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Pick your adventure: Does hydrology need to prepare for MadMax and Waterworld or for Star Trek?

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Ask people in 1940 what 2020 would be like and they would talk about hoverboards and whether androids dream of electric sheep. You wouldn't get a lot of projections that 2020 would be a few degrees warmer globally, that glaciers are disappearing and coastal cities sinking... But they are.

Looking forward to 2100 it is the other way around: no idea what technology we'll be using to communicate / commute and relax, but due to gigantic increase in geoscientific understanding over the last decades we do know for sure that the sea levels will continue to rise and global temperatures increase.

Hydrology has always been a scientific discipline that combines pure academic interest with high societal relevance. While venues of pure academic interest can go in all directions, we can use the predictions on future climate change to see what types of hydrological research will be relevant to society in 2100.

Are we on track for the RCP8.5 scenario with 4 degrees of (additional) global warming in 2100? This would lead to a combination of MadMax and Waterworld: current coastal zones will flood, whole islands will disappear and large parts of the world will become more desert-like. Or will the world come together and will nations and people start working together to collectively combat climate change to make sure we stay on the RCP2.5 scenario¹?

In this invited talk I will sketch what scientific questions will be asked from hydrology in these situations and I will share my vision on how we can already start to prepare the knowledge base to be able to adequately answer these questions on our way to 2100.

¹and invent faster than light travel in 2063...