



# REMOTE SENSING OF SOIL COVER LABORATORY



National Scientific Center «Institute for Soil Science and  
Agrochemistry Research named after O.N. Sokolovsky»  
(NSC ISSAR), Kharkiv, Ukraine

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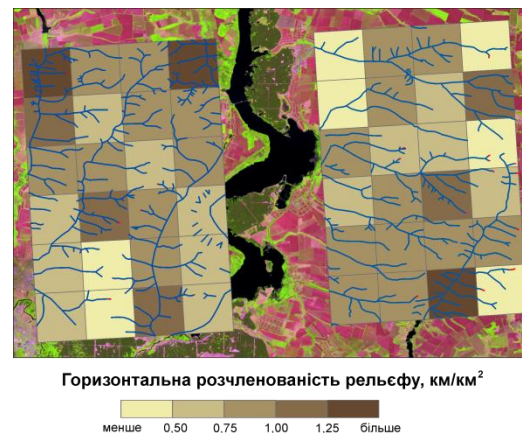
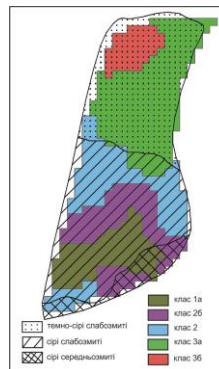
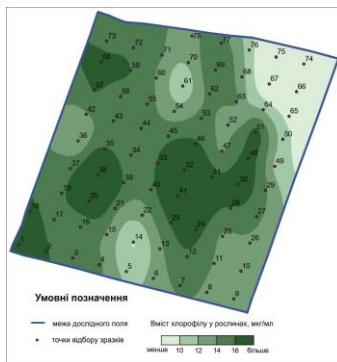
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# Expertise categories



- Remote sensing of soil cover;
- GIS-technologies;
- Erosion risk assessment;
- Digital elevation models;
- Soil conditions monitoring;
- Soil mapping.





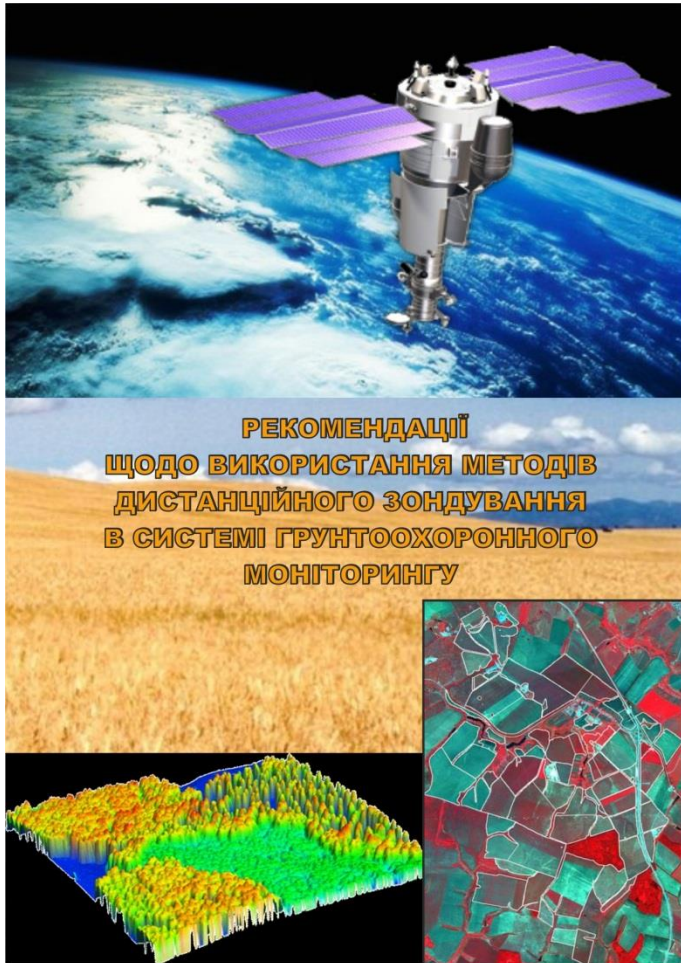
# Skills and competences



- Creation of digital soil maps on the basis of multispectral satellite imagery and GIS-technologies;
- Quantitative assessment of remote sensing data for monitoring and mapping various soil characteristics;
- Creation and analyses of digital elevation models;
- The use of radar imagery for monitoring of soil agrophysical parameters;
- The use of ground-penetrating radars in a large-scale survey of soil cover;
- Remote sensing survey in different ranges of the electromagnetic spectrum;
- Studying the structure of soil cover with the use of remote sensing data;
- Interpretation of soil cover through vegetation using satellite imagery.



