

climate change initiative

# RIVER DISCHARGE

## WP 2: Selected basins and stations



river  
discharge  
cci



Laetitia GAL

User Workshop

Météo-France, Toulouse

03-04 June 2024



## Objective

Provide a list of selected locations within few basins in which the methodologies will be applied and to respond to all the issues and interests identified in the WP 1

Region (team expertise)

Data availability

Free flowing / Human Impact

Climate

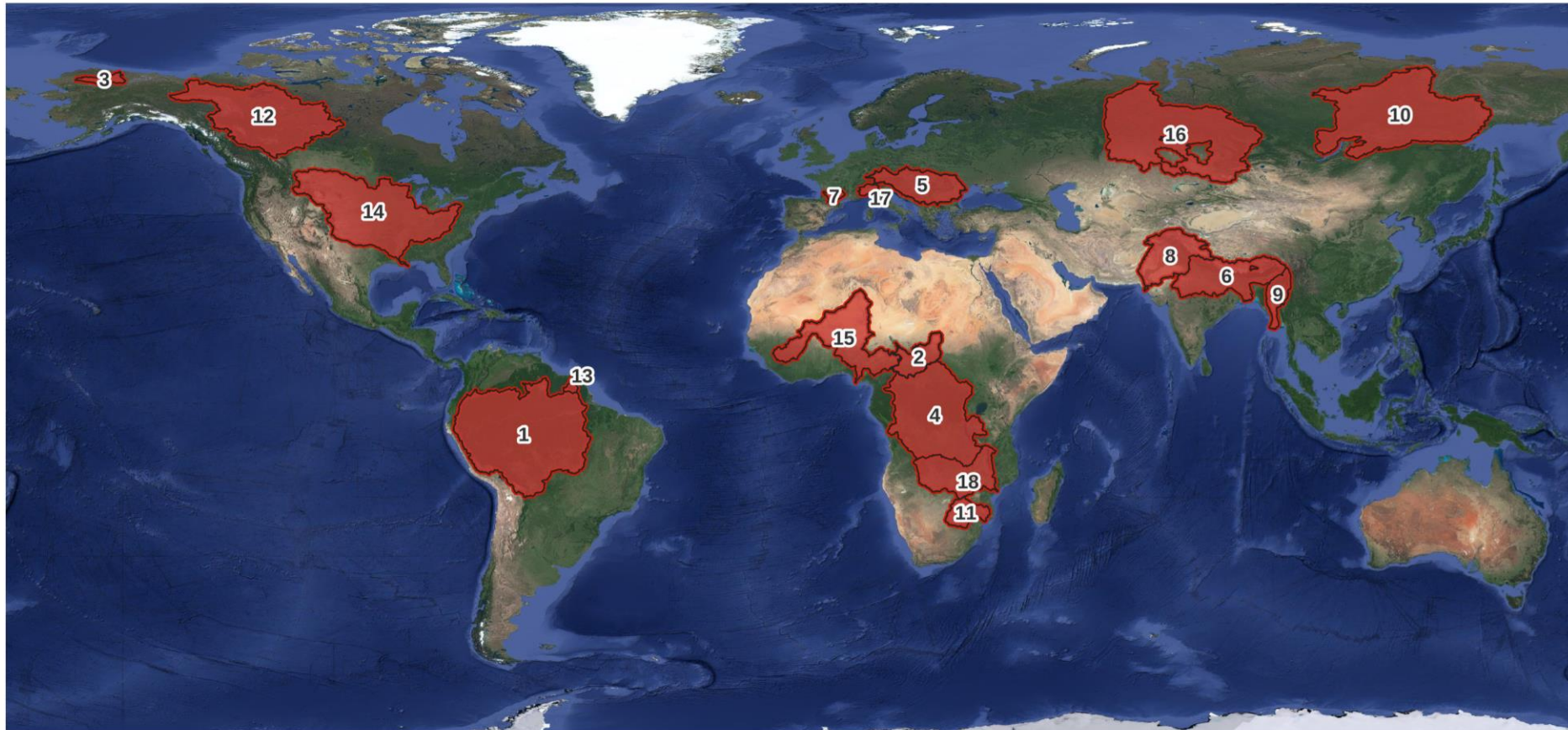
Area – Mean Discharge at the outlet

Main river Length

Selected basins (at least 15)



