

## Stochastic Simulation

- 1) Download and unzip **start.zip** if necessary. Open **start.gpr**
- 2) Change **MODFLOW Run Option** to **Stochastic Simulation**
- 3) Check **Stochastic Options** dialog.
- 4) Parameter Randomization
  - a) Go to **Parameters** dialog
    - i) Randomize K fields
    - ii) Change standard deviation for all fields to **0.3** log cycles.
    - iii) Change to **random sampling**
    - iv) **30** instances
  - b) Save and run as **monte1**
- 5) Right-click on folder of solutions and select **Statistical Analysis**. View mean head, etc.
- 6) Review Latin Hypercube distributions/options in the Parameters dialog. No need to run another model.
- 7) Gaussian Simulation
  - a) Create a dummy, empty scatter point set.
  - b) Select Gaussian Simulation Options
    - i) Log interpolation
    - ii) **30** realizations
    - iii) Mean = **0.4**
    - iv) Variogram
      - (1) Range = **700-1000**
      - (2) Contribution = **0.3**
      - (3) Nugget = **0**

- v) Run Gaussian
- vi) Turn on log contouring
- vii) Play with options
- c) Run MODFLOW
  - i) Change all K polygons to **-100** key value
  - ii) Map -> MODFLOW
  - iii) Delete all but **HK\_100** parameters
  - iv) Turn on use multiplier arrays
  - v) Select Gaussian folder
  - vi) Save as **monte2.gpr**
  - vii) Run
- 8) Probabilistic Capture Zone Analysis
  - a) Right-click on one of the stochastic solutions and select **Risk Analysis**.
  - b) Capture zone.
  - c) Stop in cells with weak sinks.
  - d) Weight results based on residual error.
  - e) Either use one point per cell or four points per cell. (works pretty quickly with one point)