

# A review of the risks to water resources in Scotland in response to climate change

## Appendix A: Future flows in the UK





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## Appendix A: Future flows in the UK

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**Cover photographs:** Photographs courtesy of Dr Christopher J. White and Dr Douglas Bertram.

**Table A.1: Graphical summary of future river flows in the UK**

Flow type	Study region	Range of changes	Timeline	Baseline	Climate model	Reference
Annual	Scotland	5% to 15%	2050s	1970-1996	UKCP09, A1B emission scenario	Werritty (2002)
	<p>Distributions of changes in mean annual flow (%) for the 2020s for the 70 modelled catchments with the sampled UKCP09 climate change forcings. Blue and red colours in the violin plots indicate the position of the distribution with respect to zero.</p>		2020s (2011-2040)	1960-1991	UKCP09, A1B emission scenario	Christerson et al (2012)

Table A.1: Graphical summary of future river flows in the UK		Range of changes		Timeline	Baseline	Climate model	Reference
Flow type	Study region						
				2040-2069	1961-1990	UKCP09, A1B emission scenario	Prudhomme et al (2012)
Winter		<p>Percentage change in seasonal mean flow for the 2050s as simulated by CERF with each of the HadRM3-PPE members (a to k).</p>		2020-2050 and 2050-2080	1980-2010	UKCP18, RCP8.5 emission scenario	Kay (2021)
		<p>Percentage change in seasonal mean flow from the pooled SIMRCM ensemble, for near future (2020-2050) - left and far-future (2050-2080) -right.</p>					

**Table A.1:** Graphical summary of future river flows in the UK

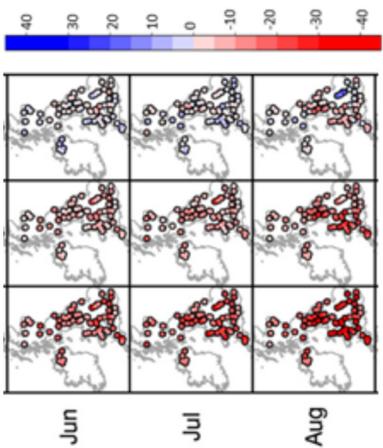
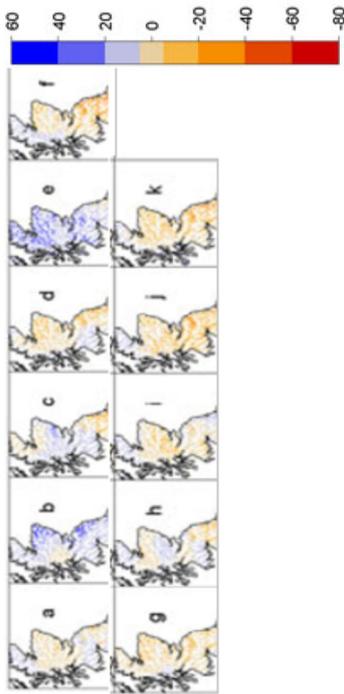
Flow type		Study region	Range of changes		Timeline	Baseline	Climate model	Reference
Winter					2020s (2011-2040)	1960-1991	UKCP09, A1B emission scenario	Christerson et al. (2012)
			<p>First (25th), second (50th) and third (75th) quartiles of monthly changes in river flow (%) for the 2020s for the 70 modelled catchments with the sampled UKCP09 climate change forcings.</p>					
Spring					2040-2069	1961-1990	UKCP09, A1B emission scenario	Prudhomme et al. (2012)
			<p>Percentage change in seasonal mean flow for the 2050s as simulated by CERF with each of the HadRM3-PPE members (a to k).</p>					

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Flow type	Study region	Range of changes	Timeline	Baseline	Climate model	Reference
Spring			2020-2050 and 2050-2080	1980-2010	UKCP18, RCP8.5 emission scenario	Kay (2021)
		<p>Percentage change in seasonal mean flow from the pooled SIMRCM ensemble, for near future (2020-2050) -left and far-future (2050-2080) -right.</p>	2020s (2011-2040)	1960-1991	UKCP09, A1B emission scenario	Christerson et al. (2012)
		<p>Percentage change in seasonal mean flow for the 2050s as simulated by CERF with each of the HadRM3-PPE members (a to k).</p>				

**Table A. 1:** Graphical summary of future river flows in the UK

Flow type	Study region	Range of changes	Timeline	Baseline	Climate model	Reference
Summer			2020s (2011-2040)	1960-1991	UKCP09, A1B emission scenario	Christerson et al. (2012)
		<p>First (25th), second (50th) and third (75th) quartiles of monthly changes in river flow (%) for the 2020s for the 70 modelled catchments with the sampled UKCP09 climate change forcings.</p>				
Autumn			2040-2069	1961-1990	UKCP09, A1B emission scenario	Prudhomme et al. (2012)
		<p>Percentage change in seasonal mean flow for the 2050s as simulated by CERF with each of the HadRM3-PPE members (a to k).</p>				

Table A.1: Graphical summary of future river flows in the UK		Flow type	Study region	Range of changes	Timeline	Baseline	Climate model	Reference
Autumn			<p>Percentage change in seasonal mean flow from the pooled SIMIRCM ensemble, for near future (2020-2050) -left and far-future (2050-2080) -right.</p>	<p>2020-2050 and 2050-2080</p>	<p>1980-2010</p>	<p>UKCP18, RCP8.5 emission scenario</p>	<p>Kay (2021)</p>	
				<p>First (25th), second (50th) and third (75th) quartiles of monthly changes in river flow (%) for the 2020s for the 70 modelled catchments with the sampled UKCP09 climate change forcings.</p>	<p>2020s (2011-2040)</p>	<p>1960-1991</p>	<p>UKCP09, A1B emission scenario</p>	<p>Christerson et al. (2012)</p>



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