

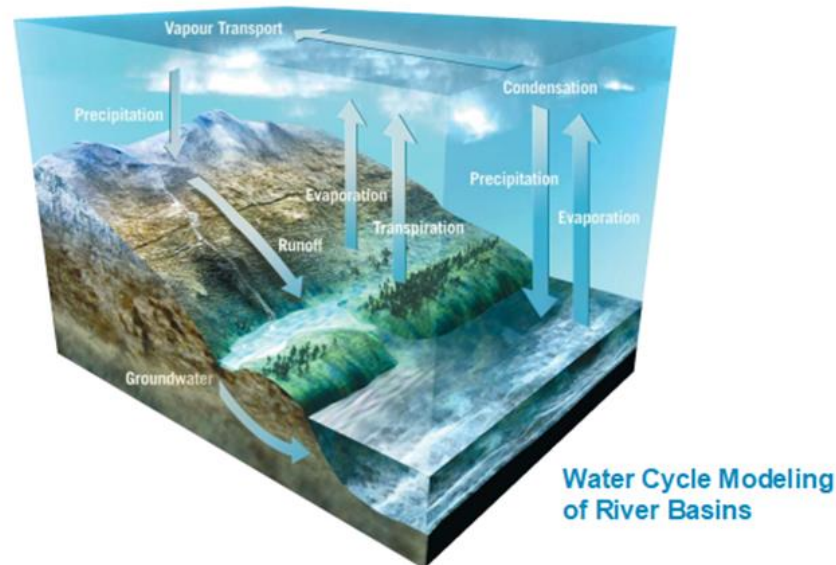
THE USE OF SPACE TECHNOLOGY FOR WATER RESOURCES MANAGEMENT IN SYRIA

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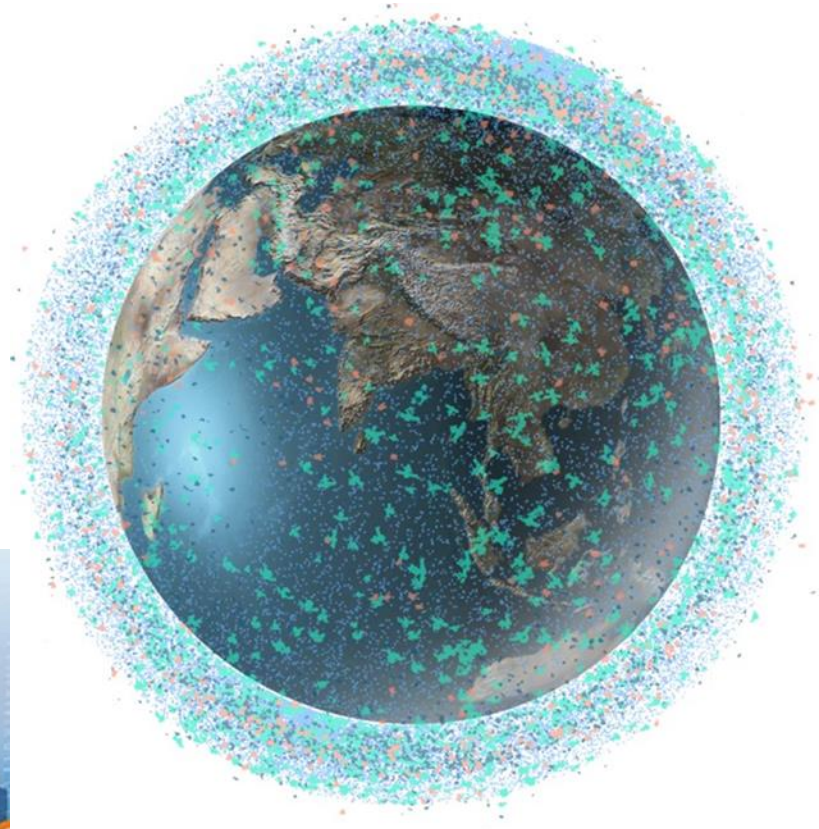
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Many manned and unmanned spacecraft are now roaming space at different altitudes, whose mission is to stare deeply around the Earth, discover its hidden resources and wealth, and monitor its environment and disasters.



