

HighNoon Delivery Report

Title	Report on domain sizes for RCMs and topography dataset
Work Package Number	1
Delivery number	1.1
Relative task(s)	
Organization	Met Office and Max Planck Institute for Meteorology
Author	Andy Wiltshire, Pankaj Kumar, Stefan Hagemann and Jeff Ridley
Function	Inform partners domain for hydrological modelling
Related to deliverable number(s)	
Date of completion	
Name Work Package Leader	Andy Wiltshire
Submission Date	16-11-2009

To complete by the Coordinator

Date of approval by the Coordinator	10-1-2010
Date of listed	15-1-2010

HighNoon Modelling Domain

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The HighNoon hydrological domain (Figure 1) is chosen to cover the Indus, Ganges and Brahmaputra catchments. These catchments have significant glacier melt contributions to their water budgets. The grid also extends to the south to ensure important atmospheric processes related to the Monsoon are captured by the RCM (Regional Climate Model). RCM model grids often used hybrid co-ordinate systems which are generally unsuitable for hydrological models which use regular latitude-longitude grids. Furthermore, existing RCM simulations over the region show large precipitation biases. Thus, to force hydrological models a bias correction is required. The chosen domain is a regular 0.25° lat-long grid covering 60°E to 100.25°E, 4°N to 40.25°N (161 by 145 grid boxes). This grid exactly coincides with the APHRODITE (Asian Precipitation - Highly-Resolved Observational Data Integration Towards Evaluation of the Water Resources) grid (Yatagai et al., 2009). The APHRODITE dataset is a high resolution observation based precipitation dataset that will be used in the evaluation of the RCM projections. Output from the RCM will therefore be re-gridded to the Hydrological grid. The bias correction will be done as part of WP2. The agreed grid coincides with parallel regional climate modelling activities under the EU-WATCH program.

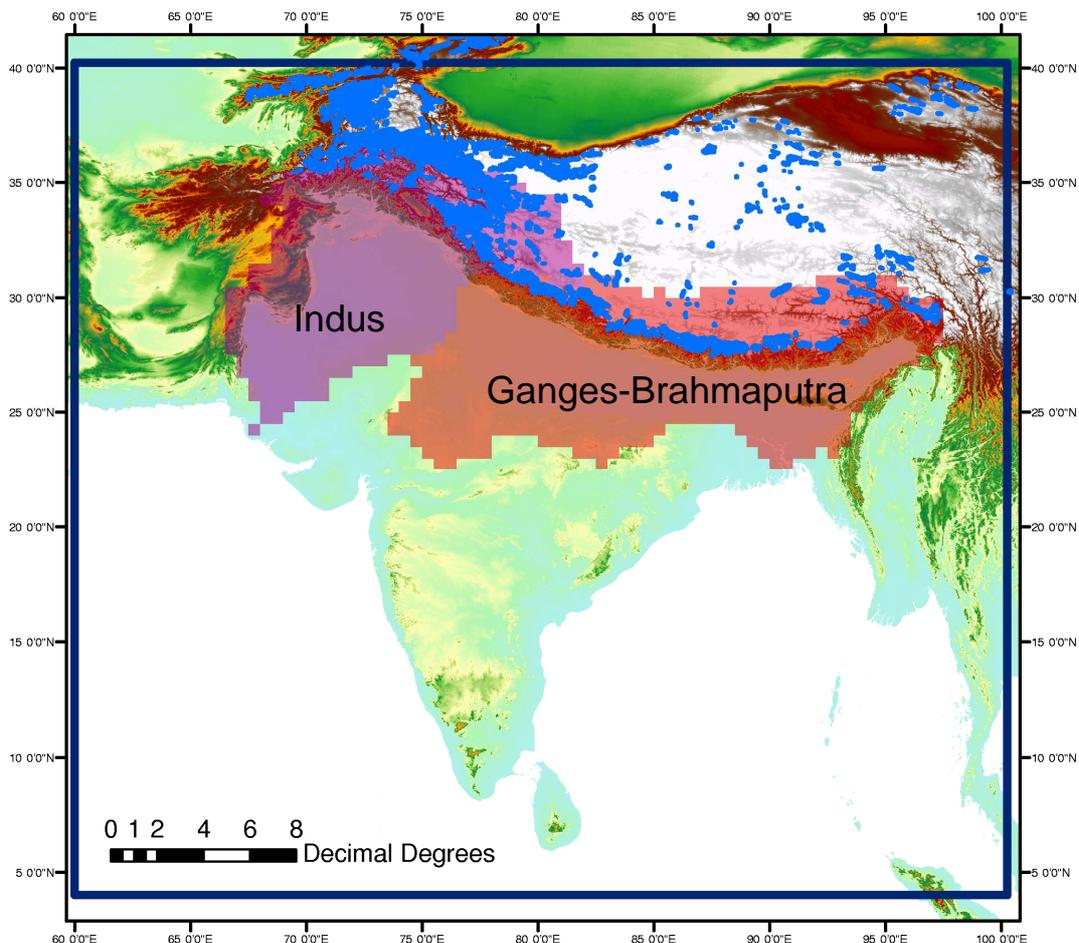


Figure 1: The HighNoon hydrological grid. The blue box outlines the maximum grid extent overlaid with glacier outlines from the Digital Chart of the World (DCW) (ESRI, 1992) and river basins from the Simulated Topological Network (Vörösmarty et al., 2000).

Regional Climate Model Grids:

Each RCM (PRECIS and REMO) will use their own grids and elevation ancillaries for internal consistency. For instance PRECIS uses a 0.22° rotated lat-long grid which is difficult for hydrological models to handle. REMO will use the hydrological grid. For ease of use, the RCM data will be provided to project partners on the hydrological grid described above.

References:

Vörösmarty, C. J., B. M. Fekete, M. Meybeck and R. B. Lammers: Geomorphometric attributes of the global system of rivers at 30-minute spatial resolution, *Journal of Hydrology*, 237: 17-39, 2000

Yatagai, A. O. Arakawa, K. Kamiguchi, H. Kawamoto, M. I. Nodzu and A. Hamada (2009): A 44-year daily gridded precipitation dataset for Asia based on a dense network of rain gauges, SOLA , 5, 137-140, doi:10.2151/sola.2009-035