

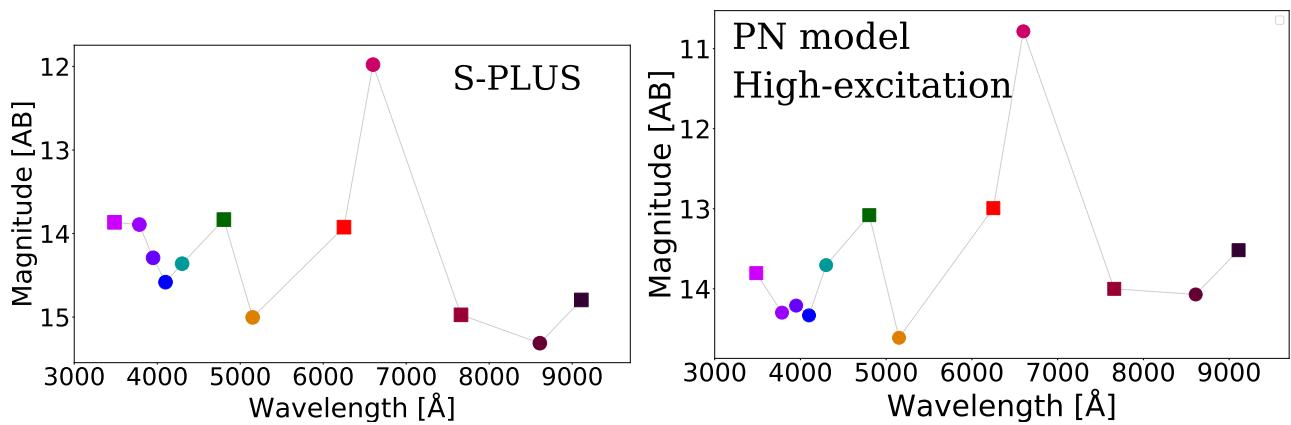
# SMC planetary nenubae in S-PLUS

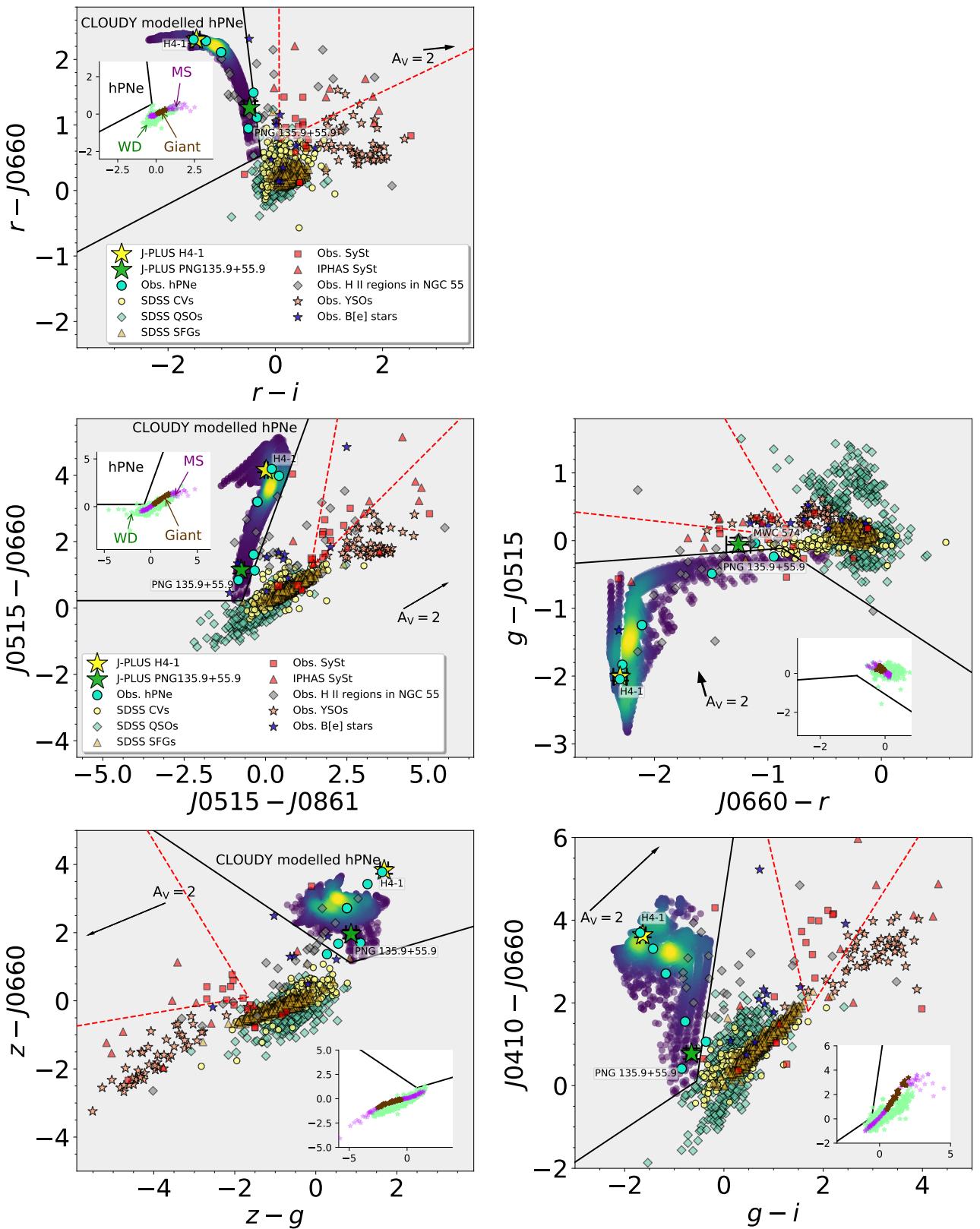
## 1 Science verification

I found this sample of SMC PNe: vizier -> J/A+A/472/101/table7. Chemical evolution of SMC planetary nebulae (Idiart+, 2007, 2007A&A...472..101I) This catalog has  $\sim 40$  PNe.

I made cross matching between this catalog and SPLUS catalog. I found 21 matches using a 1 arcsec of radii.