# Selected basins



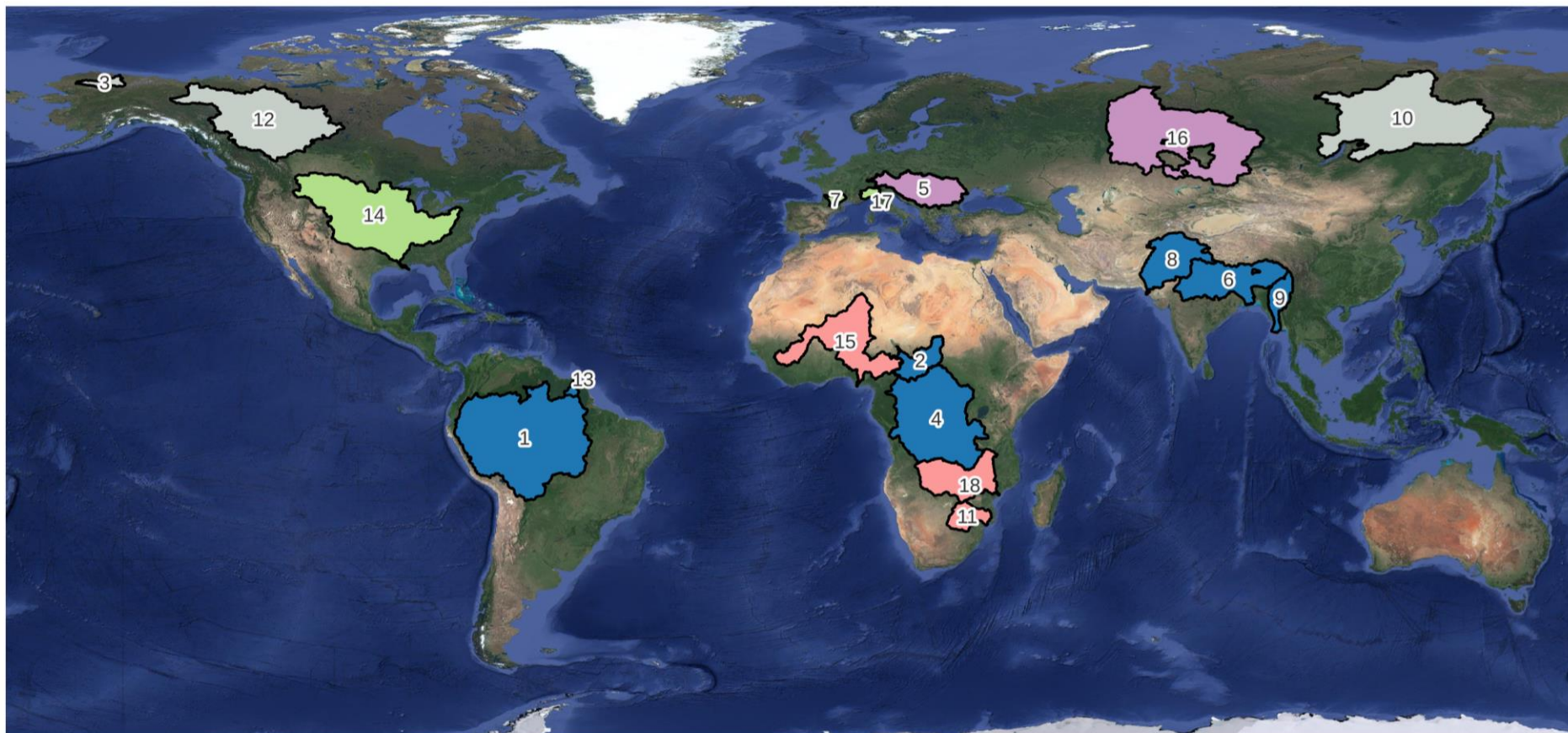
## Selected basins

- |              |                       |               |                |                  |              |
|--------------|-----------------------|---------------|----------------|------------------|--------------|
| 1 - AMAZON   | 4 - CONGO             | 7 - GARONNE   | 10 - LENA      | 13 - MARONI      | 16 - OB      |
| 2 - CHAD     | 5 - DANUBE            | 8 - INDUS     | 11 - LIMPOPO   | 14 - MISSISSIPPI | 17 - PO      |
| 3 - COLVILLE | 6 - GANGA-BRAHMAPUTRA | 9 - IRRAWADDY | 12 - MACKENZIE | 15 - NIGER       | 18 - ZAMBEZI |





