Photo: Markus Rex

MOSAiC
Sept 2019 – Oct 2020

4 Oct 2019

21 Aug – 20 Sept 2020

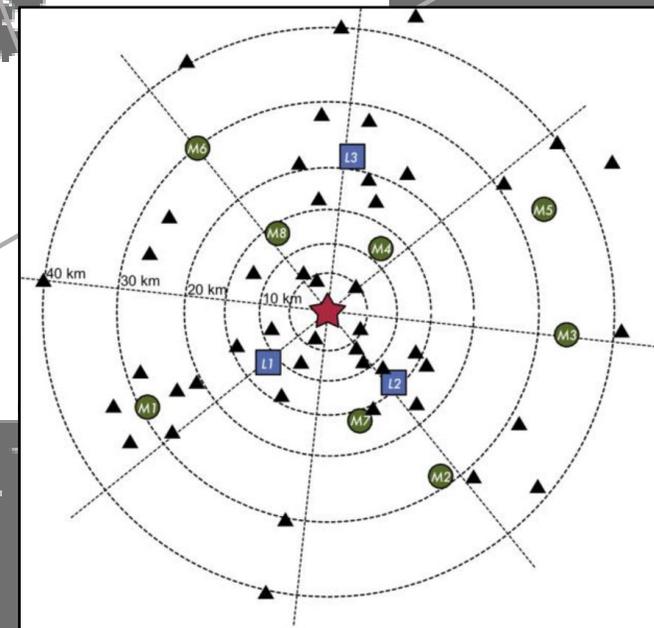15 