Rwanda National Water Resources Masterplan

Presentation: Surface Flow Studies

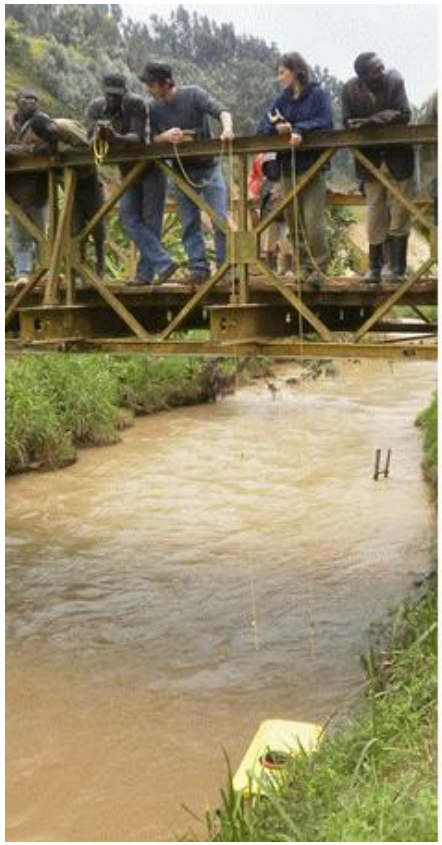
Site visits of gauging stations

Re-assessment of all rating curves

Data processing and data analysis

Flow characteristics

Site visits of runoff gauging stations



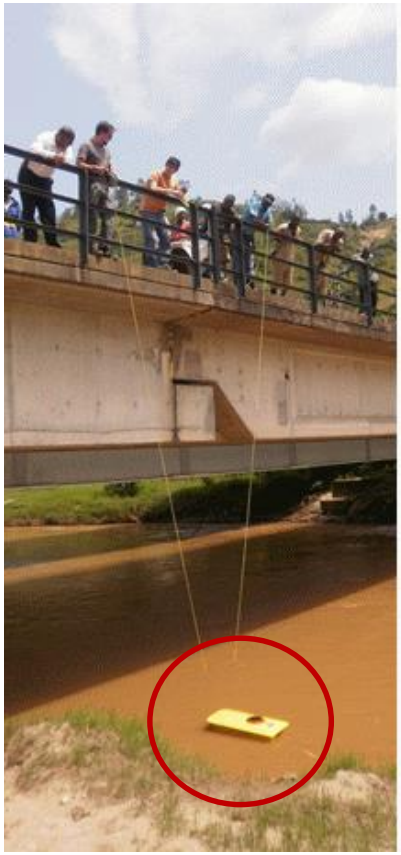
- *Documentation of all major stations: infrastructure, forms, discharge measurement*

Site visits of runoff gauging stations

ID Station	L 69
Visited on	06/05/2012
visited by	Lavuun, Achille (RNRA), Quentin, Aline
Please describe the weather conditions on the day and during the previous days (sunny, antecedent rainfal…)	today : sunny previous days : sunny
Name of the site	Gatumba
Name of the river	Nyabarongo
Name of the basin on level 0	Nile
Name of the basin on level 1	NNYT
Coordinate system (LatLong or TM60)	WGS 84 TM Rwanda
Longitude (geographic)	29.66118
Latitude (geographic)	-0,05910
x-ccordinate	0462361
y-coordinate	4785079
Coordinates determined with (device)	GPS Garmin Etrox Vista HCx
Altitude (m)	1424
Altitude determined with	GPS
Picture in upstream direction (device owner and number of the photo on the memory card)	P 1010014 P 1010015 P 9020085 (on the server)

- *Documentation of all major stations: infrastructure, forms, discharge measurement*
- *More information on Width, benchmark, coordinates*
- *Will be integrated into Database*

