Solar imaging on a budget

Solar imaging with a webcam and a Coronado PST

This is just a reaching hand for those who wants to do some solar imaging with a webcam. It's just the way I do it, not the ONLY way! So, trying and learning is the best way to solve the solar imaging puzzle…

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http://astrosurf.com/obisolar/colabora/colaboradores/veldhuis.html
What do you need?

- Coronado PST
- Motor driving equatorial mount
- Philips ToU-webcam
- 2X Barlow lens
- A good computer
- The necessary software
- Sunshine...lots of it
- And last but not least: a cold beer on a hot summer day! ;)

The setup

Set up the PST and level at north. It is important to track the Sun on an equatorial driven mount to keep the Sun centered on the ccd-chip.

I have mine piggybacked on an 8” SCT. >>

The webcam

Cheap webcams suitable for solar-imaging:

- Philips ToUcam PRO I, II
- Philips Vesta PRO
- Quickcam PRO 4000

I use a black & white RAW modded ToU-camII (SC3). >>

My cam has a nosepiece. Otherwise, use a MOGG adapter for connecting the webcam to the PST. >>
Getting into focus

To get into focus with a PST and webcam, you need the front lens of a 2X barlow:

Then, the PST works @ f/15

My PST also comes in good focus with a Tele Vue 2.5X Powermate:

Then, the PST works @ f/25

Sunspot 933

@ f/15

@ f/25

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Get out of the Sun to get good focus...

Two ways to get good focus on your computerscreen:

- get your room as dark as possible or...
- use a cardboard box!

Software

Some useful software for imaging and processing:

- Original webcam drivers
- Registax V4
  - http://www.astronomic.be/registax/
- K3ccdTools
  - http://www.pk3.org/Astro/index.htm?k3ccdtools.htm
- Photoshop, Paintshop Pro or ImagesPlus.

Capturing some frames

- Set image format at 640X480 pixels
- Shoot short AVI’s of about 30 – 45 seconds
- Use framerates of 10 – 15 frames/second
- Always capture in monochrome, black and white

Imaging Parameters

[Images of Imaging Parameters settings]

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Imaging Parameters

- Brightness: > as possible
- Gamma: < as possible
- Contrast: 50%
- Saturation: 0%
- Mode: black/white

- Exposure time:
  - Prominences: 1/33 – 1/100sec.
  - Sunspots: 1/500 – 1/1000sec.
- Gain: < as possible

Captured some AVI’s..., what’s next?

Captured some AVI’s and ready to align.
Open Registax and select an AVI-file.

Using Registax

- Select an AVI file
- Uncheck all bad frames
- Select a reference frame
- Choose an alignmentbox size and put it on a contrasty detail like a spot.
- Set the Quality Estimate on Compress and lowest quality on 90%
- Push the align button
- Registax will now align the images from best to worse

See next 2 figures

>>

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Choose the limited frames to stack, with the slider at the bottom of the screen
- Push the Limit button
- Registax will now stack all selected frames
- You end up with the Wavelet screen
- See next 2 figures
Now you can set the wavelets the way you like, just don’t overdo it.
- Push the Do All button
- There is a lot more you can do in this screen, just try it out.
- Save as TIFF or FITT size

After you saved your images, you can process them further with Photoshop or Paintshop.
- Just try Levels, Curves, Shadows/Highlights and Unsharp Masking.
- I use a H-alpha colorisation AVL, but you can give the Sun a real nice color with Colorbalance and Channelmixer too!. Just playing with those sliders ;)

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Hopefully you are now a step closer...

to solve the solar imaging puzzle...