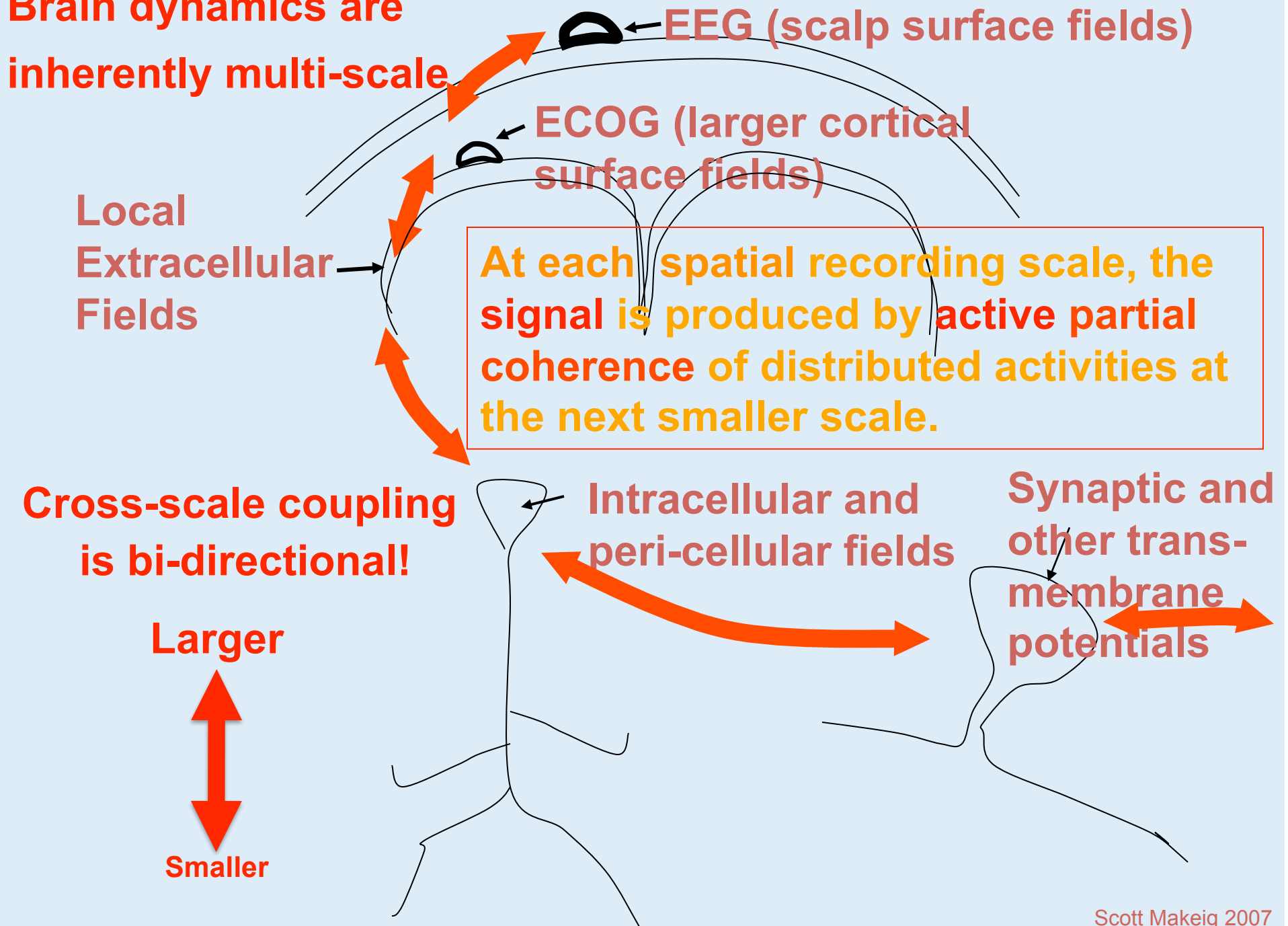


What is EEG?

Brain dynamics are inherently multi-scale



At each spatial recording scale, the signal is produced by active partial coherence of distributed activities at the next smaller scale.

Cross-scale coupling is bi-directional!