Surface Water Studies

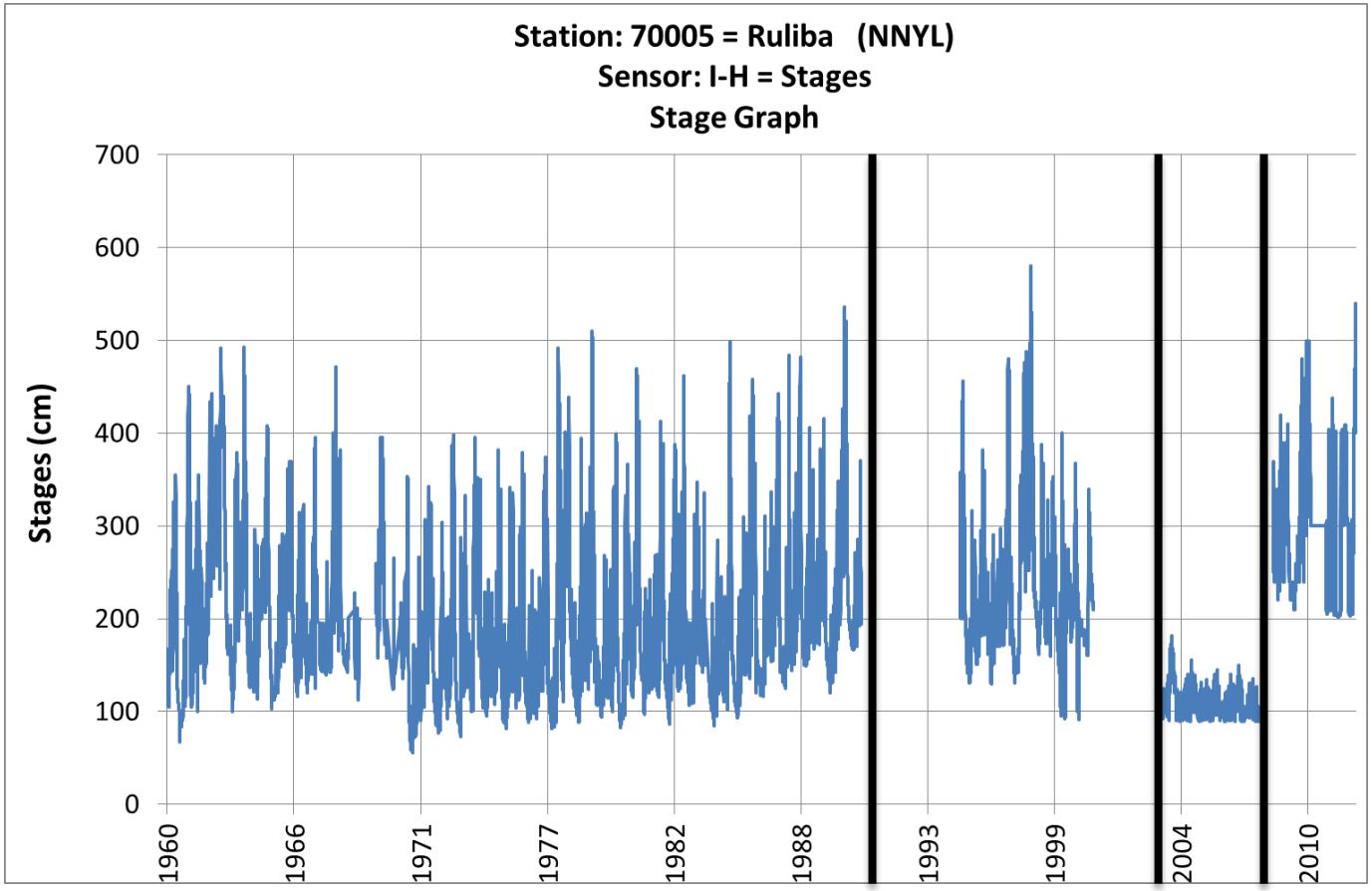


- *Field work for the re-assessment of all rating curves for deriving reliable discharge figures*

