

JCCEM Workshop on Mayak Modeling
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Pacific Northwest National Laboratory

Participants

Charles Cole, Pacific Northwest National Laboratory
Nelly Vasil'kova, PSA Hydrospeztzgeologiya
Signe Wurstner, Pacific Northwest National Laboratory
Aleksandr Zinin, Institute for Physics and Power Engineering
Galina Zinina, Institute for Physics and Power Engineering

Activities

The principal focus of this workshop was finalizing the Mayak regional three-dimensional transient groundwater model. Key activities were:

- 1) Well locations and characterization of sediments in the area of the Lake Karachay groundwater plume (pickle area) had not been included in previous exchanges of characterization data except as interpreted values around the periphery of the plume. The Russian delegation brought data to
 - a) Update the well-data coverages to include the pickle area
 - i. Pumped wells coverage for the transient well pumping.
 - ii. Porosity or specific yield point data coverage.
 - iii. Well data for the 1992 water levels.
 - iv. The transient head observation coverage (1987-1997).
 - v. Transient changes in precipitation and evapotranspiration.
 - vi. Time varying boundary conditions associated with the emplacement of the fly ash at the ash dump.
 - b) Plot the additional data and define the zero thickness boundaries for each of the loose sediments and digitize these boundaries.
 - c) Modify the ARC/INFO macros for interpolating the new well data and use the additional zero thickness polygon boundaries to create the new thickness and k distributions for all the loose sediments (only the Neogene/Paleogene remained unchanged).
- 2) Update the interpreted water table using the updated new wells and combined contour data.
- 3) Make total transmissivity maps after adding these new sediments.
- 4) Refine the model finite-element grid:
 - a) Update the ash dump boundary, modify and refine the grid in this area.
 - b) Refine the grid around all pumping centers and areas of steep interpreted water table.

- c) Refine the grid in to better match Lake Karachai and Reservoir 17, and increased the resolution there.
 - d) Refine the grid below Reservoir 11 to allow outflow to be better calculated.
 - e) Refine the grid to better match lakes and marshes.
- 5) Make ash-dump files for generating time varying dirichlet boundary conditions in the area of the ash-dump.
- 6) Make absolute gradient plots for guiding the zonation process
- 7) Develop a strategy for preparing the model flux estimates from the lakes, marshes, reservoirs and so forth and prepare the transient mixed and dirichlet boundary condition files.
- a) Modify the canal and river boundaries to match the reach boundaries and then adjust all river and canal nodes to lie with in reach boundaries.
- 8) Make several runs with the existing model to guide the other steps undertaken at the workshop.