Larger
↑
↓
Smaller

Brain dynamics are inherently multi-scale

EEG (scalp surface fields)

ECOG (larger cortical surface fields)

Local Extracellular Fields

SCALE

At each potential recording scale, the signals produced by active partial coherence of distributed activities at the next smaller scale.

CHAUVINISM

Cross-scale coupling is bi-directional!

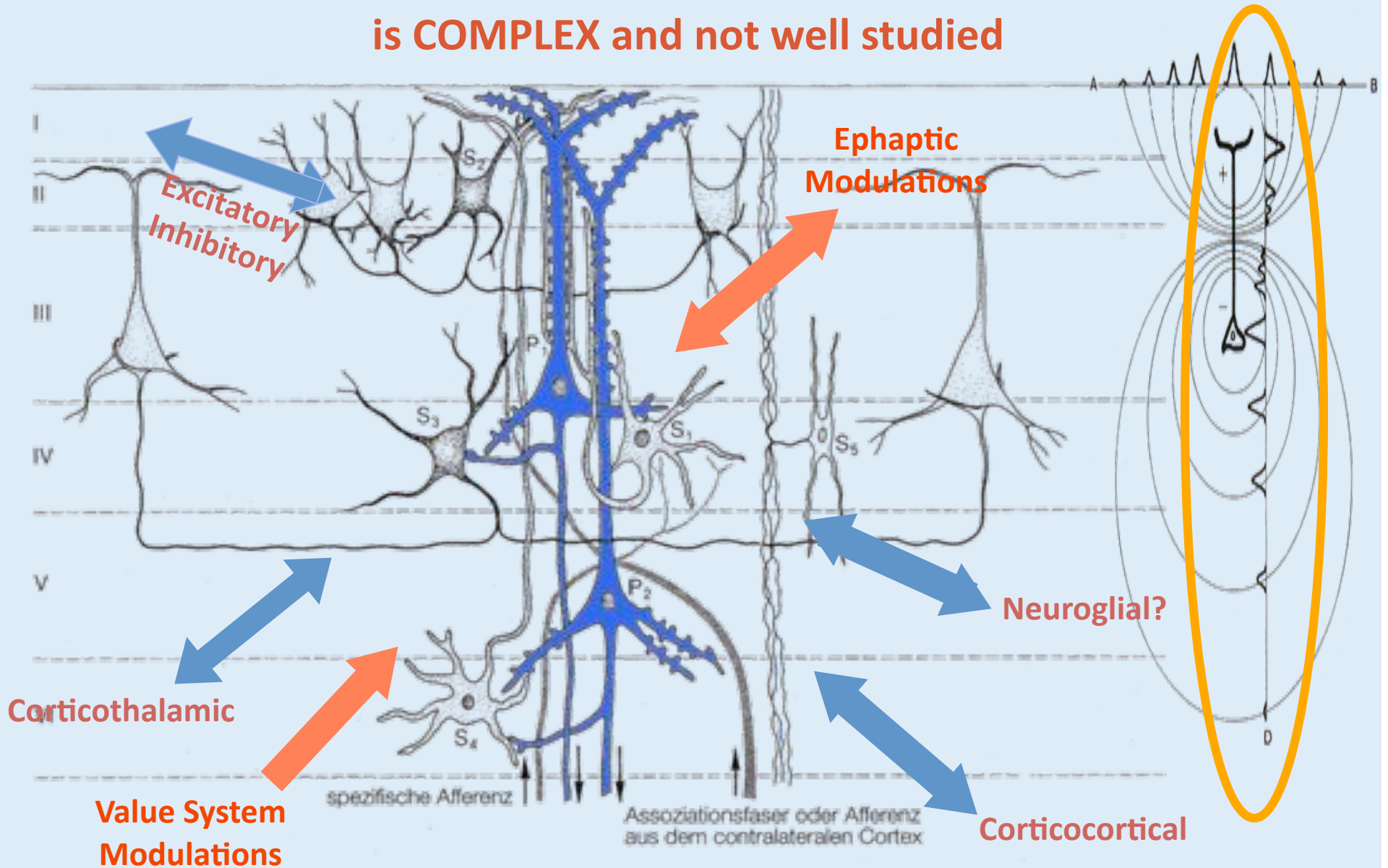
Ultra cellular and peri-cellular fields
Synaptic and other trans-membrane potentials

