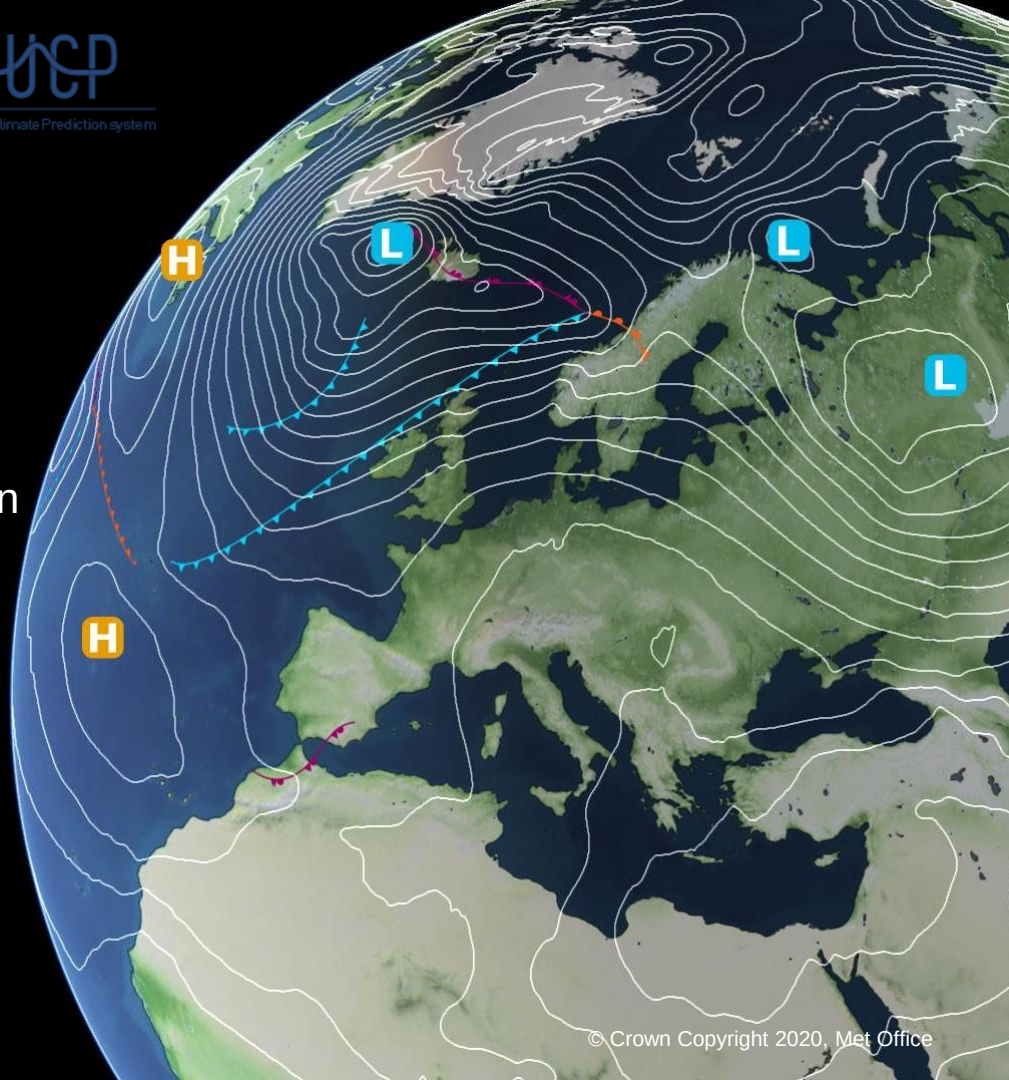
WMO LC-ADCP & GADCU update

(Lead Centre for Annual to Decadal Prediction & Global Annual to Decadal Climate Update)

