CLIM-WARN Metadata

Title:	Standard Precipitation Index
Indicator Code:	SPI
Component:	Hazard
Rationale:	The Standardized Precipitation Index (SPI) is a tool which was developed primarily for defining and monitoring drought. It allows an analyst to determine the rarity of a drought at a given time scale (temporal resolution) of interest for any rainfall station with historic data. It can also be used to determine periods of anomalously wet events. Mathematically, the SPI is based on the cumulative probability of a given rainfall event occurring at a station. The historic rainfall data of the station is fitted to a gamma distribution, as the gamma distribution has been found to fit the precipitation distribution quite well. This is done through a process of maximum likelihood estimation of the gamma distribution parameters, α and β. In simple terms, the process described above allows the rainfall distribution at the station to be effectively represented by a mathematical cumulative probability function. Therefore, based on the historic rainfall data, an analyst can then tell what is the probability of the rainfall being less than or equal to a certain amount. Thus, the probability of rainfall being less than or equal to the average rainfall for that area will be about 0.5, while the probability of rainfall being less than or equal to an amount much smaller than the average will be also be lower (0.2, 0.1, 0.01 etc, depending on the amount). Therefore if a particular rainfall event gives a low probability on the cumulative probability function, then this is indicative of a likely drought event. Alternatively, a rainfall event which gives a high probability on the cumulative probability function is an anomalously wet event.
Source Data Set:	Funk C, Michaelsen J. and Marshall, M. (2012) Mapping recent decadal climate variations in precipitation and temperature across Eastern Africa and the Sahel, Chapter 14 in "Remote Sensing of Drought: Innovative Monitoring Approaches", edited by B. Wardlow, M. Anderson and J. Verdin, Taylor and Francis, 25 pages. ftp://chg-ftpout.geog.ucsb.edu/pub/org/chg/products/CHIRPS-2.0
Units:	Units range from -3 - 3 and represent extreme dryness (-3) and extreme wetness (3). Zero represents normal conditions.
Computation:	Climate Hazard group InfraRed Precipitation with Stations (CHIRPS) is a global (50°S-50°N, 180°E-180°W), 0.05° resolution, 1981 to near-present gridded precipitation time series. CHIRPS data are produced by scientists at the University of California, Santa Barbara (UCSB) Climate Hazard Group (CHG) and the U.S. Geological Survey (USGS) Earth Resources Observation and Science (EROS) Center. Data are provided as pentadal (5-day) composites. See readme for CHIRPS data. Using IDL these data are accumulated to create monthly, 2-monthly and 3-monthly rainfall data. Individual observations are subtracted from the time series mean to produce anomaly data. Standard Precipitation Index maps (zscores) are made by applying a gamma function routine developed by Greg Husak, precip_2_spi_gh.pro and are computed at decadal, monthly, 2 monthly and 3 monthly time steps.
Scoring system:	*NA*
Limitations:	**Unknown**
Spatial Extent:	Global
Spatial	0.5 degree

Resolution:	
Year of Publication:	2015
Time Period:	unknown
Additional Notes:	http://earlywarning.usgs.gov:8080/EWX/info?page=usgs-ucsb-gridded-rainfall
Date:	April, 2015
Format:	Grid
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