

Interactive comment on “Near-surface diurnal warming simulations: validation with high resolution profile measurements” by B. Scanlon et al.

Anonymous Referee #1

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General comment This paper provides an original comparison between high resolution near-surface temperature profiles collected in situ, under different environmental conditions, and corresponding profiles obtained from 5 one-dimensional mixed layer models. The results are interesting but the paper requires some re-organization, a few clarifications and eventual additional comments/discussions before publishing.

Major comments: Sections 2-3 First of all, I would re-organize the sections moving section 2.1 first and setting it at the same level as section 2 and 3. All of them might fit as sub-sections of a more general ‘2. Material and Methods’. The sequence would then be ‘2.1 Instruments’ (instead of SST measurements), ‘2.2 Observations (present

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section 2), ‘2.3 Models’. It would be nice to have a brief description of the meteorological/atmospheric instruments/data and of the methods to estimate fluxes that have been used to force the mixed layer models. These would easily fit in the subsections suggested above, also including more details than those presently reported in section 3.

Section 4. It is not clear why the authors have decided to focus only on mean biases between observations and simulations, instead of considering also corresponding rmse. Either this choice should be justified or corresponding analysis should be included in the discussion.

Minor comments: Page 3858. Line 4. Question mark should be removed or substituted with proper reference.

Page 3860. Lines 2-6. This whole sentence is not clear at all. What kind of shift has been applied? What kind of advection effects are being considered?

Page 3861. Lines 8-12. See comment above. Limitation of 1D models probably need adequate discussion somewhere (most likely in the Introduction?) Line 28. Remove ‘perhaps’. Last line. Should be GC99.

Page 3862. Line 4. Change ‘simulates’ with ‘gives’.

Page 3864. Line 23. This sentence is not clear. We are seeing a mean observed temperature profile. What kind of diurnal warming are you talking about? Line 25. Remove ‘which are discussed in section 2.1’.

Page 3685. Line 6. ‘It is’, not ‘is is’.

Interactive comment on Ocean Sci. Discuss., 9, 3851, 2012.

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