Larger

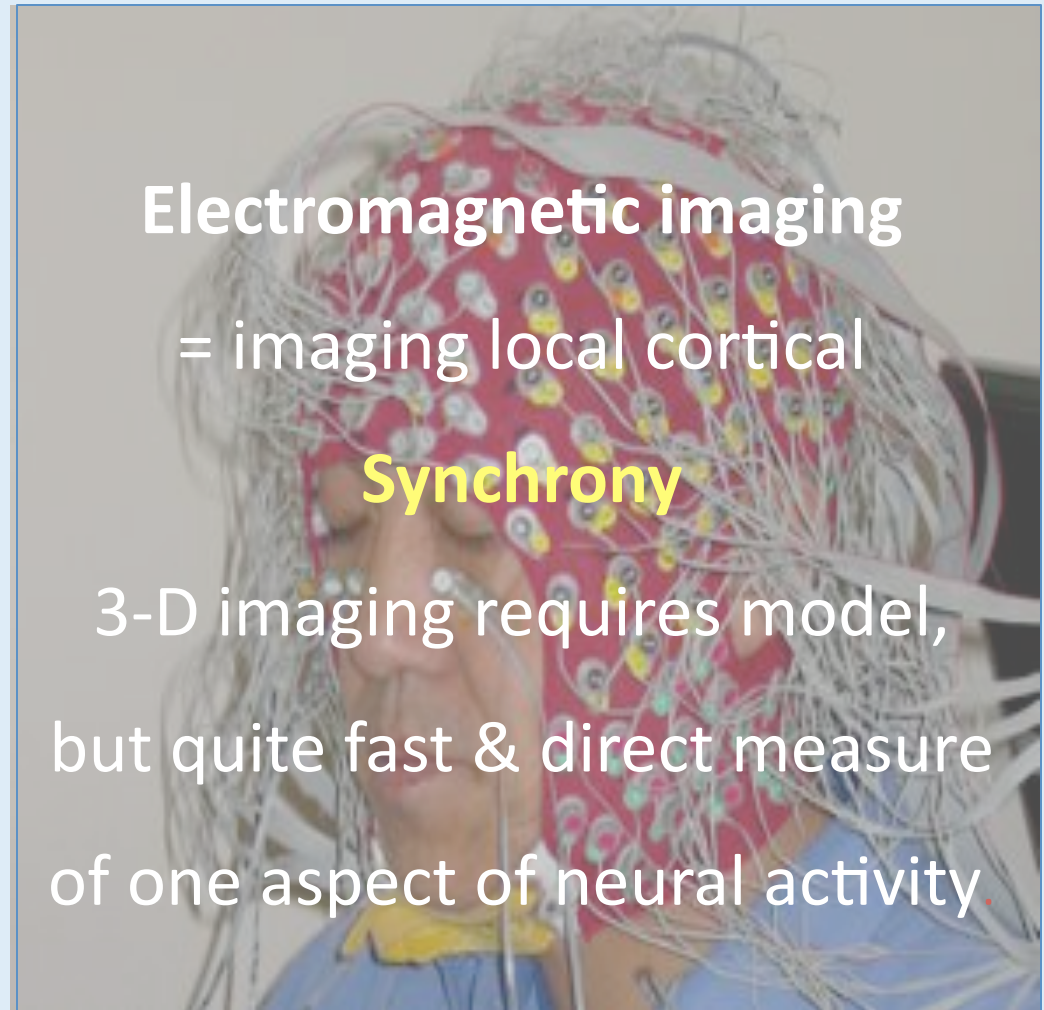
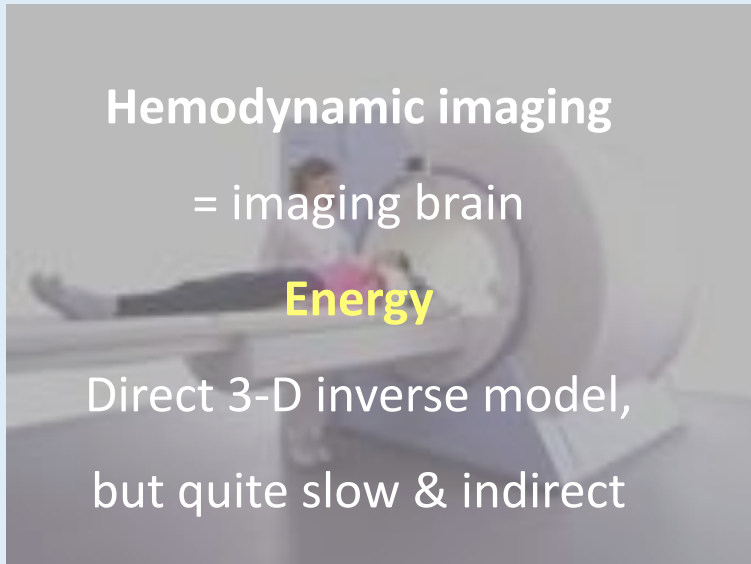


