Supplement

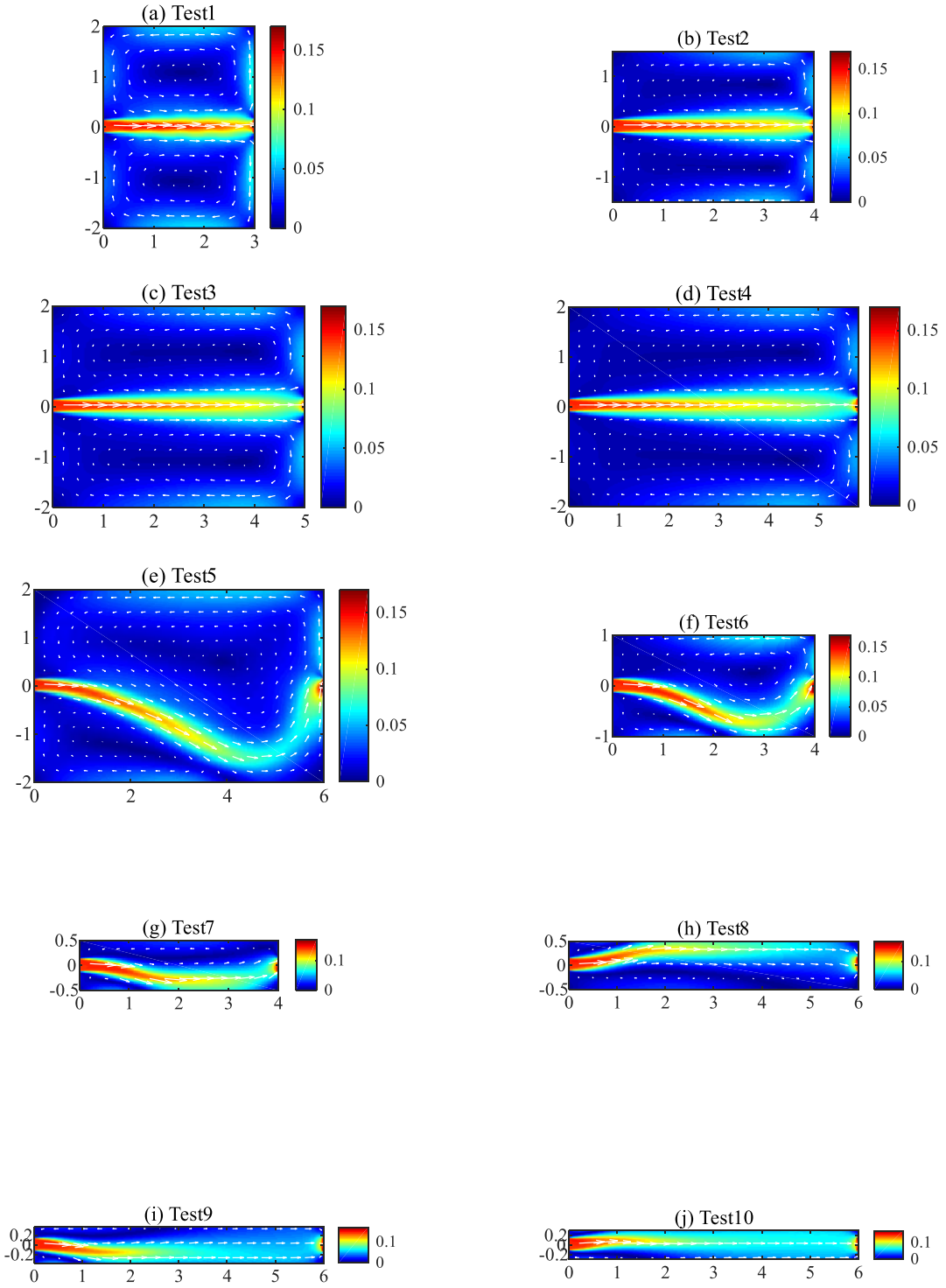


Figure S1 Computed depth-averaged flow fields (m/s).

