

GEOLOGIC HISTORY OF VENUS IN SIMPLIFIED PRESENTATION: EDUCATIONAL MAP FOR THE ELECTRONIC ATLAS OF TERRESTRIAL PLANETS AND SATELLITES

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Introduction: The electronic version of the Atlas of terrestrial planets and satellites [1] is under development at the Moscow State University of Geodesy and Cartography (MIIGAiK). The geologic map of Venus is one of the new maps to update the earlier published paper version of the Atlas [1]. Such map was absent in the paper version. The main outlines of the map are reviewed in this abstract.

Map Programme: The geologic map for the electronic atlas is intended to present the structure of the surface of Venus in simplified version for the educational purposes. This map is supposed to be used for the first acquaintance with the Venus geologic history through the stratigraphic/time consequence of the geologic units on Venus as presented on the map.

Format: The map is at 1:75,000,000 scale. It is designed as the two hemispheres – “Alphan” with central longitude 0°E and “Aphroditan” with central longitude 180°E. The map projection is modified Lambert transversal equal-area azimuthal projection. The modification of the projection includes overlapping zones around each hemisphere [1]. The hemisphere have an additional 10°-wide strip along its circumference. Due to it the hemisphere diameter is not the usual 180°, but 200°. It is resulted in 20° overlapping zone along the boundary of each hemisphere.

Legend: The geologic units are the main content of the map. The number of units is minimized as the map have an elementary education purpose. The sequence of five units will be presented. They are (from older to younger):

- Tesserae (T),
- Ancient plains (Pa),
- Intermediate-aged plains (Pi),
- Young plains (Py), and
- Recent rift zones (R).

These units are to be shown as colored areas. Beside them some important structures will be presented. The structures are: Ridge belts, Sinuous channels, and Craters. Such legend is based on the more detailed stratigraphic scheme of Basilevsky and Head [2], but some units of their scheme are united into one unit to form the simplified legend.

Color Design: Colors of the five stratigraphic units are correlated with those used in Venus Global Geologic Map project (*VENGLOBGEC*). Tessera unit is given in pink-lilac with light gray, ancient plains – in greenish-brown with light grey, intermediate-aged plains – in very light green, young plains – in bright yellow, and recent rifts – in bright red. The structures are: ridge belts – dark blue lines with bars on both sides, sinuous channels – dark green lines, and craters – black dots. Such color decision would provide visual impact of three groups of units: ancient (T and Pa) as more dark and partly achromatic, intermediate (Pi) as light and pure in color, and young (Py and R) as bright pure colors. It could create the imagination of the consequence from dark and achromatic to bright and pure, which should be associated with the consequence from ancient to young age of the units.

Feature selection: The scale of the map is of synoptic class to present the whole hemisphere on one sheet of the usual atlas format. There are 750 km of the real planetary surface in 1 cm on the map. So, only the largest craters could be shown in the scale (crater with 75 km in diameter is presented as the dot 1 mm in diameter). Due to it only the larger craters will be portrayed on the map. The diameter of 50 km has been chosen as the lower one for the map presentation (it corresponds to 2/3 mm on the map). On the same reason only the longest ridge belts and sinuous channels are to be presented. The minimal length is chosen to be 500 km, i.e. 7 mm on the map. The usual cartographic generalization take place for the areal units. In some cases the smaller areas are united into one with the same size of the area, which is occupied by the unit on the map, in other cases very small areas are omitted and their territory is involved into the adjacent unit.

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References: [1] Atlas of terrestrial planets and their satellites (1992). MIIGAiK, Babakin R&D Space Center. [2] Basilevsky A. T. and Head J.W. (1995) *EMP*, 66, 285-336.