I putted the final matches in my S-PLUS colour diagrams diagram (see Fig. 2),





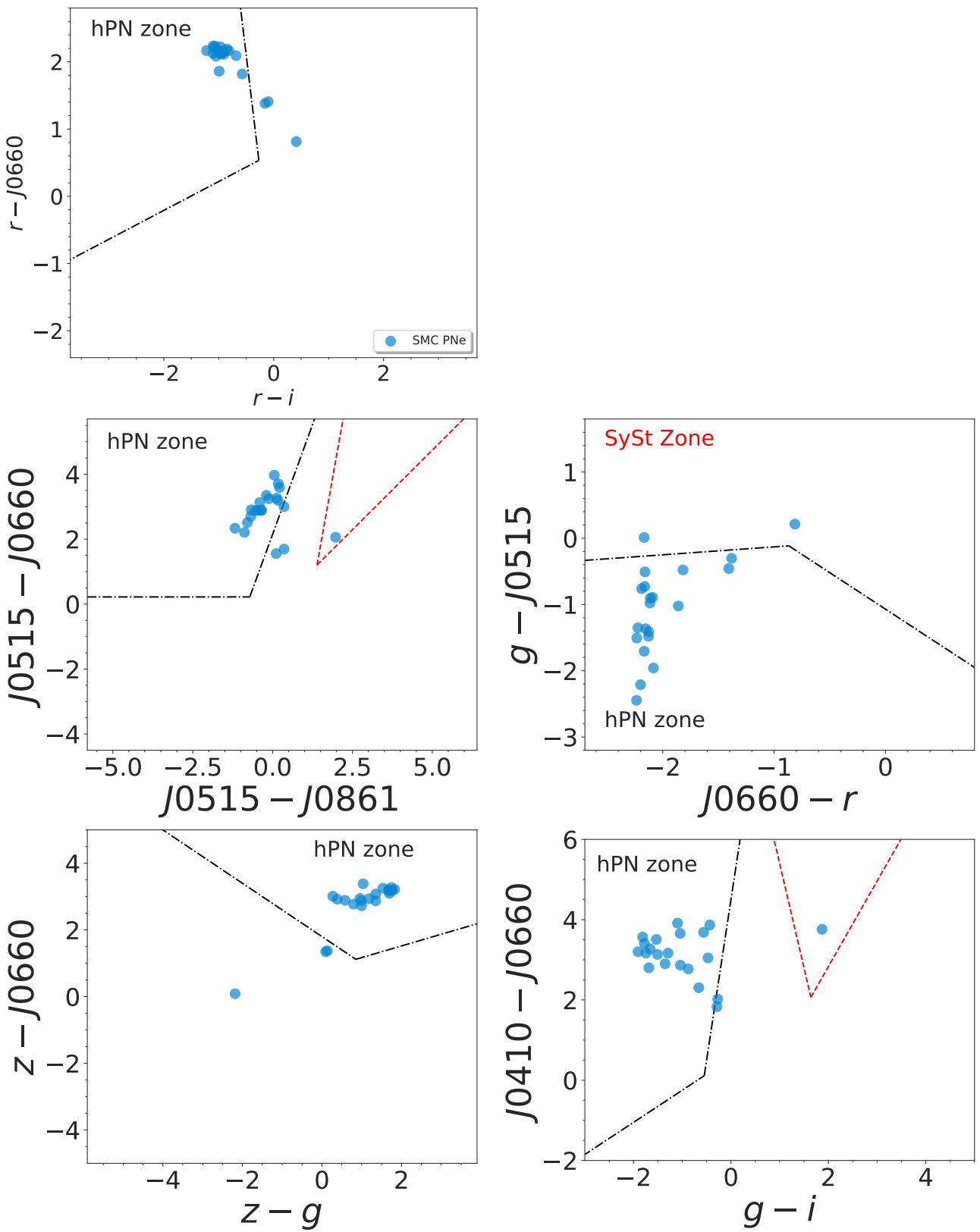
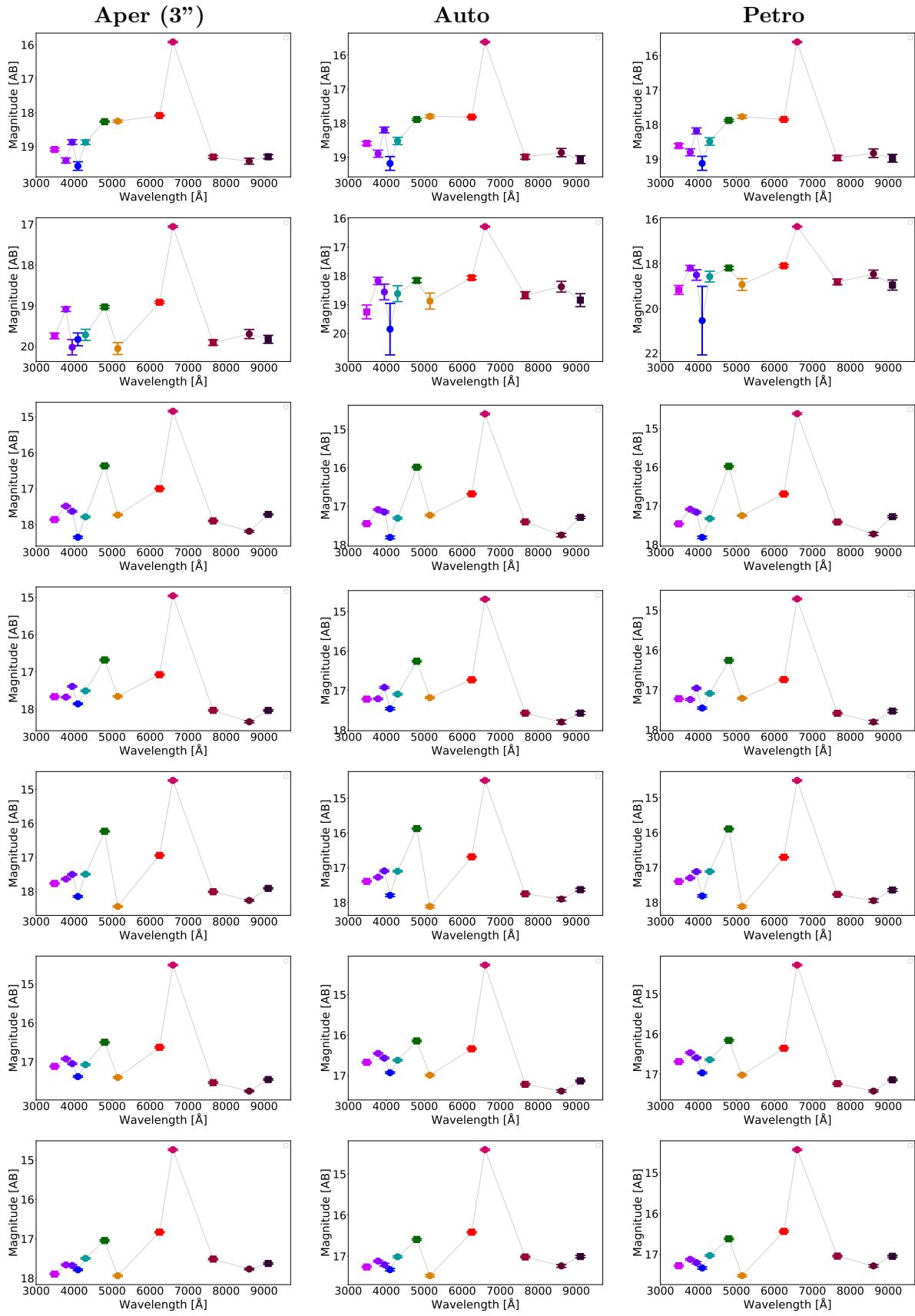
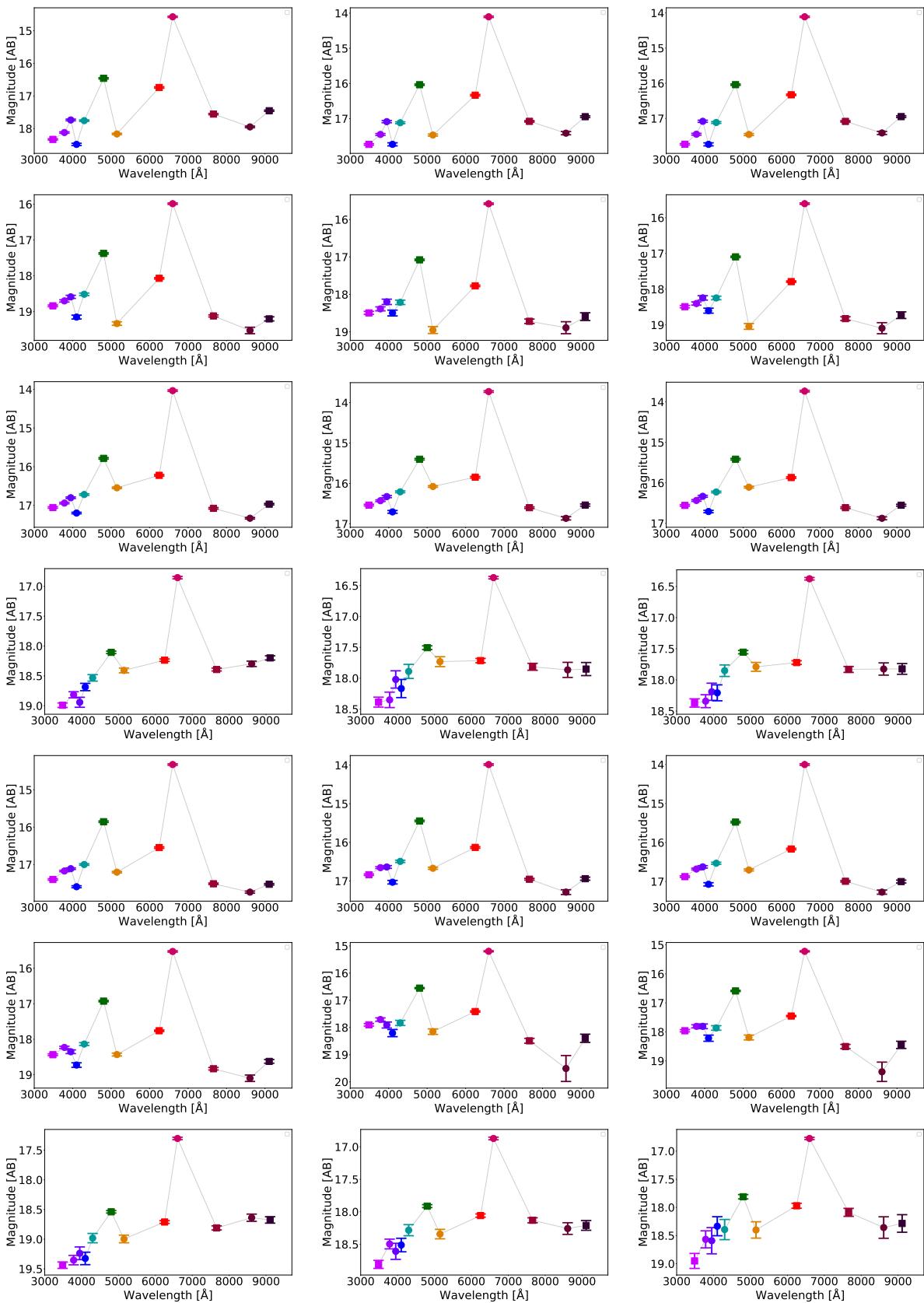
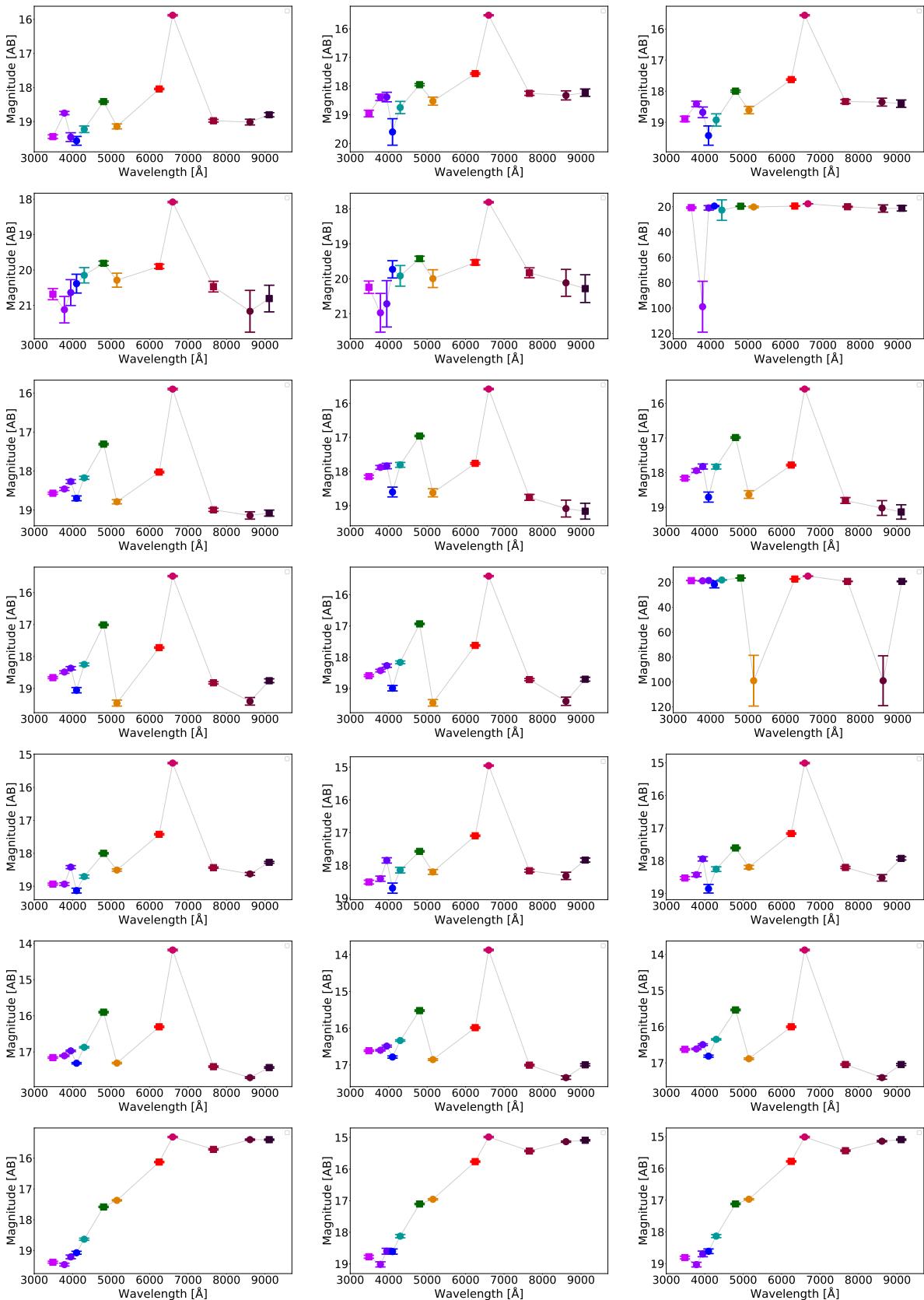
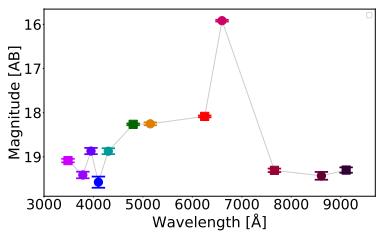
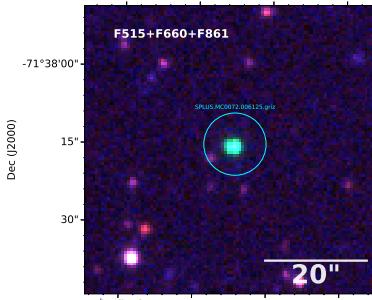
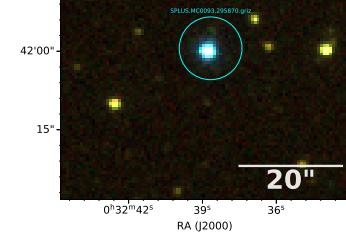
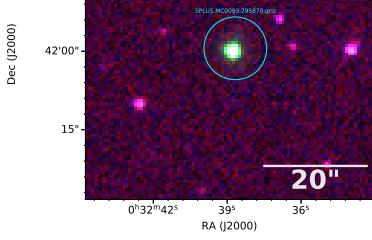
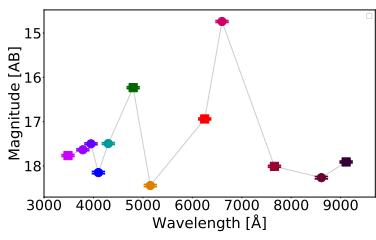
