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MDRS** — WATER POLLUTION CONTROL SYSTEM

MDRS system, partly described in this paper, is a proposal of making use of information obtained during sampling programmes executed on the rivers. The author presents general idea of the system which can be applied to any river basin.

Management and control of the river basin resources is extremely compli cated and expensive task. In most well-known cases, the available managerial concepts and computational capabilities are inadequate. Therefore, the programmes of planning and optimization of allocation and control of resources are of a great importance.

Usually, the actual planning of experimental analysis (done by sampling of river water in cross-sections) is based on the practice and intuition of analysts.

According to this idea, in 1982 the author started to develop the model for identification and control of pollution in the Bóbr river basin in which the measurement programme was the first step of the designing procedure. The block diagram shown in fig. 1 is an essential phase in construction of mathematical model, since the quality of MDRS system, as a statistical system, depends on the quality and quantity of information obtained from samples.

The seventh block in this block diagram completes the collection of the data which are next processed in programme modules of MDRS system. The MDRS System consists of several sets, e.g.:

"measurements",
"water consumers",
"water-level indicators",
"river segments",

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** MDRS – shortening of the matrix description of river structure.

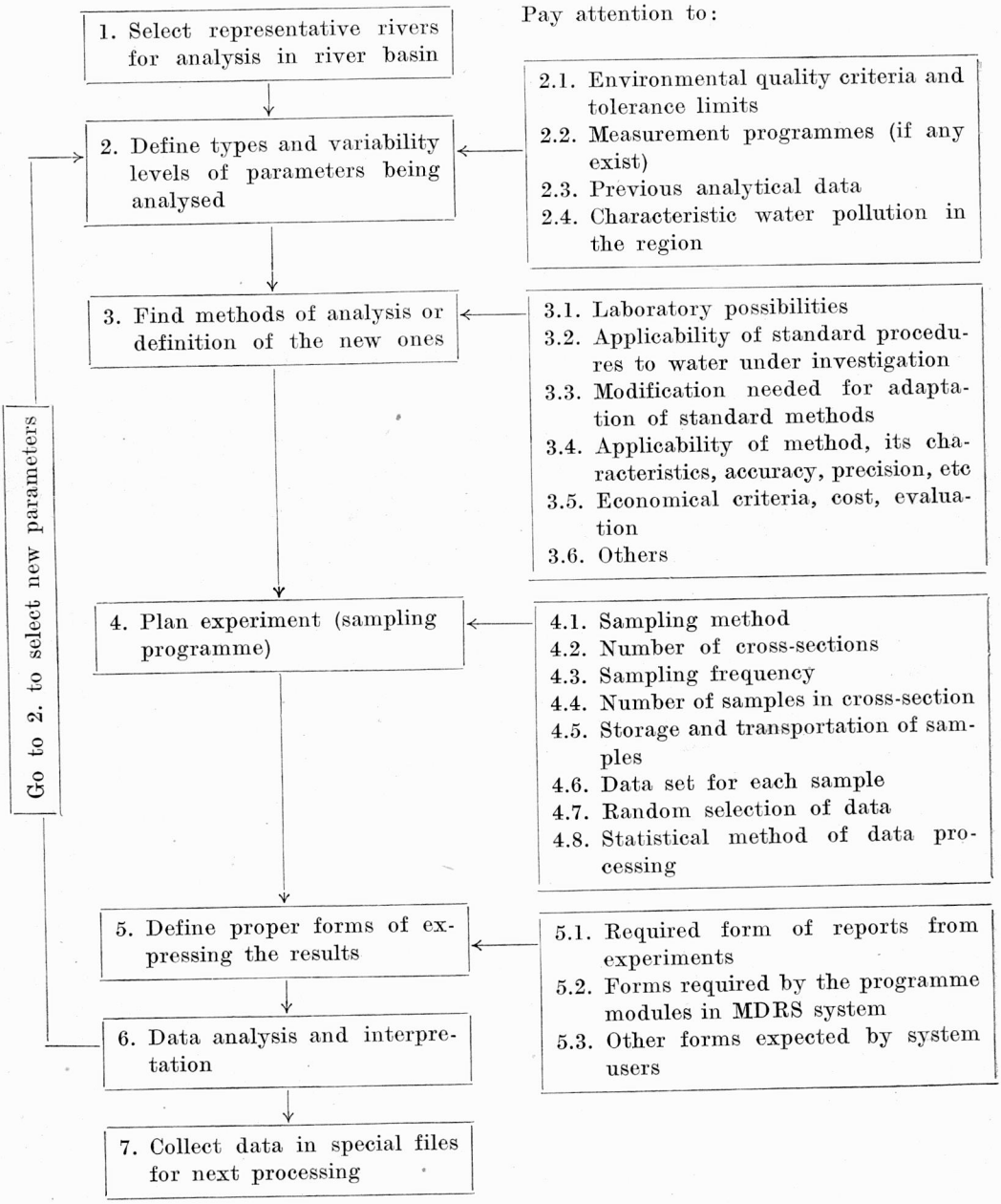

Fig. 1. Method of data collecting in the MDRS system

Rys. 1. Metoda otrzymywania danych w systemie MDRS

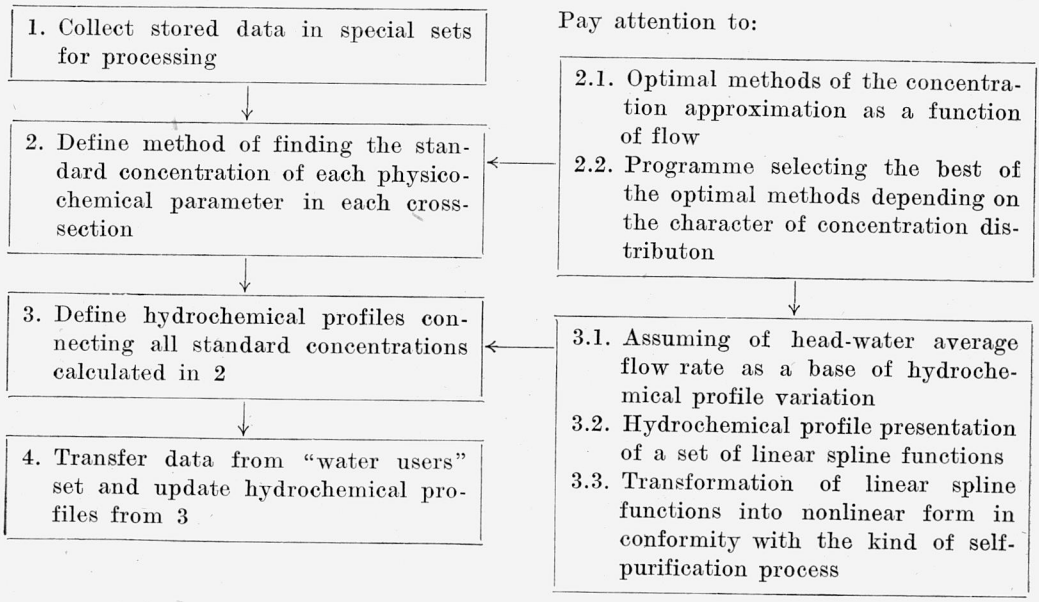

Fig. 2. Data processing in the "measurements" set

Rys. 2. Przetwarzanie danych w zbiorze „pomiary"

