PRECIPITATION IMPACT ON PHREATIC LEVEL OF SOIL IN TIMIS COUNTY

IMPACTUL PRECIPITAȚIILOR ASUPRA NIVELULUI FREATIC AL SOLULUI ÎN JUDEȚUL TIMIŞ

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Abstract: *In this paper we studied the precipitation impact on underground water level, on Timis County. Underground waters were graphic analyzed from different forage by county and compared with the precipitation fallen level.*

Rezumat: *În această lucrare este studiat impactul precipitațiilor asupra nivelului apei freatice, din Județul Timiş. Au fost analizate grafic nivelurile freatice din diverse foraje din județ şi comparate cu nivelul precipitațiilor căzute.*

Key words**:** *underground water level, precipitation, underground water, drought, irrigation system*
Cuvinte cheie: *nivele freatice, precipitații, apă subterană, secetă, sisteme de irigații*

INTODUCTION

The aim of this study is to show the influence of precipitation on the soil underground water level. The paper tries to show an evolution of the underground water level on the last 40 years in the Timis County. By decreasing the underground water level the soil is affected by drought.

The underground waters of Banat plane are stored in permeable aluvo – proluvial deposits and are presented as a continuous horizon. Some characteristics of underground waters in Timis County are:

- They are closed from the surface in the deep and middle area of the subsidence plane,
- The hydrostatic water level is very instable, which in time can rise until the surface, producing the process of secondary salinesation, glaisation, and in swamping the soil from low depression
- Underground waters are in general mineralised, containing important quantities of chloride, sulphate, carbonate, bicarbonate
- The surfaces occupied at deferent level by underground waters are mostly without continuity;

MATERIALS AND METHOD

The research made until 1982 by A.Ungureanu, shows that the most height level of underground water is in March – April at 72% of drills and the deepest in November – December at 84% of drills. In multiannual regime, beginning with 1967 is recording an accumulation cycle until in 1970 when is reaching an absolute maxims, then a discharge cycle of underground water until in 1974 when are recorded absolute limits. (1972 in Timis field, 1976 in rivers meadows).

In the Banat field the maximum multiannual average amplitude have values between 25 and 450 cm. The temperature of underground water follows closely the variation of climatic factors, the annual average being 12 – 12.5^{o}C. The underground water from Banat field is little alkaline having a pH between 7.1 – 7.8. Total mineralization in Banat field is variable between 300 – 1500 mg/lt.

Table 1

Average monthly and annually precipitation in Banat

Nr. crt	Station	Altitud. (m)	Month												Season		Year
			I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	Cold	Warm	
1	Beba Veche	80	31.6	29.4	29.4	42.5	62.7	76.8	56.7	52.3	36.0	38.2	47.4	42.0	218.0	327.0	545.0
2	Jimbolia	82	36.3	36.2	34.5	45.5	63.9	67.8	51.0	52.5	44.6	52.8	40.4	43.5	243.7	325.3	569.0
3	Sânnicolau Mare	90	29.1	30.5	32.9	39.9	61.7	69.5	53.1	48.6	41.4	44.8	46.6	38.2	222.1	314.2	536.3
4	Timişoara	91	40.9	40.2	41.6	50.0	66.7	81.1	59.9	52.3	47.1	54.8	48.6	47.8	273.9	357.1	631.0
5	Denta	93	37.1	37	39.9	48.3	74.2	73.1	54.2	53.9	43.7	52.0	45.5	43.1	254.6	347.4	602.0
6	Făget	154	43.9	39.8	51.3	59.6	83.5	98.1	68.9	64.3	51,9	62.2	57.4	53.1	307.7	426.3	734.0
7	Caransebeş	201	46.5	44.1	48.4	64.5	86.0	91.6	74.3	71.6	53,7	58.0	49.7	48.8	295.5	441.7	737.2
8	Oravița	309	60.9	55.5	55.5	74.3	102.9	110.1	85.0	82.3	69.8	72.5	62.7	63.5	370.6	524.4	895.0

The dates studied at hydrologic drills trays to cover all the climatic and pedoclimatic area of Timis County, which occupies the most part of Banat field: Banloc, Cenei, Timisoara, and Berini.

RESULTS AND DISCUSSION

In the paper was study the underground water level on a 26 years period between - 1972 – 1997, excepting Cenei drill on a 23 years period between 1974 and 1997.

