

How important are snow transport and sublimation for the mass balance of Antarctica?



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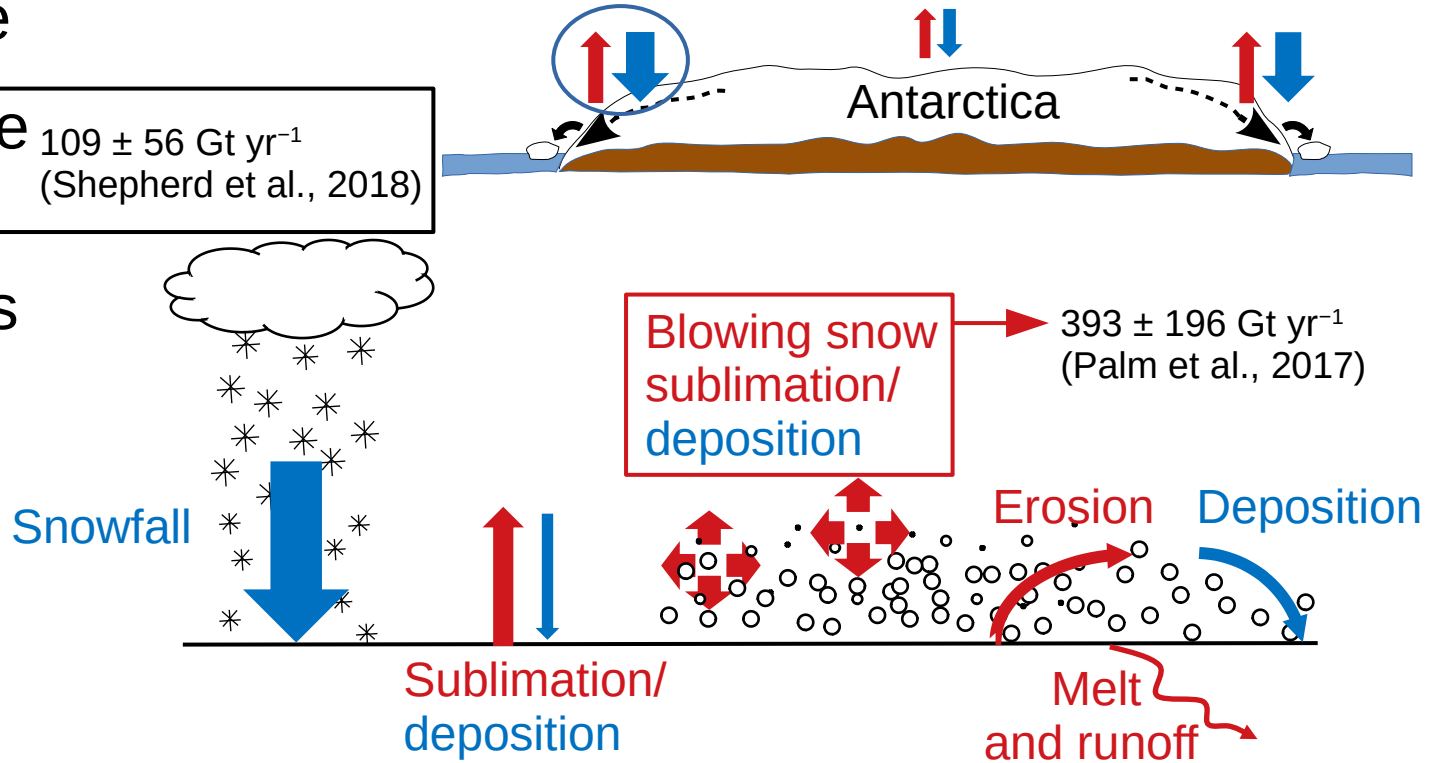
Geneva Cryosphere HUB | COP26
11 Nov. 2021

