

***Interactive comment on* “Sensors for physical fluxes at the sea surface: energy, heat, water, salt” by R. A. Weller et al.**

G. Griffiths (Editor)

gxg@noc.soton.ac.uk

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This paper is an authoritative review of sensors, their calibration and processing methods to enable research-quality measurements of physical fluxes at the sea surface. Its strengths are in describing the state-of-the-art in achievable accuracy, stability and longevity but it also points to a number of key developments that should be tackled. The arguments made are well founded and supported by an extensive set of references.

The following points should be considered by the authors in revising their paper:

Page 2 "High" accuracy and "sub-diurnal" time resolution are rather qualitative terms, perhaps the authors should explain that they provide specific details of accuracy and sampling rates for the different measurements within later sections. Also, (claimed)

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sensor accuracies are listed in the tables.

Page 3 Is flow distortion more of a problem for some instruments compared with others?

Page 4 The case has been made for measurements of surface waves at the end of the first paragraph. Examples of suitable sensors/instruments would be useful.

Page 5 Last line of second para of 3.1 C_p is introduced but not defined until section 4. What is meant by a "discrete" sensor?

Page 7 "lose too much frequency response" is open to misunderstanding, is it not better to write, if that is the case, that there is a reduction in the high frequency response?

Page 8 Section 5.2 would benefit from a reference to the available radiometers. "short run of pipe" should this ideally be a "thermally insulated" pipe?

Page 9 A reference to "Seasnake" would be helpful.

Page 10 Again, a reference to direct rainrate instruments would help here or refer forward to section 9?

Page 11 Are Pressure Anemometers not non-linear devices? Does this matter in this application?

Page 12 Add units for the Stefan Boltzman constant.

Page 13 Add reference to the WMO criteria? Ditto for the "recent trials" of a dynamic levelling system.

Pedantic point, is it "cleanliness" or "maintaining cleanliness" that is important?

Page 14 The $60\text{W}/\text{m}^2$ difference seems to be present even when the values are ca $400\text{W}/\text{m}^2$, the 6% refers to the case when the values are ca $1000\text{W}/\text{m}^2$, at $400\text{W}/\text{m}^2$ the difference is equivalent to 15%.

Page 15 Section 9.1 land and ocean are mentioned, for completeness does there need

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to be a sentence about measurements over ice, and of snow?

Proofreading points

The full stop is sometimes missing after al. Edson et al. in section 2.1 has a full stop after et

Page 12 Degree sign not needed in front of K for Kelvin

Page 14 Kipp & Zonen is referred to in this page in full, as KZ and as K&Z – rationalise.

Page 15 has nighttime and night-time

Page 17 "distances beyond 100km radius" is this not a tautology?

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5, S165–S167, 2008

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