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Discussions

Interactive comment on "Uniform flow formulas for irregular sections" *by* E. Spada et al.

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Title: Uniform flow formulas for irregular sections By E. Spada, T. Tucciarelli, M. Sinagra, V. Sammartano, and G. Corato

In this paper, the authors presented two new methods for calculating flow discharge. However, it does need further clarification.

1. The title - Uniform flow formulas for irregular sections - suggests that the new methods are applicable to all planform rivers (i.e. straight, meander and skewed simple or compound rivers) but the sections up to 4 are only deals with straight simple (K4 case?) or compound channels (other cases). Are these methods applicable to all planform rivers?

2. The SKM or similar methods can be numerically solved (see our paper with Rameshwaran & Shiono 2007) i.e. for irregular sections. You only need to discretized into linear elements for analytical solution only (lines 101 to 102).

3. In SKM papers, the friction factor is defined as f=8gRS/Uˆ2 but some other papers including Huthoff et al. 2008, it is defined as f=gRS/Uˆ2. The authors need to state their friction factor equation.

4. Looking at 13 km Alzette study reach in Figure 4, It got variety of planform (straight, bend/curve, meander etc). In such cases, the energy losses not only form bed roughness elements but also from secondary flows due to planform and expansions and contractions in meandering. Are these methods applicable to the Alzette study reach? The authors need to clarify this.

5. Line 400, the length of the reach is about four times the top width of the section. Line 450, in the inlet section a constant velocity, normal to the section, is applied, and the pressure is left unknown. Is the length (i.e. using constant velocity inlet) enough for flow to develop within 3D model? The authors need to provide evidence.

6. Lines 460 to 462: CFX allows the use, inside the boundary layer, of a velocity logarithmic law, according to an equivalent granular size. What is the logarithmic d50 relationship used in CFX?

7. What is the d50 value used? Is the logarithmic relationship and first (i.e. boundary mesh size) valid (see papers Nicholas, 2005; Lane et al., 2004; Carney et al., 2006, Rameshwaran et al. 2011)?

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