# Main scientific results



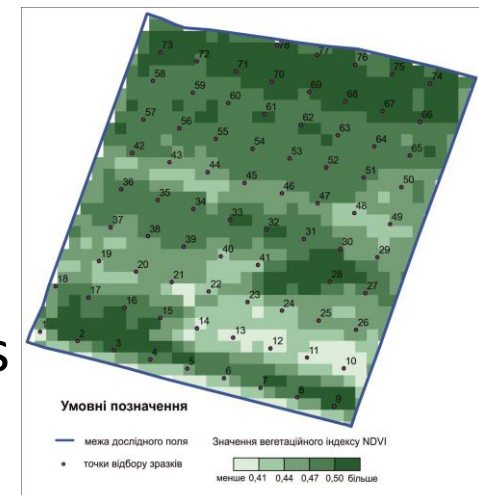
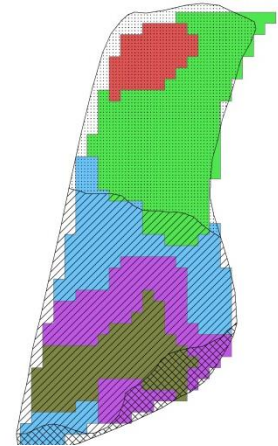
- Methodical recommendations for adjustment of soil cartographic materials using remote sensing data;
- Methodical recommendations for mapping of high soil erosion risk using satellite imagery;
- Methods of quantitative assessment of high erosion risk of soil conditions using remote sensing methods;
- Methods of quantitative assessment of soil cover structure on the bases of satellite imagery.



# Heterogeneity assessment of soil cover for precision agriculture



- Remote Sensing of Soil Cover Laboratory is experienced at using remote sensing methods for studying spatial heterogeneity of the basic soil properties on several fields of Polissya, Forest-Steppe and Steppe of Ukraine.
- We use spectral indices and cluster analysis to distinguish soil areas with different characteristics and determine the relation between spectral reflectance and soil parameters.
- Soil heterogeneity patterns can be used for developing differentiated agricultural technologies for efficient production.

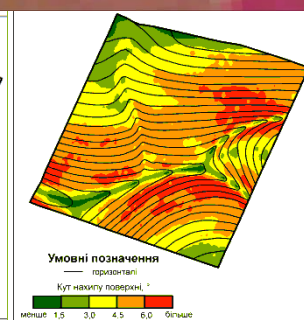
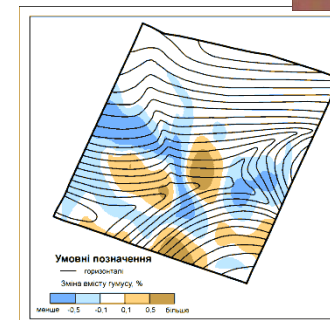
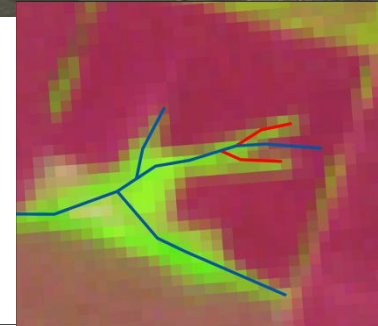




# Monitoring of soil degradation processes



- Remote sensing techniques and digital elevation models are used for soil erosion risk assessment and monitoring;
- Areas of degraded soils on slopes and development of linear erosion forms are clearly distinguished on satellite imagery;
- Using remote sensing data from different years allows to determine areas of organic carbon loss due to different degradation processes and develop efficient solutions for sustainable agricultural production.





# Some of our recent publications



Scientists of the Remote Sensing of Soil Cover Lab. have more than 200 publications. Here are some of our recent works:

1. Plisko I.V., Byndych T.Yu., Truskavetsky S.R. **The application of global observation systems for implementation of precision farming in Ukraine** //Earth Observations for sustainable development and security: IV International Conference «GEO-UA 2014», Kyiv, 26-30 May 2014 – Kyiv: Naukova Dumka, 2014. –P.68-70. **(in English)**
2. Truskavetsky S.R. , Byndych T. Yu, Sherstyuk A.I., Viatkin K.V. **Satellite monitoring of anti-erosion agrolandscapes status** // Relevant issues of Soil Science, Agriculture and Agrochemistry: Proceedings of the International Scientific Internet-Conference, 9-13 June 2014 – Lviv, 2014 – P.115 – 122. **(in Ukrainian)**
3. Truskavetsky S.R., Byndych T. Yu, Sherstyuk A.I., Viatkin K.V. **Monitoring of anti-erosion agrolandscapes status using satellite survey** // “Earth Remote Sensing – today and tomorrow” 2<sup>nd</sup> International Conference 7-8 June 2014: book of abstracts – Moscow: ScanEx Engineering and Technology Center, 2014, P.171 – 177. **(in Russian)**
- 4.Truskavetsky S.R., Byndych T. Yu , Kolyada L.P., Viatkin K.V., Sherstyuk A.I. **Recommendations for the use of remote sensing methods in soil monitoring system** // NSC ISSAR. - 2012. - 55 p. **(in Ukrainian)**
5. Truskavetsky S.R. **Recognition of species composition of cereal crops via Remote Sensing** / S.R. Truskavetsky, T. Yu Byndych, A.I. Sherstyuk, Kolyada L.P., K.V.Viatkin // Handbook of Ukrainian farmer 2013 “Adaptive agriculture. – Book 1. – Kyiv. – 2013. – P. 22-24. **(in Ukrainian)**



# Main contacts



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*Thank you for your attention!*



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