



**Interactive Escape Rooms for
Climate Crisis Awareness and
Civic Engagement
in School Education**

Module 2:

How Will the Climate Change?



Interactive Escape Rooms for Climate Crisis Awareness and Civic Engagement in School Education

Project Partners



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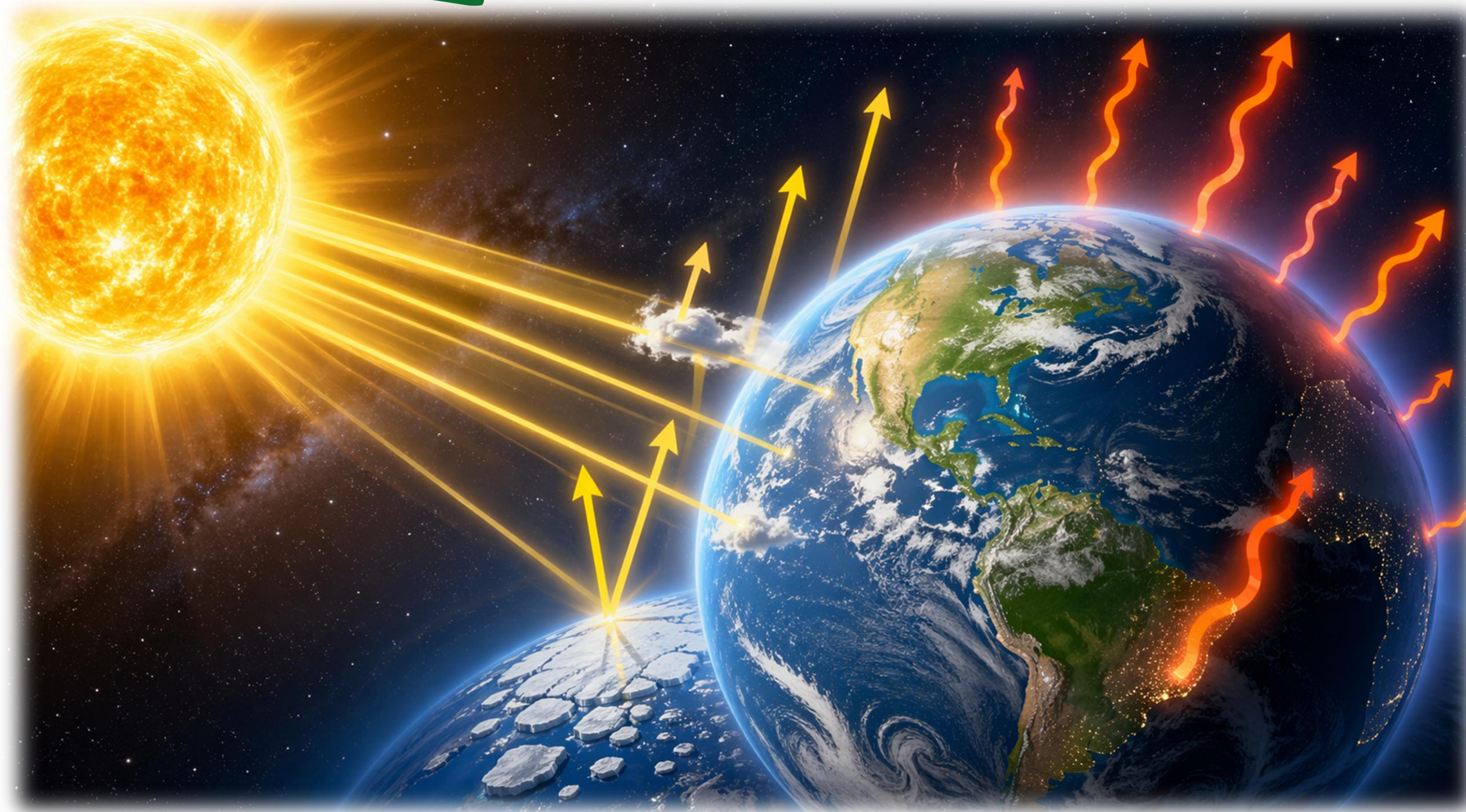


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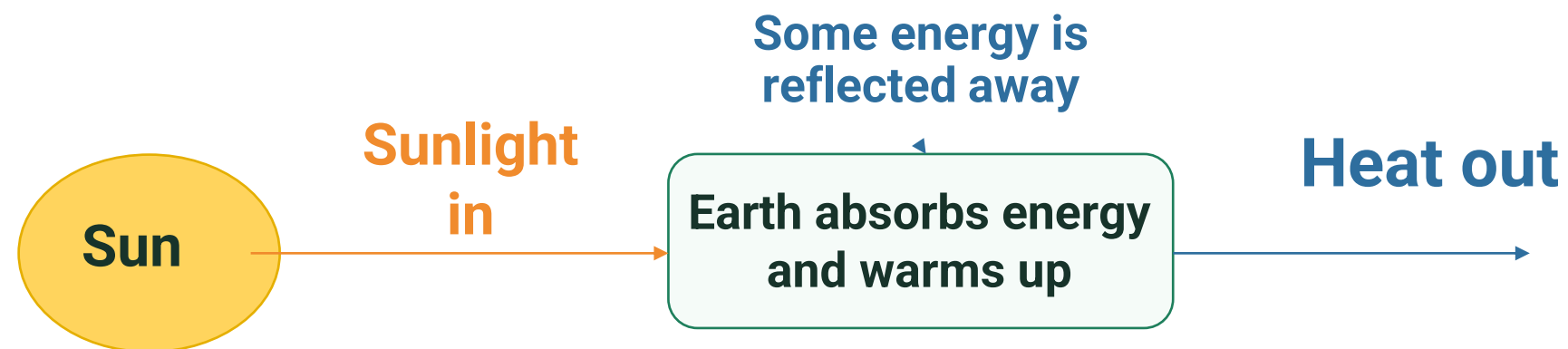
Earth's climate works in balance



