

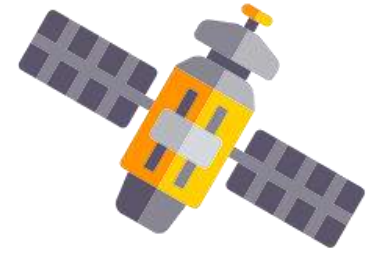


# Comparisons between GLM and the Long Wavelength Array

Joseph Berry, Michael Stock



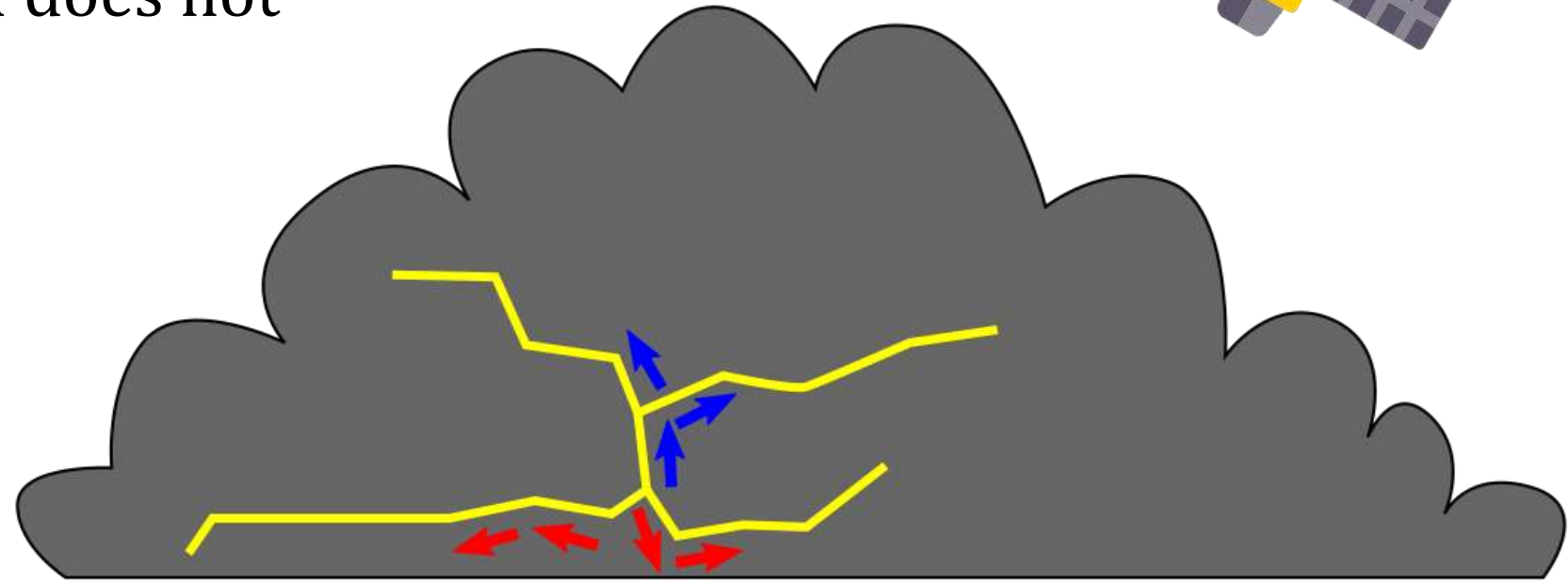
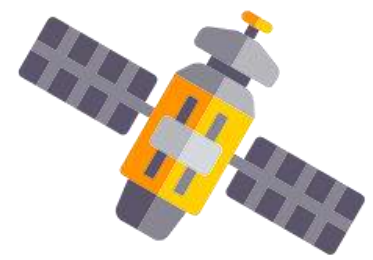
# An overly simple model of GLM lightning detection





# An overly simple model of GLM lightning detection

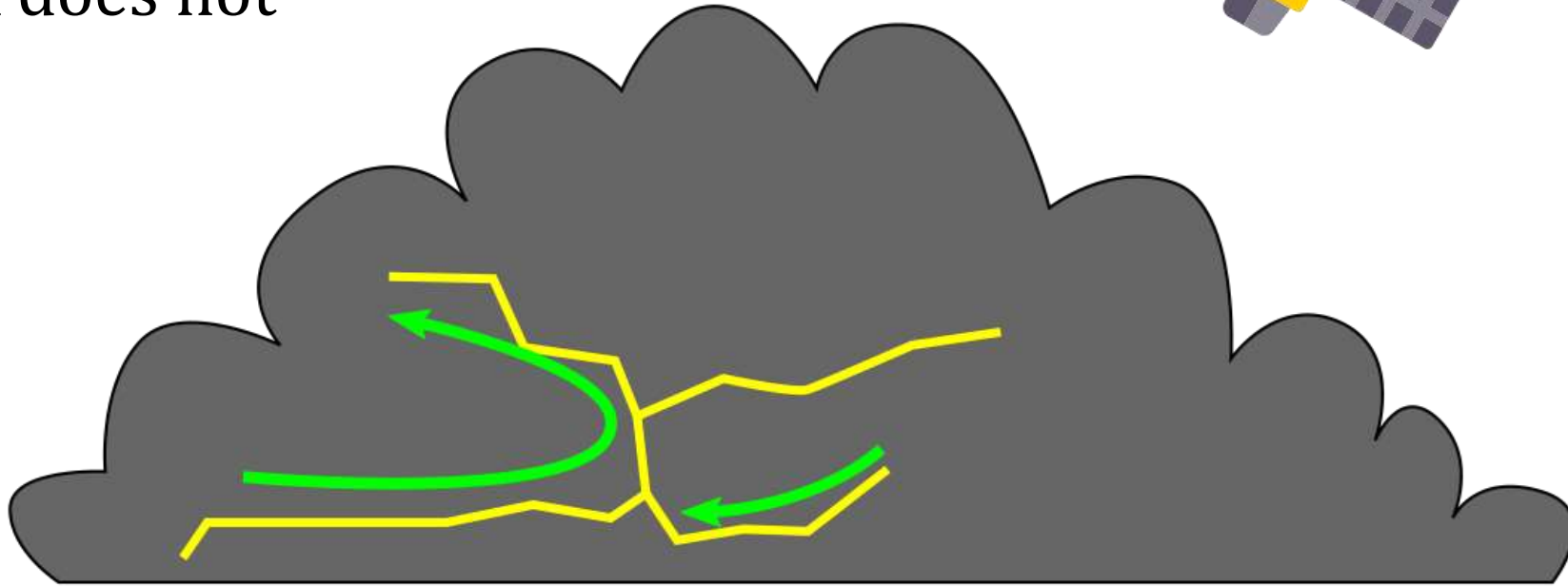
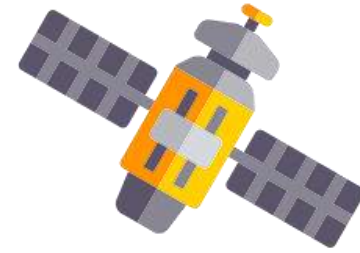
LMA sees this  
GLM does not





