

SUMMARY - DISCUSSION TOPIC 1: Rainfall as an input for urban pluvial flood modeling and forecasting – by Malcolm Kitchen

Two sub-groups¹ asked to consider and rank 10 candidate improvements to rainfall inputs. Sub group 1 mainly comprised rainfall data users and considered *desirability*; sub-group 2 considered *feasibility*. The rankings are shown in the Table below.

<i>Candidate improvements to rainfall data</i>	<i>Typical current capability/availability</i>	<i>Improvements Ranked by desirability from users perspective (from sub-group 1)</i>	<i>Improvements Ranked by feasibility from suppliers perspective (from sub-group 2)</i>	<i>Notes</i>
Improved accuracy of rainfall	~10% error in hourly accumulations at a point (gauge) , ~factor of 2 error over an area (radar)	1=	2=	Target should be 10% accuracy for radar accumulations. Suppliers see this as feasible, but taking 10-15 years.
Higher resolution	~1km and 5 minutes (radar) ~10km and 15-60 minutes (gauge)	7	2=	
Improved timeliness (real-time applications)	~ 5-10 minutes delay	6	6	Delay of <1min would bring sig. benefits
Longer historical record	Tens of years (gauge) 10 years (radar)	4=	8	
More data from historical extreme events	Limited by sampling (gauge) Limited by archive and access (radar)	3	7	
Improved access to rainfall data	Low resolution radar data very widely available - high resolution data at a premium Gauge?	4=	4	
Quantified uncertainty	Quality measures/indicators limited availability	8	*	
Rain/snow/hail discrimination	Not reliable	9	*	
More flexible choice of data e.g. accumulations/rates/radar+gauge merged	Point accumulations (gauge) Areal rates (radar) Some bespoke combined products	10	5	
Improved accuracy of rainfall forecasts (real-time applications)	Lower accuracy than observations	1=	1	Urban flooding lead times too low to rely on rainfall observations alone – hence ranked similarly



Notes on the Table

* - not assessed

1. Thanks to Christian Onof and Jacqueline Sugier for steering discussions in the sub-groups.

Chairman's Summary:

A focus for the RAIGAIN WP1 is on improving the resolution of rainfall inputs. Although the suppliers see this as technically feasible, the users rank improvements to radar resolution as fairly low, and much lower than improved accuracy at existing data resolutions. The inference might be that the users are unconvinced that improvements in resolution will translate into improvements in the rainfall input to urban drainage models. The project team(s) will need to ensure that benefits of higher resolution are not assumed, but need to be demonstrated. Also if there are opportunities to work towards higher accuracy, then these should be given at least an equal priority to resolution improvements.

Access to data (including historical data from flood events) is good within some organizations, but difficult and/or expensive for others. Both suppliers and users see the potential for improvements in this situation.

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