Republic of Turkey
The Ministry of
Forestry and Water
Affairs

METEOROLOJi

DERIVATION OF MISSING METEOROLOGICAL PRECIPITATION DATA
BY USING FFGS-MergedMAP AND PRECIPITATION RADAR

Esin OĞUZ , Yusuf ULUPINAR, Ali İhsan AKBAŞ, Mehmet AKSOY

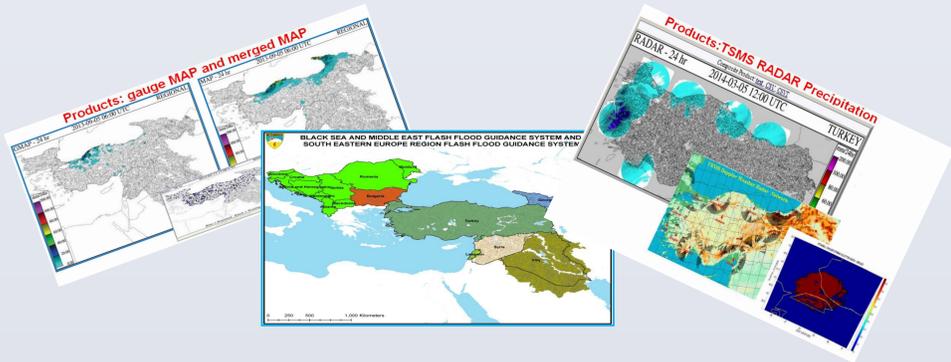Turkish Meteorological Service, Research Department Hydrometeorology Division

ABSTRACT

Hydrometeorological data concerning to basins have crucial importance for planning of water resources. For this reason, lack of meteorological data such as precipitation, evaporation and temperature is very important problem for hydrological analyses and calculations. It is necessary to complete these missing data with several methodology. The most common method is known as the Regression Analysis method. Besides, it is possible to observe precipitation with new technological instruments from space. RADAR observations is one of these methods. In this study, we used MergedMAP precipitation forecast from BSMEFFGS output and precipitation observation from TRMM Precipitation Radar.

DATA and METHODOLOGY

Regression Analysis is a statistical process for estimating the relationships among variables. It includes many techniques for modeling and analyzing several variables, when the focus is on the relationship between a dependent variable and one or more independent variables.

BSMEFFGS-Merged MAP (mean areal precipitation) is a bias corrected product. The bias correction is done by using available gauge data, radar (Turkey only), GHE (Global Hydroestimator) or MWGHE (MiroWave Adjusted Global Hydroestimator) in that order.

Products: gauge MAP and merged MAP

Products:TSMS RADAR Precipitation

BLACK SEA AND MIDDLE EAST FLASH FLOOD GUIDANCE SYSTEM AND SOUTH EASTERN EUROPE REGION FLASH FLOOD GUIDANCE SYSTEM

TRMM RADAR Precipitation Radar (PR), provides spaceborne precipitation estimation, is an important sensor of the Tropical Rainfall Measuring ission (TRMM) that was built by the Japan Aerospace Exploration Agency (JAXA) as part of its contribution to the joint US/Japan. Aerospace Exploration Agency (JAXA) as part of its contribution to the joint US/Japan.

