Projecting drought scenarios to future proof water supplies in Scotland

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Introduction

The UKCP 18 models indicate that Scotland's summer will get increased occurrence of drought events. Understanding the likely impact of future droughts on Scotland's water security is critical to facilitate planning. This study explores the drought risks in Scotland using modelled temperature and precipitation data as the Standardised Precipitation and Evapotranspiration Index calculated (SPEI) for 2041-2080.

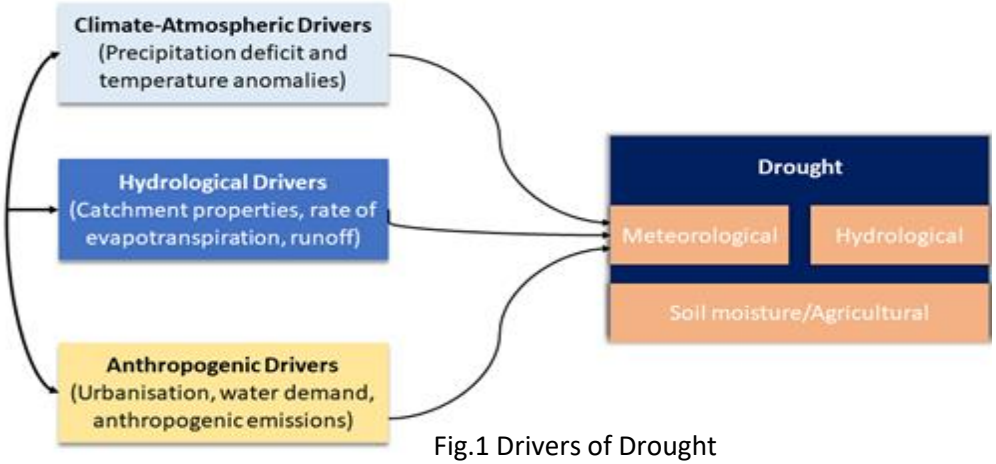

Fig.1 Drivers of Drought

Method

Step 1- Collate UKCP18 dataset

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Step 2- Convert data into average monthly timeseries

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Step 3- Analyse SPEI for baseline and future period using SPEI package in R

Results

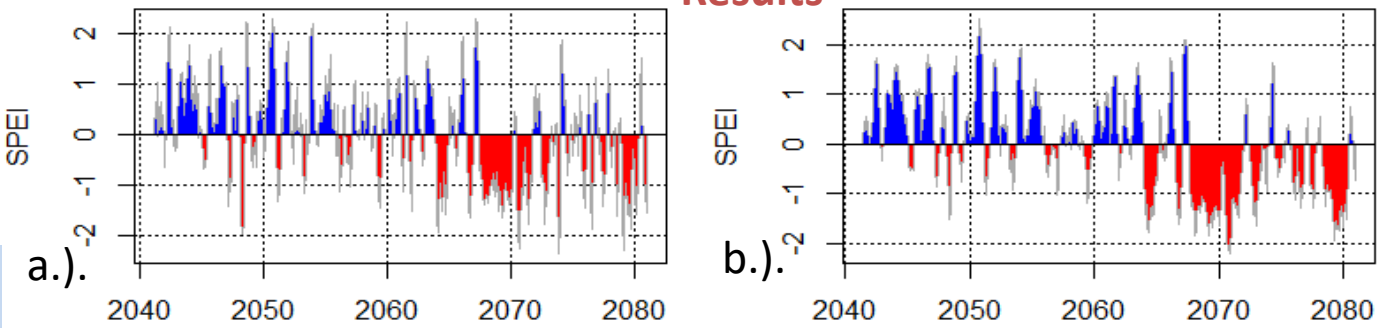
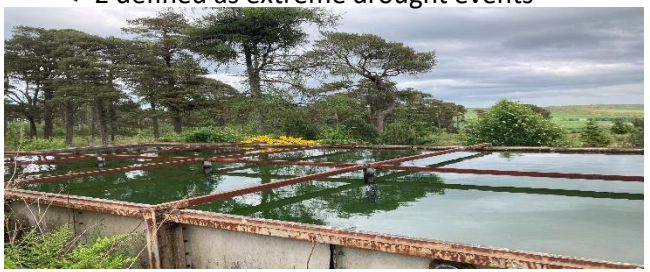


Fig.2. SPEI at sample site for one model member a.) Three month timestep b.) Six month timestep. Events <- 2 defined as extreme drought events

Future

Further work is needed to calculate and apply the SPEI for all 1 km grids across Scotland. There will be focus on applying results in particular on water quality of private water supplies. The impacts from this short study currently imply drought risk leading to water quantity and quality issues in the imminent future



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