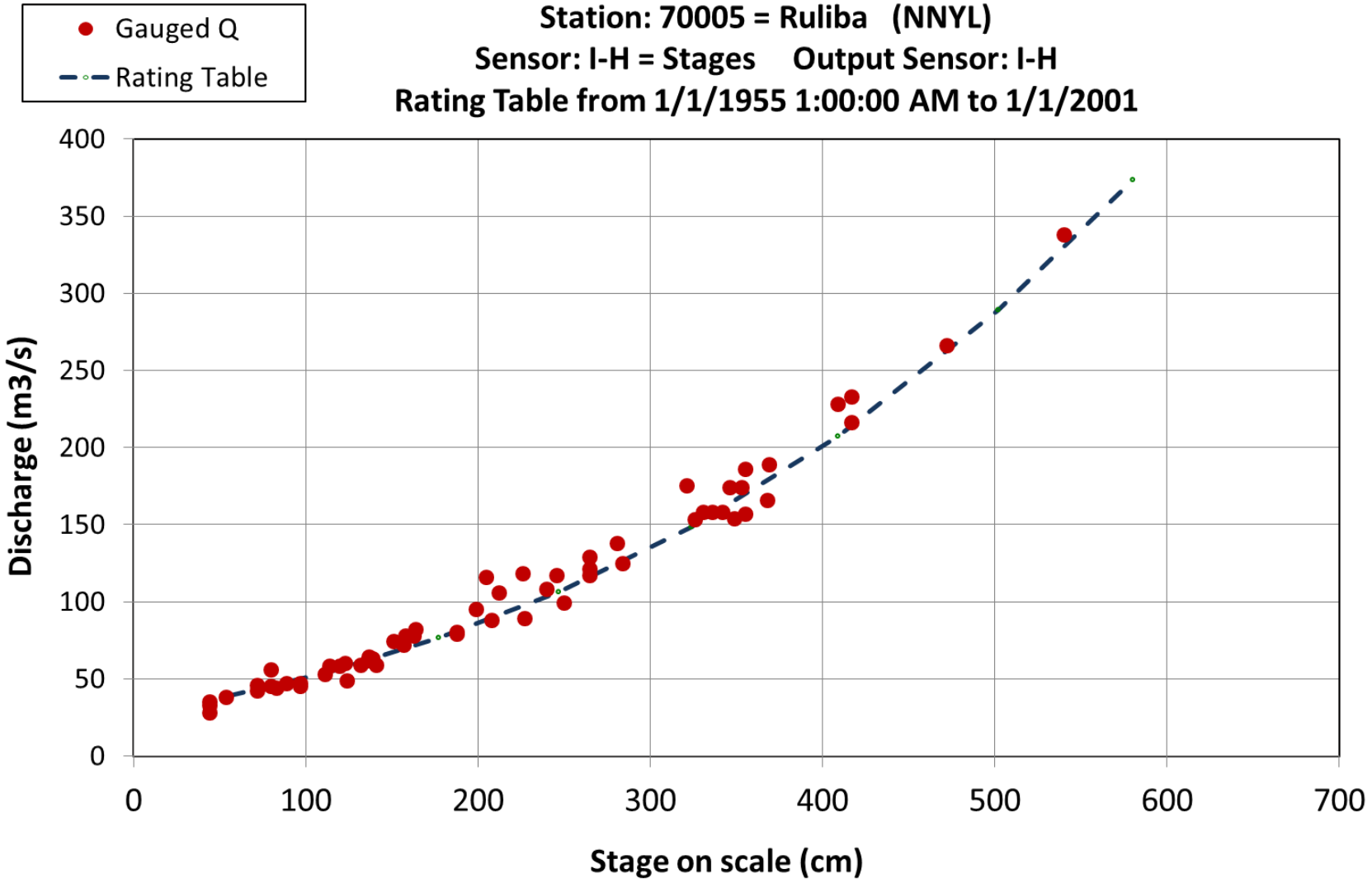
Surface Water Studies

- *First serie of discharge measurements was carried out – there needs to be an operational update*

Surface Water Studies

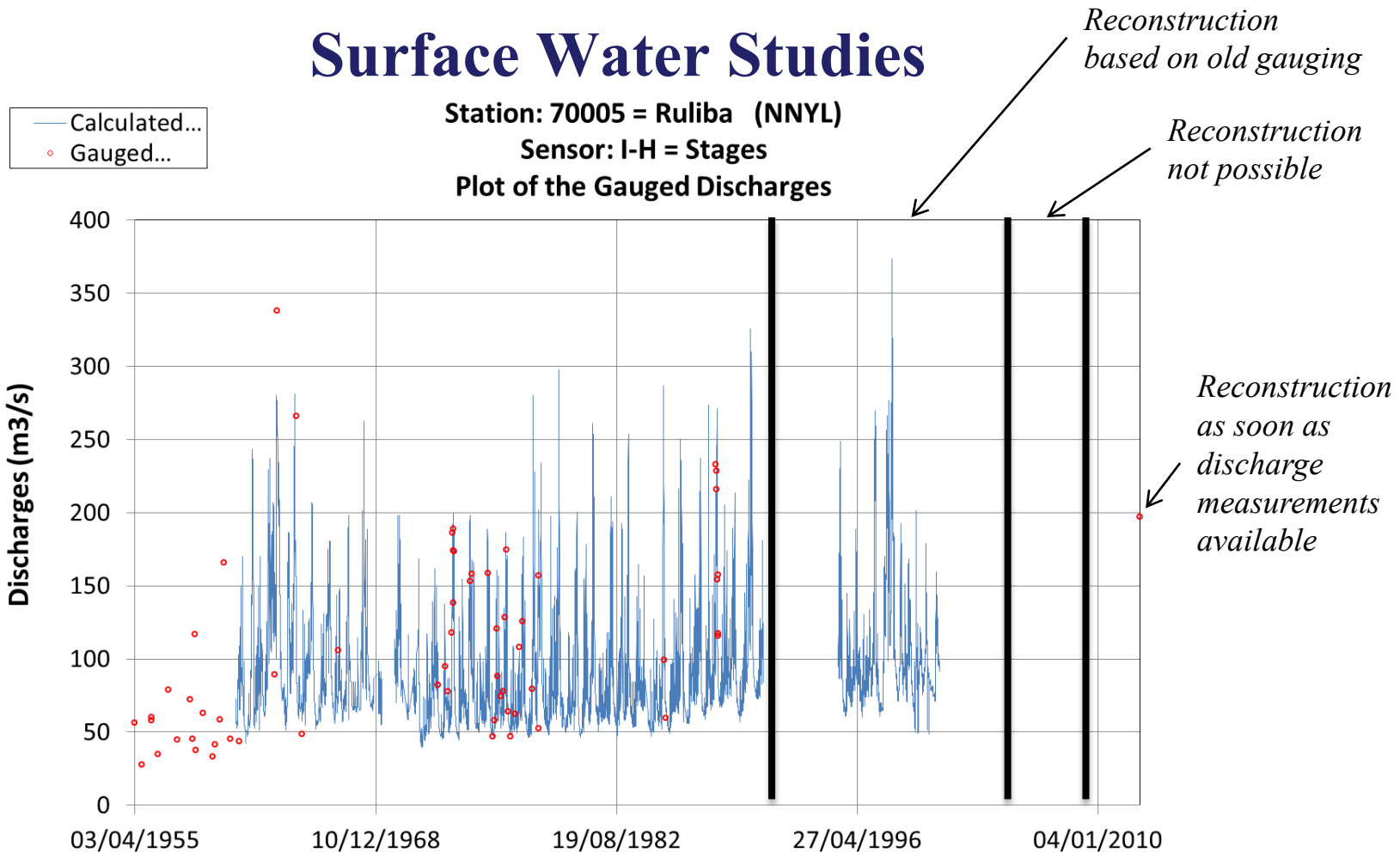


- *Complete revision of all stage data in PGNRE database: quality control, time sections*