# Selected basins

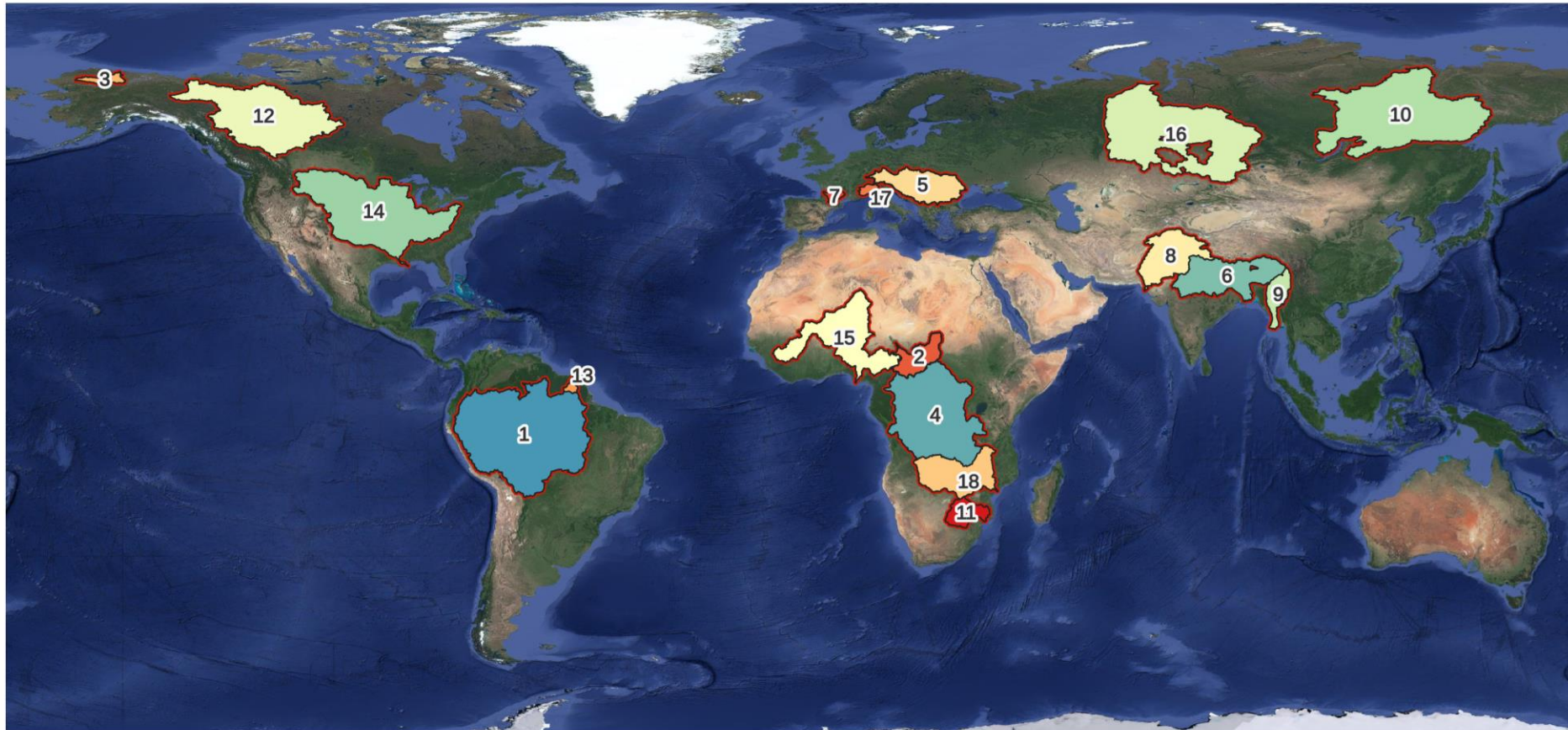


Climatic zone (based on Köppen classification, 1900)

