A Global Probabilistic Dataset for Monitoring Meteorological Droughts

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Fig. ES1. Validation of all the gridded datasets using MSWEP data. Correlation of annual SPI12 against MSWEP data over the period 1981–2016. Points indicate significant correlations ($p$ values < 0.05).
Fig. ES2. Validation of all the gridded datasets using MSWEP data. Boxplots of the spatial distribution of (a) the correlation values and (b) the mean absolute error (MAE) of the pairs (gridded datasets available in near-real-time and MSWEP data) computed across the studied area over the period 1981–2016 considering the monthly SPI1, (c) the correlation values and (d) the MAE for the 3-month SPI3, (e) the correlation values and (f) the MAE for the 6-month SPI6, and (g) the correlation values and (h) the MAE for the annual SPI12. The median is shown as a solid line, the boxes indicate the 25th–75th-percentile range while the whiskers show the 2.5th–97.5th-percentile range.
Fig. ES3. Validation of all the gridded datasets using soil moisture data. Correlation of annual SPI12 against annual ESA CCI Soil Moisture data over the period 1981–2016. Points indicate significant correlations ($p$ values < 0.05).
Fig. ES4. Validation of all the gridded datasets using GRACE data. Correlation of annual SPI12 against monthly GRACE data over the period April 2002–December 2016. Points indicate significant correlations ($p$ values < 0.05).
Fig. ES5. Validation of all the gridded datasets using GSIM data. Correlation of annual SPI12 against GSIM data over the period 1981–2016. Colored circles indicate significant correlations ($p$ values $< 0.05$).
Fig. ES6. Deterministic validation of DROP over all the regions. Boxplots of the spatial distribution of the correlation values of the pairs (SPI12 from DROP and MSWEP data) over the period 1981–2016 for all the regions of the study. The median is shown as a solid line, the boxes indicate the 25th–75th-percentile range, while the whiskers show the 2.5th–97.5th-percentile range.
Fig. ES7. Probabilistic validation of DROP over all the regions. Boxplots of (a) the reliability measured as the slope of the regression line of the reliability diagrams for all the regions of the study for moderate (i.e. annual SPI < −0.8) drought events and (b) the ROCSS values for the monthly SPI1, (c) the reliability and (d) the ROC diagrams for the 3-month SPI3, and (e) the reliability and (f) the ROC diagrams for the 6-month SPI6. The median is shown as a solid line, the boxes indicate the 25th–75th-percentile range while the whiskers show the 2.5th–97.5th-percentile range.
Fig. ES8. As in Fig. ES7, but for severe (i.e., annual SPI < −1.3) drought events.
Fig. E59. Drought case studies time series. Times series evolution of the observed 12-month SPI considering the spatially averaged (over the domain highlighted in black) ensemble members (in gray), the DROP ensemble mean (in green), and the MSWEP data (in orange).

Table E51. Drought severity classification based on the SPI values (Svoboda et al. 2002).

| Standardized index | Description          |
|--------------------|----------------------|
| −0.50 to −0.79     | Abnormally dry       |
| −0.80 to −1.29     | Moderate drought     |
| −1.30 to −1.59     | Severe drought       |
| −1.60 to −1.99     | Extreme drought      |
| −2.0 or less       | Exceptional drought  |

Reference

Svoboda, M., and Coauthors, 2002: The Drought Monitor. *Bull. Amer. Meteor. Soc.*, 83, 1181–1190, https://doi.org/10.1175/1520-0477-83.8.1181.