

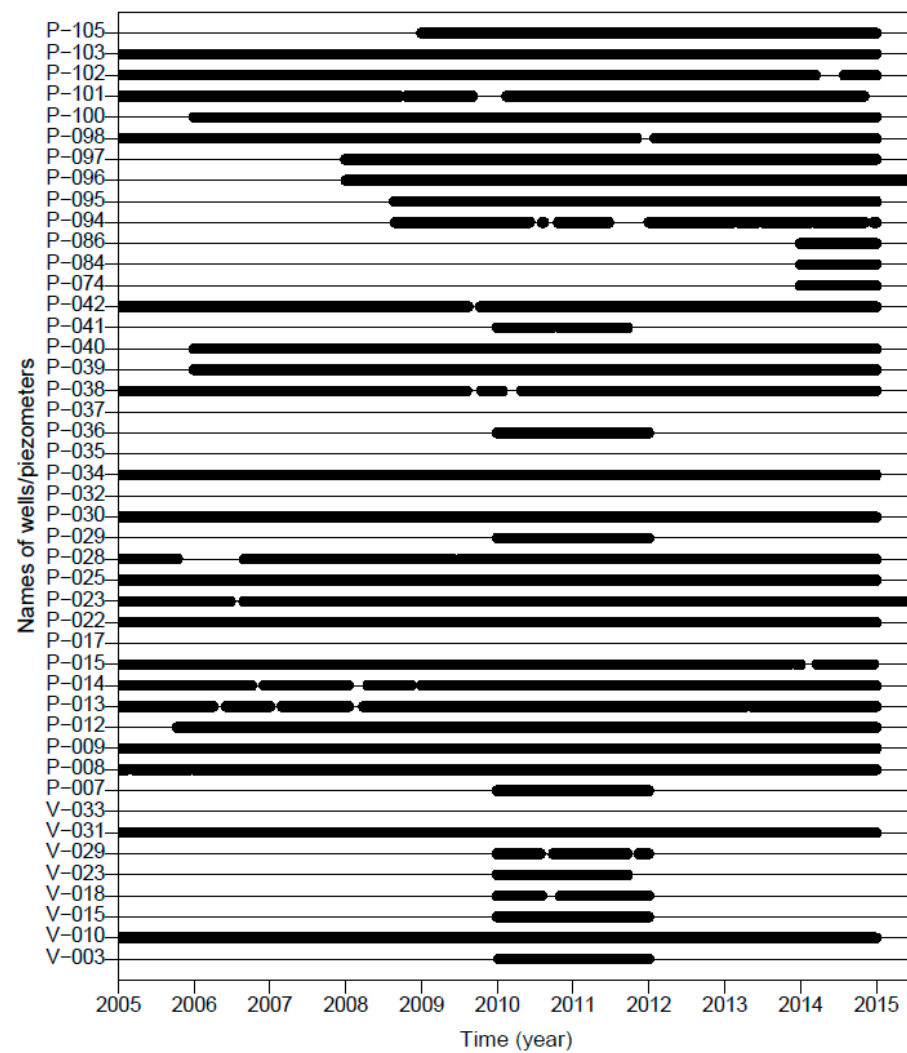


Figure 1. Distribution of observed hydraulic heads over time.

