gsm.py

BBS needs a local sky model of the observed field. This sky model is stored in a source table created by makesourcedb from a text input file.

The script `gsm.py` can be used to extract known VLSS sources in the observed field from the GSM and store them in a text file that can directly be used as input by `makesourcedb`. The parameters for the script need to be given at the command line. The spatial selection can be done using a cone in RA,DEC to be given in J2000.

The sources found will also be extracted from other catalogs (NVSS, WENSS) which are used to fit a spectral index.

By default each source will be its own patch (see makesourcedb), but using the `-p` option it is possible to create a single patch for the sources found.

The command

```
use MonetDB
```

has to be given first in order to make it work well.

Cone selection

```
gsm.py [-p patchname] filename ra dec radius [vlssFluxCutoff [assocTheta]]
```

`-p patchname`	if given, all sources will be given the same patch name
`filename`	the path-name of the file to generate
`ra`	the RA part of the cone center (degrees)
`dec`	the DEC part of the cone center (degrees)
`radius`	the radius of the cone (degrees)
`vlssFluxCutoff`	minimum flux (Jy) of VLSS sources to use; default = 4
`assocTheta`	uncertainty in matching (degrees); default = 0.00278 (10 arcsec)

Output file

The generated file is in the `makesourcedb` format. The following fields are extracted:

- source name
- source type (POINT or GAUSSIAN)
- RA and DEC
- Flux I, Q, U, and V (the latter 3 are currently always 0)
- Major and minor axis and orientation(for gaussian sources)
- Reference frequency
- Spectral index

Example

```
gsm.py /home/username/field1.src 23.175 45.978 1 0.1
```

searches in the WENSS catalog using a cone of 1 degree around (23.175, 45.978) degrees. VLSS sources with a flux >= 0.1 Jy are selected. Implicitly `makesourcedb` will create a patch for each source with the same name as the source. Note it is possible to tell `makesourcedb` to add a prefix and/or suffix to this patch name.

```
gsm.py -p grp1 /home/username/field1.src 23.175 45.978 1
```

searches in the WENSS catalog using a cone of 1 degree around (23.175, 45.978) degrees. VLSS sources with a flux >= 4 Jy are selected. It will create a line defining patch `grp1`, where the patch center is the given RA/DEC and its brightness is the summed fluxes. All sources found will belong to this patch.