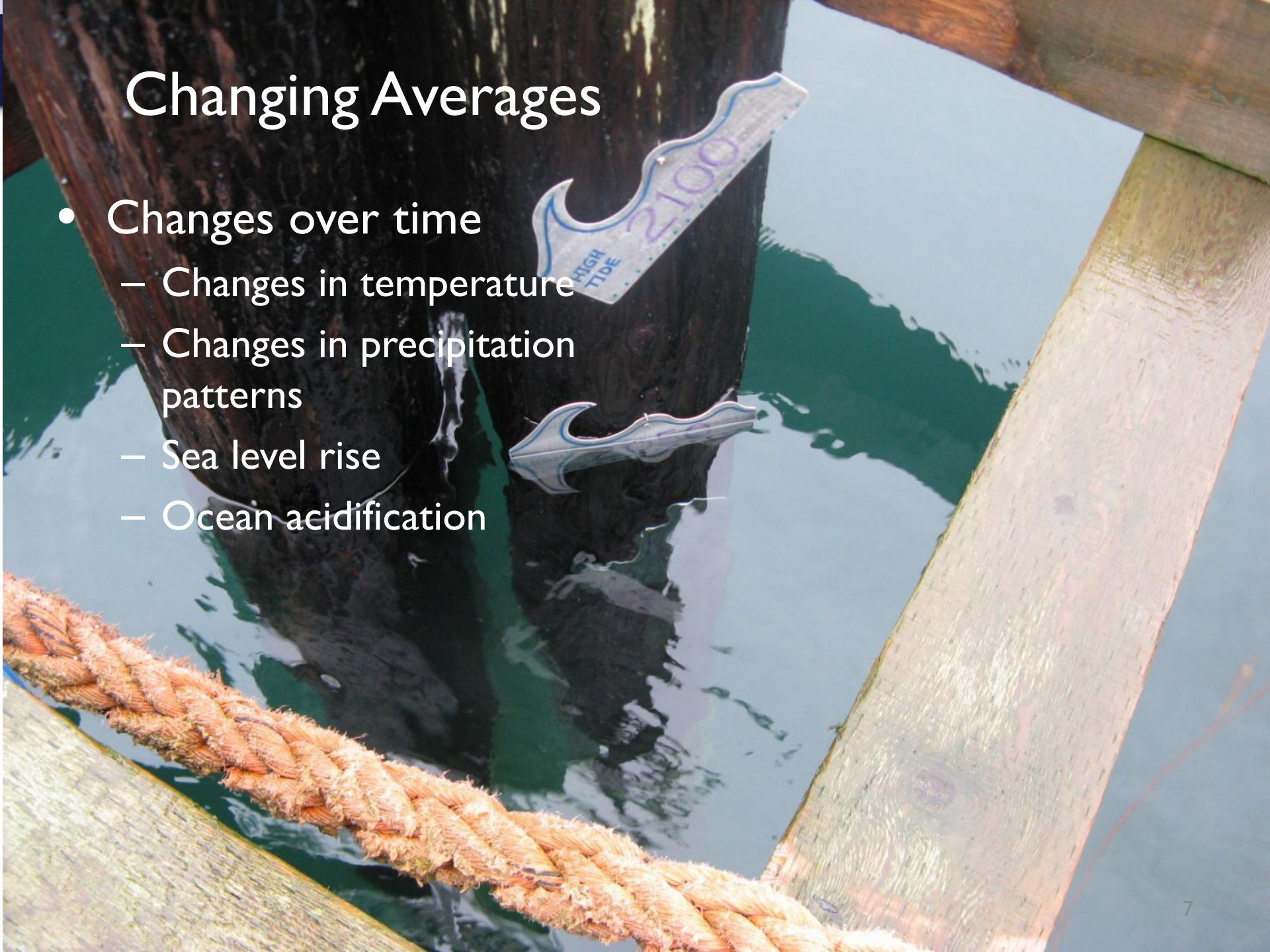
Talking about Climate Change

- Changing averages
- Extreme events
- Managing Uncertainty



Changing Averages

- Changes over time
 - Changes in temperature
 - Changes in precipitation patterns
 - Sea level rise
 - Ocean acidification



Extreme Events

- High intensity rainfall events
- Flooding (caused by rain, storm surge, or freshet)
- Extreme Heat
- Drought
- Fires
- High Winds



Uncertainty

- The past is a poor predictor of the future
- Complex situations; nobody has all the answers
- Risk management is a useful approach





From your own experience what are the characteristics of an effective risk management or change management process?

**RISK
ISSUE
CHANGE**

In
simple
terms





Mitigation &
Adaptation
together

Mitigation!

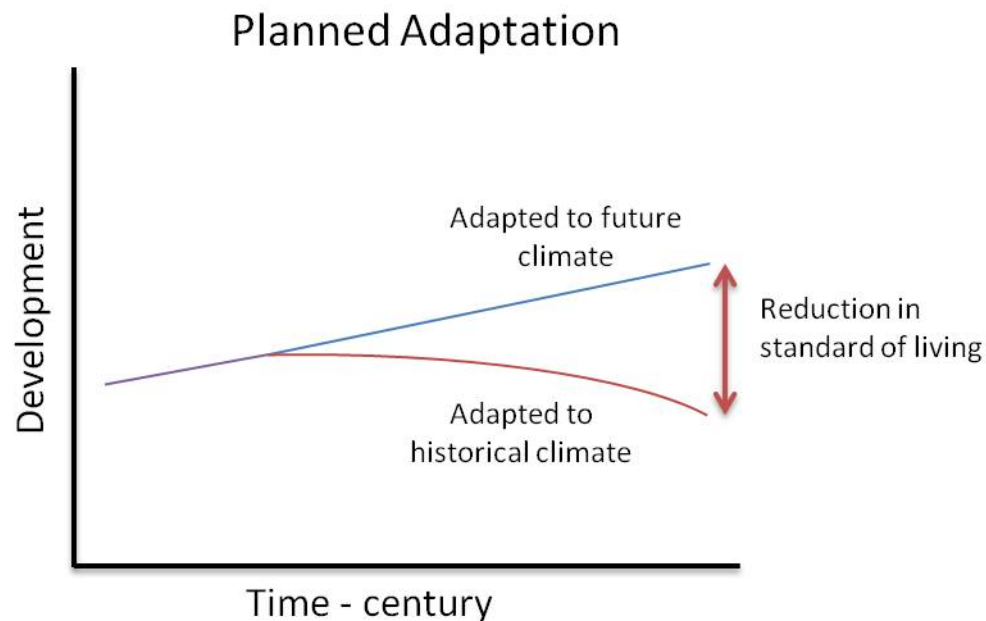
Adaptation!

Climate Action & Adaptation

- Adapt to anticipated events
 - “no regrets” solutions
 - Informed adjustments



- Adapt to unanticipated events
 - Iteration
 - Engagement
 - Learning processes



Change the way we think

Who:
people and
organizations

How:
rules & processes

What:
buildings
infrastructure &
ecosystems



Characteristics of adaptive systems

- Who?
 - Responsiveness
 - Resourcefulness
 - Capacity to learn
- What?
 - Flexibility
 - Redundancy
 - Safe failure
- How?
 - Access to resources, information
 - Accountable, equitable, fair decisions
 - Iterative process

Who (people and organizations):

- Responsiveness: the capacity to anticipate and respond in a timely fashion
- Resourcefulness: have access to material and human resources to take action
- Capacity to learn: mechanisms and processes in place to internalize experience; avoid repeated failures; and change practices



What

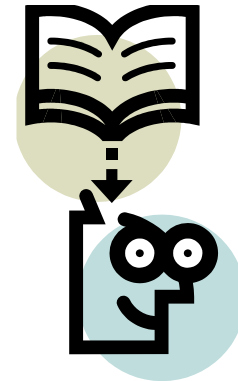
(Buildings, Infrastructure & Ecosystems)

- Diversity: spatial & functional
- Flexibility: perform tasks under a wide range of conditions, or rearrange assets to find new ways
- Redundancy (modularity): excess capacity or backup
- Safe failure: loss of key components does NOT lead to catastrophic or cascading failure of related systems



How (Rules and Processes)

- Access: equitable access to key resources & information
- Decision-making: accountability, transparency & fairness
- Quality information: having the right information to inform decisions



Exercise

- Think about examples that you have *already* leveraged to achieve emissions reduction
 - Who (people – individuals & groups)
 - What (buildings, infrastructure & ecosystems)
 - How (rules & processes)

Brainstorm together with your table & record on sticky notes



Adaptation Planning in the Public Sector

A simpler approach to adaptation planning



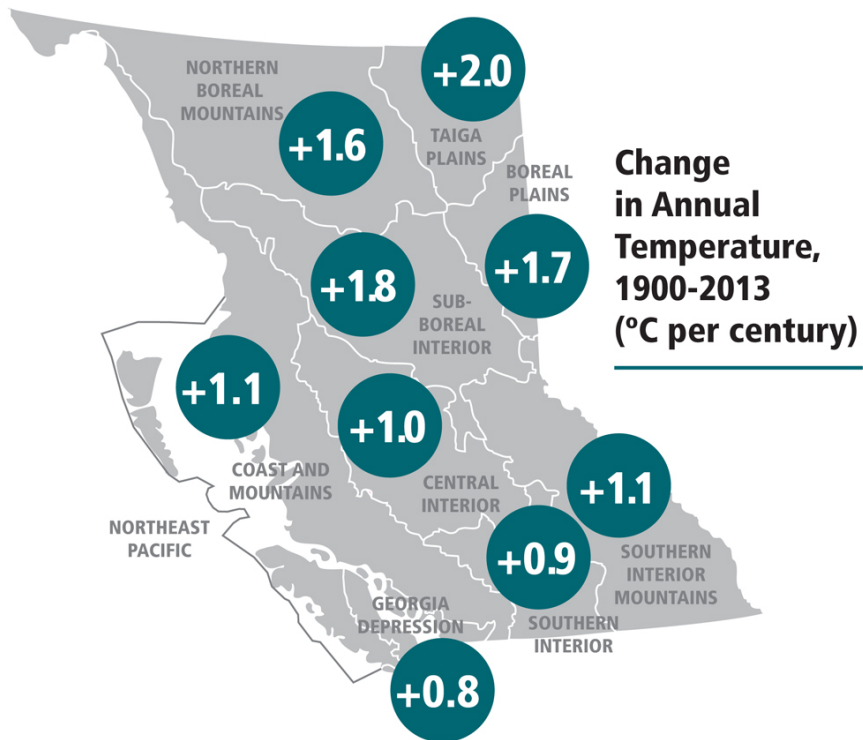
What does your organization do and why is important?



