1. OBJECTIVE:
3D MODEL OF A POTENTIAL TRAP FOR CARBON DIOXIDE with 2 components:
- 3D STRATIGRAPHIC MODEL
- 3D PARAMETRIC MODELS (PERMEABILITY, POROSITY etc.)

2. LOCATION: WEST VALCELE - ROMANIA - oil structure belongs to Getic Depression

3. DATA AVAILABLE: 241 boreholes explored by geophysical logging

4. GEOLOGY OF THE SITE: The Valcele structure represents an anticline of the Paleogene covered with Burdigalian deposits, locally Badenians and Samatians, as well as with Pliocene formations, all broadly molding and borrowing the structural shape of the Oligocene. The selected series for CO2 storage are OLIocene and BADENIAN: OLIocene, the most important oil complex (500 - 1500m):
- LOWER SERIES (sandstones, sands, conglomerates, with marlstone intercalations: Ol1b7, Ol1b6, ... Ol1b1);
- SUPERIOR SERIES (argillaceous series with marlstone intercalations: Ol1a1, ... Ol1a10).
BADENIAN (HELVETIAN-old name; 20-1000m):
- LOWER SERIES (argillaceous series with thin intercalations of fine sand and calcareous sandstones: HeIII undivided, HeIII 4, ..., HeIII 1);
- MEDIUM SERIES (sand and sandstones: He II):
  - He II A, He II B2, He II B1;
- SUPERIOR SERIES (sandy series with marly and argillaceous intercalations: He I):
  - He I b1+b2, He I c+d.

5. METHODOLOGY: 3D models were built based on data obtained from 71 selected boreholes using geostatistical methodology:
- indicator kriging for 3D stratigraphic model;
- universal kriging for 3D parametric models (exemplified for porosity and permeability);
- conditional simulation for assessment of uncertainty models.
The main steps of data processing were:
- statistical analysis of the data;
- declustering for representative distribution;
- trend analysis;
- study of the anisotropy made with surface variograms;
- evaluation of values and errors distribution.

6. VARIOGRAPHIC ANALYSIS of the parameters

7. MEAN VALUES of the PARAMETERS obtained by statistical analysis of geophysical logging data

8. 3D STRATIGRAPHIC MODEL

9. 3D PARAMETRIC MODEL (POROSITY and PERMEABILITY)

10. DISTRIBUTION OF PARAMETERS AND UNCERTAINTY AT -1600M ELEVATION

CONCLUSIONS: on base of all the parameters distribution (porosity, permeability, conductivity etc.) it will be selected the best location for the carbon dioxide injection, after the testing of the permeability faults.

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