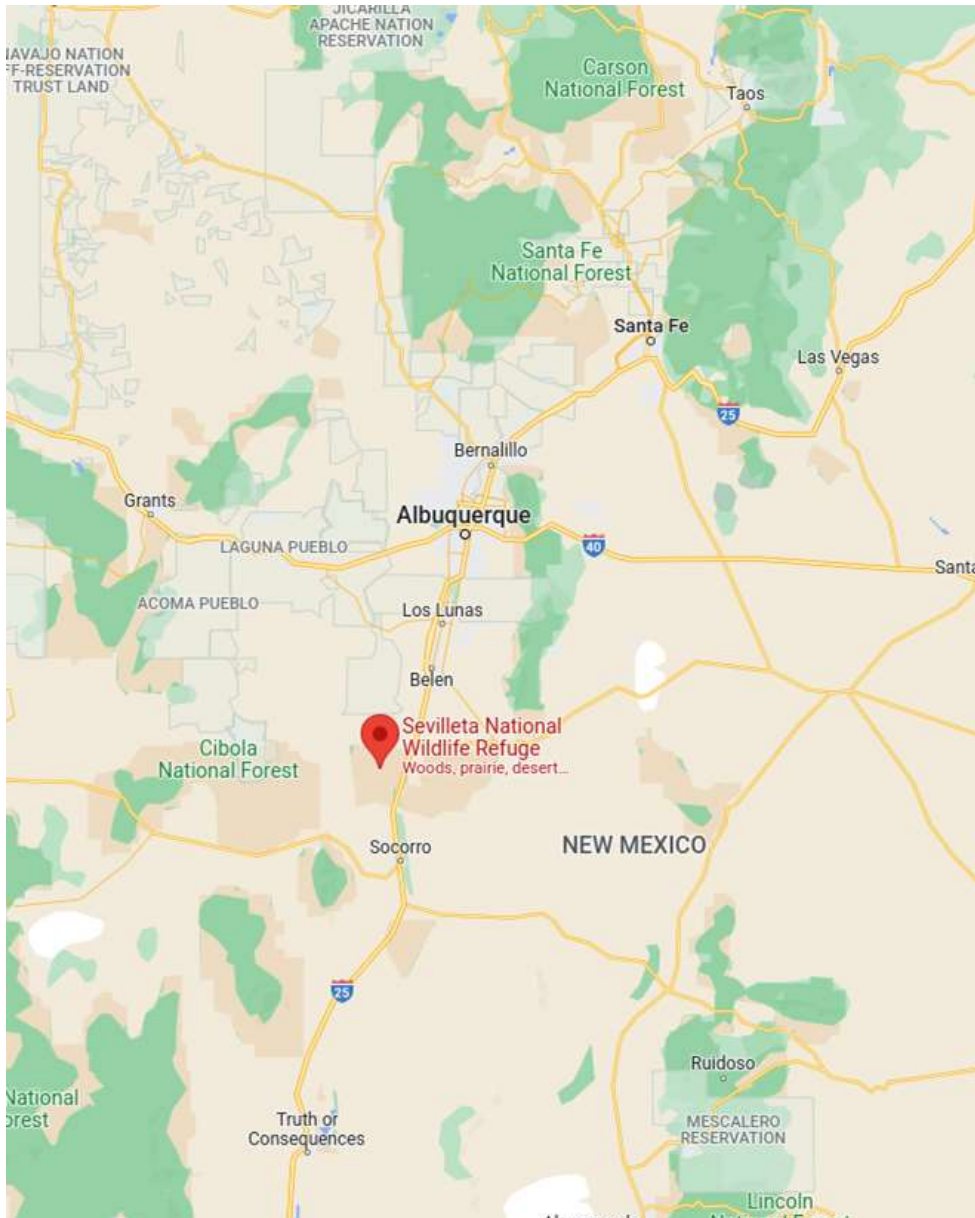
# An overly simple model of GLM lightning detection

