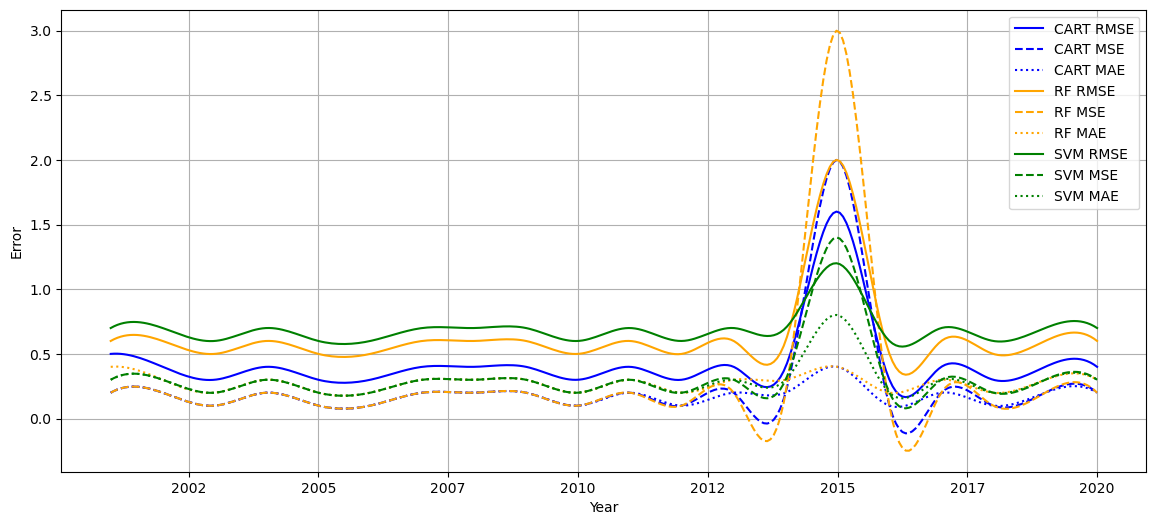
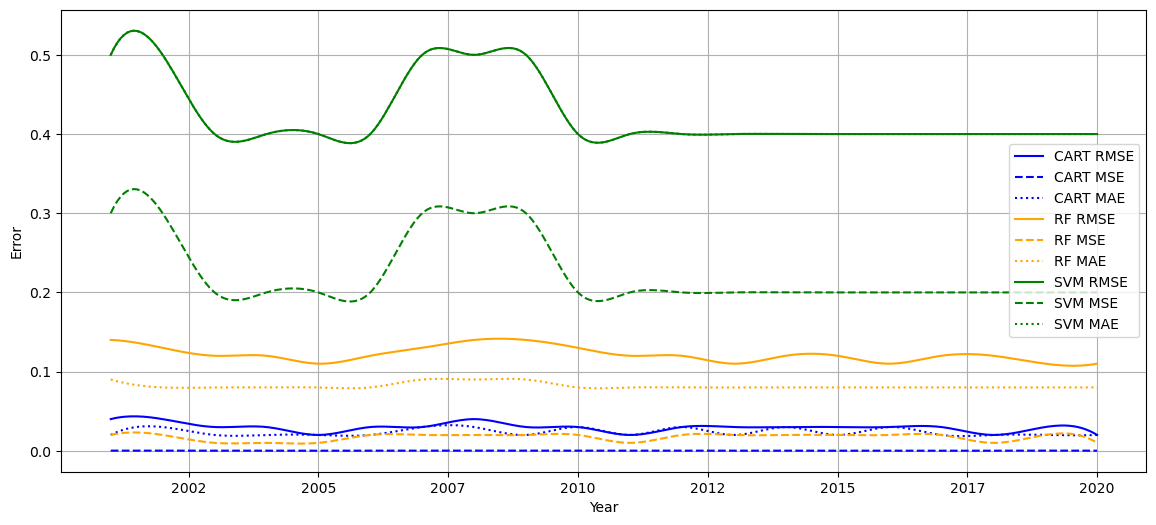
**Supplementary information/ index**

