



Rtop – an R package for interpolation along the stream network

J. O. Skøien

Utrecht University, Department of Physical Geography, Utrecht, Netherlands (j.skoien@geo.uu.nl)

Rtop – an R package for interpolation along the stream network

Geostatistical methods have been used to a limited extent for estimation along stream networks, with a few exceptions (Gottschalk, 1993; Gottschalk, et al., 2006; Sauquet, et al., 2000; Skøien, et al., 2006). Interpolation of runoff characteristics are more complicated than the traditional random variables estimated by geostatistical methods, as the measurements have a more complicated support, and many catchments are nested. Skøien et al. (2006) presented the model Top-kriging which takes these effects into account for interpolation of stream flow characteristics (exemplified by the 100 year flood).

The method has here been implemented as a package in the statistical environment R (R Development Core Team, 2004). Taking advantage of the existing methods in R for working with spatial objects, and the extensive possibilities for visualizing the result, this makes it considerably easier to apply the method on new data sets, in comparison to earlier implementation of the method.

Gottschalk, L. 1993. Interpolation of runoff applying objective methods. *Stochastic Hydrology and Hydraulics*, 7, 269-281.

Gottschalk, L., I. Krasovskaia, E. Leblois, and E. Sauquet. 2006. Mapping mean and variance of runoff in a river basin. *Hydrology and Earth System Sciences*, 10, 469-484.

R Development Core Team. 2004. *R: A language and environment for statistical computing*. Vienna, Austria: R Foundation for Statistical Computing.

Sauquet, E., L. Gottschalk, and E. Leblois. 2000. Mapping average annual runoff: a hierarchical approach applying a stochastic interpolation scheme. *Hydrological Sciences Journal*, 45 (6), 799-815.

Skøien, J. O., R. Merz, and G. Blöschl. 2006. Top-kriging - geostatistics on stream networks. *Hydrology and Earth System Sciences*, 10, 277-287.