- A: Tropical or equatorial
- B: Arid or dry zone
- C: Warm/Mild temperature zone
- D: Continental zone
- E: Polar zone



# Selected basins

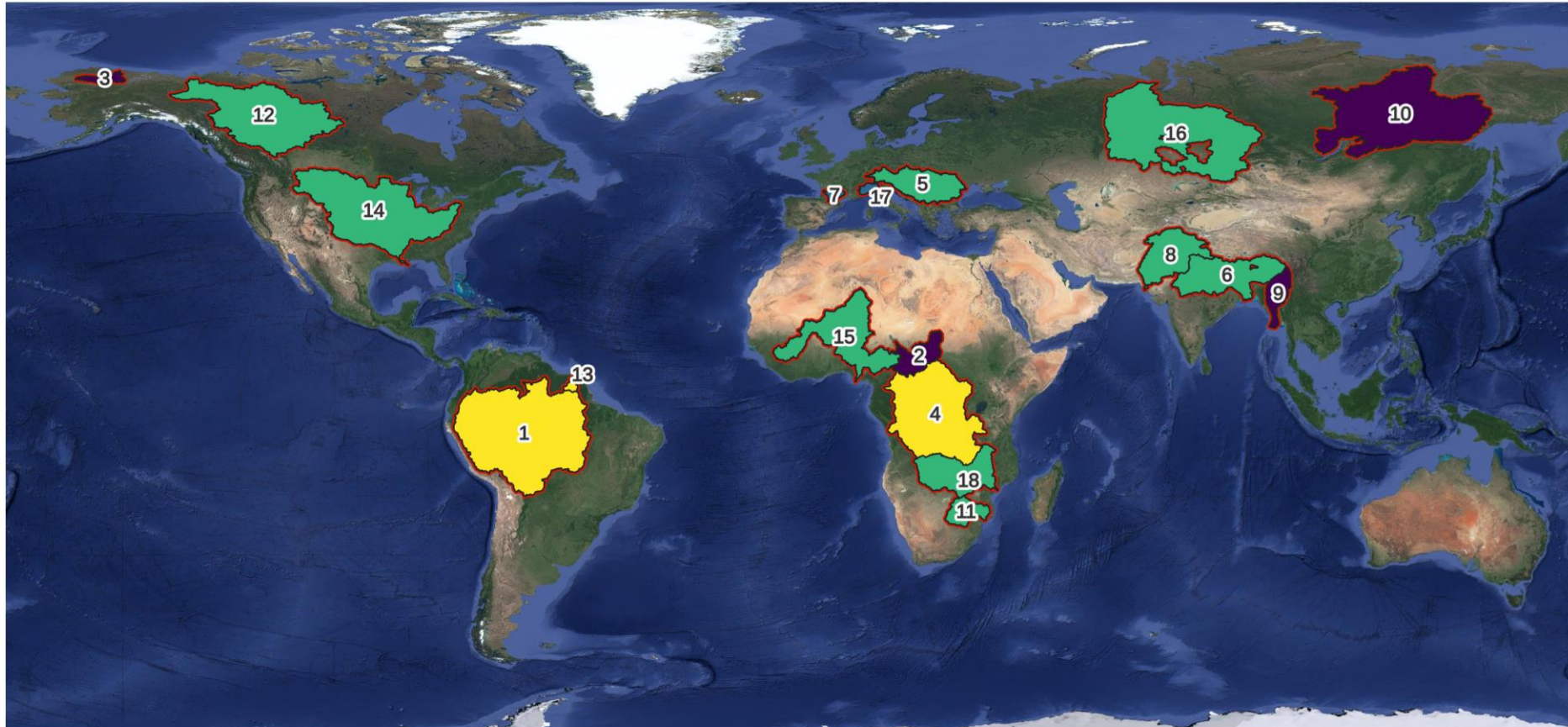


Mean Discharge - outlet (m3/s)

400	1 500	3 900	6 900	15 000	32 000
600	1 600	5 600	9 300	16 500	40 000
1 250	3 100	6 600	13 000	17 000	200 000



# Selected basins



% of free flowing (based on Grill et al., 2019 classification)

- Free-flowing river : CSI  $\geq$  95% over the entire river
- Impacted : CSI  $<$  95%
- Good connectivity status : CSI  $\geq$  95% over parts of river
- Loss of free-flowing status due to future dam bulding



