Clarification of Calpuff Slug eqs:
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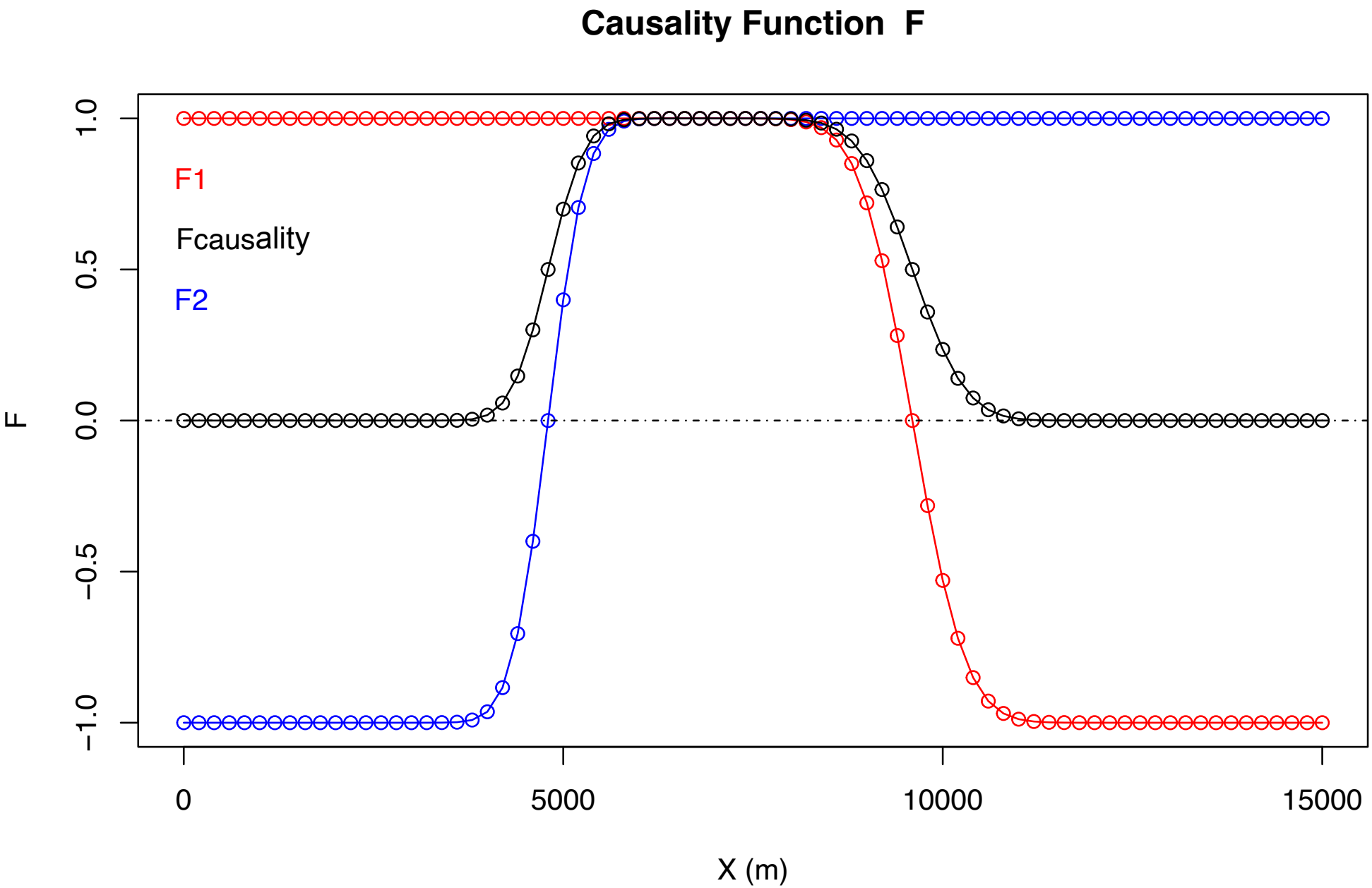
Clarification of CALPUFF v5 User Guide eq (2-15):
Let
U = wind speed
Δt = elapsed time since smoke puff was emitted
x = distance downwind of the stack

x1 = U* Δt downwind location of the initial (farthest) slug point
x2 = U* Δt downwind location of the final (nearest) slug point

F2 = erf((x-x2) / (sqrt(2.)*sigma_y2)) # F_causality portion associated with final slug point
F1 = erf(-(x-x1) / (sqrt(2.)*sigma_y1)) # F_causality portion associated with initial slug point
Fcausality = 0.5*(F2 + F1) # total causality function

where sigma_y is the horizontal std.deviation of smoke puff spread (assumes sigma_x = sigma_y)

See plot on next page.


Causality Function F
F1
Fcausality
F2
F
1.0
0.5
0.0
−0.5
−1.0
0
5000
10000
15000
X (m)