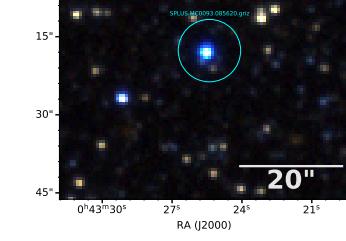
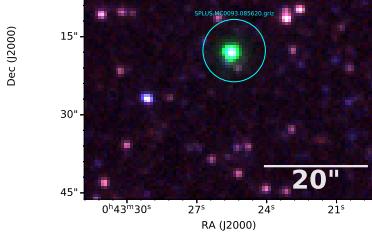
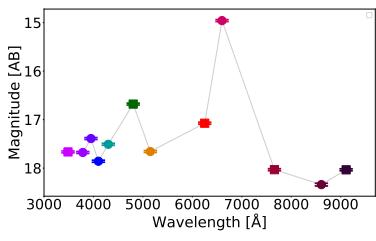
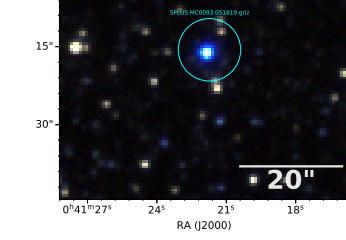
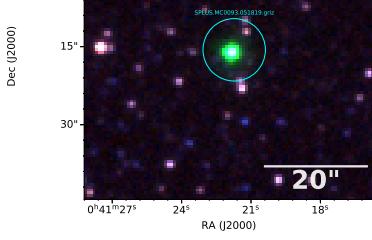
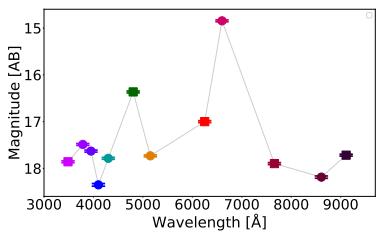
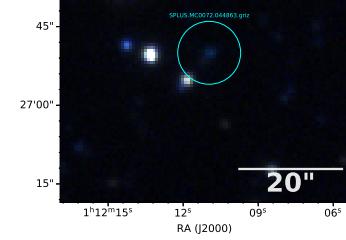
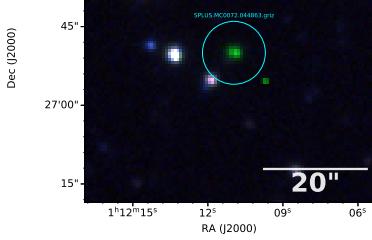
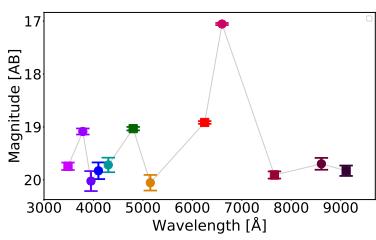
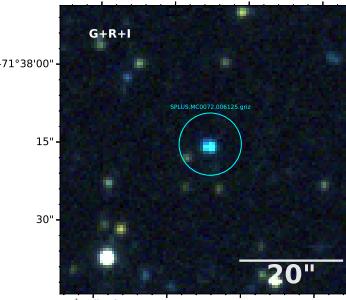