The Antarctic ice sheet

- Sea level rise

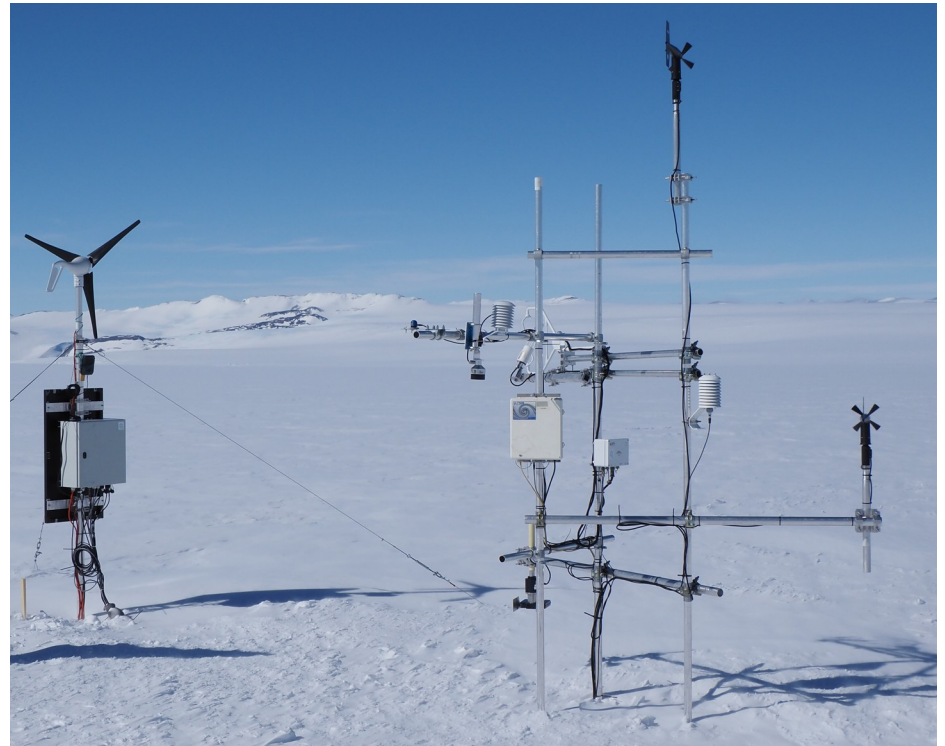
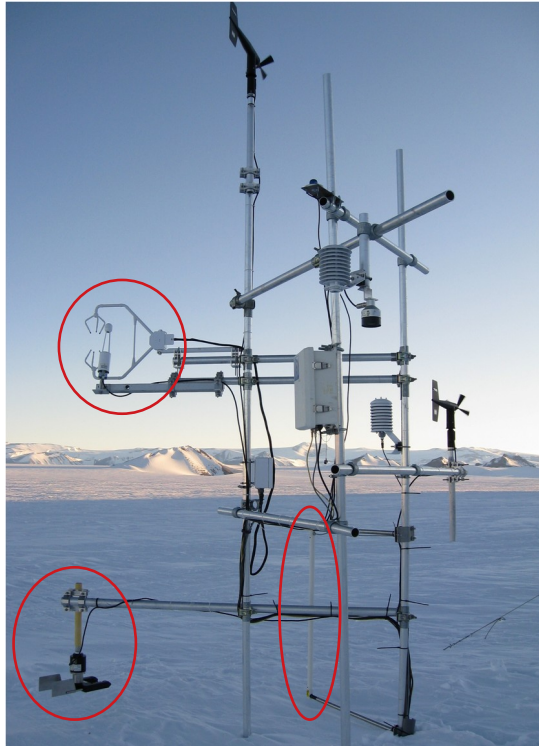
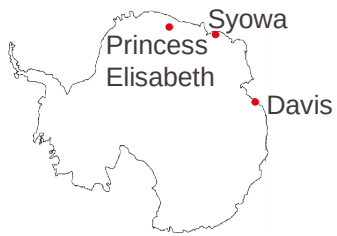
• Net loss of ice sheet mass $109 \pm 56 \text{ Gt yr}^{-1}$
(Shepherd et al., 2018)

