

DIFFERENCES IN THE LATITUDE VALUES OBTAINED
BY DIFFERENT OBSERVERS AT THE ASTRONOMICAL OBSERVATORY
IN BELGRADE

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Summary: The author gives the first results of the investigation of the differences in the latitude values obtained by different observers at the Astronomical Observatory in Belgrade. The purpose is to establish the size of personal errors.

At the Astronomical Observatory in Belgrade the variations of the latitude, according to the new programme based on the Talcot's method, (Shevarlich, Teleki, 1959) have been observed since 1960.0. Analyzing the observation material gathered within the period from 1960.0—1974.0, we established the differences between the latitudes obtained by different observers. The differences between R. Grujić (RG) and M. Djokić (MD), who carried out the observations in the whole indicated period, were especially analyzed. The values $\Delta(\Delta\varphi)_{RG, MD} = \Delta\varphi_{RG} - \Delta\varphi_{MD}$, in which case $\Delta\varphi_{RG}$ are differences of latitude obtained by observer RG and the latitude obtained from the curve of the latitude variation in Belgrade, based on international data, and $\Delta\varphi_{MD}$ is the corresponding difference for the observer MD.

The Table 1. gives these differences for every subgroup of this programme as the mean values MV from all the observations within this period. In Table 2. we give this data grouped according to the years. The values are given in 0'.001.

Table 1.

Subgroupes	Ia	Ib	IIa	IIb	IIIa	IIIb	IVa	IVb	Va	Vb	VIa	VIb	MV
$\Delta(\Delta\varphi)_{RG, MD}$	-17	-23	+12	-83	-5	-12	+36	-46	+1	+2	-23	-52	-18

Table 2.

year	1960 +													MV	
	0	1	2	3	4	5	6	7	8	9	10	11	12		13
$\Delta(\Delta\varphi)_{RG, MD}$	-67	-59	-29	-81	-57	+68	+33	+36	+21	+1	-45	-123	+32	+20	-18

As it can be seen from this Tables the observer RG obtains mostly smaller values of latitude then the observer MD: the mean difference is about $-0'.02$.

We consider the established differences not small and therefore they require a detailed investigation. It is necessary to make a difference between the values originating from the observers themselves and those caused by other factors. In order to answer these questions we started with the analysis of our observing material in details. In 1974 we introduced even certain modifications within the observing organization. At that time, namely, the observation was carried out so that both observers were engaged each observing night together. The one observer observed the evening group while the other one observed the morning group. The next time an interchange of observers took place. Table 3. gives $\Delta(\Delta\varphi)$ RG, MD for 1974 resulting from this way of observing. As it can be seen, the differences, according to their absolute values, are the same as the values in Table 1 and 2, but the sign is inverse. This is not unusual because such examples were experienced in the earlier years, but in these new obtained values (Table 3), the effect of meteorological factors differs from the earlier differences.

Table 3.

The observed groups	$\Delta(\Delta\varphi)$ RG,MD
II, III	+'.001
"	+.066
"	+.023
III, IV	+.021
"	+.016
IV, V	+.008
V, VI	+.058
"	+.012
I, II	+.023

Mean values $+.025 \pm .007$

In the course of analysis we have noticed that the inclination of the movable thread of the micrometer screw has significantly changed at the beginning 1965. This was interesting because, as it can be seen in Table 2., the sign of values of $\Delta(\Delta\varphi)$ RG, MD has changed during the same year. The question is whether there is a real relation between the two phenomena.

The above data and other ones show that the investigation of differences $\Delta(\Delta\varphi)$ RG, MD is of great interest. The examinations at other observatories, which are not numerous, show that this is necessary to be done. Our aim is to establish the real value of the effect of the observers themselves and, if we succeed, we want to clean our observational material from such factors.

R E F E R E N C E S

Shevarlich, B., Teleki, G., 1959, Bull. Obs. Astr. Belgrade, XXIV, 3—4, 19.