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Future seasonal climate change scenarios for Taiwan using a climate scenario generator

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Decision makers, resource managers and engineers demand accurate information regarding future changes in climate and variability to better forecast potential impacts. To acquire information about climate change, dedicated experiments using global and regional climate models are needed. These demand considerable computing capacity and expertise. This study explores the use of simple climate change scenario generators in developing future changes of climate change at national level. Model for the Assessment of Greenhouse-gas Induced Climate Change (MAGGIC) combined with a scenario generator (SCENGEN) is applied. MAGGIC/SCENGEN use results from the Coupled Model Inter-comparison Project Phase 3 - CMIP3 and IPCC fourth assessment report, working group 1 - AR4). Eighteen general circulation models (GCMs) were evaluated based on global and regional performance. From these, 5 models were selected to predict future changes for Taiwan. The models predict temperature increase in all seasons with a high magnitude (3.16 °C) in June-July-August (JJA) season. Precipitation changes vary widely; generally, there is a decline in December-January-February (DJF), March-April-May (MAM) and September-October-November (SON). A significant decline, -8.8 % and -16 %, is observed in MAM by 2020 and 2100, respectively. The study reveals that simple climate change scenarios can be used to predict future changes.