

Modelling of Arctic SST

Ioanna Karagali

DTU Wind Energy, Risø campus – Department of Wind Energy

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Outline

- 1 Introduction
- 2 Test Cases
- 3 Results
- 4 Conclusions & Future Work

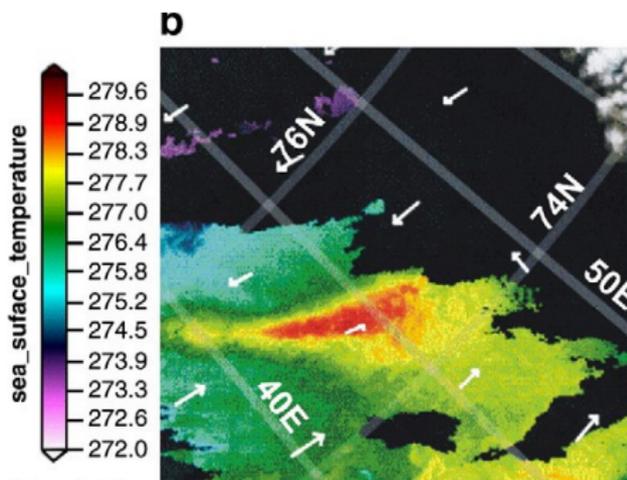
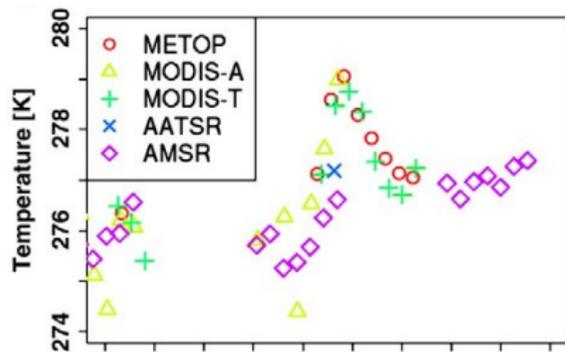
GOTM Model

- Version 4.1
- Calculating heat, momentum: Fairall model
- SWR: calculated or prescribed
- BRM:
- TKE K_ϵ
- 2-band solar abs. scheme
- 150 Vertical layers

Test Case I

Barrents Sea DW (Eastwood et al., 2008)

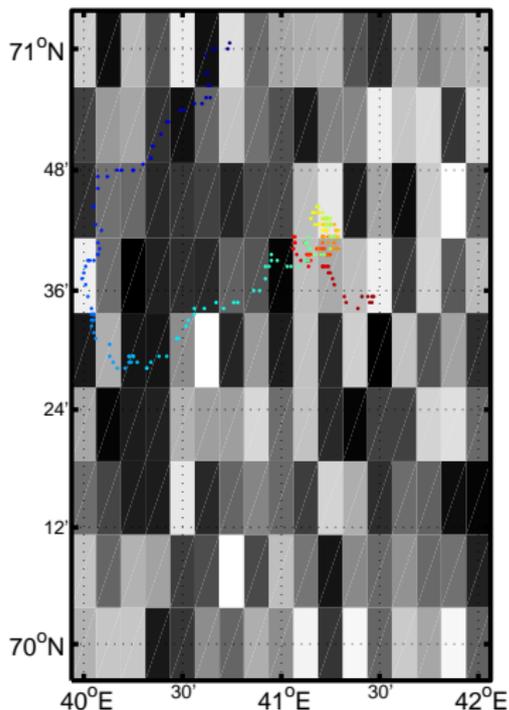
- 74.4 N – 44.5 E, 20–22 June 2008
- Profiles: WOA09, MetNo (top T level adjusted)
- Heat & Momentum Fluxes:
 - Calculated: HIRLAM (10m wind, P_{air} , T_{air} , Humidity, Cloud Cover)
 - Prescribed: Heat Flux, Momentum Flux estimated from HIRLAM (MetNo)



