Tab. 6.5: Sampling in the Vipava springs during the forth tracing experiment in 1995.

SAMPLING POINT	DATE	SAMPLING METHOD
4/2, 4/5, 4/7	25.10.95 - 21.12.95	4x per day
4/2, 4/5, 4/7	22.12.95 - 01.03.96	3x per day
4/2, 4/5, 4/7	02.03.96 - 02.06.96	1x per day
4/5	28.10.95 - 30.10.95	automatic sampler out of function
4/2, 4/7	29.10.95 - 03.11.95	automatic sampler out of function
4/5, 4/7	06.12.95 -11.12.95	automatic sampler out of function

6.2. DESCRIPTION OF THE HYDROLOGICAL SITUATIONS DURING THE TRACING EXPERIMENTS

(N. TRIŠIČ & J. POLAJNAR)

6.2.1. The Hubelj Spring in the Time of the First Tracing Experiment (October 14 to December 31, 1993)

The values of discharges of the Hubelj were above average in the time of tracing experiment, if compared to the average over many years for the same period (October, November, December 1961-90). The mean discharge was by one third higher in the time of the tracing experiment than the mean discharge of the period. The highest discharge in the time of tracing experiment was higher by 2-times than the mean of extremes of the maximum high discharges in the period, and the lowest discharge was equal to the mean of extremes of the minimum low discharges in the period.

At the injection of the tracer on October 14, 1993, the initial discharge of 2.786 m^3/sec was only one half of the average mean discharge in the time of tracing experiment. On October 22, the high water wave followed with the highest discharge of 29.13 m^3/sec, which is more than the mean of extremes of the maximum high discharges in the period. By the end of October, the discharge of the Hubelj decreased below the value of discharge at the time of injection of the tracer, and on November 9, the second minor high water wave occurred with the highest discharge which was lower than the mean of extremes of the maximum high discharges in the period.

The discharge kept decreasing by December 6, when the lowest value was registered in the time of tracing experiment and was equal to the mean of extremes of the minimum low discharges in the period. In mid-December, the last high water wave occurred, with the highest discharge of 34.59 m^3/sec, which is almost by 2-times higher than the mean of extremes of the maximum high discharges in the period. The discharge of the Hubelj decreased by the end of December and was approx. equal to the discharge at the time of injection of the tracer (Fig. 6.2).

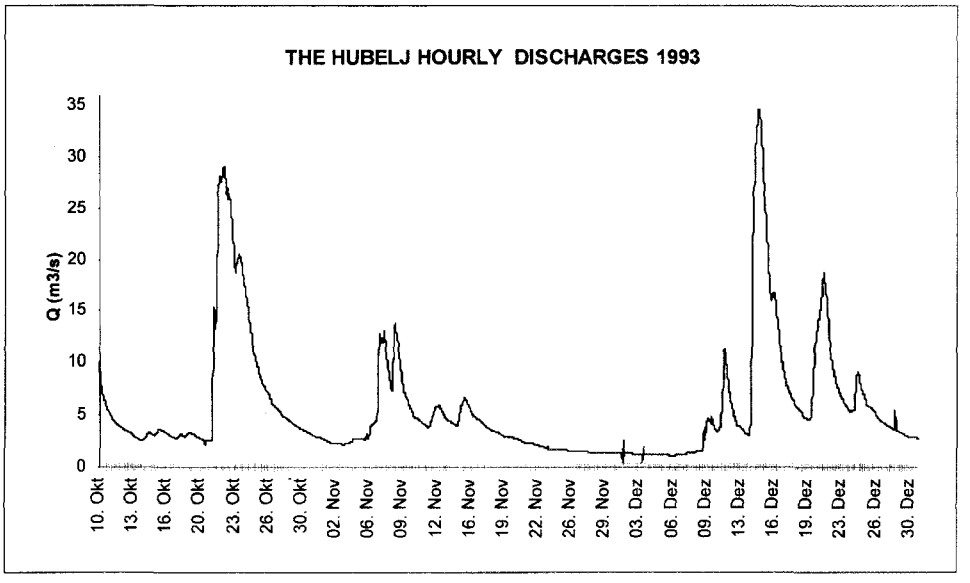

Fig. 6.2: Comparison of the Hubelj discharge behaviour during the second tracing experiment in April 1994 with the characteristic discharges (gauging profile Hubelj - Ajdovščina). Measured Hubelj discharge at the time of injection in Belo Brezno(October 14, 1993, 13:00) was Q.= 2.786 m^3/s. The following discharge data (Q in m^3/s) was evaluated:

	Q_{min}	Q_{mean}	Q_{max}	
Oct 14 to Dec 31, 1993	*1.085*	*5.73*	*34.59*	
Oct 14 to Nov 13, 1993	*2.11*	*6.77*	*29.14*	
long-time (1961-1990)	*0.382*	*3.03*	*59.50*	
	Oct	*Nov*	*Dec*	*average*
Q_{mean} *1993*	*10.1*	*7.64*	*5.11*	*7.6*
Q_{mean} *1961-1990*	*3.58*	*4.19*	*3.51*	*3.76*

6.2.2. The Hubelj Spring in the Time of the Second Tracing Experiment (April 16 to July 31, 1994)

The values of discharges of the Hubelj were below average in the time of tracing experiment, if compared to the average over many years for the same period (April, May, June, July 1961-90).

The mean discharge amounted to 2.08 m^3/sec in the time of tracing experiment and was by one third lower than the mean discharge of the period.

The lowest discharge of 0.29 m^3/sec was only one quarter of the mean of extremes of the minimum low discharges in the period, and the highest discharge of 31.27 m^3/sec exceeded by 2-times and a half the mean of extremes of the maximum high discharges in the period.

At the injection of the tracer on April 16, 1994, the initial discharge of 5.409 m^3/sec was higher than the mean discharge of the period and it was higher by 5-times than the mean discharge in the time of tracing experiment.

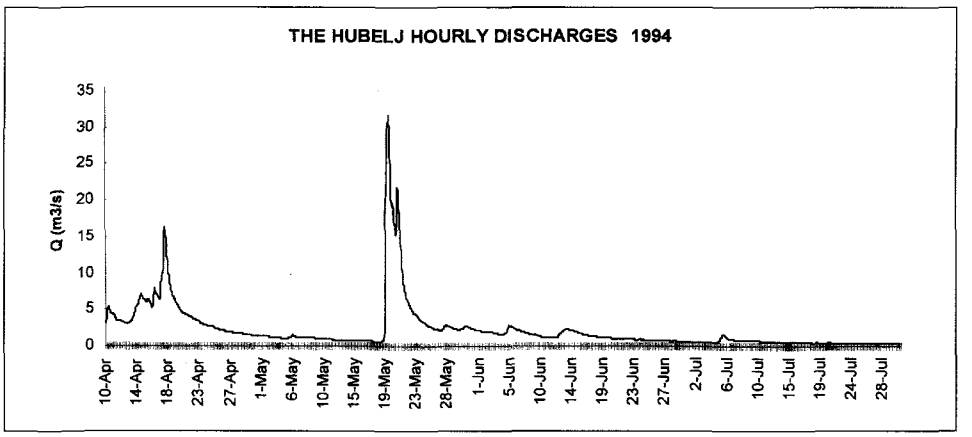

Fig. 6.3: Comparison of the Hubelj discharge behaviour during the second tracing experiment in April 1994 with the characteristic discharges (gauging profile Hubelj - Ajdovščina). Measured Hubelj discharge at the time of injection in Belo Brezno(April 16, 1994, 13:00) was Q.= 0.514 m^3/s: the following discharge data was evaluated:

	Q_{min}	Q_{mean}	Q_{max}
Apr 16 to May 12, 1994	*0.86*	*2.80*	*16.28*
Apr 16 to Jul 31, 1994	*0.29*	*2.09*	*31.65*
long-time (1961-1990)	*0.38*	*3.03*	*59.50*

	Apr	*May*	*Jun*	*Jul*	*average*
Q_{mean} *1994*	*4.17*	*3.17*	*1.37*	*0.54*	*2.31*
Q_{mean} *1961-1990*	*4.91*	*3.20*	*2.70*	*1.52*	*3.08*

In the days that followed the injection, the discharge increased to 16.27 m^3/sec and exceeded the mean of extremes of the maximum high discharges in the period.

