

## General Information

|                |           |                                   |              |
|----------------|-----------|-----------------------------------|--------------|
| River Name     | Rea Brook | Catchment Area (km <sup>2</sup> ) | 178          |
| Station Name   | Hookagate | SAAR (mm) 61-90                   | 756          |
| Station Number | 54018     | Mean Annual Rain (mm) 62-91       | 758          |
| Grid Reference | SJ466092  | Mean Annual PE (mm) 62-91         | 530          |
| EA Region      | EA-M      | Observed flow record              | 1962 to 2005 |



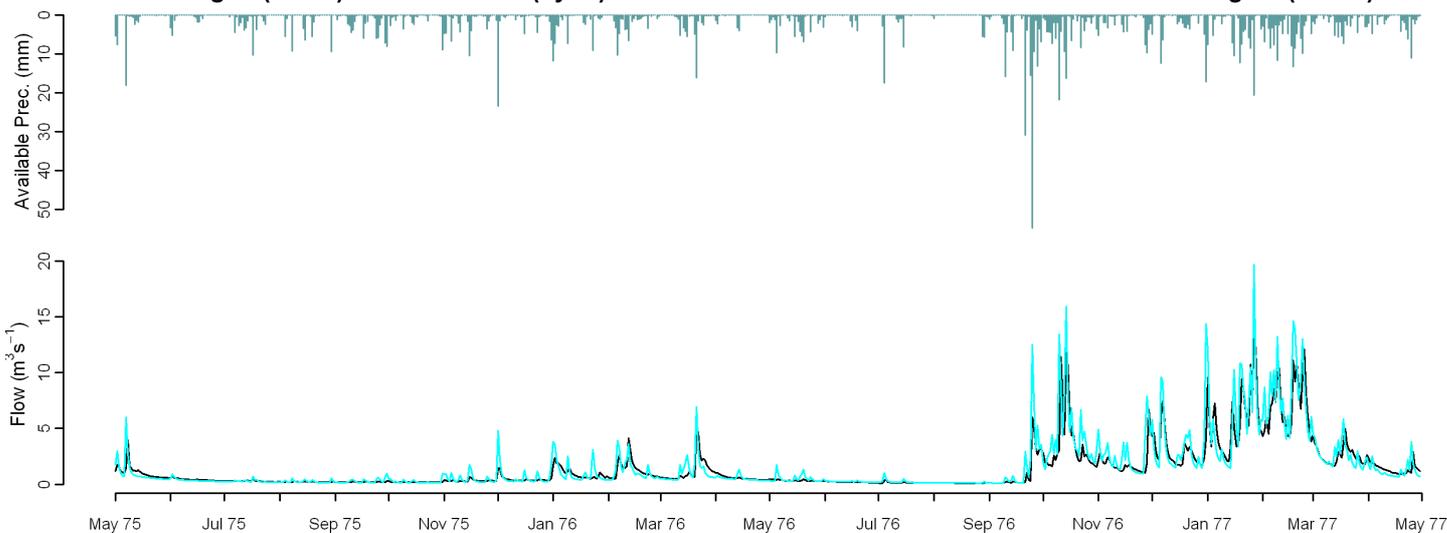
## Observed Data

## Comparison of gauged and simulated flow

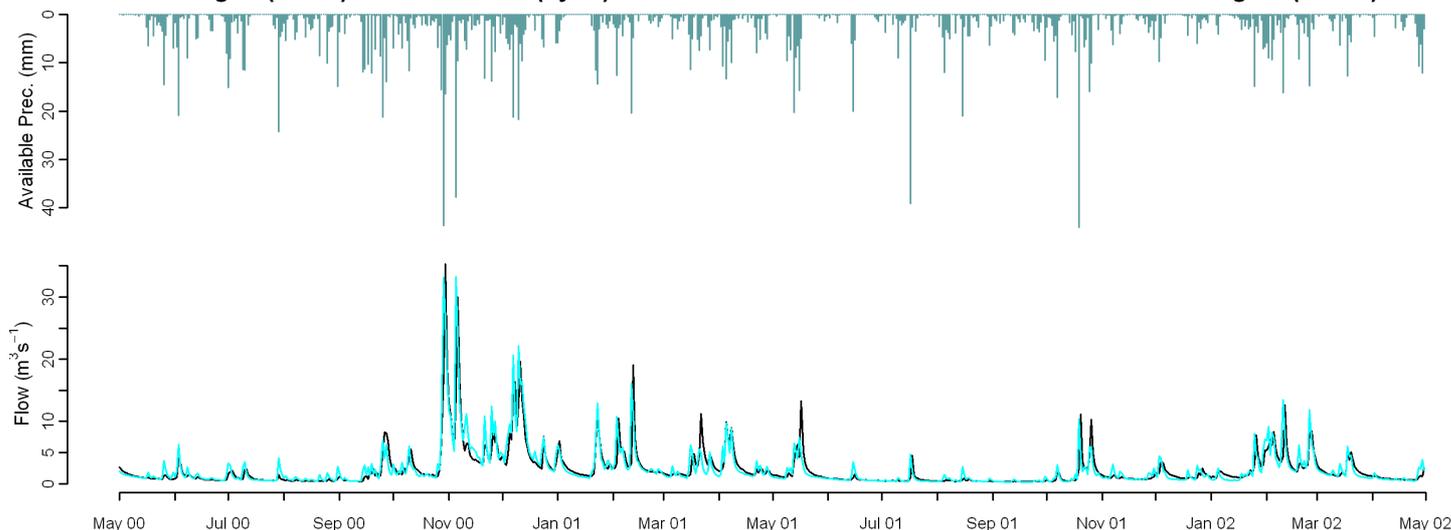
## Model used: PDM

|                    | Mean Annual | J    | F    | M    | A    | M    | J    | J    | A    | S    | O    | N   | D   | Nash Sutcliffe |
|--------------------|-------------|------|------|------|------|------|------|------|------|------|------|-----|-----|----------------|