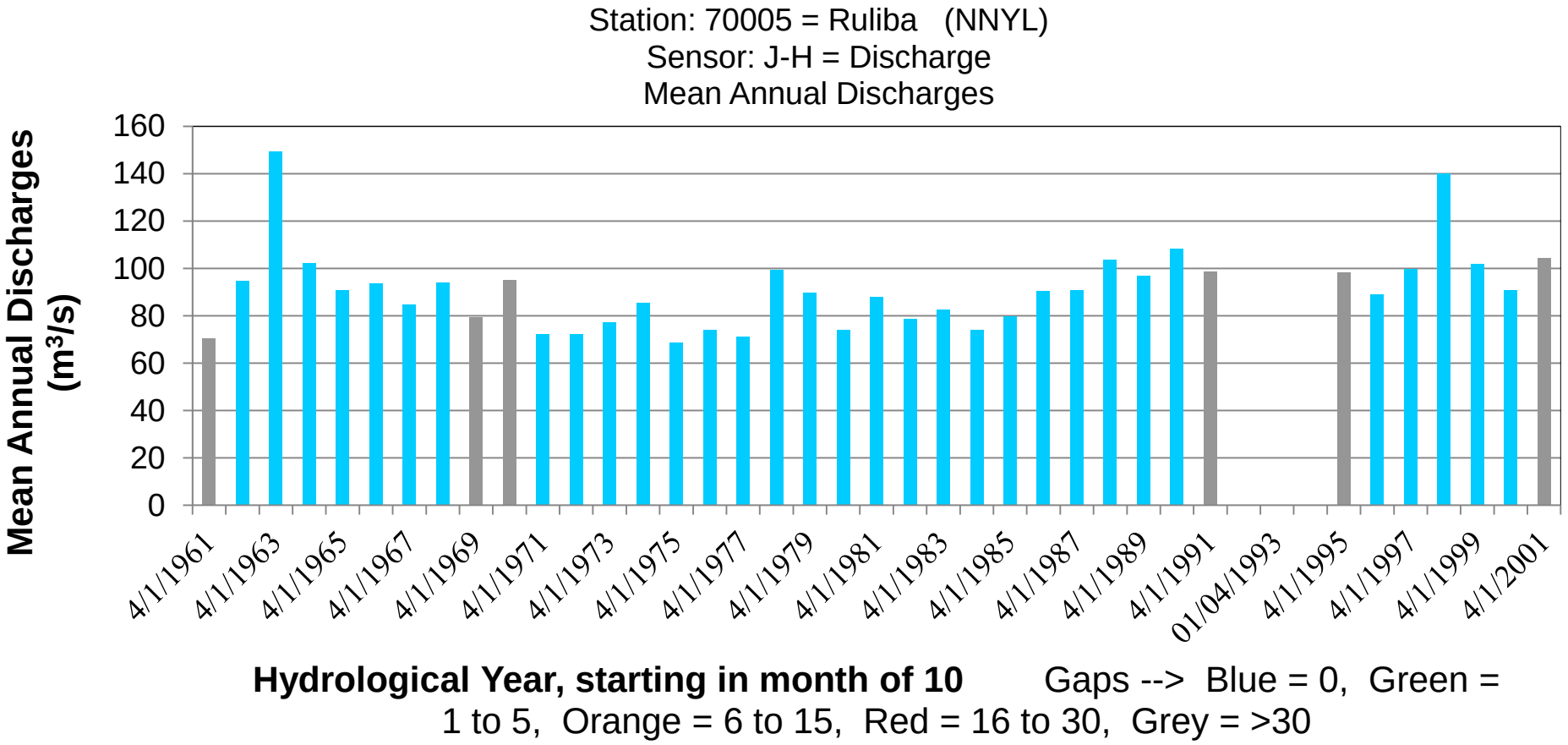
- *Complete revision of all stage data in PGNRE database: quality control, time sections*

Surface Water Studies



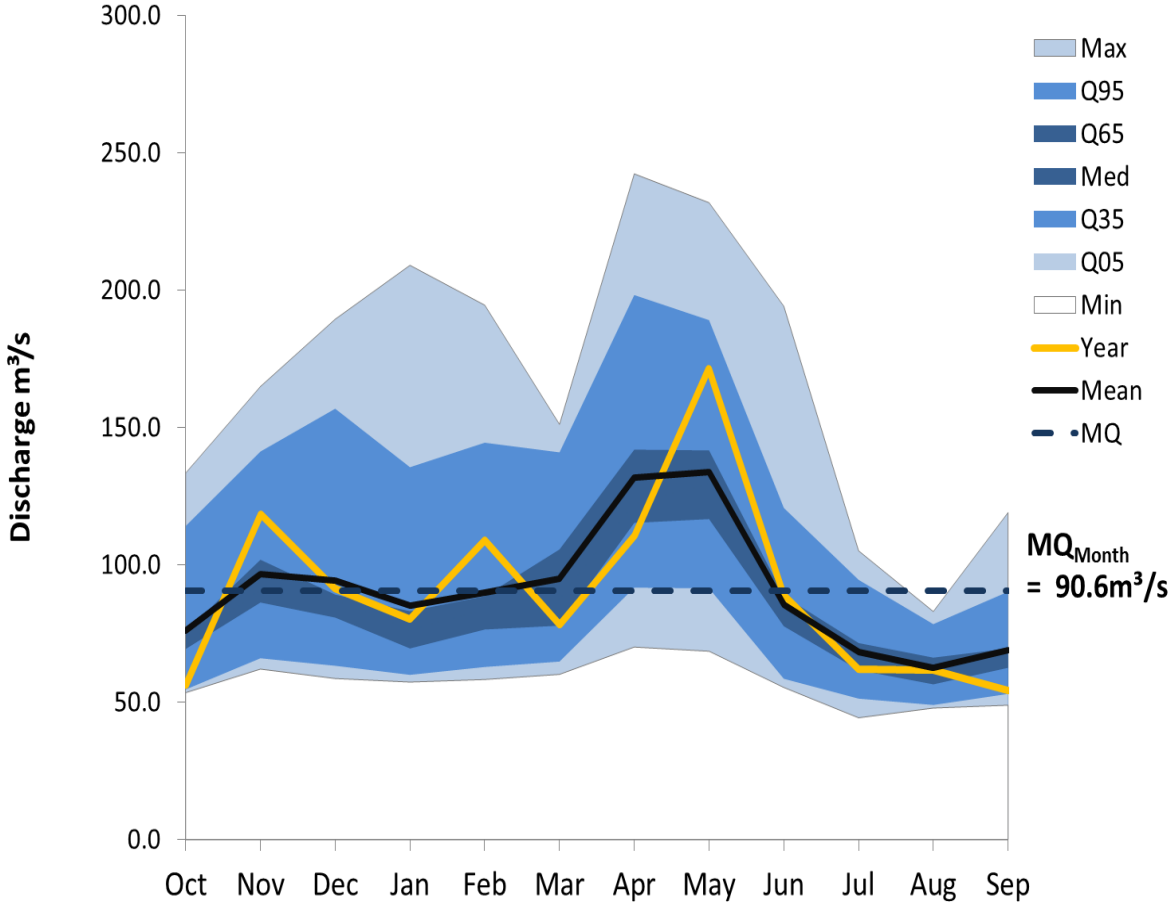
- *Complete revision of all stage data in PGNRE database: quality control, time sections*