GLM sees this  
LMA does not

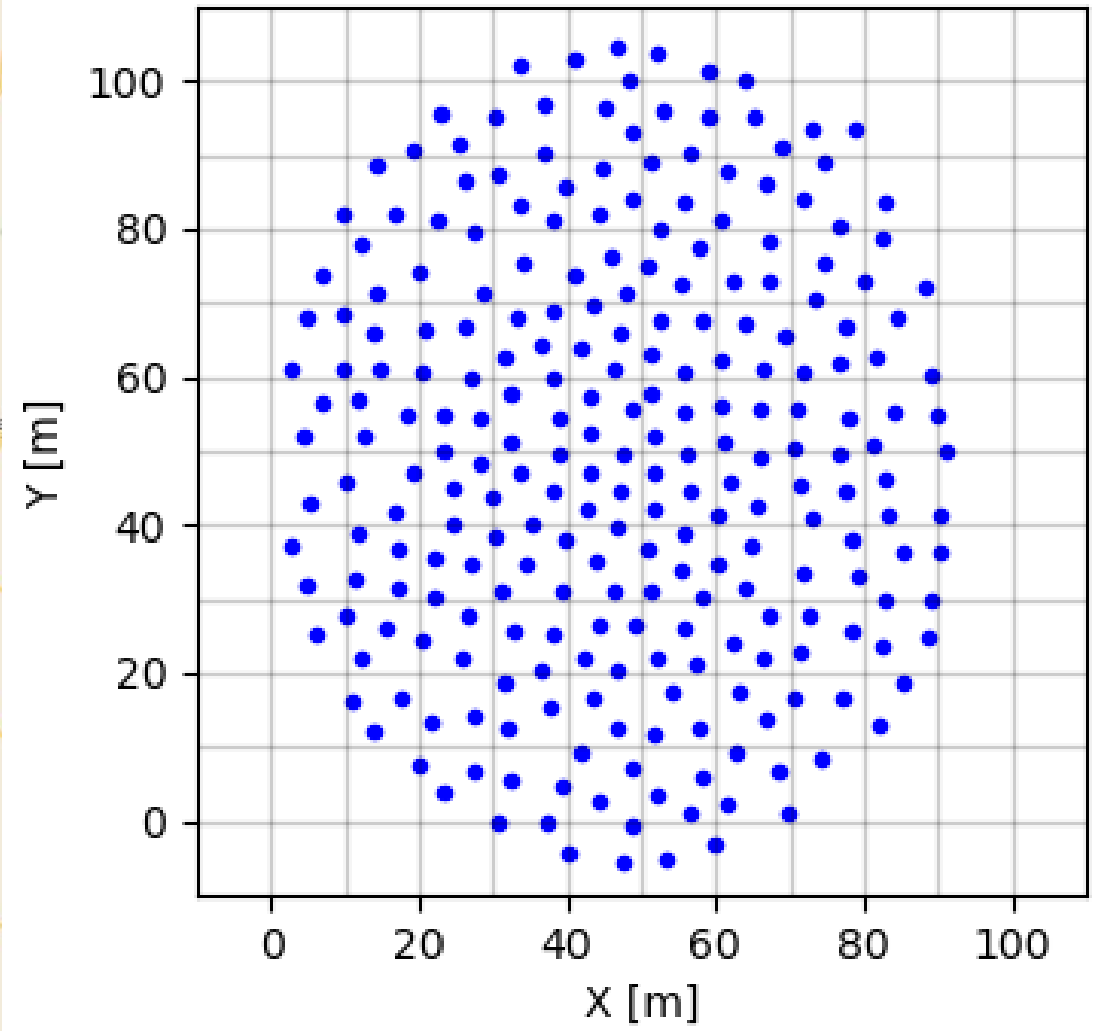




# Sevilleta Long Wavelength Array



## LWA SV







# Sevilleta Long Wavelength Array



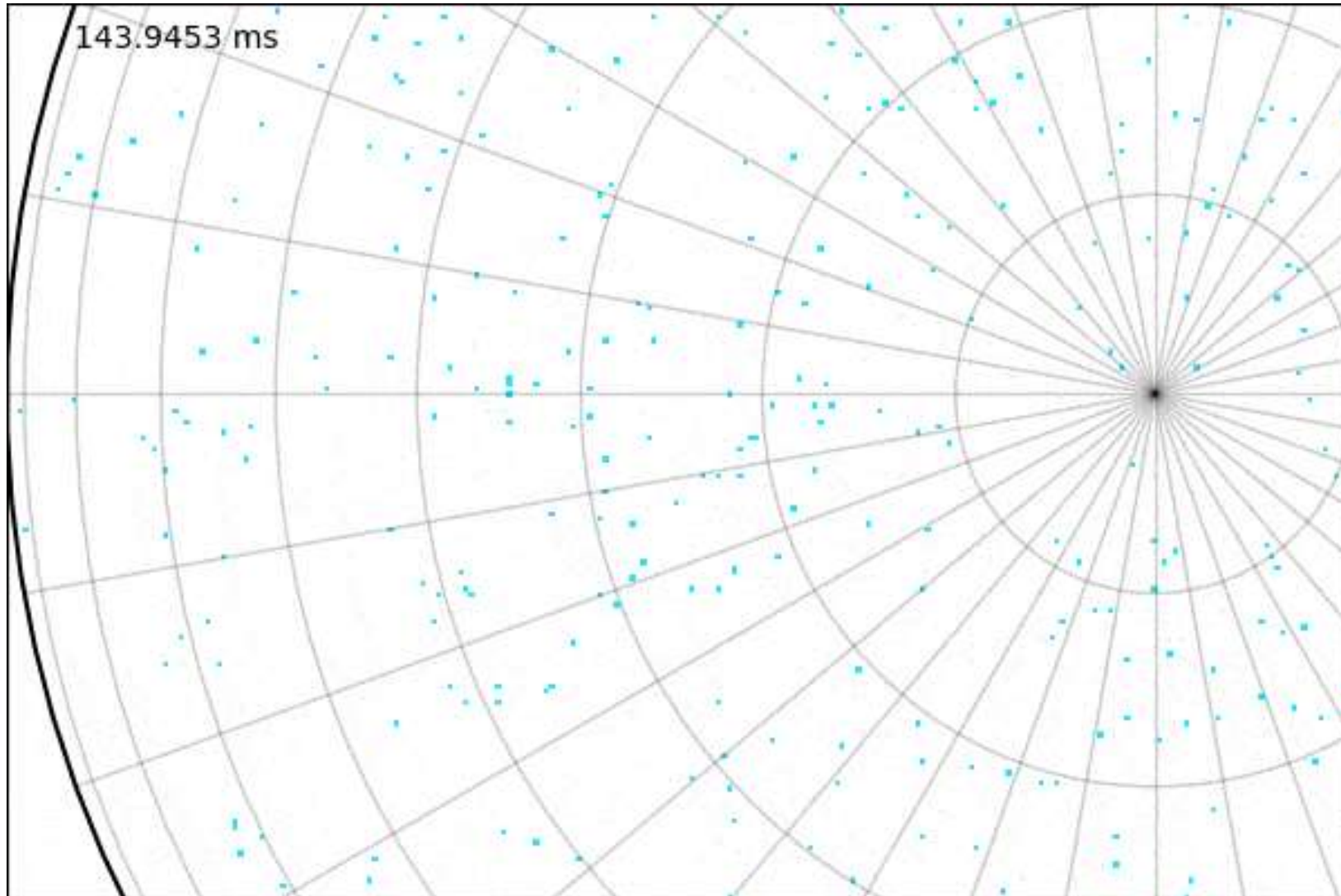
- 256 Antennas
- 32,640 Baselines
- 2 polarizations
- ~100 meter diameter
- 3-90 MHz
  
