

EXERCISE N°2: a logical fault (we are stuck between two constraints)

In the so-called PDF-based sedimentation, the ALARO-0 option works with the constraint $P2 > P3$, in order to ensure that the equilibrium value of the falling species is always positive.

Yves Bouteloup detected that this choice can lead to potentially forecast negative quantities of the same falling species, something that does not happen if $P2 < P3$!

The aim of the exercise is to try and find out whether there may exist a solution out of this dilemma, apart from the trivial one of setting $P2 = P3$!

The correction may happen at any place of the code (in APLMPHYS and/or in ACEVMEL, at the end of which some securities are indeed already activated and could be 'adapted').

The available material is:

- the code of APLMPHYS and the code of ACEVMEL;
- Y.Bouteloup, September 2008: Différences entre APLMPHYS stimulant ACPLUIZ et ACPLUIZ ;
- Geleyn, J.F., Catry, B., Bouteloup, Y. and Brozkova, R. 2008. A statistical approach for sedimentation inside a micro-physical precipitation scheme. Tellus, 60A, 649-662.