

Exercise 3: Question 3

Here we present the particle tracing results from FemFlow. We are now testing the effect of dispersion coefficient. In all simulations we have wind blowing from west with a speed of 5 m/s. The flow model has been simulating lake flow field for 12.5 h. This means that the lake circulation system has been stabilized. Now we enter 50 particles at the point (1000,2000) and let the flow field transport them for 24 hours.

Q3: Study the particle tracing results below in three cases. What is the effect of changing the dispersion coefficient on the particle transport?

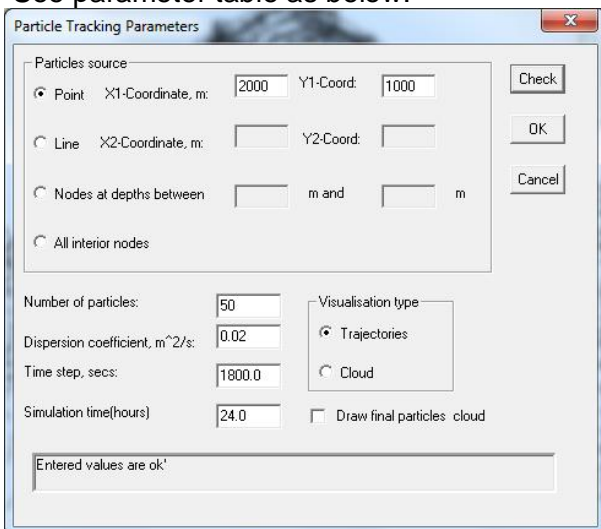
Case 1.

West wind 5 m/s

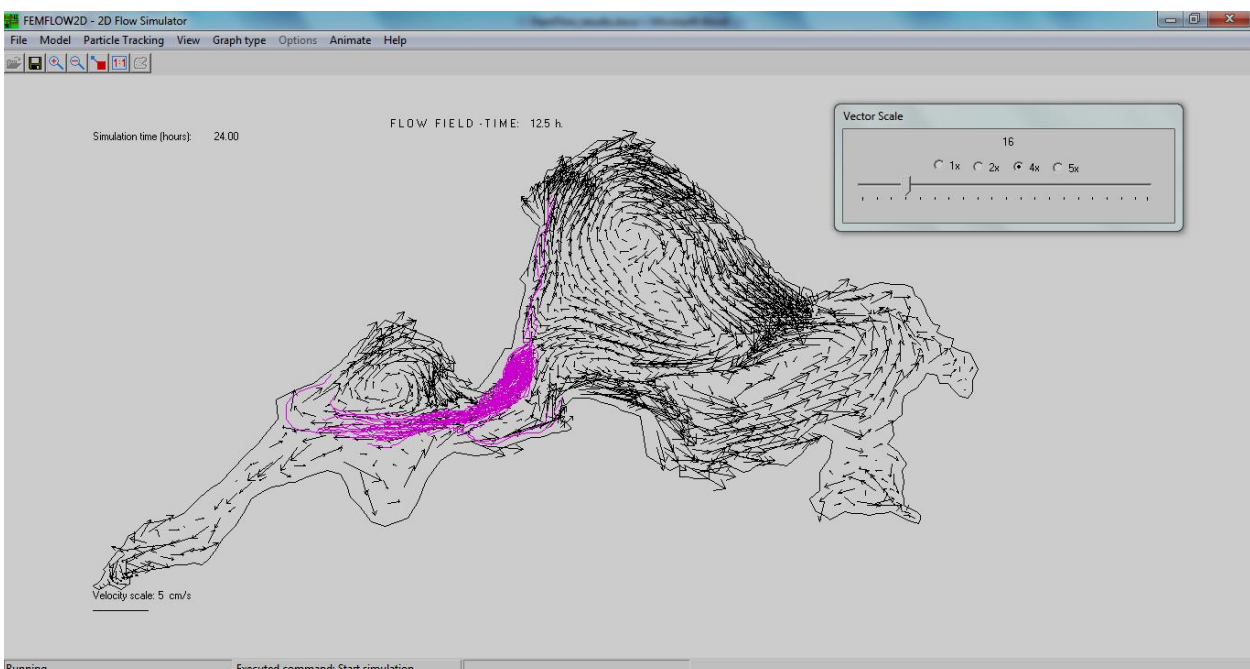
Simulation time 12.5 h

Dispersion coefficient = $0.02 \text{ m}^2/\text{s}$

See parameter table as below:



Simulation result in case 1:



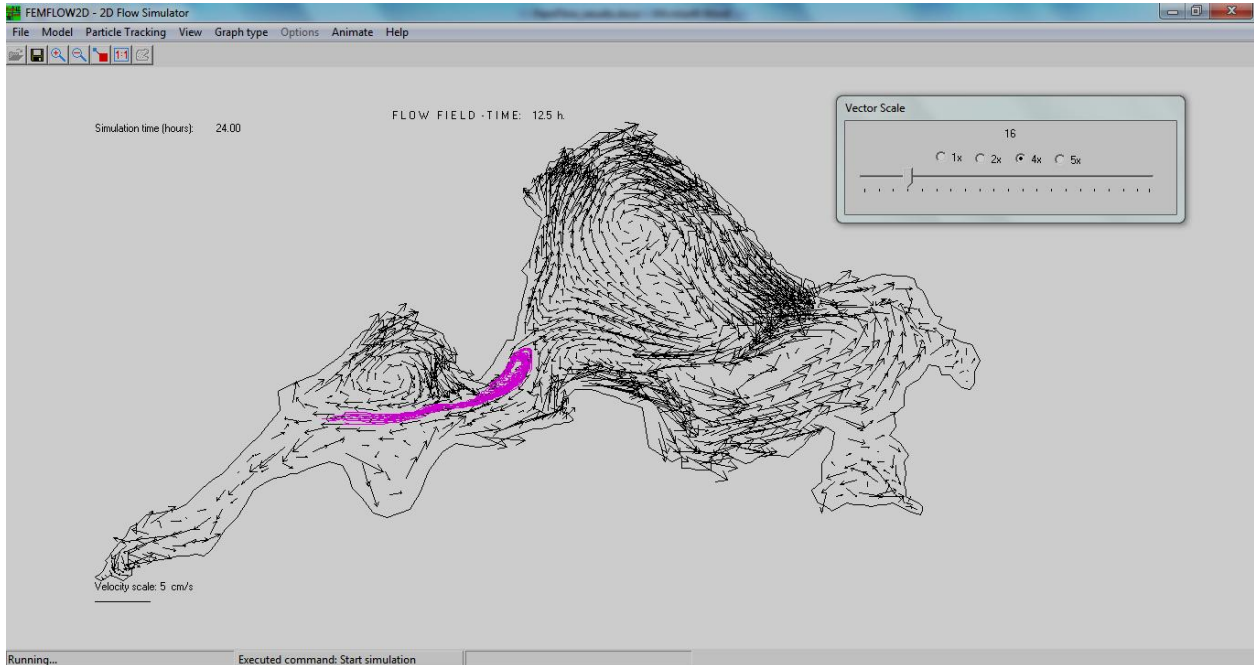
Case 2.

West wind 5 m/s

Simulation time 12.5 h

Dispersion coefficient = 0.002 m²/s

Simulation result:



Case 3.

West wind 5 m/s

Simulation time 12.5 h

Dispersion coefficient = 0.2 m²/s

Simulation result:

