

SolarSpy

by Tink-rs

GNU GPLv3 – 2022

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(SolarSpy widget only, not the HUD or Bargraph Lua by wlouf)

SETUP INSTRUCTIONS

This conky widget requires you have “Conky-all” installed vs just Conky as it requires the full library of Conky dependencies to run the Lua script.

Ubuntu/Debian:

```
sudo apt install conky-all
```

CentOS and Fedora:

```
sudo yum install conky-all
```

DIRECTORY LOCATION

You must install this widget in your \$HOME/.conky folder.

Do not remove the files from the folder. Just place the SolarSpy FOLDER into your .conky directory.

The path should be ~/.conky/SolarSpy_HUD_P_Conky/...

If you place this folder in a directory other than \$HOME/.conky you will need to edit all the paths in all .sh files and the config file, otherwise the scripts will not work.

If you do need to edit paths, pls use a proper text editor like gedit and use the “find and replace” feature. It’ll make quick work of the job and leaves less room for error/typos.

WIDGET DEPENDENCIES

This widget requires the installation of a very small command line add-on to run.

Xidel command line tool is an awesome web scrapping tool and does things wget can't.

This widget also uses Wget – on most distros it is installed by default.

~~~~~ INSTALL 'Xidel' ~~~~~

Download the file here: <https://www.videlibri.de/xidel.html#downloads>

Ubuntu/Debian based systems require the Debian: 64 bit file.
Other distros will use the Universal Linux file.

~~~~~ CHECK for Wget and/or Install ~~~~~

Ubuntu/Debian

Open terminal

Enter: `wget --version`

if no version is returned, then

Enter: `apt-get update -y`

then: `apt-get install wget -y`

CentrosOS/Fedora

Open terminal

Enter: `wget --version`

if no version is returned, then

Enter: `yum update -y`

then: `yum install wget -y`

WALLPAPER

If you want to use it, the background is included. Set it as your desktop background according to your distro.

Setting Up SolarSpy Scripts

We are going to set the scripts to run outside of Conky as a cron job. This will run the processes in the background and lessen the CPU demand so Conky will run smoothly as a HUD. We are also doing this because if we run these in an `${execi}` inside Conky, we will have to wait 2 hrs for our data to update each time we start the computer.

The solar.sh script is set to refresh the data and retrieve new solar images every 2 hours. The images.sh copies the images creating a “slideshow” which runs every 12 minutes.

This process is easy. Just take your time with each step. You’ve got this. :)

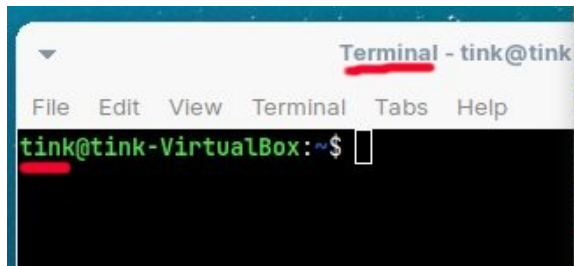
Ready the .sh (shell script files)

Because cron jobs run as root, we need to use absolute file paths. We have to edit images.sh and solar.sh (in the script folder)

the paths are currently set as:

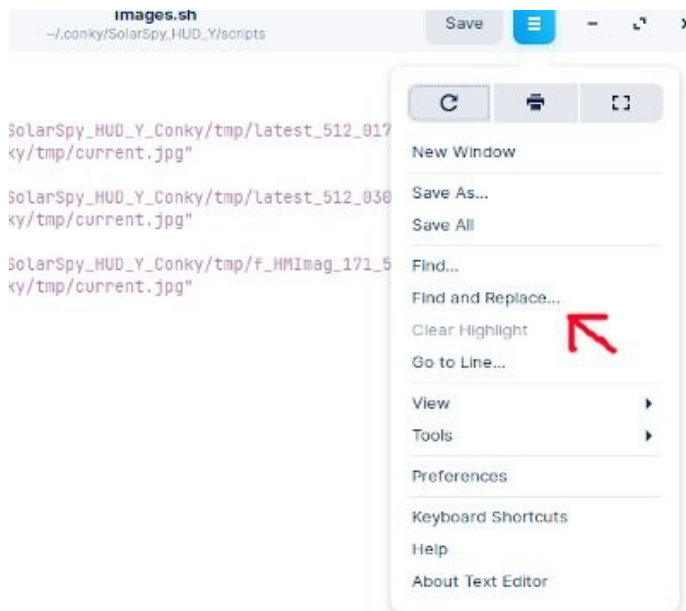
/home/**yourusername**/.conky/SolarSpy_HUD_P_Conky/...