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1- Introduction:

Many countries in the world complain of water problems especially our region, complains of great water shortage. This problem increases greatly in result of great increasing of the population, agricultural projects and investments. That will make additional pressure on water resources. Also, the water storage had begun complaining of pollution problems

2- Water Resources Management in Syria:

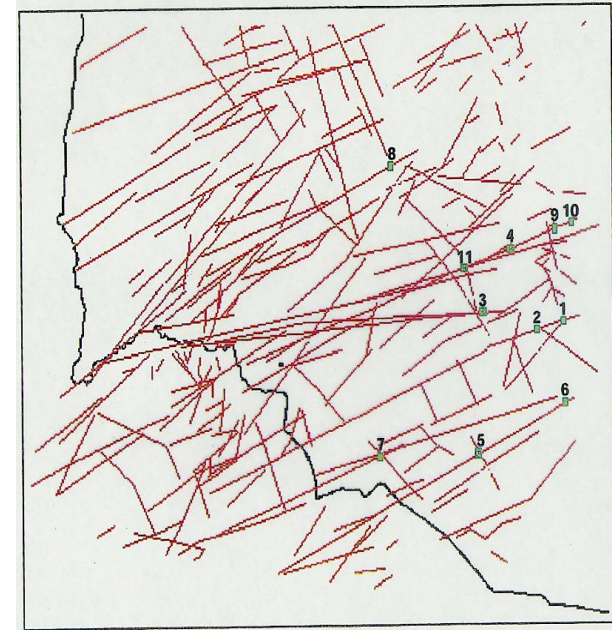
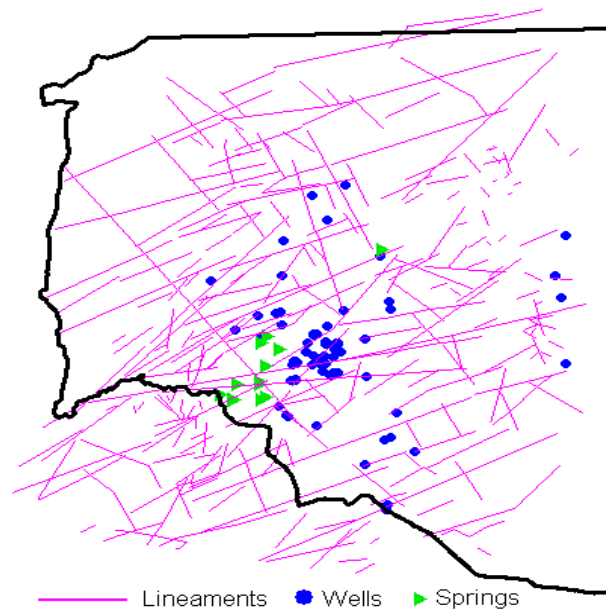
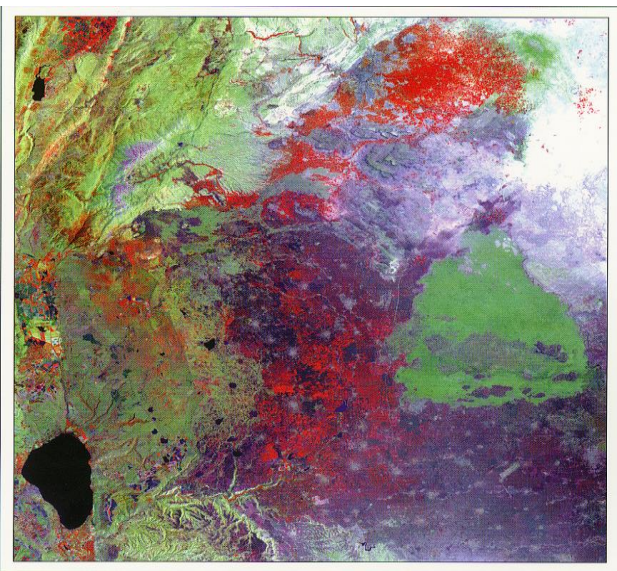
The new technologies of remote sensing, geographic information system and global positioning system had a great importance in groundwater exploration. Whereas the space images taken by Landsat TM, radar images by European Remote Sensing satellite ERS, using geographic information system GIS, global positioning system GPS and previous geological, tectonic, hydrological and hydrogeological studies of study regions contributed as ideal method in exploration of groundwater in Syria.

