The taxicab norm

$$d_T(\vec{p}_1, \vec{p}_2) = |x_1 - x_2| + |y_1 - y_2| \tag{1}$$

while the Euclidean norm is

$$d_E(\vec{p}_1, \vec{p}_2) = \sqrt{(x_1 - x_2)^2 + (y_1 - y_2)^2} \tag{2}$$

And the ditance between two points in the surface of a sphere of radius R is

$$\begin{aligned} d_S(\vec{p}_1, \vec{p}_2) =& R \arccos\Big(\sin(\phi_1)\sin(\phi_2) && (3)\\ &+ \cos(\phi_1)\cos(\phi_2)\cos(\theta_1 - \theta_2)\Big) && (4) \end{aligned}$$

These are the cooling we used :

$$T_k = \frac{T_0}{1 + \alpha \log(k+1)} \tag{5}$$

$$T_k = \frac{T_0}{1 + \alpha k^2} \tag{6}$$

$$T_k = T_0 \alpha^k \tag{7}$$

Their derivatives with respect to k are

$$\frac{\mathrm{d}T_k}{\mathrm{d}k} = -\frac{\alpha T_0}{(1 + \alpha \log(k+1))^2} \tag{8}$$

$$\frac{\mathrm{d}T_k}{\mathrm{d}k} = -\frac{2\alpha k T_0}{(1 + \alpha k^2)^2} \tag{9}$$

$$\frac{\mathrm{d}T_k}{\mathrm{d}k} = \alpha T_0 \log(\alpha) \tag{10}$$