We need to replace **yourusername** with your actual user name.
(Your user name is the name before the @ in terminal)

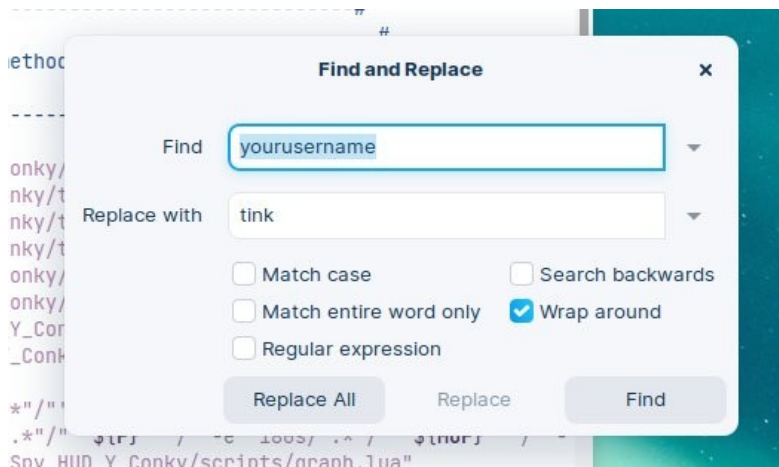


You **MUST** use a proper text editor such as Gedit or Gnome Text Editor

Open the solar.sh file in the text editor
Click on the menu for the “Find and Replace” tool
(In Gedit, the menu is on the right)



In the **find** box paste this word: yourusername
In the **replace with** box type in your actual user name
(My user name is Tink in the below example)



Click 'Replace All'
Now save and close.
Rinse and repeat, following the above steps with the images.sh file.

MAKE SCRIPTS EXECUTABLE

NOTE: Because we are running these as cron jobs as root, we need to add 'a' to our chmod command. Just making them "+x" executable is not enough.

(To paste code into terminal use `ctl + shift + v` or right click 'paste')

open the 'scripts' folder (or continue in the terminal from the previous step)

right click on a blank space

select "open in terminal"

(or cd into the directory if you prefer)

Enter: `sudo chmod a+x solar.sh` (then hit enter)

Enter: `sudo chmod a+x images.sh` (then hit enter)

UPDATE THE DATA

(We will be setting this as a cron job in a moment, but the cron job will take 2 hrs before it updates the data and 12 min before the image "slideshow" starts, we could wait, HOWEVER, this is the best way to test that you changed the paths properly.)

open the 'scripts' folder

right click on a blank space

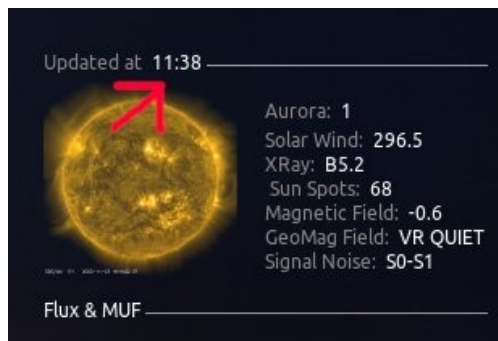
select "open in terminal"

(or cd into the directory if you prefer)

Enter: `sudo bash solar.sh`

then: `sudo bash images.sh`

The "Updated at" time in the widget should now be current and the images should cycle through 1 "round" of a slideshow.



SET SCRIPTS TO AUTO-RUN IN CRON

Replace **yourusername** in the code below with your user name. We are also adding a tag at the end of the cron jobs to create error files that will show up in the main SolarSpy folder only if there are issues. This will help you trouble shoot if needed.

We are adding 2 sets of cron jobs – one to run once (as root) on start-up (so that our info is updated immediately on start-up)

And the 2nd job to run our scripts on a regular time schedule.