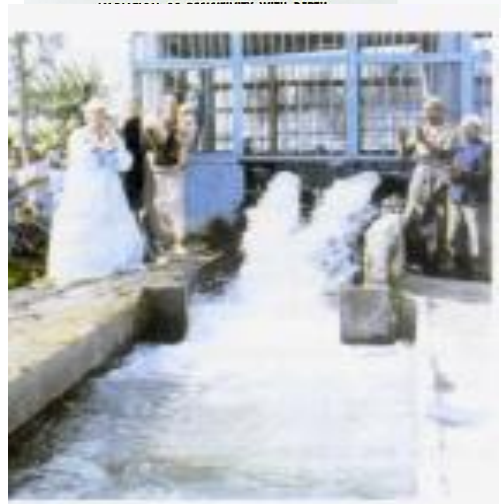
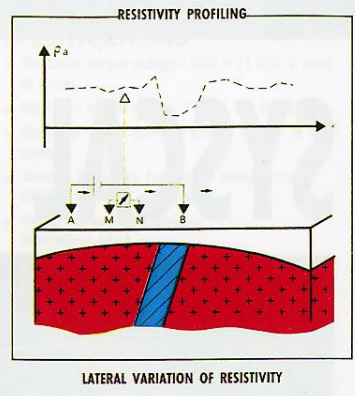
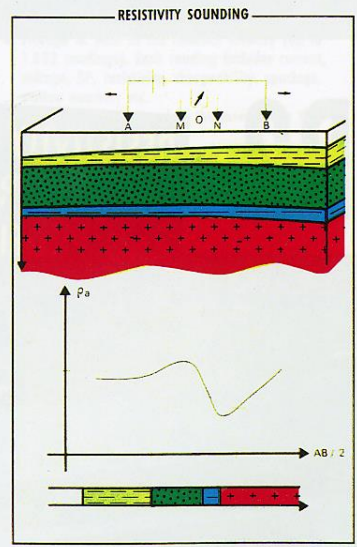
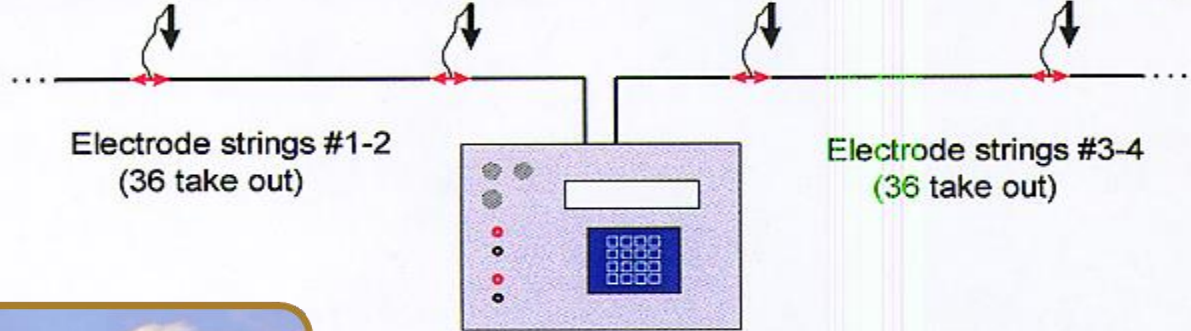
By processing , analyzing of space images, compiling thematic maps of drainage, lineaments and main faults with their intensity and crossing in addition to maps of all drilled wells with their discharge and existing springs in the study of each area, study of wet faults at the end of summer through thermal band in Landsat images, subsurface faults through radar images, cross of separated faults with their accurate coordinates by using GPS and carrying out geo-electrical sounding for perspective locations and analyzing the resulted curves and assurance of existing groundwater with their water table.

We had identified many locations of ground water in Salamyeh, Sweida, Dara,a, Lattakia, Tartous and Damascus cities by using this methodology. We had drilled many of wells in the studied perspective locations, and we had good results.

Exploration of ground water in southern part of Syria:

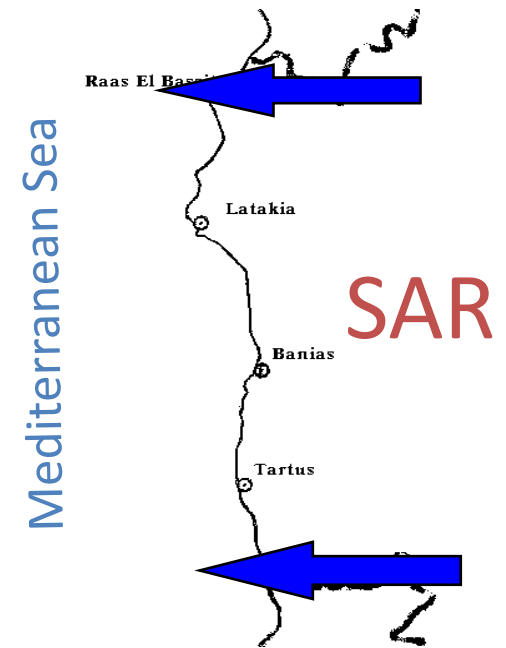
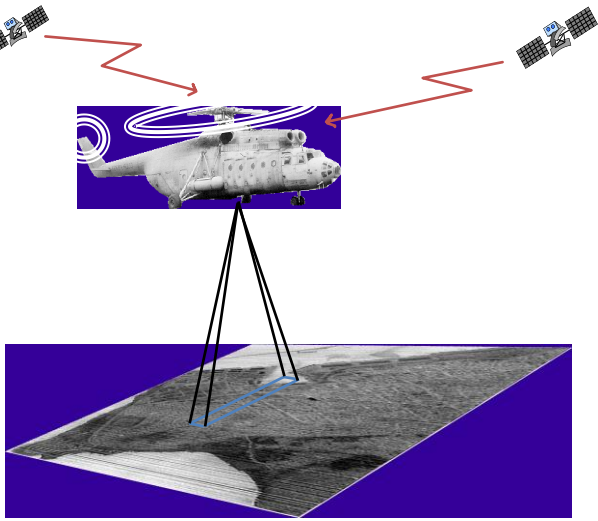
This study has been carried out in south – west part of Syria by using remote sensing techniques (Landsat and SPOT images). In Basalt Area.



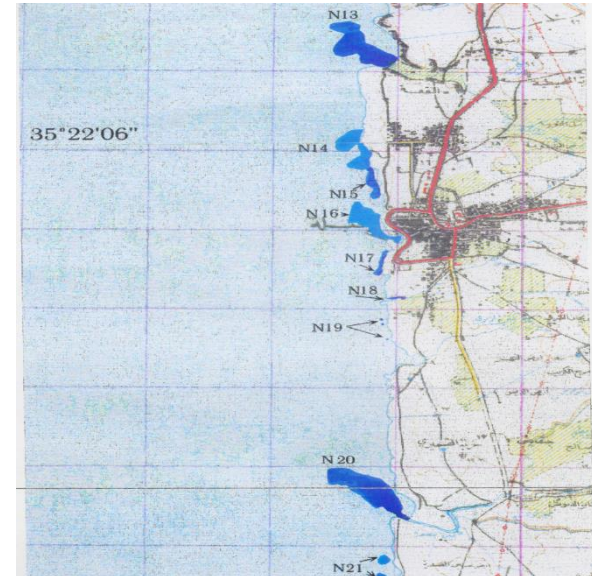


Thermal Survey of The Mediterranean Coast of Syria

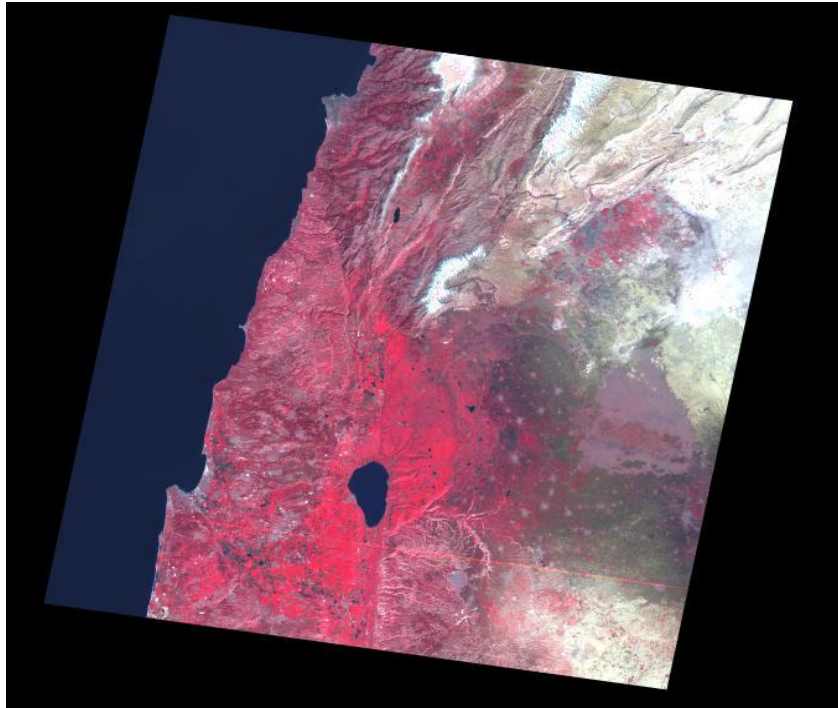
The survey was aimed to find places of the unloading of fresh water springs under sea water according to supposed temperature anomalies at the sea surface.



