Pressure Diffusion Model Validity Scope

(1) $T(t, \mathbf{r}) = T(\mathbf{r})$	Reservoir fluid temperature is not changing over time
(2) $s_w(t, \mathbf{r}) = s_w(\mathbf{r}), \quad s_o(t, \mathbf{r}) = s_o(\mathbf{r}), \quad s_g(t, \mathbf{r}) = s_g(\mathbf{r})$	Reservoir saturation is not chaging over time
(3) $\lvert\nabla B_o\rvert \sim 0, \quad \lvert\nabla B_g\rvert \sim 0$	No high fluid pressure gradients over reservoir volume
(4) $\lvert\nabla P_{cow}(s)\rvert \sim 0, \quad \lvert\nabla P_{cog}(s)\rvert \sim 0$	No high capillary pressure gradients over reservoir volume

See also

Multi-phase pressure diffusion @model

Volatile/Black Oil dynamic flow models @model

Non-linear multi-phase diffusion derivation @model