

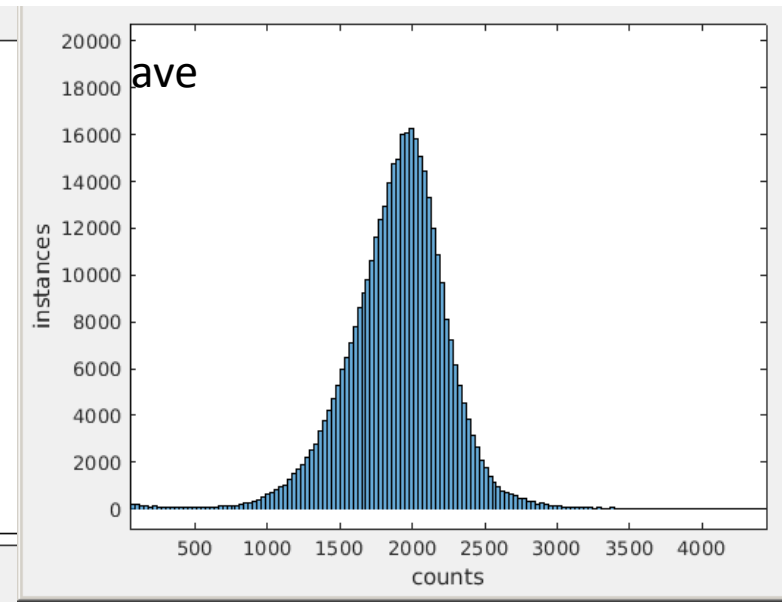
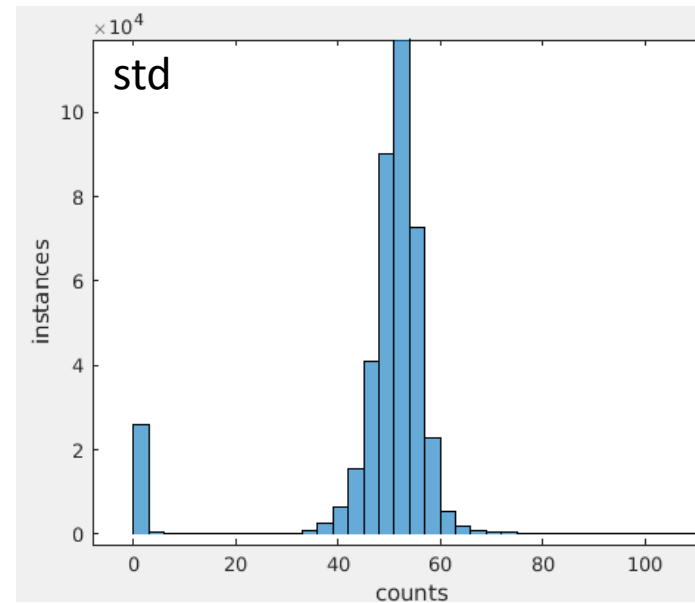
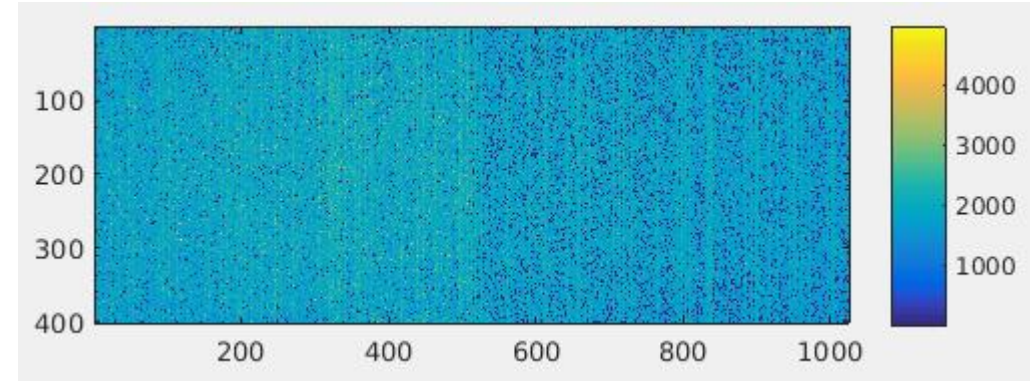
# Pixirad intensity correction table generation using flood field

