The figure is plotted with the minimum value for each iteration. x & y is generated randomly in the range of -10000 to 10000 and calculated with the eggfunction.

For Hill Climbing Search:

The distribution of minima is very high. For a particular scenario it shows range from -50000 to -200000. The operation takes only 0.26851657499992143 seconds



**For Hill Climb with Differential Evolution**:  
The distribution of minima is very low. For a particular scenario it shows the range from -12000 to -19000. whole Operation time required: 2.521618459000024 seconds for 100 iterations.



DE optimizes a problem by maintaining a population of candidate solutions and creating new candidate solutions by combining existing ones according to its simple formulae, and then keeping whichever candidate solution has the best score or fitness on the optimization problem at hand.

That’s why it takes longer time then just Hill Climbing Search  
  
Analysis:

In DE the curve has more gradual increment or decrement. Although it does not guaranty finding the global optima. Hill Climbing Search does not guaranty either.