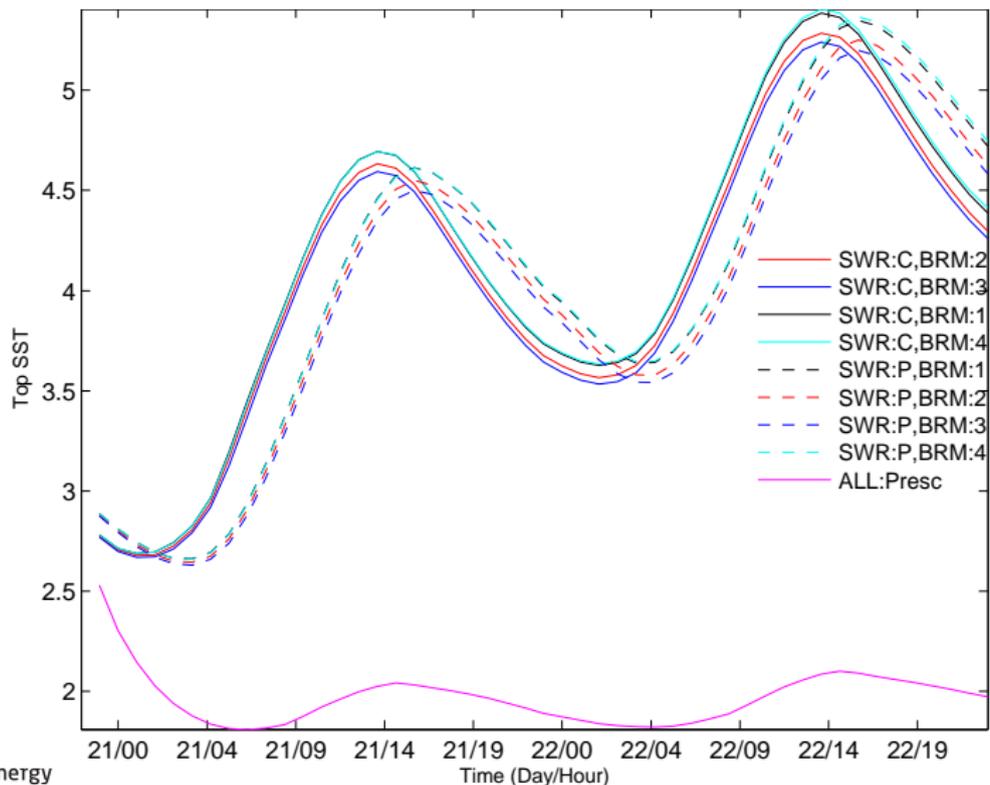
Test Case II

CMS Arctic DV

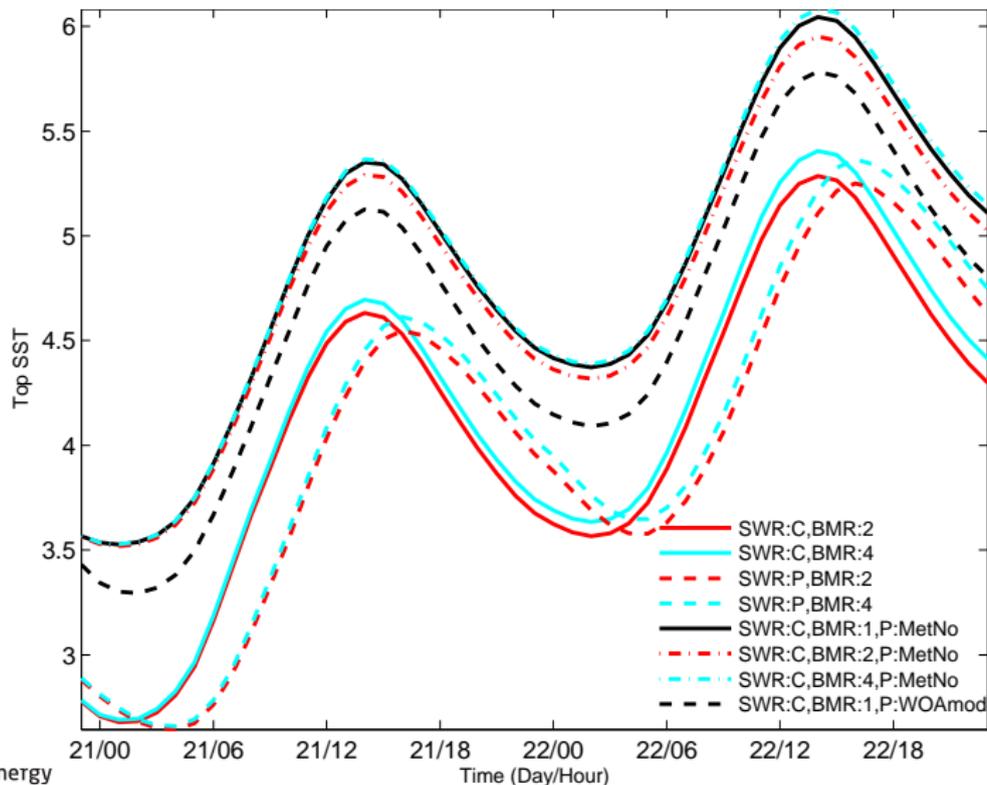
- Drifting Buoys 62926, 44942
- 14–22 July 2012
- ECMWF fields, WOA09 Profiles
- Challenge: Drifting Buoy position