**Table S1.** Detailed significant drought years, affected Countries and regions, and impacts

|  |  |  |
| --- | --- | --- |
| Reference | Drought year or period within the years 2001 to 2020 | Remarks on drought occurrences by region/ country/ basin |
| Meteorological Drought |  |  |
| North Africa |  |  |
| Babaousmail et al. [100] | 2001-2020 | 70% desert with less than 50mm of r/f. 150mm of r/f in arid areas. Recurrent drought in the Sahel, Sahara, and its environs. |
| Touchan et al. [101], Touchan et al. [102], Mohamed et al. [103] | 2001-2002 | Drought in Northern Africa, notably Morocco, Algeria, and Tunisia, with Tunisia experiencing extreme conditions. |
| Elagib & Elhag. [104] | 2002-2008 | El Niño driving droughts in Sudan. |
| Thi et al. [84] | 2001,2005, 2015-2017, 2019-2020 | Droughts in Northeast Africa as detected through the Standardized Precipitation Index (SPI). |
| West Africa |  |  |
| Kasei et al. [85] | 2001 | Mali, Burkina Faso, Ghana, Togo, and the Volta Basin suffer droughts per SPI assessments. |
| Ogunrinde et al. [105] | 2001 to 2005 and 2012 | Drought in Nigeria, particularly severe in 2002 and 2012. |
| East Africa |  |  |
| Nicholson. [106], Ayugi et al. [86] | 2005/2006, 2007, 2008, 2009, 2011, 2017/2018 | Below normal rainfall in the greater horn of Africa in regions of Kenya, Tanzania, Somalia, and Ethiopia. |
| Uhe et al. [107] | 2010/2011, 2016 | Kenyan drought |
| Dutra et al. [108], Tierney et al. [109] | 2010-2011 | Severe drought in the Horn of Africa, especially in Somalia and Ethiopia, is among the worst in six decades, influenced by the Indian Ocean. |
| Hastenrath et al. [110] | 2005 | Equatorial East Africa, Kenya |
| Tadesse et al. [111] | 2001-2002 | Horn of Africa drought and monitoring using gridded precipitation data. |
| Southern Africa |  |  |
| Mishra & Singh [112], Bhaga et al. [113], Rouault & Richard. [114], Chivangulula et al. [87], Chikoore & Jury [115] | 2002-2004 and 2015-2019 | Droughts in Southern Africa, including El Niño impact, with extreme meteorological droughts in 2015, 2016, and 2019. |
| Central Africa |  |  |
| Alber et al. [116], Chen et al. [92] | 2001-2020 | Drying trend in Congo linked to gradually decreasing precipitation and SPEI study findings |
| Ntali et al. [88] | 2002, 2004, 2009, 2011, 2012, 2015, 2016, 2017, 2018, and 2019 | Frequent droughts in northern Cameroon, as determined by SPI analysis." |
| Carvalho et al. [117] | 2013 | Severe drought in Angola |
| Pinto et al. [118] | 2012-2020 | Southern Angola experienced droughts |
| Agricultural Drought |  |  |
| North Africa |  |  |
| Amri et al. [119] | 2001 | Drought in North Africa as assessed through NDVI analysis |
| Henchiri et al. [120] | 2002 | Analysis of agricultural drought in Tunisia, North Africa, with a focus on the exceptionally dry year of 2002. |
| Thi et al. [84] | 2016-2017 and 2019-2020 | Precise observation of severe drought in Morocco and Algeria within Northeast Africa, utilizing NDVI time series data. |
| West Africa |  |  |
| Bhaga et al. [89] | 2018 | In 2018, drought-induced crop failure in Senegal resulted in food insecurity for 245,000 people. |
| Brown et al. [121] | 2011 | Agricultural drought in Ghana. Monitored with a satellite based agricultural drought early warning system. |
| Eastern Africa |  |  |
| Rulinda et al. [90] | 2005-2006 | Drought across Burundi, Kenya, Rwanda, Tanzania, and Uganda, with agricultural drought spreading spatially from September 2005 to its peak in January 2006. |
| Southern Africa |  |  |
| Ndlovu & Mjimba. [91] | 2019 | In 2019, Zimbabwe saw a roughly 70% drop in maize production due to drought. |
| Archer et al. [122], Theron et al. [123], Theron et al. [124] | 2015-2019 | Multiyear agricultural drought in South Africa from 2015 to 2019, impacting Western and Eastern Cape. |
| Central Africa |  |  |
| Chen et al. [92] | 2001-2020 | Congo rainforest productivity declining with increasing drought frequency, severity, and duration trends, though not yet severe. |
| Luetkemeier et al. [125] | 2006 | Angolan study using various drought indices indicates limited trend variation from 2001 to 2011, with only one severe drought in 2006. |
| Hydrological Drought |  |  |
| North Africa |  |  |
| Henchiri et al. [93] | 2001-2003, 2008-2010 | Morocco and Algeria in North Africa experiencing hydrological drought. |
| Achite et al. [126] | 2014-2016 | Algeria's Wadi basin facing severe to extreme drought. |
| West Africa |  |  |
| Oloruntade et al. [127] | 2006 | In Nigeria, the Niger-South Basin experienced drought in 2006, as evidenced by the findings derived from the Standardized Runoff Index (SRI). |
| Henchiri et al. [93] | 200-2003, 2008-2010 | Mali, Guinea, Ghana, Sierra Leone, Cote d’Ivoire, Niger, Burkina Faso, Nigeria experienced hydrological drought conditions. |
| Ogunrinde et al. [105] | 2003-2004 | Extreme hydrological drought in Nigeria |
| East Africa |  |  |
| Anderson et al. [94] | 2010-2011 | Drought in Ethiopia, Somalia, and Kenya indicated by hydrological modeling results. |
| Calow et al. [128] | 2002-2003, 2004-2005, 2005-2006 | Droughts in Ethiopia studied through groundwater research. |
| Tareke & Awoke. [23] | 2001,2002,2003,2004,2005,2010,20112012 | Severe and extreme hydrological drought years in six Ethiopian river basins, determined through Streamflow Drought Index (SDI) results. |
| Southern Africa |  |  |
| Mussá et al. [129] | 2003-2004 | Hydrological droughts in South Africa's Crocodile catchment area identified via groundwater analysis employing the SRI hydrological index. |
| Siderius et al. [5] | 2015/2016 | Southern Africa experienced hydrological droughts due to a severe El Niño event, leading to low lake levels in Botswana and Zambia. |
| Bhaga et al. [4] | 2015-2018 | Severe drought in South Africa's Western Cape, resulting in a 20% decrease in dam levels. |
| Cenral Africa |  |  |
| Ndehedehe et al. [130], Sorí et al. [95], Sorí et al. [131] Alber et al. (116) | 2001-2020 | Trend shows the Congo River Basin has become drier. |
| Pinto et al. [118] | 2012-2020 | Drying trend in Angola. |



**Figure S1.** Meteorological drought-training errors



**Figure S2.** Agricultural drought-training errors



**Figure S3.** Hydrological drought-training errors.