

S2D prediction for Nepal - where all models failed

Robert GILLIES

Utah Climate Center, U.S.A, gillies.robert@gmail.com

S-Y Simon Wang, Changrae Cho

Presenter : Robert Gillies

Western Nepal has experienced consecutive and worsened winter drought conditions since 2000 culminating in a severe drought episode during 2008-2009. In this study, winter droughts in western Nepal were analyzed using instrumental records, a paleoclimatic drought index, and climate model outputs. Although decadal-scale drought conditions were found to be recurrent in the paleoclimate record, the severity of the recent decadal drought clearly stands out and is suggestive of potential anthropogenic influences in the recent decades. Meteorological diagnosis revealed that (1) winter drought in western Nepal is linked to the Arctic Oscillation and its decadal variability, that (2) the persistent warming of the Indian Ocean likely contributes to the suppression of rainfall, and that (3) the increase in winter aerosols from wood burning may have made the drought worse. It is therefore conceivable that the recent spells of decadal drought in Nepal are symptomatic of both natural variability and anthropogenic influences, compounded by late monsoons during the dry phase of the Quasi-Decadal Oscillation (QDO) in Nepal's monsoonal regime. While empirical methods may assist in Nepal's seasonal prediction, testing of the CMIP5 decadal prediction experiments reveals a less enthusiastic outcome.