

ISO 9123:2017-10 (E)

Hydrometry - Stage-fall-discharge relationships

Contents		Page
Foreword		v
1	Scope	1
2	Normative references	1
3	Terms and definitions	1
4	Symbols and abbreviated terms	1
4.1	Symbols	1
4.2	Abbreviations	2
5	General considerations	3
5.1	Importance of backwater	3
5.2	Backwater conditions	3
5.3	Gauging requirements	3
5.4	Types of stage-fall-discharge relationships	4
6	Unit-fall method	4
6.1	General	4
6.2	Method of analysis	5
6.3	Computation of discharge	5
6.4	Example of unit-fall method	5
7	Constant-fall method	7
7.1	General	7
7.2	Method of analysis	7
7.3	Computation of discharge	7
7.4	Example of constant-fall method	7
8	Variable-fall method	10
8.1	General	10
8.2	Normal-fall method	11
8.3	Limiting-fall method	11
8.3.1	General	11
8.3.2	Method of analysis	11
8.3.3	Computation of discharge	11
8.3.4	Example of limiting-fall method	12
9	Rating curves and tables	16
10	Method of computation	16
11	Periodic checking of stage-fall-discharge ratings	16
12	Extrapolations	16
13	Evaluation of uncertainty in the stage-fall-discharge relation	16
13.1	General	16
13.2	Implementing the GUM procedure for evaluating uncertainty in the stage-fall- discharge relation and derived estimates	17
13.2.1	General	17

13.2.2	Propagation of uncertainty for stage-fall-discharge estimates	17
13.2.3	Uncertainty in rating curve	18
13.2.4	Uncertainty in the measured stage	21
13.2.5	Uncertainty in the measured fall	21
13.2.6	Prediction intervals of estimated discharge	21
13.2.7	Uncertainty caused by neglecting all other physical parameters	21
13.3	Example	22
13.3.1	General	22
13.3.2	Standard error of estimate	23
13.3.3	Uncertainty of mean response	23
13.3.4	Uncertainty in measured stage and fall	24
13.3.5	Uncertainty caused by neglecting all other physical parameters	24
13.3.6	Propagation of uncertainty in discharge estimation	24
13.3.7	Uncertainty in the predicted discharge	25
Annex A (informative) Multiple least squares regression -- Matrix representation		27
Bibliography		29