

How to use TRA (Windows C/C++ version)

This TRA version is based on Windows 10 and Microsoft Visual Studio 2017 (or higher). It requires the installation of HDF library (version 4.2.11) for reading the HLS product (HDF format).

When you open **TRA.sln**, you need to check configuration. Choose **Release** and **x64** (Figure 1), and then make sure:

- (1) **Use MFC in a Shared DLL** (Figure 2);
- (2) **Use Multi-Bytes Character Set** (Figure 2);
- (3) Add the **include and library directories** of HDF (Figure 3);
- (4) Add **_CTR_SECURE_NO_WARNINGS** into preprocessor (Figure 4).

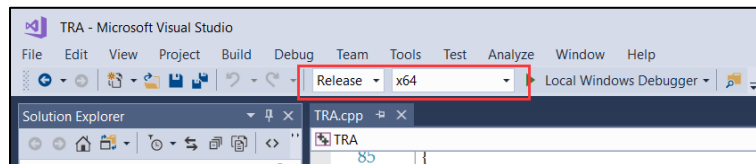


Figure 1

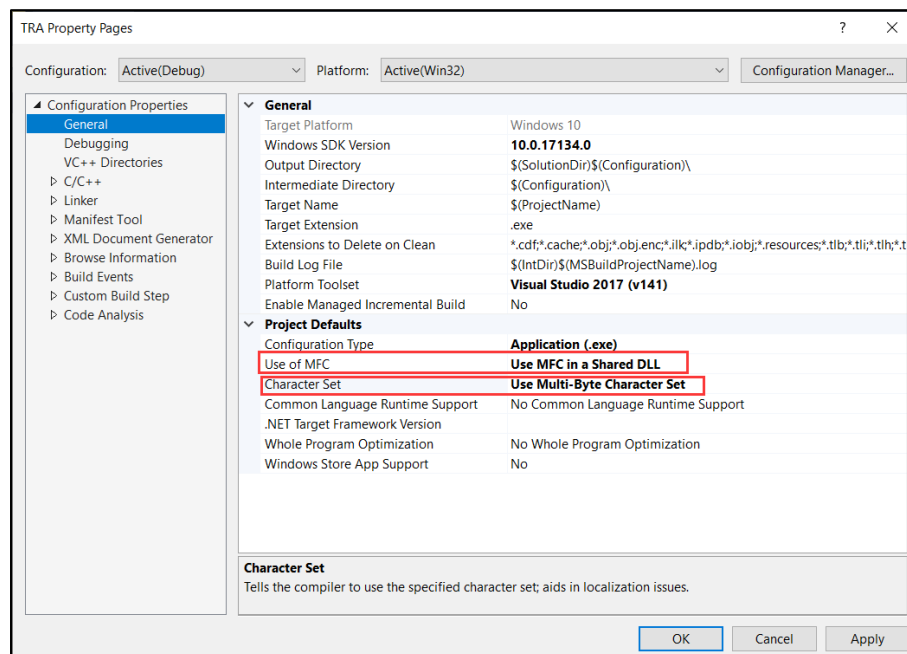


Figure 2

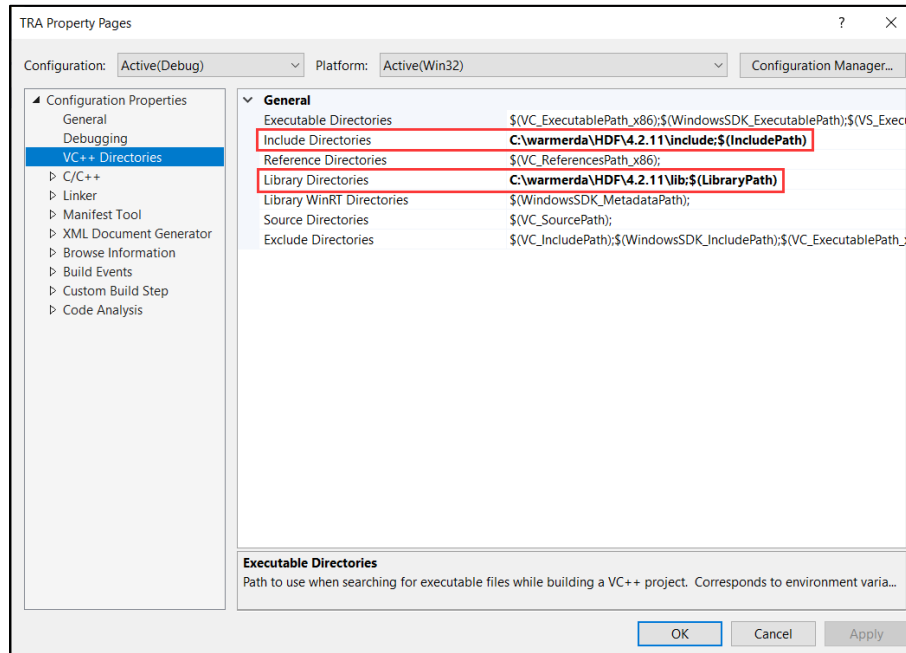


Figure 3

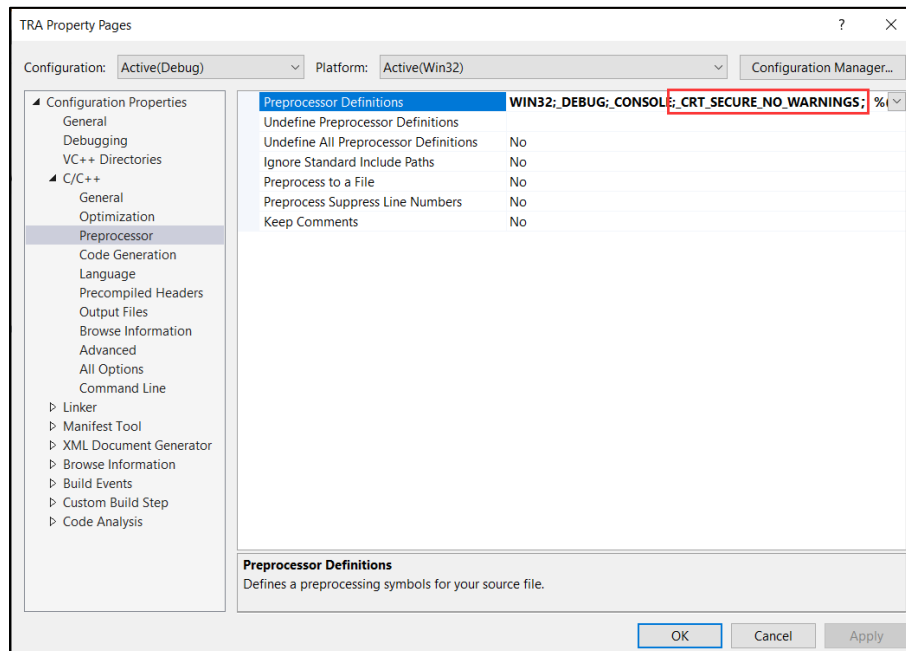


Figure 4

There are two functions for running TRA: one is for a single pixel and the other is for the MGRS tile.

When running a single pixel, you need to define the path of L30 and S30 point data (CSV format) and the output path of fitted parameters (TXT format). As shown in Figure5, the CSV file should be organized as nine

columns (*Year*, *DOY*, *Blue*, *Green*, *Red*, *NIR*, *SWIR1*, *SWIR2*, and *ClearFlag*). The *ClearFlag* labeled as 1 means the clear-sky observation.

	A	B	C	D	E	F	G	H	I
1	Year	DOY	Blue	Green	Red	NIR	SWIR1	SWIR2	ClearFlag
2	2015	18	361	466	607	1466	981	1024	0
3	2015	27	0	0	0	0	0	0	0
4	2015	34	2162	2357	2417	3231	2580	2489	0
5	2015	43	0	0	0	0	0	0	0
6	2015	50	8450	8222	8317	7974	5698	4785	0
7	2015	75	0	0	0	0	0	0	0
8	2015	82	4570	4419	4630	5616	4793	4341	0
9	2015	91	0	0	0	0	0	0	0
10	2015	98	363	565	472	3050	1658	917	1
11	2015	107	0	0	0	0	0	0	0