Leon Hermanson



Met Office
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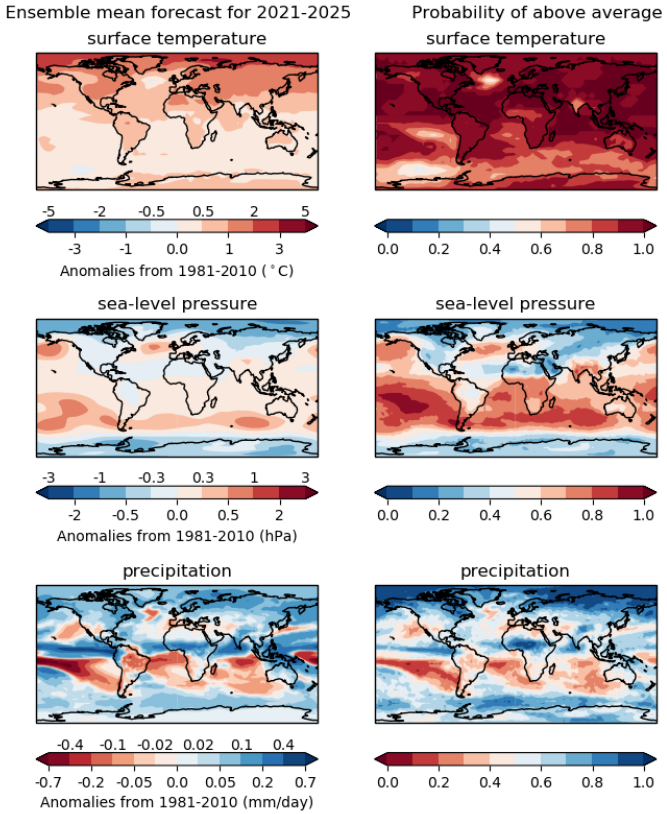
WMO Lead Centre for Annual to Decadal Climate Prediction

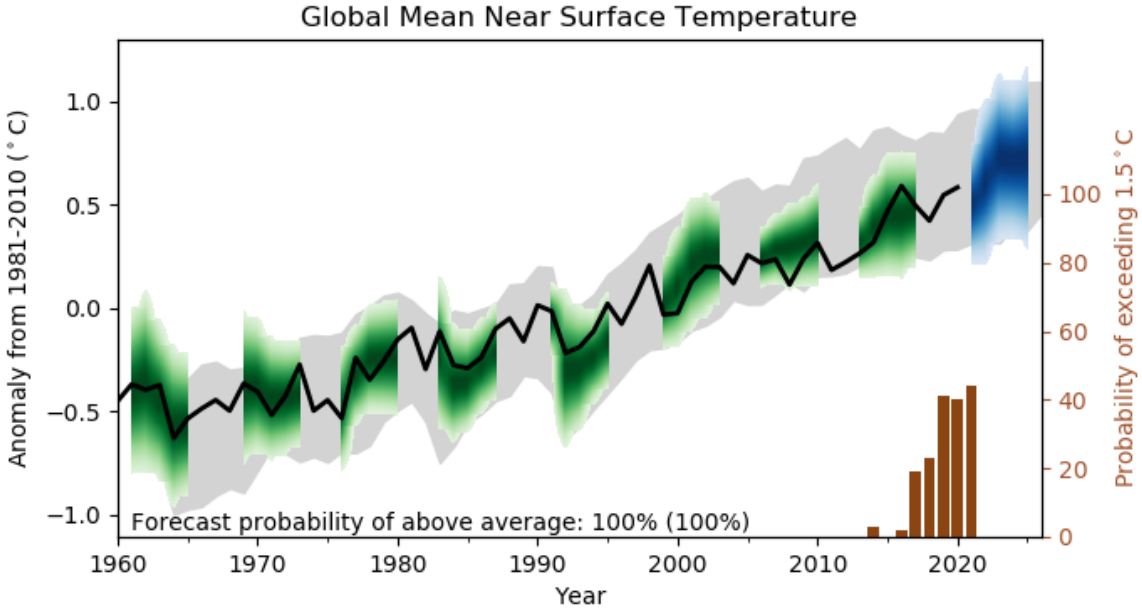
- Started as an informal exchange of decadal predictions among modelling centres around the world in 2010 (Smith et al. 2013) to produce a large multi-model ensemble of real-time decadal forecasts.
- Building on this effort the Met Office was designated the Lead Centre for Annual to Decadal Climate Prediction in May 2017. Organisationally it sits under ET-OCPS.
- Some of the responsibilities of the Lead Centre are:
  - Prepare forecast fields annually from the data collected
  - Prepare verification statistics of the multi-model and individual models
  - Make available up-to-date information on the decadal prediction systems
  - Create Global Annual to Decadal Climate Update (consensus forecast)
- This is all available at **www.wmolc-adcp.org**