Over time, incoming energy and outgoing energy need to stay roughly in balance.



Earth's climate works in balance



- Some sunlight is reflected away by clouds, ice, snow, and other bright surfaces.
- The rest is absorbed by land and oceans, which then warm up.
- Earth releases energy back toward space as infrared heat.

Key Idea:

If more energy enters the system than leaves it, Earth warms.

If more leaves than enters, Earth cools.

The greenhouse effect is natural

— but human activity can intensify it!



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Without greenhouse gases, Earth would be far too cold for most life.



- Greenhouse gases such as carbon dioxide, methane, and water vapour absorb part of the outgoing heat.
- This natural process helps keep Earth warm enough for life.
- The current problem is the rapid increase in greenhouse-gas concentrations because of human activity.

The greenhouse effect is natural

— but human activity can intensify it!



Common misconception:

|| **Natural** greenhouse effect = necessary for life.

(Because otherwise earth's temperature would be too cold.)

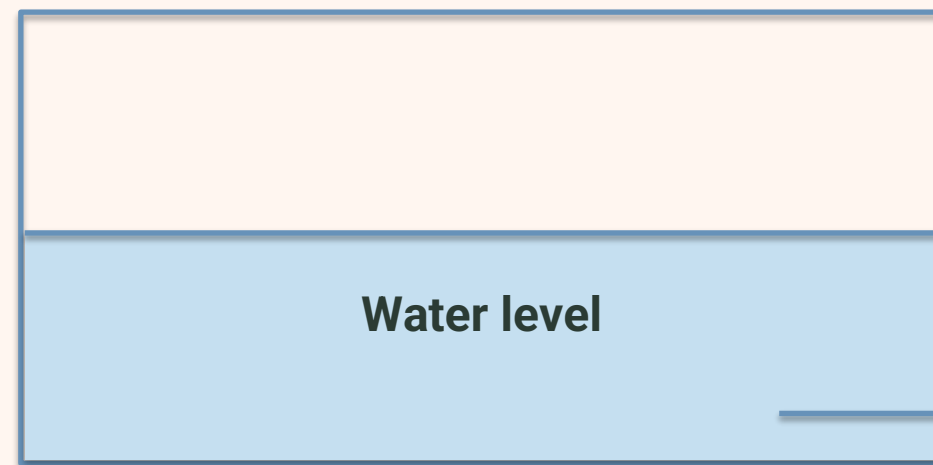
|| **Enhanced** greenhouse effect = stronger warming.

(Because greenhouse-gas concentrations are rising).

A useful analogy: the climate system as a bathtub



Tap = energy
from the Sun



Drain = heat
leaving Earth

Higher water level =
higher average
temperature

Partly blocked drain
= less heat escapes
= temperature rises

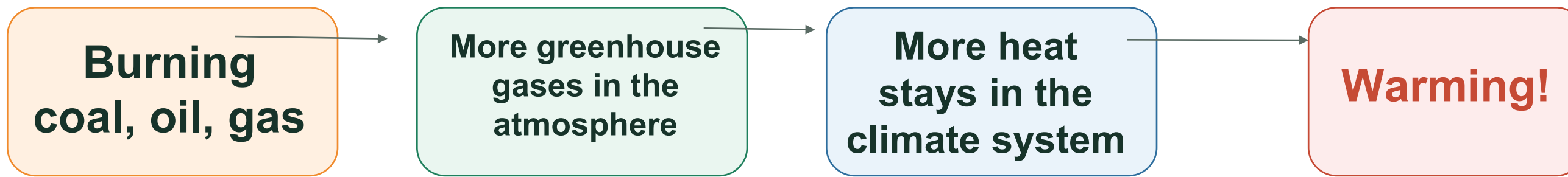
If the drain is partly blocked, water rises until a new balance is reached. In the climate system, that higher “water level” means a higher global temperature.

Think about the analogy:
What would “blocking the
drain” mean in climate terms?

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Why are global temperatures rising?

