

Changing patterns: session 2

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- **Question: How will storm tracks change in a future climate?**
 - Subtext: Can we trust the current models?
- Unpacked a bit: What is the robustness of the extratropical storm track/blocking response to climate change, including persistence of anomalies?
- New angle here: Role of moist processes, diabatic processes

Relevant aspects

- Changing balance between dry and moist dynamics
 - cf. Baiu/Mei-yu front and STCZ (summer baroclinicity, summer moisture)
- Role of changing patterns in tropics (zonal mean, e.g. UT temperature gradient and STJ, and zonally asymmetries)
- Role of Arctic amplification

- Role of midlatitude land-sea contrast
- Role of stratosphere
- Impact on precipitation patterns
- Impact on weather and extremes (precip, winds), including their persistence
- Systematic biases over Southern Ocean, their possible impact on tropics

Opportunities

- Links to paleo
 - Latitudinal shifts in SH westerlies
 - Mediterranean drying
- Aquaplanet simulations, including simple continents and SSTs (like David Brayshaw's work)
- Analyzing the specialized forcing experiments in CMIP5

- Designing special experiments and diagnostics for CMIP6
 - Both AMIP and historical, and other experiments
 - Challenge: high temporal resolution: need a WG to help define this
- Seasonal prediction: link to WGSIP
- S2S (subseasonal to seasonal) initiative
 - e.g. last winter as testbed: can models persist the anomaly?
- Role of horizontal resolution? Link to WGNE
- Links to weather community/WWRP
- Moist life cycles (Simmons & Hoskins with state-of-the-art global weather models to establish a benchmark calculation)
 - e.g. role of CSI
- COOKIE and SPOOKIE
- Clear model bias: European blocking, role of diabatic processes over western Atlantic and over Iberia

- **Outcomes/ways ahead:** review papers, workshops, liaison with other WCRP groups, CMIP6
 - N.B. SPARC/DynVar workshop on jets, storm tracks and modes of variability (Tiffany Shaw and Mark Baldwin; autumn of 2015)

Other topics

- Extremes? Patterns of extremes..
- Sensitivity of AMIP simulations to different SST reconstructions
 - Expansion of the tropics; SPARC workshop on this (Dian Seidel)
- Changing patterns of tropical circulation
 - Vertical structure of temperature changes
 - East-west Pacific SST gradient, Walker circulation