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Area – Mean Discharge at the outlet

Main river Length

Selected basins (at least 15)

**18 basins**

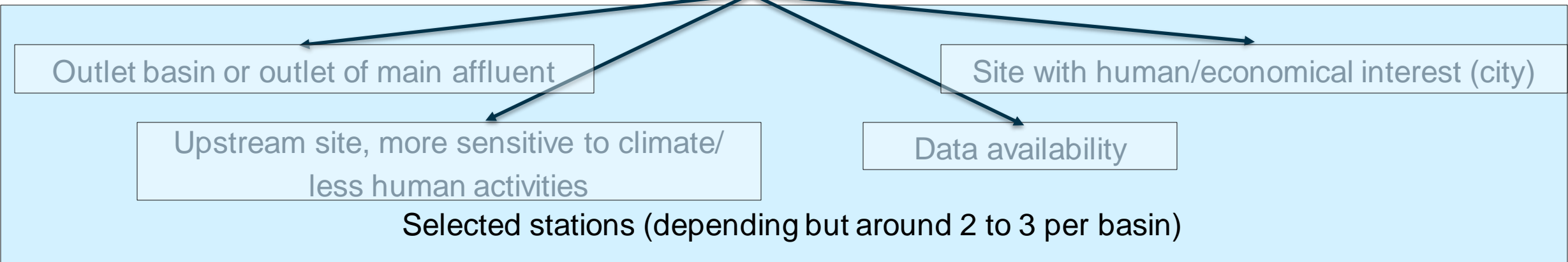
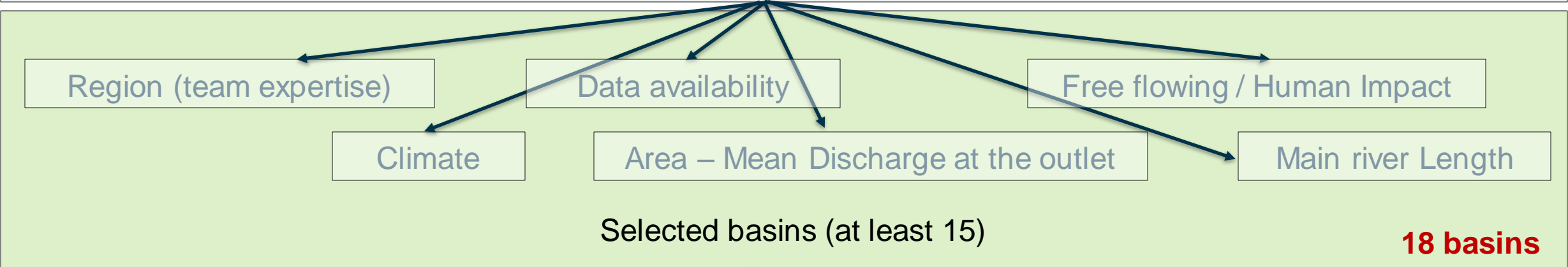


