

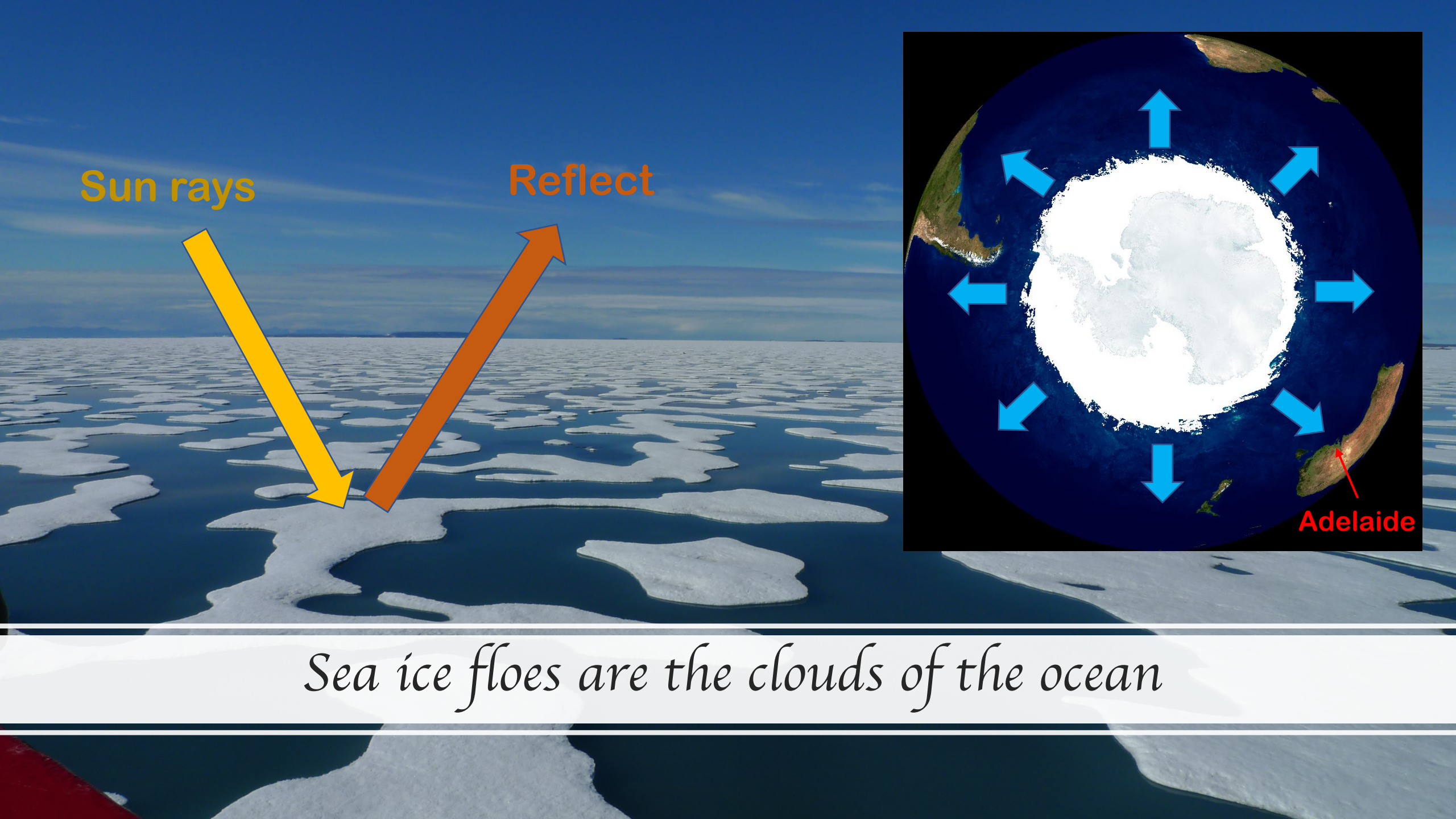
*Imagine the world without
clouds*





*It might look like
