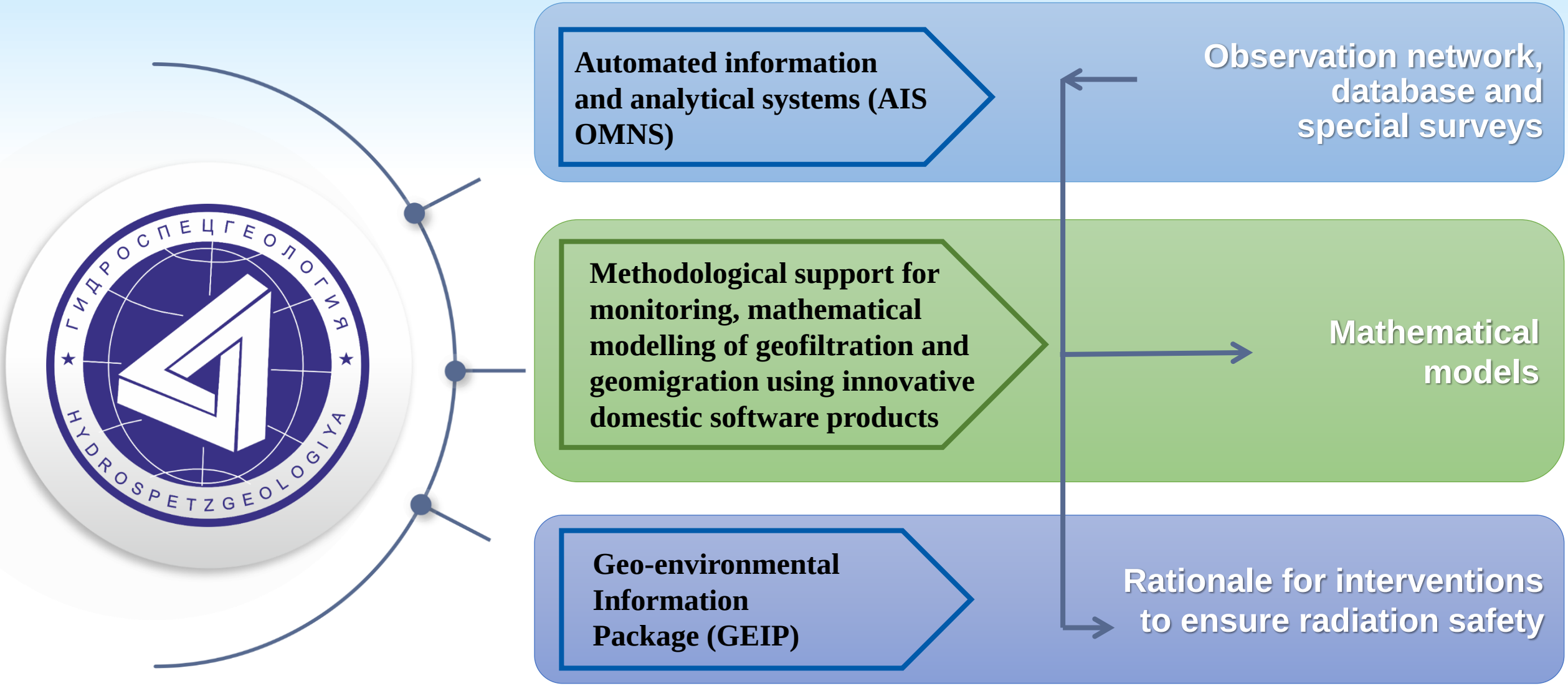
GEO-ENVIRONMENTAL MONITORING TO ENSURE ENVIRONMENTAL AND RADIATION SAFETY OF NUCLEAR FACILITIES

Anatoly Annenkov,

General Director of FSBI “Gidrospetzgeologiya”, member of the Public Council of Rosatom State Corporation

XII International Forum ATOMEXPO 2022
21 November 2022

GEO-ENVIRONMENTAL MONITORING TOOLS



➢ *The unified subsoil monitoring system at Rosatom facilities includes 65 sites at 58 enterprises in the industry.*

THE USE OF GEO-ENVIRONMENTAL MONITORING TOOLS DURING THE DECOMMISSIONING OF NUCLEAR POWER FACILITIES

The objective is to assess the natural and technogenic conditions of the nuclear power facilities and to provide a geo-environmental justification of the most effective option for the site decommissioning.

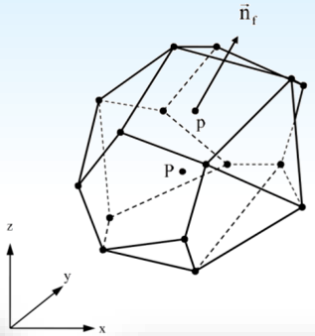
1 Collection, compilation and analysis of monitoring data on the state of environmental components by surveying and populating the onsite monitoring of subsoil conditions database .

