SATELLITE-BASED RAINFALL ESTIMATION TECHNOLOGY TRANSFER BETWEEN THE MEKONG RIVER COMMISSION AND THE NOAA CLIMATE PREDICTION CENTER

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Due to sparse and irregular distribution of surface-based rain gauges, additional information is required to obtain a complete daily precipitation analysis over a large geographical region such as the Mekong River Basin in southeastern Asia. A combined satellite and surface-based rainfall estimation (RFE) technique to enhance the knowledge of fallen precipitation was developed at the NOAA Climate Prediction Center in 2001, and results have been disseminated to users within the MRC since 2002. This data, bringing value-added information to rain gauge interpolations, is primarily intended to serve a flash flood monitoring role as a near real time rainfall dataset, complimenting real time stream gauge, rain gauge, and independent satellite-based information. The dataset also provides an excellent opportunity for the monitoring of seasonal moisture, especially when comparing to historical averages for the calculation of anomaly and percent normal rainfall. Figure 1 portrays a rain gauge interpolation over the southern Asia region, while Figure 2 represents an example 24-hour accumulation of satellite-gauge merged precipitation over area. It is seen that incorporated satellite data assist in bias removal and fill in the gaps between irregularly spaced gauge data.

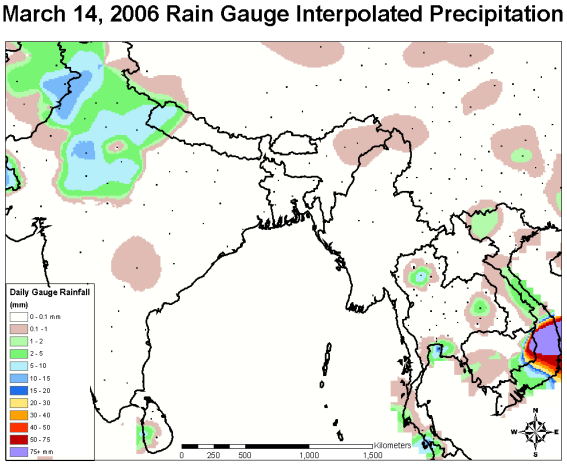

Figure 1: Interpolated station-based rain gauge precipitation for March 14, 2006.

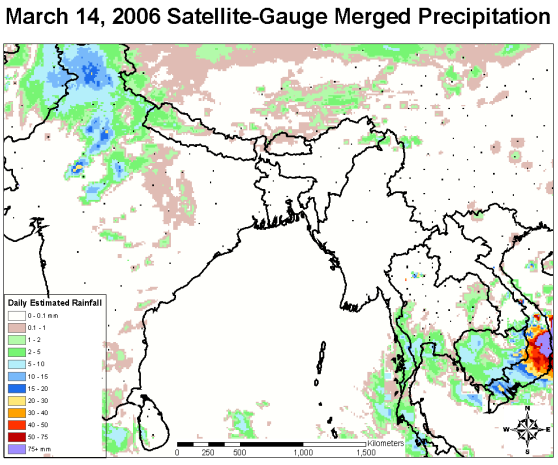

Figure 2: Satellite-enhanced, gauge-merged precipitation for March 14, 2006.

A collaborative project is currently in place between The Mekong River Commission and NOAA Climate Prediction Centre to train, install, and validate aspects of CPC's rainfall estimation software. This will provide the MRC an opportunity to create precipitation estimates with improved timeliness, and to incorporate locally-available rain gauge information yielding increased accuracy in the final product. Expert personnel from MRC will provide valuable feedback to NOAA that will assist to quantify errors in the rainfall algorithm, with the results serving as a first step in algorithm improvement over the region. Continuous interaction between agencies will serve two important purposes: to routinely update and improve the rainfall estimation process, and to strengthen ties between groups that are working toward the common goal of flood preparedness.