- 40 MHz Recording Bandwidth
- 5 seconds continuous records





# Flash 1:

## Low altitude IC flash

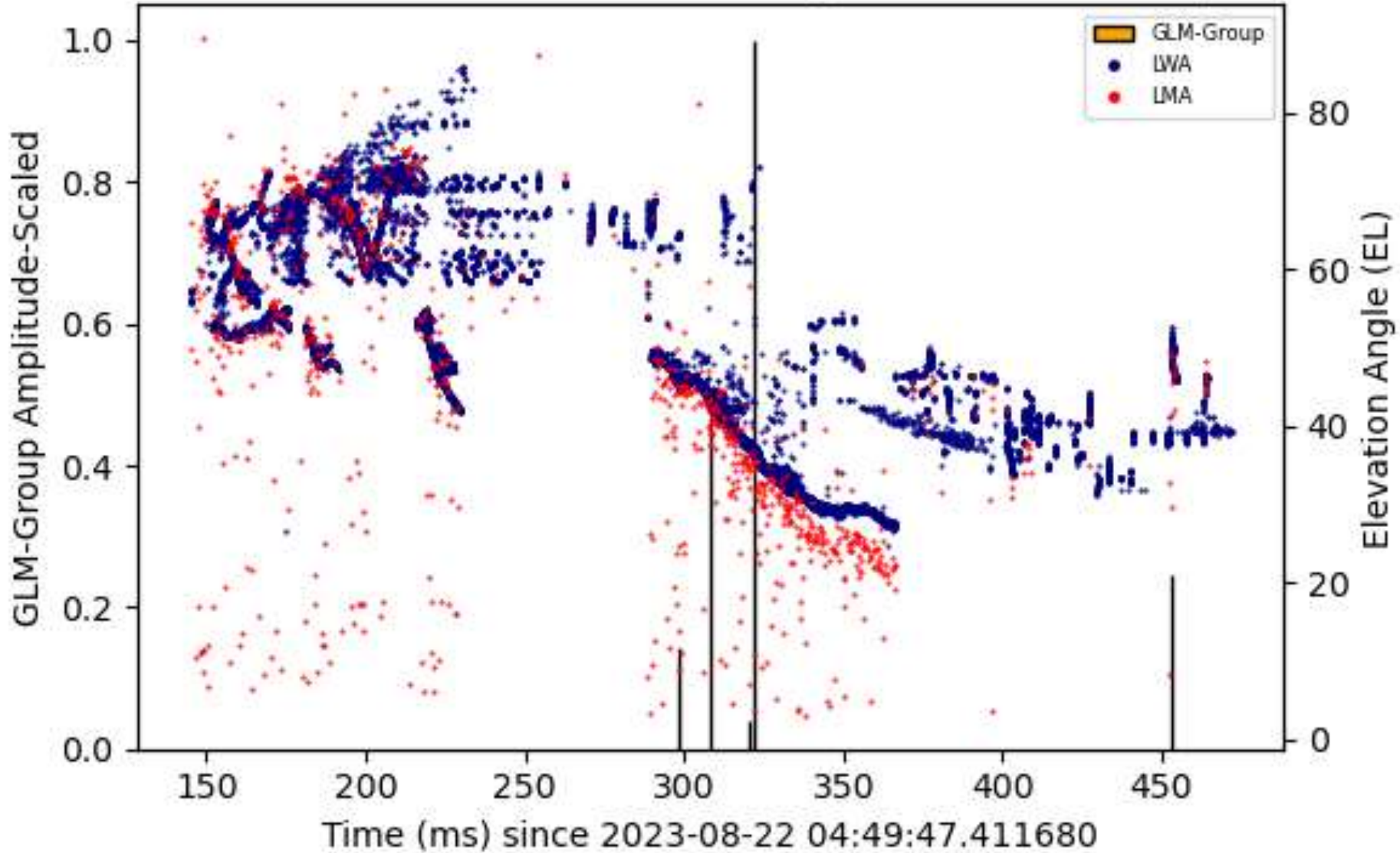






# Flash 1:

## Flash 1: LWA/LMA Elevation Angles and GLM Groups

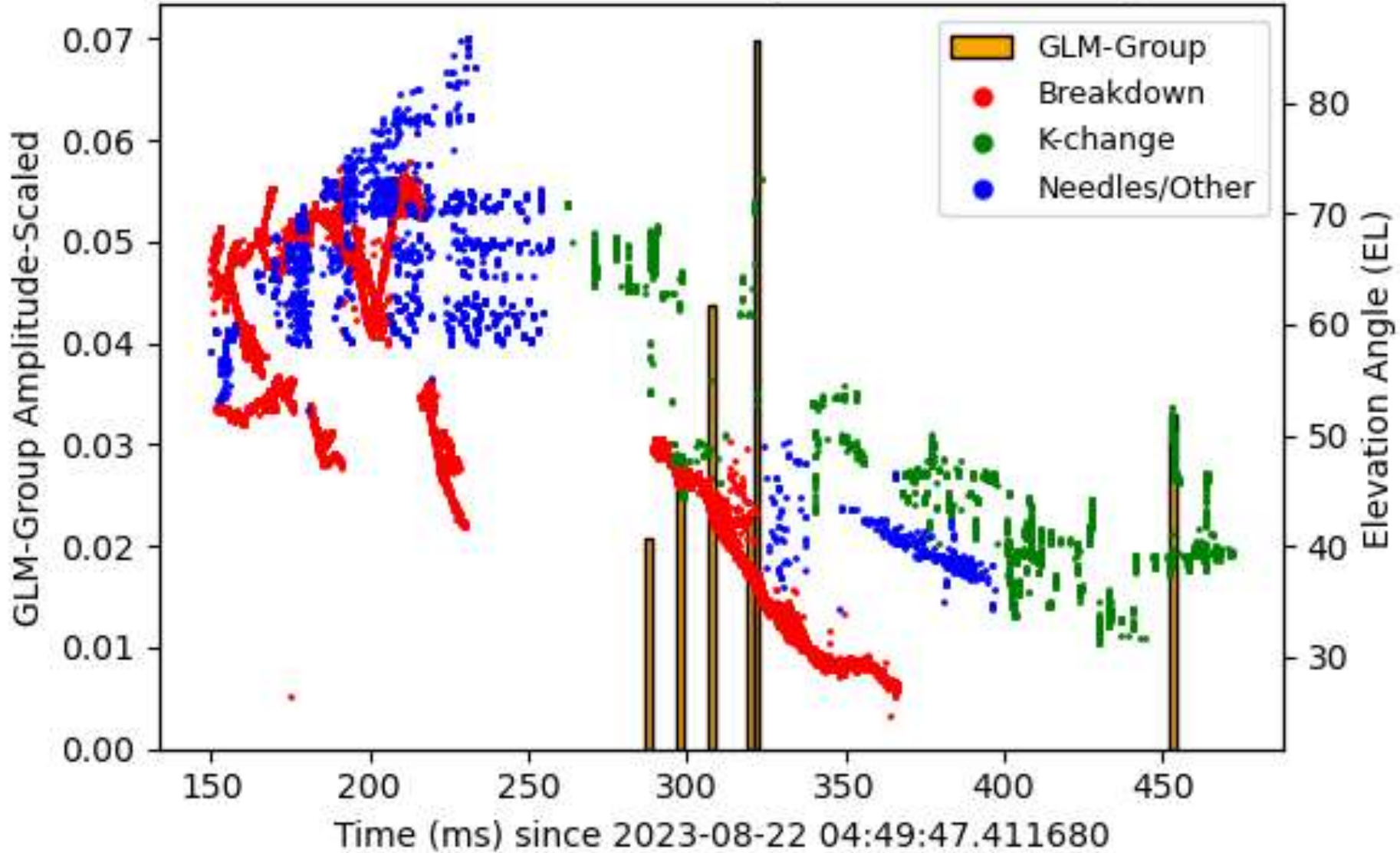






# Flash 1:

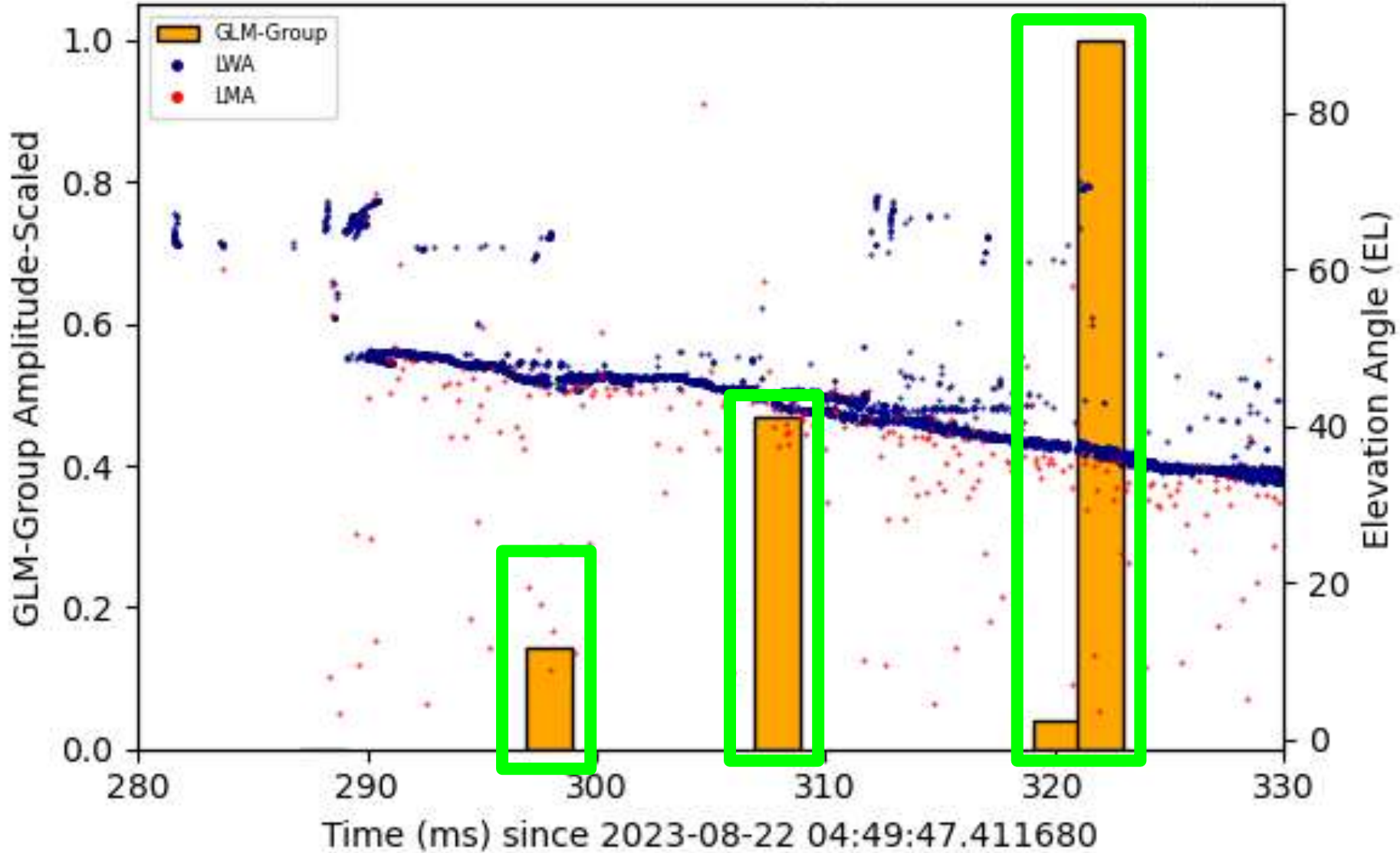
Flash1: LWA Elevation Angle and GLM Groups:





# Flash 1:

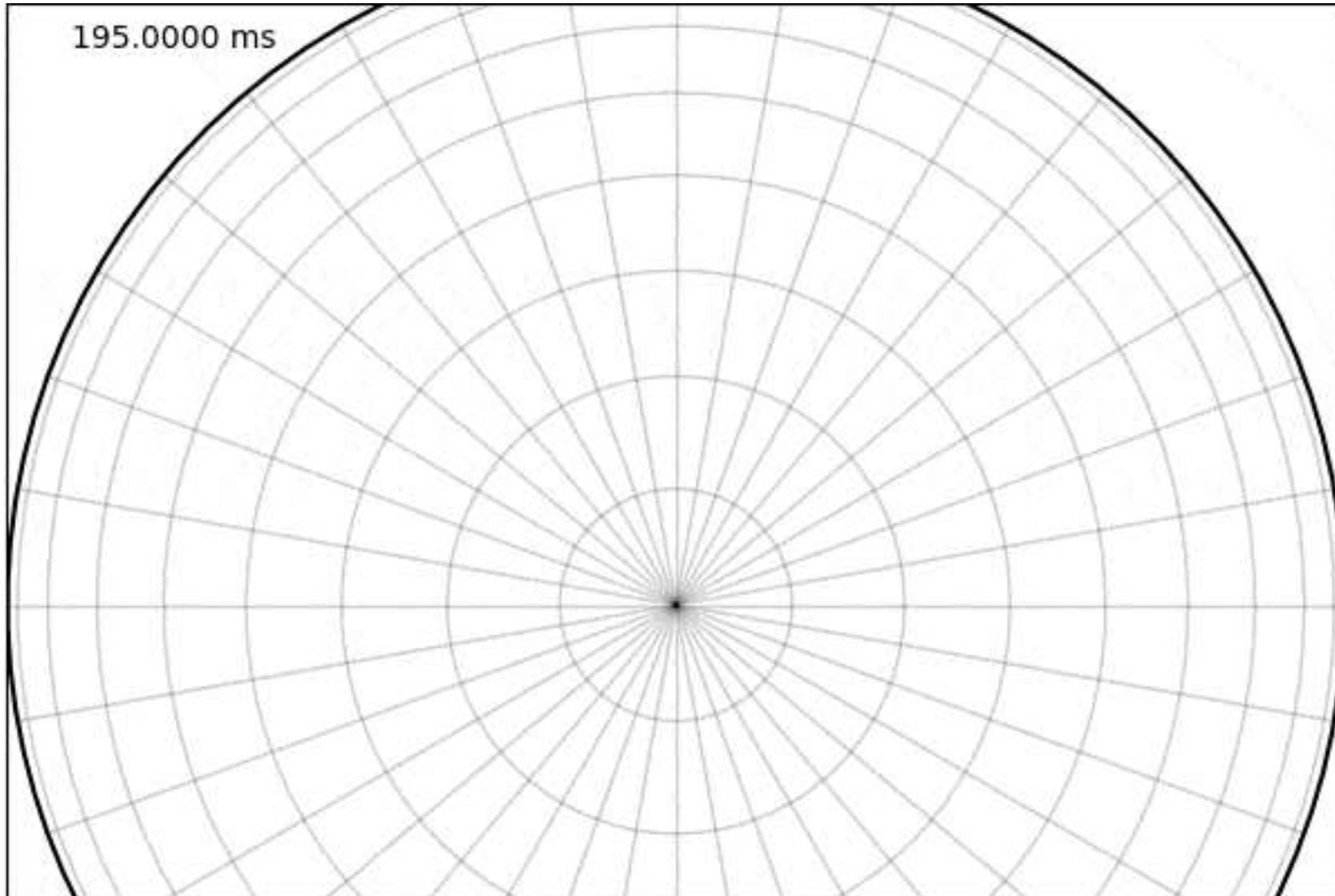
## Flash 1: LWA/LMA Elevation Angles and GLM Groups