Smaller

The generation and modulation of EEG / LFP is COMPLEX and not well studied



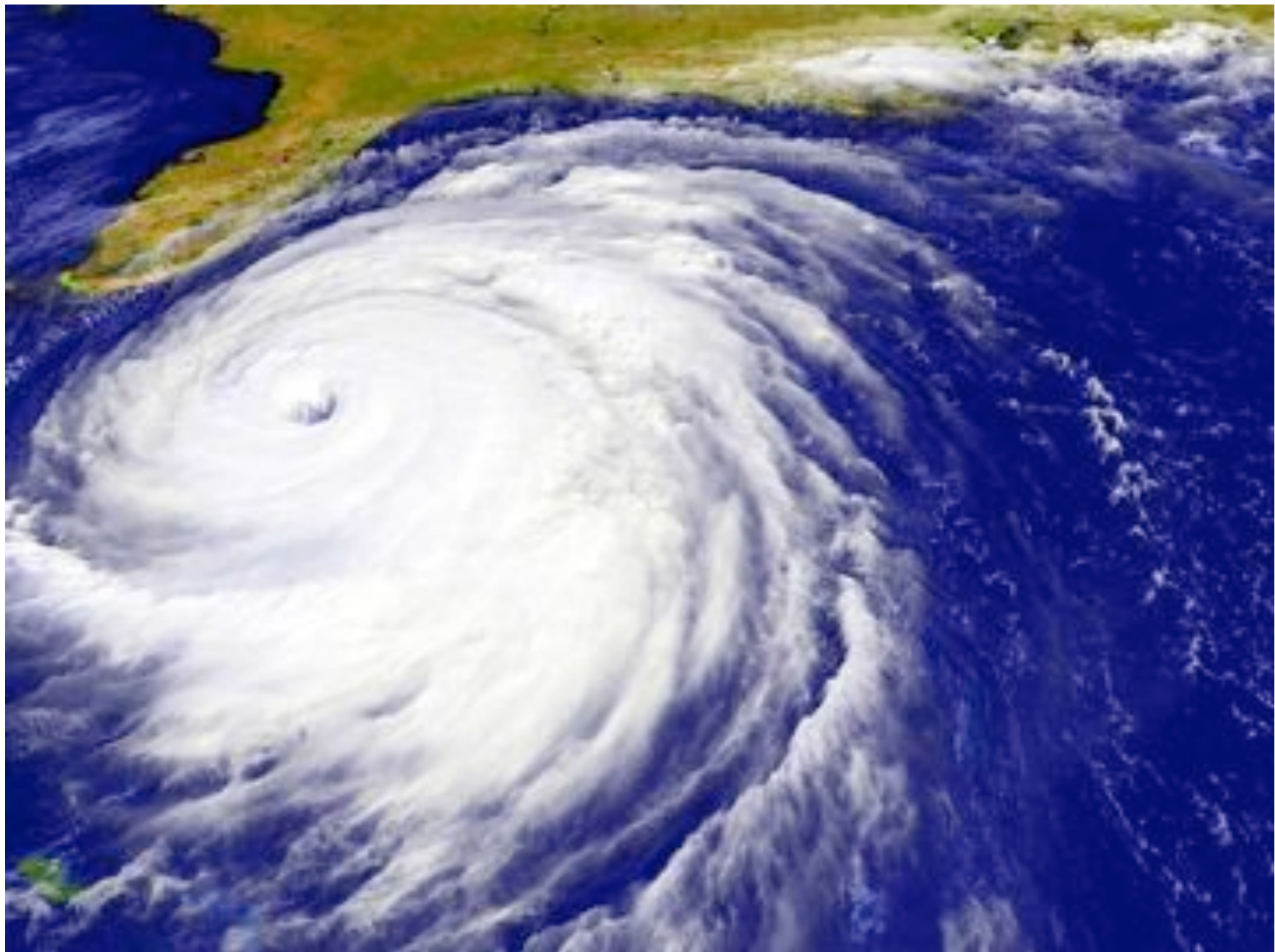
Functional Brain Imaging




Phase cones (Freeman)

