$$\sigma(x_i, y_j, t_{k+1}) = -\frac{\tau}{\varphi}\left(\frac{u_1(x_{i+1}, y_j, t_k) - u_1(x_i, y_j, t_k)}{h}\right.$$

$$\left. + \frac{u_2(x_i, y_{j+1}, t_k) - u_2(x_i, y_j, t_k)}{H}\right) + \sigma(x_i, y_j, t_k)$$

$$\sigma(x_i, y_j, t_{k+1}) = \frac{\tau}{\varphi}\left(\frac{w_1(x_{i+1}, y_j, t_k) - w_1(x_i, y_j, t_k)}{h}\right.$$

$$\left. + \frac{w_2(x_i, y_{j+1}, t_k) - w_2(x_i, y_j, t_k)}{H}\right) + \sigma(x_i, y_j, t_k)$$

$$u_1(x_{i+1}, y_j, t_k) - u_1(x_i, y_j, t_k) =$$

$$-h\left(\frac{u_2(x_i, y_{j+1}, t_k) - u_2(x_i, y_j, t_k)}{H}\right) + \frac{\varphi}{\tau}\left(\sigma(x_i, y_j, t_{k+1}) - \sigma(x_i, y_j, t_k)\right))$$

$$u_2(x_i, y_{j+1}, t_k) - u_2(x_i, y_j, t_k) =$$

$$-H\left(\frac{u_1(x_{i+1}, y_j, t_k) - u_1(x_i, y_j, t_k)}{h}\right) + \frac{\varphi}{\tau}\left(\sigma(x_i, y_j, t_{k+1}) - \sigma(x_i, y_j, t_k)\right))$$

$$P(x_{i+1}, y_j, t_k) = -h\left(\frac{\mu_2 * w_1(x_i, y_j, t_k)}{k * k_2(s_2, T, C)} + \frac{\gamma * w_1(x_i, y_j, t_k)}{\sqrt{w_1^2(x_i, y_j, t_k) + w_2^2(x_i, y_j, t_k)}}\right) +$$

$$P(x_i, y_{j+1}, t_k) = -H(\frac{\mu_2 * w_2(x_i, y_j, t_k)}{k * k_2(s_2, T, C)} + \frac{\gamma * w_2(x_i, y_j, t_k)}{\sqrt{w_1^2(x_i, y_j, t_k) + w_2^2(x_i, y_j, t_k)}}) + P(x_i, y_j, t_k)$$

$$w_1 \equiv w_2 \equiv 0, (\frac{P(x_{i+1}, y_j, t_k) - P(x_i, y_j, t_k)}{h})^2 + (\frac{P(x_i, y_{j+1}, t_k) - P(x_i, y_j, t_k)}{H})^2 < \gamma$$

$$\sqrt{w_1^2(x_i, y_j, t_k) + w_2^2(x_i, y_j, t_k)} =$$

$$w_1(x_i, y_j, t_k)\sqrt{1 + \frac{H^2(P^2(x_{i+1}, y_j, t_k) - 2P(x_{i+1}, y_j, t_k)P(x_i, y_j, t_k) + P^2(x_i, y_j, t_k))}{h^2(P^2(x_i, y_{j+1}, t_k) - 2P(x_i, y_{j+1}, t_k)P(x_i, y_j, t_k) + P^2(x_i, y_j, t_k))}}$$

$$w_1(x_i, y_j, t_k) = \frac{k * k_2(s_2, T, C)}{h * \mu_2} * (P(x_i, y_j, t_k) - P(x_{i+1}, y_j, t_k) -$$

$$-\frac{h*\gamma}{\sqrt{1+\dfrac{H^2(P^2(x_{i+1},y_j,t_k)-2P(x_{i+1},y_j,t_k)P(x_i,y_j,t_k)+P^2(x_i,y_j,t_k))}{h^2(P^2(x_i,y_{j+1},t_k)-2P(x_i,y_{j+1},t_k)P(x_i,y_j,t_k)+P^2(x_i,y_j,t_k))}}})$$

$$w_2(x_i,y_j,t_k)$$

$$=\frac{P(x_i,y_{j+1},t_k)-P(x_i,y_j,t_k)}{H*\left(\dfrac{\mu_2}{k*k_2(s_2,T,C)}+\dfrac{\gamma}{\sqrt{1+\dfrac{H^2(P^2(x_{i+1},y_j,t_k)-2P(x_{i+1},y_j,t_k)P(x_i,y_j,t_k)+P^2(x_i,y_j,t_k))}{h^2(P^2(x_i,y_{j+1},t_k)-2P(x_i,y_{j+1},t_k)P(x_i,y_j,t_k)+P^2(x_i,y_j,t_k))}}}\right)}$$