Surface Water Studies (Processing)

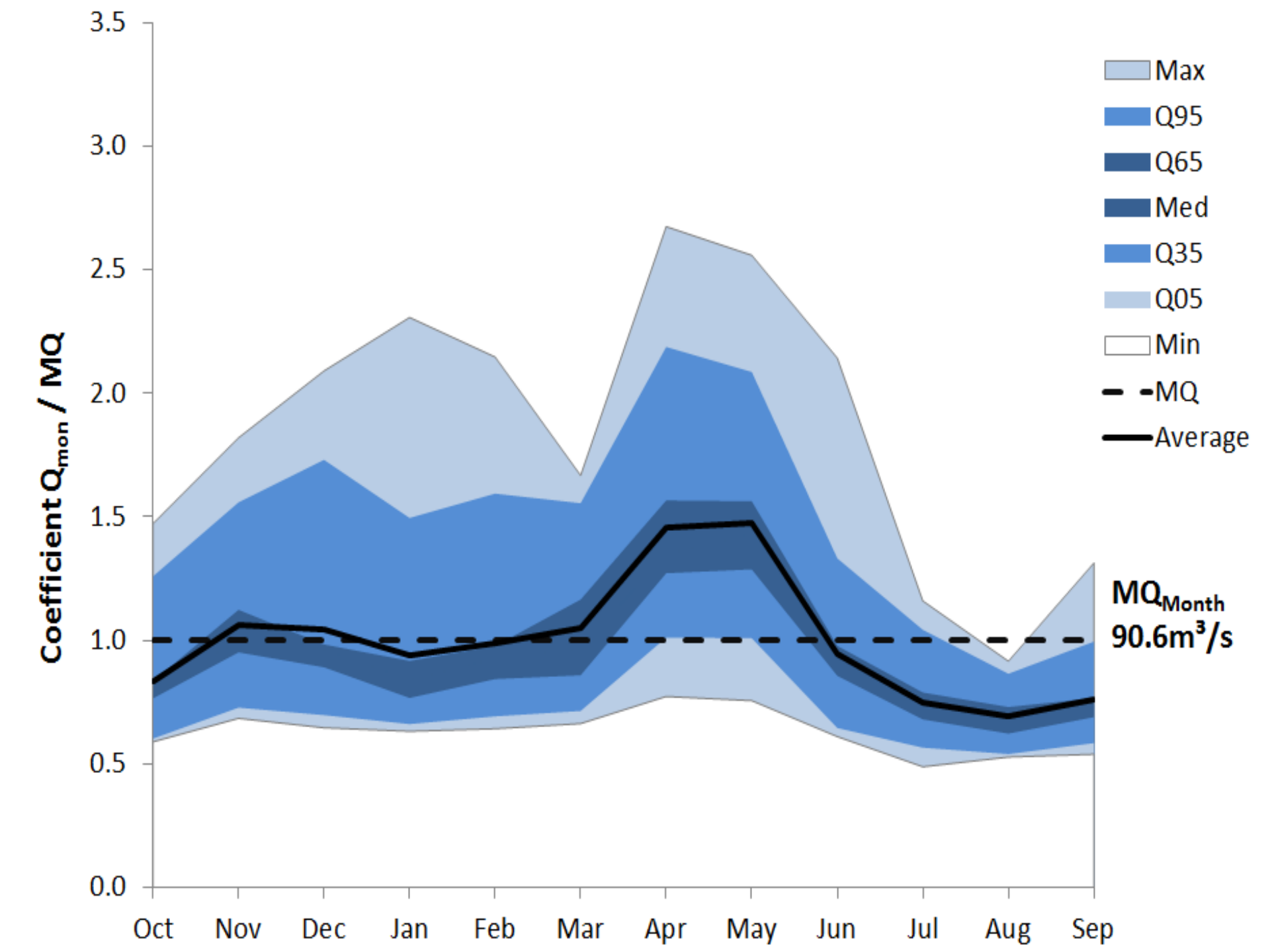


- *Min, max., mean annual discharge,*
  Min, max, mean monthly discharge

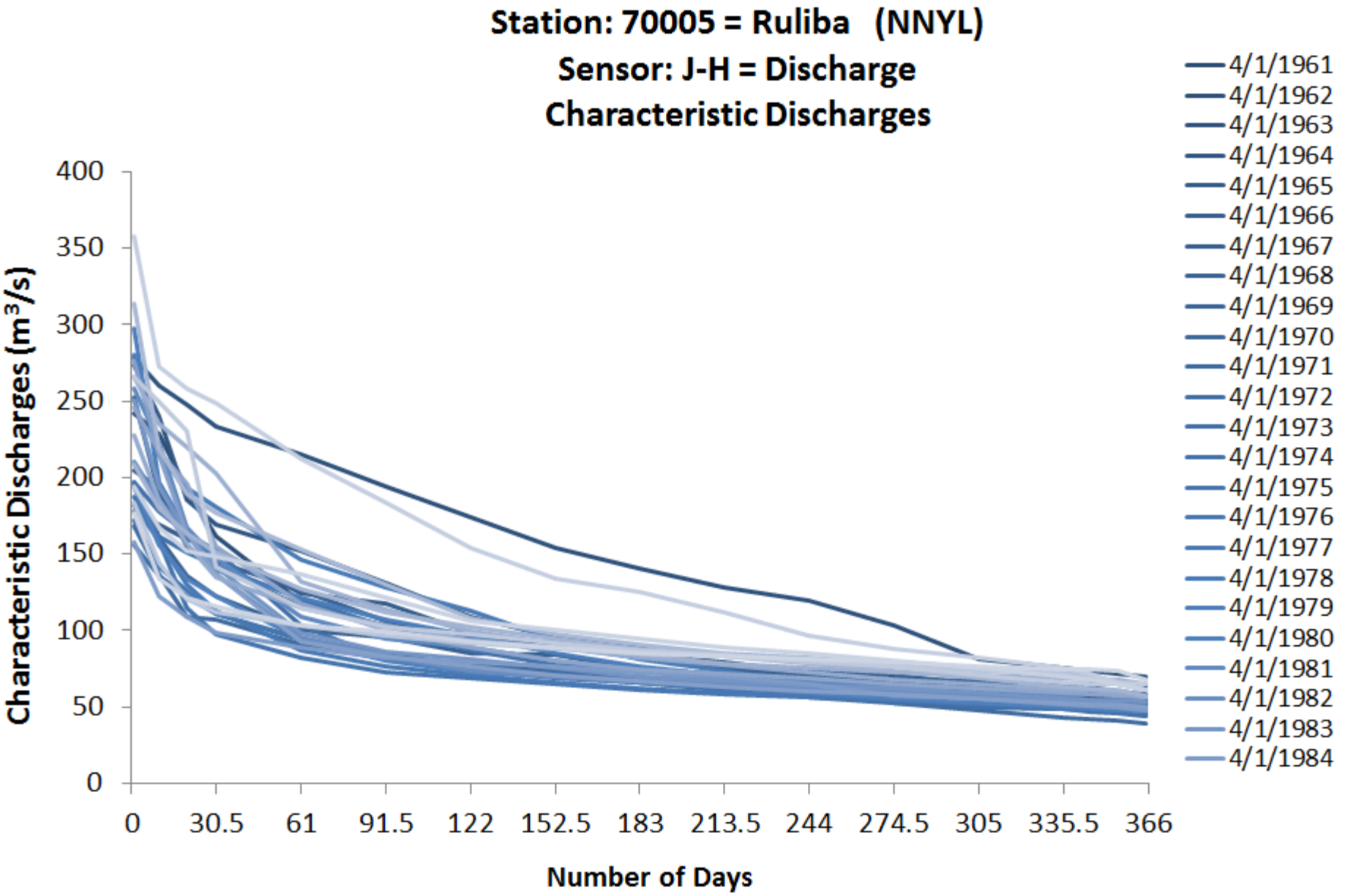
Surface Water Studies (Probability and regimes)



