

# Tools

Spring map creation requires a few simple tools. These are an image editor (Photoshop, Gimp, Paint.NET, etc), MapConv, and a program capable of creating a .zip file. Knowing how to create/edit a .bat file is invaluable to iteration time, as well.

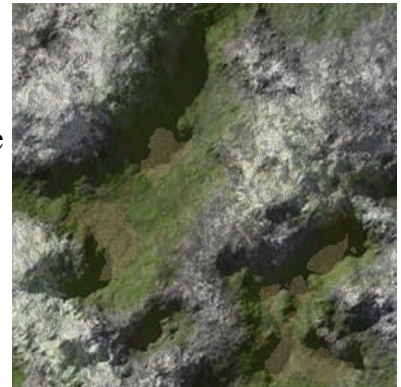
Springrts.com has some very useful reference material. I used [http://springrts.com/wiki/Create\\_maps](http://springrts.com/wiki/Create_maps) when creating this guide. Refer to it for command-line explanation, in particular.

## Necessary Files

1. a texture map
2. a height map
3. a metal map

### Texture map:

All maps are based on a texture image. This image's width and height must be an exact multiple of 1024 pixels. So, for instance, you can have a "4096 by 8192" image, but not a "4096 by 4608" image, as 4608 does not divide by 1024. It, like all three maps, must be saved as a 24 bit BMP. A 1024x1024 Texture will produce a map shown as '2x2' in the launcher. This is a very tiny map!



### Height map:

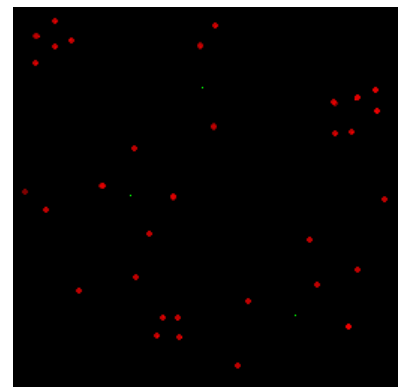
Should measure 1/8 the size of your texture map, plus one pixel (i.e. a 1024x1024 texture map should have a height map measuring 129x129). Your heightmap should be a greyscale image (no color, just shades of grey) saved as a 24 bit .bmp file.



The heightmap dictates your map's topography. Bright spots will be high and dark spots will be low. The exact range depends on the arguments given to mapconv at compile time. Keep in mind water is always at a height of 0, so if you compile your map with a minimum height of -100 and a maximum height of 100, any shades of grey darker than 50% will be underwater!

### Metal Map:

One of the primary resources in the game is metal. This needs to be extracted from the ground by metal extractors, and they work best on designated spots. In this case the metal map actually dictates geothermal plant locations as well.



The map compiler uses the red channel for metal and the green channel for geothermal. Make geothermal spots a single pixel of bright 255 green, and metal spots a larger dot of red (6x6 is about right). Save these into a 24-bit BMP file.

## Creating An SMD File

In addition to these images, a map needs an SMD file created to operate. This is simply a text file which lists various parameters for the map, including sunlight direction, player starting locations, terrain properties, gravity, and so on. The easiest thing to do is create a new text file and rename it to mymap.smd (maching your map's name). Open it in a text editor and use the following as a template.

