

ALTERNATIVE METHODS OF AREA DATA COLLECTION

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Introduction

In order to build a hydraulic model of a sewer system, comprehensive data are required on not only the pipes, but also on the associated catchment areas draining to those pipes. This item of the data set is vital to the accuracy and reliability of the model. The more common methods of collecting the information rely heavily on manual techniques and are generally thought to be less than ideal as they tend to be labourious, costly and inaccurate. WRC have been looking at an alternative approach to the problem which centres on the use of remotely sensed data.

Remote Sensing

Specifically Remote Sensing has come to refer to the use of electromagnetic sensors to collect data remotely from either airborne or spaceborne platforms. It was thought that if data of this sort could be digitally manipulated by computer to produce accurate assessments of contributing areas then the whole process could be made more efficient.

A pilot study has been undertaken on a small catchment in Swindon, Wiltshire, which contains a variety of urban patterns. Digital data from both airborne and spaceborne sources have been examined on an image processing system and manipulated to produce impermeable area measurements. The results have been compared to data derived by more traditional means. The effect of the different techniques on the WASSP-SIM output hydrographs is used as the basis for judgement.

Results and Conclusions

The results show that airborne data can provide excellent information for the engineer regarding the contributing areas to a hydraulic model. The results are very accurate and are obtained with great speed and little operator intervention. It is also likely to be a useful source of information when the hydrology has to be calibrated for overseas applications.

Spaceborne data has produced similar results but is a little more limited in that one has to be careful with the spatial distribution of the urban area. It is felt that these data are particularly suited to the larger planning models. However the technology is continually improving in this area which will enhance its applicability.

Discussion of G Stickler's Paper

Richard Cotton (Scott Wilson Kirkpatrick)

Q What happens if a previous area is not covered with vegetation ?

A In such circumstances, a simple chlorophyll mapping technique would not work. That is why the more complex methods referred to are used rather than the simple one described in detail.

2 Peter Ratcliffe (Preston Borough Council)

Q Can the technique differentiate between a flat and pitched roof ?

A Yes

3 Philip Deakin (Northumbrian Water)

Q What are the costs of the technique ?

A Obviously equipment and expertise are required - these can be purchased or hired.

Then data costs vary according to type eg
60km x 60km SPOT scene costs around #700

100km² aircraft data would cost around #5,000 - #6,000.

4 Gareth Catterson (North West Water)

Q Noticed a shadow area on one of the slides which looked like a cloud shadow - what affect does this have ?

A Shadows from clouds can affect an image as happened in this case. The technique of producing a ratio of one image to another has the effect of taking the shadow away.

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