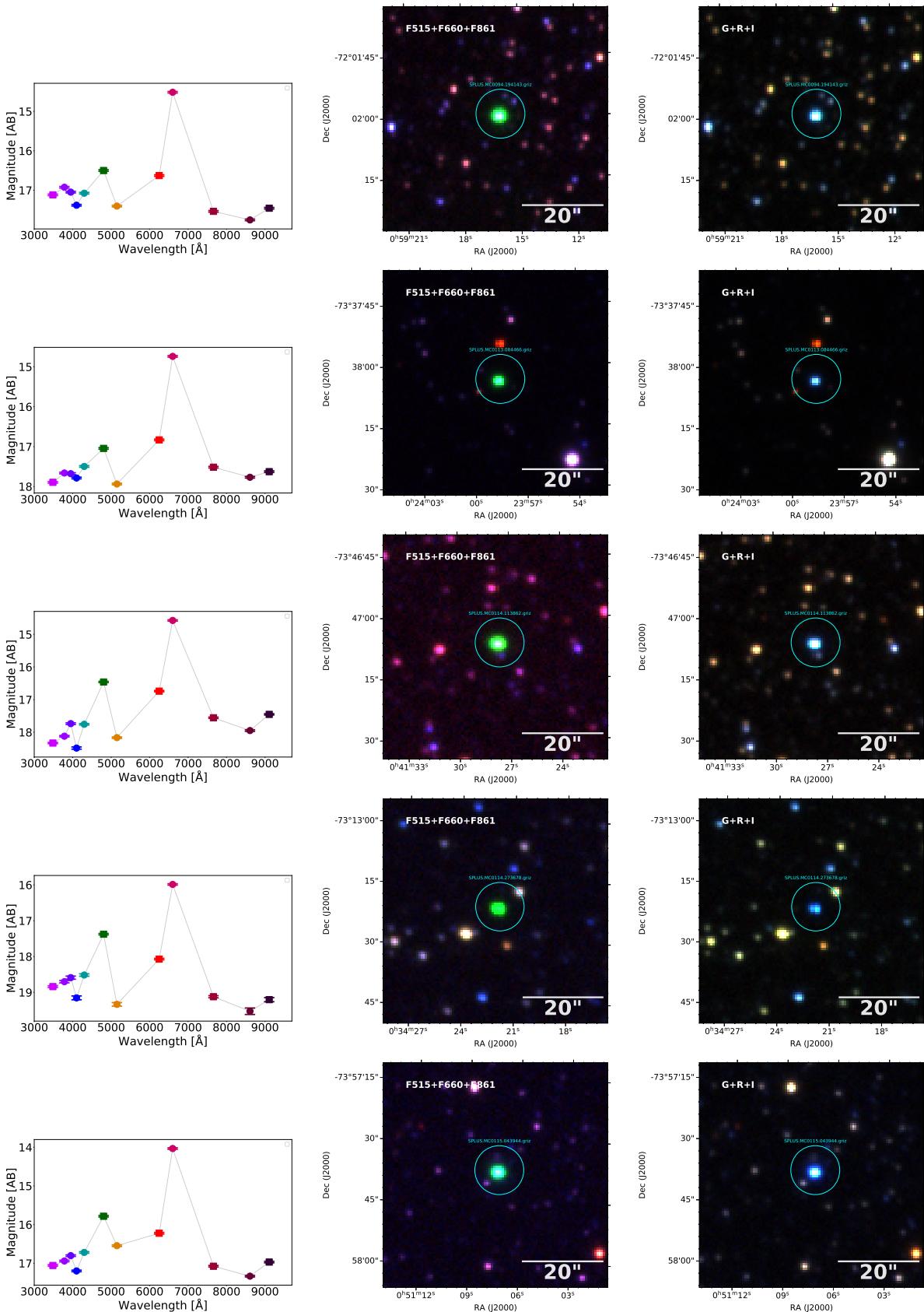
Figure 1:

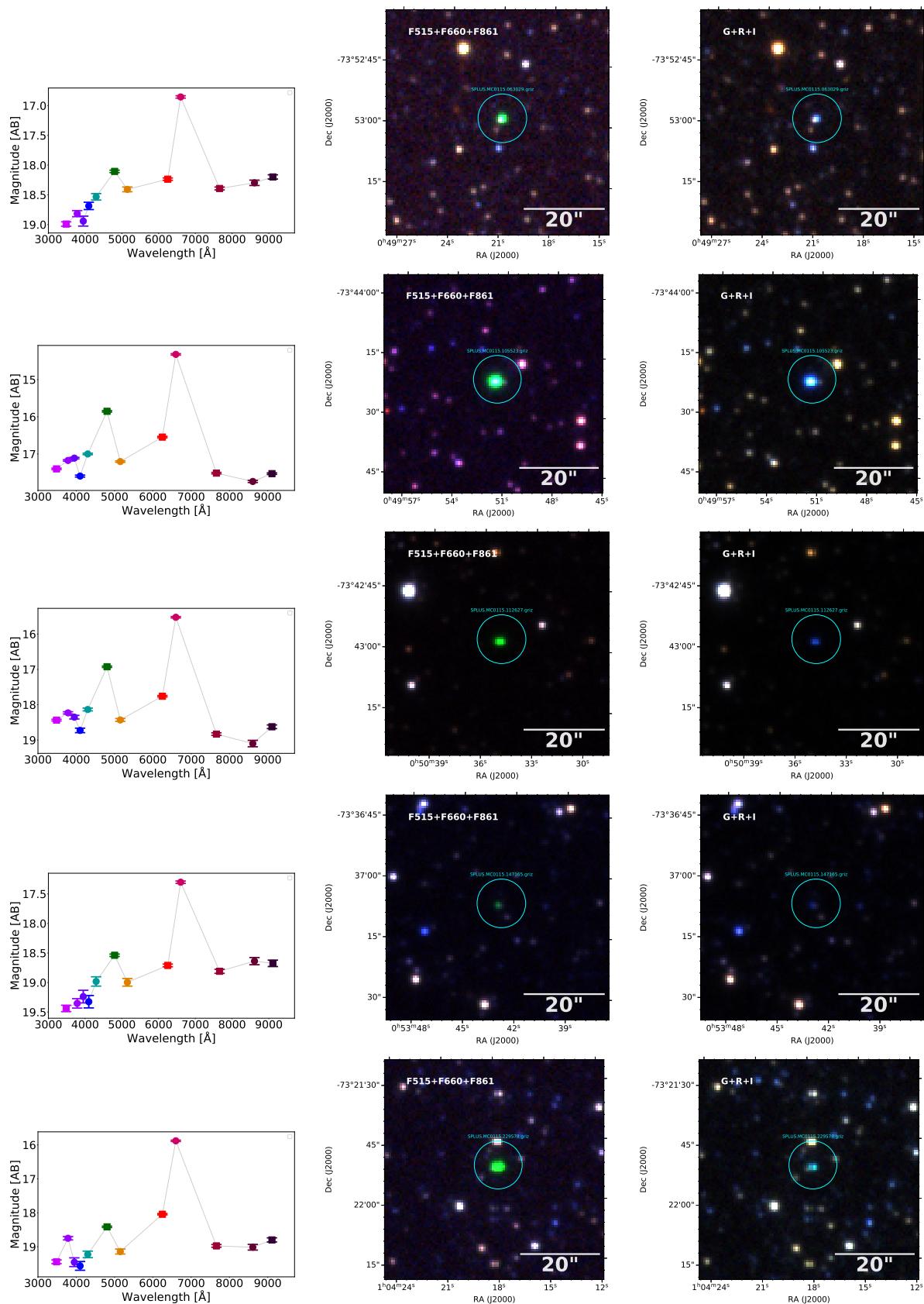


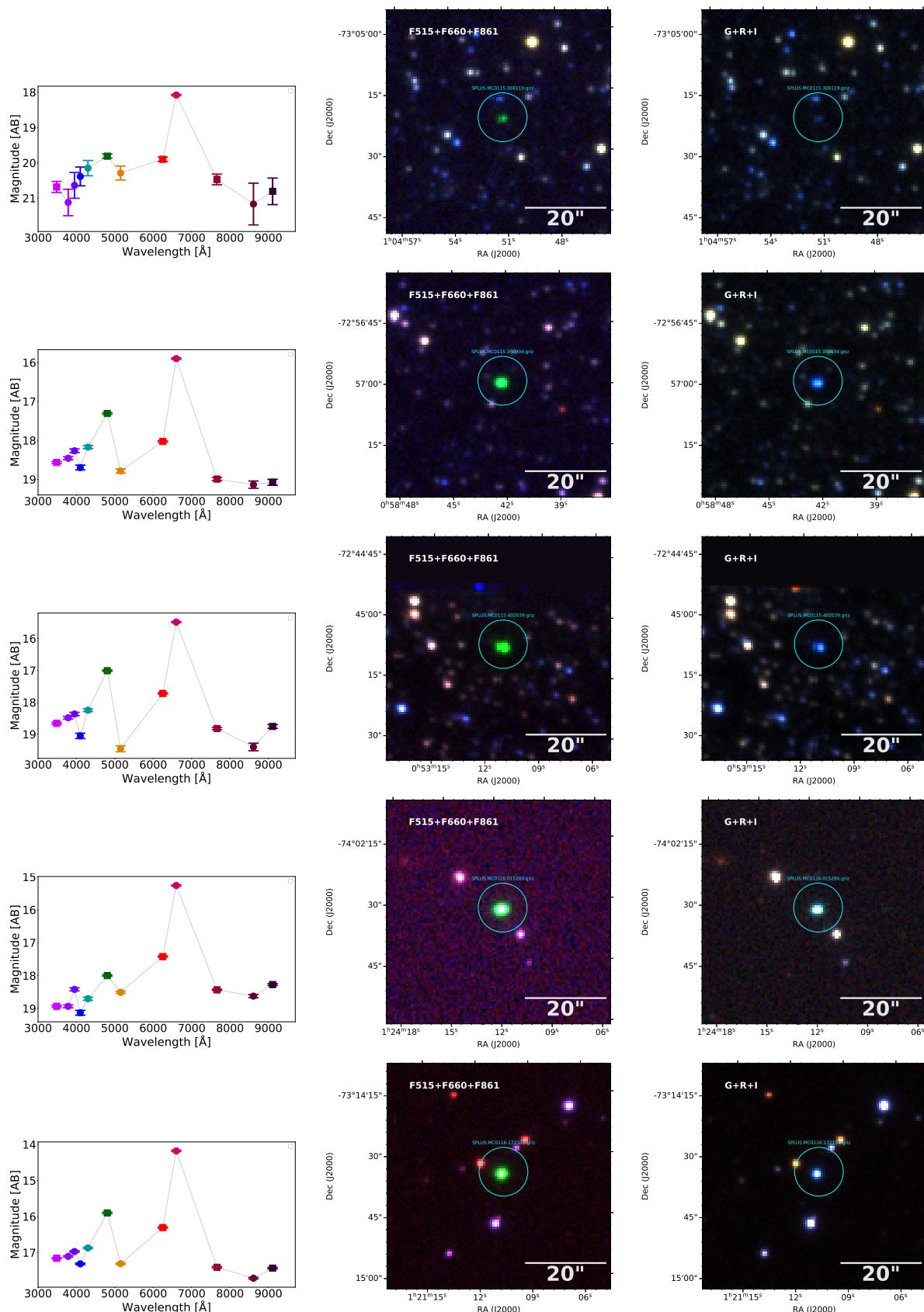


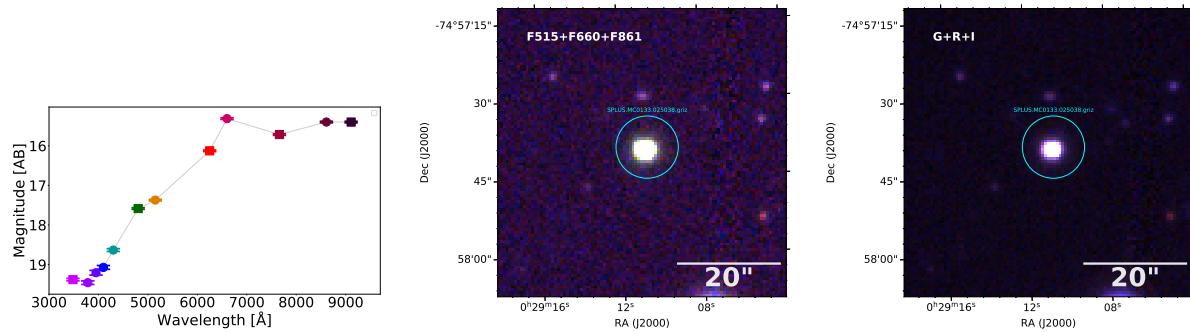


**Aper(3'')****F515+F660+F861****G+R+I**









## 1.1 What about compact H II regions

I found a catalog of 12 compact H II regions (2012SerAJ.185...53W) in the SMC SPLUS catalog. In Simbad appear reported like emission line stars.