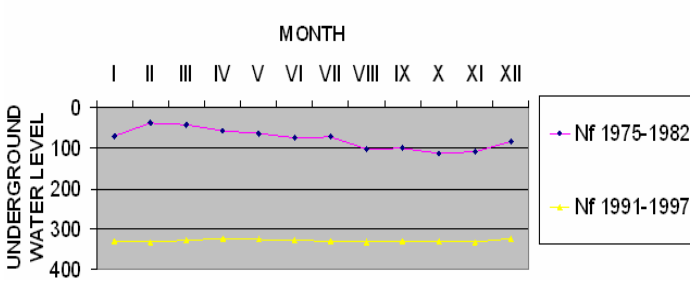

Figure1. Average monthly underground water level at Banloc drill 1972-1997, (Comparison 1975-1982 with 1991-1997)

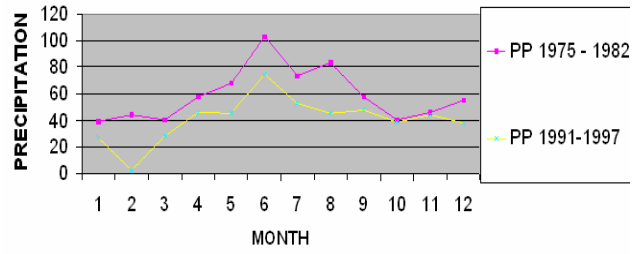

Figure2. Average monthly precipitation at Banloc drill 1972-1997, (Comparison 1975-1982 with 1991-1997)

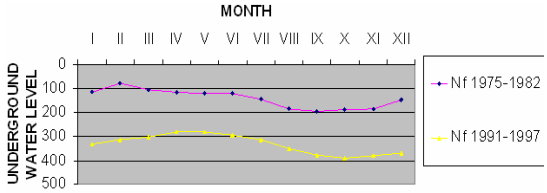

Figure3. Average monthly underground water level at Berini drill 1972-1997, (Comparison 1975-1982 with 1991-1997)

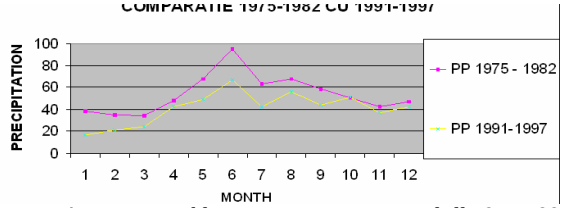

Figure4. Average monthly precipitation at Berini drill 1972-1997, (Comparison 1975-1982 with 1991-1997)

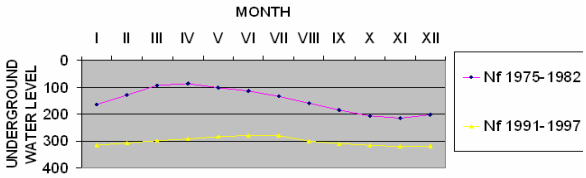

Figure5. Average monthly underground water level at Cenei drill 1974-1997, (Comparison 1975-1982 with 1991-1997)

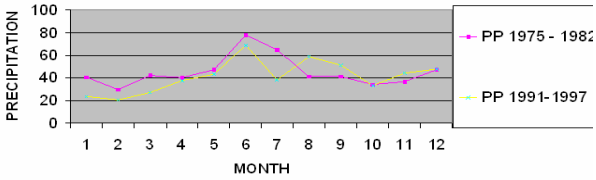

Figure6. Average monthly precipitation at Cenei drill 1974-1997, (Comparison 1975-1982 with 1991-1997)

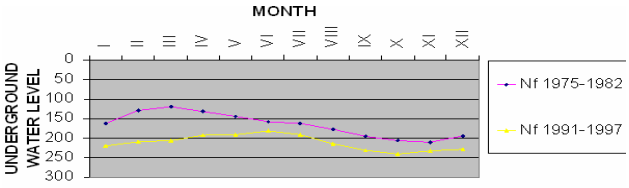

Figure7. Average monthly underground water level at Timisoara drill 1974-1997, (Comparison 1975-1982 with 1991-1997)

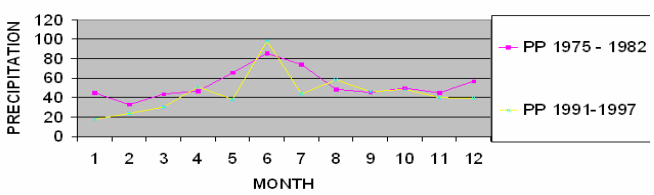

Figure6. Average monthly precipitation at Timisoara drill 1974-1997, (Comparison 1975-1982 with 1991-1997)

The period with the deepest underground water level is between the years 1975-1982 and who is in concordance with the most height precipitation level period. In this period the slowest values was recorded until 39 cm at Banloc in the February – April interval and the highest values until 216 cm at Cenei in the September – November interval, resulting an amplitude at 0.74 – 1.3 m in the deep area and 0,8 m in the tabular field.

In the drought period 1989-1995 was recorded the most low levels of underground water for all the drills. The most low and the most height level was recorded different: April and July, respectively October – November, the amplitude being at 0.1 – 0.6 m in the low field area and at 1.1 m in the tabular field area.

CONCLUSIONS

Experimental research showed that the permanent underground water level is constant at deep level in the months October – November, and at small deep different: February – April in the medium and drought years and April – June in the rainy years.

In the fine soil texture is manifested with height frequency the level 0-1 m in the March – April period and especially in the rainy years.

Because of the geographic position, of the relief and of the air masses the atmospheric precipitation is height from north – west to south – east, but can be observed that in the last period in the north – west side of field is register a decreasing of precipitation level, associated with the reducing the underground water level which is specific to the steppisation process.

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