this*

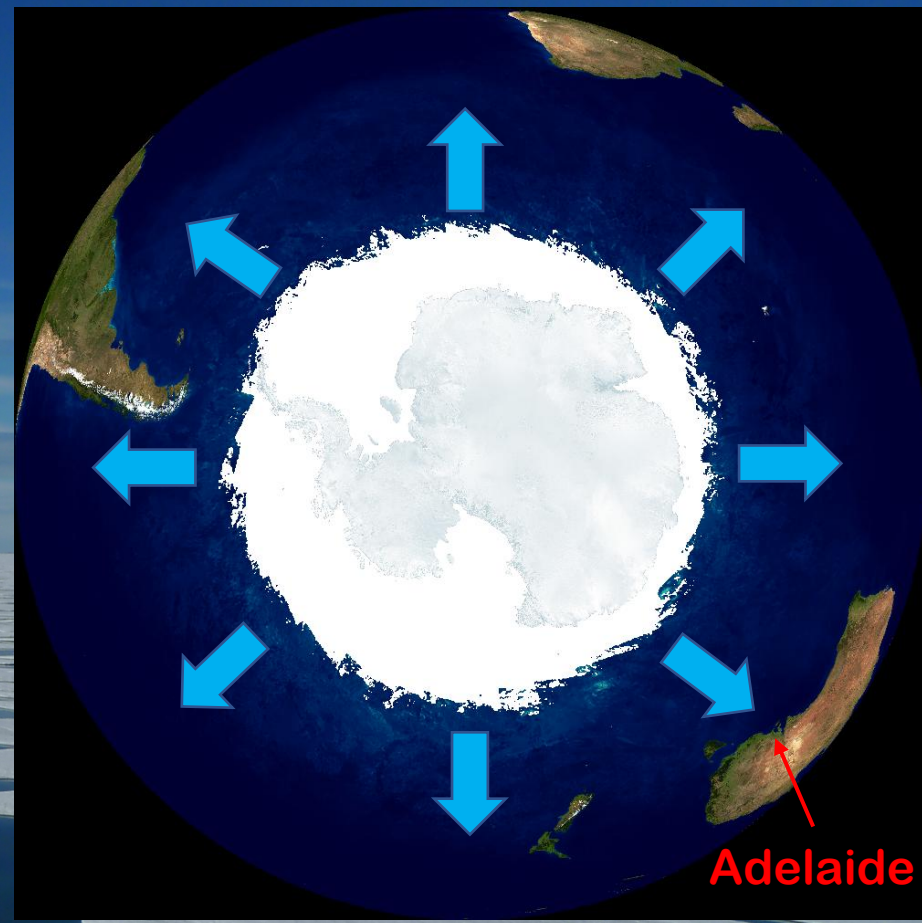
*(California in drought...
not South Australia)*



