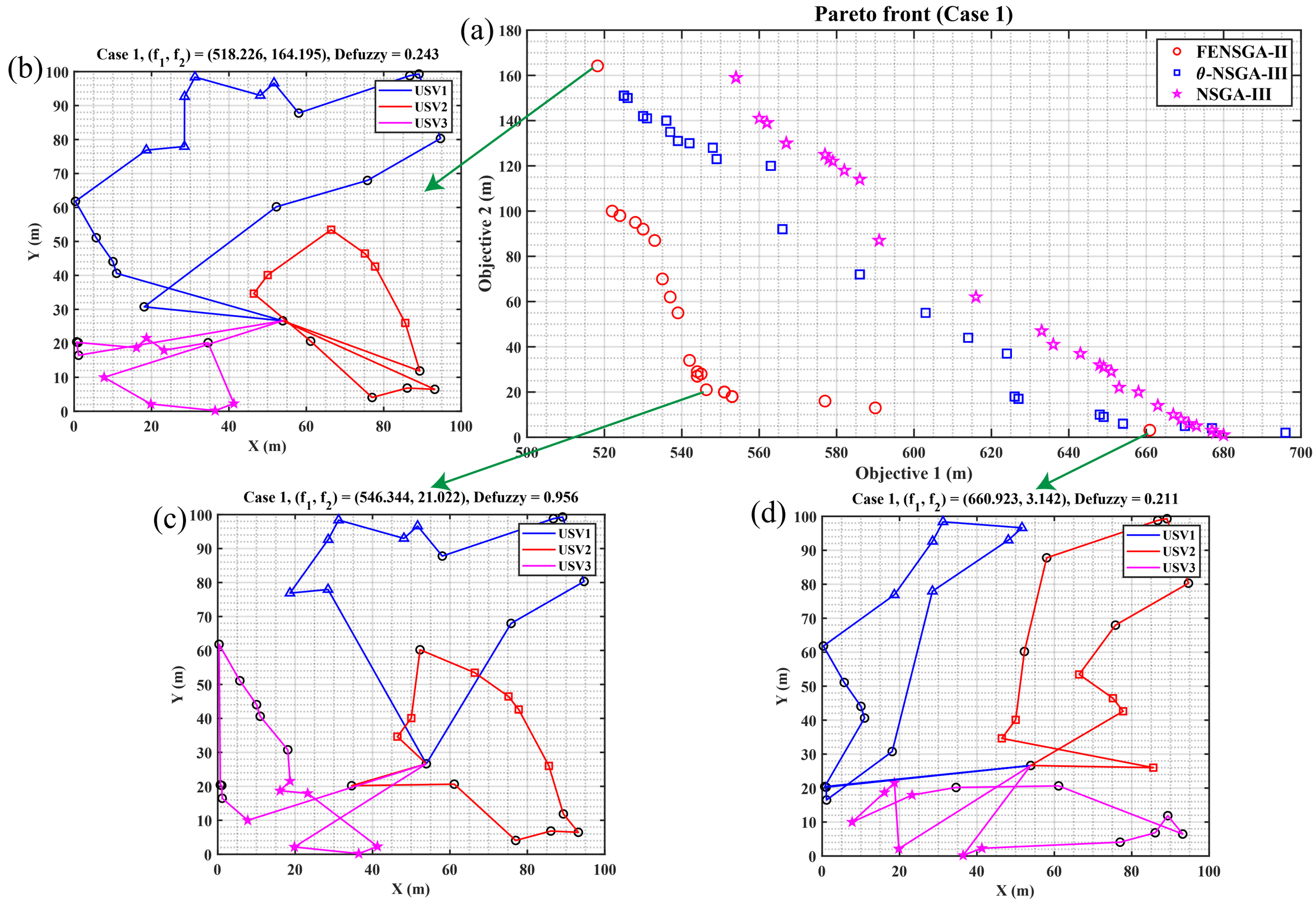
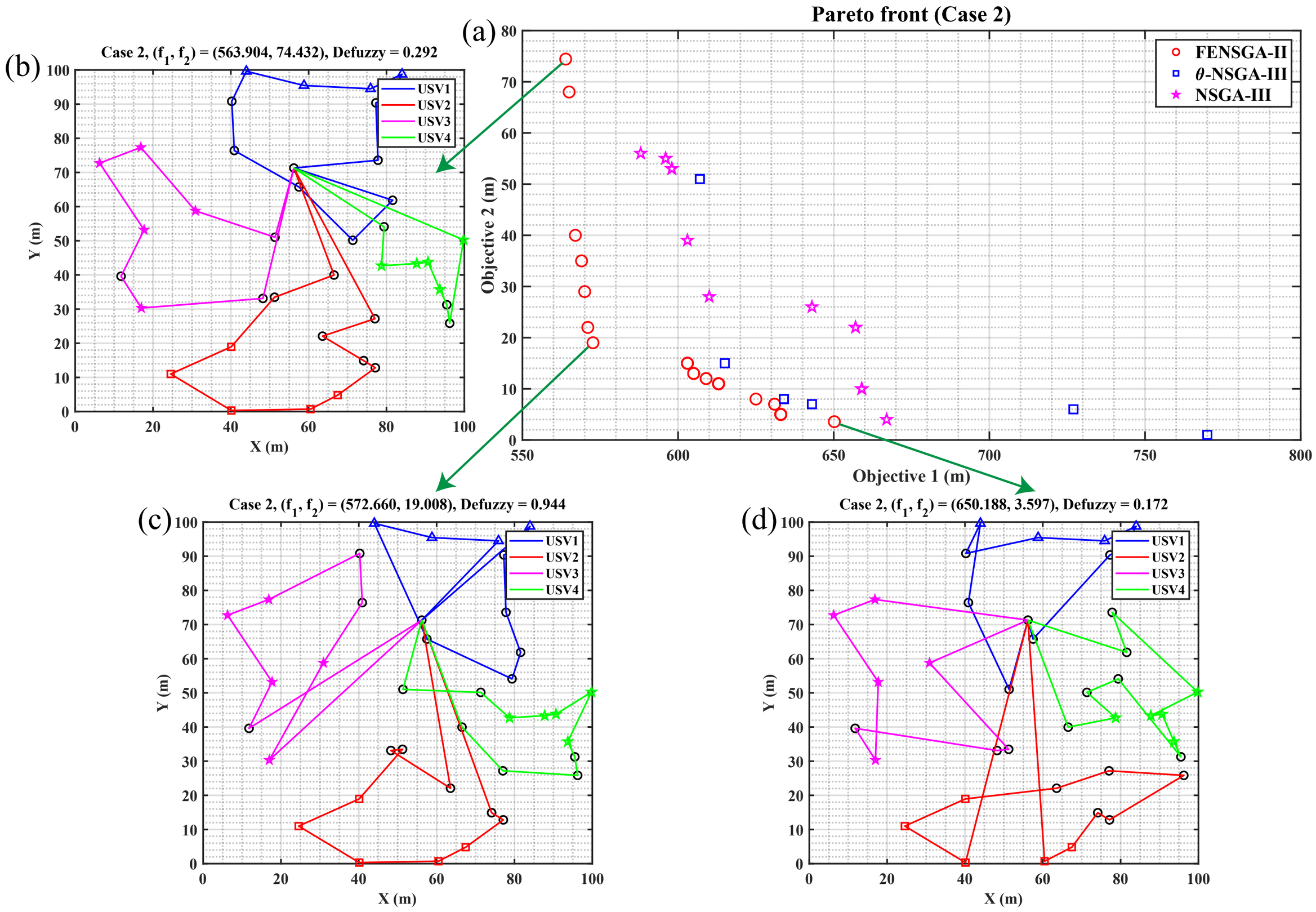
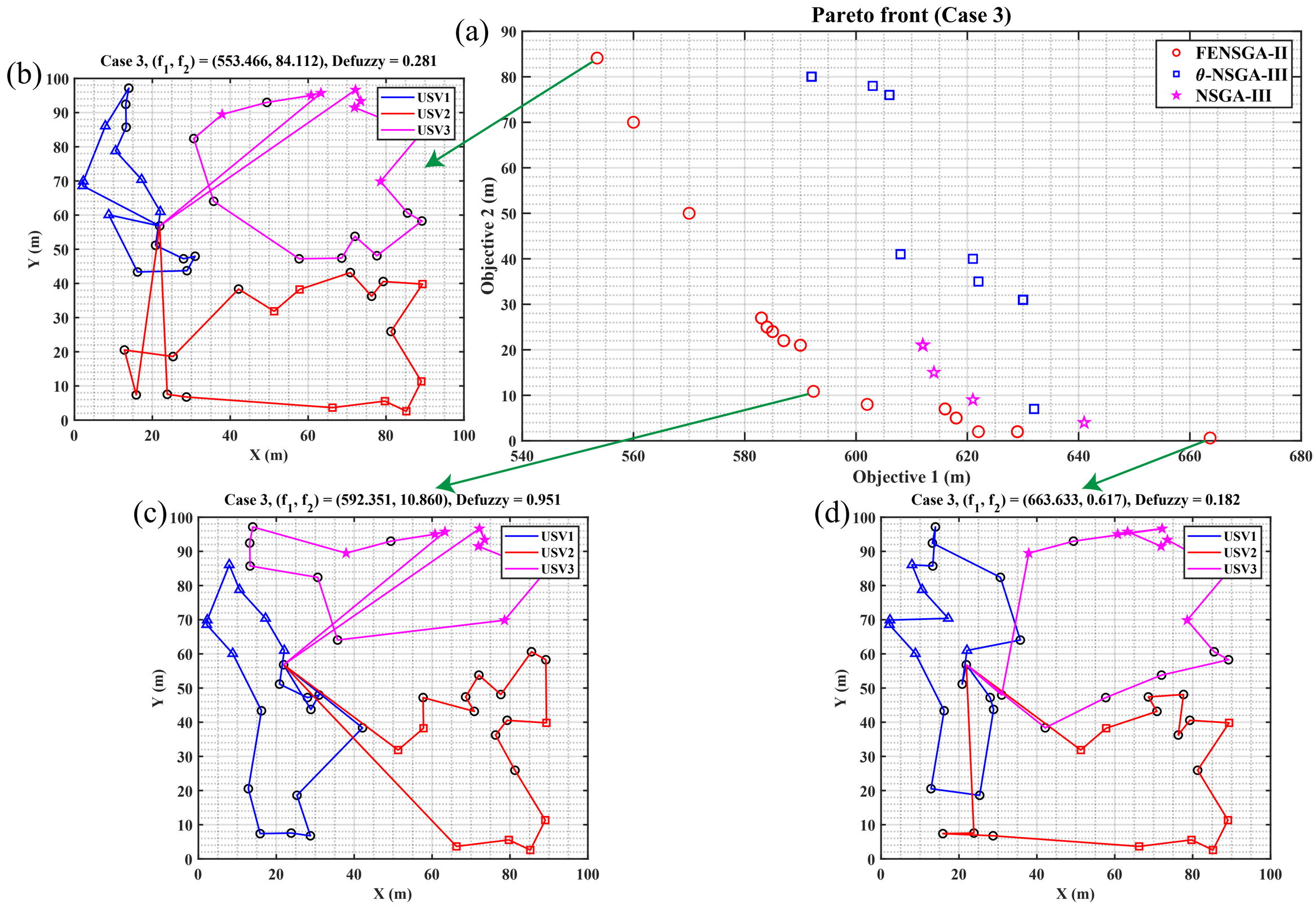
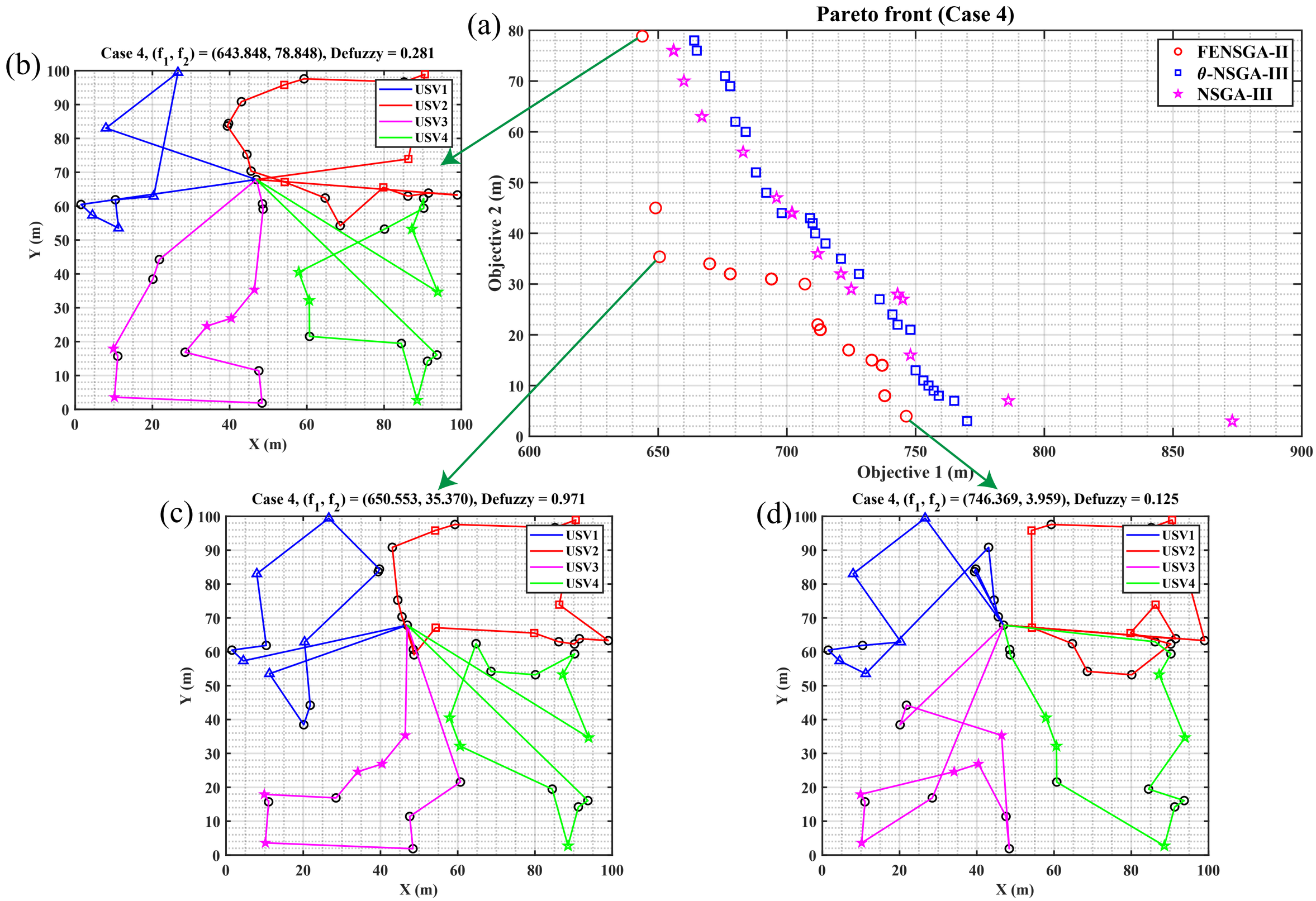
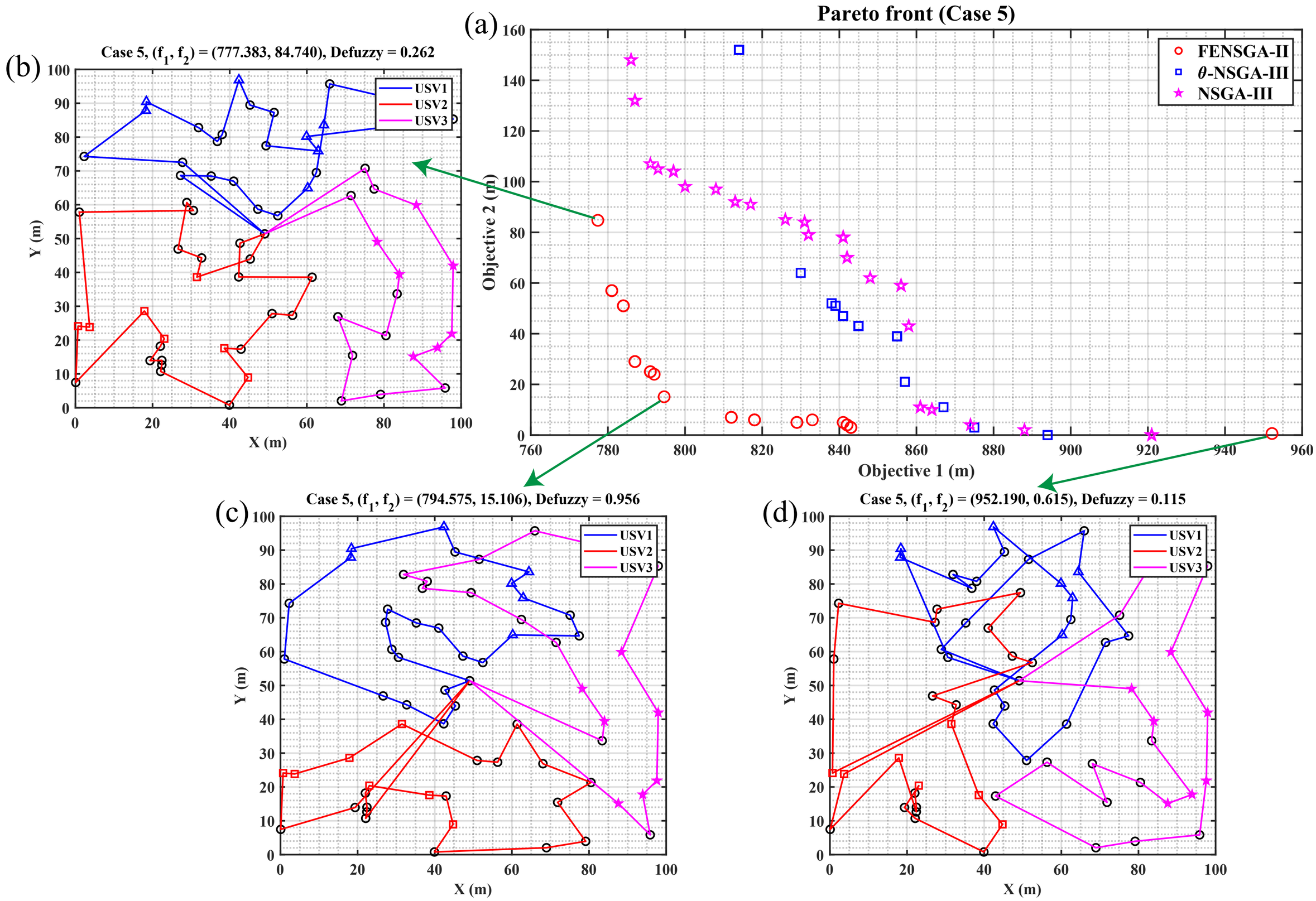
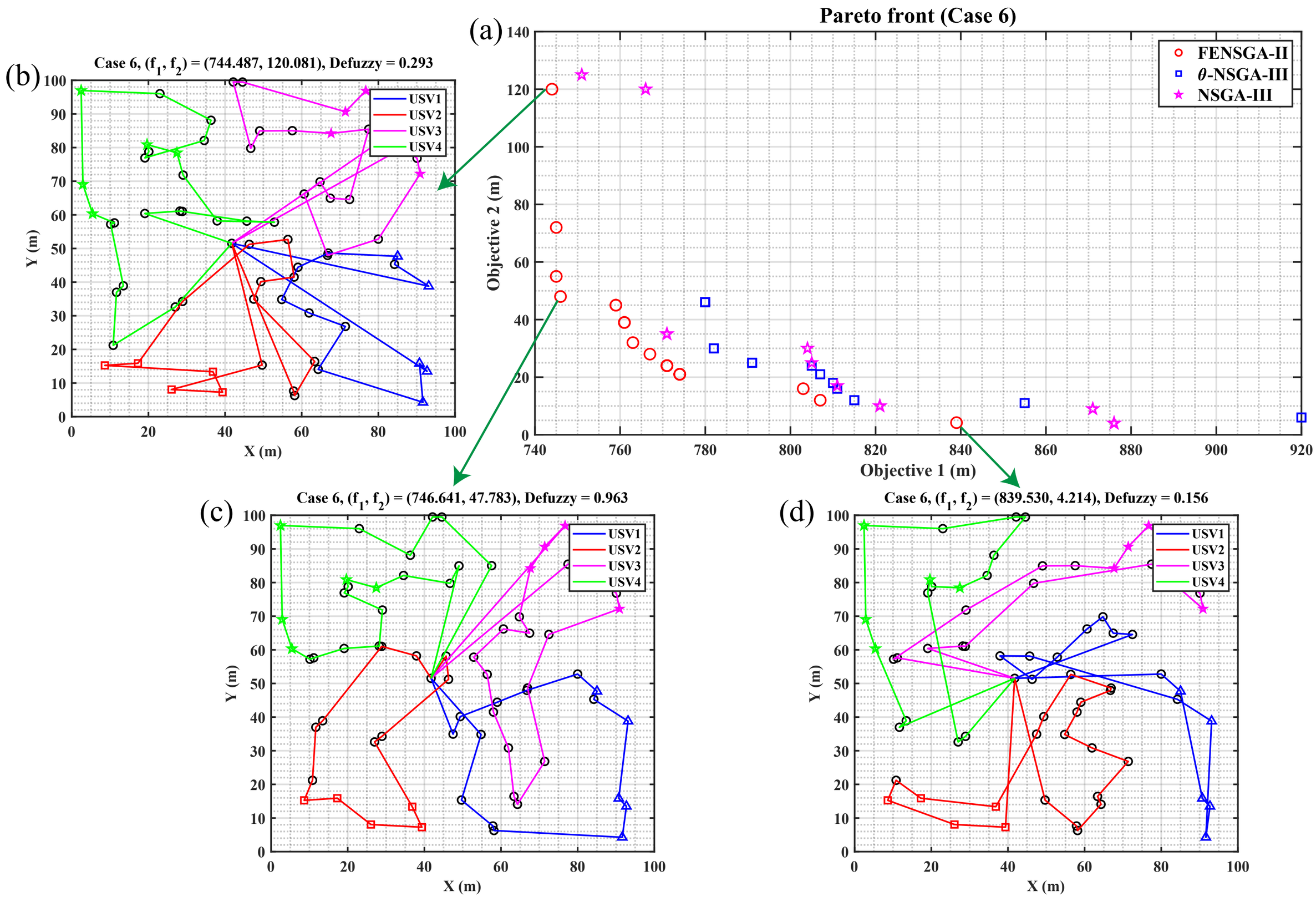

(a)
Pareto front (Case 1)
FENSGA-II
θ-NSGA-III
NSGA-III
Objective 1 (m)
Objective 2 (m)
(b)