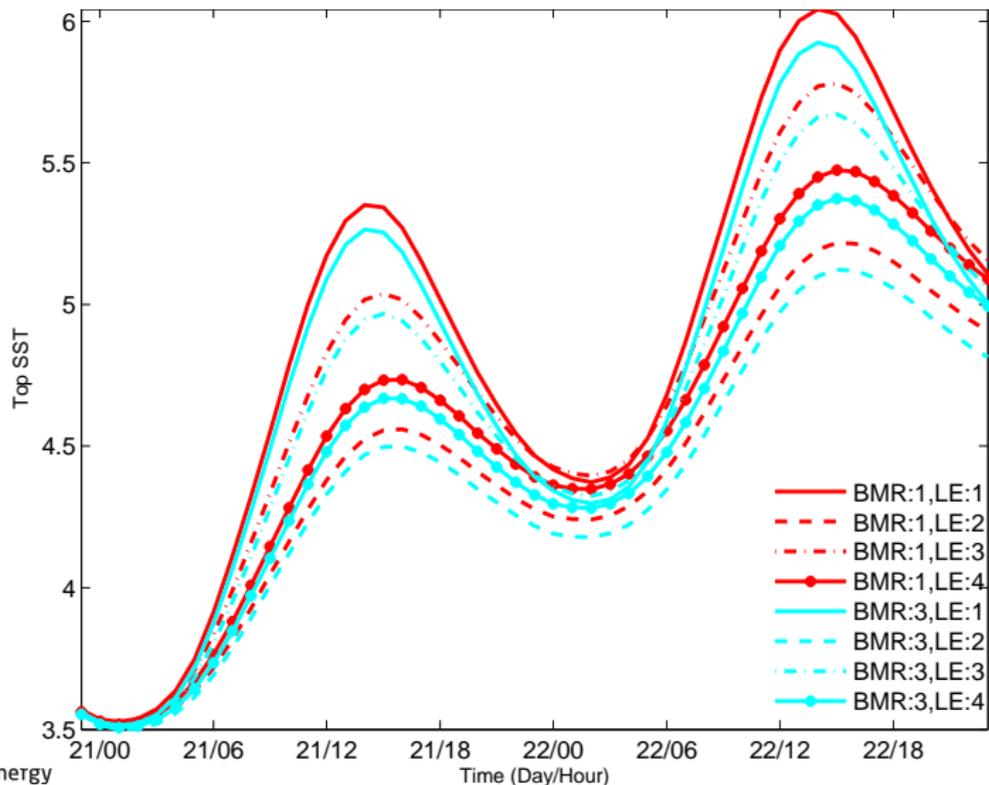
MetNo Sensitivity Tests: Fluxes



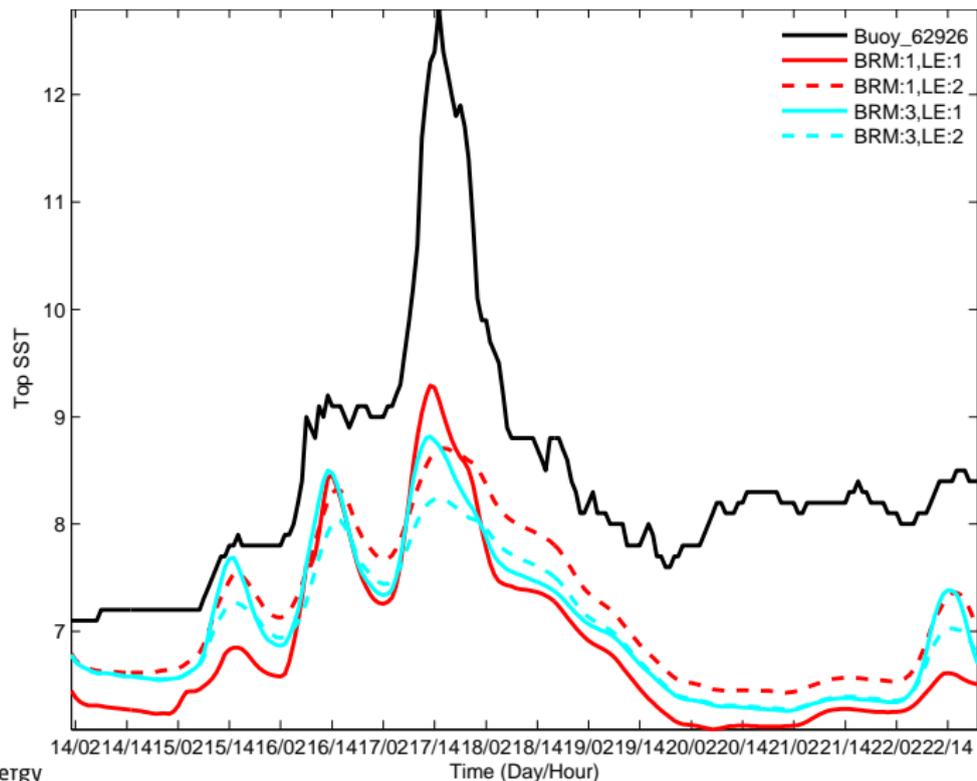
