# **Evaluating floods in the Kabul River basin of Pakistan with the Soil and Water Assessment Tool (SWAT) model.**

## Abstract:

Pakistan has suffered a devastating flood in 2010. In river Kabul large-scale riverine and flash floods occur every year and cause damage. The river Kabul basin of Pakistan is vulnerable to climate change. More and more severe floods are expected in the area. Flooding increases the concentration of the bacterium *E. coli* in the surface water. Our final aim is to better understand the impact of flooding on public health in the Kabul River basin. We plan to use SWAT to model the concentration of *E. coli* in the surface water to enable fate and transport studies and scenario analysis. As a first step, we modelled the Kabul River discharge. A detailed Digital Elevation Model (DEM), land cover, and soil map of the basin and meteorological data (1994-2014) are used to estimate the discharge. The model is calibrated and validated with stream flow data at two monitoring gages within the downstream basin of river Kabul. These data cover several floods. This is the first time that the SWAT model is used in the Kabul River basin. We will discuss the usefulness of SWAT in flood modelling for this region.

Keywords: SWAT, GIS, hydrology, Kabul River, flooding