A Comparison of Properties of a Cyclonic Event Fog and and Anticyclonic Event Fog in July 2022 at Sable Island, Nova Scotia

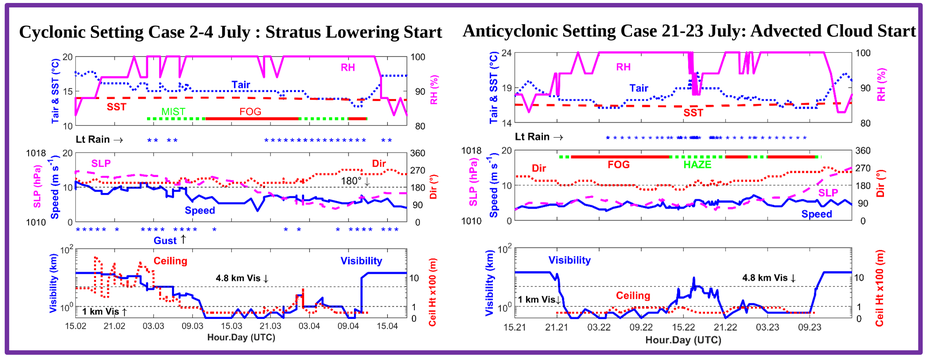
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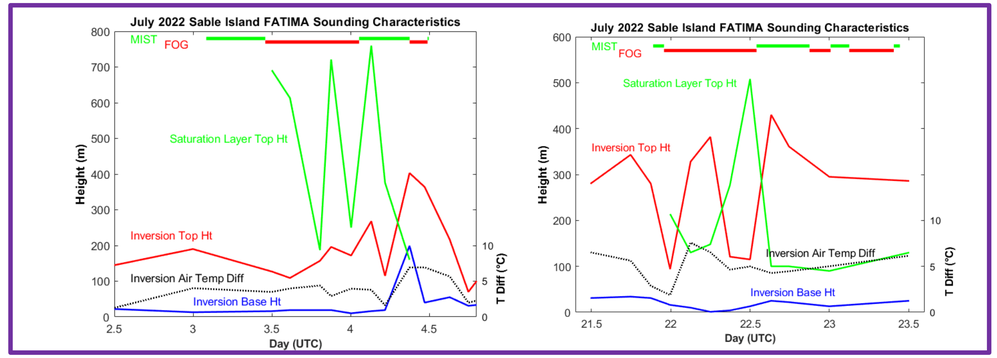
1 Introduction

FATIMA, a well instrumented fog field experiment took place on Sable Island off Nova Scotia in July 2022. A comparison is show here of two fog cases: one under a cyclonic trough with deep clouds and a second with an advected shallow cloud bank under an anticyclonic ridge.

2 Surface Observations

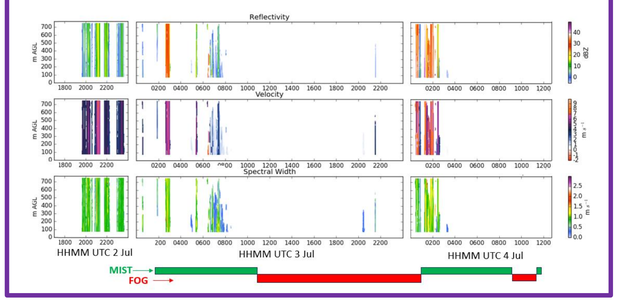


3 Sounding Characteristics

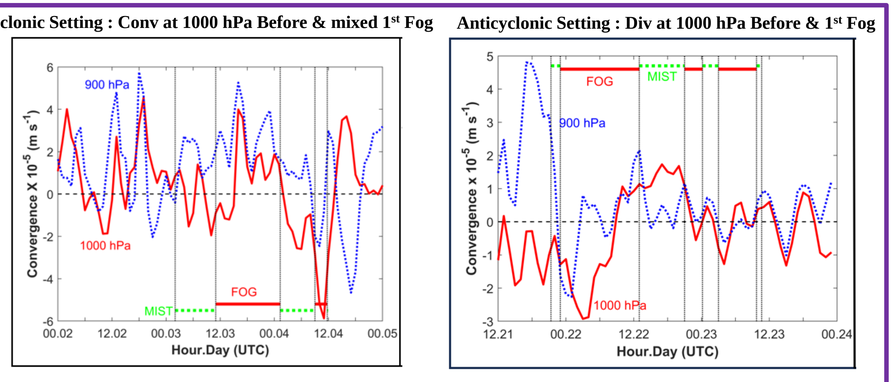


3 Microwave Rain Radiometer

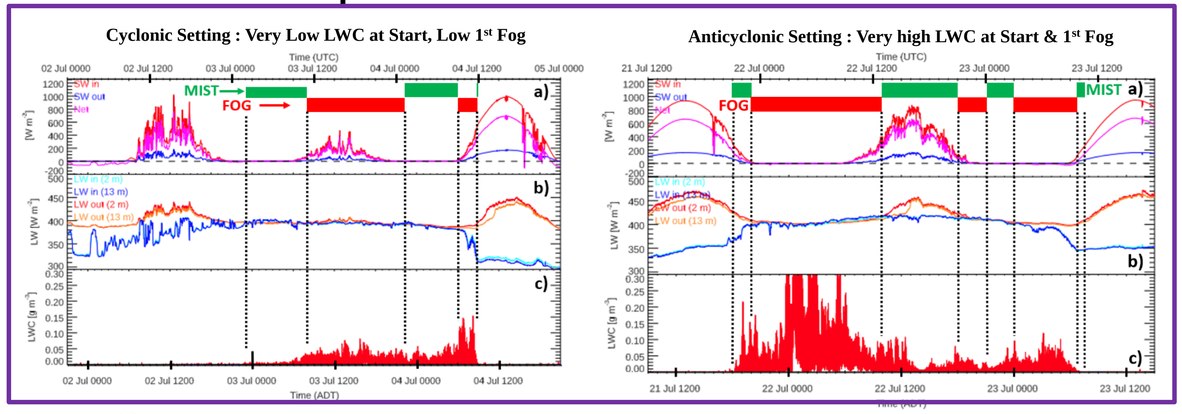
For 2 – 4 UTC July Cyclonic Case : No significant returns for 20-23 July AC Case



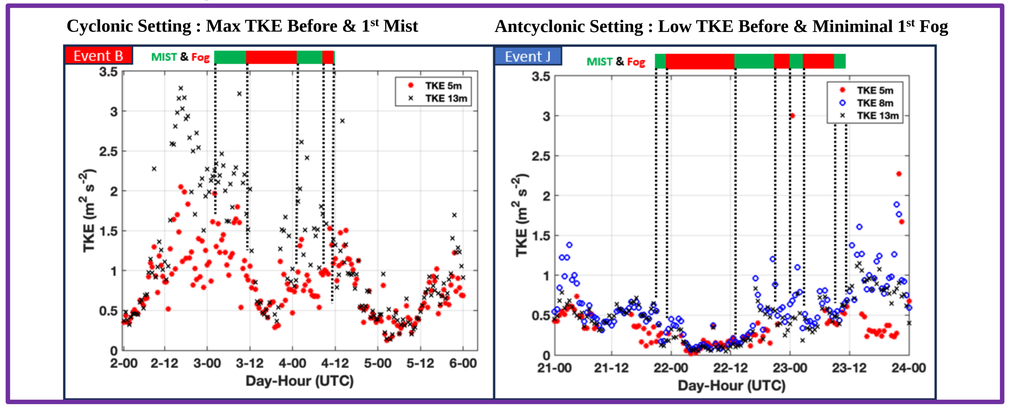
4 ERA5 1000 & 900 hPa Convergence + Vertical Velo



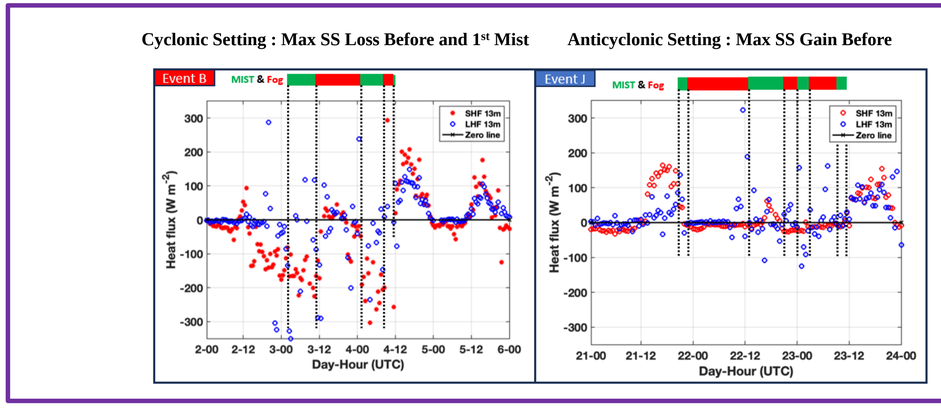
5 Radiation and Liquid Water Content



6 Sounding Characteristics



7 Sea Surface Heat Flux



8 Summary

Fogs at Sable Island in cyclonic setting differs from those in anticyclonic setting:

Cloud formation:
Cyclonic: Cloud base lowering
Anticyclonic: Cloud advected

Conv/Div
Cyclonic: conv before, mixed 1st mist
Anticyclonic: div before, div 1st fog

Liquid Water Content:
Cyclonic: low throughout most of event
Anticyclonic: very high at start & 1st fog

TKE:
Cyclonic: large before, during fog
Anticyclonic: mostly small

Sea Surface Heat Flux:
Cyclonic: loss at start
Anticyclonic: gain at start

Reference

Fernando, H.J.S., et al. (2023) Fog-laden density staircases in the marine atmospheric boundary layer. *Environmental Fluid Mechanics*, 23, 489–510. https://doi.org/10.1007/s10652-023-09914-4

Acknowledgement

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