1 Program sqwave

1.1 Purpose

This is a simple program that generates a time series file consisting of 'on' periods (10's), 'off' periods (0's), and 'unused' periods. The time series is suitable for input as an ideal for 3dfim or afni.

1.2 Usage

sqwave [**-on** #] [**-off** #] [**-length** #] [**-cycles** #] [**-init** #] [**-onkill** #] [**-offkill** #] [**-initkill** #] [**-name name**]

1.3 Options

-on # Length of the 'on' period (# of 10's per cycle).

-off # Length of the 'off' period (# of 0's per cycle).

-length # Total length of the time series.

-cycles # An alternative way of specifying the length of the time series. If the -length command is *not* used, then

$$\text{length } \# = \text{cycles } \# \times (\text{on } \# + \text{off } \#) + \text{init } \#.$$

-init # Length of time before the first 'on' period.

-onkill # Ignore first # of points in the 'on' period.

-offkill # Ignore first # of points in the 'off' period.

-initkill # Ignore first # of points in the 'initialization' period.

-name name Name of output time series file.

1.4 Examples

Example 1. To create a square wave time series of length 100, with 'on' period of length 10, and 'off' period of length 10, the command line would be:

sqwave -on 10 -off 10 -length 100 -name sqwave1.1D

The output time series would then be stored in file sqwave1.1D (the actual output is stored one number per line):

10 10 10 10 10 10 10 10 10 10 0 0 0 0 0 0 0 0 0 0 10 10 10 10 10 10 10 10 10 10 0 0 0 0 0 0
0 0 0 0 10 10 10 10 10 10 10 10 10 10 0 0 0 0 0 0 0 0 0 0 10 10 10 10 10 10 10 10 10 10 0 0
0 0 0 0 0 0 0 0 10 10 10 10 10 10 10 10 10 10 0 0 0 0 0 0 0 0 0 0

Example 2. We again create a square wave time series of length 100, with 'on' period of length 10, and 'off' period of length 10. However, the 'on' cycle does not begin until after 17 time intervals. Also, for correlation calculations, we want to ignore the first 3 points of each 'on' period, and we want to ignore the first point of each 'off' period. The command line to accomplish this is:

```
sqwave -on 10 -off 10 -length 100 -init 17 -onkill 3 -offkill 1 \
-name sqwave2.1D
```

The output time series stored in file sqwave2.1D would be:

0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 99999 99999 99999 10 10 10 10 10 10 10 99999 0 0 0 0 0 0
0 0 0 99999 99999 99999 10 10 10 10 10 10 10 99999 0 0 0 0 0 0 0 0 0 99999 99999 99999
10 10 10 10 10 10 10 99999 0 0 0 0 0 0 0 0 0 99999 99999 99999 10 10 10 10 10 10 10 99999
0 0 0 0 0 0 0 0 0 99999 99999 99999

Note that the '99999' tells program 3dfim (or program afni) to ignore this point in the correlation calculations (see user documentation for these programs).