SMD files support C++ style commenting.

```
[MAP]
{
    Description=My Test Map;
    TidalStrength=15;
    Gravity=100;
    MaxMetal=2;
    ExtractorRadius=90;
    MapHardness=175;

    [ATMOSPHERE]
    {
        FogColor=0.9 0.9 0.9;
        FogStart=0.5;
        CloudColor=0.85 0.7 0.7;
        SkyColor=0.1 0.2 0.9;
        SunColor=1 0.8 0.4;
        CloudDensity=0.2;
        MinWind=2;
        MaxWind=20;
    }
    [WATER]
    {
        WaterBaseColor=0.4 0.7 0.8;
        WaterAbsorb=0.004 0.003 0.002;
        WaterMinColor=0.1 0.2 0.3;
        WaterPlaneColor= 0.1 0.1 0.3;
    }
    [LIGHT]
    {
        SunDir=1 0.7 1;
        GroundAmbientColor=0.4 0.4 0.4;
        GroundSunColor=0.7 0.7 0.7;
        GroundShadowDensity=1;
        UnitAmbientColor=0.3 0.3 0.3;
        UnitSunColor=0.8 0.8 0.8;
        UnitShadowDensity=1;
    }
    [TERRAINTYPE0]
    {
        name=default;
        hardness=1;
        tankmovespeed=1;
        kbotmovespeed=1;
        hovermovespeed=1;
        shipmovespeed=1;
    }
    // Player start positions:
    [TEAM0]{
        StartPosX=220;
        StartPosZ=1000;
    }
    [TEAM1]{
        StartPosX=1050;
        StartPosZ=150;
    }
}
```

```

    }
    [TEAM2]{
        StartPosX=1735;
        StartPosZ=1350;
    }
    [TEAM3]{
        StartPosX=1470;
        StartPosZ=1900;
    }
    // You should create as many start positions as possible, 16 if you can
    // Spring supports up to 32 players nowadays, so you can put 32 positions if you want.
    // positions are in pixels from the texture.bmp, with StartPosZ = Y-coordinate
}

```

## Compiling Your Map

You'll need a copy of mapconv.exe to do this. Look for “Mother's Mapconv” online when in doubt.

Mapconv is a command-line program that will take your specified maps and combine them together into a format the game can use. This is fairly straightforward once you have your images prepared, but is a fairly long command line, so I'd encourage creating a bat file. I actually created a bat file that relocates and packages the files afterward, which I'll show you at the end of this document.

The simplest command line for mapconv is the following:

```

mapconv -o mymap.smf -i -x 175 -n -25 -t texmap.bmp -a
heightmap.bmp -m metalmap.bmp -c 0 -l

```

Running this from a DOS prompt results in four files being created, along with some temp files that you can safely ignore:

```

mymap.smf
mymap.smt
mini.bmp
mini.dds

```

Copy these into a maps folder, along with your appropriate SMD file named to match the .smf.

## Packaging Your Map

Now that you've compiled your map, you need to package it. This gathers everything into a single .zip file for easy distribution. Make sure you have all five of the above files inside a maps folder, as the package must contain a folder called maps to work.

You should have a structure like this, at which point you zip the maps folder:

```

/maps
  mymap.smd
  mymap.smf
  mymap.smt
  mini.bmp

```

mini.dds

To create the zip file, you can either use Windows' built-in Zipped Folder functionality, or make use of an outside utility like 7-Zip. I used 7-Zip to create my file.

Once you've got your zip file, make sure it has the same name as your smf/smd/smt files do, and change its extension from .zip to .sdz. From here, you're ready to try running your map! Copy mymap.sdz to the spring maps folder and launch Spring. Good luck!

## Automating All This

I made a .bat file that does most of the last few steps, making iteration time much faster. To do this, I first created a text file and renamed it compile.bat. I then downloaded 7za, a command-line zip utility, and placed it in the same folder as my image files and mapconv. Finally, I created mymap folder with a maps folder inside it

I then put the following into my bat file.

```
mapconv -o mymap.smf -i -x 175 -n -25 -t texmap.bmp -a heightmap.bmp -m
metalmmap.bmp -c 0 -l
move mini.bmp mymap\maps
move mini.dds mymap\maps
move mymap.smf mymap\maps
move mymap.smt mymap\maps
cd mymap
..\7za.exe a mymap.sdz maps -tzip
pause
```

Running the bat file thus compiles the map, copies the output into a subfolder with a maps folder inside it, then changes to that directory and zips maps into a .sdz file. All you have to do after that is copy the .sdz into your Spring folder and test it! This means you can go from messing with your images to taking a look in-game with only one step in between.