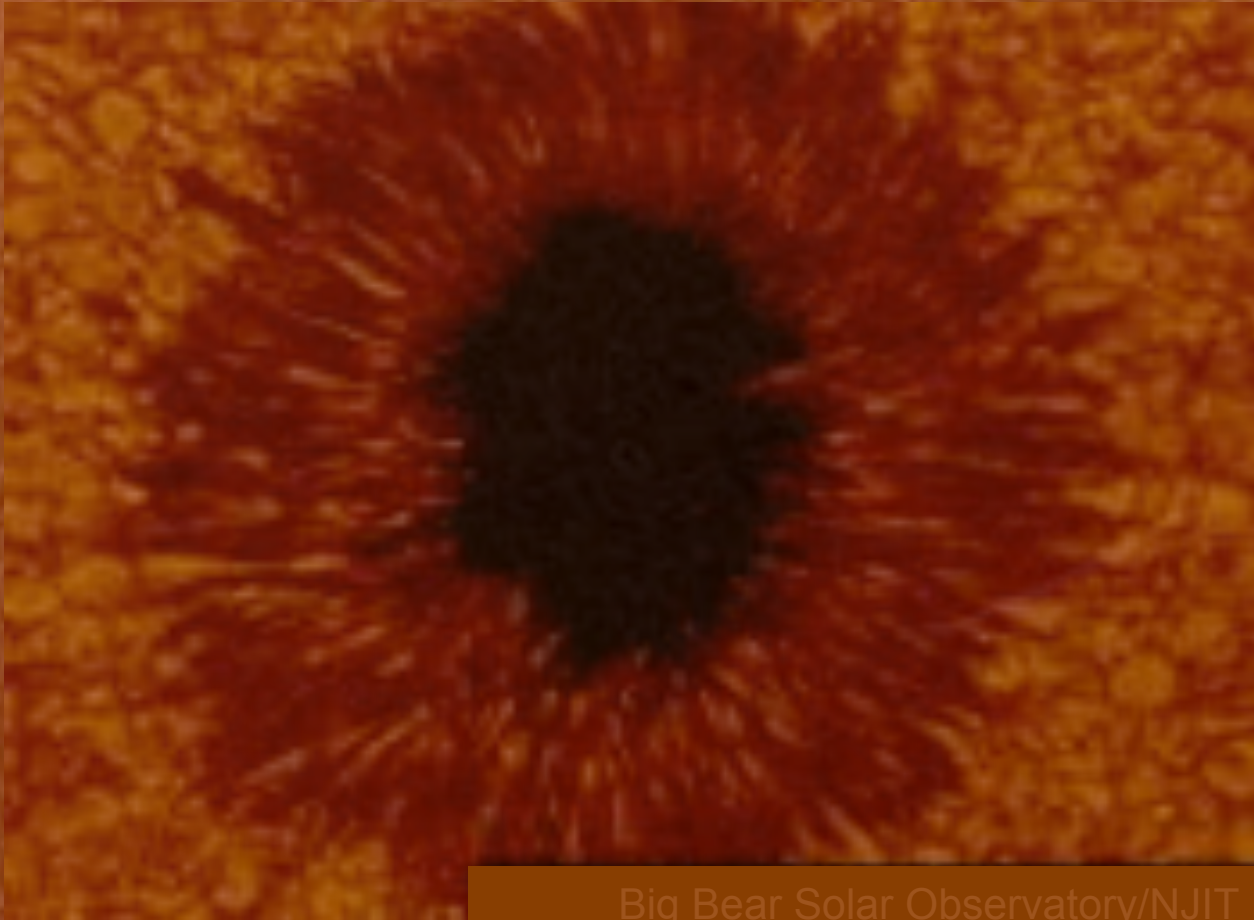
Avalanches (Plenz)