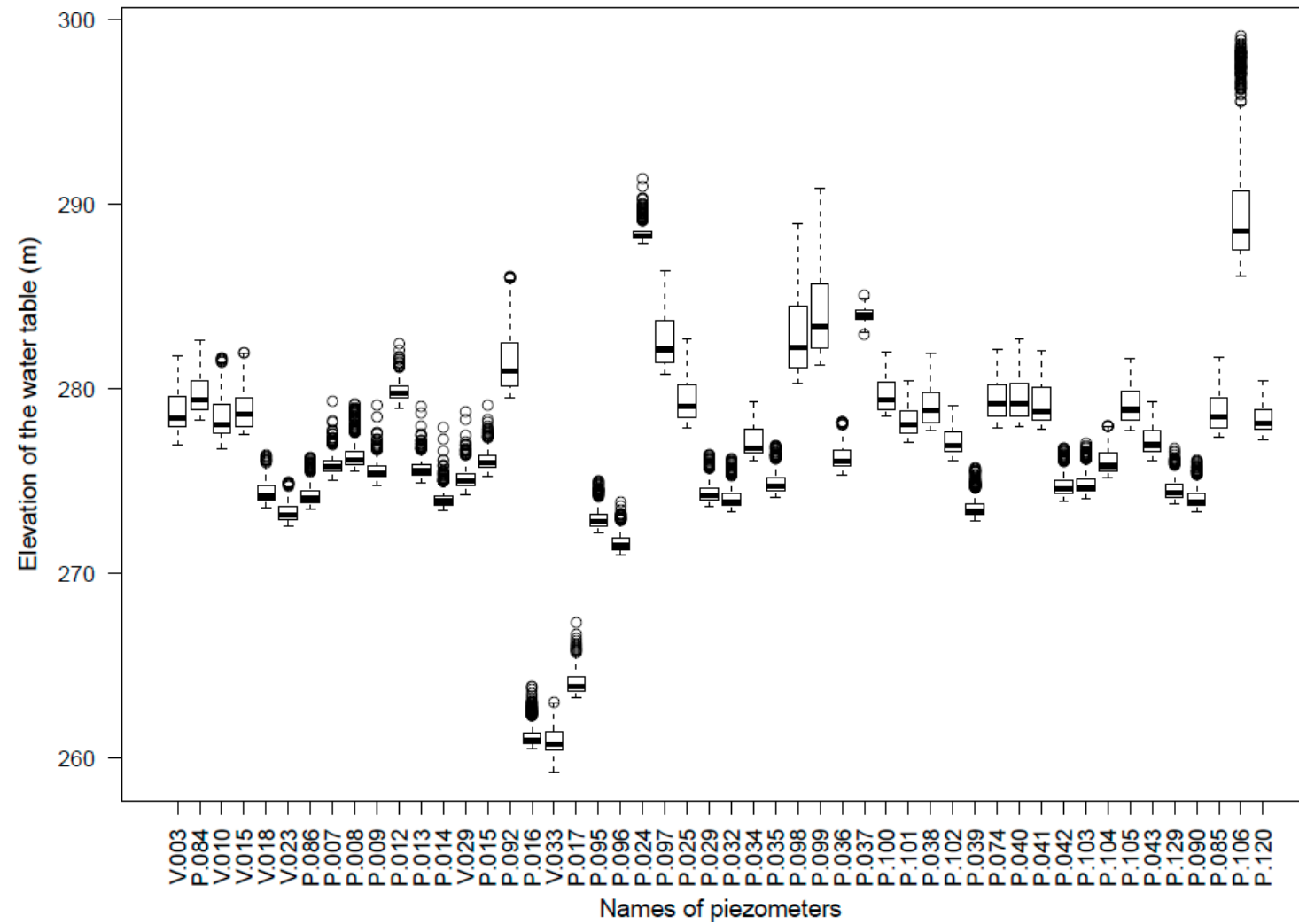


Figure 2. Box plot of hydraulic heads observed in 50 piezometers over the period 2010–2011.

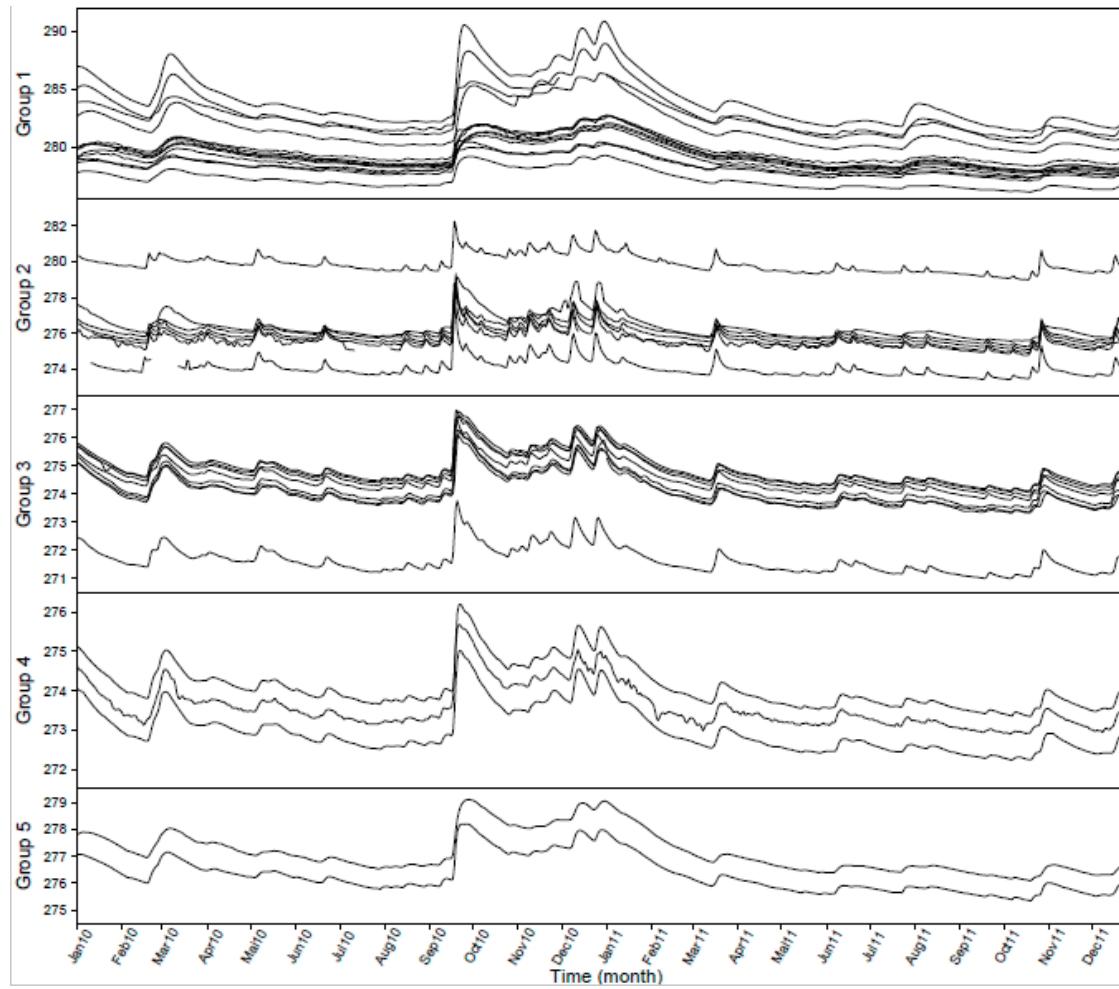


Figure 3. Hydraulic head patterns of all five groups observed over the period 2010–2011.