11/23/2011 0455Z TRMM Precipitation Radar (PR) 15dBZ Isosurface
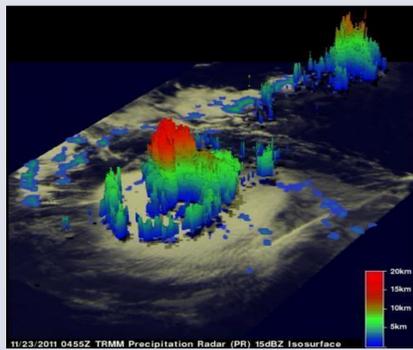
Study Area: In this study areal rainfall in the catchment area of the stations which are 17675 Bursa Mustafa Kemal Paşa and 17699 Manyas TSMS AOS, TRMM Radar and MergeMAP values have been used.
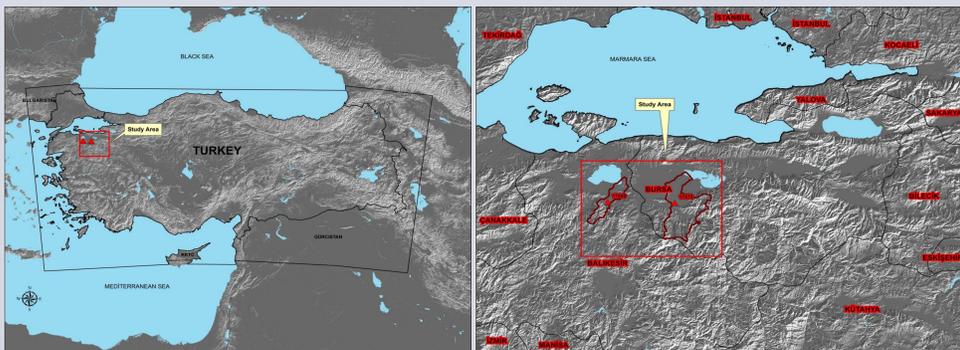

	Rainy Days	Same Days Rainy with AOS	consistency
17675 TSMS AOS	121	121	-
TRMM Radar	43	28	23,10%
Merge-MAP	193	93	76,90%

|	Rainy Days	Same Days Rainy with AOS	consistency
17699 TSMS AOS	124	121	-
TRMM Radar	42	42	27,40%
Merge-MAP	181	92	74,20%