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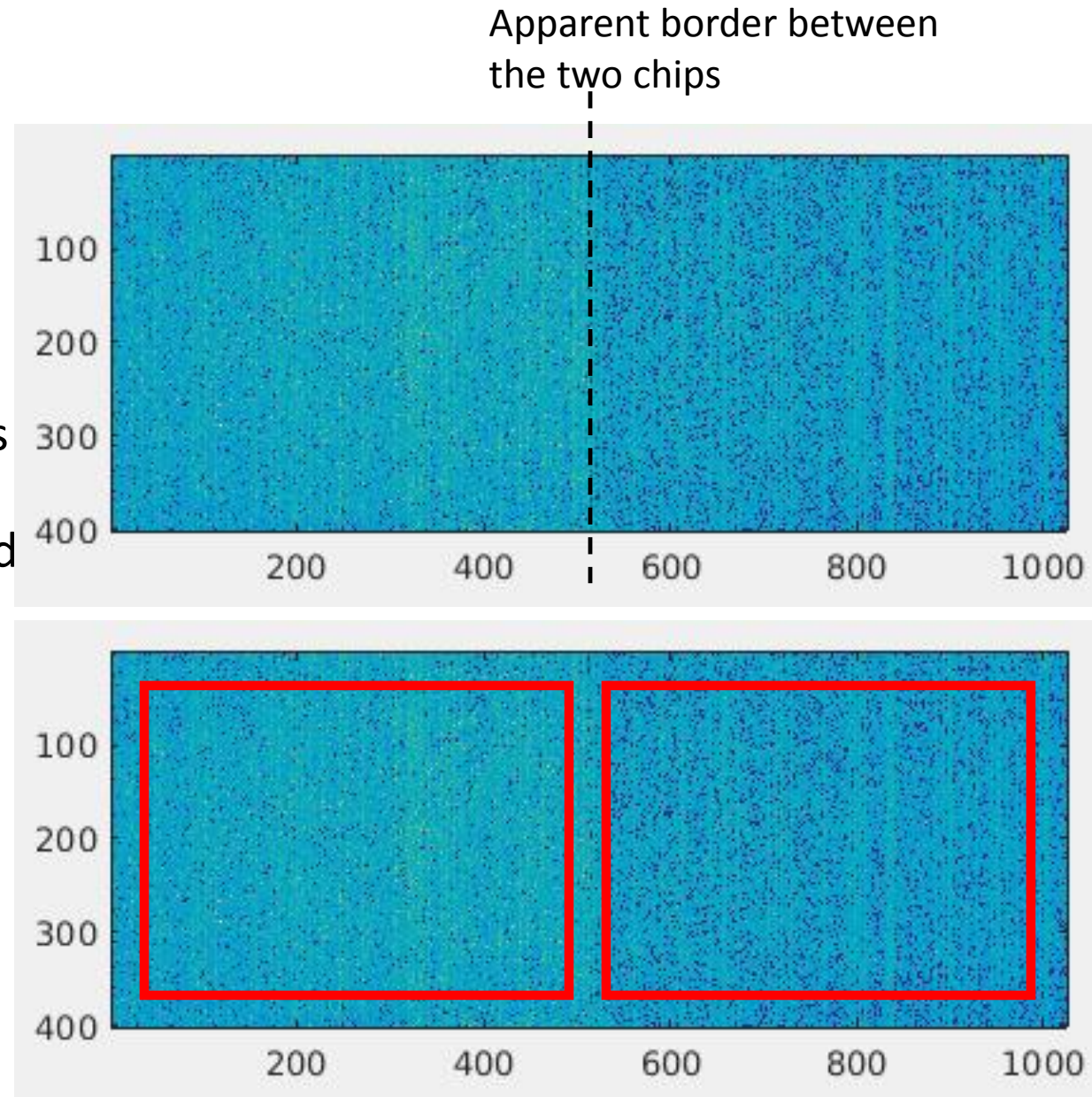
# Motivation

- 1ide pixirad2 seems to have a lot of dead pixels and non-uniform pixel sensitivity
  - An image from pixirad2 from 6ide with Pb glass flood field shows vertical streaks as well many dead pixels (0 counts)
- Take 300 continuous exposures
  - Compute the average of each pixel over 300 frames
    - Pixels have very different sensitivities
  - Computing the standard deviation of each pixel over 300 frames
    - Majority of the pixels have standard deviation of approximately 50 counts
  - Any pixels with standard deviation larger than 90 and average values of less than 900 or larger than 2200 are deemed bad pixels