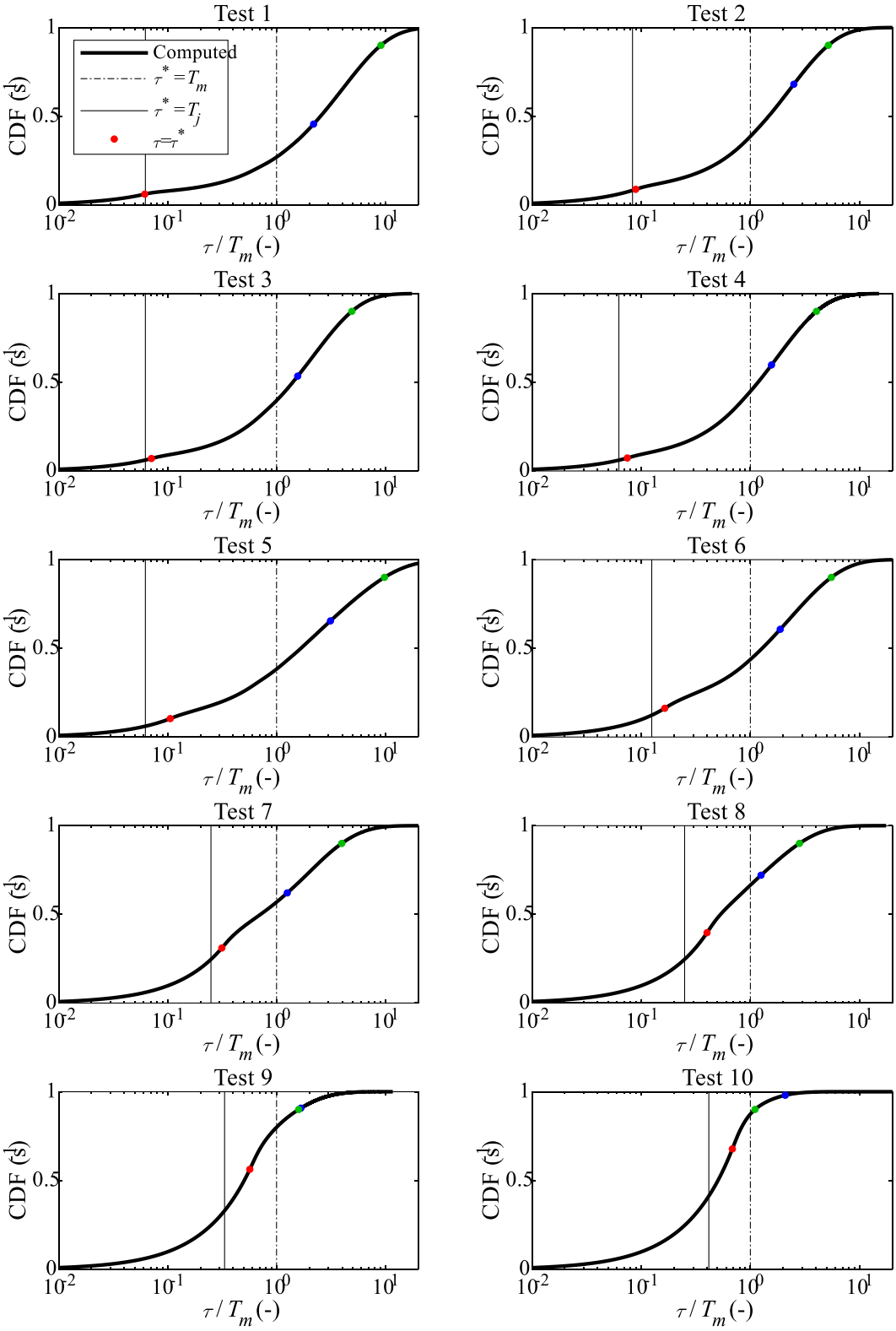
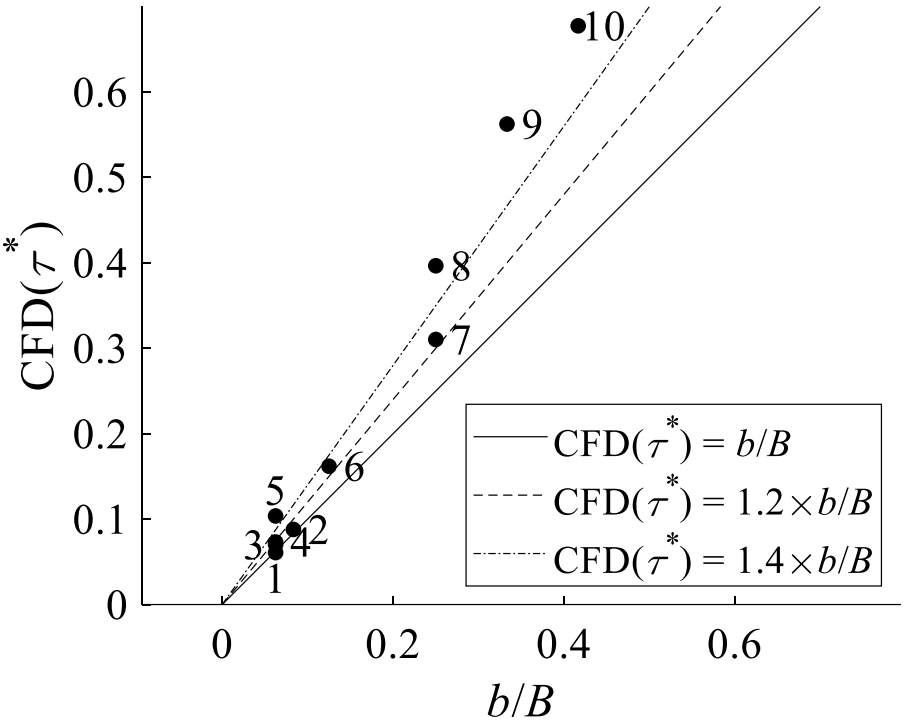
