An introduction to
perform the RBF/KT/Dual KT interpolation

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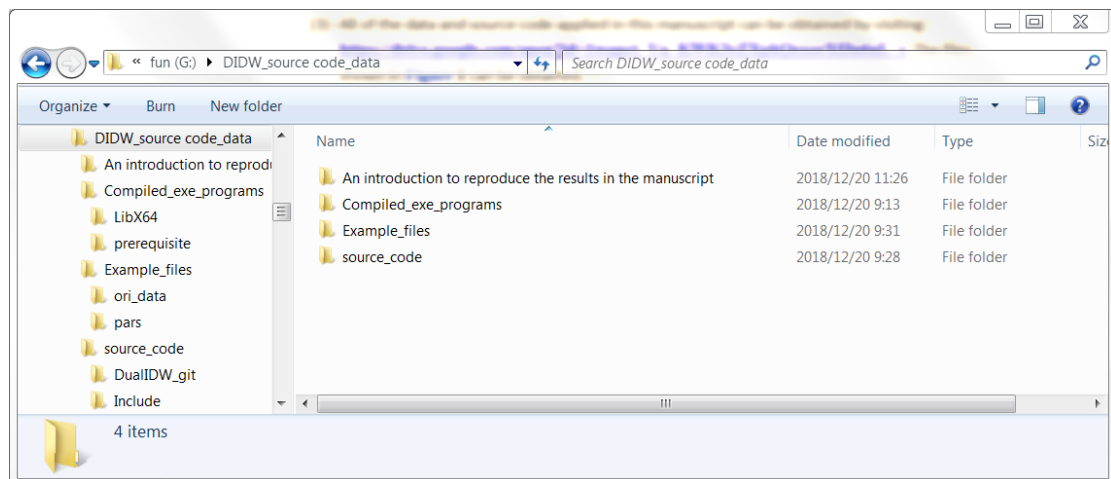
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Outline

1. Prerequisite

(1) An x64 Microsoft Windows OS is required for the current program.
(2) An X64 python which can be found in [https://www.python.org/downloads/] or [DIDW\Compiled_exe_programs\prerequisite\python-2.7.14.amd64.msi] is also needed.
(3) All of the data and source code applied in this manuscript can be found in the attached file (please see **Figure 1**).

Figure 1

2. Operation steps

There are four operation steps to perform the DIDW-based estimation or simulation.

(1) Open the file "DIDW\Compiled_exe_programs\LibX64\Sgems_X64.exe" (**Figure 2**). Normally, the plug-in of DIDW will be loaded automatically and shown in estimation category of the algorithm panel (**Figure 3** and **Figure 4**).
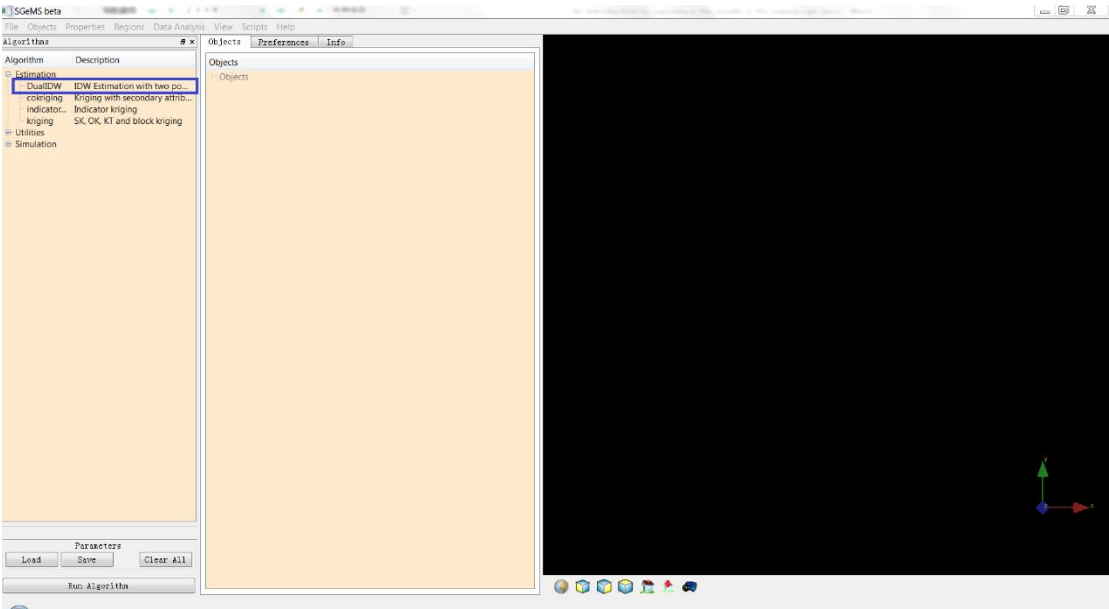
Figure 2

