

# HOW TO DECIDE THE UNITS OF DRAINAGE PATTERN OF GENERALIZATION

Lili Jiang <sup>a,b</sup>, Qingwen Qi <sup>a</sup>, An Zhang <sup>a</sup>

<sup>a</sup> *Institute of Geographical Science and Natural Resource Research, CAS, Beijing 100101, China*

<sup>b</sup> *Graduate School of the Chinese Academy of Sciences, Beijing 100039, China*

{ jiangll, qiqw, zhangan }@igsnr.ac.cn

**Abstract:** It is undoubted that there is an affinity between the river network pattern and the terrain. The hierarchically structured river networks and associated drainage basins are important basis for international modeling and monitoring activities. In fact, drainage basins are important reference units for many biophysical processes and rivers represent major transport networks not only for water, but also for sediments, nutrients and pollutants. We know that drainage abstraction is also an important part in cartographic generalization, and drainage pattern is definitely an important factor which should be considered in drainage abstraction. But how to decide the drainage pattern is really a complicated job. From all these, deciding the unit of drainage abstraction is the first step and unit should simple which means that there is only one type of pattern in this unit. Considering the complexions of drainage pattern, it is no doubted that we can not choose the whole drainage area as the unit of judging drainage pattern. In this report, we choose basins based on DEM as the abstract unit. After extracting basin, If the drainage pattern is not simple enough (only one pattern in a basin), we should divide this basin into two basins or three more basins until the drainage pattern is simple in every sub-basin. When we extract sub-basin, the most important job is decide the stream thresholds which are different in the different areas. Then we do many experiments and from these experiments, we choose the proper threshold in order to get the basins which we want. Besides the threshold, we know that there are many DEMs with different resolution. Which one is the right DEM? It is obvious that which DEM is selected is lie on the level of generalization. In this paper, the scale of generalization is from 1:250 000 to 1:1 000 000, so we choose 90 meters DEM as the basement of extracting. Of course we can use other DEM of different resolution, but according to the experiments, 90 meters DEM is the best one to extract the basins which is the unit of drainage abstraction from 1:25 000 to 1:1 000 000. This paper tries to find some which are helpful to drainage abstraction with different drainage pattern.

**Key words:** Map Generalization, Drainage Pattern, River Network