MetNo Sensitivity Tests: T Profiles



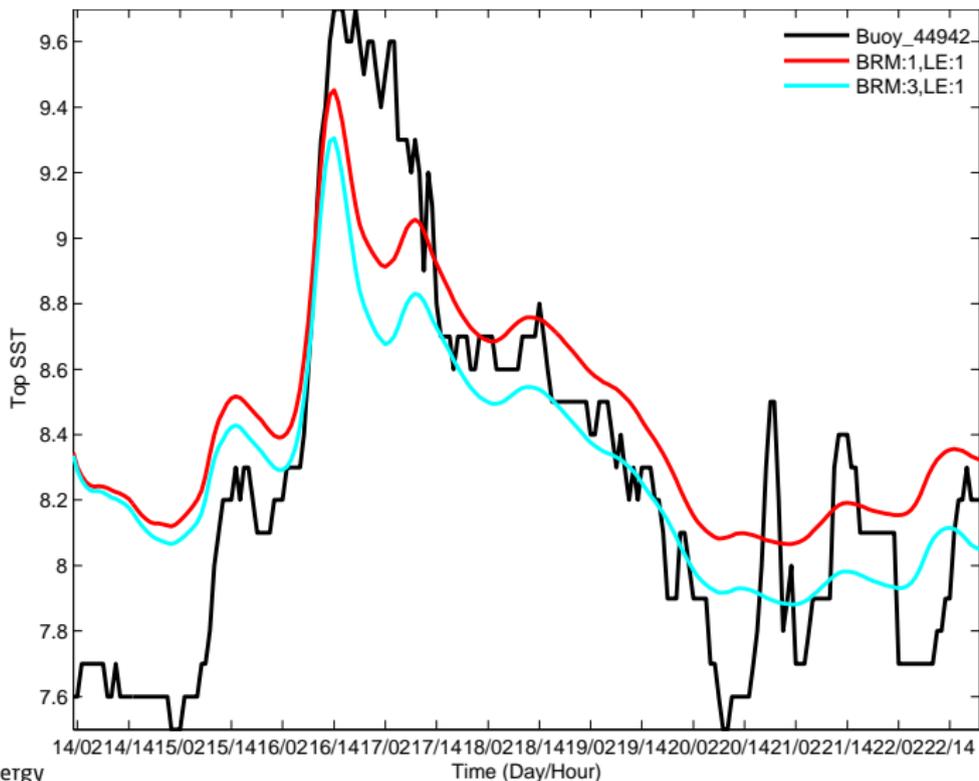
MetNo Sensitivity Tests: Light Extinction



