Uploaded are the input and output files used for fault characterization through numerical simulation using iTOUGH2. The synthetic data for the push period are generated by running a forward simulation (input parameters are given in BradyGF6\_Exp\_06\_injection). In general, the permeability of the fault gouge, damage zone, and matrix are assumed to be unknown. The input and output files are for the inversion scenario where only pressure transients are available at the monitoring well located 200 m above the injection well and only the fault gouge permeability is estimated. The input files are InvExt6i, INPUT.tpl, FOFT.ins, CO2TAB, and the output files are InvExt6i.out, pest.fof, and pest.sav.

The table below summarizes the inversion results, and indicates the fault gouge permeability can be estimated even if imperfect guesses are used for matrix and damage zone permeabilities, and permeability anisotropy is not taken into account.

|  |  |  |
| --- | --- | --- |
|  | Synthetic data | Model for inversion: all materials are isotropic, matrix is homogeneous |
| Starting value | Returned value |
| Matrix  | Isotropic; log(k) = -16 or -15.3 (varies with geological layer) | log(k) = -15 (fixed) | -15 |
| Damage zone | log(kh) = -15, log(kv) = -14.7 | log(k) = -14 (fixed) | -14 |
| Fault gouge | log(kh) = -12, log(kv) = -11.70 | log(k) = -13 | -11.66 |