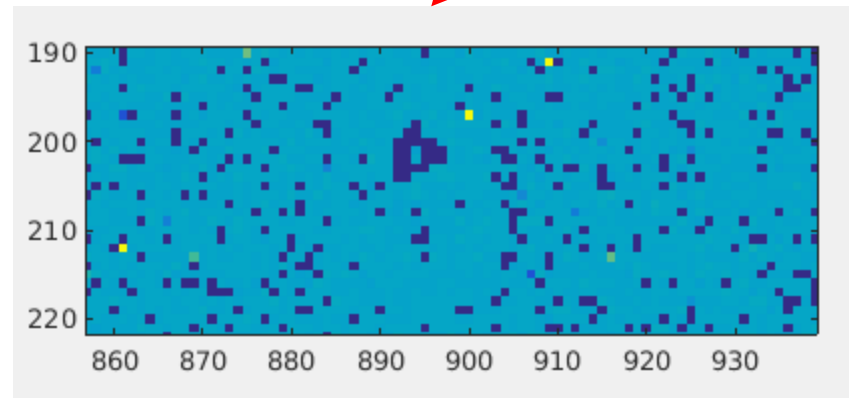
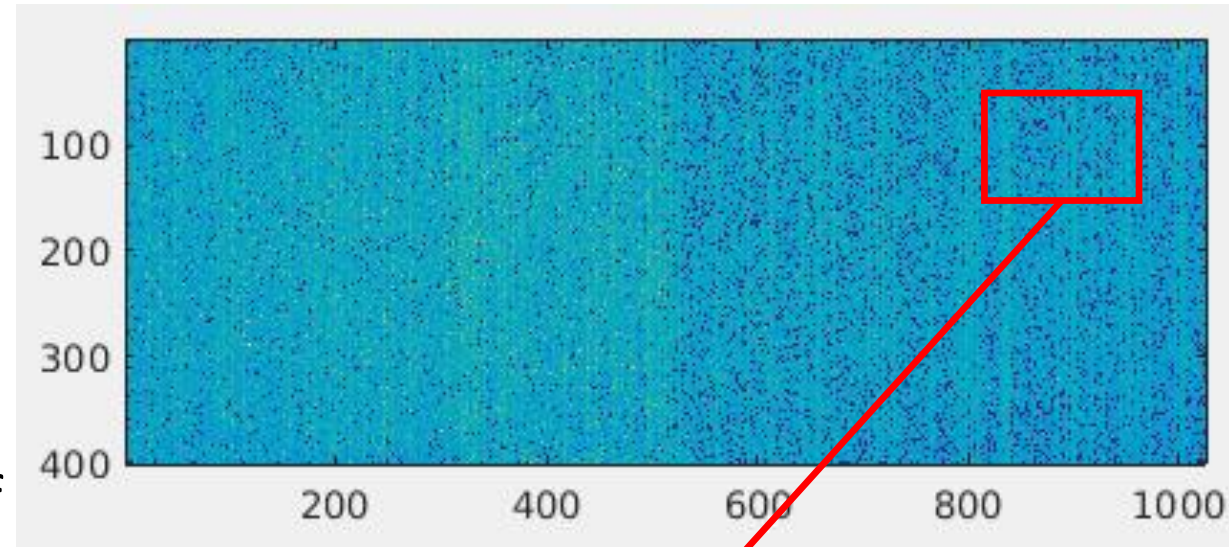
# Sensitivity Calculation

- Exclude the intensities from the bad pixels
- Exclude the intensities from edge pixels
  - 25 pixels or less away from the edge
- Exclude the border pixels between the two chips
  - 25 pixels or less away from the border
- Take the average of intensities from LHS chip and RHS chips
  - LHS = 1953 cts
  - RHS = 1816 cts
  - Consistent with our observation
  - Take the average of the two = 1884 cts
- Sensitivity is calculated as
  - $\text{Sensitivity} = (\text{ave over 300 frames}) / 1884$
  - More sensitive pixels  $> 1$
  - Less sensitive pixels  $< 1$
  - $\text{Corrected image} = \text{sensitivity} * \text{raw\_image}$