Case 1, (f1, f2) = (518.226, 164.195), Defuzzy = 0.243
USV1
USV2
USV3
X (m)
Y (m)
(c)
Case 1, (f1, f2) = (546.344, 21.022), Defuzzy = 0.956
USV1
USV2
USV3
X (m)
Y (m)
(d)
Case 1, (f1, f2) = (660.923, 3.142), Defuzzy = 0.211
USV1
USV2
USV3
X (m)
Y (m)


(a)
Pareto front (Case 2)
FENSGA-II
θ-NSGA-III
NSGA-III
Objective 1 (m)
Objective 2 (m)
(b)
Case 2, (f1, f2) = (563.904, 74.432), Defuzzy = 0.292
USV1
USV2
USV3
USV4
X (m)
Y (m)
(c)
Case 2, (f1, f2) = (572.660, 19.008), Defuzzy = 0.944
(d)
Case 2, (f1, f2) = (650.188, 3.597), Defuzzy = 0.172


(a)
Pareto front (Case 3)
FENSGA-II
θ-NSGA-III
NSGA-III
Objective 1 (m)
Objective 2 (m)
(b)
Case 3, (f1, f2) = (553.466, 84.112), Defuzzy = 0.281
USV1
USV2
USV3
X (m)
Y (m)
(c)
