

Focus on Forests



A Forest Ecosystem Education Guide

Activities and Lesson Plans for Teachers and Resource Educators



www.focusonforests.on.ca

The Heat is On!

Lesson Summary

Students will predict the impacts of climate change on a local forested environment.

SENIOR FOF35



Objectives

- To introduce the greenhouse effect and climate change
- To discuss the implications of climate change to different forest regions in Ontario
- To introduce *Future Wheels*

Discussion

- What is the difference between weather and climate?
- What is global warming?
- What is the greenhouse effect?

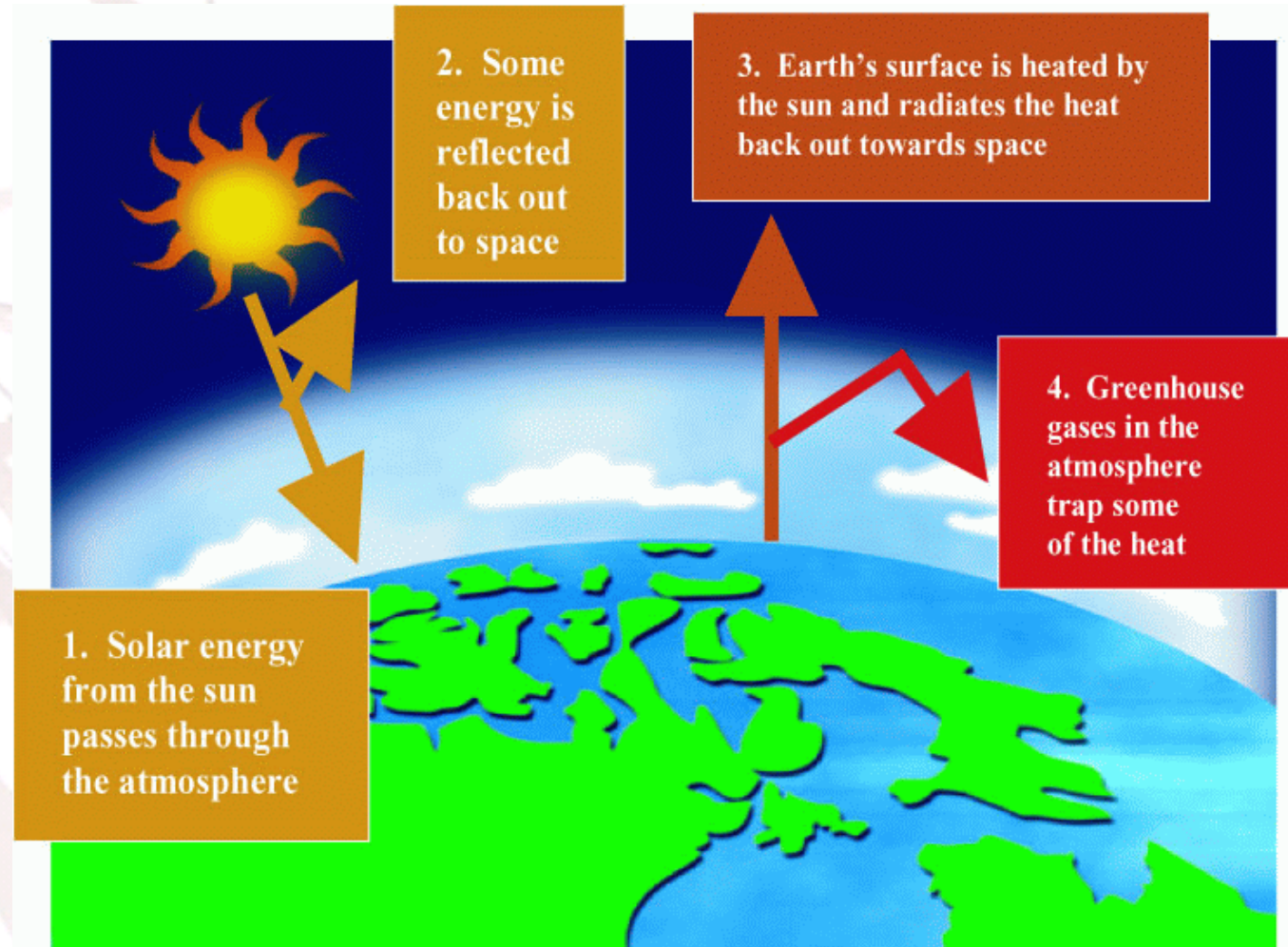
Climatic Cycle

- Composed of both warming and cooling trends
- Historically: natural fluctuations between colder and warmer conditions
 - Ice age



