



Interactive  
Comment

## ***Interactive comment on “TITAN2F: a pseudo-3-D model of 2-phase debris flows” by G. Córdoba et al.***

**G. Córdoba et al.**

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article Dear referee,

Thanking your suggestions, we modified the paper to adjust it accordingly. However, in the attached pdf file some sections appear in german. This is a bug in the copernicus .cls latex class, which is fixed once compiled by the Copernicus staff.  
The list of changes are:

- typeset reviewed

C1505

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- spell checking done
- Improved differences with Pitman and Le (2005) put into a separate section
- A plot is added to explain how we deal with the volume fraction changes and its relationship with  $K_{ap}$
- New section about numeric added.
- In the section Introduction, we explain the shortcomings of Pitman and Le model that we want to address, and the fundamental idea of our work.
- We explain that some of the new parameters are fixed within the program, and that we only need the location, volume and initial concentration, instead of the basal and internal friction angles.
- The redaction of sections 2.1 and 2.2 has been modified
- A note about the validation and verification added to explain that most of the test are done in 2D.
- All the minor objections has been addressed in addition to an expansion of the explanation of the most important difference with Pitman and Le, which is the fluid phase equation and the fluid friction at wall effect.
- The section about fluid stresses was expanded to stress the differences with Pitman and Le model, and to a better understanding
  - Appropriate references are now given to explain the depth averaging.
- It is explained now that the particles fraction is limited to a maximum pack concentration, in order to ensure that the drag equation never reach infinity.
- About the variable names: we add a note explaining that we prefer to follow the same notation of Savage and Hutter (1989). We explain more clearly the meaning of each variable.
- About P3802/L5: We disagree. As we understand, fully saturated flow refers to underground flows.
- Figures and caption suggestions has been addressed.
- A section with nomenclature has been added.

Thanks,

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**NHESD**

3, C1505–C1507, 2015

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