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Interactive comment on "A pipe network simulation model with dynamic transition between free surface and pressurized flow" *by* J. Fernández-Pato and P. García-Navarro

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Dear referee, thank you for your comments. We present now the answers and modifications:

0) Several authors have detailed this issue. See for example "Simulation of urban drainage systems" by Roland K Price, published in "Chaudhry, M. H. and Mays, L. W.: Computer modeling of free-surfaces and pressurized flows". Nevertheless, a short explanation will be added to the introduction section.

1+2) As indicated to referee 1, English will be reviewed and a table will be added, identifying each magnitude and its corresponding units.

Detailed comments:

COMMENT: Page 30, Eq. 3: what are "eta" and "h"?

ANSWER: "eta" and "h" correspond to the water depth variables, indicated in fig.2. A definition will be added to the text.

COMMENT: Page 31, line 19: I find the reference to speed of sound in gases irrelevant. Page 32, line 5: I find the reference to Mach nr irrelevant.

ANSWER: The analogy between Froude and Mach number was added for the sake of comprehension of the mathematical model. The readers not specialized in shallow water equations may find useful this comparison.

COMMENT: Page 32, line 7: Water hammer is presented for the first time in Section 2.2 without being properly introduced. How does water-hammer relate to the situation being studied?

ANSWER: We list the water hammer equations just for completeness sake but these equations are not used in the presented method. In fact, one of the main features of the model is to avoid using both systems of equations, simplifying the numerical resolution.

COMMENT: Page 32, line 21: why do you neglect the convective term?

ANSWER: The convective term is normally neglected in order to get a linear hyperbolic system. See "Chaudhry, M. H. and Mays, L. W.: Computer modeling of free-surfaces and pressurized flows" (15th proceeding)

COMMENT: Page 32, Eq. 15: what is "rho"?

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ANSWER: "rho" is the fluid density (definition will be added to the text)

COMMENT: Page 34, Eq. 22: What is parameter "bS"?

ANSWER: "bS" represents the width of the slot of the Preissmann method. (explanation will be added to the text)

COMMENT: Page 36, Eq. 36: what are you assuming here?

ANSWER: We are assuming that the water discharge is equally divided at the junction.

COMMENT: Page 36, line 15: a "sometimes a storage well junction is used", for what?

ANSWER: The storage well junctions have been implemented in order to explore the usual urban pipe system conditions.

COMMENT: Page 37, line 4: what is a "bump"? It had not yet been defined.

ANSWER: bump=protuberance. For the sake of clarity, the word will be replace for "obstacle"

We agree the rest of the comments/suggestions of the referee and will perform the corresponding corrections to the text.

Thank you again for the feedback.

Interactive comment on Drink. Water Eng. Sci. Discuss., 7, 27, 2014.