Activity Area -3 Reduced gap between research and operational hydrology applications

outcome	*Trusted data is made accessible to all users (from EC):*Increased discoverability, availability, and use of high-quality hydrometeorological and hydrologic data for scientific analysis
measure of success	Number of discharge time series with data available for 2021-2030 period that are accessible via WMO infrastructure and programmes (such as WIS, WHOS, GRDC) for scientific purposes on free and unrestricted basis.

output	activity	ID	description	LTA	SOP	success criteria	time frame	responsibility	resources	partners	linkages	MOA	comments
Methods for standard assessment of data quality developed	1.1 Guidelines on/development of practical methods for assessment (flagging) of hydrological data	*E.1.1*	*While metadata provides some information on data quality and reliability for particular use, additional assessment/classification of data uncertainty, or reliability (e.g. by flagging) might help research community in data processing. Providing guidelines and assess potential benefits of harmonized data assessment/classification system/tools*	*5*		*Guidelines published* *Assessment of benefits provided for further decision on the issue*	*2025*	*INFCOM*		*RB, RAs, SERCOM*	*OSCAR, WIS, WHOS, Capacity development programme*		
	1.2 Continuous development and update of Technical Regulation Vol. III and its annex on Hydrometry and other materials (including QMF-H compliance)	*E.1.2*		*1, 2, 3, 4, 5, 6, 7, 8*		*TechReg updated each CG*	*2023, 2027*	*INFCOM, SERCOM, HCP*		*ISO, UNEP*	*RAs*		
Assumptions													
Risks													
Quality assured hydrometeorological data by NHSs are generated through increased compliance to the culture of Quality Management Framework - hydrology (QMF-H)	Development of generic data production processes (schemes), metrics and internal guidelines (ISO 9001 like)	*E.2.1*	*Internal system of QMF comprising manuals, guidelines, defined processes and metrics is necessary for each enterprise, providing products and services*	*1, 2, 3, 4, 5, 6, 7, 8*		*Generic QMS schemes and guides developed, Number of Members who implemented QMS based on those (CPD)*	*2025*	*HCP, INFCOM, SERCOM*		*ISO, Members,*	*RAs*		
	Training materials and e-learning on QMF	*E.2.2*	*Review of requirements of Members on training in the field of QMF/QMS should lead to*			*Review of requirements ready by 2023,*	*2023 review of*	*CDP*			*INFCOM, SERCOM, HCP*		

output	activity	ID	description	LTA	SOP	success criteria	time frame	responsibility	resources	partners	linkages	MOA	comments
			development of training plan for NHSs and its implementation based on identified priorities			*training plan (curriculum) by 2024, First training course launched 2025*	*progress*						
	Information/promotion campaign - TED talks, what a difference quality makes	*E.2.3*	*What benefit investment in QMS brings, why it is key to deliver quality services? Let's share good experience, and bad experience among community*	*1, 2, 3, 4, 5, 6, 7, 8*		*10 TED talks available, number of views*	*2025*	*HCP*	Technical support for recording and publishing	*Members, SG*	*Capacity development programme,*		
	Field safety manual/training course)	E.2.4	Generic annotated structure of Field safety manual will help Members to develop their fit for purpose guidelines. Interactive courses, describing problems, sharing bad and good examples (like cyber security) is developed for practitioners in the field	*1, 2, 5*		*Manual published, interactive course available with at least 50 participants by 2025*	*2025*	*INFCOM*	Technical support	*Members, RAs*	*Capacity development programme, , HCP*		*Potential to involve external partners e.g. through hackatlons*
Assumptions													
Risks													
Improved (guidance for?) development and maintenance of technical platforms to support data exchange for research and science	WHOS/WIS/WIGOS as a tool for data provision	*E.3.1*											
	Evolving role of data centers helps Members in sharing and rescue its data	*E.3.2*											
Assumptions													
Risks													
Improved coordination on observing networks to fit the research purposes	WMO, UNESCO-IHP, IAHS, ERB, FRIEND, colloquium on data for scientific purposes - what and how to measure to enhance scientific progress	*E.4.1*											
	same as E.3.1	*E.3.1*											

output	activity	ID	description	LTA	SOP	success criteria	time frame	responsibility	resources	partners	linkages	MOA	comments
	same as E.3.2	*E.3.2*											
Assumptions													
Risks													

outcome	Reduced gap between research and operational hydrology applications; operational hydrology uses improved understanding of Earth system science
measure of success	Number of WMO (co-)sponsored research programmes/projects that includes implementation of operational hydrological applications at Members' level during 2021-2030.

output	activity	ID	description	LTA	SOP	success criteria	time frame	responsibility	resources	partners	linkages	MOA	comments
Enhanced culture of research & development to operation projects co-design (by operational hydrology and academia) - (Demonstration) projects are developed with beneficiaries being National Meteorological and Hydrological Services	Catalogue of case studies/best practices (or may be bad practices as well)	*F.1.1*											
	Database of research needs from NHSs as a project topics repository for scientist	*F.1.2*											
	Implementation of research strategy for hydrology	*F.1.3*	*in cooperation with UNESCO and IAHS*					*RB*					
assumptions	*An effective working arrangements are set up with UNESCO-IHP IX phase*												
risks													
Inventory of the compiled data and products from Earth systems science projects for hydrological applications	*Similarly to activities on inventory of operational products, research outputs are compiled to be accessible for operational hydrology application where relevant*	*F.2.1*	*See A.11, B.7 and C.2*										
assumptions													

output	activity	ID	description	LTA	SOP	success criteria	time frame	responsibility	resources	partners	linkages	MOA	comments
risks	*None*												
Improved Earth system models outputs and its availability at high resolution for local and regional applications	*Improving QPE and QPF by research focus*	*F.3.1*	*Global community of NWP and downscaling works together on providing QPE and QPF at relevant scales (< 1 square km)*										
	Guidance on coupled model systems, interfaces	*F.3.2*	*Provision of cases studies, Compendium of relevant methodologies*										
assumptions													
risks													
There is a greater understanding of how the hydrological system responds to extreme conditions	*Development of tools and modules to assess and analyse uncertainty of extreme conditions are available.*	*F.4.1*	*Research community further develops uncertainty and scenario analysis that can be directly used to design/manage infrastructure & water systems.*										
assumptions													
risks													
Enhanced collaboration between hydrology and meteorology communities of practice, including academia	*Inclusion of different stakeholders (energy-water-food) needs and requirements, moving towards MHEWS approach (e.g. with the integration of FFGS/CIFI/SWFP) for the possible future integration of hydrology in GMAS (including reflecting hydrological hazards in the*	*F.5.1*	*Same as B.4.1*										

output	activity	ID	description	LTA	SOP	success criteria	time frame	responsibility	resources	partners	linkages	MOA	comments
	catalogue of hazardous events)												
	Widen the implementation of a Water segment towards the creation of Regional Outlook Fora (ROFs), based on the successful experience of RCOFs with water segment in Central America	*F.5.2*	*Same as C.7.1*										
assumptions													
risks													