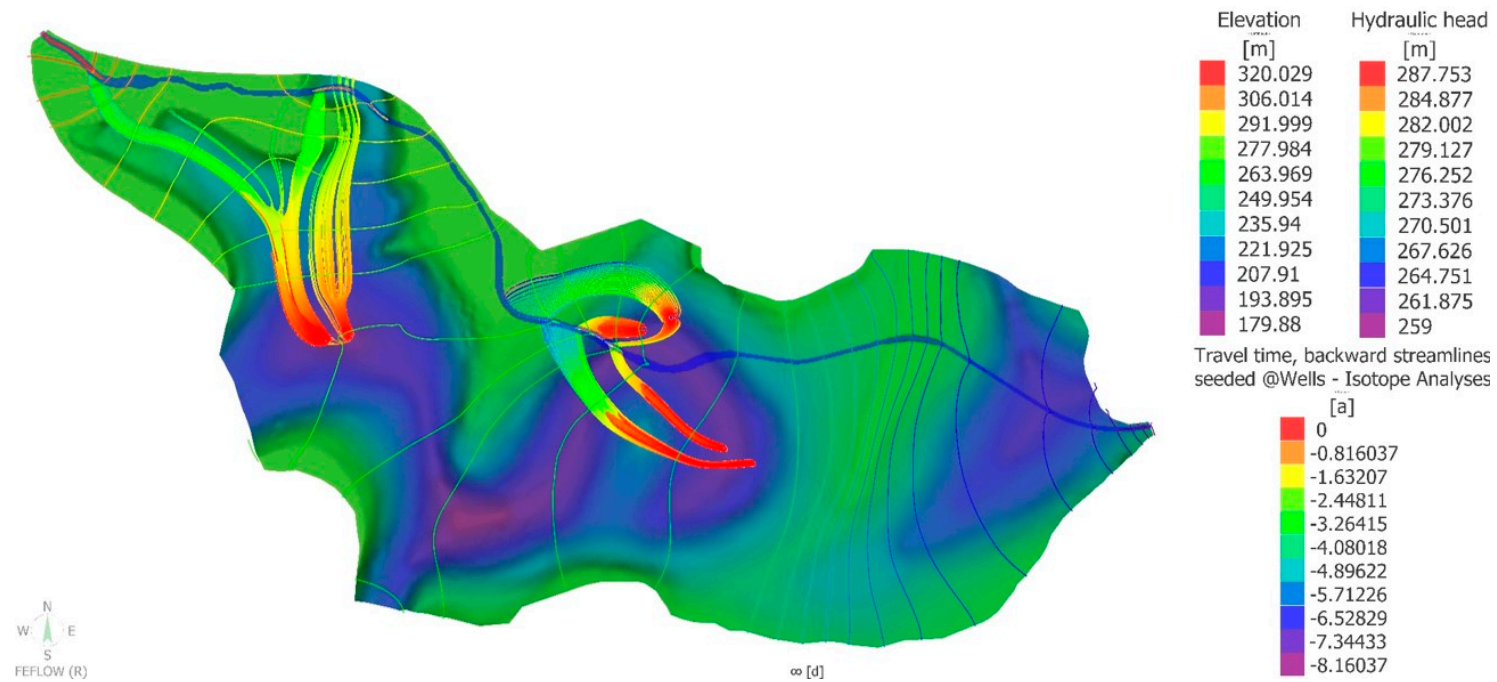


Figure 4. Travel time, backwards streamlines seeds (y), hydraulic head (m), and bedrock elevations (m).

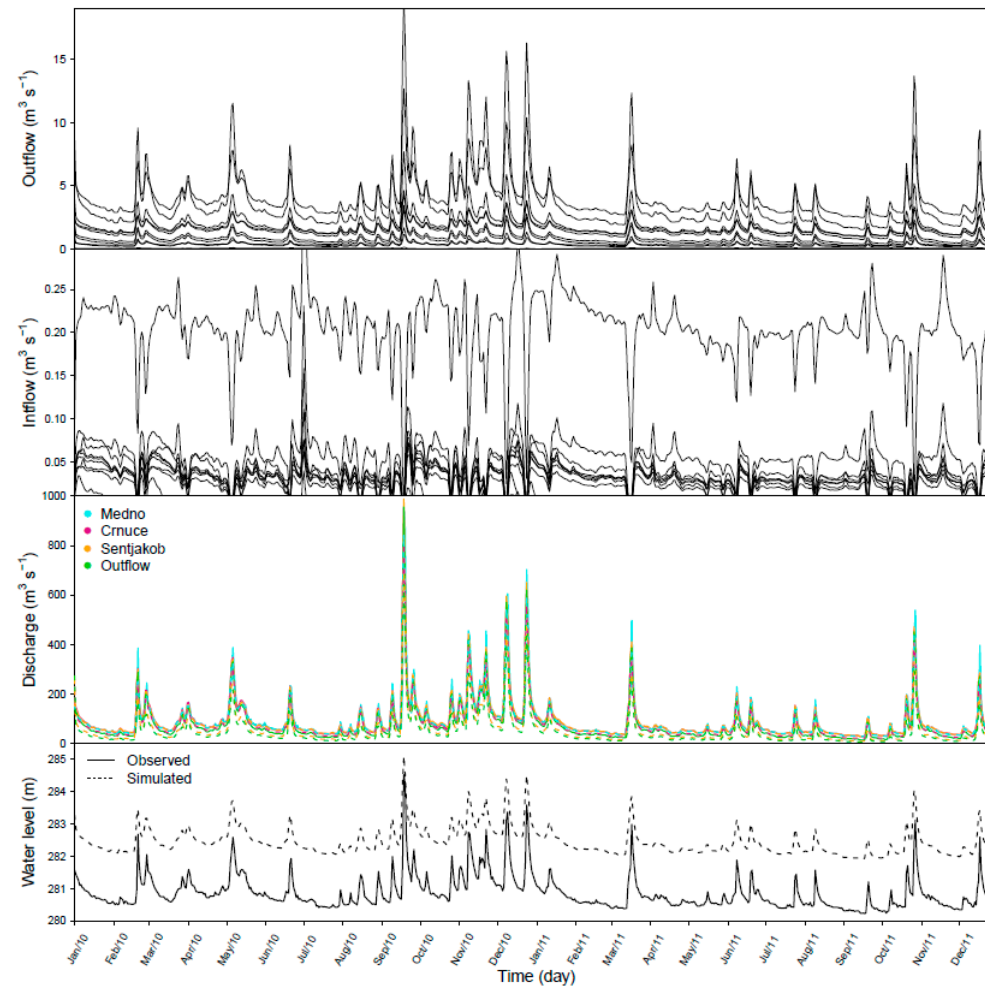


Figure 5. The upper two plots show outflows/inflows ($\text{m}^3 \text{s}^{-1}$) for random Sava River cross-sections simulated in MIKE 11 with ifmMIKE11 plug-in in FEFLOW Observed (full lines) and simulated (dash lines) discharges and water levels in the Sava River over the validated period 1 January 2010–31 December 2011.

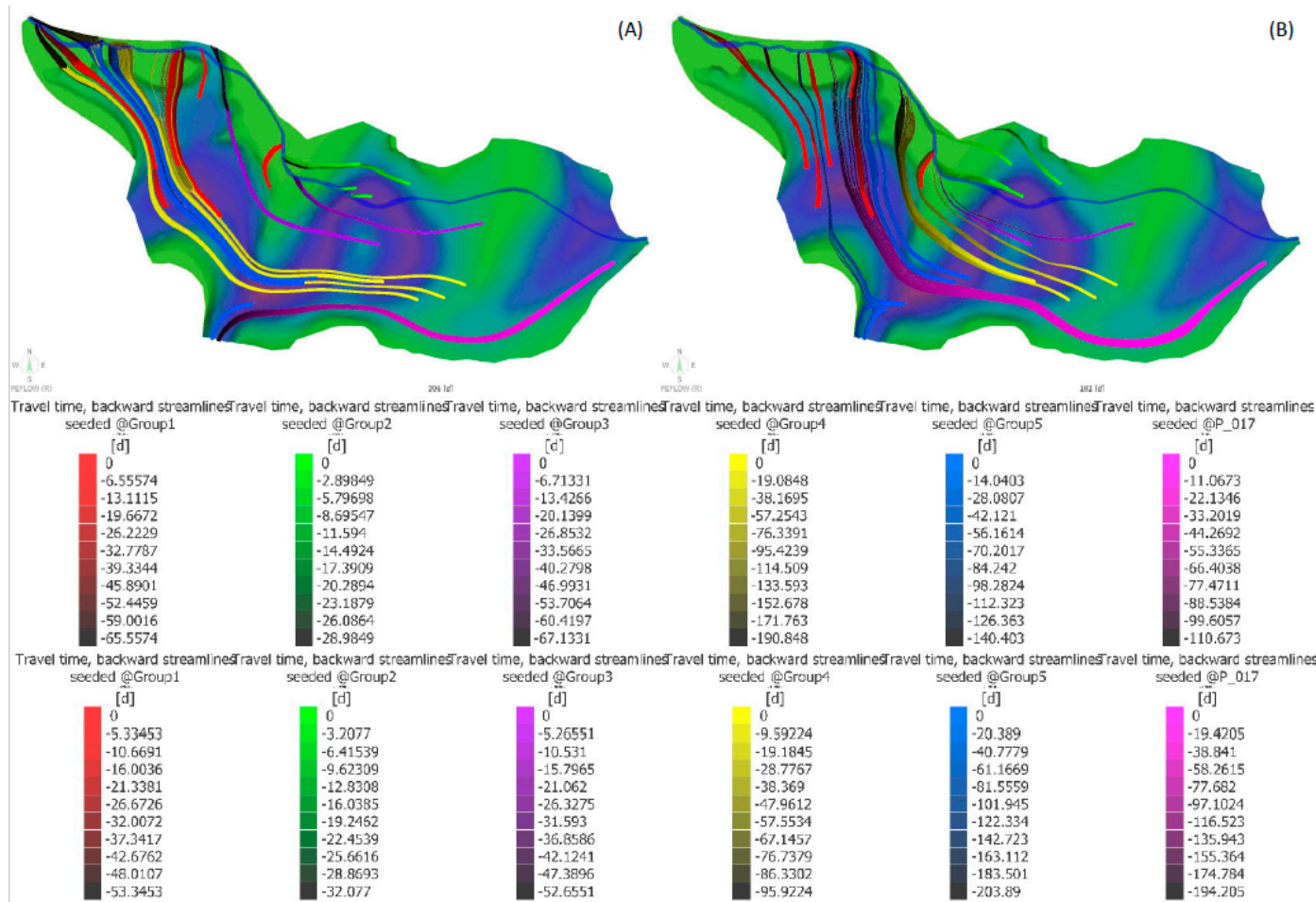


Figure 6. Groundwater flow under different conditions in the Sava River: (a) high discharge (left: upper legend) for 6 May 2010, (b) low discharge (right: lower legend) for 1 July 2010.