RESULTS

***Graphics show that 17675 and 17699 TSMS Automatic Monitoring Station, TRMM and MergeMAP Areal Rainfall values have been shown
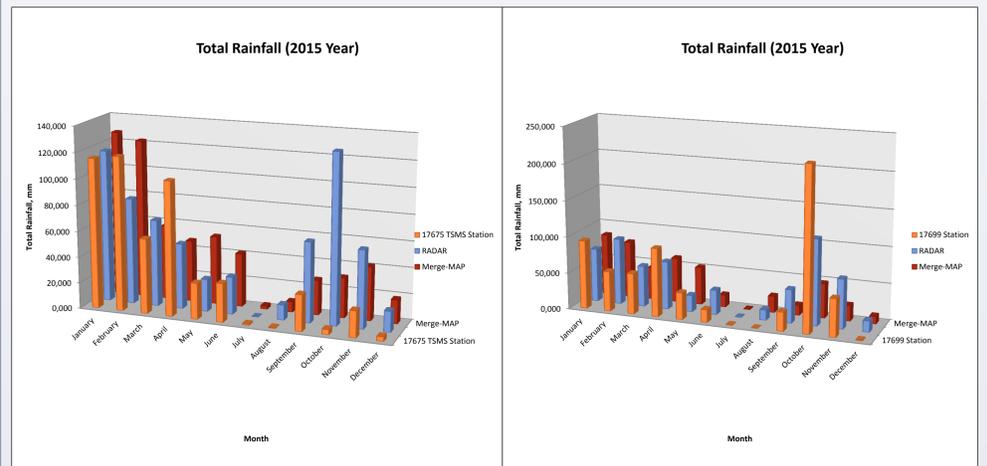
***Regression analysis results have been shown in the following graphs;
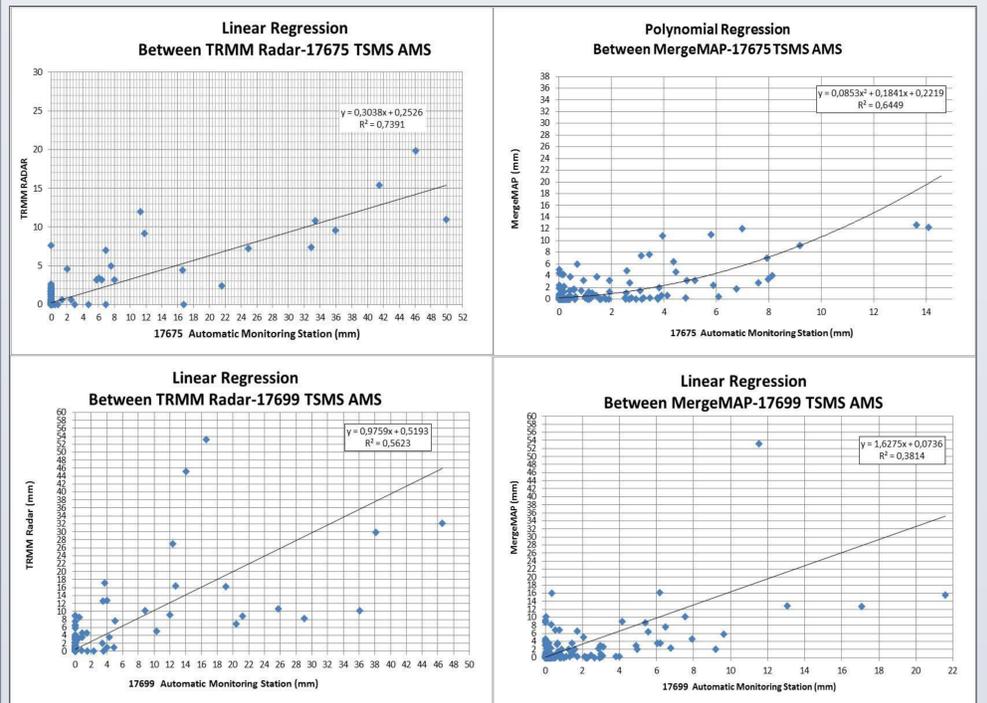
***Final results have been shown in the following graphs;
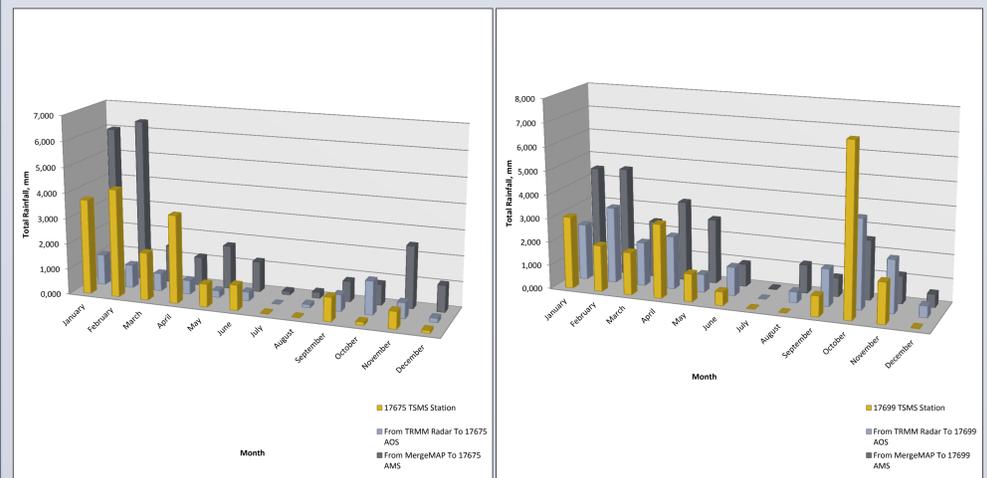
In this study, we have analysed correlations of TRMM RADAR, MergeMAP and ground measurements for two selected meteorological stations. Then, appropriate equation are selected from correlation equations. Precipitation data have been derived with TRMM RADAR and GMAP data by using these equations. As a result, accuracy of derived data have been examined and compared to real measurements for selected meteorological stations..