Sept 2020 Ice edge
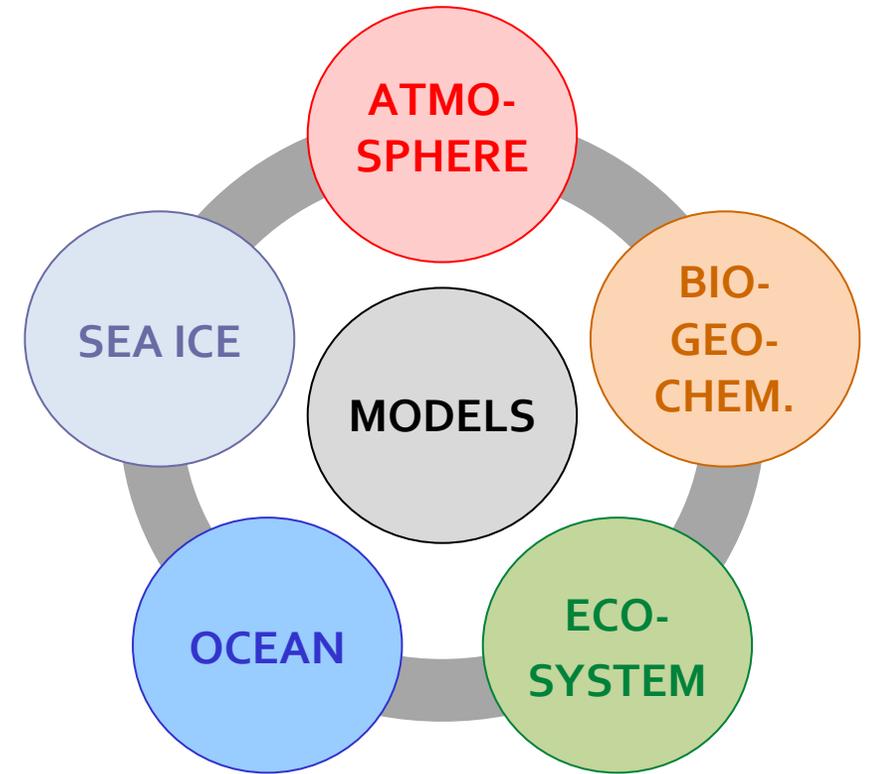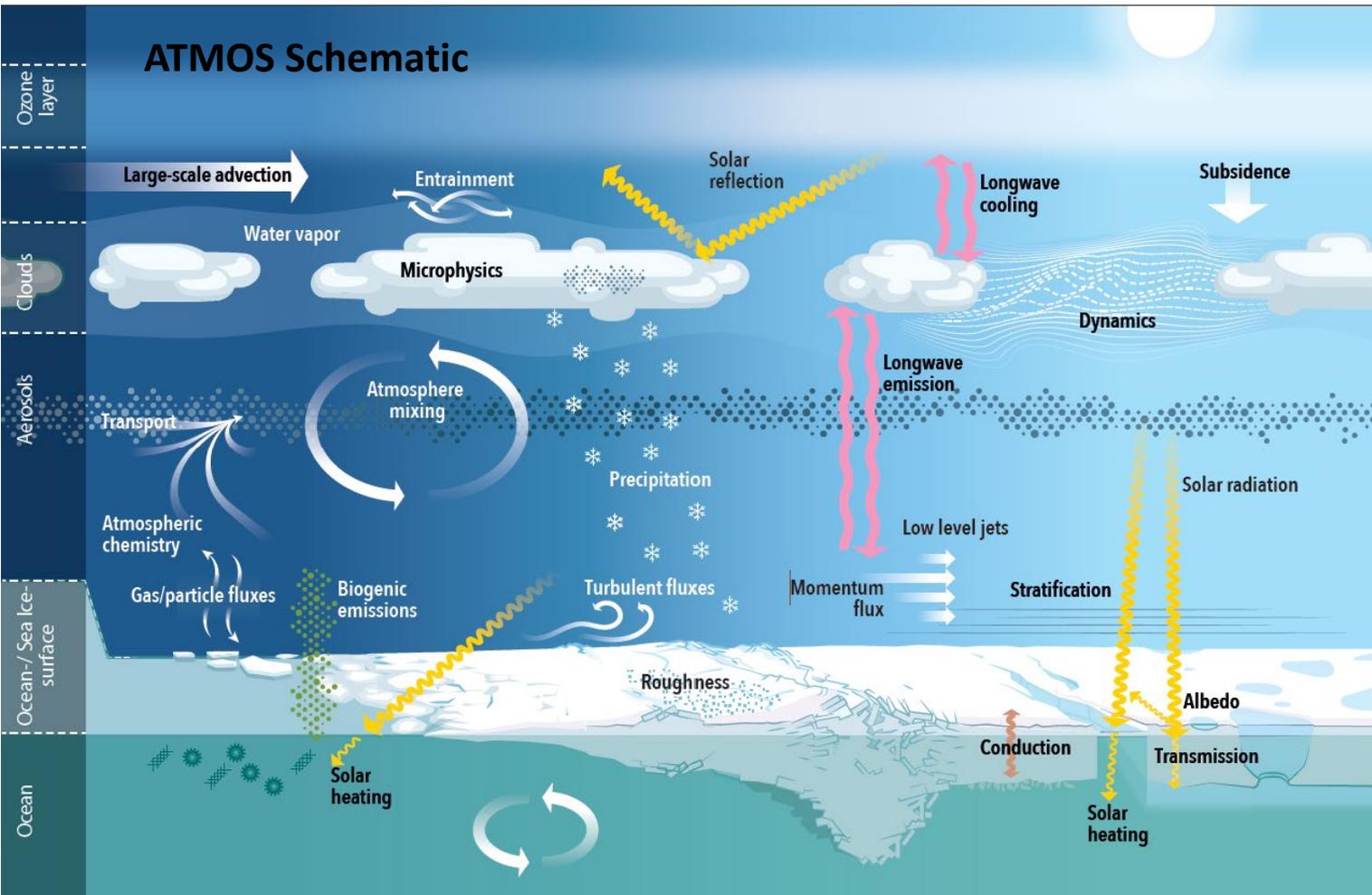
31 July 2020

