1. Decompress the Plasticty\_Workshop.zip. The Zip file contains four folds, two R scripts, and this document. The fold ghcn is used to store daily weather profiles downloaded from NOAA FTP. Other three folds are input files for demo crops.

######## Top\_dir

######## |----0ghcn

######## | |--ghcn\_stations\_lite.txt

######## | |--2011.csv.gz (not included, downloading from NOAA FTP)

######## |----1Sorghum

######## | |--7Envs\_envParas\_DAP122.txt

######## | |--Env\_meta\_table.txt

######## | |--Trait\_records.txt

######## | |--Genotype.txt

######## |----2Rice

######## | |--9Envs\_envParas\_DAP80~.txt

######## | |--Env\_meta\_table.txt

######## | |--Trait\_records.txt

######## | |--Genotype.txt

######## |----3Maize

######## | |--47Envs\_envParas\_DAP80~.txt

######## | |--Env\_meta\_table.txt

######## | |--Trait\_records.txt

######## | |--Genotype.txt

######## |----CERIS\_search\_Workshop.r

######## |----Sub\_functions\_Workshop.r

######## |----Readme.docx

2. The Zip file doesn’t include the weather profile because of the large size of weather profiles. If you want to practice the weather profile compiling with R script, please download the corresponding file from <ftp://ftp.ncdc.noaa.gov/pub/data/ghcn/daily/by_year/> into the ghcn fold. For Rice, download 2007.csv.gz, 2008.csv.gz, and 2009.csv.gz. And 2014.csv.gz and 2015.csv.gz for Maize. If you prefer to skip this step, you can use the pre-compiled weather file in each crop fold by removing ‘~’ in the ‘9Envs\_envParas\_DAP80~.txt’.

3. To avoid the internet traffic, we suggest running the first xx lines in ‘Ceris\_search\_Workshop.r’ to install the necessary R packages before the Workshop.

4. Within each crop fold, there are three essential files for:

* Observations (Trait\_records.txt), which stores the phenotypic values for each accession (line\_code) in each environment (env\_code);
* Genotype (Genotype.txt), which stores the marker information, if running genomics prediction to predict performance for new genotype is desired;
* Environmental (Either Env\_meta\_info.txt or xxEnv\_envParas\_Dapx~.txt). Env\_meta\_info.txt stores the necessary information about each environment to compile environmental parameters automatically from NOAA records, which are stored in xxEnv\_envParas\_DAPxx.txt. If records from in-field stations are preferred, you can compile this file corresponding.