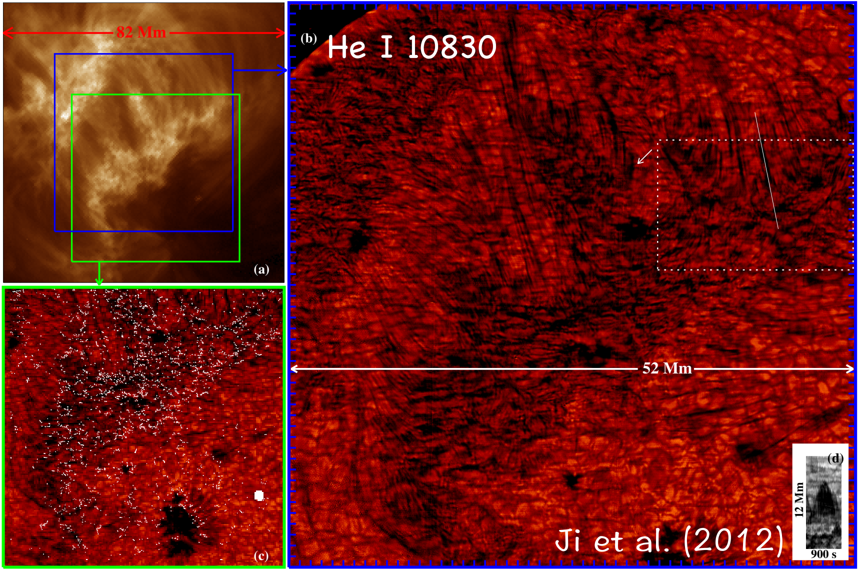
$$\mathcal{L} = \sqrt{\delta\phi/\bar{B}}$$

$$V_s = \frac{\mathcal{L}}{\tau_r}$$

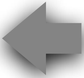
$$P = \frac{\sum_i P_i}{A} = \frac{1}{\mu_0} \alpha \mathcal{L} V_s \bar{B}^2$$

Apparent Motion

Reconnection


82 Mm
(a)
(b)
He I 10830
52 Mm
(c)
(d)
12 Mm
900 s
Ji et al. (2012)

Heating



$$P_i = \mathcal{L}\bar{B}V_s \times \alpha\delta\phi_i/\mu_0$$

$$F = \frac{\sum_i P_i}{A} = \frac{1}{\mu_0} \alpha \mathcal{L} V_s \bar{B}^2$$

$$I = A_i J = \frac{A_i}{\mu_0} \nabla \times B = \frac{\alpha}{\mu_0} A_i B = \frac{\alpha \delta \phi_i}{\mu_0}$$

$$\frac{\delta \phi_i}{\tau_r} = \mathcal{L}^2 \bar{B} \frac{V_s}{\mathcal{L}} = \mathcal{L} \bar{B} V_s$$

$$P = I \times \delta\phi / \tau_r$$

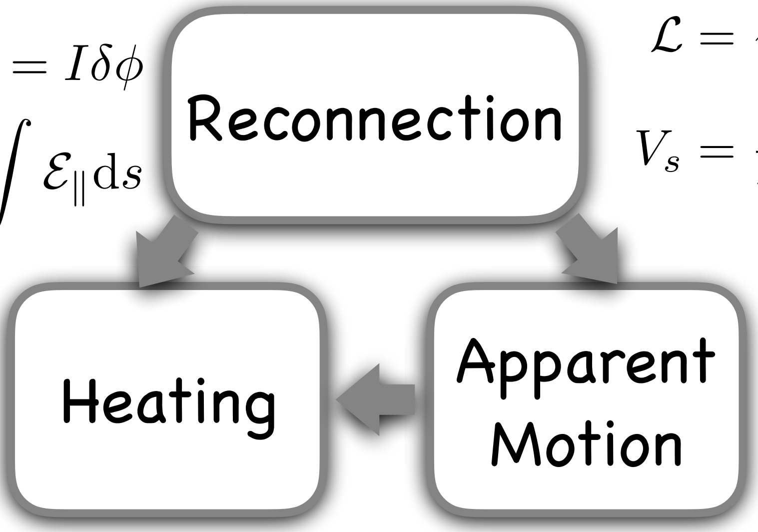
0

$$\delta W = I\delta\phi$$

$$\delta\phi/\tau_r \sim \int \mathcal{E}_{\parallel} \mathrm{d}s$$

$$\delta W = I\delta\phi$$

$$\delta\phi/\tau_r \sim \int \mathcal{E}_{\|}\mathrm{d}s$$



$$\mathcal{L} = \sqrt{\delta\phi/\bar{B}}$$

$$V_s = \frac{\mathcal{L}}{\tau_r}$$

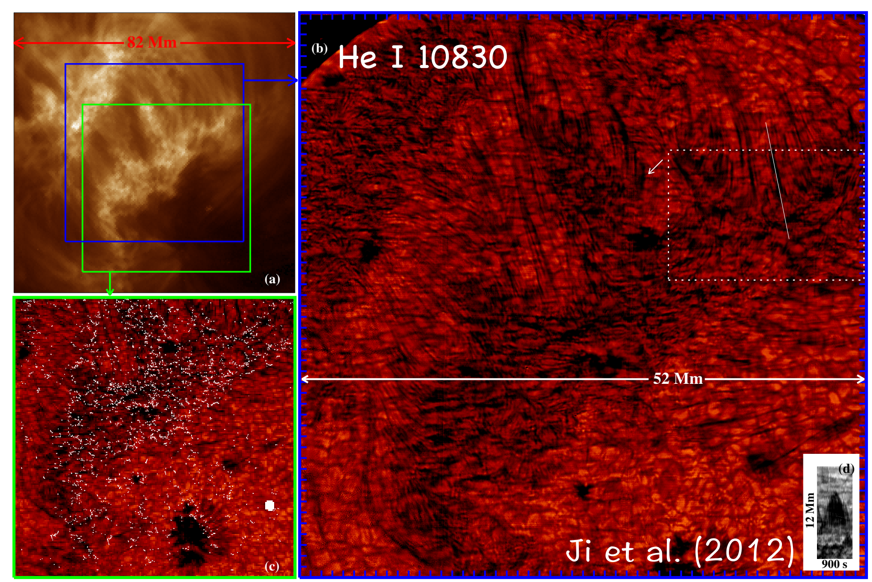
$$I = A_i J = \frac{A_i}{\mu_0}\nabla \times B = \frac{\alpha}{\mu_0}A_i B = \frac{\alpha\delta\phi_i}{\mu_0}$$

$$\frac{\delta\phi_i}{\tau_r} = \mathcal{L}^2\bar{B}\frac{V_s}{\mathcal{L}} = \mathcal{L}\bar{B}V_s$$

$$P = \boxed{I} \times \boxed{\delta\phi/\tau_r}$$

$$P_i = \boxed{\mathcal{L}\bar{B}V_s} \times \boxed{\alpha\delta\phi_i/\mu_0}$$

$$F = \frac{\sum_i P_i}{A} = \frac{1}{\mu_0}\alpha\boxed{\mathcal{L}}V_s\bar{B}^2$$



Test the model with AR 11416