Sun rays



Reflect



Adelaide

Sea ice floes are the clouds of the ocean



Pancake ice: small disks



Nilas: thin 'fingers' of ice



Pack ice: large ice floes

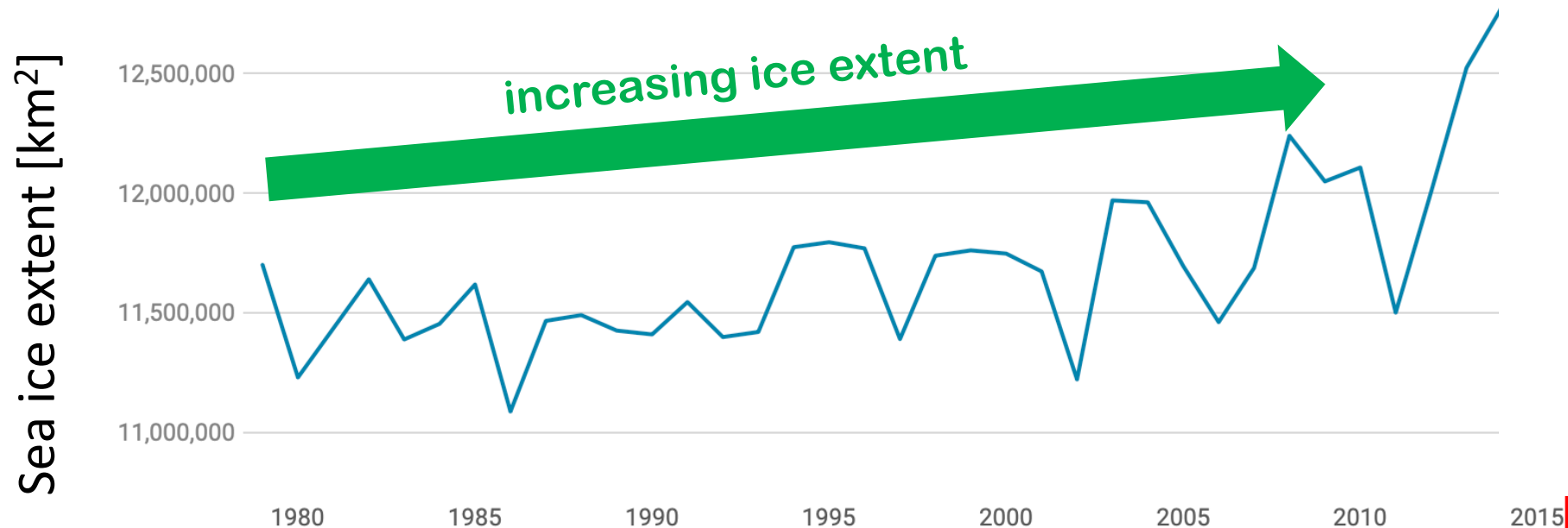
Many types of sea ice

Is Antarctic sea ice declining? ...Probably

NewScientist

ENVIRONMENT 1 July 2019

Antarctic sea ice is declining dramatically and we don't know why



Measuring sea ice

Australia's new \$2 billion icebreaker

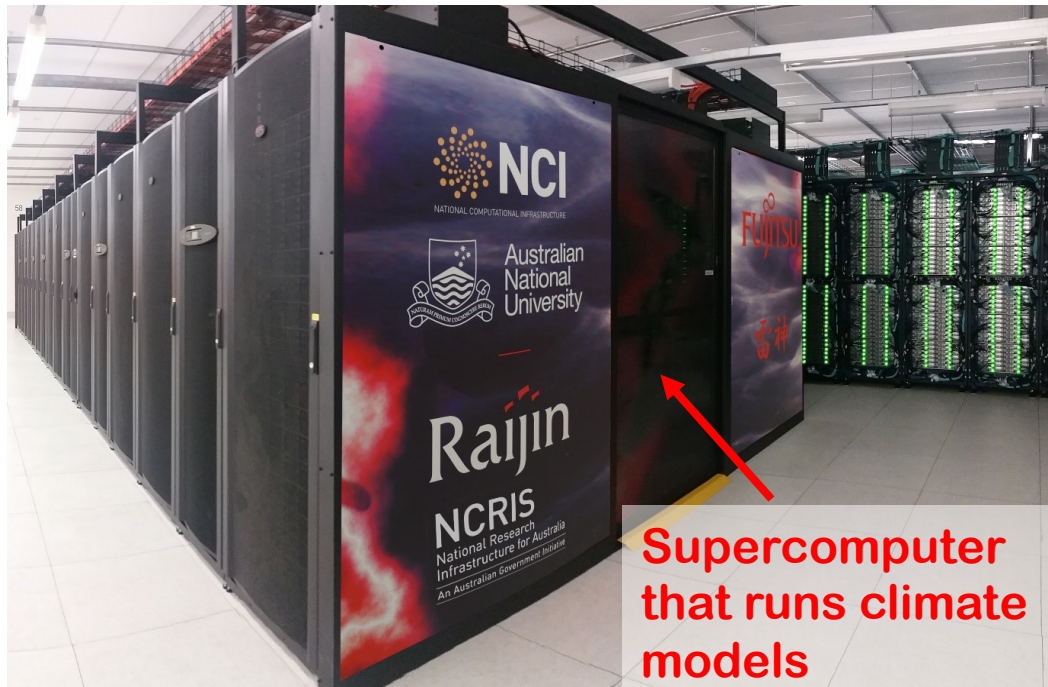


CryoSat-2 satellite mission €140 million



Climate models: wrong but useful ... need BIG supercomputers

Australia's national supercomputing facilities in Canberra



Modelling: the “grand challenge”

Improving models

- More details of ice cover
- New and improved physical processes

vs.

Reducing computational costs

- Identify dominant processes
- Finding relationships between quantities

Multidisciplinary science underpinned by advanced mathematics