5 Mar 2020 Ice edge

Ny'Alesund

COMBLE

90°

80°

30°

30°

70°

20 Nations (funding)
37 Nations (participants)
7 Icebreakers/ships
>80 Institutions
>400 field participants
>$170M overall

40 km   30 km   20 km   10 km
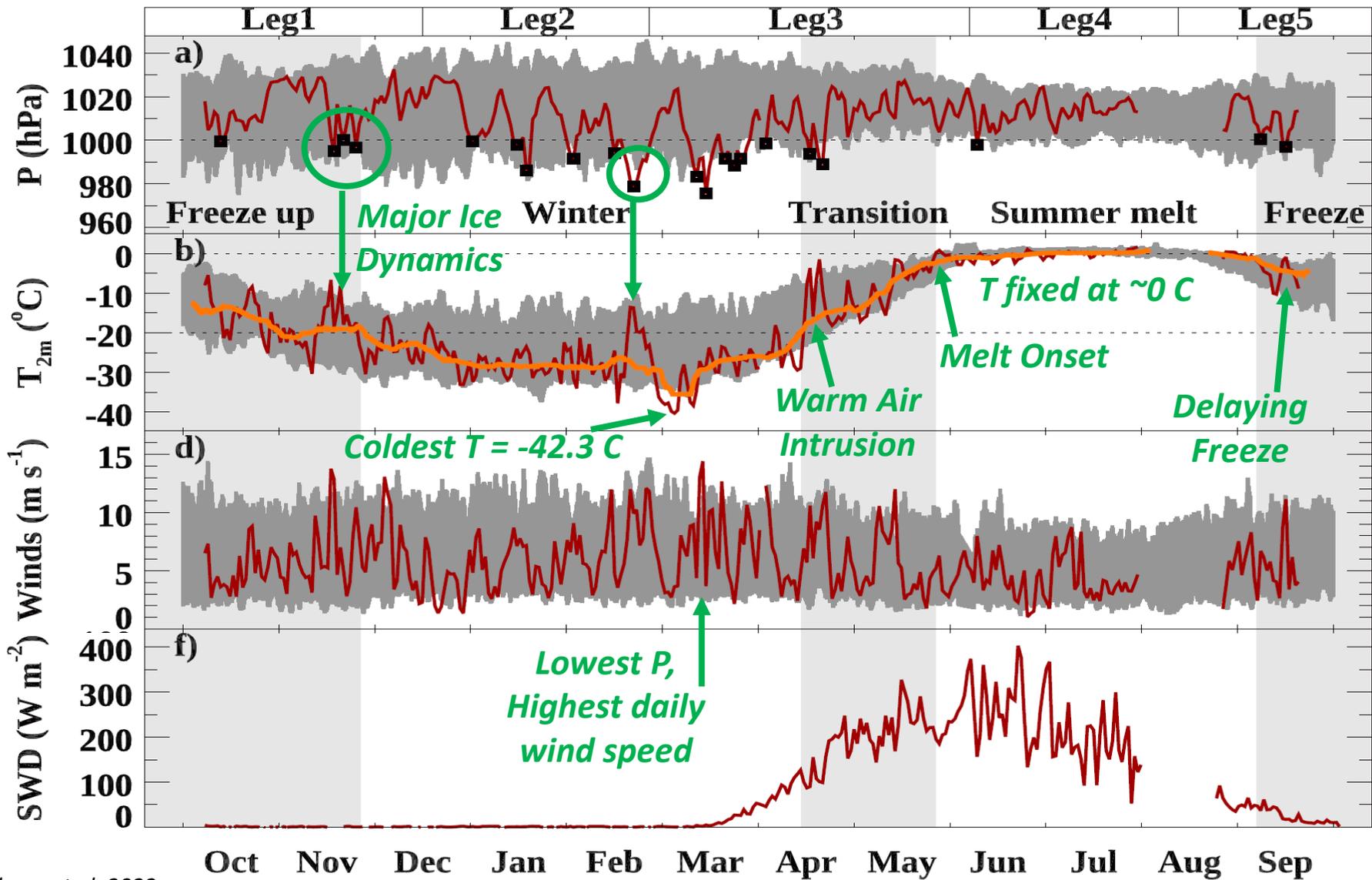
M6   L3   M5   M8   M4   M3   M1   L1   L2   M7   M2

Science

What are the causes & consequences of an evolving & diminished Arctic sea ice cover?

A Year in the Arctic

Shupe et al. 2022

Data

MOSAiC Data Policy: All data must be in publicly available archive by 1/2023!

ARM Archive has 90 data sets & growing!

Working on "Merged Observatory Data Files"

Data Available at:
- **DOE ARM Archive**
- **NSF Arctic Data Center**
- **PANGAEA Archive**
- **Some others**

Involve data PIs!

Science Possibilities

➢Surface energy budget processes

➢Dynamical drivers of ice motion

➢ABL structure and processes

➢Gas concentrations, fluxes, and cycles

➢Aerosols, sources, and cloud processes

➢Precipitation and snow on sea-ice

➢Warm air advection and atmospheric rivers

➢Light transmission through sea ice

➢Ocean heat budgets and fluxes to the ice

➢Physical system constraints on ecosystem

➢Model assessments at many scales

➢High-res cloud modeling

2nd *International*

MOSAiC Science Conference

13-17 February 2023   University of Colorado   Boulder, Colorado, USA

Cross-cutting science to advance modeling capabilities

For information, session descriptions, and abstract submissions:

https://mosaic.colorado.edu/second-science-conference

Key Dates
12 Oct: Session announcement
18 Nov: Abstract due date
16 Dec: Full program released
11 Jan: Registration deadline

Today's Session Plan

5min + 2min

Damao Zhang / Laura Riihimaki - Status on ARM products
Jian Wang / Xianda Gong - Sea salt aerosols in the winter/spring Arctic
Kerri Pratt - Individual aerosol sources and composition during MOSAiC
Jessie Creamean - Annual cycle of INPs in the central Arctic during MOSAiC
Sergey Matrosov - Measurements of snowfall during MOSAiC
Israel Silber - Sources and formation mechanisms of liquid-bearing clouds over MOSAiC
Matthew Shupe - Cloud impacts on the surface energy budget
Anne Sledd - Snow thermal conductivity & conductive flux variability during MOSAiC winter
Ola Persson - Observations of dynamic air-ice-ocean interaction events during MOSAiC
Amy Solomon - Using observations from MOSAiC to evaluate and improve simulations of the coupled cloud-atmosphere-surface system
Andrew Dzambo - Disentangling the roles of large-scale subsidence, moisture flux, and aerosol effects on Arctic cloud lifetime
General Discussion – Pathways forward, model foci, more

Thanks

Lianna Nixon