

Abstract on

**Developing rainfall and stream flow predictions and monitoring for
water resources management in Sri Lanka**

The viability of El Niño-Southern Oscillation (ENSO) based predictions for water resources management for Kelani, one of the major river basins in Sri Lanka. The agricultural seasons in Sri Lanka are *Yala* (April-September) and *Maha* (October-March). During the El Niño phase, warmer sea surface temperature in the equatorial Central and Eastern Pacific ocean, the *Yala* rainfall and streamflow declines and the *Maha* rainfall is enhanced during the first half of the season and diminished in the second half. The Kelani stream flow and rainfall correlate with ENSO indices at 99% significance level for the *Yala*. The rainfall of the first half of the *Maha* season has a robust association with ENSO indices but the streamflow is not directly predictable. However, capitalizing on the predictability of rainfall, rainfall-runoff relationships may be used to predict streamflow.

The second half of the *Maha* season is dry and both rainfall and streamflow during this season shows weak predictability based on ENSO indices in the far Eastern equatorial Pacific Ocean. Overall, it was found that useful predictability is obtained by choice of seasons that have consistent ENSO signals, which are also meaningful for water managers.

Other influences on streamflow, such as due to different flavors of ENSO, Indian Ocean Dipole, Quasi Biennial Oscillation, Equatorial Indian Ocean Oscillation; Central Indian Ocean temperatures; volcanic phenomenon and the influence of the Eurasian region snow cover are also being investigated so as to improve the prediction scheme.

We have also undertaken validation of daily satellite rainfall estimations (RFE) from NOAA/CPC. These observations are useful for water resources managers. We are providing monitored rainfall information, weather and rainfall predictions weekly for national water resources management operations.

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