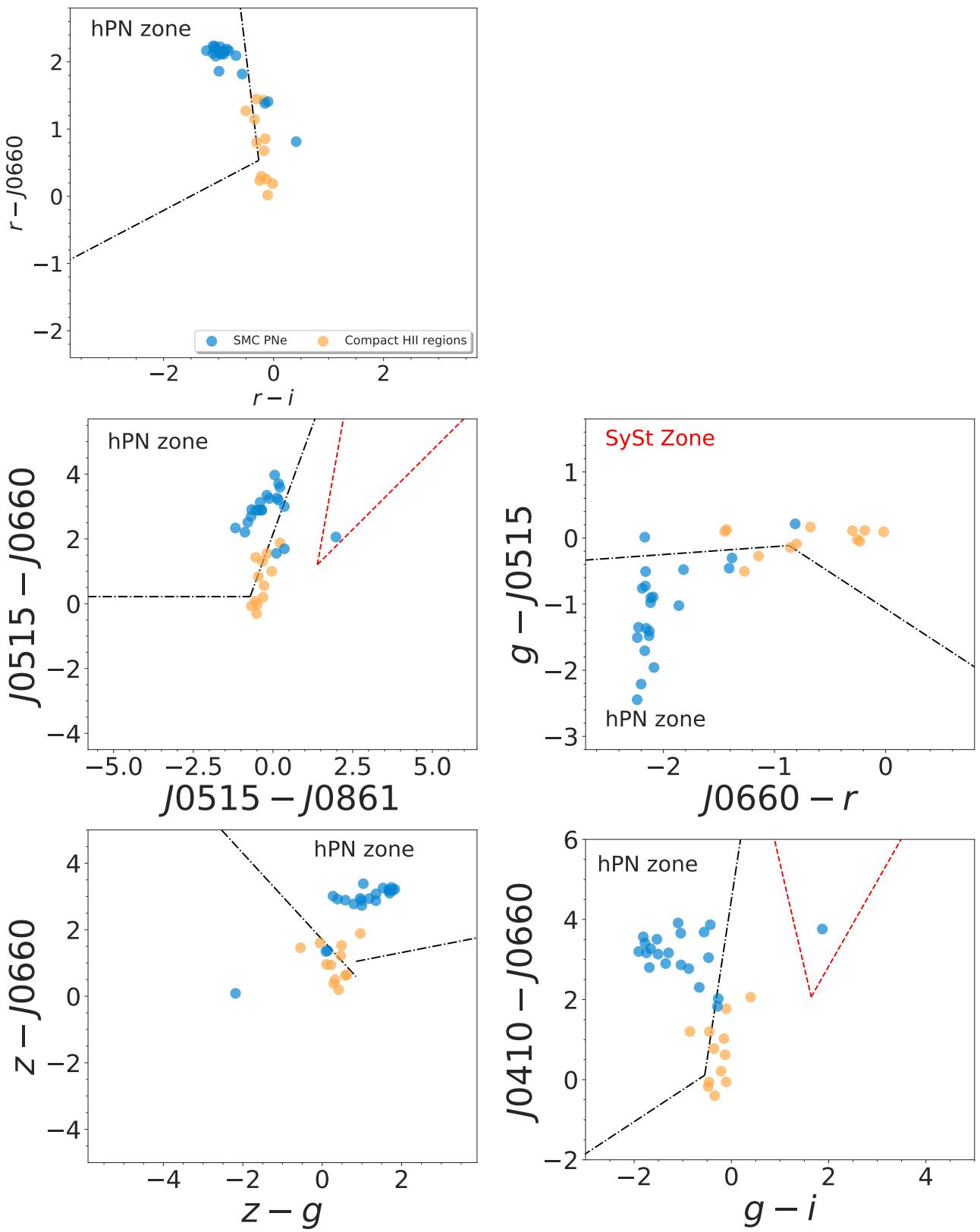
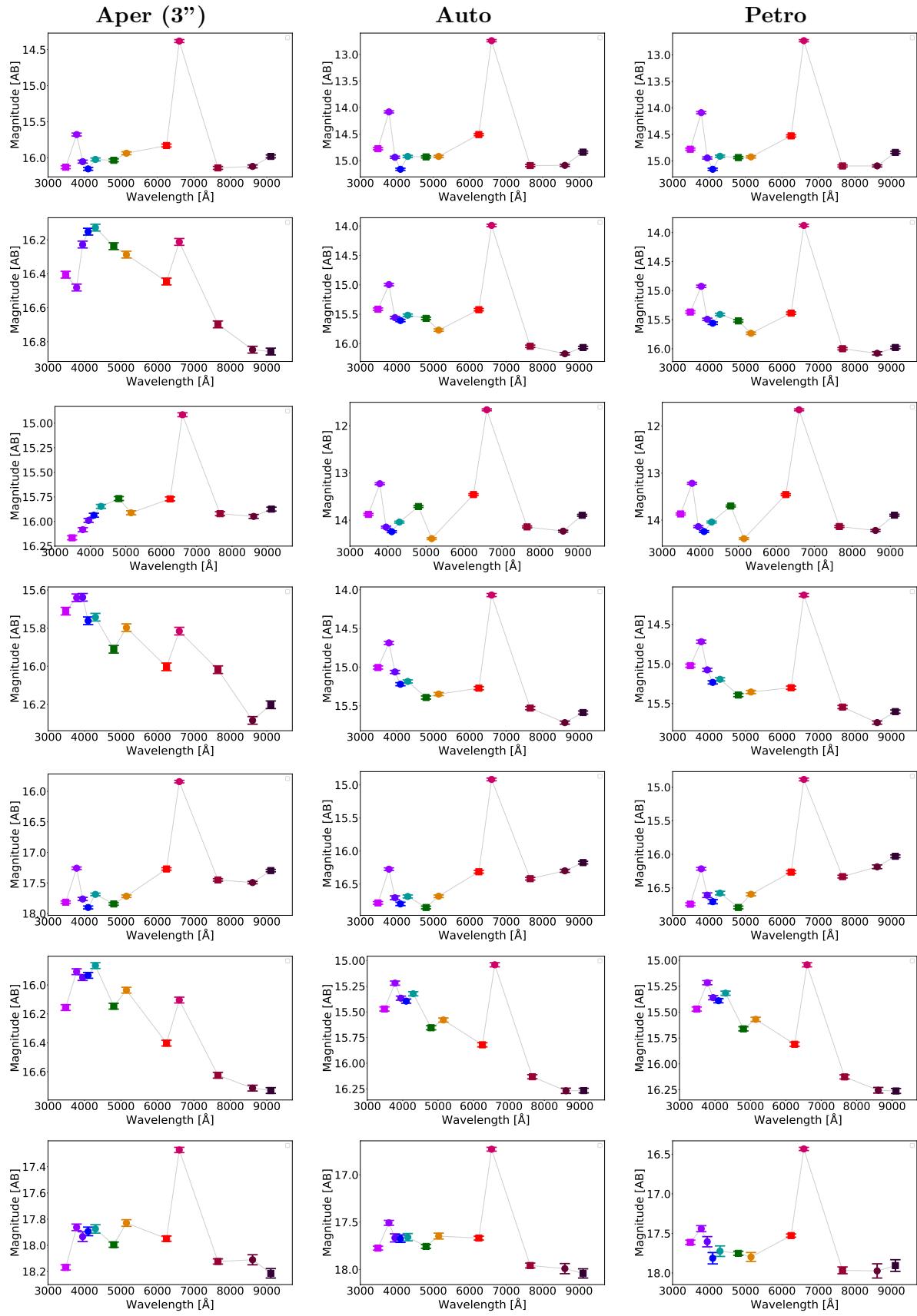
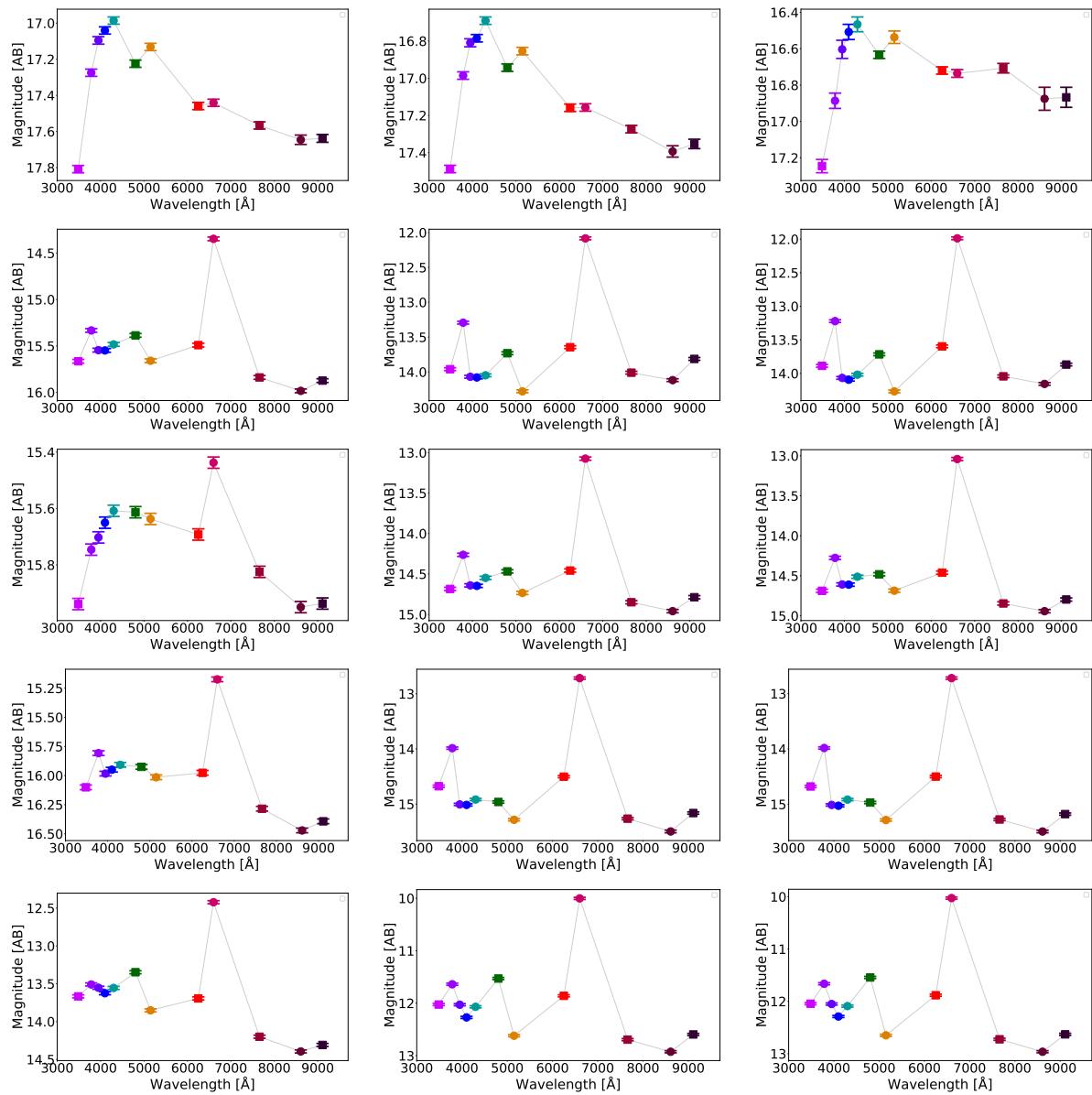