“ON START-UP” CRON JOB

Open terminal (or continue in the terminal from the previous step)

Enter: `sudo -i`

Terminal will ask for your password

Enter your password

(you are now logged in as root)

Enter: `crontab -e`

(Terminal will open crontab in an editor.)

Use your keyboard down arrow to move cursor below all the commented text. Paste the text in the empty space below it.

COPY THIS CODE FROM THE TEXT FILE – CRON_COMMANDS – (seems the below code is breaking into multiple lines when pasting to the crontab editor. Each command should sit on one line.)

paste: `@reboot`

```
/home/yourusername/.conky/SolarSpy_HUD_P_Conky/scripts/solar.sh  
>>   
/home/yourusername/.conky/SolarSpy_HUD_P_Conky/solar_reboot_err  
ors 2>&1
```

Hit enter

Then paste: `@reboot`

```
/home/yourusername/.conky/SolarSpy_HUD_P_Conky/scripts/images.s  
h >>   
/home/yourusername/.conky/SolarSpy_HUD_P_Conky/images_reboot_er  
rors 2>&1
```

Hit enter (the extra blank line is needed on some cron versions – a weird quirk)

Save the file (in Nano hit `ctl s`, then `crtl x`)

Crontab editor should be closed now and you are back in terminal.

Now start the @reboot cron service

Debian/Ubuntu enter: `systemctl start cron.service`

Older Debian/Ubuntu enter: `update-rc.d cron defaults`

CentOS/Fedora enter: `systemctl enable crond.service`

Older CentOS/Fedora enter: `service crond start`

Enter: `exit`

(you should now be out of root and back as your user)

Stay in terminal for our next task.

REGULAR TIME SCHEDULED CRON

Enter: `sudo crontab -e`

COPY THIS CODE FROM THE TEXT FILE – CRON_COMMANDS – (seems the below code is breaking into multiple lines when pasting to the crontab editor. Each command should sit on one line.)

Enter:

```
0 */2 * * * bash
/home/yourusername/.conky/SolarSpy_HUD_P_Conky/scripts/solar.sh
>> /home/yourusername/.conky/SolarSpy_HUD_P_Conky/solar_errors
2>&1
```

Hit enter, then on the next line enter....

```
*/12 * * * * bash
/home/yourusername/.conky/SolarSpy_HUD_P_Conky/scripts/images.s
h >>
/home/yourusername/.conky/SolarSpy_HUD_P_Conky/images_errors
2>&1
```

Ensure there is one blank line below (a weird quirk of crontab in some distros)

Save the file (in Nano hit `ctl +s`, then `ctrl +x`)

Stay in terminal for our next task.

START THE CRON SERVICE

Remember, after we start the service it will take 2 hrs for the data to update and 12 min before the images start the “slideshow”.

~~~~~ Debian/Ubuntu ~~~~~

Newer versions

Enter: `sudo systemctl enable cron.service`
then: `sudo systemctl start cron.service`
check cron is running: `systemctl status cron`

Older Versions

Enter: `update-rc.d cron defaults`
then: `/etc/init.d/cron start`
check cron is running: `pgrep cron`

~~~~~ CentOS/RHELv7.x+ and newer Fedora ~~~~~

Newer versions

Enter: `sudo systemctl enable crond.service`
then: `sudo systemctl start crond.service`
check if cron is running: `systemctl status crond.service`

Older versions CentOS/Fedora:

Enter: `chkconfig crond on`
then: `service crond start`
check cron is running: `service crond status`

ADDITIONAL INFO

To stop the cron jobs at any time, simply open crontab in terminal...

`sudo crontab -e`

Delete the entries, then save.

Then enter: `sudo -i`

Then: `crontab -e`

Delete the entries, then save.

To remove the error files (if they were created), right click to open terminal in the main SolarSpy folder and enter:

`sudo rm error-file-name` (replace with the file name)

LAYOUT

All files should be edited in a proper text editor such as Vim, Nano, Gedit etc.

The nature of Conky is that it will not display the same on every device. This widget was designed for 1920x1080 resolution. But no matter how much care I've taken to align everything, you will undoubtedly have to make adjustments and realign things.

GRAPHS

The graphs display independently of the config file (named solarspy) To access the graphs go to the graphs.lua file in the scripts folder.

