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Equations

https://camillejr.github.io/science-docs/

1 PC-transport

$$\rho \frac{DX}{Dt} = \mathbb{D} \nabla^2 X + S_\phi$$

$$S_X(X) = f(T, p, Y_1, \dots, Y_{N_S - 1})$$

$$\rho \frac{D\mathbf{X}}{Dt} = -\nabla(\mathbf{j}_X) + \mathbf{s}_X$$

$$\rho \frac{D\mathbf{z}}{Dt} = -\nabla(\mathbf{j}_z) + \mathbf{s}_z$$

$$\rho \frac{\partial \mathbf{X}}{\partial t} + \rho \vec{\mathbf{V}} \cdot \nabla \mathbf{X} = \nabla \rho \mathbb{D}_X \nabla \mathbf{X} + \mathbf{S}_X$$

$$\rho \frac{\partial \mathbf{Z}}{\partial t} + \rho \vec{\mathbf{V}} \cdot \nabla \mathbf{Z} = \nabla \rho \mathbb{D}_\mathbf{Z} \nabla \mathbf{Z} + \mathbf{S}_\mathbf{Z}$$

$$\mathbf{Z} = \mathbf{X} \mathbf{A_q}$$

$$k(x_i, x_j) = h^2 \exp(\frac{-(x_i - x_j)^2}{\lambda^2})$$

$$\rho \frac{\partial \mathbf{X}}{\partial t} + \rho \vec{\mathbf{V}} \cdot \nabla \mathbf{X} = \nabla \rho \mathbb{D}_X \nabla \mathbf{X} + \mathbf{S}_\mathbf{X}$$

$$\rho \frac{\partial \mathbf{z}}{\partial t} + \rho \vec{\mathbf{V}} \cdot \nabla \mathbf{z} = \nabla \rho \mathbb{D}_\mathbf{z} \nabla \mathbf{z} + \mathbf{S}_\mathbf{z}$$

$$\rho \frac{\partial \mathbf{X}}{\partial t} + \rho \vec{\mathbf{V}} \cdot \nabla \mathbf{X} = \nabla \rho \mathbb{D}_X \nabla \mathbf{X} + \mathbf{S}_X$$

2 Regression

$$\mathbf{X} = [T, p,]$$

$$\mathbf{X} \approx f_X(\mathbf{Z}_q)$$

$$\mathbf{X} \approx N(0, \sigma_n^2)$$

$$\mathbf{X} \approx N(0, \mathbf{K}(\mathbf{Z}_p, \mathbf{Z}_q) + \sigma_n^2 \mathbf{I})$$

$$y_e = y_m(x) + \delta + \epsilon$$

3 Arrhenius law

$$k = A e^{\frac{-E_a}{RT}}$$

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$$k = AT^n e^{\frac{-E_a}{RT}}$$

$$\tilde{E} = y_m - \bar{y}_e$$

$$(\mathbf{X}, \mathbf{S_Z}) \approx F(\mathrm{PC1}, \mathrm{PC2}, \ldots, \mathrm{PCq})$$