Forecast factory worksheet

$$\left| T_{\text{future}} = T - \left(\frac{\Delta t}{\Delta x} \times \left\{ \left(u \times \left[T - T_{\text{west}} \right] \right) + \left(v \times \left[T_{\text{north}} - T \right] \right) \right\} \right) \right|$$

Constants: Time-step (Δt) = 3600s, Grid-spacing (Δx) = 100,000m (100km) T is the temperature at your location at the current time

My grid box number is:

TIMESTEP 1

$$\begin{array}{c|c} \Delta t \\ \hline \Delta x \end{array} = \begin{bmatrix} \Delta t \\ \Delta x \end{bmatrix}$$

$$\bigvee$$
 X (T north - T) = C

$$T - \{A X (B + C)\} = T$$

TIMESTEP 2

$$\Delta t$$
 Δx Δx

$$V$$
 X $\left(T \text{ north } - T \right) = C$

$$T - \{A X (B + C)\} = T$$

TIMESTEP 3

$$\frac{\Delta t}{\Delta x}$$
 = A

$$\begin{bmatrix} u \end{bmatrix} \times \left(\begin{bmatrix} T \end{bmatrix} - \begin{bmatrix} T \text{ west} \end{bmatrix} \right) = \begin{bmatrix} B \end{bmatrix}$$

$$\bigvee$$
 X $\left(\begin{bmatrix} T \text{ north} \end{bmatrix} - \begin{bmatrix} T \end{bmatrix} \right) = \begin{bmatrix} C \end{bmatrix}$

$$T - \{A X (B + C)\} = Tfuture$$

TIMESTEP 4

$$\frac{\Delta t}{\Delta x}$$
 $=$ A

$$\bigvee$$
 X $\left(\begin{bmatrix} T \text{ north} \end{bmatrix} - \begin{bmatrix} T \end{bmatrix} \right) = \begin{bmatrix} C \end{bmatrix}$

$$T - \{A X (B + C)\} = Tfuture$$