

Hydrogeological Experimental Site of Poitiers (France): Dataset description

This document is to be attached with paper Chamroo et al. (2015) of the benchmark session SysID2015. The aim is to describe the 4 enclosed datasets.

I. Pumping tests

The provided file is `PumpingTest.mat`. Once loaded in Matlab, the variable PumpM06 is created in the workspace. The given name recalls that for the given experiment, pumping was carried out at well M06. PumpM06 is a structured variable giving access to 35 fields. Some typical fields are described in the following table:

PumpM06.time	Time (s) vector for the experiment
PumpM06.FlowRate	Flow rate (m ³ /h) evolution when pumping (at M06)
PumpM06.M01	Water level (m) at the 33 different wells, including level at well M06
...	
PumpM06.PZ7	

Note that in this case the water level information of any well XXX contained in PumpM06.XXX is a vector of fixed length equal to that of PumpM06.time.

II. Dipole tests

For the dipole test mentioned in the article, the corresponding file is `DipoleTest.mat`. Once loaded in Matlab, several variables are created in the workspace. Each one is named according the name of a given observation well. It is to be noted that for the dipole test, due to unsynchronised measuring devices, the captured signals at different wells DO NOT HAVE the same time sampling period and the same measuring duration. Thus, there is no possible common time vector as in the previous section. This is why every loaded variable possesses 2 columns: one for the time (s) vector and a second one for the corresponding water level variations (m) at the given well. In the article, only some of the wells have been chosen for display. Moreover, a semilog plot has been used to propose a better interpretation of the transient.

III. Slug test

For the slug test, the corresponding file is `SlugTest.mat`. Once loaded in Matlab, several variables are created in the workspace. In this test only water level at well M03 is given. The different variables account for slug experiments of different duration concerning water introduction in M03. Each loaded variable possesses 2 columns: one for the time (s) vector and a second one for the corresponding water level variations (m) at M03.

IV. Tracer test

For this type of experiment, the provided file is `TracerTest.mat`. Once loaded in Matlab, the user can access to two variables: `M04_M06` and `M07_M06`, depending if the tracer is injected either in M04 or in M07. Both variables contain 2 columns: one for the time stamps (in minutes) and the other one for the corresponding tracer concentration (in µg/L) at M06.

Note for the user

Authors of this present document would be grateful to any user of the enclosed datasets to kindly mention the following references in any published document:

- the network of hydrogeological research sites H+ (<http://hplus.ore.fr/>)
- Chamroo et al. (2015)
- Bodin et al (2012)

For any complementary information, please contact afzal.chamroo@univ-poitiers.fr.

References

- Bodin, J., Ackerer, P., Boisson, A., Bourbiaux, B., Bruel, D., de Dreuz, J.-R., Delay, F., Porel, G., Pourpak, H. (2012). Predictive modelling of hydraulic head responses to dipole flow experiments in a fractured/karstified limestone aquifer: Insights from a comparison of five modelling approaches to real-field experiments. *J. Hydrol.* 454, 82–100. doi:10.1016/j.jhydrol.2012.05.069, 454-455, 82-100.
- Chamroo, A., Ouvrard, R., Poinot, T., Bodin, J., Nauleau, B., Porel, G. (2015). Hydrogeological Experimental Site of Poitiers (France). 17th IFAC Symposium on System Identification, Beijing, China.