Greenhouse effect

- Greenhouse effect
 - Heat trapping quality of the atmosphere created by greenhouse gases



Greenhouse effect

- Human induced greenhouse gas effect
 - Large amounts of GHG produced by humans
 - Mostly through burning of fossil fuels
 - These gases trap heat in the atmosphere
 - Expected to raise global temperatures and change planet's climate
 - “Global warming” or “Climate Change”

Climate Change

- “a change of climate which is attributed directly or indirectly to human activity, that alters the composition of the global atmosphere and which is, in addition to natural climate variability, observed over comparable time periods”

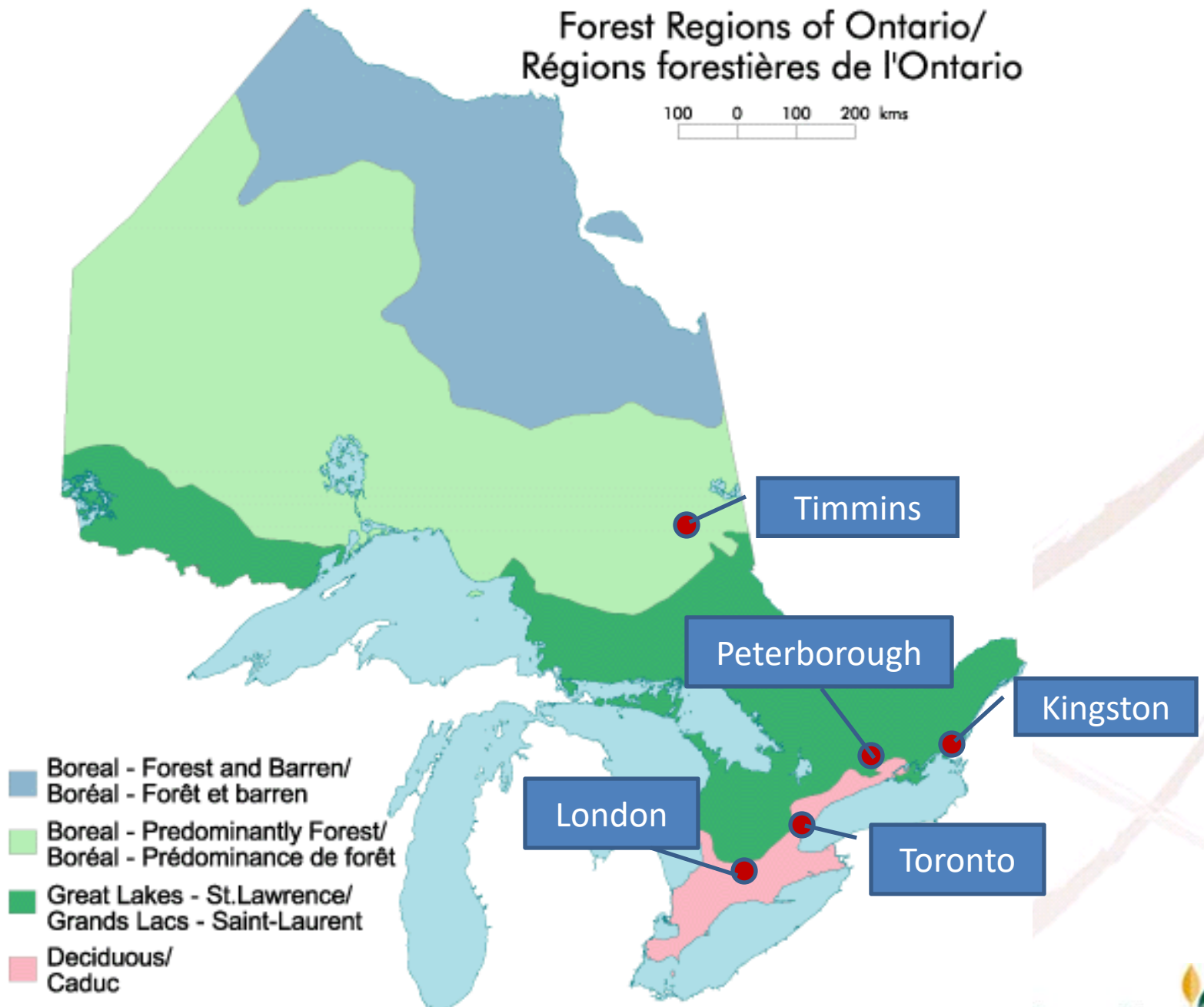
– UNFCCC

Discussion

- What are some of the potential impacts of climate change?
 - Social and cultural implications?
 - Environmental impacts?
- Will these impacts be the same regionally or globally?

Forest Regions of Ontario/ Régions forestières de l'Ontario