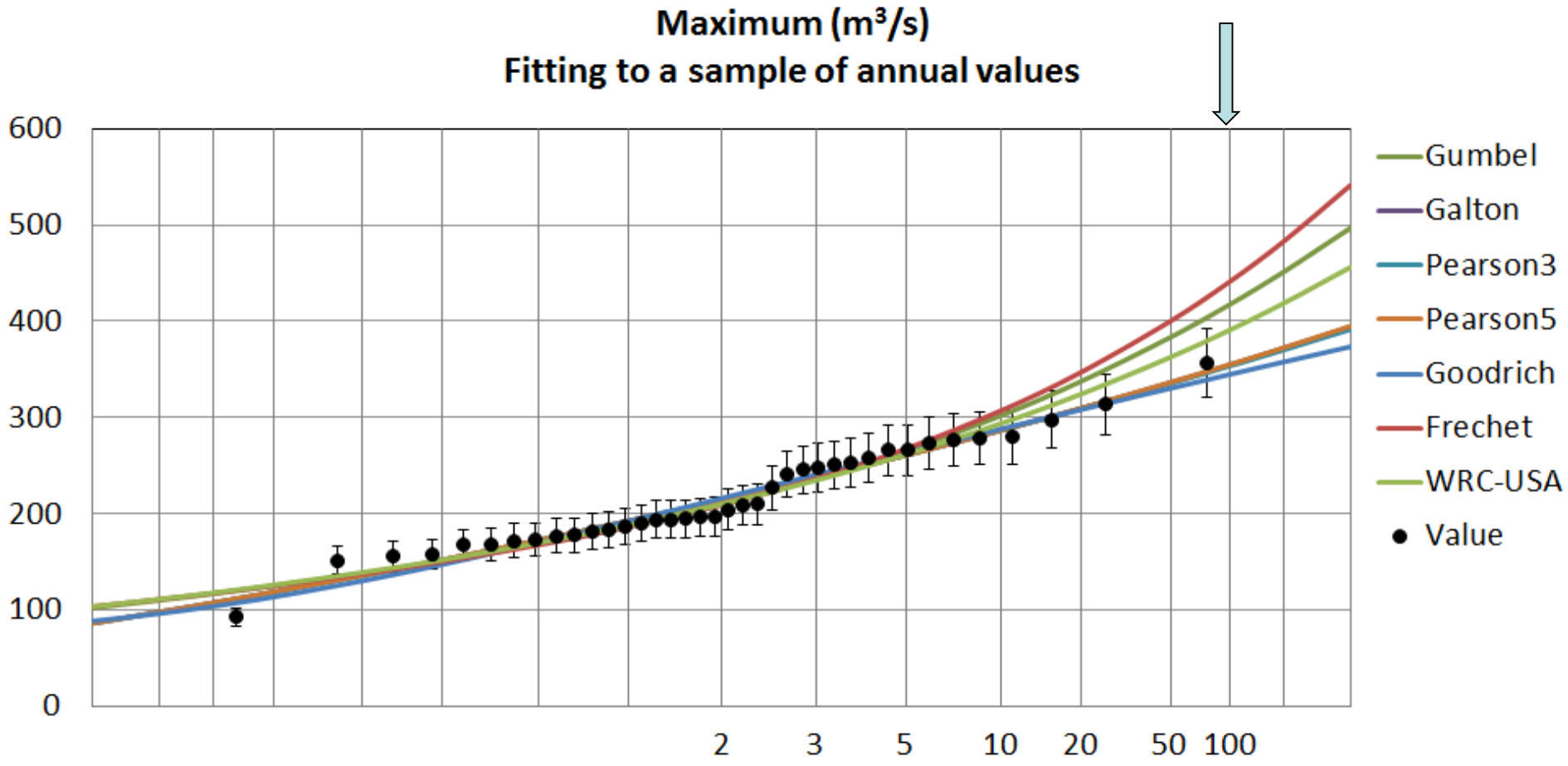
– *Statistical analysis of monthly occurrence based on quantiles with 1σ (dark blue) and 2σ windows*


3.5
3.0
2.5
2.0
1.5
1.0
0.5
0.0
Coefficient Q_{mon} / MQ