| MORECS (1971-2005) | 3.9         | 6.1  | 7.4  | -5.9 | -7.3 | -3.5 | 5.4  | 25.0 | 38.3 | 28.1 | 5.0  | 3.8 | 0.8 | 0.69           |
| Performance Band   | 1           | 1    | 1    | 1    | 1    | 1    | 1    | 2    | 3    | 2    | 1    | 1   | 1   | 1              |
| FAO (1962-1991)    | 7.4         | 10.8 | 8.8  | -4.4 | -0.1 | -4.5 | 13.6 | 17.4 | 33.9 | 35.8 | 13.3 | 8.5 | 8.8 | 0.67           |
|                    | Q90         | Q75  | Q50  | Q25  | Q5   | RP2  | RP5  | RP10 | RP20 |      |      |     |     |                |
| MORECS (1971-2005) | -0.8        | 3.0  | -2.5 | 2.9  | 6.7  | 2.0  | 6.5  | 10.1 | 13.7 |      |      |     |     |                |
| Performance Band   | 1           | 1    | 1    | 1    | 1    |      |      |      |      |      |      |     |     |                |
| FAO (1962-1991)    | 4.9         | 11.0 | 4.0  | 8.1  | 10.7 | 0.2  | 3.0  | 6.9  | 11.9 |      |      |     |     |                |

