

Scientific Forecasting with Validation

Solar modulation Cosmic rays-Clouds

- Use Scientific Forecasting. Green & Armstrong '08
 - IPCC breached 72/139 principles scientific forecasting
- Objectively Validate Climate models
 - Temperature diverging from forecasts $\sim 2\sigma$ since '01
 - Include PDO, nonlinear solar modulation etc. West '08
 - Track models v. tropospheric T See T3Tax McKittrick'07
- Add solar wind & magnetic modulation of galactic cosmic rays on cloud formation=Cosmo-climatology
 - High $\Delta^{14}\text{C}$ & $\delta^{18}\text{O}$ correlation 6.5 to 9.5 kyr BP Neff '01
 - 3% UK cloud modulation over few days Brown '08
 - 40°C Sudden Stratospheric Warming Osprey'09