12	2015	114	260	476	355	3603	1472	700	1
13	2015	123	0	0	0	0	0	0	0
14	2015	130	5489	5566	5618	6717	5101	4339	0
15	2015	139	0	0	0	0	0	0	0
16	2015	146	8024	7586	7626	7707	4715	3607	0

Figure 5

When running a MGRS tile, you need to create the TXT file (Figure 6) for all paths of the HLS L30 or S30 files (use the command: *dir *S30*.hdf /s/b >pathS30.txt*), and then define the paths of two TXT files and the output path of the HDF file with the fitted parameters.

```

1 H:\SR_Data\HLS\V1.4\SEA\HLS.S30.T54JYP.2015275.v1.4.hdf
2 H:\SR_Data\HLS\V1.4\SEA\HLS.S30.T54JYP.2015295.v1.4.hdf
3 H:\SR_Data\HLS\V1.4\SEA\HLS.S30.T54JYP.2015328.v1.4.hdf
4 H:\SR_Data\HLS\V1.4\SEA\HLS.S30.T54JYP.2015345.v1.4.hdf
5 H:\SR_Data\HLS\V1.4\SEA\HLS.S30.T54JYP.2015358.v1.4.hdf
6 H:\SR_Data\HLS\V1.4\SEA\HLS.S30.T54JYP.2016010.v1.4.hdf
7 H:\SR_Data\HLS\V1.4\SEA\HLS.S30.T54JYP.2016023.v1.4.hdf
8 H:\SR_Data\HLS\V1.4\SEA\HLS.S30.T54JYP.2016040.v1.4.hdf
9 H:\SR_Data\HLS\V1.4\SEA\HLS.S30.T54JYP.2016070.v1.4.hdf
10 H:\SR_Data\HLS\V1.4\SEA\HLS.S30.T54JYP.2016083.v1.4.hdf
11 H:\SR_Data\HLS\V1.4\SEA\HLS.S30.T54JYP.2016100.v1.4.hdf
12 H:\SR_Data\HLS\V1.4\SEA\HLS.S30.T54JYP.2016113.v1.4.hdf
13 H:\SR_Data\HLS\V1.4\SEA\HLS.S30.T54JYP.2016123.v1.4.hdf
14 H:\SR_Data\HLS\V1.4\SEA\HLS.S30.T54JYP.2016133.v1.4.hdf
15 H:\SR_Data\HLS\V1.4\SEA\HLS.S30.T54JYP.2016140.v1.4.hdf
16 H:\SR_Data\HLS\V1.4\SEA\HLS.S30.T54JYP.2016160.v1.4.hdf
17 H:\SR_Data\HLS\V1.4\SEA\HLS.S30.T54JYP.2016173.v1.4.hdf
18 H:\SR_Data\HLS\V1.4\SEA\HLS.S30.T54JYP.2016180.v1.4.hdf
19 H:\SR_Data\HLS\V1.4\SEA\HLS.S30.T54JYP.2016193.v1.4.hdf
20 H:\SR_Data\HLS\V1.4\SEA\HLS.S30.T54JYP.2016200.v1.4.hdf

```

Figure 6