# CASPRS ver 2.1 user guide

## The download of software and sample file

Computer-aided shoreline position recognition software (CASPRS) is a software used to recognize the shoreline position on satellite images. The software and sample files can be download from the https://github.com/ouczxd/CASPRS.

## The data files

The software is stored in an EXE file, which is named as CASPRS 2.1.exe. The file can be run on Windows 10 without install.

The data of CASPRS is separated to two parts: the shoreline position data and satellite images. The shoreline position sample data is named as “Feng River sample.zip”, and it contain 3 parts: the CAS file, the CSV file, and the images.

The satellite images sample data is reduced to 11, since the original 812 images are too big to be uploaded to the GitHub. All the satellite images can be downloaded from Google Earth Engine (https://earthengine.google.com/) using the program: “GEEdownloader” (<https://github.com/ouczxd/CASPRS>).

The format of CAS File:

First row shows the resolution of the satellite images. All the images should use same resolution and spatial range. If the images have different resolutions, you can upscale or downscale the images to make them have same resolution. The unit is meter/pixel.

Second row shows the number of transects used to study beach evolution.

Third row shows the number of images used to study beach evolution.

Fourth row shows the caption of the variables.

Following rows show the start point and end point of each transect. The unit is pixel. The position of the start and end points can be read from image-edit software, such as Photoshop. If you have measured the beach using field measure devices, such as RTK, therefore, you have some transects. In this case, you can transform the measured-transect to the satellite-transect based on the latitude and longitude of the up-left image corner and the pixel resolution. The radius of the earth, which is 6378137 m, should be used to transform the latitude and longitude to meters.

“Image resolution,10,,,

Number of transect,18,,,

Number of images,11,,,

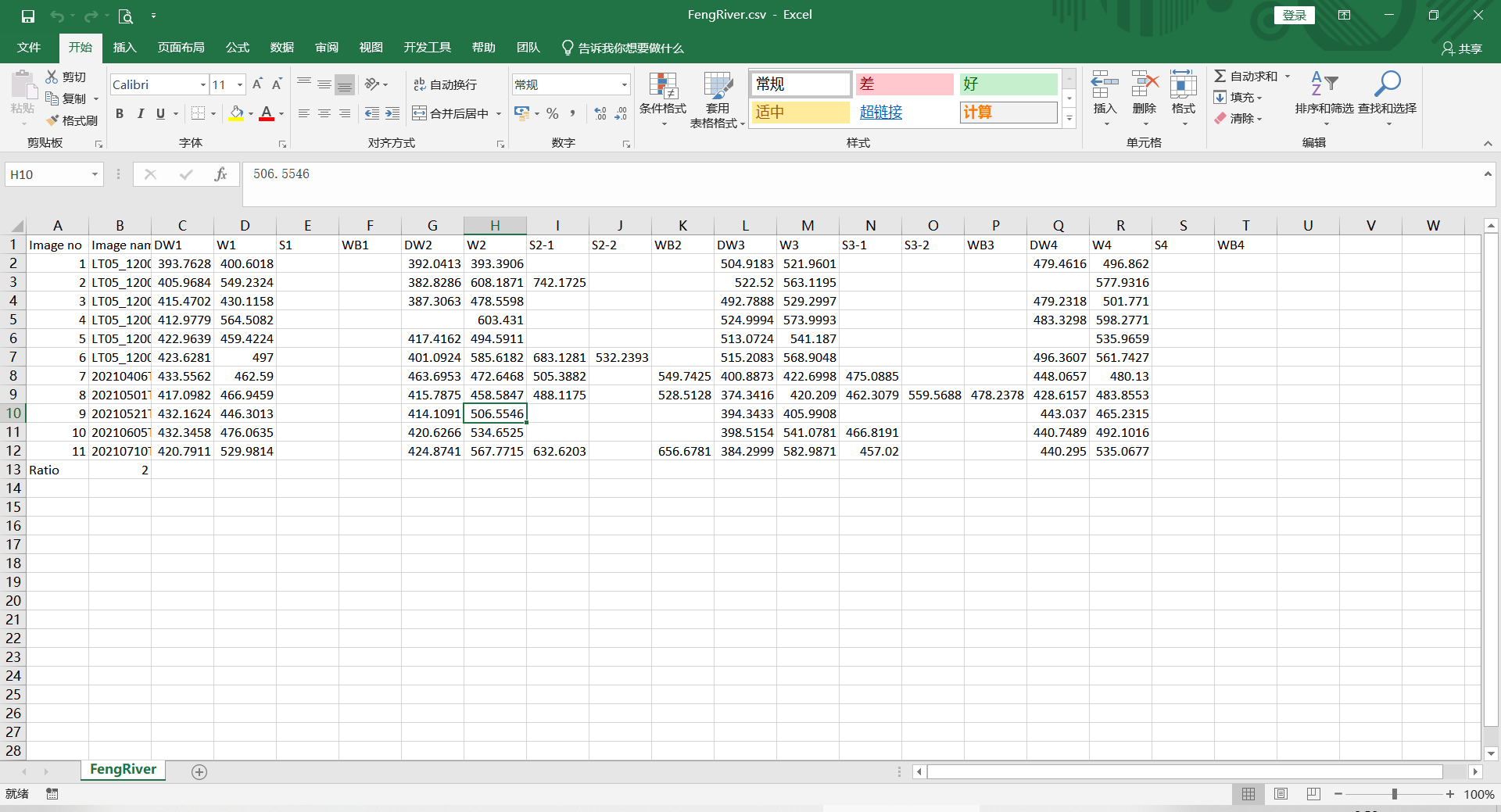
Transect no,Start point x,Start point y,End point x,End point y