Will your organization's ability to do these things be affected by climate change?



Temperature

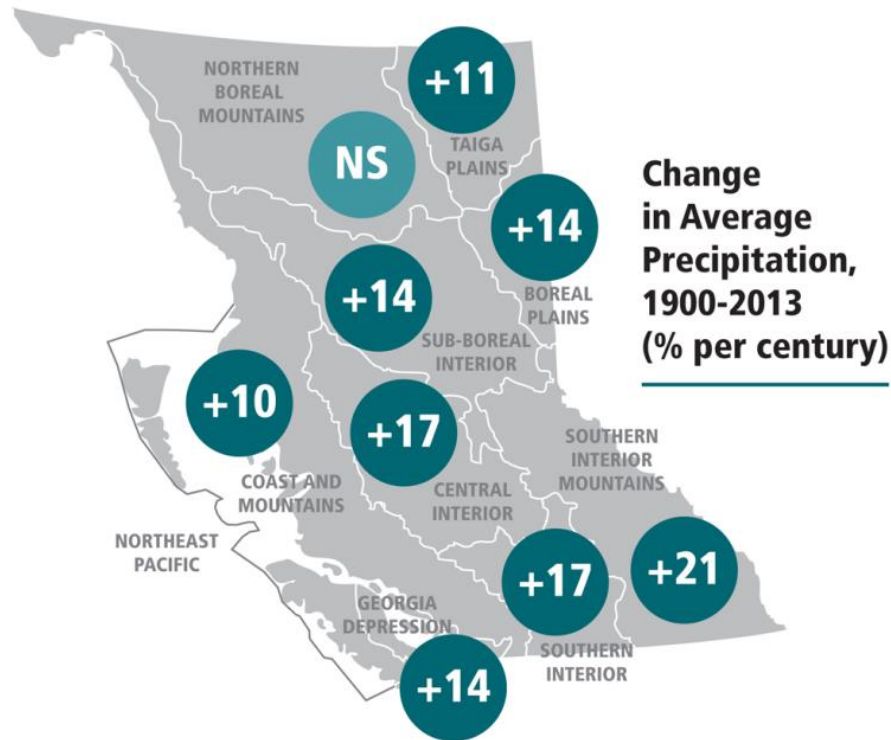


SOURCE: Data from Ministry of Environment Climate Related Monitoring Program and Environment Canada. Trend Analysis for 1900 through 2013 conducted by PCIC, 2014 for the Ministry of Environment Climate Action Secretariat. NOTES: All trends are positive and indicate warming.

In general with warming of the atmosphere we should expect:

- Year to year natural variation
- Relatively warm years will almost certainly increase in frequency
- The interior will warm faster than other areas and will experience higher rates of warming than in the past
- The north will continue to warm at rates considerably greater than the global average

Precipitation



SOURCE: Data from Ministry of Environment Climate Related Monitoring Program and Environment Canada. Trend Analysis for 1900 through 2013 conducted by PCIC, 2014 for the Ministry of Environment Climate Action Secretariat. NOTES: A positive sign indicates increasing precipitation. NS indicates that trend is not statistically significant.

In general with warming of the atmosphere we should expect:

- More frequent heavy precipitation events
- A shift poleward of mid latitude storms
- Increase in the strength of most extreme storms (more moisture available to transport)
- An expansion of the moist tropic zone from which storms draw moisture

Summary of Climate Change for Greater Vancouver in the 2050s

Summary

Region & Time

Temperature

Precipitation

Snowfall

Growing DD

Heating DD

Frost-Free Days

Impacts

Notes

References

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	+7%	-2% to +11%
	Summer	-15%	-25% to +3%
	Winter	+6%	-4% to +15%
Snowfall* (%)	Winter	-36%	-56% to -19%
	Spring	-56%	-73% to -17%
Growing Degree Days* (degree days)	Annual	+415 degree days	+250 to +609 degree days
Heating Degree Days* (degree days)	Annual	-589 degree days	-853 to -360 degree days
Frost-Free Days* (days)	Annual	+22 days	+14 to +33 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 **Greater Vancouver** 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.

