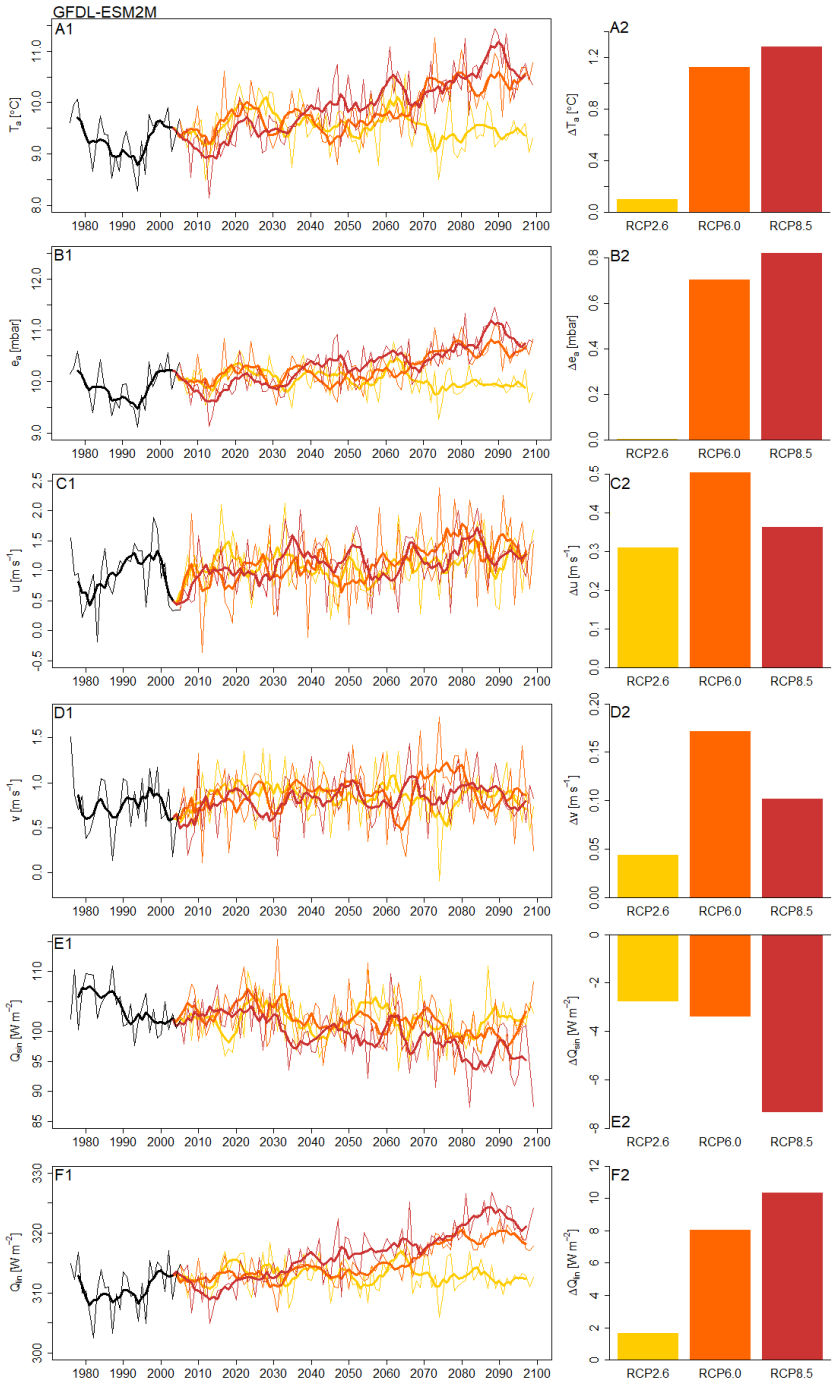

Fig. S1: Climate variables obtained from ISIMIP2b (https://www.isimip.org/), for the 0.5°grid cell overlying Lough Feeagh, and used to drive the lake model applied to Lough Feeagh. Variables are arranged from top to bottom: A: **Air temperature** T_a (°C), B: **Vapor pressure at 2m** e_a (mbar), C: **Wind speed towards the east** u (ms^{-1}), D: **Wind speed towards the north** v (ms^{-1}), E: **Surface incoming short-wave radiation** Q_{sin} ($W\ m^{-2}$), F: **Surface incoming long-wave radiation** Q_{lin} ($W\ m^{-2}$). Each row display the projections for 1976 to 2099 under historical (black) and future climate forcing RCP 2.6 (yellow), RCP 6.0 (orange) and RCP 8.5 (red). **1** Annual average of the variable with the thin line showing the yearly average projected using the **GFLD-ESM2M** GCM and the thick line show the 5-year centred moving average**2** Average difference in each variable between RCPs (2070-2099) and historical period (1976-2005) for the **GFLD-ESM2M** GCM**.**

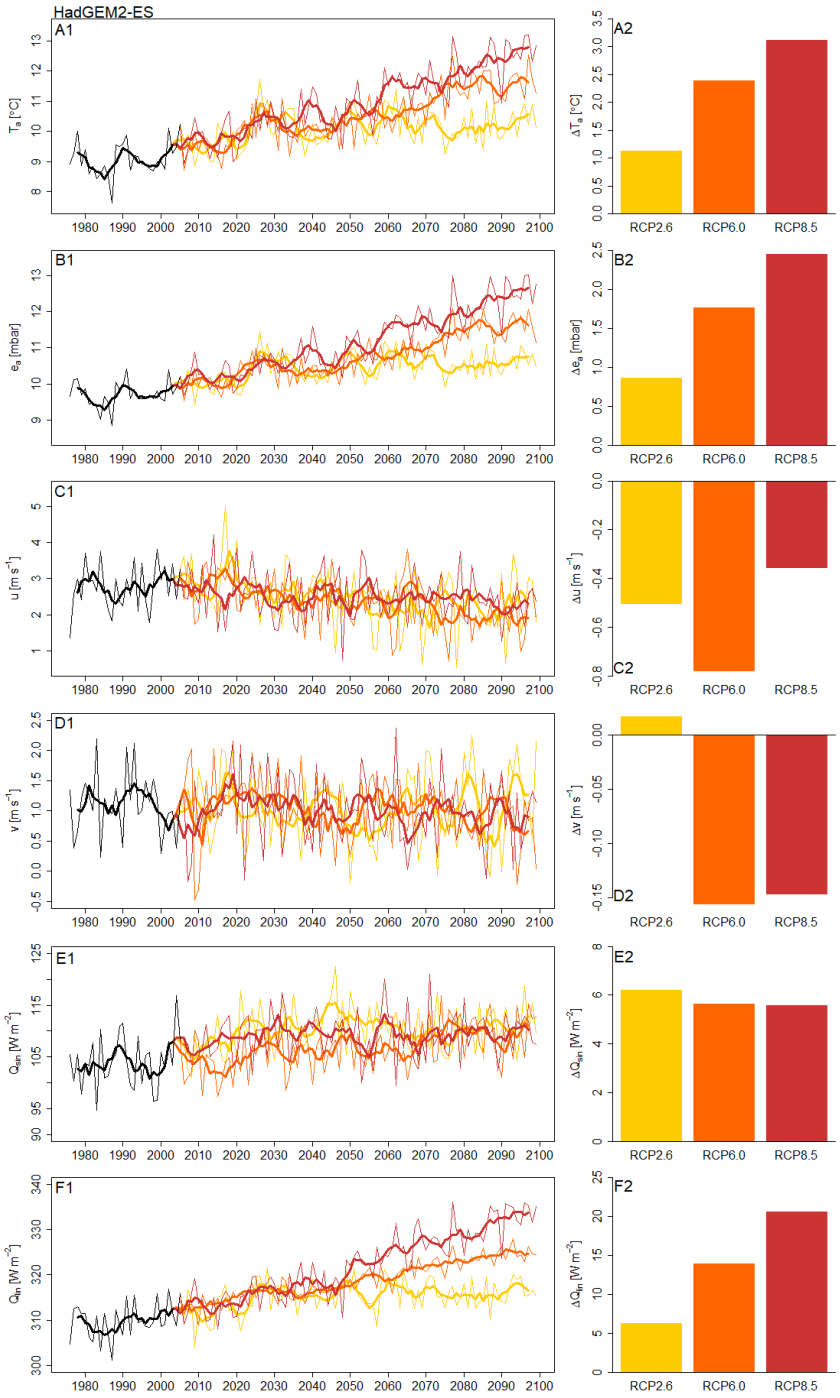

Fig. S2: Climate variables obtained from ISIMIP2b (https://www.isimip.org/), for the 0.5°grid cell overlying Lough Feeagh, and used to drive the lake model applied to Lough Feeagh. Variables are arranged from top to bottom: A: **Air temperature** T_a (°C), B: **Vapor pressure at 2m** e_a (mbar), C: **Wind speed towards the east** u (ms^{-1}), D: **Wind speed towards the north** v (ms^{-1}), E: **Surface incoming short-wave radiation** Q_{sin} ($W\ m^{-2}$), F: **Surface incoming long-wave radiation** Q_{lin} ($W\ m^{-2}$). Each row display the projections for 1976 to 2099 