Oct
Nov
Dec
Jan
Feb
Mar
Apr
May
Jun
Jul
Aug
Sep
Max
Q95
Q65
Med
Q35
Q05
Min
MQ
Average
MQ_{Month}
$90.6m^3/s$

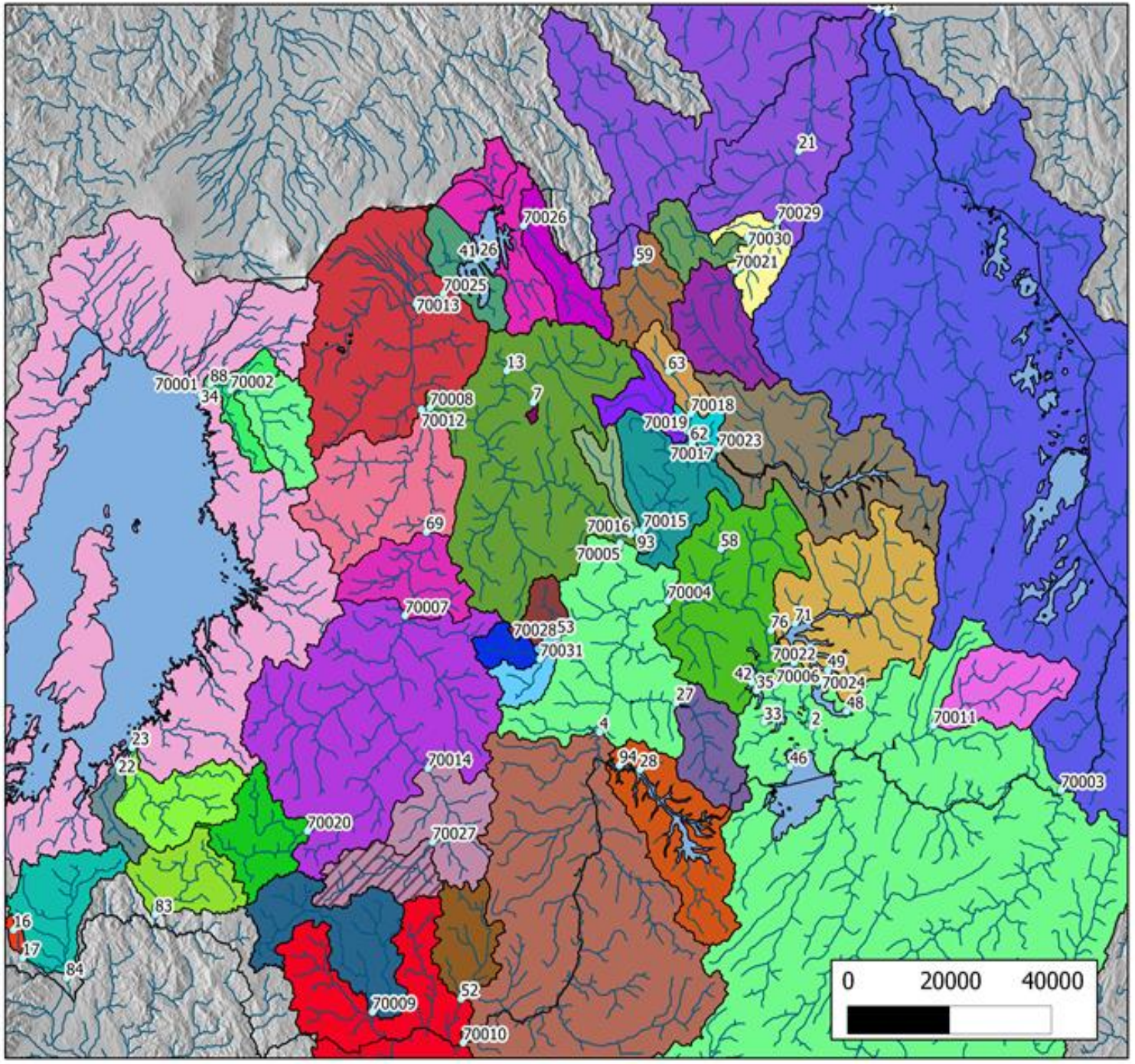
Surface Water Studies (Probability and regimes)