- Surface mass balance



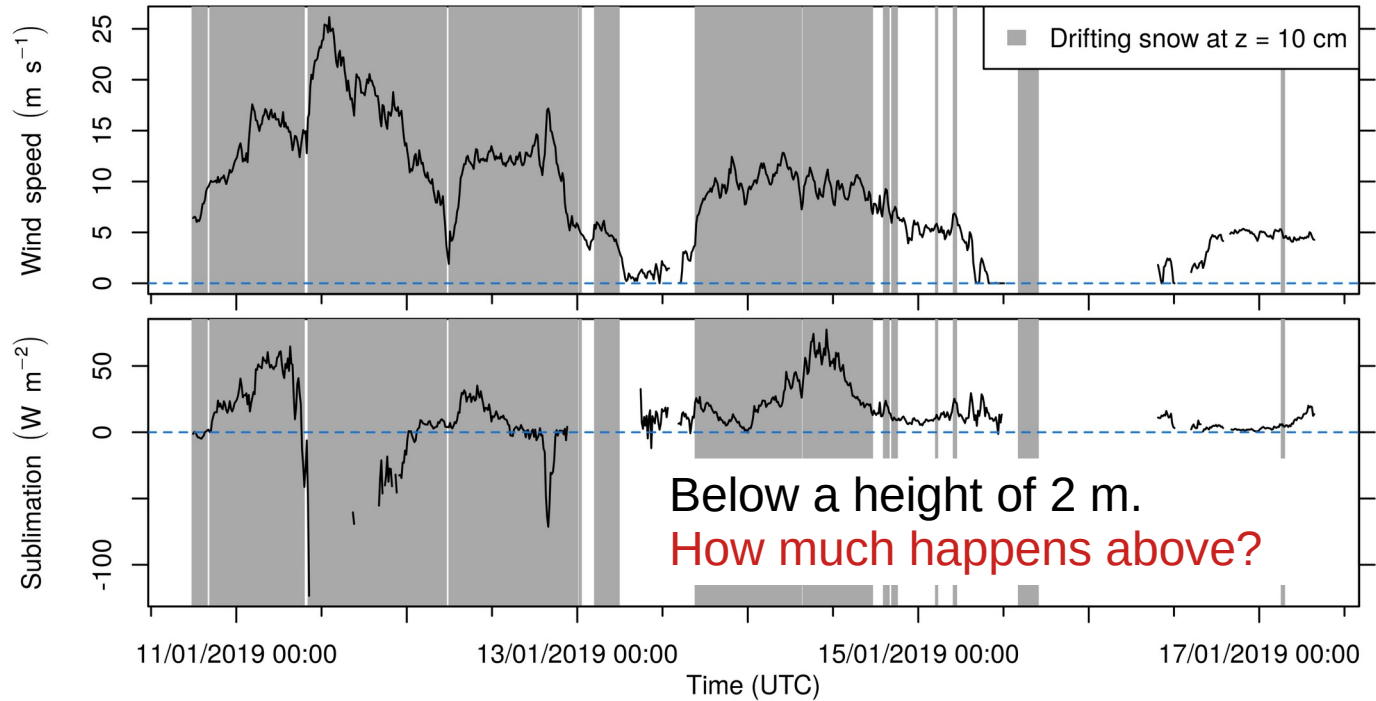
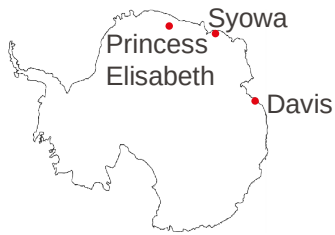
Small-scale studies

