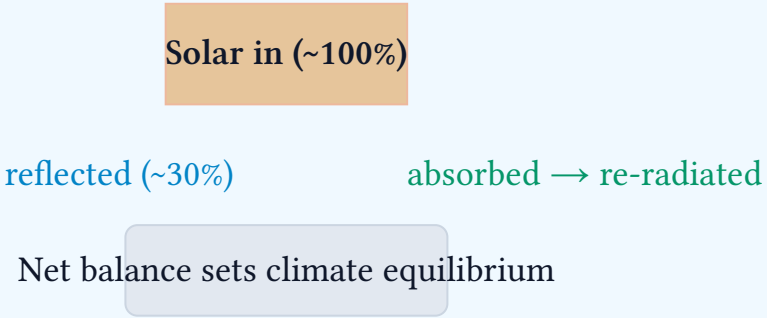
Science 10

## Unit D: Energy flow in global systems

# Net radiation budget

# One hundred units of sunlight

- About 30 of 100 incoming solar-energy units are reflected by clouds, atmosphere, and surfaces.
- The absorbed portion is later transferred and emitted as longwave radiation.



# Terms in the energy budget

- Incoming sunlight, reflected sunlight, and outgoing infrared radiation all belong in the budget.
- Reflected radiation bounces straight back to space without warming Earth.
- Use one set of units, or one set of percentages, for the whole calculation.

# Key terms

**radiation budget**

Accounting of incoming, reflected, absorbed, and outgoing radiation.

**albedo**

Fraction of incoming radiation reflected by a surface.

**shortwave radiation**

Mostly visible and near-visible solar radiation arriving at Earth.

**longwave radiation**

Infrared radiation emitted by Earth and its atmosphere.

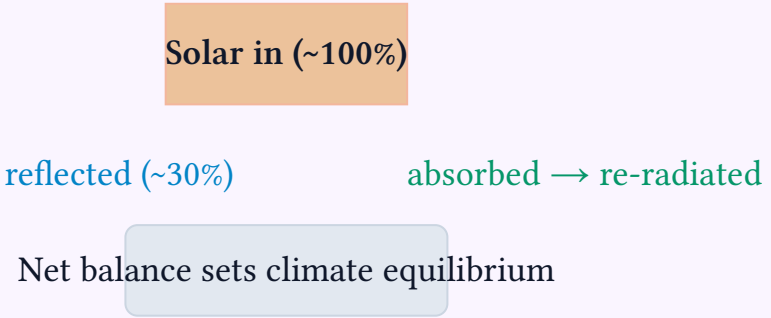
# Key terms

**net radiation**

Incoming absorbed radiation minus outgoing radiation.

# Radiation budget

- State incoming radiation, outgoing radiation, and the net as percentages of the same total.
- Shortwave radiation arrives from the Sun. Longwave radiation leaves from Earth.
- The net is what remains after you subtract what leaves.



# Closing the budget

- From a simple 100-unit model, calculate the radiation that was absorbed and the net radiation.
- Subtract the reflected portion, keep the percentages consistent, and say whether the system gained or lost energy.



# Closing the budget

- Calculate absorbed and net radiation from a simple 100-unit model.
- A complete answer subtracts reflected energy, keeps one set of units or percentages, and interprets the sign of the net.

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