SUPPLEMENTARY MATERIAL

A MULTI-SCALAR GLOBAL EVALUATION OF THE IMPACT OF ENSO ON DROUGHTS

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Figure S1. Spatial distribution of the average 6-month SPEI anomalies during La Niña years and the years preceding. The black lines identify areas in which significant differences in the SPEI average were found between the La Niña years and other years. The greatest anomalies were again found in the southern USA/northern Mexico area. It is notable that the drought conditions at the 6-month time scale were delayed (the drought conditions were identified in this region in February of La Niña years), but propagated for a longer period, until September of La Niña year. The pattern was very similar in eastern Europe and western Russia, where negative and significant anomalies were found from April to June of La Niña years.
Figure S2. Probability of drought conditions (SPEI < −0.84) during La Niña events for the 12-month SPEI. The Figure shows a representative example of the spatial distribution of the empirical probability of drought conditions (SPEI < −0.84, a value that represents the 20% according to the normal distribution of the SPEI values) during the year of La Niña events at the time scale of 12 months. With the exception of the southern USA/northern Mexico region, where high probabilities were recorded for most months (> 60% of La Niña years having drought conditions from July to December), the probabilities elsewhere in the world were low (commonly < 40%), and the spatial pattern was exceedingly patchy, even in eastern Europe and southwestern Russia.
Figure S3. Spatial distribution of the average 6-month SPEI anomalies during El Niño years and the years preceding. The black lines identify areas in which significant differences in the SPEI average were found between the El Niño years and other years. The 6-month time scale confirmed the negative SPEI anomalies found for the most affected regions at the shorter time scales.
Figure S4. Probability of drought conditions (SPEI $< -0.84$) during El Niño events for the 12-month SPEI. The probability is very high (> 60%) in most of Australia and Indonesia at the beginning of the year, and in India and Indochina during the entire year. In South Africa the probability is also high (> 50%) during most of the months showing a very homogeneous spatial pattern in drought probability. Northern South America has the highest probability, with > 80% of El Niño years associated with drought conditions. Other areas with high probabilities of drought associated with El Niño events include the Sahel, western Canada and eastern Siberia, but the surface areas affected are smaller or very patchy.
Figure S5. Standardised anomalies of Sea Surface Temperature during La Niña years and the years preceding. Large negative anomalies are recorded in the East Pacific from August of the preceding year to May of La Niña year.
Figure S6. SLP standardized anomalies during La Niña years and the years preceding. From November of the previous year to March of La Niña year, the Pacific coastland of North America is largely affected by strong blocking in the East Pacific, which would determine dry conditions in the region. The propagation of the SLP anomalies clearly shows dominant positive values in Europe and central Eurasia from February to April of La Niña year. There are other minor features also identified in the SLP configurations for La Niña years, which are having a remarkable impact on the SPEI anomalies, but the patterns are local or they are only recognized in one month (e.g., North Europe and Scandinavia in May or North Argentine in November of the previous year).
Figure S7. Standardised anomalies of Sea Surface Temperature during El Niño years and the years preceding. Large positive anomalies are recorded in the East Pacific from June of the preceding year to May of La Niña year.