Figure 3

Figure 4

(2) Use the menu "File | Open project" to open the test project files "DIDW\ Example_files\ori_data\WalkerLake_DIDW.prj" (**Figure 5** and **Figure 6**).

Figure 5

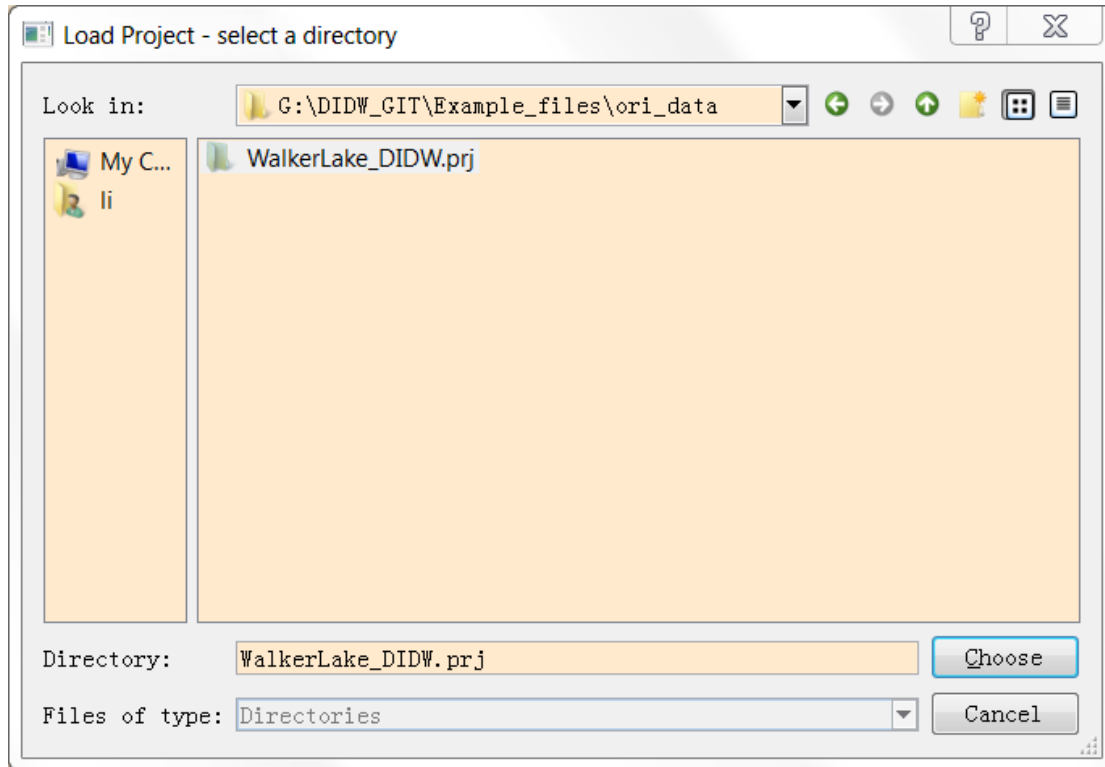**Figure 6**

(3) Click the "load" button (**Figure 6**) to open one of the general interpolation parameters. The DIDW-estimation algorithm will be located automatically, and the common parameters in an estimation process, such as the variogram model or RBF kernel, search neighborhood, estimation grid and property, hard data, and property will also be set automatically. See **Figure 7**, **Figure 8**, **Figure 9**, and **Figure 10**.