Case 3, (f1, f2) = (592.351, 10.860), Defuzzy = 0.951
USV1
USV2
USV3
X (m)
Y (m)
(d)
Case 3, (f1, f2) = (663.633, 0.617), Defuzzy = 0.182
USV1
USV2
USV3
X (m)
Y (m)


(a)
Pareto front (Case 4)
FENSGA-II
θ-NSGA-III
NSGA-III
Objective 1 (m)
Objective 2 (m)
(b)
Case 4, (f1, f2) = (643.848, 78.848), Defuzzy = 0.281
USV1
USV2
USV3
USV4
X (m)
Y (m)
(c)
Case 4, (f1, f2) = (650.553, 35.370), Defuzzy = 0.971
(d)
Case 4, (f1, f2) = (746.369, 3.959), Defuzzy = 0.125


(a)
Pareto front (Case 5)
FENSGA-II
θ-NSGA-III
NSGA-III
Objective 1 (m)
Objective 2 (m)
(b)
Case 5, (f1, f2) = (777.383, 84.740), Defuzzy = 0.262
USV1
USV2
USV3
X (m)
Y (m)
(c)
Case 5, (f1, f2) = (794.575, 15.106), Defuzzy = 0.956
USV1
USV2
USV3
X (m)
Y (m)
(d)
Case 5, (f1, f2) = (952.190, 0.615), Defuzzy = 0.115
USV1
USV2
USV3
X (m)
Y (m)


(a)
Pareto front (Case 6)
FENSGA-II
θ-NSGA-III
NSGA-III
Objective 1 (m)
Objective 2 (m)
(b)
Case 6, (f1, f2) = (744.487, 120.081), Defuzzy = 0.293
USV1
USV2
USV3
USV4
X (m)
Y (m)
(c)
Case 6, (f1, f2) = (746.641, 47.783), Defuzzy = 0.963
(d)
Case 6, (f1, f2) = (839.530, 4.214), Defuzzy = 0.156