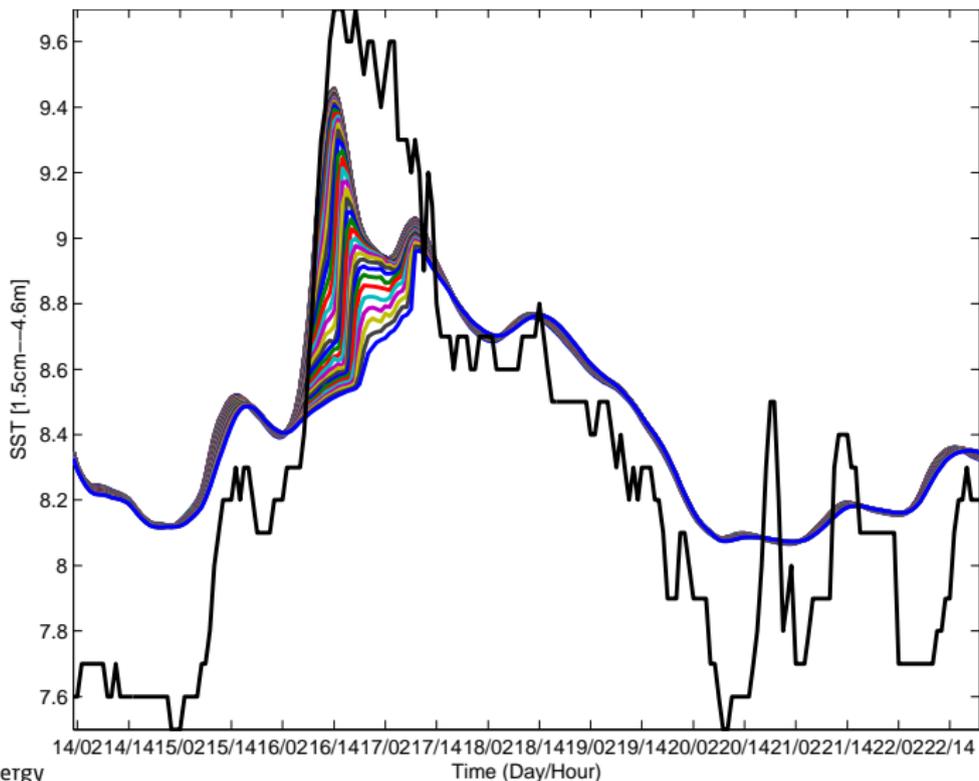
Drifting Buoy 62926



Drifting Buoy 44942 I



Drifting Buoy 44942 II



Conclusions & Future Work

- Calculated vs. Prescribed Fluxes: 1–0
- T profile important (not only top layer)
- Amplitude decreases for more turbid waters (???)
- GOTM reproduces daily signal
- Current set-up: little variability in upper 5m

- Implementing LE 9-band parameterisation
- Using ocean model S,T profiles from DMI
- GOTM runs in Atlantic and European Seas
- Unpumped ARGO floats?