● Please note that, in **Figure 7**, the three files: 'GeneralPars_KT_gaussian.PAR', 'GeneralPars_RBF_gaussian.par', and 'GeneralPars_dual_kriging_gaussian.par', corresponding to the Kriging with a trend (KT), RBF, and dual KT interpolation. After

performing the three methods through the following steps (4) – (5), you will get the corresponding estimates; as you will see, these three methods result in the same estimates.
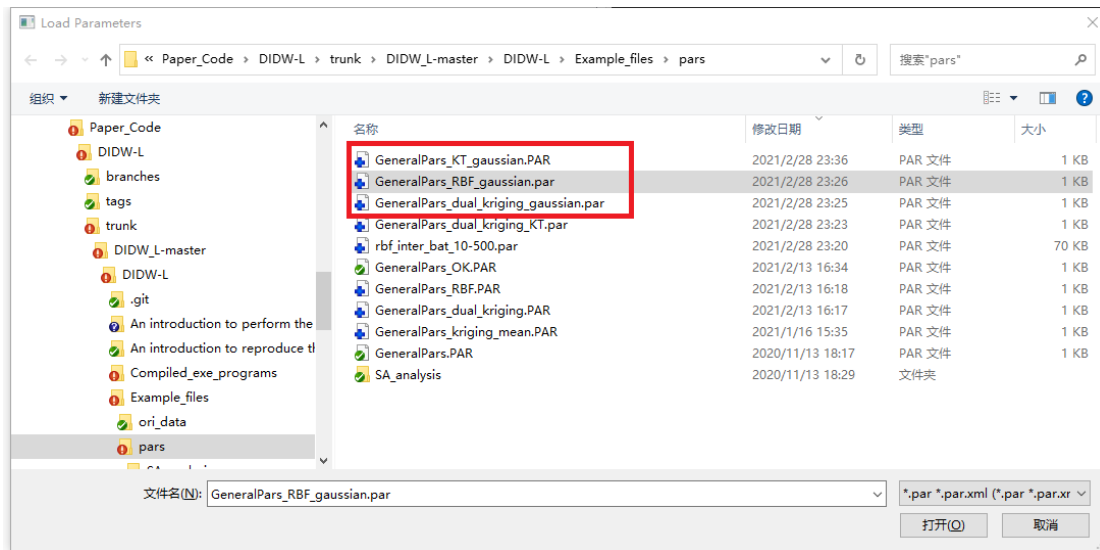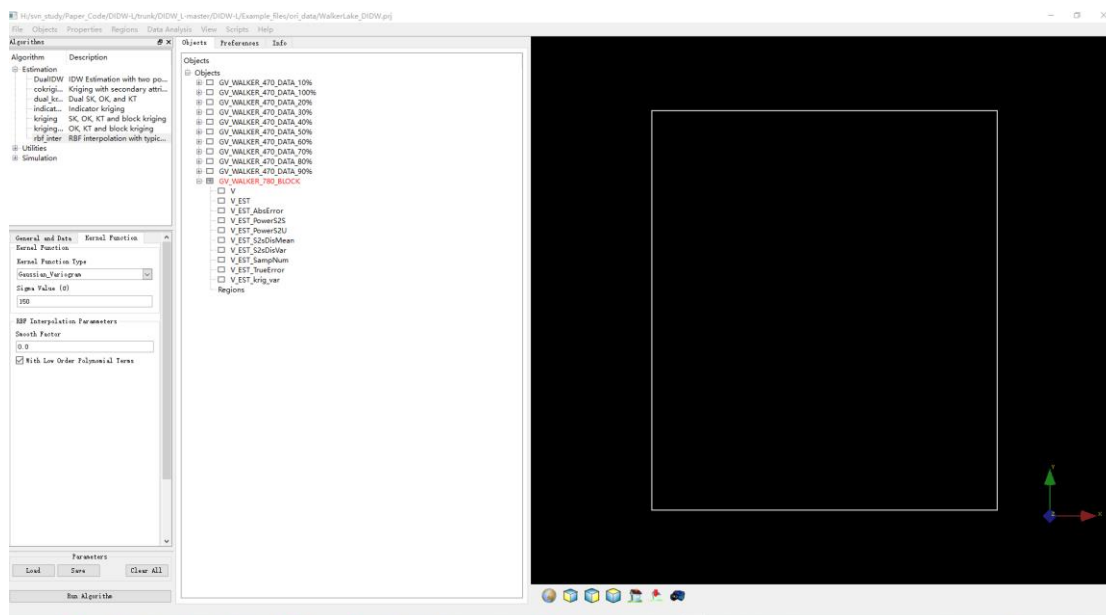

