$$
\begin{aligned}
v_x &= -k_s \frac{\partial h}{\partial x} \\
[\![v_x]\!] &= \left[\!\!\left[k_s \frac{\partial h}{\partial x} \right]\!\!\right]
\end{aligned}
$$

na verdade v_x é uma vazão por unidade de área

$$
\begin{aligned}
[\![v_x]\!] &= \frac{\mathsf{XYZT}^{-1}}{\mathsf{YZ}} = \mathsf{XT}^{-1}; \\
[\![v_x]\!] &= [\![k_s]\!] \left[\!\!\left[\frac{\partial h}{\partial x} \right]\!\!\right] \\
\mathsf{XT}^{-1} &= [\![k_s]\!]\, \mathsf{ZX}^{-1} \\
[\![k_s]\!] &= \mathsf{X}^2\mathsf{Z}^{-1}\mathsf{T}^{-1}.
\end{aligned}
$$

Note que

$$
[\![h_0 k_s]\!] = \mathsf{ZX}^2\mathsf{Z}^{-1}\mathsf{T}^{-1} = \mathsf{X}^2\mathsf{T}^{-1}
$$

Operações sobre a EDP de Boussinesq.

$$
\begin{aligned}
\frac{\partial h}{\partial t} &= \frac{k_s}{n}\frac{\partial}{\partial x}\left[h \frac{\partial h}{\partial x} \right] \\
\frac{\partial \frac{h}{h_0}}{\partial t} &= \frac{k_s}{n}\frac{\partial}{\partial x}\left[h \frac{\partial \frac{h}{h_0}}{\partial x} \right] \\
\frac{\partial \frac{h}{h_0}}{\partial t} &= \frac{k_s h_0}{n}\frac{\partial}{\partial x}\left[\frac{h}{h_0} \frac{\partial \frac{h}{h_0}}{\partial x} \right] \\
\frac{\partial \Pi_1}{\partial t} &= D\frac{\partial}{\partial x}\left[\Pi_1 \frac{\partial \Pi_1}{\partial x} \right]
\end{aligned}
$$

$$
\begin{aligned}
\Pi_2 &= gL^a c^b, \\
1 &= \mathsf{LT}^{-2}\mathsf{L}^a(\mathsf{LT}^{-1})^b \\
1 &= \mathsf{L}^{1+a+b}\mathsf{T}^{-2-b} \\
a+b &= -1, \\
-b &= 2
\end{aligned}
$$