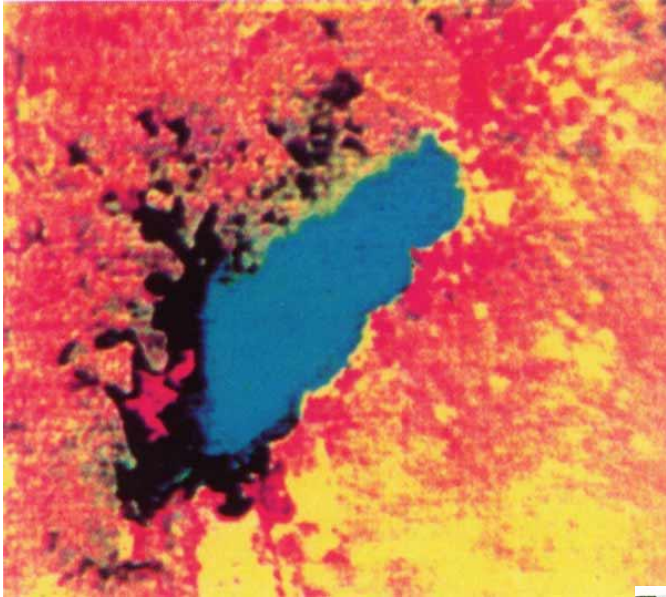
Sub-Water Springs -Part of the Coast Map with Anomalies. The discharge of these anomalies is 500 Million m³ – 1000 Million m³.