Figure 7

Figure 8

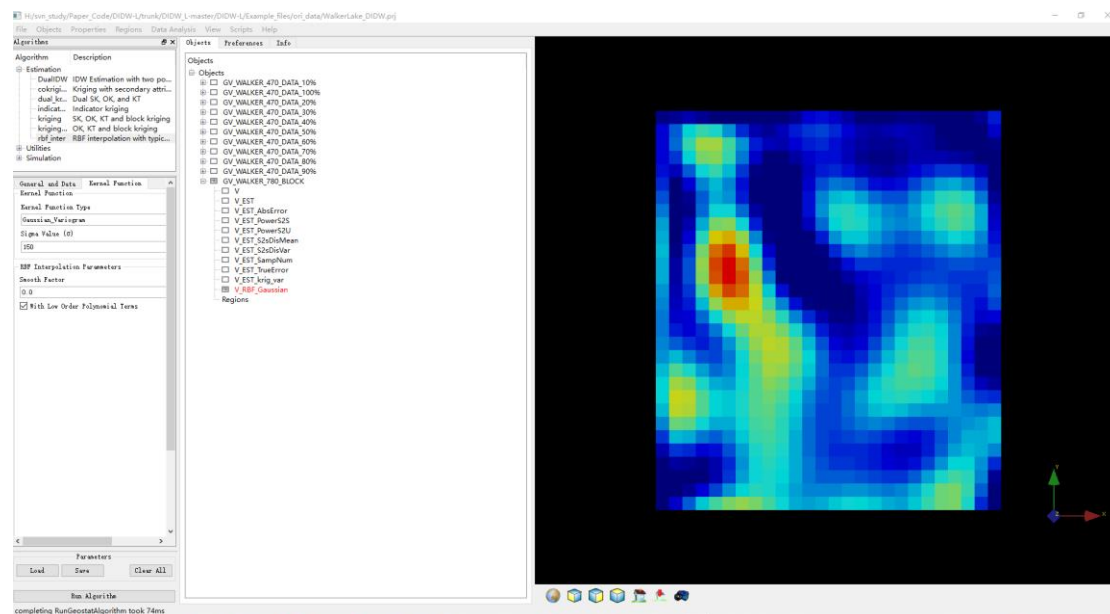**Figure 9**

Figure 10

(4) Click the "Run algorithm" button in **Figure** 10 to perform the algorithm. The value of "The new property" is suggested to be changed to identify the method being applied. Following the above steps, an estimation map such as that shown in **Figure** 11 will be produced.

(5) Please note that all of the data files in the project can be exported for further analysis using the menu (Object| Export Object).

Figure 11 An example of estimates from the RBF interpolation