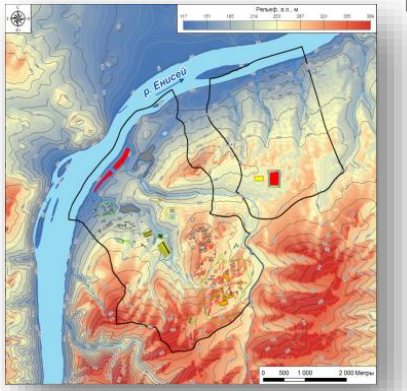
2 Digitalisation of the geological environment of the onsite monitoring of subsoil conditions based on attestation Russian software.

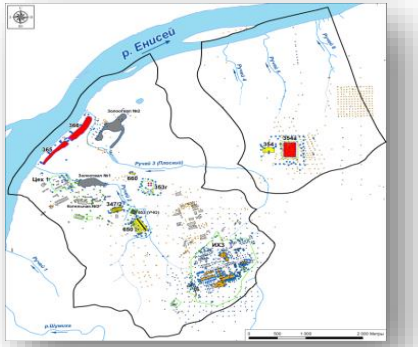
3 Decommissiong risk assessment using the results of mathematical modelling

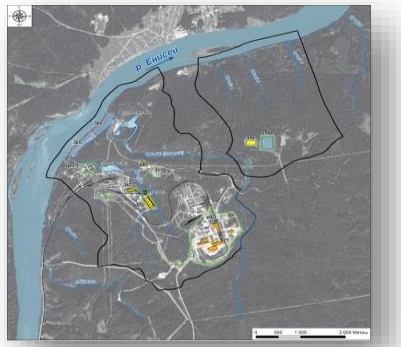
4 Selection of the optimal decommissiong scenario, including economic evaluation.

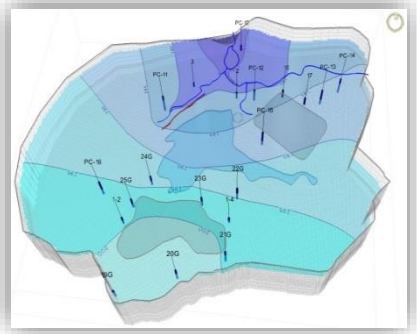
5 Justification of the observation network and monitoring of the state of environmental components for the period of rehabilitation measures.