Figure 2:





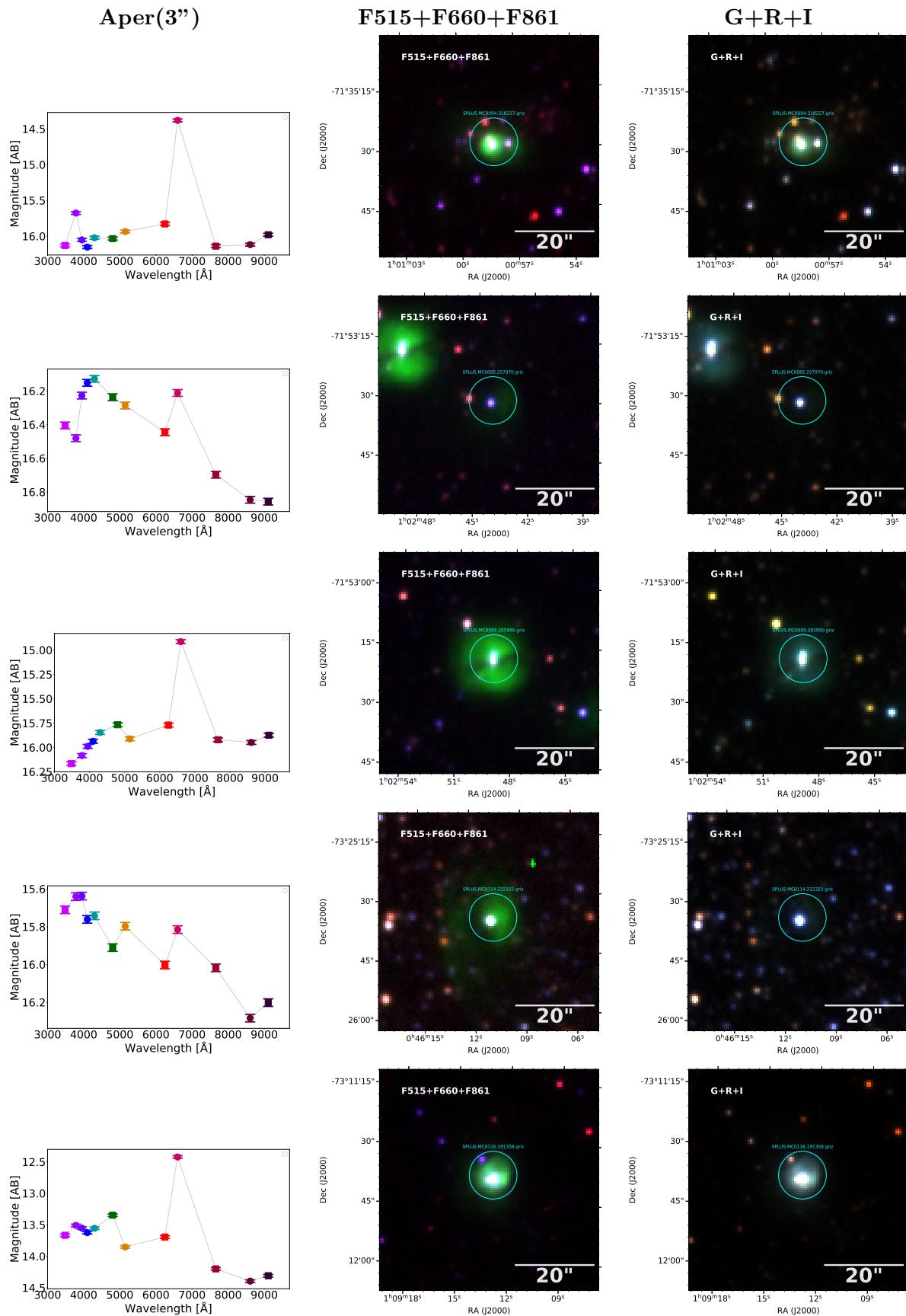


Figure 3:

### **1.1.1 Comparing SPLUS images with HST**

The professor Denise found HST information for four of these objects. She sent me the information that follows (I added the SPLUS imges).