under historical (black) and future climate forcing RCP 2.6 (yellow), RCP 6.0 (orange) and RCP 8.5 (red). **1** Annual average of the variable with the thin line showing the yearly average projected using the **HadGEM2-ES** GCM and the thick line show the 5-year centred moving average**2** Average difference in each variable between RCPs (2070-2099) and historical period (1976-2005) for the **HadGEM2-ES** GCM**.**

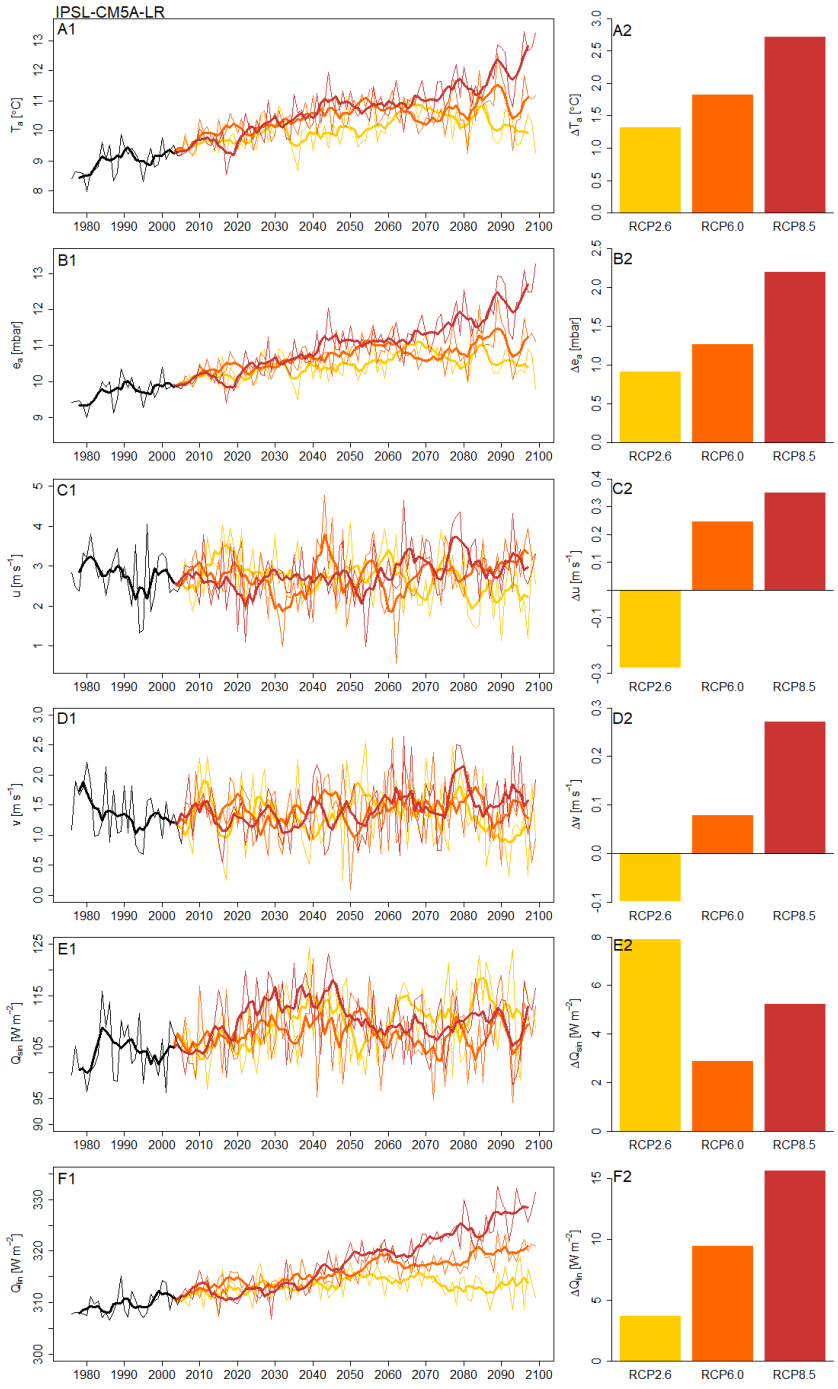

Fig. S3: Climate variables obtained from ISIMIP2b (https://www.isimip.org/), for the 0.5°grid cell overlying Lough Feeagh, and used to drive the lake model applied to Lough Feeagh. Variables are arranged from top to bottom: A: **Air temperature** T_a (°C), B: **Vapor pressure at 2m** e_a (mbar), C: **Wind speed towards the east** u (ms^{-1}), D: **Wind speed towards