

Model to assess the impacts of external drivers on the hydrology of the Ganges River Basin

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Abstract Impact of climate change on the hydrology of the Ganges River Basin (GRB) is simulated by using a hydrological model – Soil and Water Assessment Tool (SWAT). Climate data from the GCM, Hadley Centre Coupled Model, version 3 (HadCM3) was downscaled with PRECIS for the GRB under A1B Special Report on Emission Scenarios (SRES) scenarios. The annual average precipitation will increase by 2.2% and 14.1% by 2030 and 2050, respectively, compared to the baseline period (1981–2010). Spatial distribution of the future precipitation shows that in the substantial areas of the middle part of the GRB, the annual precipitation in 2030 and 2050 will be reduced compared to the baseline period. Simulations indicate that in 2050 the total groundwater recharge would increase by 12%, while the increase of evapotranspiration will be about 10% compared to the baseline period. The water yield is also expected to increase in the future (up to 40% by 2050 compared to baseline), especially during the wetter months. The model setup is available for free from IWMI's modelling inventory.

Key words Ganges River Basin; climate change; Soil and Water Assessment Tool