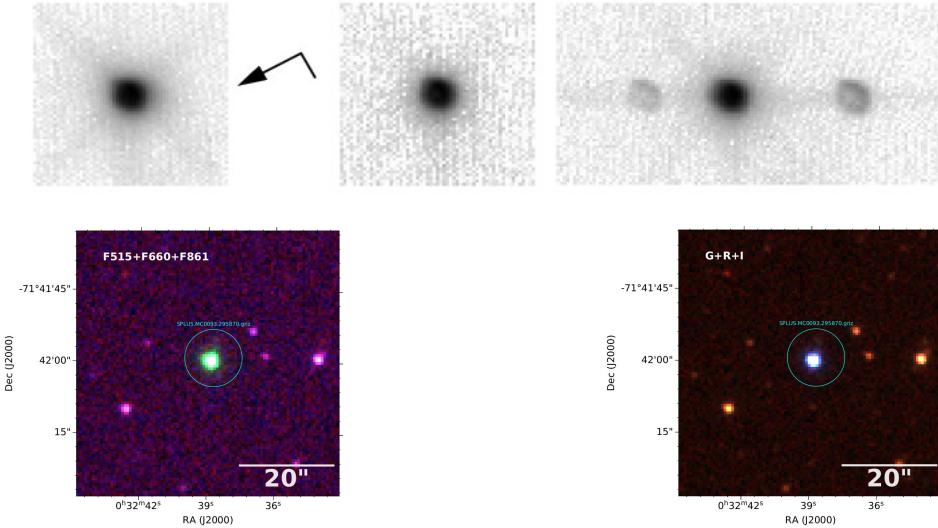
SimbadName	RA	DEC	RAx	DECx	Dimension (HST)	Morpho
SMP_SMC_2	8.16179	-71.69986	00:32:38.83	-71:41:59.5	0.54"	R
SMP_SMC_3	8.59137	-73.22264	00:34:21.93	-73:13:21.5	0.59" x 0.48"	E(bc)
SMP_SMC_15	12.78071	-73.96047	00:51:07.37	-73:57:37.7	0.32"	R
SMP_SMC_28	21.04921	-74.04239	01:24:11.81	-74:02:32.6	0.31"	R

REF: Shaw, Stanghellini, Villaver & Mutchler, 2006 ([2006ApJS..167..201S](#))

All figures are: HST image; [OIII], [NII], Ha and [NII] STIS spectra. Box sizes: 3x3arcsec<sup>2</sup>. The orientation for each image is indicated on the figure, with north lying in the direction of the arrow and east to the left.

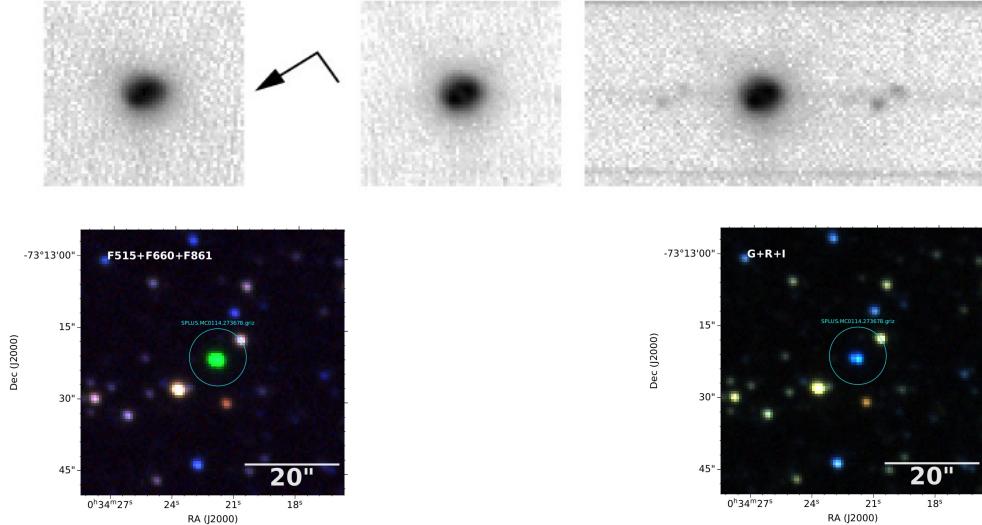
SMC-SMP 2. This **round nebula has an asymmetric bright-ness profile** in broadband light and in the high-ionization lines of H and [Oiii], with higher emission on the south side. The low-ionization lines such as [Nii] show emission in an elliptical ring, again with somewhat brighter emission on the south edge. No CS is evident in the broadband image. (See Fig. 18.)

SMC-SMP 2



SMC-SMP 3. This elliptical nebula has a very distinct **bi-polar core**. Interestingly, only the lobes can be seen in the [Nii] emission. The CS is very apparent in the broadband image. (See Fig. 18.)

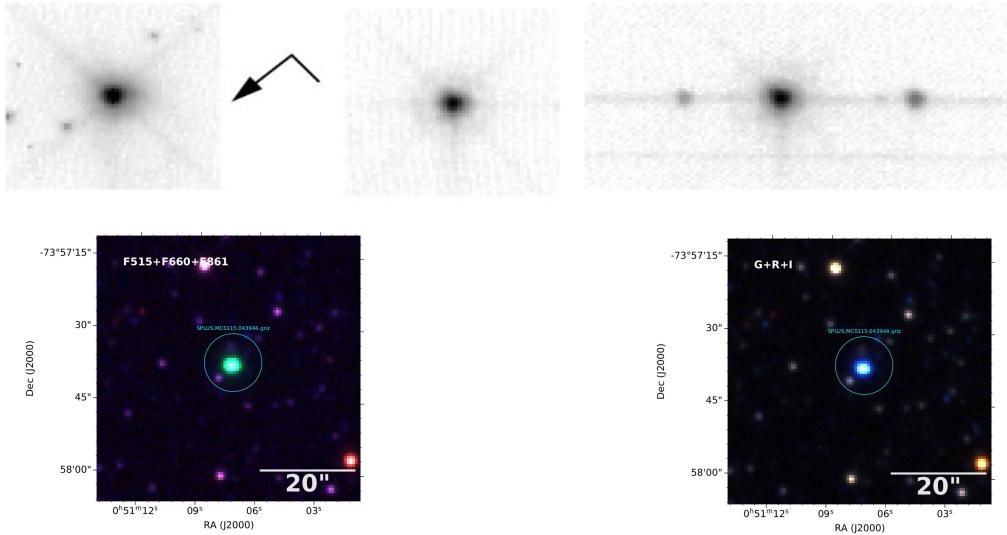
SMC-SMP 3



Please pay attention to the orientation of the bi-polar lobes in the [NII] spectra.

**SMC-SMP 15.** The emission from this nebula is **strongly peaked in both the broadband image, as well as the high-ionization lines of H and [Oiii].** The emission in [Nii] is not as strongly peaked, and from the 6583 line it is possible to make an improved estimate of the nebular size, which is slightly broader than a pointsource. The CS might have been detected had it not saturated in the broadband image. (See Fig. 18.)

#### SMC-SMP 15



**SMC-SMP 28.** This bright, compact nebula is **round but appears to have a faint, diffuse tail of emission extending about 0.9'' to the northwest from the central star.** No G750M spectrum is available. (See Fig. 18.)

#### SMC-SMP 28

