Documentation of the Shiny App developed for the ASPECT WP6 M22

This Shiny App consists of three different apps:

- Forecast quality: this tab includes maps of the skill metrics.
- Forecasts maps: this tab includes maps of the ensemble mean anomaly and most-likely tercile.
- Documentation: this tab includes a PDF file with the documentation.

Data

- Variables:
  - Near-surface surface temperature (tas)
  - Precipitation (pr)
  - Sea level pressure (psl)

- Reference datasets: ERA5 reanalysis

- Forecast systems (members)
  - CMCC-CM2-SR5 (r1–10i1p1f1)
  - EC-Earth3 (r1–10i4p1f1)
  - HadGEM3-GC31-MM (r1–10i1p1f1)
  - MPI-ESM1-2-LR (r1–16i1p1f1)
  - Multi-model ensemble (46 members)

- Periods:
  - Evaluation period: 1961–2023
  - Forecast periods: years 1, 2, 3, 1–2, 2–3, 1–3, 1–5, and 1–9
  - Reference period: 1991–2020
  - Seasons: Annual, Dec-Jan-Feb (DJF), and Jun-Jul-Aug (JJA)
  - Start date of the forecasts: november 2023

Methods

- Evaluation metrics:
  - Anomaly Correlation Coefficient (ACC)
  - Root Mean Squared Error Skill Score (RMSSS)
  - Ranked Probability Skill Score (RPSS)
  - Continuous Ranked Probability Skill Score (CRPSS)
  - Relative Operating Characteristic Skill Score (ROCSS)
  - Spread-to-error ratio (Spread/Error)

- Statistical significance testing
    - Confidence level: 95%
    - Two-sided t-test for the ACC
    - Two-sided Random walk test for the RMSSS, RPSS and CRPSS

- Grid:
    - Spatial resolution 1ºx1º
    - Interpolation method: conservative

- Cross-validation: leave-one-out

- Skill mask:
    - ACC for maps of the ensemble mean anomaly
    - RPSS for maps of the most likely tercile

Contact

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