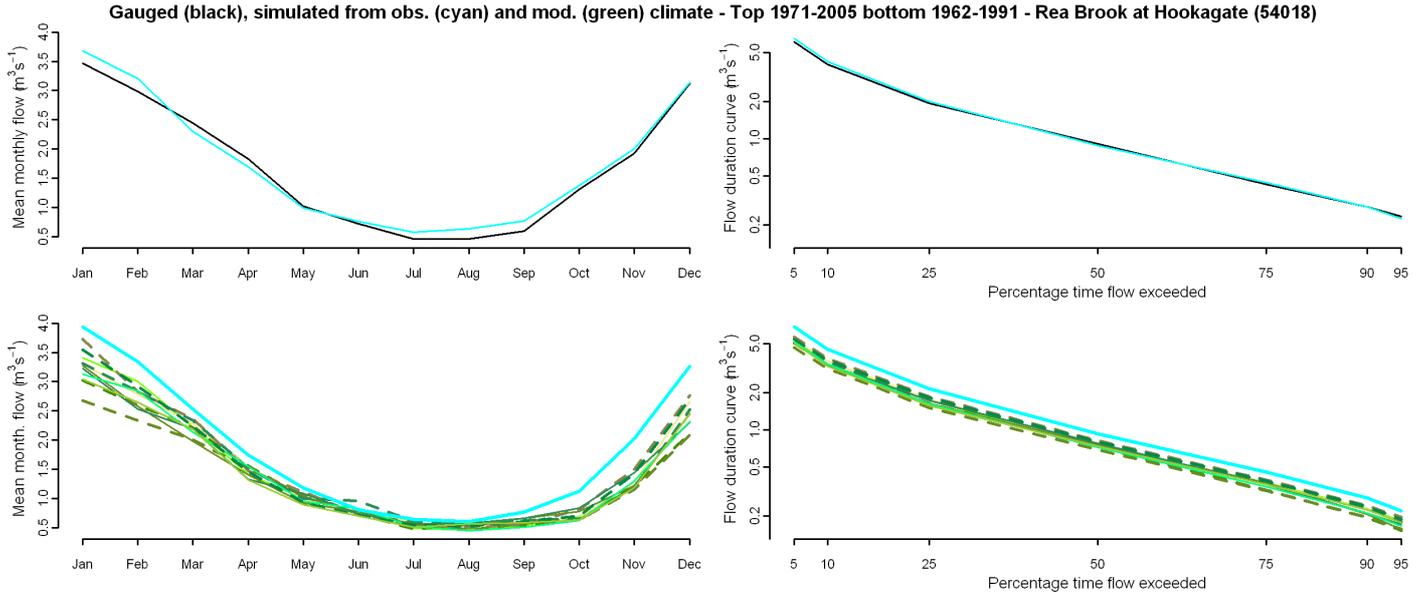
Gauged (black) and simulated (cyan) flows from observed climate - Rea Brook at Hookagate (54018)



Gauged (black) and simulated (cyan) flows from observed climate - Rea Brook at Hookagate (54018)



Comparison of gauged and simulated flow (observed and modelled climate)



Percentage difference between flow simulated from observed climate and Future Flows Climate

|         | afgcx | afixa | afixc | afixh | afixi | afixj | afixk | afixl | afixm | afixo | afixq |
|---------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Annual  | -19   | -24   | -18   | -13   | -22   | -28   | -20   | -16   | -22   | -17   | -25   |
| January | -12   | -23   | -11   | -1    | -13   | -27   | -18   | -11   | -16   | -11   | -19   |
| April   | -20   | -19   | -9    | -14   | -22   | -17   | -25   | -15   | -14   | -17   | -23   |
| July    | -23   | -18   | -8    | -18   | -20   | -13   | -11   | -9    | -19   | -17   | -23   |
| October | -36   | -44   | -41   | -30   | -34   | -43   | -25   | -40   | -44   | -38   | -25   |
| Q90     | -17   | -32   | -19   | -15   | -28   | -32   | -25   | -20   | -25   | -16   | -20   |
| Q75     | -17   | -29   | -20   | -14   | -21   | -30   | -21   | -15   | -23   | -16   | -22   |
| Q50     | -19   | -23   | -19   | -11   | -22   | -27   | -17   | -14   | -22   | -15   | -22   |
| Q25     | -20   | -25   | -17   | -12   | -24   | -29   | -19   | -16   | -24   | -15   | -28   |
| Q5      | -22   | -26   | -19   | -16   | -25   | -32   | -25   | -18   | -23   | -21   | -27   |
| RP2     | -15   | -9    | -15   | -3    | -14   | -22   | -8    | -10   | -14   | -5    | -16   |
| RP10    | -13   | -14   | -14   | 0     | -13   | -14   | 2     | -12   | -4    | -1    | -5    |

Climate change graphs for 2050s