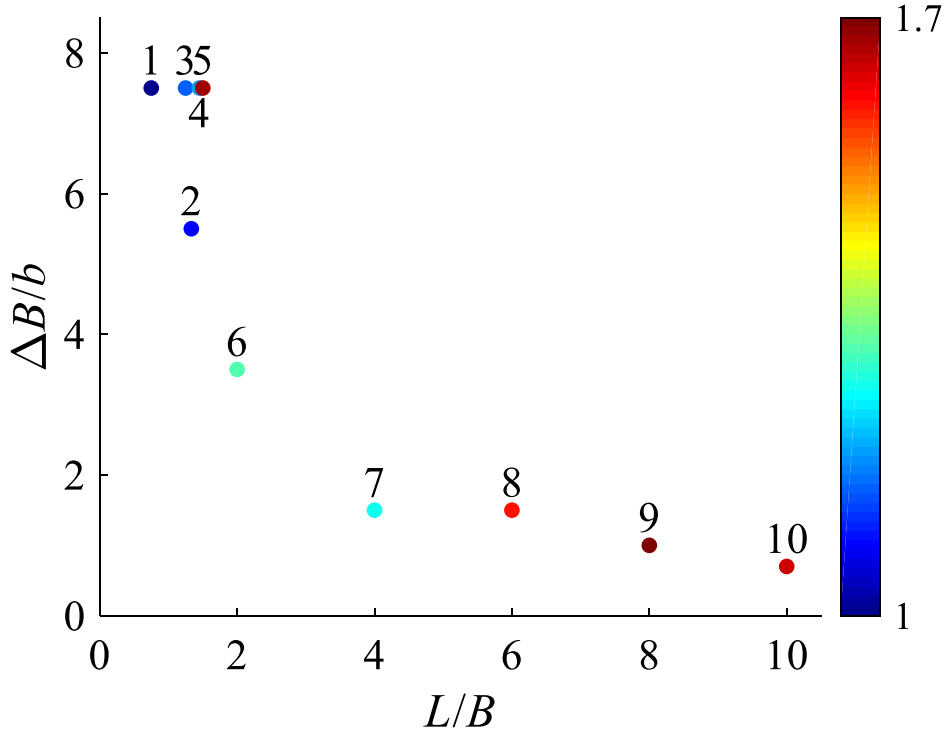