# Bad pixel map

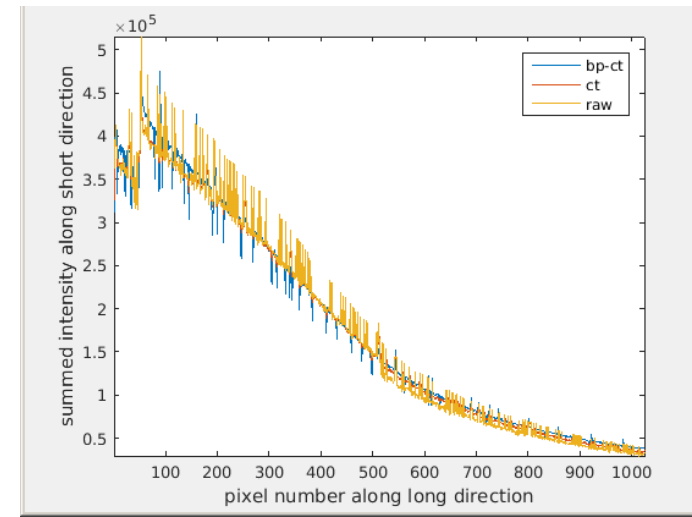
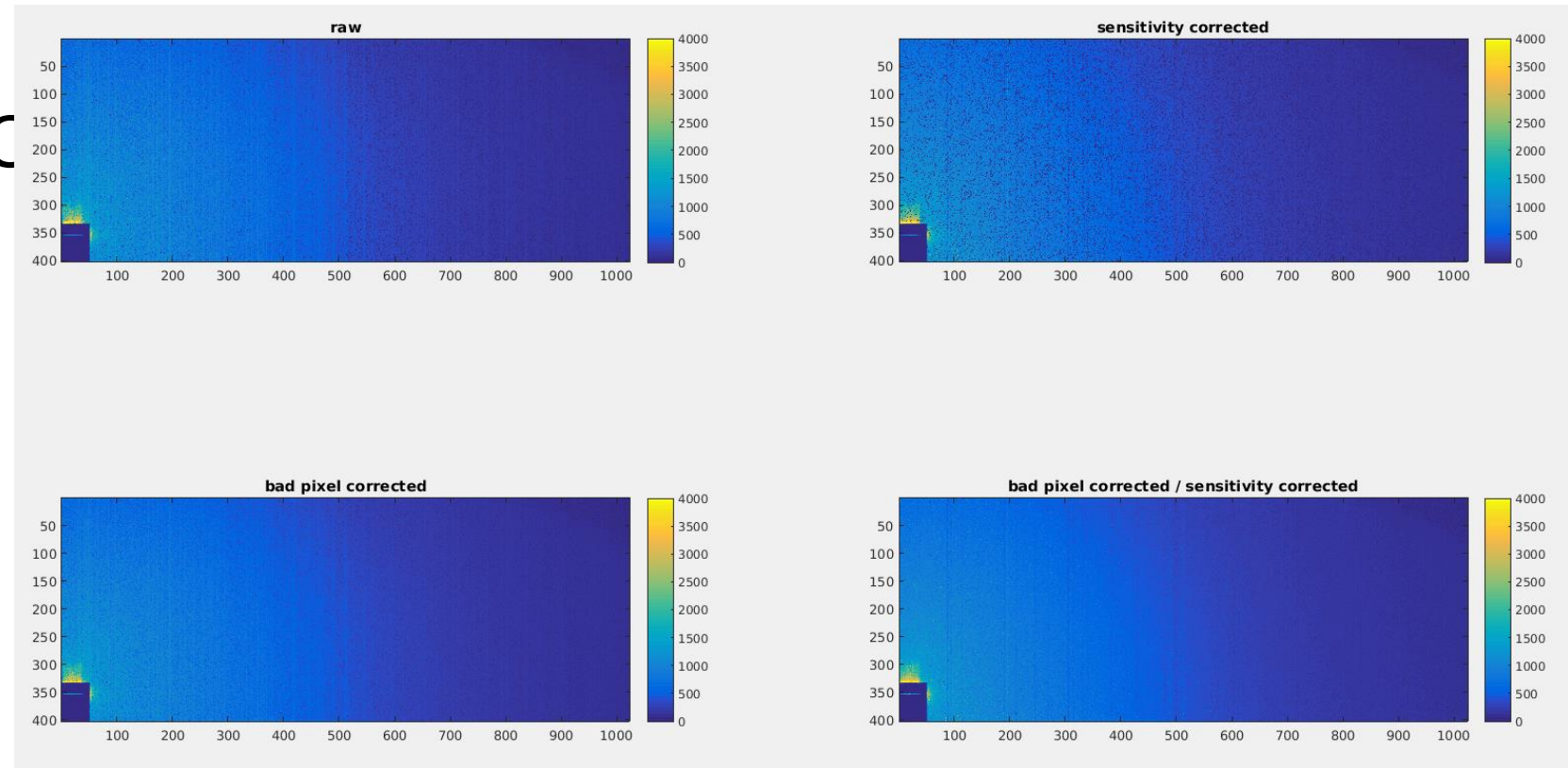
- Bad pixel map based on std and raw intensity value = 0 is used to correct the image
  - Average of the 8 neighboring pixels if they all are good pixels and not at the border
    - Subset of pixels for corner pixels and pixels with bad neighbors
  - Multiple passes for large clump of bad pixels





# Implementatio

- New correction routine implemented with new correction tables
- Bad pixels are removed
- Streaks are suppressed but not completely removed



# Future plans

- Implemented in MA
- Exposure time dependence?
- Energy dependence?