Studying the snow cover with snow pack in Syria



Monitoring the pollution in the Syrian Lakes: 1- Qateina Lake – 2- Assad Lake



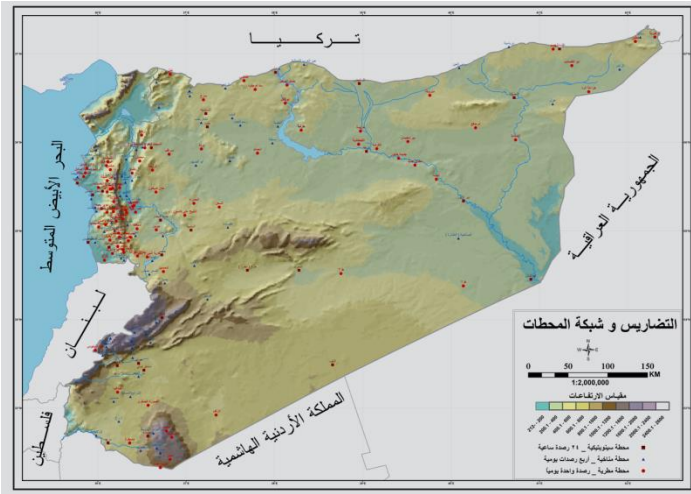
Water Harvesting in Syria



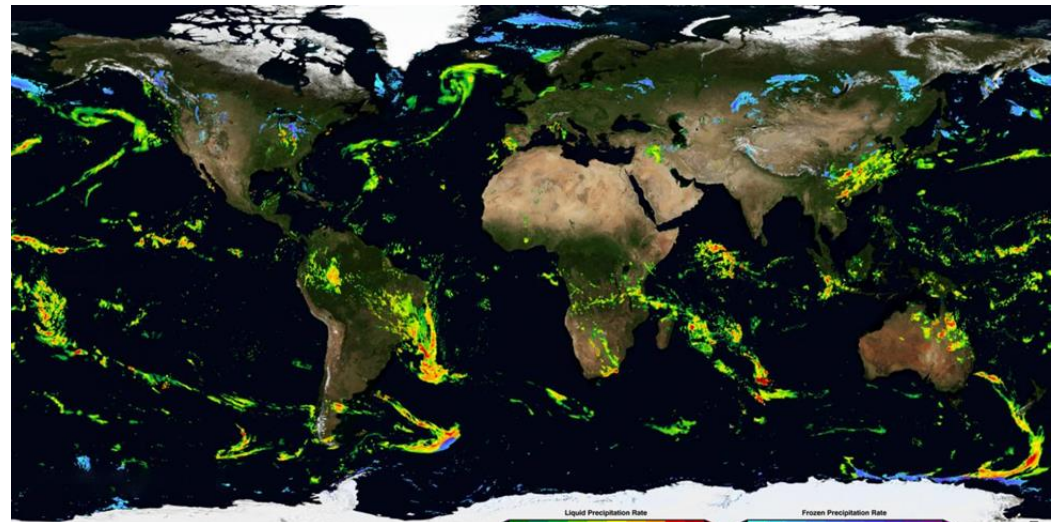
Treatment of Sewage



Measuring the precipitation (Rainfall) in Syria

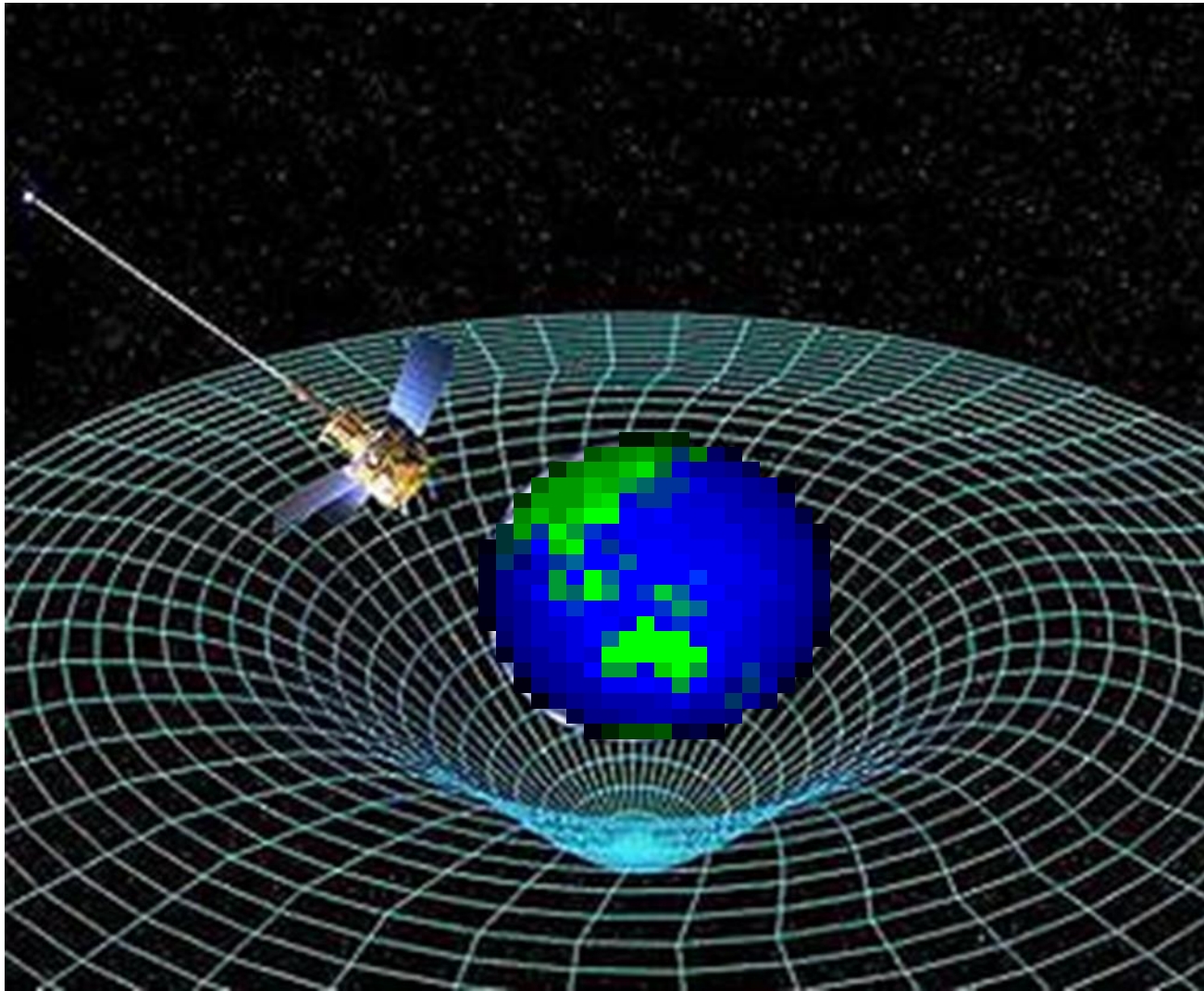


Using Tropical Rainfall Measuring Mission Satellite (TRMM) and Terra and Aqua Satellites



3- Recommendations:

Integrated Water Resources Management (IWRM) should be further promoted in the region.



Thank you very much for your attention