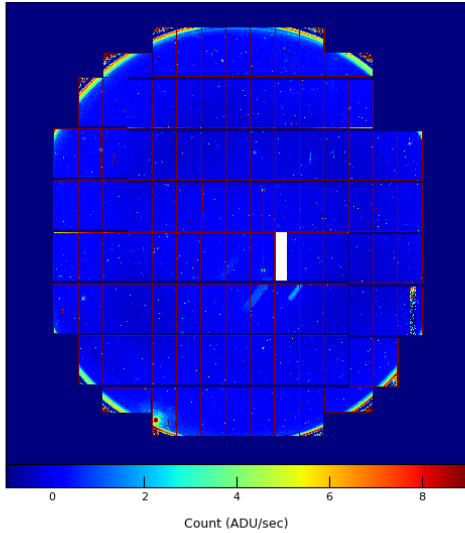


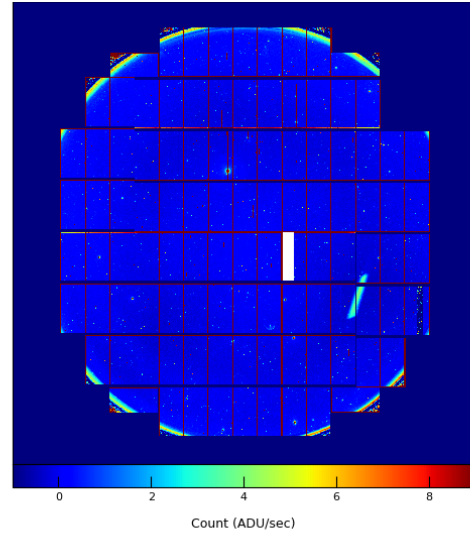
HSC stray light issue on the night of Nov 1, 2021

November 12, 2021
T. Terai

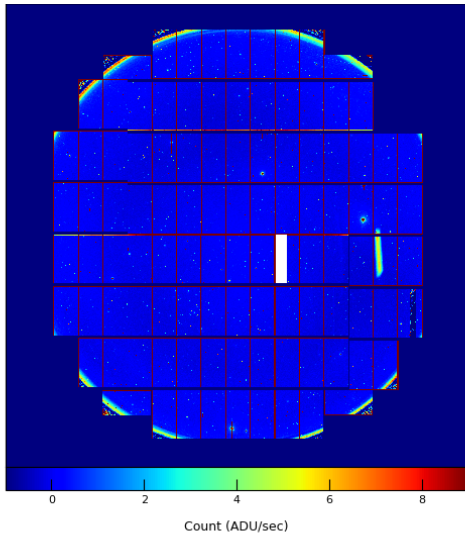
- On the night of November 1, 2021, strip-shaped ghosts continuously appeared in HSC images obtained with the z-band filter for about 2.5 hours from the beginning of science observation.
- The position of these ghosts was rotated reversely with the instrument rotator angle (InR) almost around the center of field-of-view. The intensity varied with time and/or position.
- The ghosts suddenly disappeared around 21:30 HST. The light source is still unknown.



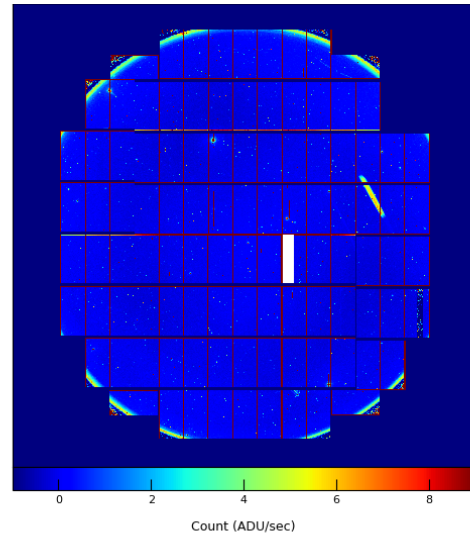
2021-11-01 19:01 HST, z-band, InR= -52°



2021-11-01 19:36 HST, z-band, InR= -33°



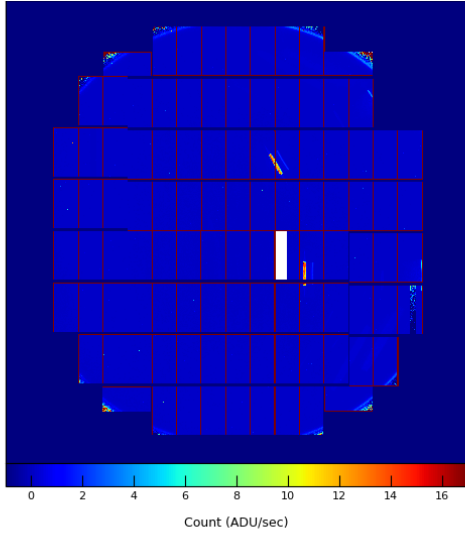
2021-11-01 20:17 HST, z-band, InR= -13°



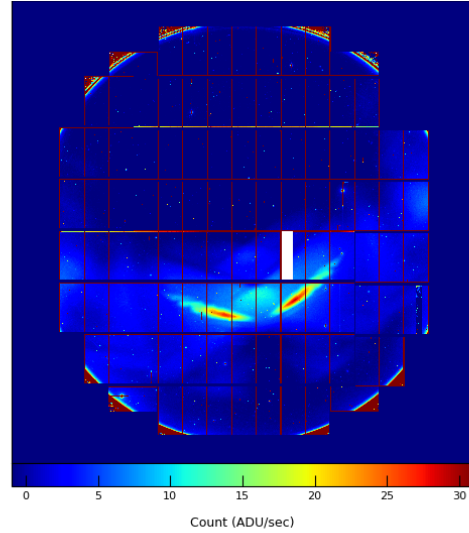
2021-11-01 20:46 HST, z-band, InR= $+12^\circ$

- Comparison with the previous cases

- The ghost shapes resemble those of the precedent in November 2019 caused by light emission from a dome inside monitor camera at the rear side rather than that in February 2021 due to the afterglow of sunset intruding into the dome inside through the rear vent.
- The intensity is about half or less compared with that in the former precedent.
- It is likely that the stray light source was in the inside of the telescope dome rather than the outside though it is still unclear what the source is.



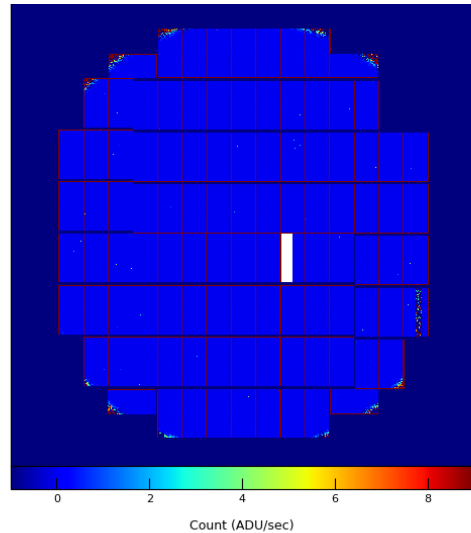
Nov 2019: ghosts in the z-band image due to light emitted from a dome inside monitor camera



Feb 2021: ghosts in the r2-band image due to the afterglow of sunset through the rear vent

- Test data

- We took test exposures with the z-band filter at several elevations under the dome closed on the night of November 9, 2021. No ghost appeared in the images.
- It seems that this stray light issue was only a temporary one.



A z-band exposure on the night of Nov 9 under the dome closed