- Field work

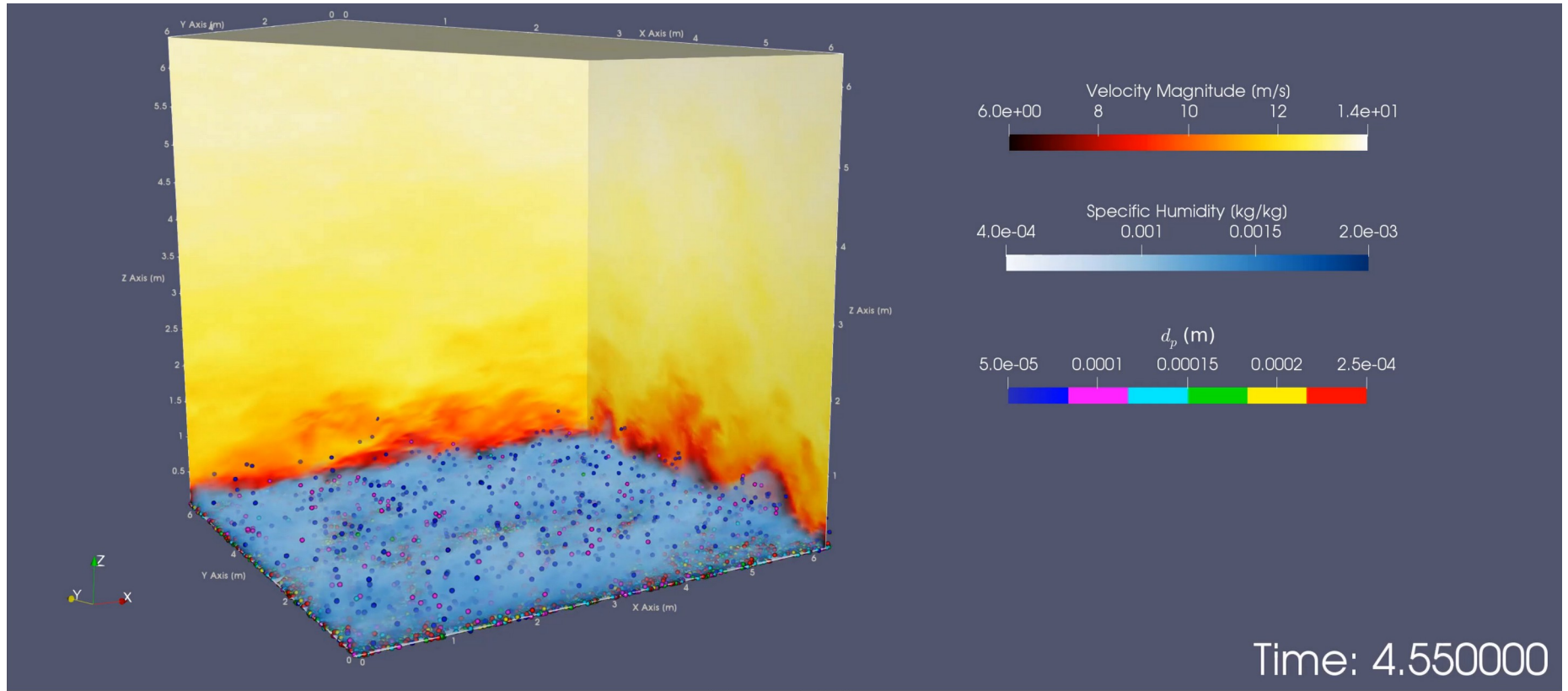


Small-scale studies

- Field work



Small-scale simulations (LES)



(Sharma et al., 2018)

Improving large-scale models

- Near-surface resolution and approximations
 - Include sublimation in lowest few centimetres
 - ↔ realistic humidity and temperatures
 - Account for changing snow properties such as cohesion
 - ↔ amount of blowing snow
- ➡ More reliable values for Antarctica's mass balance

