- **Nascent in situ tropopause cirrus with unique properties observed over the undersampled southwestern Indian Ocean during the CONCIRTO balloon campaign.**
- **Cirrus beyond teledetection capabilities (r <1µm, OD ~10^{-4}): Need of long-term in situ airborne measurements in remote oceanic regions**

T, u, v + water vapor + particles

BALLOON ASCENT

r_M	N_{ice}	IWC
< 1 µm	520 L^{-1}	0.4 µg m^{-3}

11 January 2019

90 min, 80 km

T, u, v + ~~water vapor~~ + particles

BALLOON DESCENT

r_M	N_{ice}	IWC
1-2 µm	40 L^{-1}	1.3 µg m^{-3}

Tropopause



1.5-km vertical scale gravity wave event drives cirrus formation
T'= -1 K
w'= 0.5 m s^{-1}
S_i = 1.5

Relatively low ice concentration (N_{ice}) are plausible with w' = 0.5 m s^{-1} if temperature tendency changes truncating the nucleation event

Very unlikely observation due to the short duration of nucleation events

Reinares Martínez et al., 2021, GRL
"Unprecedented Observations of a Nascent in Situ Cirrus in the Tropical Tropopause Layer", https://doi.org/10.1029/2020GL090936

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