# Flash 2:

## Low altitude IC flash

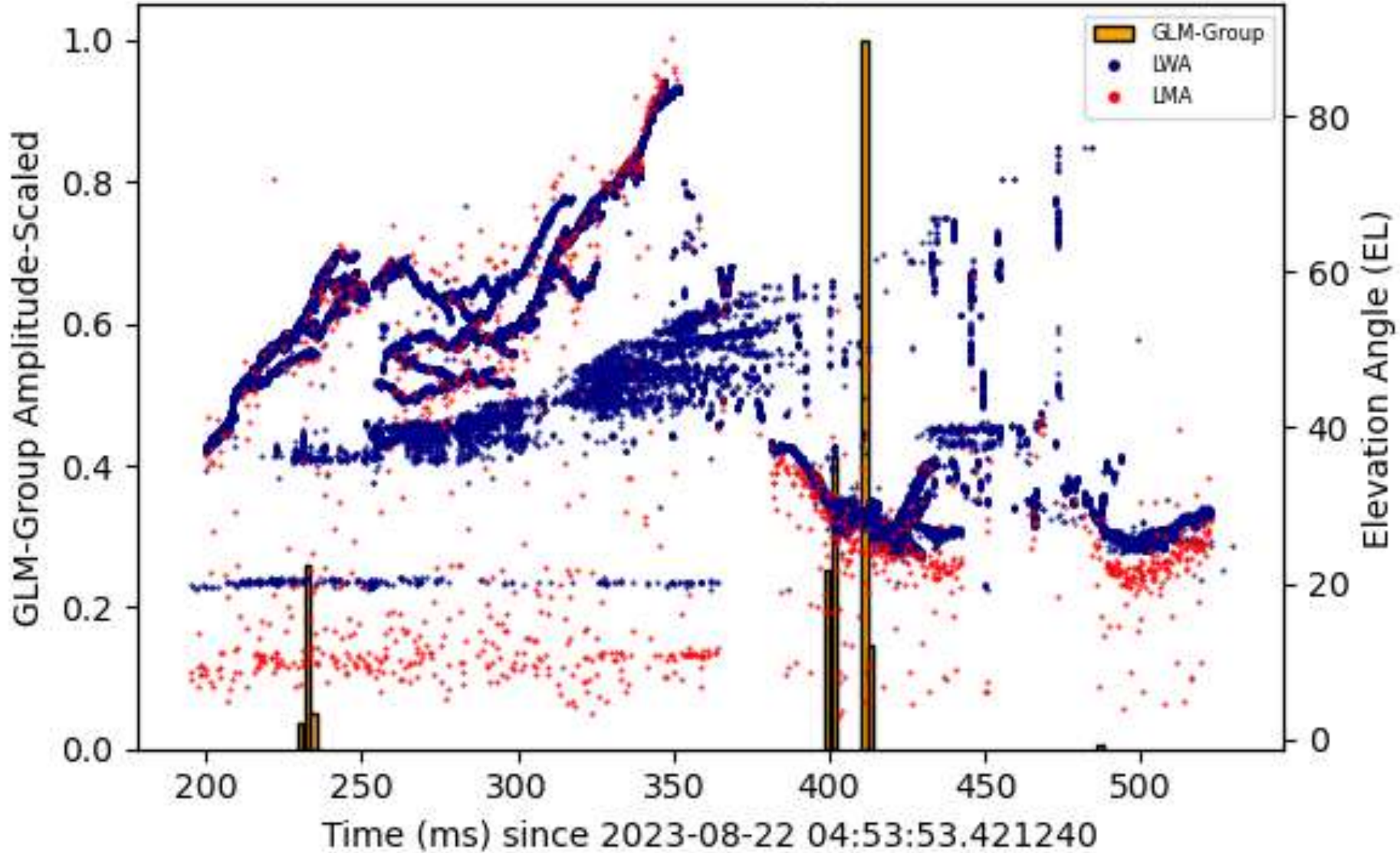






# Flash 2:

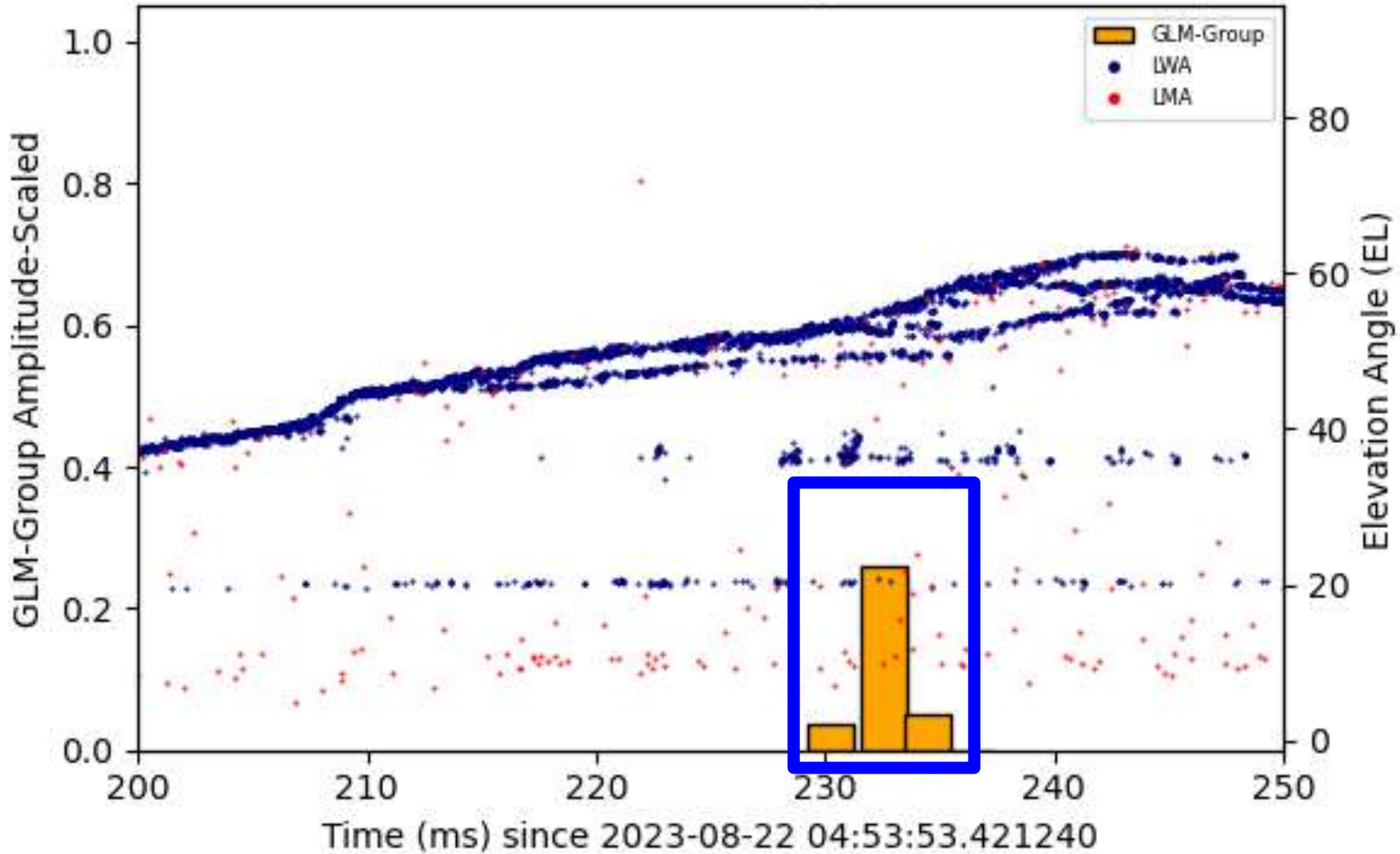
## Flash 2: LWA/LMA Elevation Angles and GLM Groups





# Flash 2:

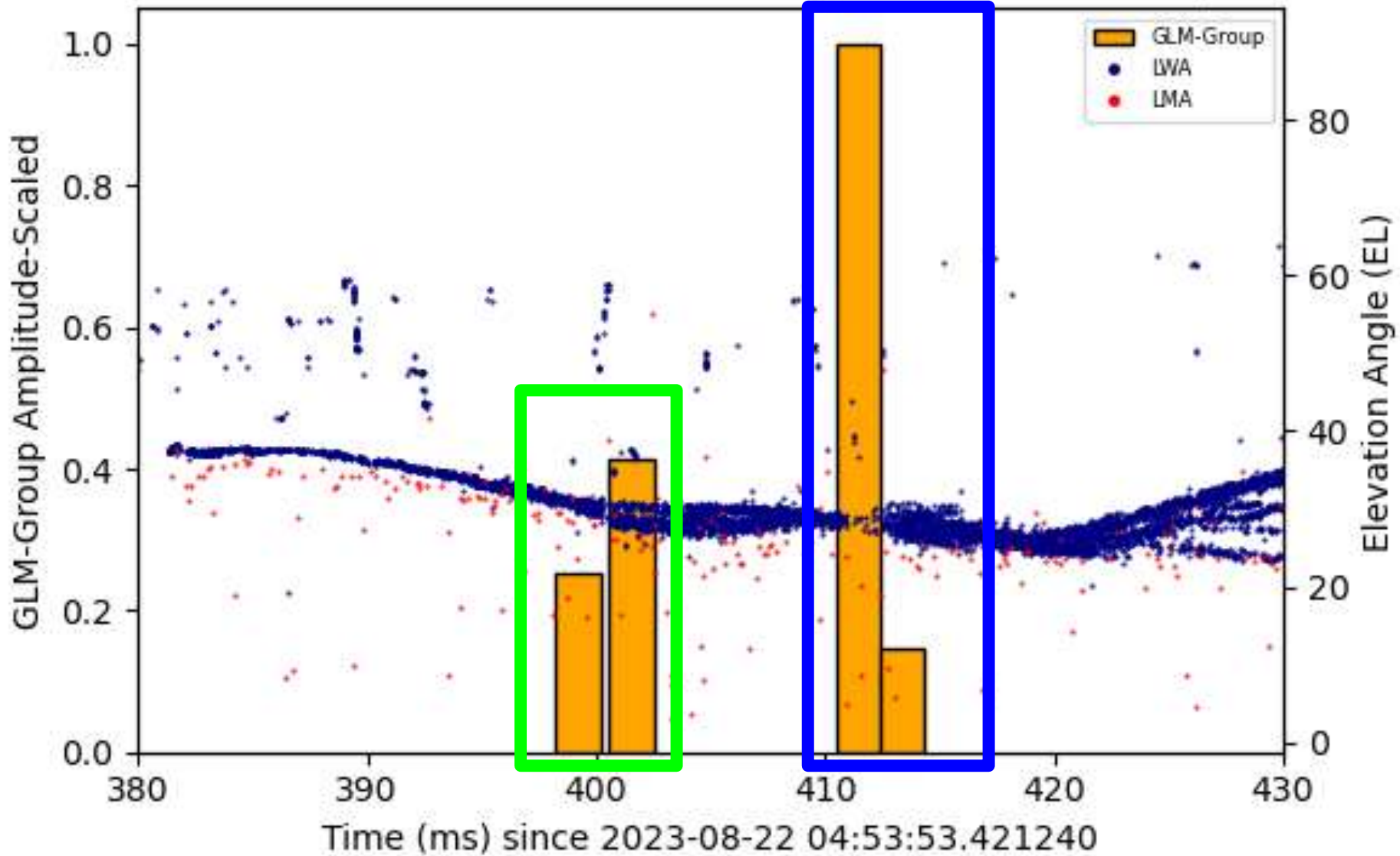
## Flash 2: LWA/LMA Elevation Angles and GLM Groups