Surface Water Studies (Probability T_{100})



The 100-year flood (and floods of 2,3,5,10,20,50,100) return intervals have been calculated for each basin

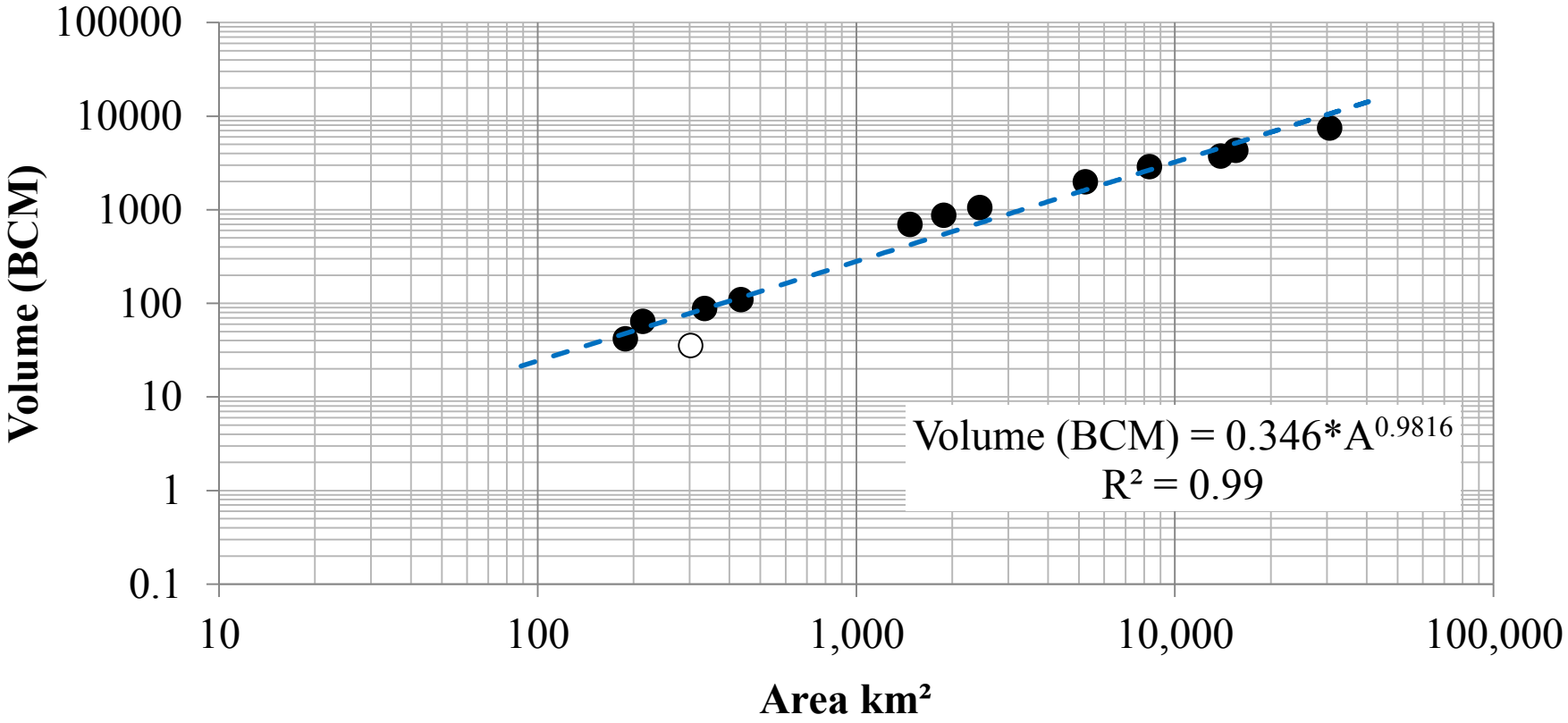


For all gauging stations

Basins calculated

Properties determined (slope, mean altitude, area)

Surface Water Studies



Rating curves re-assessed, discharge time series established.

*The **runoff production of Rwanda** can now be **quantified** precisely.*