the north** v (ms^{-1}), E: **Surface incoming short-wave radiation** Q_{sin} ($W\ m^{-2}$), F: **Surface incoming long-wave radiation** Q_{lin} ($W\ m^{-2}$). Each row display the projections for 1976 to 2099 under historical (black) and future climate forcing RCP 2.6 (yellow), RCP 6.0 (orange) and RCP 8.5 (red). **1** Annual average of the variable with the thin line showing the yearly average projected using the **IPSL-CM5A-LR** GCM and the thick line show the 5-year centred moving average**2** Average difference in each variable between RCPs (2070-2099) and historical period (1976-2005) for the **IPSL-CM5A-LR** GCM**.**

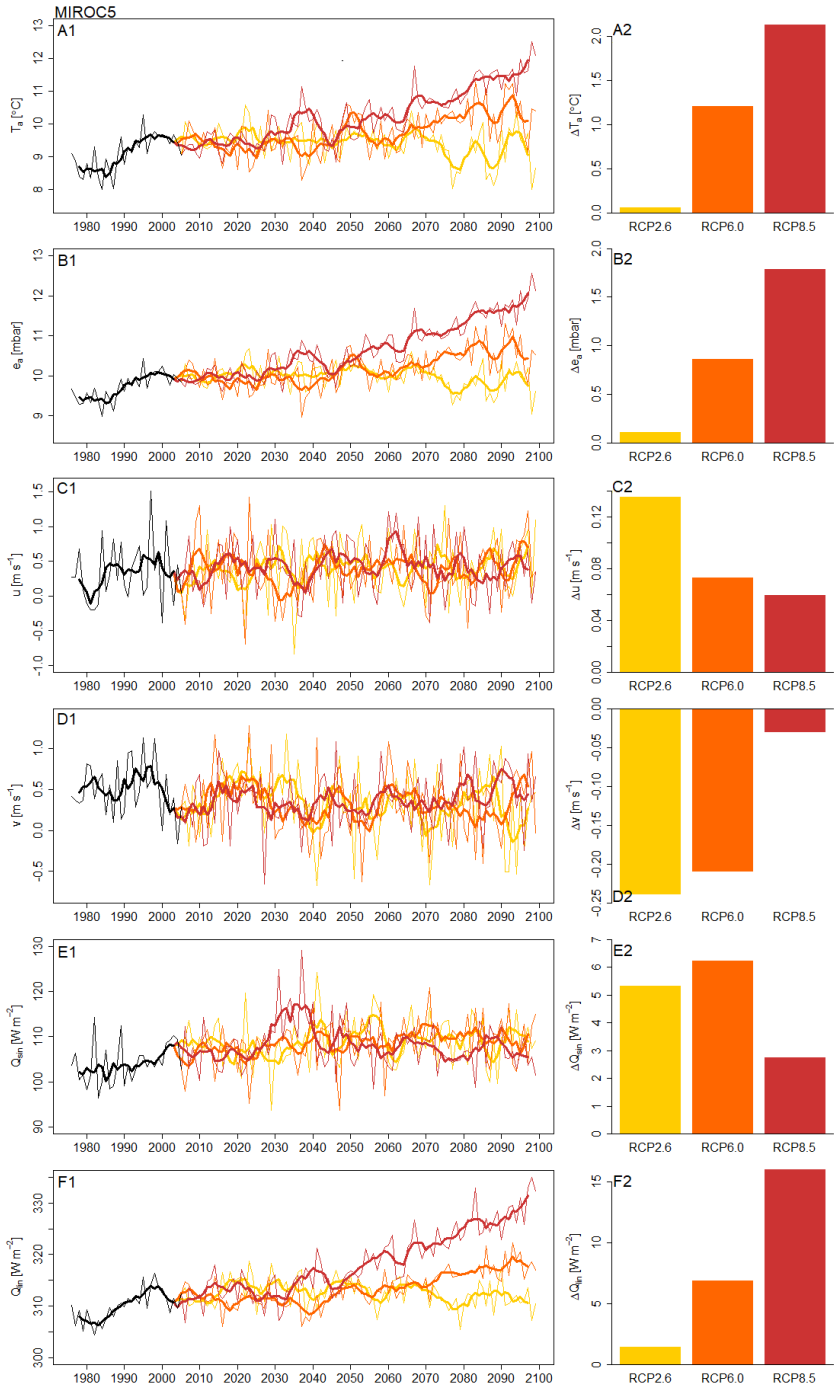

Fig. S4: Climate variables obtained from ISIMIP2b (https://www.isimip.org/), for the 0.5°grid cell overlying Lough Feeagh, and used to drive the lake model applied to Lough Feeagh. Variables are arranged from top to bottom: A: **Air temperature** T_a (°C), B: **Vapor pressure at 2m** e_a (mbar), C: **Wind speed towards the east** u (ms^{-1}), D: **Wind speed towards the north** v (ms^{-1}), E: **Surface incoming short-wave radiation** Q_{sin} ($W\ m^{-2}$), F: **Surface incoming long-wave radiation** Q_{lin} ($W\ m^{-2}$). Each row display the projections for 1976 to 2099 under historical (black) and future climate forcing RCP 2.6 (yellow), RCP 6.0 (orange) and RCP 8.5 (red). **1** Annual average of the variable with the thin line showing the yearly average projected using the **MIROC5** GCM and the thick line show the 5-year centred moving average**2** Average difference in each variable between RCPs (2070-2099) and historical period (1976-2005) for the **MIROC5** GCM**.**