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SOIL MANTLE ORGANIZATION AND MAPPING PRECISION ANALYSIS OF AN EXAMPLE

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The precision of soil maps is discussed with reference to the soil mantle organization.

The traditional approach of the precision of a soil map based on an elememtary relation between the number of observations and the scale of the map is at first criticized.

It is then assume that the knowledge of an area progresses step by step (and not regularly) when the number of observations increases (ex. fig. 1) :

— each step corresponds to a level of organization of the soil mantle,

— between two steps the same elementary elements are mapped (mapping units !).

Consequently the frequency of observations to be made is completely dependant on the size of the elementary elements to be mapped.

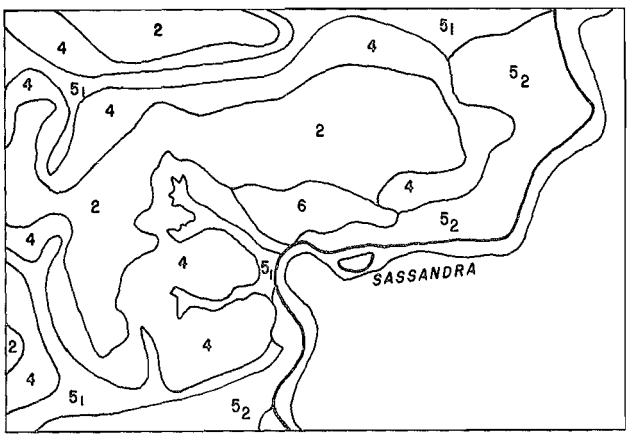

Figure 6 : 1st phase map

The study of an actual case including 3 phases of mapping, is then done :

— a first phase with 150 observations for 30 000 ha. (fig. 6),

— a second phase with 600 observations for 23 000 ha (fig. 7),,

— a third phase with 1 observation/1 ha on 13 000 selected ha only (fig. 9).

The 1st and 2nd phases have given more or less the same maps corresponding to the same level of organization though the density of observations has been multiplicated by 4.

A density of observations of 1obs/ha. — 200 times more than for the 1st. phase — has been necessary for the mapping of a more detailed level of organization during the 3rd. phase.

The possibility of mapping characteristics such pH and gravels percentage is discussed using for that the shape of the semi-variogram in the vicinity of zero — the

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semi-variograms have been calculated for two sample areas from the 3rd phase —. It appears that the density of 1 obs/ha is not sufficient for such thematic mapping in that case.

Finally this study has pointed out that it is possible to analyse the precision of a soil map with reference to the soil mantle organization in two cases :

— if several maps of the same area have been done ; by comparison of a given map with a more detailed one ;

— if a thematic survey is done concerning a quantitative property of the by examination of the semi-variogram.

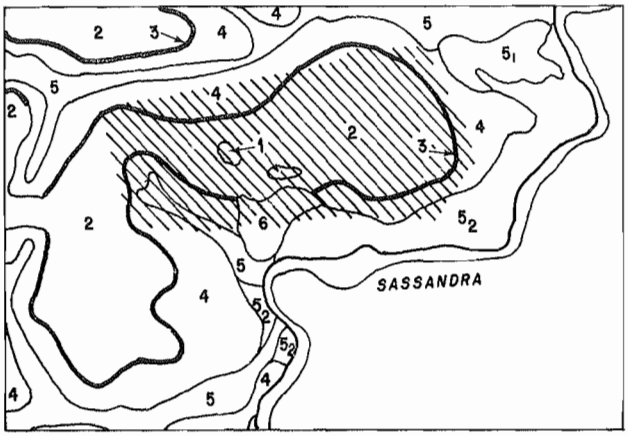

Figure 7 : 2nd phase map

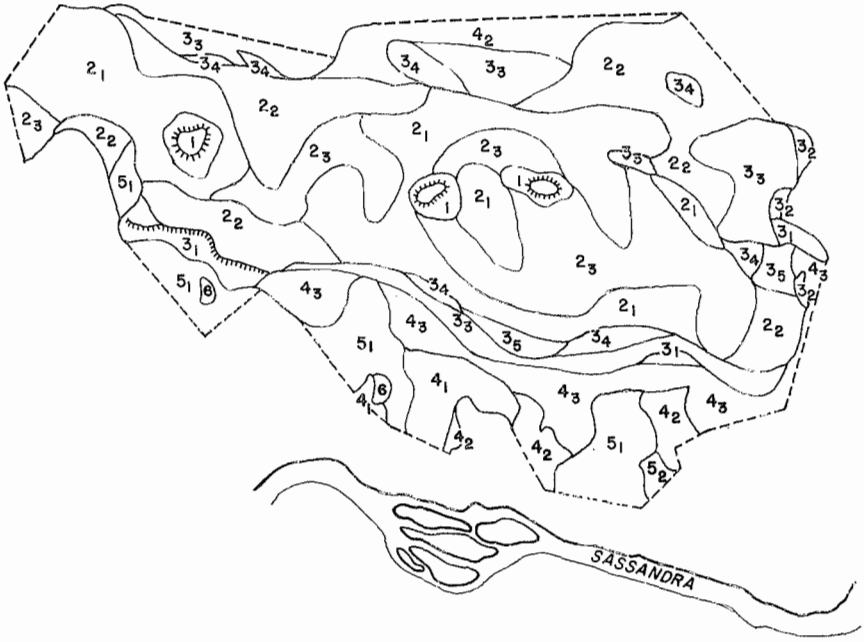

Figure 9 : 2nd phase map. Corresponding to hachured area of fig. 7.