Table 1. Lithological composition of the suggested model layers (ML) [Error! Reference source not found.].

ML	Lithology
1	Gravel, sand, gravel with sand and silt
2	Conglomerate, clay, conglomerate with lens and clay
3	Gravel with clay, sand with clay, gravel with narrow lines of conglomerate, gravel with sand and silt
4	Conglomerate is predominate
5	Gravel with sand and silt

Table 2. Linear correlations (R^2) between observed and calculated real evapotranspiration and trend of the hydraulic head after the calibration (period: January 2010–December 2014).

Correlation		ET _{ref}	Elevation of the Hydraulic Head							
			P-084	P-013	P-086	P-032	P-035	P-036	P-096	P-102
ET _{real}		0.87	-	-	-	-	-	-	-	-
Hydraulic head	Σ	-	0.83	0.70	0.67	0.56	0.57	0.63	0.70	0.66
	2010	-	0.82	0.61	0.62	0.46	0.47	0.50	0.68	0.54
	2011	-	0.79	0.72	0.69	0.68	0.69	0.74	0.63	0.76
	2012	-	0.71	0.57	0.14	0.38	0.38	0.38	0.25	0.43
	2013	-	0.74	0.71	0.86	0.78	0.81	0.87	0.74	0.90
	2014	-	0.66	0.64	0.80	0.69	0.72	0.81	0.70	0.84

Table 3. Correlations (R^2) between observed and calculated real evapotranspiration and trend of the hydraulic head after the validation (period: January 2009–December 2009).

Validation		ET _{ref}	Elevation of the Hydraulic Heads							
			P-084	P-013	P-086	P-032	P-035	P-036	P-096	P-102
ET _{rel}		0.47	-	-	-	-	-	-	-	-
Hyd. head	2009	-	0.53	0.53	0.84	0.69	0.72	0.83	0.78	0.87

Table 4. Estimated components of a groundwater budget in the Ljubljansko polje ($\text{m}^3 \text{s}^{-1}$) [Error! Reference source not found.].

Recharge Components (m³ s ⁻¹)							
The Sava River				Percolation	Underflow		Comments
Medno-Brod	Brod-Roje	Roje-Ježica	Medno-Šentjakob		Trnovo	Dravlje	
0.06–0.13	0.20–2.36	1.35	1.62	-	-	-	Žlebnik (1968)
-	-	-	1.34–1.74	-	-	-	Žibrik (1969)
-	-	-	1.47–1.74	-	-	-	Pleskovič (1969)
-	-	-	2.5	-	-	-	Brilly (1989)
-	-	-	0.7–4.3	-	-	-	Brilly et al. (2002)
-	-	-	-	3.2	0.2	0.05	Andjelov et al. (2005)
2.3–8.1				3.2	0.25		Total
5.76–11.59							Sum

Discharge Components (m³ s⁻¹)					
Sava - downstream of Šentjakob	Pumping	Direct outflow	Underflow	ET	Comments
3.26	-	-	(unreliable data)	-	Brilly (1989)
1.3–2	-	-		-	Brilly (2002)
-	0.92	0.3		1.5	Andjelov et al. (2005)
4.02–5.98					Total

Table 5. Water balance after calibration and validation of the steady-state GW flow model for data observed over the period 2010–2011 and 2013–2014, respectively, Water balance after calibration for 2010–2011 data and included simulation of MRT (after step 2).

Recharge Components (m³ s⁻¹)											
The Sava River				Percolation	Underflow						Comments
Medno-Brod	Brod-Roje	Medno-Šentjakob	Downstream of Šentjakob		Trnovo	Dravljje	Roje	Črnuče	Stanežiče	Outflow	
0.096	0.183	1.102	1.772	0.500	0.316	0.117	1.141	0.035	0.240	2.791	Calibration
3.153					4.640						Sum
0.098	0.001	1.116	1.608	0.609	0.179	0.052	1.302	0.041	0.163	2.868	Validation

The Sava River		Pumping	Underflow					Comments
Upstream of Šentjakob	Downstream of Šentjakob		Dravlje	Trnovo	Roje	Stanežiče	Outflow	
0.287	0.117	1.217	0.234	-	0.219	0.010	3.809	2 November 2010
0.404			4.272					Sum
0.956	0.388	1.476	0.818	-	1.060	0.314	6.015	1 July 2010
1.344			8.207					Sum
5.893–11.260								Total
0.692–2.082								Imbalance