

## PHOTOGRAMMETRY IN LAND MORPHOLOGY MONITORING

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Land affected by sliding are to be improved and put under crop. This morphological pollution is surveyed and monitored by terrestrial photogrammetric surveyings periodically. Terrestrial photogrammetric methodologies proper for semi-stabilized slide land surveyings during implementation stages, i.e. after land slide, during modelling, and during improved land slide development are presented in this paper.

**Key Words:** Land Applications, Photogrammetry, Terrestrial, Thematic

Degradation processes containing land slides, as well as, torrential rain erosion ones are found over large agricultural lands covering hilly and plateau zones in Romania. They are more widely represented, sometimes showing serious degrading shapes, within the Sub-Carpathians, Gaetic Piemont, and Birlad Plateau.

Some degradation control, modelling and levelling works over slopes have been made within some perimeters of these geographical zones, in the last years. To design and carry out these works, it is compulsory to take into account the morphological and geological features of the slope processes and their evolutions in the course of time.

In slope modelling works, we should consider not only the near morphological management objective, but also the main perspective factor, that is, the slope process consolidation.

### TERRESTRIAL PHOTOGRAMMETRY IN SLOPE SURVEYING

In the last time, terrestrial photogrammetry has been more and more used in investigations on the slope instability process development. The terrestrial photogrammetric surveys ensure: (1) to complete aerial photogrammetric surveys over zones showing areas not covered by aerial photography; (2) to compile photogrammetric plans over degraded lands requiring soil conservation works; (3) to compile photogrammetric plans along the rivers showing steep banks in order to manage their flows, correcting courses and slopes, and to carry out hydrotechnical works, as well; (4) to monitor the surface slope sliding down photogrammetrically, at some established intervals.

The photogrammetric surveys based on ter-

restrial ones have been taken normal, left and right shifted photographs, seldom convergent and/or tilted ones. Photograph taking bases have been implemented on the ground, being used for periodical photograph takings over the investigated areas.

### PHOTOGRAMMETRIC SURVEYS IN SLOPE MORPHOLOGY MONITORING

Photographs taken over the investigated hydrographical basins (Tutova-Birlad, Argeş, Govora, Buzău) have been plotted in Stereoplotter to compile large scale topographical maps (1:1,000; 1:500 and 1:200) and longitudinal and transverse profiles showing the slope morphologies.

Graphical elements (topographical maps, longitudinal and transverse profiles) and numerical data (xyz - characteristic point coordinates) have established a base developing a modelling non-consolidated land methodology.

Softwares for the best morphologically non-consolidated land modelling have been developed based on geo-morphological data featuring slided zones, as well as, on the special zone establishments (fracturing, expanding, sliding, accumulating zones).

The modelling indices - slopes, filling and cutting heights, embankment volumes, a.s.o. - which we have obtained after photogrammetrical data had been processed, using a proper programme, allow to arrange sliding slopes within the morphologically degraded zones.

After the land sliding modellings have been implemented on the ground, the periodical photogrammetric surveyings to monitor the arranged zone behaviours, using the first photogrammetric bases are to be carried out.

The slope morphology evolutions and the method efficiencies should be emphasized comparing longitudinal and transverse profiles derived from the periodical photogrammetric surveys.

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