By May 18, the discharge of the Hubelj decreased to 0.67 m^3/sec, which is only a half of the mean of extremes of the minimum low discharges in the period, and immediately after, on May 20, followed the high-water wave with the highest discharge of 31.64 m^3/sec which is higher by 2-times and a half than the mean of extremes of the maximum high discharges in the period. By July 31, the discharge of the Hubelj decreased to 0.29 m^3/sec, which is only one quarter of the mean of extremes of the minimum low discharges in the period (Fig. 6.3).

6.2.3. The Hubelj Spring in the Time of the Third Tracing Experiment (August 1 to December 31, 1995)

The values of discharges of the Hubelj were above average in the time of tracing experiment, if compared to the average over many years for the same period (August, September, October, November, December 1961-1990).

The mean discharge amounted to 3.24 m^3/sec in the time of tracing experiment and was higher by one tenth than the mean discharge of the period.

The lowest discharge of 0.24 m^3/sec was only one third of the mean of extremes of the minimum low discharges in the period, and the highest discharge of 40.74 m^3/sec exceeded by 3-times the mean of extremes of the maximum high discharges in the period.

At the injection of the tracer on August 1, 1995, the initial discharge of 0.514 m^3/sec was lower than the mean discharge of the period and it was lower by 6-times than the mean discharge in the time of tracing experiment. Towards the end of August, the discharge increased to 17.47 m^3/sec. This is a typical discharge in October as to the mean of extremes of the maximum high discharges in the period. In September, the discharge increased five times above the average value of the mean discharge in the time of tracing experiment, and by the end of this month, it decreased below this value. By mid-November, discharges decreased below the mean of extremes of the minimum low discharges in the period, and on November 18, it increased intensely and reached the value of 40.47 m^3/sec which is the highest value in the time of tracing experiment. The discharge decreased again by mid-December, and in the second half of the month, it increased two times above the mean of extremes of the maximum high discharge in the period (Fig. 6.4).

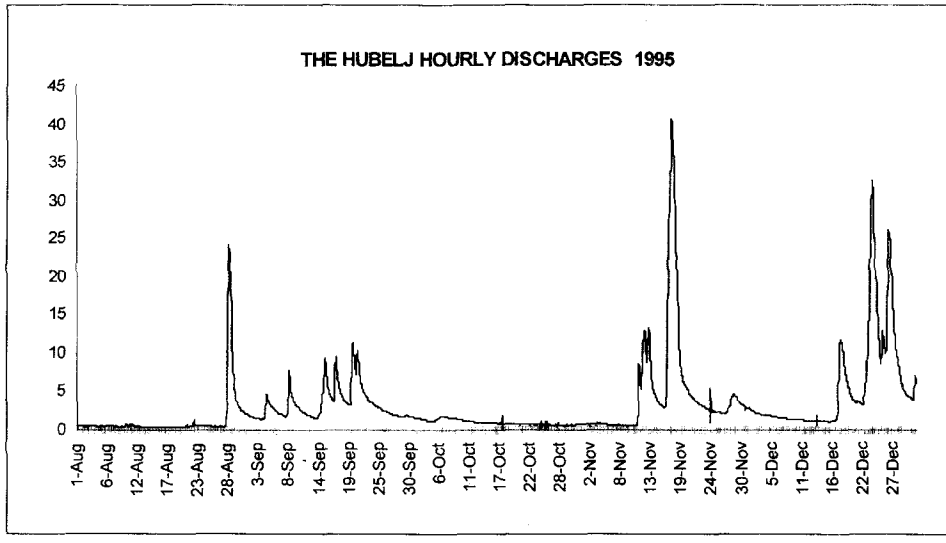

Fig. 6.4: Comparison of the Hubelj discharge behaviour during the third tracing experiment in August 1995 with the characteristic discharges (gauging profile Hubelj - Ajdovščina). Measured discharge at the time of injection in Belo Brezno (Aug 1, 1995 11:37) was Q.= 0.514 m³/s. The following discharge data (Q in m³/s) was evaluated:

	Q_{min}	Q_{mean}	Q_{max}
Aug 1 to Aug 28, 1995	*0.30*	*0.60*	*17.47*
Aug 1 to Dec 31, 1995	*0.24*	*3.24*	*40.74*

	Aug	*Sep*	*Oct*	*Nov*	*Dec*	*average*
Q_{mean} *1995*	*1.24*	*3.44*	*1.01*	*4.80*	*5.43*	*3.18*
Q_{mean} *1961-1990*	*1.32*	*2.18*	*3.58*	*4.19*	*3.51*	*2.96*

6.2.4. The Vipava Spring in the Time of the Fourth Tracing Experiment (October 26 to December 31, 1995)

The values of discharges of the Vipava river at gauging station. Vipava were little lower in the time of tracing experiment, if compared to the average over many years for the same period (October, November, December 1961-1990).

The mean discharge amounted to 9.99 m³/sec in the time of tracing experiment and was higher by 1.95 m³/sec than the mean discharge of the period.

At the injection of the tracer on October 26, 1995, the initial discharge of 1.702 m^3/sec was lower than the mean discharge of the period and it was lower by 6-times than the mean discharge in the time of tracing experiment. On November 17, it increased intensely and reached the value of 52.0 m^3/sec which is the second highest value in the time of tracing experiment. The discharge decreased again by mid-December, and in the second half of the month, it increased two times. On December 24, reached the value of 61.60 m^3/sec which is the highest value in the time of tracing experiment (Fig. 6.5).

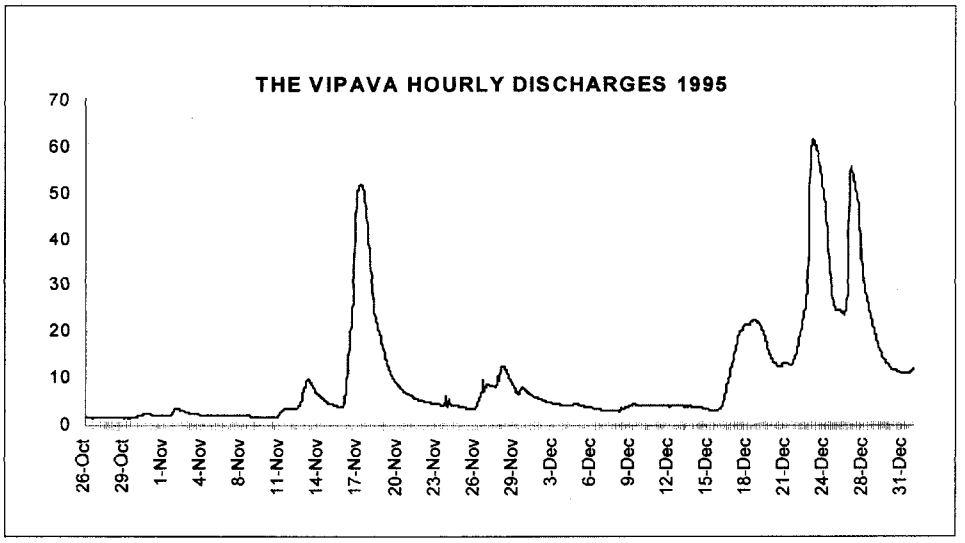

Fig. 6.5: Comparison of the Vipava discharge behaviour during the forth tracing experiment in August 1995 with the characteristic discharges (gauging profile Vipava - Vipava). Measured discharge at the time of injection in Slapenski ledenik (Nov 26, 1995, 12:00) was Q.= 1.702 m^3/s. The following discharge data (Q in m^3/s) were evaluated:

	Q_{min}	Q_{mean}	Q_{max}	
Oct 26 to Dec 31, 1995	*1.51*	*9.99*	*61.60*	
	Oct	*Nov*	*Dec*	*average*
Q_{mean} *1995*	*2.22*	*7.46*	*13.8*	*7.83*
Q_{mean} *1961-1990*	*6.85*	*9.13*	*8.13*	*8.04*