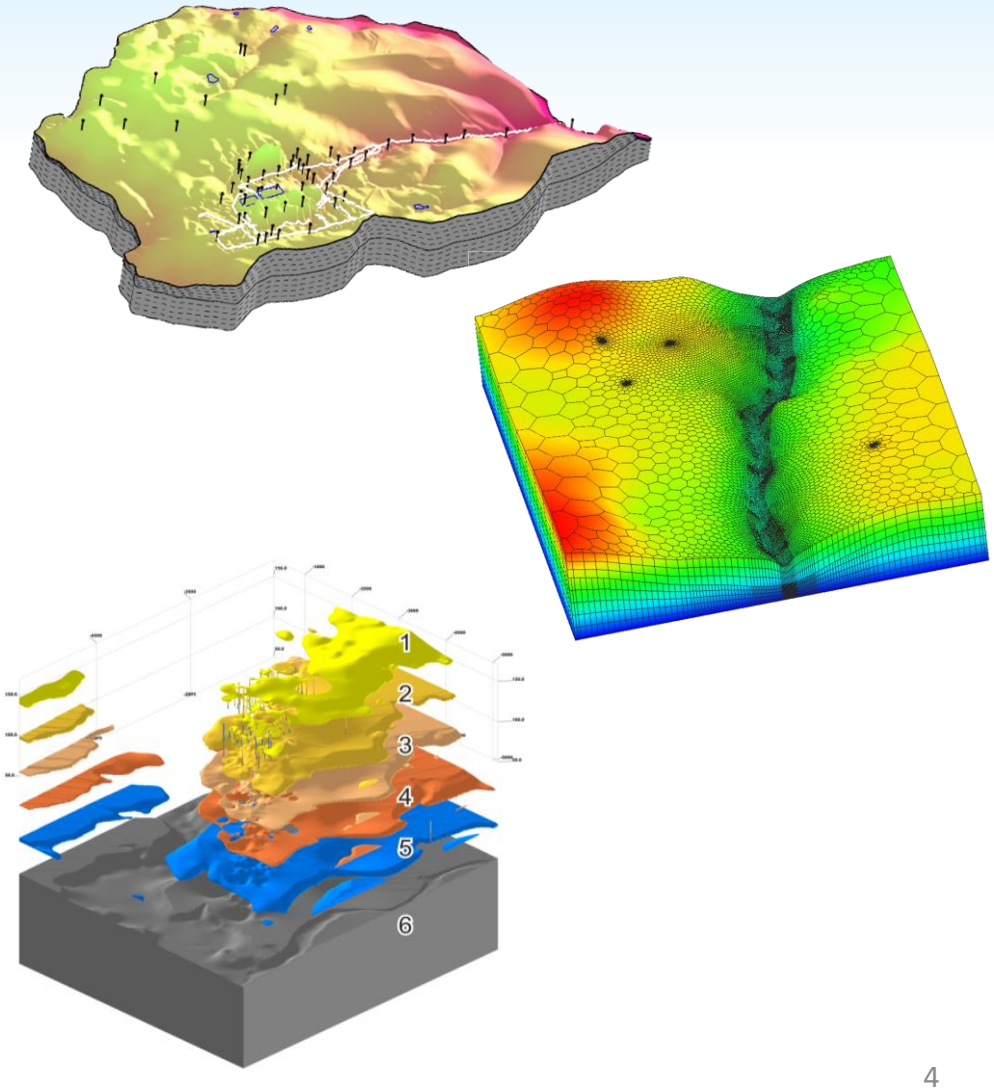




THE USE OF GEO-ENVIRONMENTAL MONITORING TOOLS IN THE MANAGEMENT OF RADIOACTIVE WASTE

The objective is to assess the geological and hydrogeological conditions for the safe siting and operation of radioactive waste storage facilities.

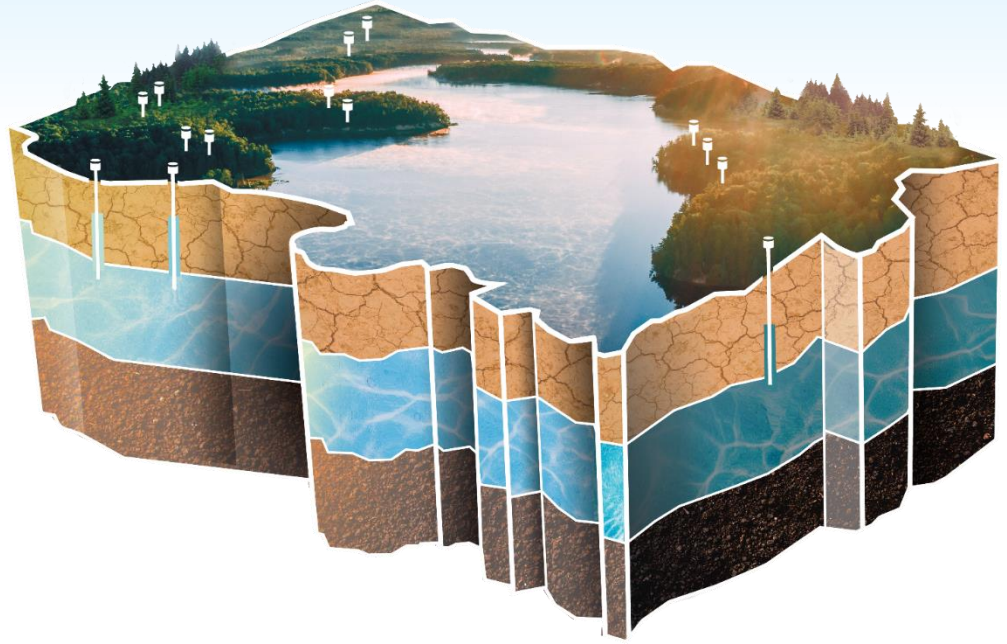
1. Primary data collection and analysis.
2. Hydrogeological surveys, including pilot-filtration and pilot-migration surveys.
3. Processing and correlation of field data with geo-environmental monitoring data. Selection of the optimum location.
4. Selection of the optimum location for RAW storage based on mathematical modelling and geological and hydrogeological conditions.
5. Long-term forecast of accident scenarios in the operation of storage facilities.



RESULTS OF APPLYING GEO-ENVIRONMENTAL MONITORING TOOLS
GEO-ENVIRONMENTAL MONITORING TOOLS FOR NUCLEAR POWER FACILITIES

✓ Results:

- Rehabilitation measures have been justified for 14 sites.
- Forecast of impact of nuclear and radiation hazardous facilities on the subsoil and optimisation of the nuclear power facilities network for 39 sites was carried out.
- Constant-action models have been developed for 20 objects.
- Including simulation results in design solutions - 6 objects.
- Use of results in public hearings - 4 sites



The presented geo-environmental monitoring tools are flexible and can be replicated at sites of any complexity and under different geo-environmental conditions.

THANK YOU FOR ATTENTION!