Comment of reviewer 2 concerning author's reply

Paper: HESS-2015-365 MS

Condensation causes airflow in a closed system or in a system in which only one preferential main flow direction is possible, i.e. in a pipeline or in an apparatus. This phenomenon was demonstrated by using the experimental setup described in this paper.

In contrast to that, the atmosphere is an open system. If condensation takes place in a limited volume (cloud formation), there is no "implosive pressure drop" because the loss of the volume of water vapor is compensated nearly instantaneously by air, which flows from all directions into this "vacuum" in order to keep the total pressure constant. That means no preferential flow direction appears in this case and an appreciable biotic pump effect in vertical direction is rather improbable.

Furthermore, the authors corrected eqn. (5) and claim that there was a type error in the paper, but that the analysis of the experiments has been performed with the correct equation.

Unfortunately, considering these corrections, eqns. (4) – (6) are now as before wrong. That is why below the correct thermodynamic relationships are given.

To avoid further misunderstanding, more convenient thermodynamic symbols are used instead of the symbols r and q.

R_{air}, R_w = gas constants of air and water

w = mass fraction of **water** (mass of water per mass of mixture)

X = mass of water per mass of **dry** air.

p_w, p_{air} = partial pressures of water and air, respectively.

$p = p_{air} + p_w$ (total pressure)

Quotient of molar masses (water to air) 18 / 29 = 0.622.

Taking into account the definitions above the following correct equations (4) – (6) can be formulated:

$$R = w R_w + (1-w) R_{air} \quad (4)$$

$$X = 0.622\, p_w / (p - p_w) \quad (5)$$

$$w = X / (1 + X) \quad (6)$$