

ESA GLOBAL DEVELOPMENT ASSISTANCE (GDA) CLIMATE RESILIENCE

The collection and analysis of Earth Observation (EO) data plays a critical role in global climate research by providing vast amounts of precise and up-to-date information about various environmental components, such as the atmosphere, oceans and landmasses. When coupled with knowledge about our society, this information paints a vivid picture of climate-related hazards and opportunities for enhancing resilience.

Starting from 2008, the European Space Agency (ESA) has established a long-standing partnership with International Financial Institutions (IFIs), upon which it has built several initiatives including the Earth Observation for Sustainable Development (EO4SD) and the Global Development Assistance (GDA) programmes. Telespazio UK (TPZ UK) carried out climate data provision and tool development as part of the EO4SD Climate Resilience cluster. Following this fruitful collaboration, TPZ UK has continued to actively participate in the ESA GDA programme, contributing significantly to its objectives.

THE PROJECT AIM

The GDA initiative aims to leverage the full potential of EO satellite technology for accelerating the impact of international development assistance efforts. To accomplish this goal, the GDA programme concentrates on targeted and Agile EO Information Development in priority sectors. Through the GDA initiative, over \$100 million has been

mobilised from various space and development financing sources, aimed at mainstreaming the application of EO in practical development activities.

Examples of the services provided by GDA Climate Resilience include:

- Innovative tools to assist selection of Global Climate Models (GCMs) for climate change impact assessment modelling
- Support to the Disruptive Technologies for Public Asset Governance (DT4PAG) project of the Digital Government Transformation programme at the World Bank
- Geospatial portal for profiling climate risk exposure of assets and proposed investments
- Support to preparation of the World Bank's Country Climate and Development Reports (CCDR)
- Web-based platform to explore flood and drought risks and exposure using EO data
- Analysis of precipitation and flood trends and identification of flood hazard zones based on EO satellite data
- Sub-annual deforestation dynamics for assessment of sustainability-linked bonds at the World Bank

TELESPAZIO UK SERVICES

For the GDA Climate Resilience project, TPZ UK drew upon its expertise in developing the Copernicus Climate Change Service (C3S) Climate Data Store (CDS) and its successful involvement in the ESA EO4SD Climate Resilience project, to provide data and solutions for various activities within the World Bank Group. As part of its efforts, TPZ UK collaborated with the World Bank Group to develop the Climate Change Screening components of the World Bank's Geospatial Planning and Budget Platform (GPBP-CCS), offering technical and scientific assistance. TPZ UK played a key role in conceptualisation and data provision, and leveraged their climate expertise to develop the climate risk score for the designated assets.

In addition, TPZ UK has supported the World Bank teams tasked with producing the CCDRs by providing EO-based climate impact indicators. TPZ UK has also assisted the South Sudan Climate Resilient Flood Management project by performing an in-depth analysis of the precipitation regime in the region and developing extreme precipitation indices using both reanalysis and EO satellite data. This particular activity was received very well by the project stakeholders, including officials from the South Sudan Ministry of Water Resources and Irrigation,

the Ministry of Environment, and various institutes located within South Sudan.

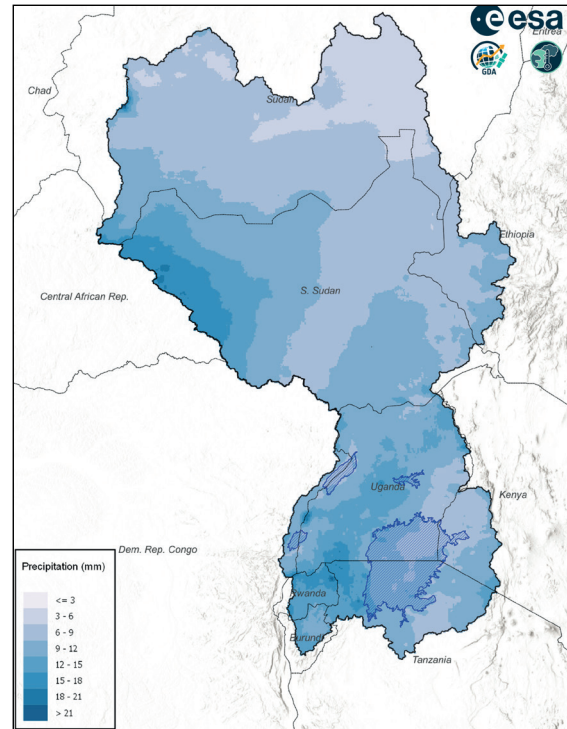


Figure 1. Mean Simple Precipitation Intensity Index (SPII) over study area using Tropical Applications of Meteorology using SATellite data and ground-based observations TAMSAT-V3 (1983-2021)

As a member of the GDA Climate Resilience project, TPZ UK has created a preliminary version of an analytical tool that helps users of the World Bank's Climate Change Knowledge Portal (CCKP) assess and rank the GCMs' statistical skill for a particular area. With this innovative solution, users can indicate the desired variable (such as temperature or precipitation), the target season and the time horizon. The tool then uses a statistical process to ascertain which GCMs exhibit the greatest proficiency for the given parameters. Additionally, the tool offers analytical interfaces to assist users in evaluating the spatiotemporal variability of different GCMs and selecting models that encompass the full range of future scenarios.

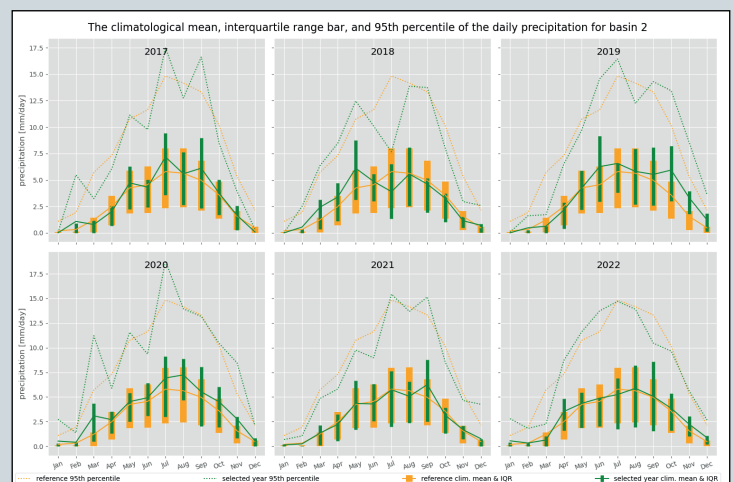


Figure 2. Climatological statistics of the precipitation in the period 2017-2022 with respect to the reference period 1983-2012 for basin 2, South Sudan