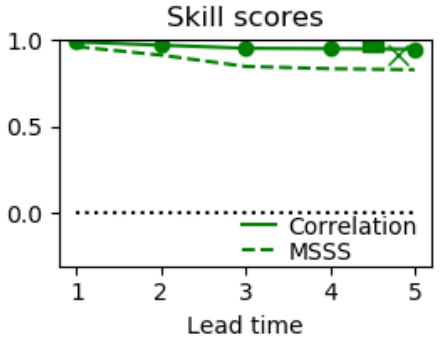
WMO Global Annual to Decadal Climate Update

- Issued annually by WMO Lead Centre for Annual to Decadal Climate Prediction, hosted by the Met Office
- International contributions from BSC, CSIRO, CCCMA, CMCC, DWD, Met Office, GFDL, MIROC, MRI, BCCR, SMHI+DMI
- Climate *predictions* for the next five years
- Now considered one of the key annual output reports of the WMO
- Headline result: 40% chance of exceeding 1.5°C global temperature in next 5 years
- Press releases from WMO and Met Office had phenomenal pickup by nearly all major news outlets with millions of subscribers and in multiple languages
- www.wmolc-adcp.org



Key outputs of the Global Annual to Decadal Climate Update





Forecast \ Observed	Yes	No
Yes	15 (15)	0 (2)
No	1 (2)	33 (34)

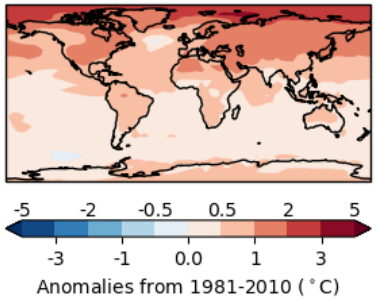
Hit rate: 93% (88%)
False alarm rate: 0% (11%)

- It is about as likely as not (40% chance) that at least one of the next 5 years will be 1.5°C warmer than pre-industrial levels and the chance is increasing with time
- It is very unlikely (10% chance) that the five-year mean global near-surface temperature for 2021-2025 will be 1.5°C warmer than pre-industrial levels
- The chance of at least one year exceeding the current warmest year, 2016, in the next five years is 90%

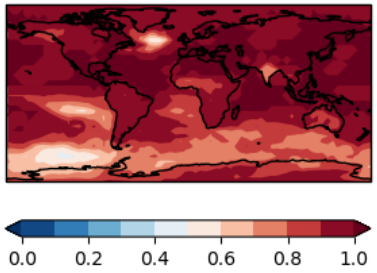
Key outputs of the Global Annual to Decadal Climate Update

Baseline: 1981-2010

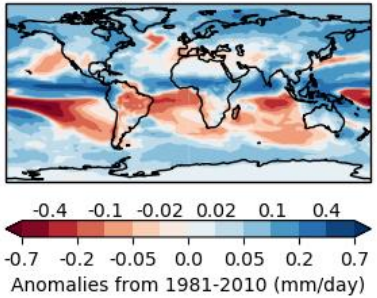
Ensemble mean forecast for 2021-2025 surface temperature



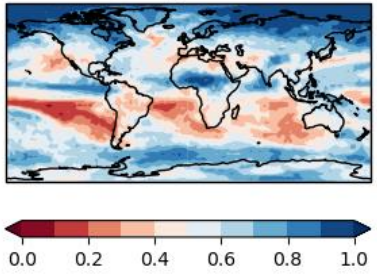
Probability of above average surface temperature



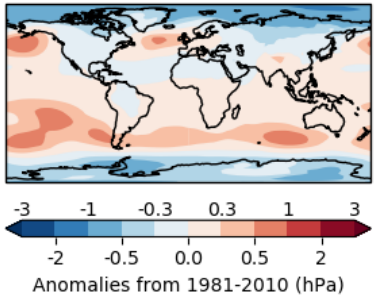
Ensemble mean forecast for 2021-2025 precipitation



