

# Group C: Magnetic Fields

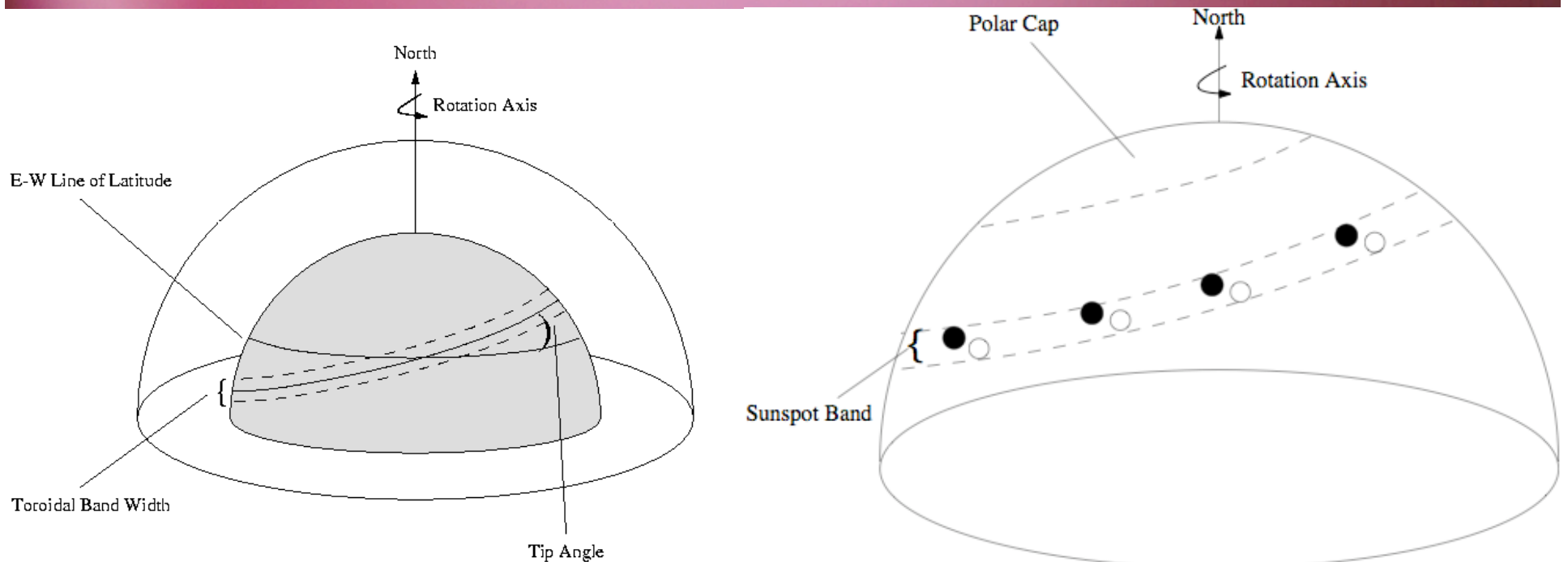
# Topics discussed

- ◆ Global dipole tilt angles
- ◆ Ephemeral region emergence rates
- ◆ Magnetogram calibration issues
- ◆ Chromospheric fields (with Group H)
- ◆ Loops from EIS (with Group I)
- ◆ Filament models (with Group J)



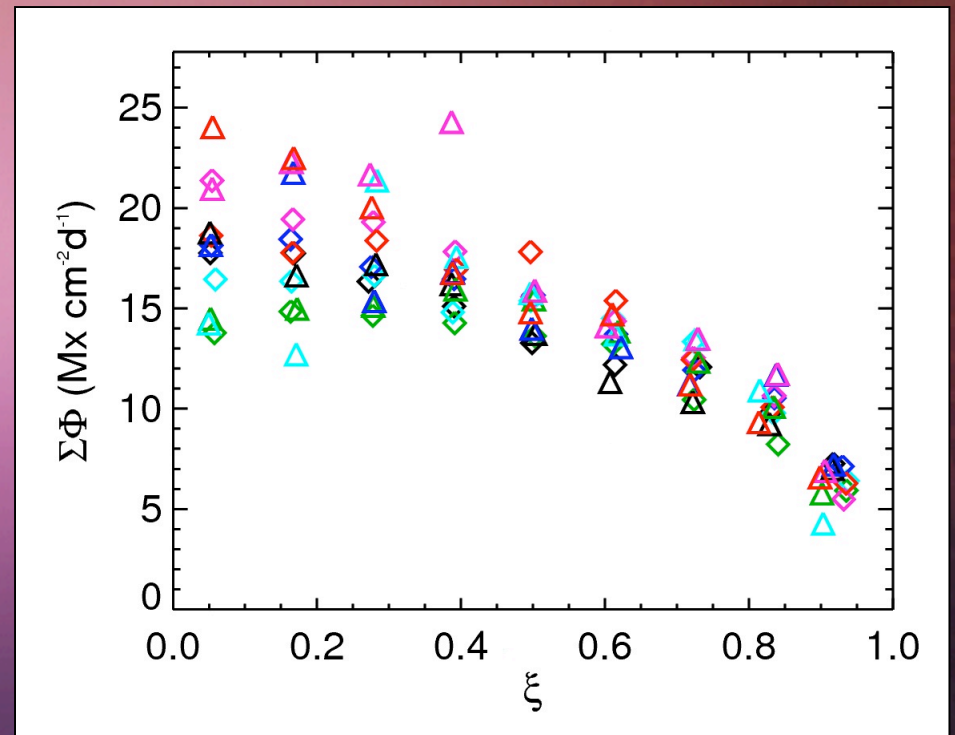
# Surface Measurements as Dynamo Indicators

- ◆ Location of spots at onset of Cycle 23 maps out an  $m=1$  mode



# Surface Measurements as Dynamo Indicators

- ♦ Measured ER emergence rate is lower in more unipolar regions than in more mixed-polarity regions.





# Tipped toroidal bands

- ◆ Dipole tipped, even at solar minimum
- ◆ Tipping likely influenced by interior
- ◆ Hemispheric flux asymmetry
- ◆ Sector boundary skirt pattern
- ◆ Insight into global dynamo?

# Ephemeral region emergence

- ♦ Measured ER emergence rate is lower in unipolar regions than in mixed-polarity regions
- ♦ Indicative of what?
  - ♦ Lower lifetimes/faster collision frequencies in unipolar regions
  - ♦ Dynamo producing fewer ERs?
  - ♦ ERs get wiped out before reaching surface?
- ♦ Also some indications that emergence rates vary with cycle (max in ER occur a few years after solar max)



# Improving coronal field models

- ◆ PFSS models (use line-of-sight field measurements)
- ◆ NLFFF and MHD models (use vector field measurements)

# Magnetogram measurements

- ♦ LOS magnetograms have uncertainties that might affect, e.g., N.Arge's solar wind forecasting efforts.
- ♦ Photospheric vector-field measurements are hard to use for coronal field models given the difficulties in adequately model the chromosphere
- ♦ Chromospheric vector-field measurements are possible in e.g., He I and Mg II, but still problematic to interpret given complicated line-formation characteristics of these lines.



# Magnetogram measurements