# Selected stations



## Objective

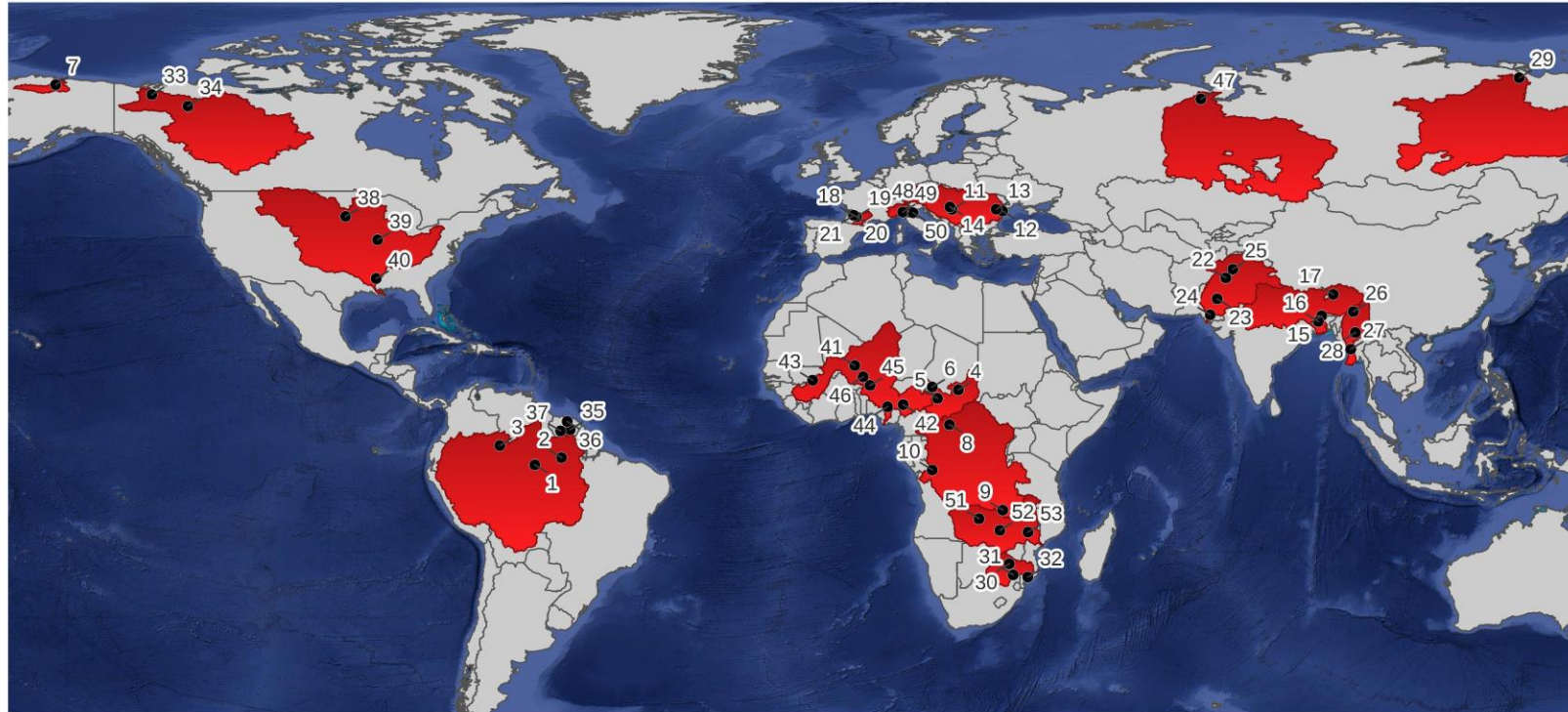
Provide a list of selected locations within few basins in which the methodologies will be applied and to respond to all the issues and interests identified in the WP 1







# Selected stations



- **54 stations have been identified**
- Discharge should be available for each station
- Water Surface Elevation (WSE) from altimetry should be available also
- For most of them, overlap period between WSE and Discharge