While much of this RFE-related work is currently ongoing, a delegation from the MRC will be visiting NOAA in mid-2006 for additional training and discussion. This visit will be the second stop for many delegates, the US Geological Survey's (USGS) Eros Data Centre the first. While select MRC members will work with hydrologic scientists from the USGS to discuss streamflow

applications, other appropriate MRC scientists will attend rainfall estimation software training at the Climate Prediction Centre. This week-long training session will serve to transfer aspects of NOAA CPC's rainfall estimation technology to the MRC, and will allow the delegates to setup, install, and run the algorithm locally in southeastern Asia. A discussion will occur on implementing precipitation data that is obtained locally at the MRC into the software, potentially allowing more timely estimates to be produced and disseminated on a local basis. Figure 3 compares dataset input processes and product timeliness for the current NOAA CPC and potential MRC rainfall estimation production.

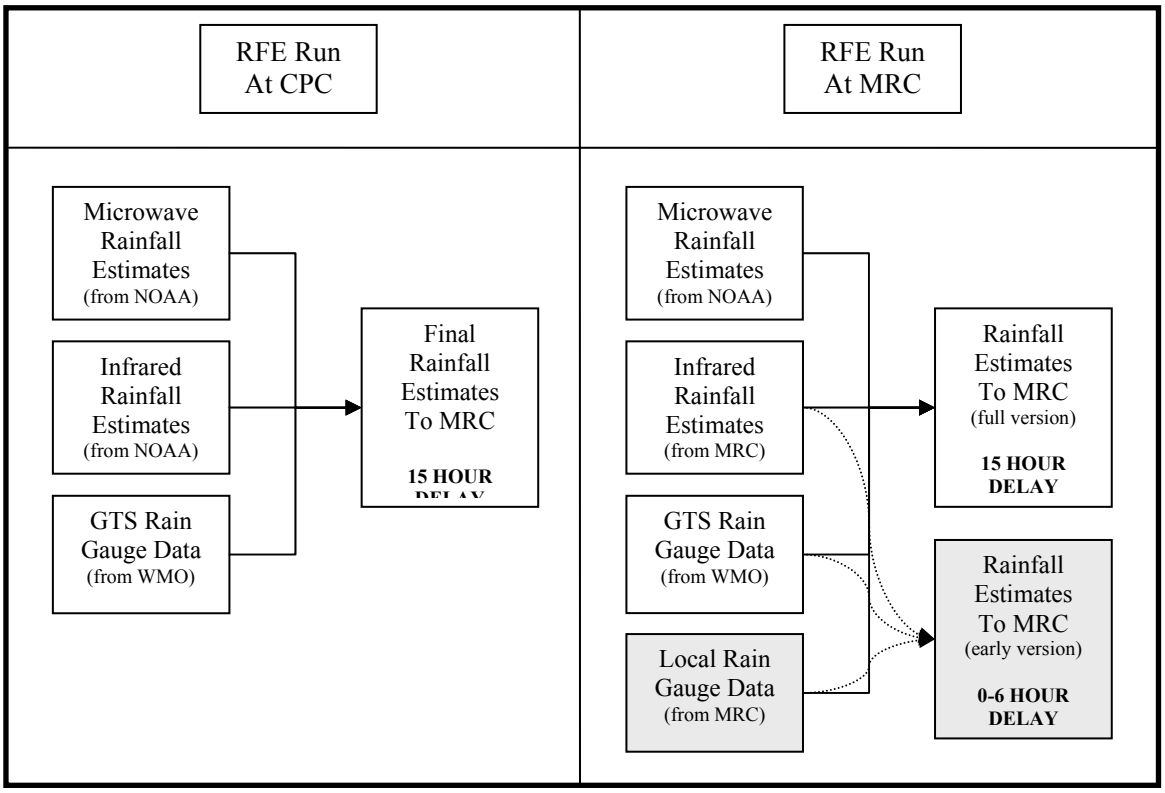

Figure 3: Comparison of rainfall estimate software timing & input datasets between CPC and MRC processing.