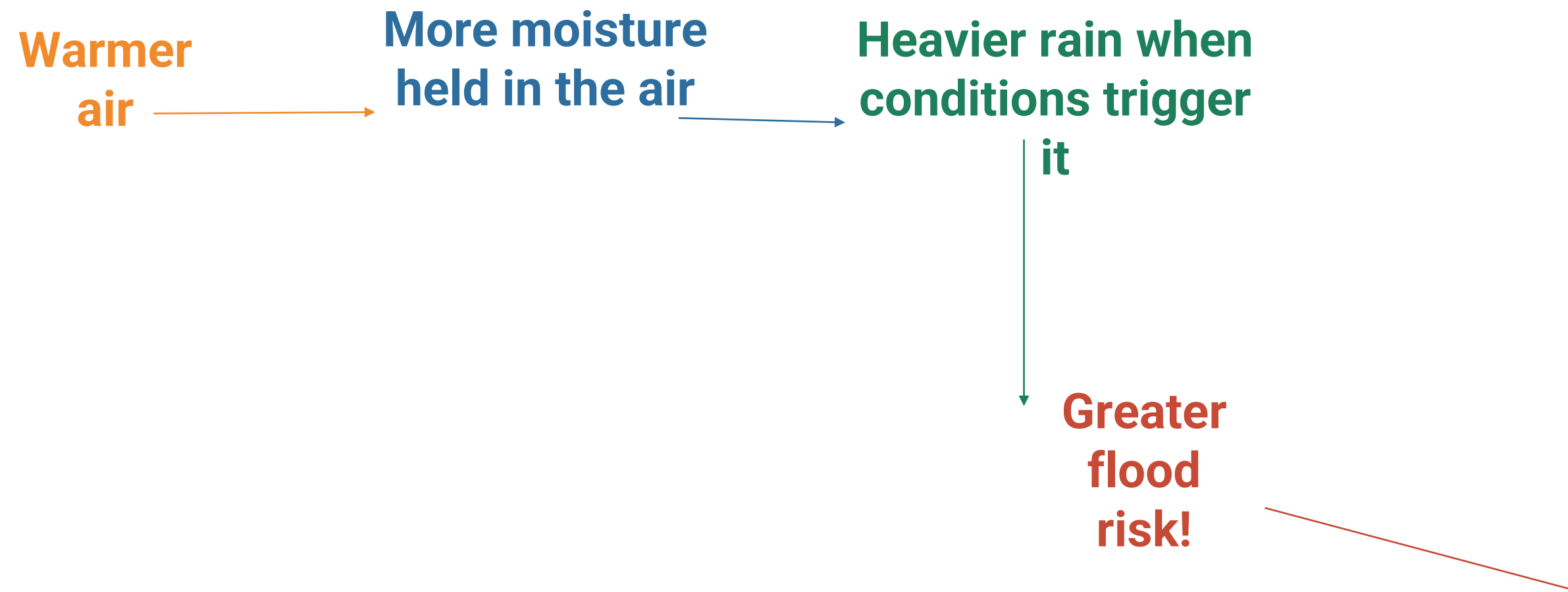


- Agriculture, waste, and energy production also add methane and nitrous oxide.
- Deforestation matters because forests remove carbon dioxide from the atmosphere.
- Natural factors such as volcanic eruptions or small solar changes still matter, but they do not explain the long-term warming trend since the industrial period.

The **biggest reason** is the increase in greenhouse gases caused by **human activity!**



Warmer air can lead to heavier rainfall





Important limit

Climate change does not explain every flood by itself. Local drainage, land cover, river conditions, and urban design still matter.

Local question

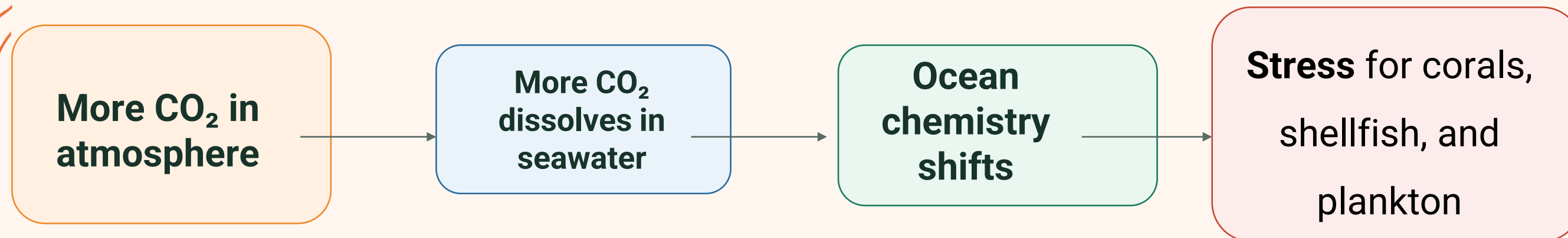
Where in a school or town would heavy rain cause the biggest problems first: drains, entrances, paths, riverside roads, or sports areas?



Ocean acidification: another major change in the system



Extra carbon dioxide does not only warm the atmosphere...
It also changes **ocean chemistry**.



The ocean does not become “acid” in the everyday sense. It becomes less alkaline. Even that smaller shift can still matter a great deal for marine life!





Thank you!

The EcoMystery Project 2024-1-IT02-KA220-SCH-000248873

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