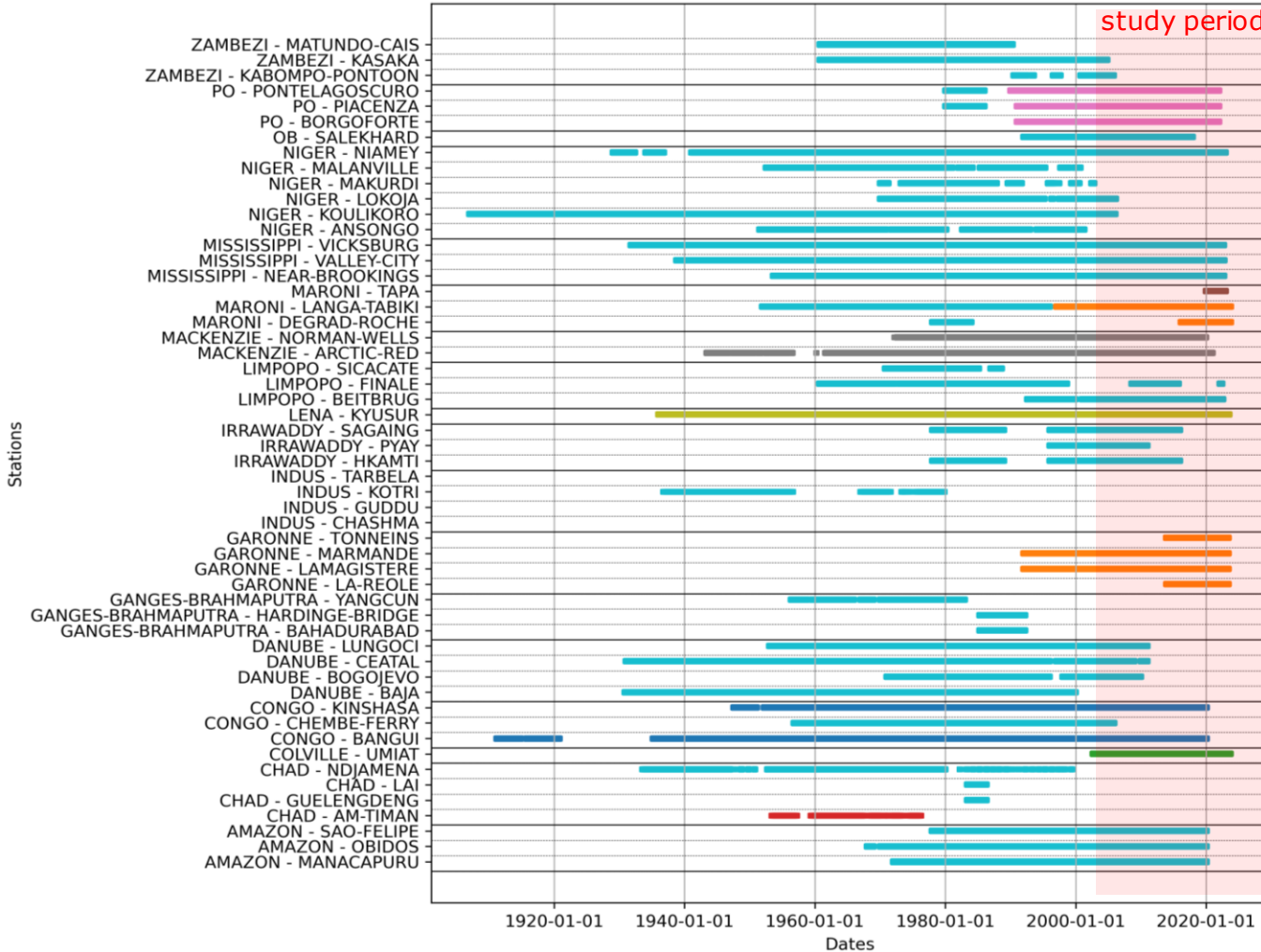
Selected Basins	● 9-CONGO-CHEMBE-FERRY	● 21-GARONNE-MARMANDE	● 33-LIMPOPO-SICACATE	● 45-NIGER-MALANVILLE
Selected Stations	● 10-CONGO-BANGUI	● 22-GARONNE-LA-REOLE	● 34-MACKENZIE-ARCTIC-RED	● 46-NIGER-ANSONGO
● 1-AMAZON-OBIDOS	● 11-CONGO-KINSHASA	● 23-INDUS-KOTRI	● 35-MACKENZIE-NORMAN-WELLS	● 47-NIGER-MAKURDI
● 2-AMAZON-SAO-FELIPE	● 12-DANUBE-BOGOJEVO	● 24-INDUS-CHASHMA	● 36-MARONI-LANGA-TABIKI	● 48-OB-SALEKHARD
● 3-AMAZON-MANACAPURU	● 13-DANUBE-BAJA	● 25-INDUS-TARBELA	● 37-MARONI-DEGRAD-ROCHE	● 49-PO-PONTELAGOSCURO
● 4-CHAD-NDJAMENA	● 14-DANUBE-LUNGOCI	● 26-INDUS-GUDDU	● 38-MARONI-TAPA	● 50-PO-BORGOFORTE
● 5-CHAD-AM-TIMAN	● 15-DANUBE-CEATAL	● 27-IRRAWADDY-HKAMTI	● 39-MISSISSIPPI-NEAR-BROOKINGS	● 51-PO-PIACENZA
● 6-CHAD-LAI	● 16-GANGA-BRAHMAPUTRA-YANGCUN	● 28-IRRAWADDY-SAGAING	● 40-MISSISSIPPI-VALLEY-CITY	● 52-ZAMBEZI-KASAKA
● 7-CHAD-GUELENGDENG	● 17-GANGA-BRAHMAPUTRA-HARDINGE-BRIDGE	● 29-IRRAWADDY-PYAY	● 41-MISSISSIPPI-VICKSBURG	● 53-ZAMBEZI-KABOMPO-PONTOON
● 8-COLVILLE-UMIAT	● 18-GANGA-BRAHMAPUTRA-BAHADURABAD	● 30-LENA-KYUSYUR	● 42-NIGER-KOULIKORO	● 54-ZAMBEZI-MATUNDO-CAIS
	● 19-GARONNE-LAMAGISTERE	● 31-LIMPOPO-FINALE	● 43-NIGER-NIAMEY	
	● 20-GARONNE-TONNEINS	● 32-LIMPOPO-BEITBRUG	● 44-NIGER-LOKOJA	