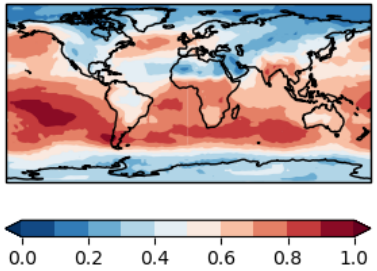
Probability of above average precipitation



sea-level pressure



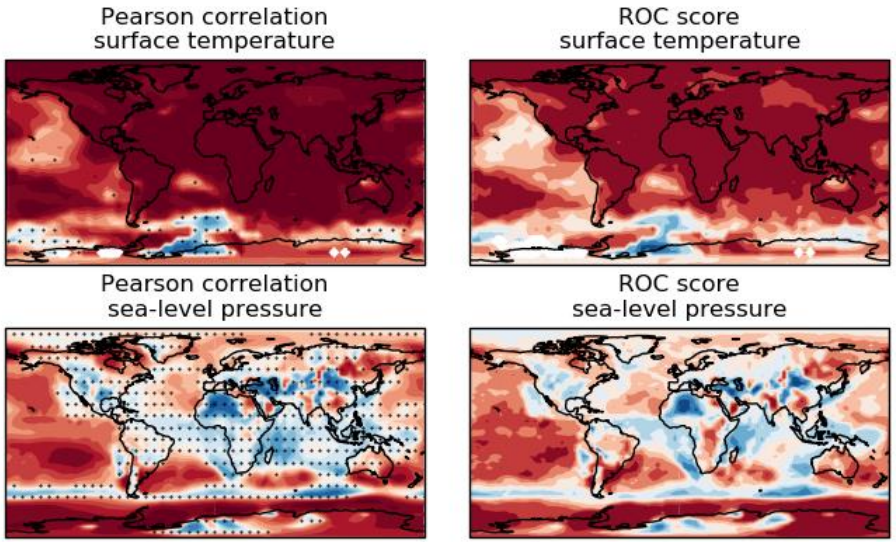
sea-level pressure

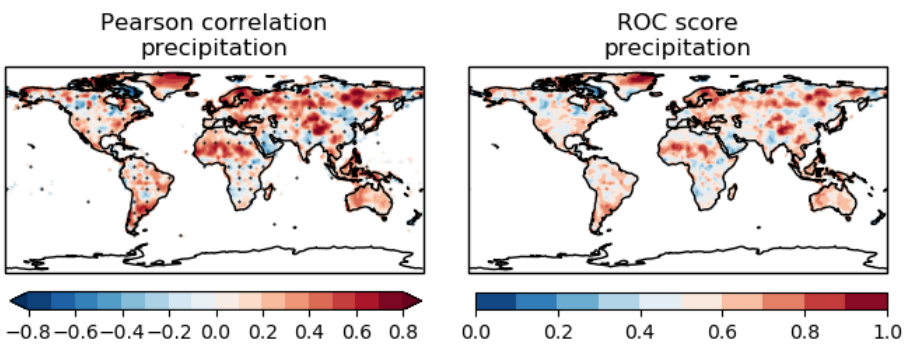


- There is a high probability for above average temperatures almost everywhere, the Arctic (north of 60°N) anomaly is more than twice as large as the global mean anomaly.
- The subtropical North Atlantic, shows an increased chance of low pressure which, combined with higher temperatures and a northward displacement of the Intertropical Convergence Zone (ITCZ), suggests an increased chance of tropical cyclones in this basin.

Skill maps for 1-5 years lead time

Baseline: 1981-2010





- Skill is high for temperature including for the Arctic.
- Sea-level pressure skill is moderate in the tropical Atlantic and for precipitation over land close to the ITCZ

Stippling where positive correlation skill is not significant at the 5% level

Met Office
Hadley Centre

News and Plans

- Review of GPCs – CSIRO elected as new member joining BSC, DWD, Met Office and CCCMA giving a total of five GPCs
- Updates to website (www.wmolc-adcp.org):
  - Deterministic and probabilistic skill score maps for individual models and multi-model ensemble mean
  - Time series of global mean temperature, AMV and PDV both hindcasts and forecasts for models and mean
  - Updated System Configuration Information for new system versions and new systems
  - WCRP Recognition
- Future plans:
  - Seasonal mean maps and indices
  - Regional information
- Questions for WGSIP:
  - Which regions to use? RCOFs, RCCs, RAs, AR6?
  - Should we provide guidance for use of data, if so what kind?