Figure S2 Volume-averaged cumulative water age distribution functions (CDF). Note that, in the horizontal axis, the age τ has been scaled by the characteristic time T_m, and that a logarithmic scale is used. The blue marker (•) indicates approximately the value of τ above which the corresponding fraction of the reservoir operates similarly to a perfectly mixed reservoir. The green marker (•) is the 90th percentile of the age distribution.



(a)



(b)

Figure S3 (a) CDF(τ^*) as a function of b / B representing the ratio of the volume occupied by an idealized jet without diffusion (h b L) to the entire reservoir volume (h B L), (b) ratio of CDF(τ^*) to b / B (colour scale), as a function of the reservoir aspect ratio L / B and its expansion ratio ΔB / b. The number next to each marker in the graphs indicates the corresponding test ID.

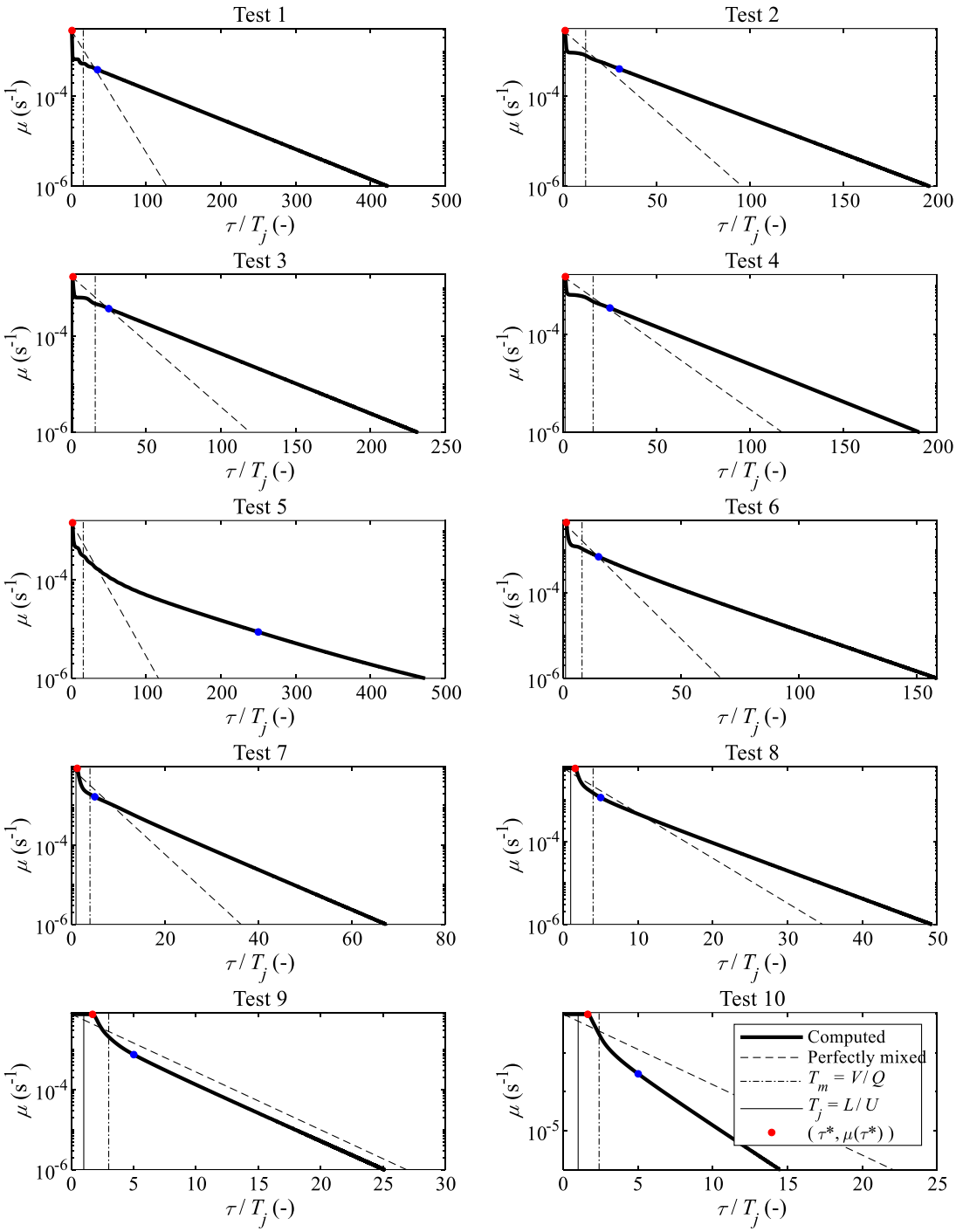


Figure S4 Computed volume-averaged water age distribution, compared to the distribution corresponding to a perfectly mixed reservoir of same volume, as well as to the time scales T_m and T_j. The red marker (•) corresponds to the upper bound τ^* of the range where μ is uniform. Note that, in the horizontal axis, the age τ has been scaled by the characteristic time T_j, and that a logarithmic scale is used for the vertical axis. The blue marker (•) indicates approximately the value of τ above which the representation of μ follows a straight line (i.e., the corresponding fraction of the reservoir operates similarly to a perfectly mixed reservoir).