# Selected stations



Q and WSE Data Availability Timeline



- **54 stations have been identified**
- Discharge should be available for each station
- Water Surface Elevation (WSE) from altimetry should be available also
- For most of them, overlap period between WSE and Discharge
- **In situ daily discharge have been downloaded** from various databases for each station
  - MGB model
  - SO-HYBAM
  - GRDC
  - ArcticGRO
  - AIPo
  - RivDIS
  - SCHAPI
  - USGS

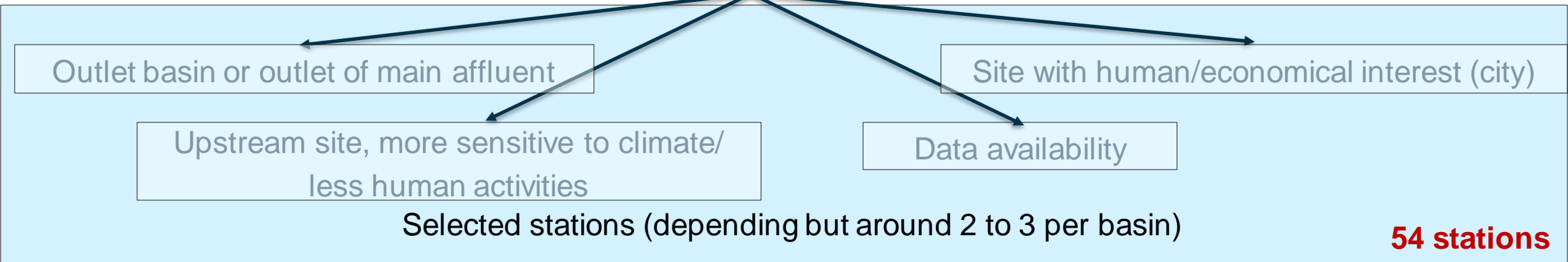
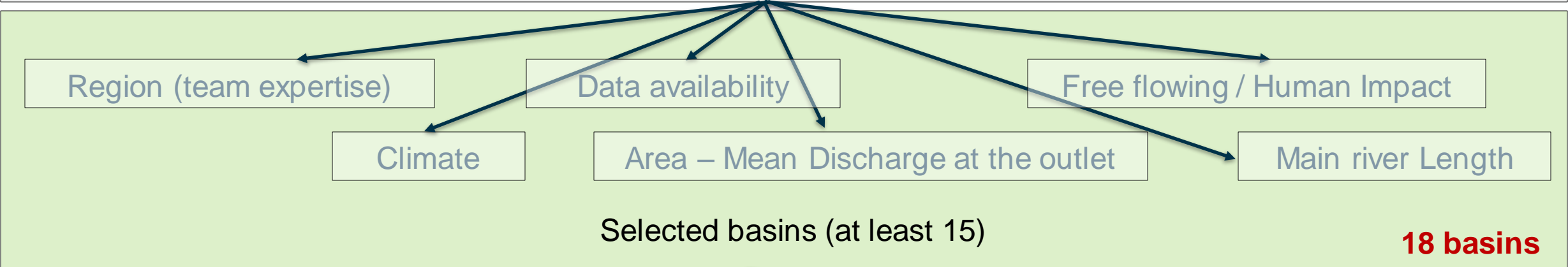


# Selected stations



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# river discharge cci

[climate.esa.int/projects/river-discharge](https://climate.esa.int/projects/river-discharge)