DW1,141.478506,539.5507202,223.2960305,566.3630822

W1,141.478506,539.5507202,223.2960305,566.3630822

……“

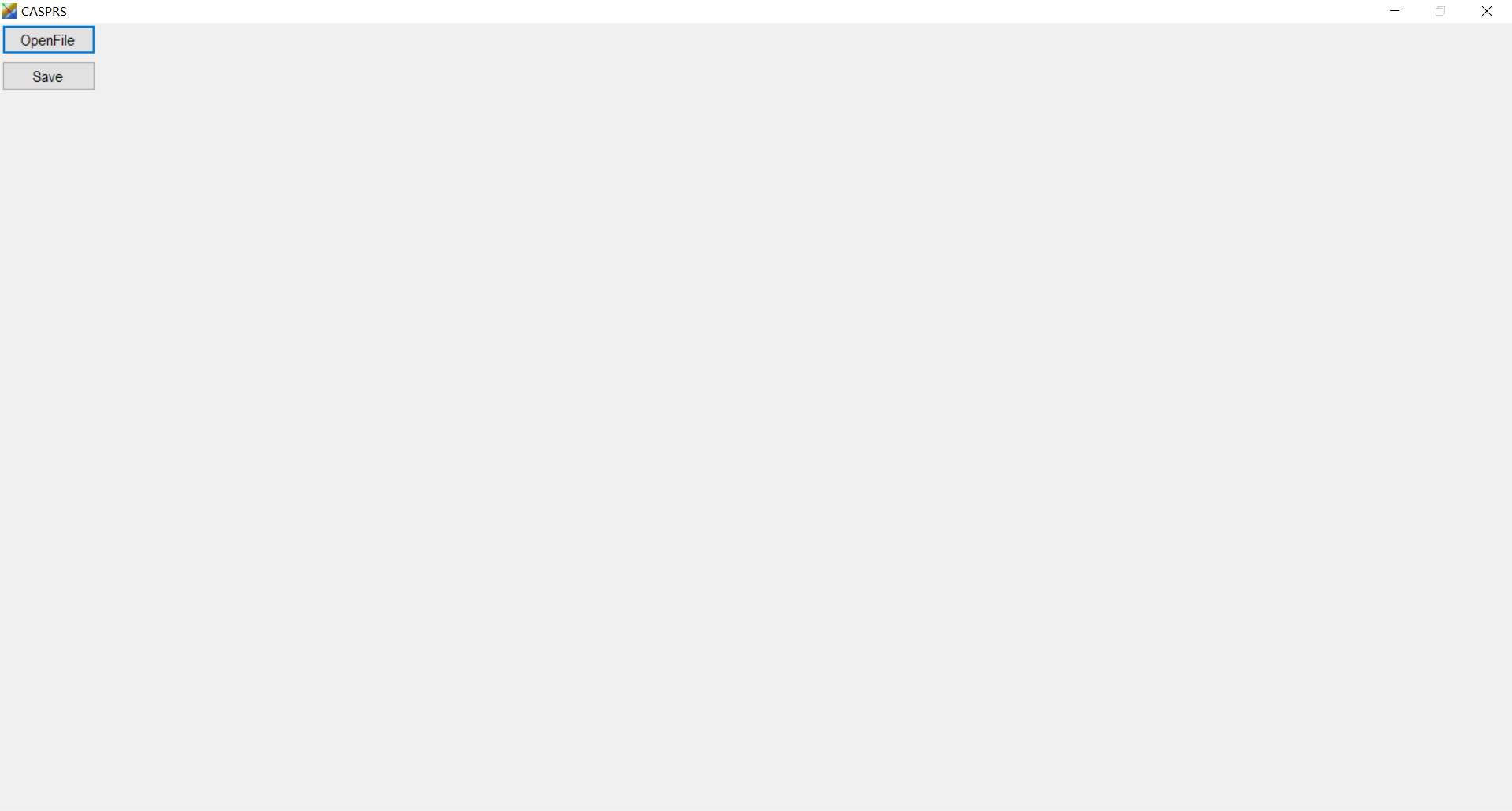
The format of CAS File:

The file can be open in Excel.

The first row is caption, the last row shows the ratio last used to show the images, and the rest is the data. The unit of the data is meter.

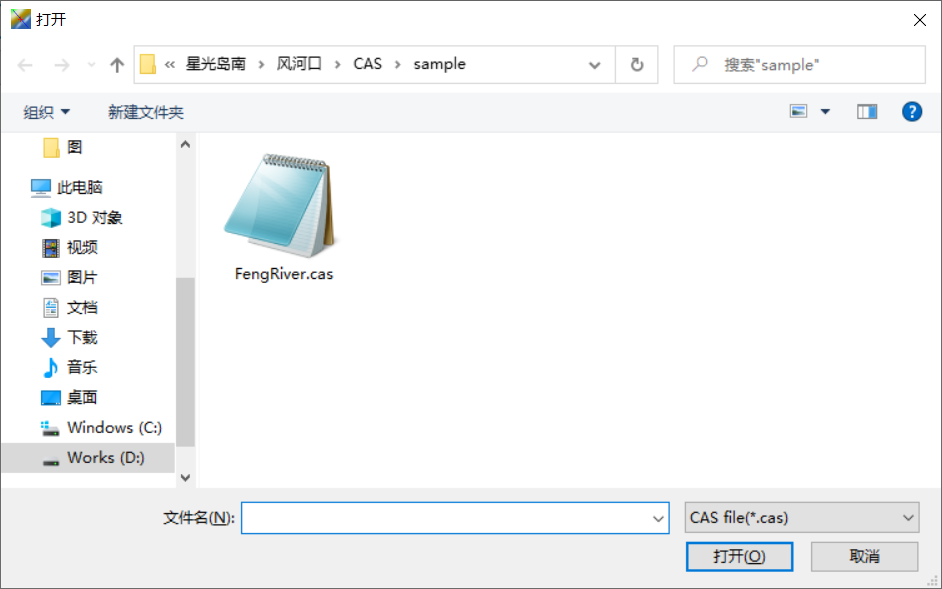
## Start of the CASPRS

(1) Just double-click the CASPRS 2.1.exe, then you open the open file main window.



The open file window of CASPRS

(2) click the Openfile button to open the open CAS file dialog.



Open CAS file dialog

(3) Browse to your directory storing the \*.cas, and select the CAS file you want to work with, such as the FengRiver.cas, then click the Open button.

It should be noted that the CAS file, the CSV file and the Satellite image files should be stored in the same directory, and the CAS file and the CSV file should have same name.

(4) Here, you opened the main window of CASPRS.



Main window of CASPRS

## Operation of CASPRS

You can switch between images by click the Pre\_Ima and Nex\_Ima buttons, or press “Z” and “X” keys; you can also switch between transects by click the Pre\_Tran and Nex\_Tran buttons, or press “A” and “S” keys. The image can be zoomed at the rates of 1-30 by click the Zoom in (-) and Zoom out (+) buttons. You can also create an image plotted the transects on the current image.

When you are recognizing the water lines, you can click the Auto Rec button to let the software to find the possible positions of the water lines or dry/wet lines on the current transect. If the first letter of the transect name is “D”, the Auto Rec program search the positions of dry/wet lines; in other cases, the Auto Rec program search the positions of water lines.

The Save button is their text meaning.

If you think the shoreline position is not right, you can click on the right position on the images, and CASPRS calculated the foot point of the right position on current transect. If there is no right position, you can delete the current result by click the Del button.

I recommend that you identify the shoreline positions in the order of the transects. Firstly, click the Auto Rec button, and then check the results. When switch between the images, I recommend you press X key to move to next image, and use the mouse to click the right position if it is wrong, or click the Del button if there is no right position.

Quit.

Click the up-right “X” of the window to quit the software. The data will be auto-saved before the quit.