



Greenhouse Gas Emissions



### FEEDBACK LOOP #1

Ever increasing warming of Southern Ocean and Antarctica & Sea-Ice Retreat

Increase Air Temperature

Increase Ocean Temperature

Decrease Sea Ice Extent

positive albedo feedback

polar temperature amplification

### FEEDBACK LOOP #2

Ever increasing melting of ice-shelves

Surface waters go to equator

Ice shelves melt

Warmed deep ocean water upwells at edge of ice sheet

Antarctic Circumpolar Current speeds up

Westerly Winds & warm tropical air move farther south

### IMPACTS ON AOTEAROA

- Wilder weather
- Seasonal change
- Extreme events
- Crops & agriculture fail
- Loss of habitats
- Ecosystems decline
- Fish stocks decline
- Species lost

Ice-shelves break up

Sea level rise

Ice-sheets melt

**IRREVERSIBLE TIPPING POINT**