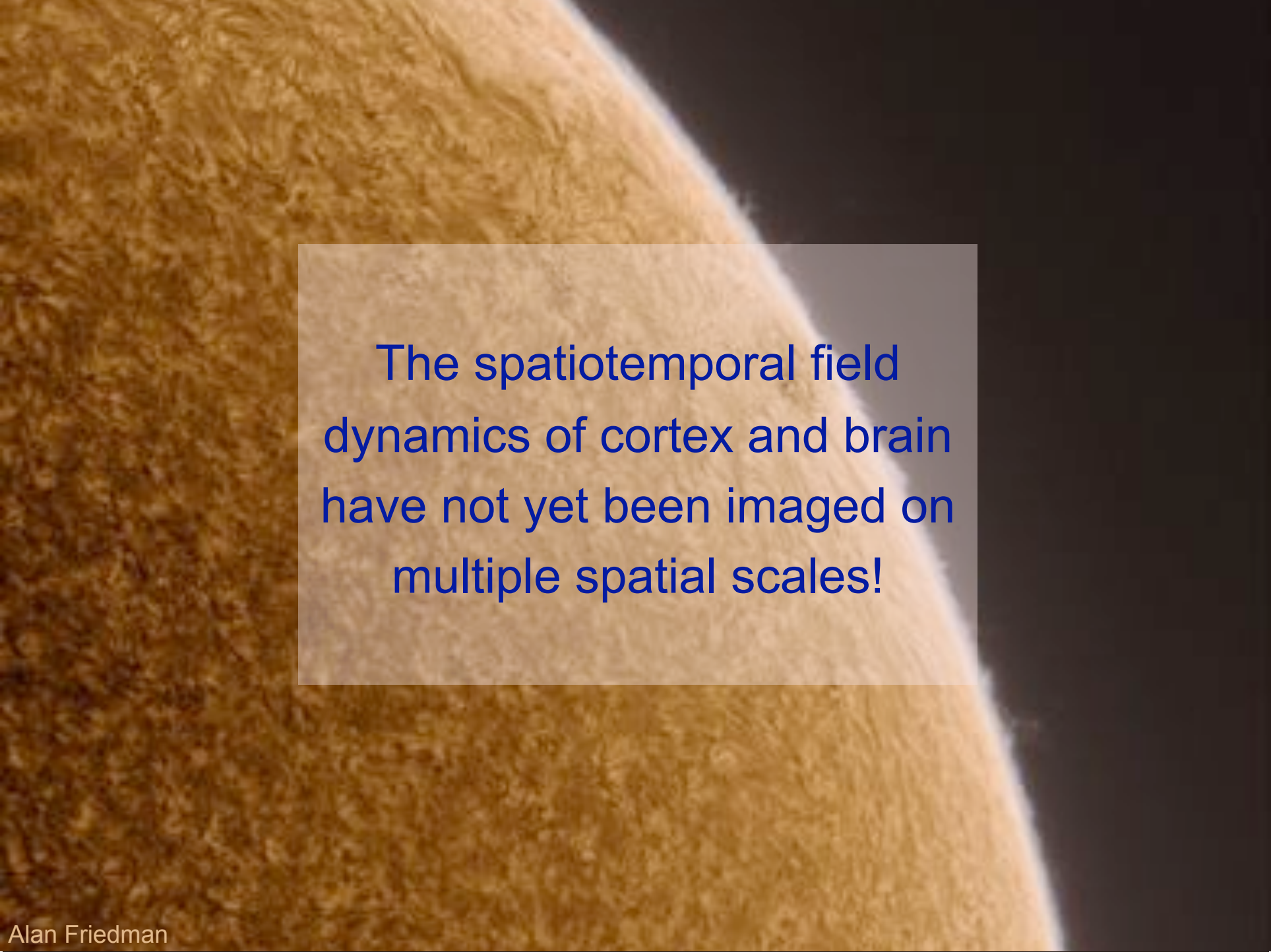
Macro field dynamics are
spontaneous emergent
dynamic patterns – in both
outer space and cortex.



Big Bear Solar Observatory/NJIT

Alan Friedman





The spatiotemporal field
dynamics of cortex and brain
have not yet been imaged on
multiple spatial scales!