***** **IMPORTANT** *****

DO NOT add or remove any lines **ABOVE** the **CPU GRAPHS** section. The solar.sh script writes data to the **SOLAR GRAPHS SECTION** in this file, assigned by line number. You **CAN** delete lines anywhere **BELOW** the Solar graphs section.

To **REMOVE** a **CPU** graph, select the code starting at the “ { “ and ending with the “ },”.
See image below.

```
290     },
291     {
292         name="cpu",
293         arg="cpu7",
294         angle=90,
295         max=1000000,
296         alarm=900000,
297         bg_colour={0x4a4e50,0.25},
298         fg_colour={0x1789db,1},
299         alarm_colour={0x77ae00,1},
300         x=14,y=777,
301         blocks=45,
302         height=4,width=14,
303         draw_me=true,
304     },
305     {
306         name="cpu",
307         arg="cpu8",
308         angle=90,
309         max=1000000,
310         alarm=900000,
311         bg_colour={0x4a4e50,0.25},
312         fg_colour={0x1789db,1},
313         alarm_colour={0x77ae00,1},
314         x=14,y=815,
315         blocks=45,
316         height=4,width=14,
317         draw_me=true,
318     },
319 }
320 -----END OF PARAMETERS-----
321
322
```

It's best to remove graphs starting at the end of the CPU section, meaning if you don't need CPU graphs 7 and 8, then specifically remove CPU 7 and 8, and so on. That way you don't have to rename the other graphs.

ADJUST GRAPH POSITION

x=14,y=815,

x is the vertical position and y is the horizontal position

CHANGE GRAPH COLORS

```
name="cpu",  
arg="cpu7",  
angle=90,  
max=1000000,  
alarm=900000,  
bg_colour={0x4a4e50,0.25},  
fg_colour={0x1789db,1},  
alarm_colour={0x77ae00,1},  
x=14,y=777,  
blocks=45,  
height=4,width=14,  
draw_me=true,
```

Replace the 6 characters between the "0x" and the "," with any rgb value.

IMAGES

The images.sh script copies the solar images (once every 4 minutes) and writes it as 'current.jpg' so do not change the image name in the \${image} tag in the conky config unless you know what you are doing.

Image "slideshow" timing. To change the display time, edit the images.sh file.

Each image is set to show for 4 minutes (x3 images) which means it takes the script 12 minutes in total to execute.

Lines 5, 7 and 9 have a sleep command. This controls the timing. Change it to whatever you wish, however, the sleep command on line 9 is written in seconds because it needs to be 10 secs less. This is to ensure there is no over-lap in the execution as a cron job.

Whatever you change it to, you must also adjust the crontab entry to match. So, if you changed the images to sleep for 5 minutes each, it will take the script 15 minutes in total to execute. On the crontab entry, change the "/12" (which indicates 12 minutes) to "/15"

HUD

You will have to change some settings according to your system/distro.

Here are some useful tips to help set up the HUD for your system.

CPU TEMP

Conky code for CPU temps example: `${hwmon 5 temp 5}°C`

in terminal enter: `tree /sys/class/hwmon/`

*For CPU Temp enter the hwmon number that correlates to the output that reads
"/devices/platform/coretemp"*

Can also try...

enter: `find /sys/devices/platform/ -iname '*input'`

output tells you all hwmon info

GRAPHICS CARD NAME

Line 81 in solarspy config file...

`${color}${font}Nvidia ${color}RTX 3060 ${color1}GPU ${color}`

You will need to replace the words "Nvidia" and "RTX 3060" with your card name/type

To find it, in terminal enter: `lspci`

NETWORK INFO

line 125 – 141 in solarspy config

To find your wireless connection....

~~~~~Debian/Ubuntu, older Fedora ~~~~~

**in terminal enter:** `iwconfig`

*output will list your internet connection ID eg. Wlp4s0*

Will also output your VPN connection ID (if installed)

~~~~~ Newer Fedora ~~~~~

in terminal enter: `nmcli`

or alternately install: `dnf install wireless-tools-1`

then in terminal enter: `iwconfig`

A note about transparency and Conky

Conky has some shortcomings when it comes to transparency. You will need to use a fairly dark background in order for the text color and images to display properly. Transparency on a light background with Conky just doesn't work. If you insist on using a light background then you will need to enable Conky's background.