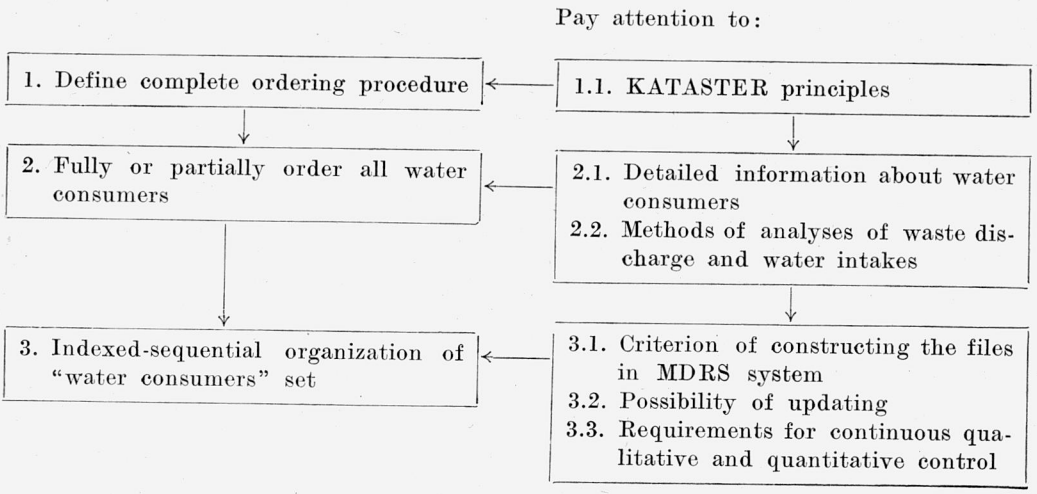

Fig. 3. Method of data collecting in the "water consumers" set

Rys. 3. Metoda otrzymywania danych w zbiorze „użytkownicy wody"

"prognosis module", and others which are defined or assumed depending on the needs of the system users.

In this paper the author presents only the set of „measurements" and a part of the "water consumers" set, as the sets of data processing which identify the quality and quantity of water in the Bóbr river basin. Generally, the "measurements" set includes the data collected according to measurement programme, shown previously. The block diagram of data processing in this set is shown in fig. 2.

The water consumers constitute the next file in the MDRS system. This data set, named "water consumers", contains a large number of information concerning the waste discharges and water intakes. General method of data collecting in this set is shown in fig. 3.

Updated hydrochemical profiles are substantial information in MDRS system. Using kilometer distance as the input data, the user of this system may obtain in an optional point of the river the standard concentration of the given pollutant, the quality of this water and other information depending on demands.

The MDRS system suggests the usage of large data sets obtained from the conducted investigations. This system was tested on the Bóbr river basin and the obtained results show that it can be applied in other river basins.

The successful implementation of the MDRS system largely depends on the understanding many physicochemical and biological phenomena that should be transferred to coherent model. This model gives a set of alternatives and predictions for the given economical conditions and regional limitations which may be useful in the desicion-making processes.

REFERENCES

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MDRS – SYSTEM STEROWANIA ZANIECZYSZCZENIAMI WÓD

System MDRS, częściowo przedstawiony w artykule, jest propozycją wykorzystania informacji gromadzonych w czasie realizowania programów badawczych dotyczących wód rzek. Autor prezentuje ogólną koncepcję systemu, który może być zastosowany do każdego dorzecza.

MDRS – EIN STEUERUNGSSYSTEM DER GEWÄSSERVERSCHMUTZUNG

Das im Beitrag nur zum Teil beschriebens MDRS-System, stellt einen Vorschlag dar, die während der Flußuntersuchung gesammelten Ergebnisse im weiten Ausmaß auszunutzen. Der Verfasser stellt das allgemeine Konzept dieses Systems vor; es kann für ein beliebiges Einzugsgebiet verwendet werden.

МАТРИЧНОЕ ОПИСАНИЕ СТРУКТУРЫ РЕКИ – СИСТЕМА УПРАВЛЕНИЯ ЗАГРЯЗНЕНИЯМИ ВОД

Система матричного описания структуры реки, частично представленная в статье, является предложением использования информации, накапляемой во время выполнения исследовательских программ вод рек. Автор представляет общую концепцию системы, которая может применяться для каждого бассейна реки.