My thanks to Referee 3 for comments – responses follow below.

Firstly, with reference to the Kirchner et al (2001, Eq 11), I did indeed omit the 0.5 multiplier in the definition of z0. My thanks for picking up my poor copying of the expression – although as noted this has no implications for the argument in the current paper.

I guess my reference to a "typesetting error" may have been a little too strong. And there was never any suggestion of a mathematical error. I think though the expression $1/4Pe(\tau/\tau_0)$ would be clearer with a second set of brackets. If the current paper is accepted I would reproduce the original equation with the extra brackets added but without reference to a typesetting error.

In the Kirchner et al (2001), standardised time was represented as τ/τ_0. It seems more compact to simply define τ to be standardised time without having the explicit rescaling. If this is seen as an issue then there is no problem to revert back to τ/τ_0.

There is no disagreement that an arbitrary change of integration limits would be just that – arbitrary – and therefore not very helpful.

An argument is requested to demonstrate that if A < x* then f(0) = 0. The argument is simple. The distance x*- A is some interval of distance greater than zero. A particle which starts its random walk from point x* at time t = 0 cannot also arrive at A at time t = 0, unless it travels at infinite speed. Therefore f(0) = 0 if A < x*.

I have no reason to have any issue with singularities in probability density functions as such. But there is an issue if the singularity creates an L-shaped transit time distribution, which must be an incorrect form.

Further to this, it is evident from paragraphs 1 and 2 of Referee #1 that, apparently, everyone is very aware than anything other than f(0) = 0 is incorrect, although Referee #1 felt that this truth was of no particular consequence. In contrast, Referee #3 maintains:

"Thus, there are tracer particles which are precisely at the outflow at t=0, which do not disperse, leading to sharp peak, and others further away which do disperse and lead to long tails…".

So who is correct? Is it Referee #1, or Referee #3 ? If Referee #1 is correct then the tracer particles in the transit time distribution all transit some non-zero time to an observation point and Eq (1) in the present paper applies. If Referee # 3 is correct the tracer particles of the transit time distribution are comprised of two sub-populations : those which transit and those which do not. In that case Eq (2) of the present paper would apply.

It is of course Referee #1 who is correct, because particles which do not transit cannot be a sub-population of a transit time distribution.

The current paper does indeed have a single subject, as noted in the title - drawing attention to the fact that transit time distributions cannot be L-shaped. And, by implication, noting that any mathematical derivation leading to L-shaped transit time forms must contain some degree of error. Utilising the property f(0) = 0 is simply a means on the way to achieve that end.

It is beyond the scope of this brief technical note to use the rejection of L-shaped forms to provide a starting point for alternative approaches which take into account data gathering and the physical complexities of catchment processes. However, elsewhere in HESSD I do have a paper morphing its way through several iterations which may or may not turn out to be helpful for nonparametric approaches.

Finally, it is worth repeating the comment at the end of the paper. The argument is not simply variations on some obscure theme as to how many tracer particles might dance on the head of a needle. The assumption of L-shaped transit time distributions is in fact potentially risky in practice. That is, it is entirely possible that a brief pulse of contaminant widespread over at catchment could result in multiple peaks of downstream contaminant concentrations, and not just decline consistently over time.

My thanks again to Referee # 3. I understand there is also a Referee # 5 due to release comment, so I will perhaps wait and respond to Referees #4 and #5 together.