

## ***Interactive comment on “Numerical tools to estimate the flux of a gas across the air-water interface and assess the heterogeneity of its forcing functions” by V. M. N. de C. da S. Vieira***

**Anonymous Referee #2**

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Most comments below are grammatical. In a few cases the meaning is unclear.

Comments refer to version "os-2012-17-discussions-typeset\_source-version6"  
"pdftitle=Air-water interface gas flux pdfauthor=V. M. N. de C. da S. Vieira title  
Manuscript prepared for Ocean Sci. Discuss. with version 3.5 of the LATEX class  
copernicus discussions.cls. Date: 28 June 2012"

Pgs 4 and 30. The acronyms MOHID, ECO lab, URI, WRL and FIO should be defined

Pg 4, 5 lines from bottom. Delete the line "The  $k_H$  is Henry's constant in its  $C_a/C_w$  form".

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Pg 5, 9 lines from top. "would be to extensive" should be "would be too extensive"

Pg 7, 10 lines from bottom. The standard definition of CD is in terms of a neutral wind speed,  $u_{10N}$ .

Pg. 7, 2 lines from bottom. "Air temperature . . . may also affect the air transfer velocity, although in a mild manner". The effect of air temperature is not at all mild, as shown by Smith (1988: J. Geophys. Res., 93, 15467-15472, Fig. 1)

Pg 8. Delete the lines "The simplest way was to use the fixed CD proposed by Duce et al (1991). This was unrealistic and its expected bias was assessed comparing with variable drag coefficient formulations dependent on  $U_{10}$  as proposed by Smith (1980), MacKay and Yuen (19 83) and Taylor and Yelland (2001). But even these were of limited application." This lines are essentially repeated from the previous pages.

Pg 9, 4 lines below Eq (4). The variable 'w' does not appear in Equation (4), so it does not avoid or reduce the confusion by discussing it here.

Pg 17 (fig 6). Add temperature range ( $T_a$  changing from 0C to 40C) to caption of Fig. 6

Pg 20, 12 lines from top. "It was attempted", not "It was essayed"

Pg 21, 4 lines from top. "Fourth", not "forth"

Pg 21, 10 lines from bottom. Use "very time consuming" instead of "much time consuming"

Pg 22, 6 occurrences: when referencing a date, "at the" should be replaced by "on". For instance, "verified at the 15 April 2011" should be "verified on 15 April 2011".

Pg 27, 7 – 8 lines from top. The statement "The latter further proposes intermediate scale waves are the dominant contributors to the ocean surface roughness" is only true for large waves.

Pg 30, 14 lines from bottom. "It is unfeasible the application of the DDF tool to thou-

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sands of locations every few seconds.” It is not entirely clear what is meant here. Perhaps “the application of” should be replaced by “to apply” ??

Pg 31, 11 lines from bottom: “height”, not “heigh”

Pg 33, above conclusions. A long list of references is essentially repeated twice within six lines. This should be avoided.

Pg 33 “devoted to oblivian”. It is unclear what is meant here, but presumably the authors mean to say “atmospheric stability and sea surface roughness have been neglected in studies about riverine systems”. This is not entirely true, as atmospheric stability goes into the calculation of 10m neutral wind speeds.

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Interactive comment on Ocean Sci. Discuss., 9, 909, 2012.