100 0 100 200 kms

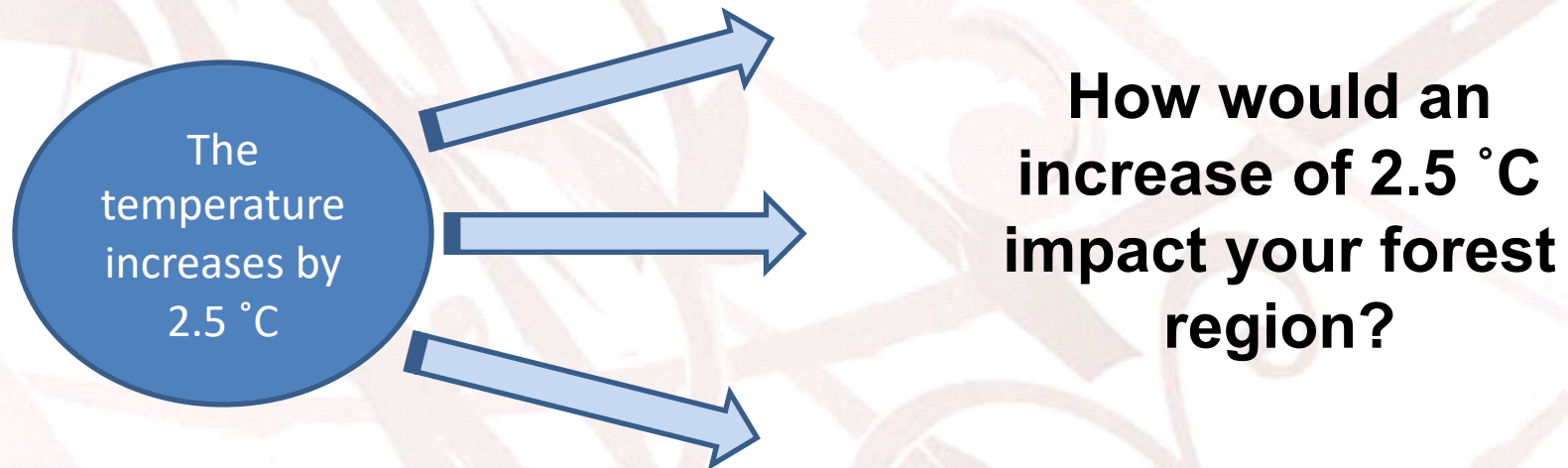


Impacts to Forests

- Increased CO₂ may increase photosynthetic rates
$$\text{CO}_2 + 2 \text{H}_2\text{O} \rightarrow \text{sugar} + \text{H}_2\text{O} + \text{O}_2$$
- This may increase the productivity of Ontario's forests
- However... not all species can adapt to the changes
 - Shift in forest species composition
- Increased stress
 - Drought, storms, fires, insect pests

Futures Wheel

- Examines the effect that a single decision/situation can have on inter-relationships
- Illustrates direct and indirect effects



Extension

- What is the role of forests in climate change?
 - Carbon sink vs. carbon source
 - Carbon storage in wood products

Review

- Human caused greenhouse effect is increasing global temperatures
- Changes in global climate will influence forest ecosystems
- Not all forest ecosystems will respond in the same way to changes in climate