# Flash 2:

## Flash 2: LWA/LMA Elevation Angles and GLM Groups

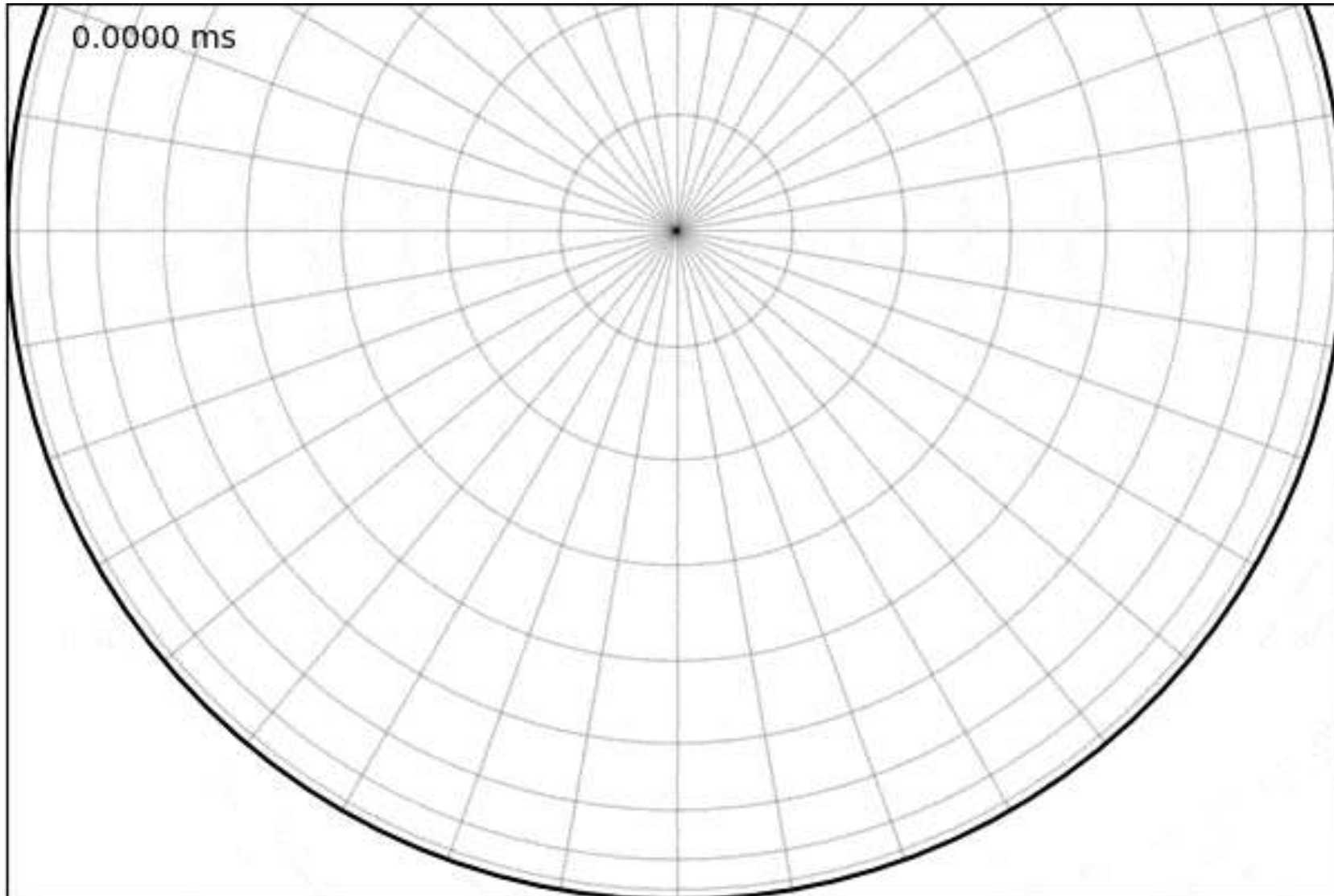






# Flash 3:

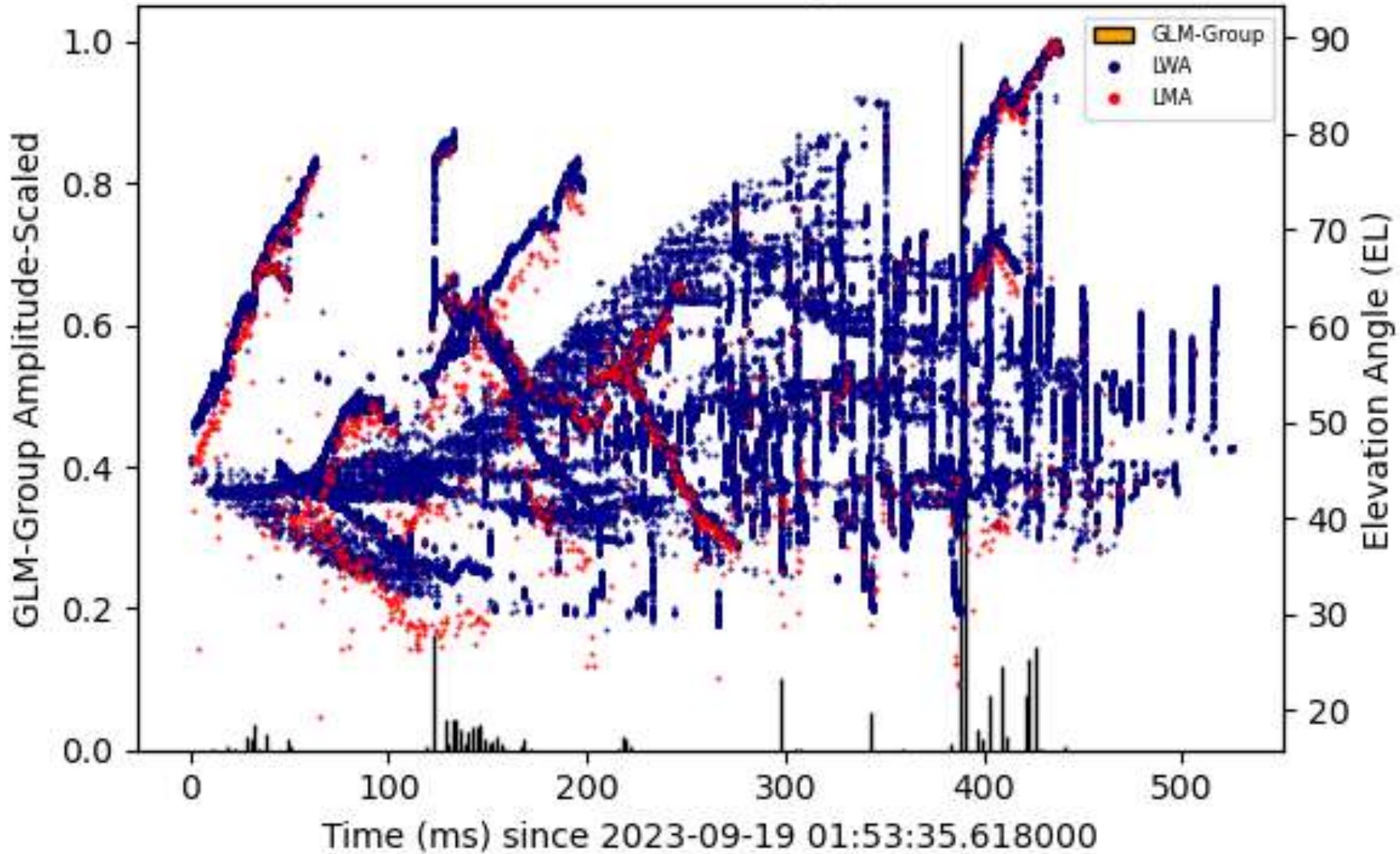
## Extensive 'normal' altitude IC flash





# Flash 3:

## Flash 3: LWA/LMA Elevation Angles and GLM Groups

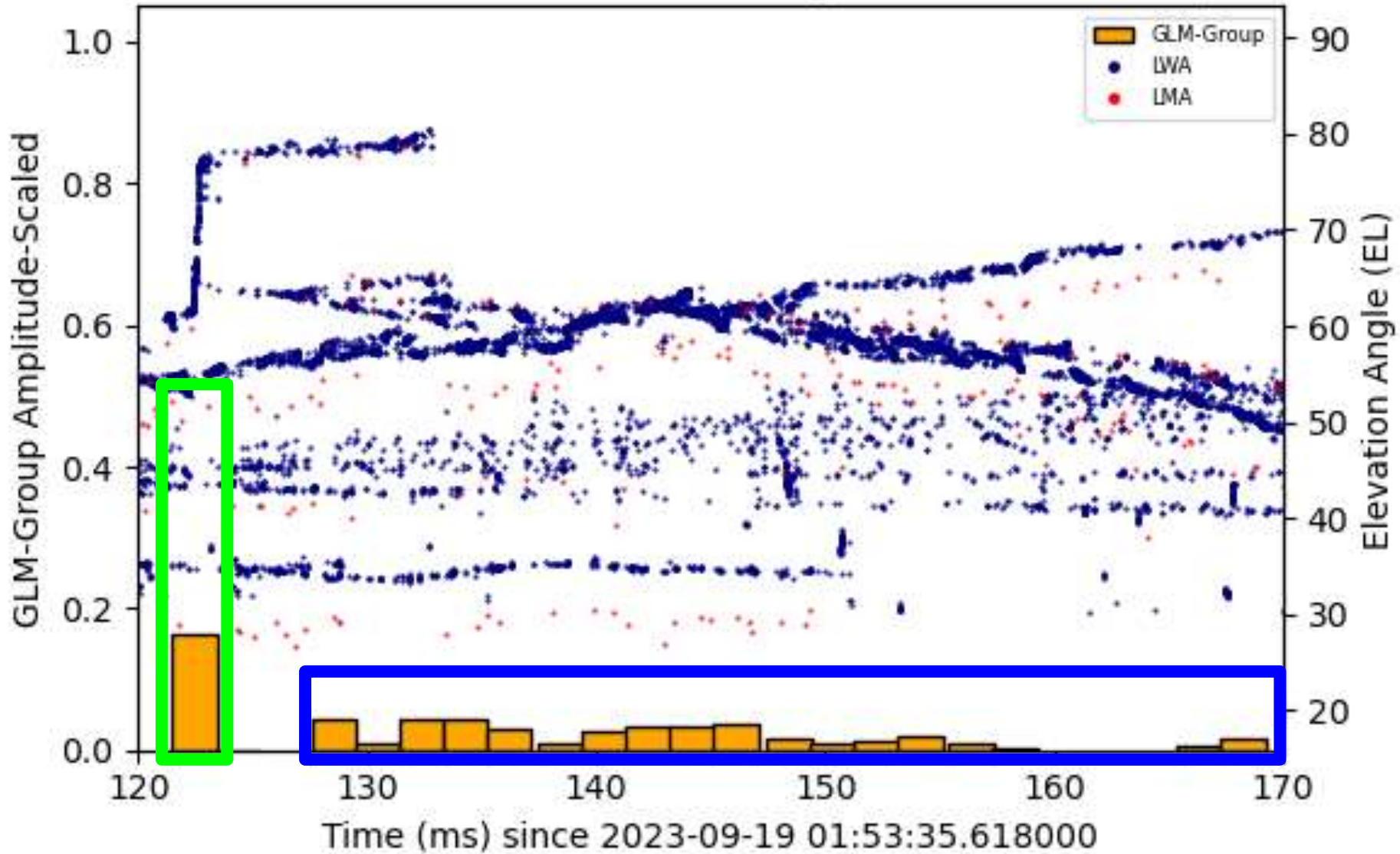






# Flash 3:

## Flash 3: LWA/LMA Elevation Angles and GLM Groups

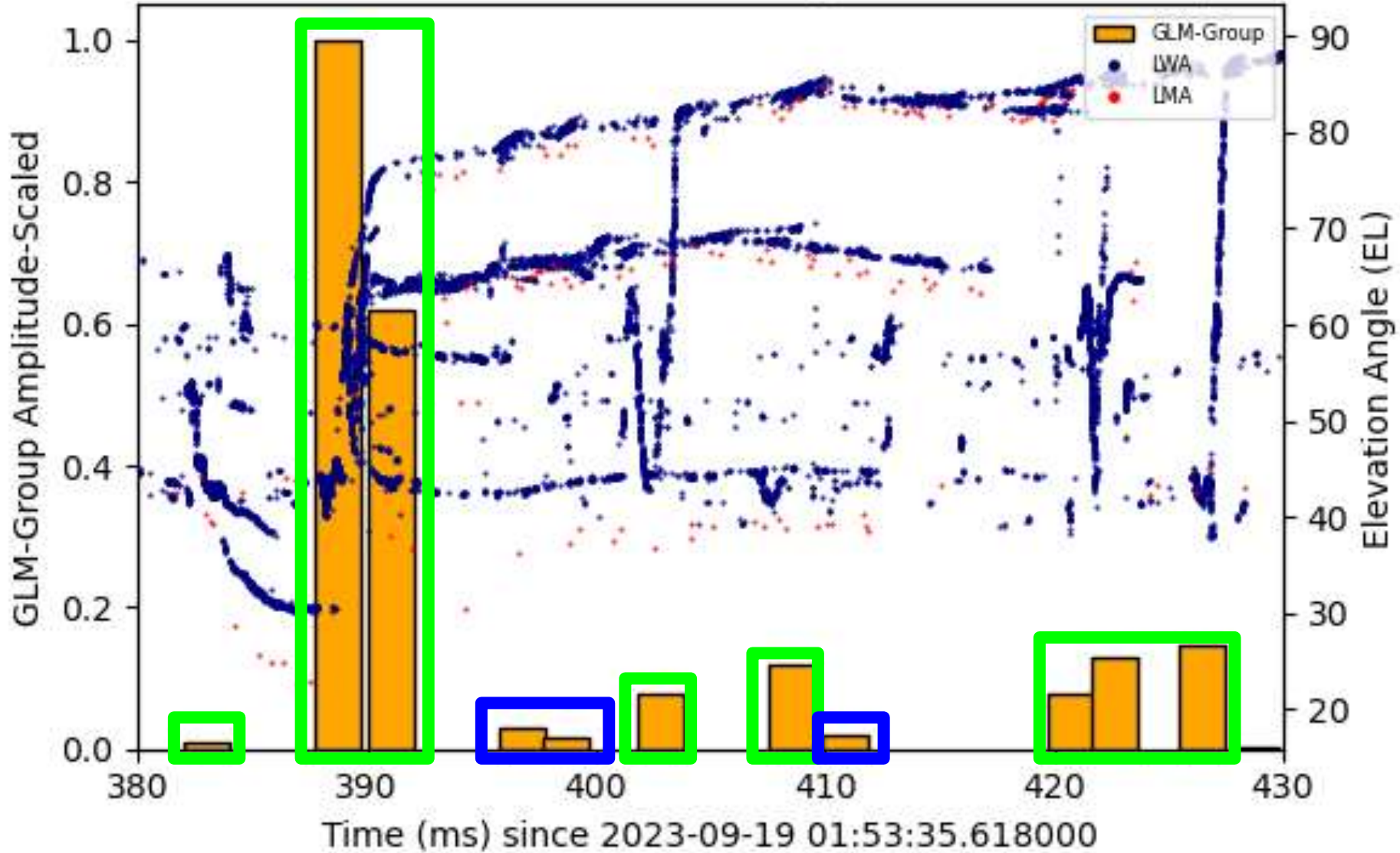






# Flash 3:

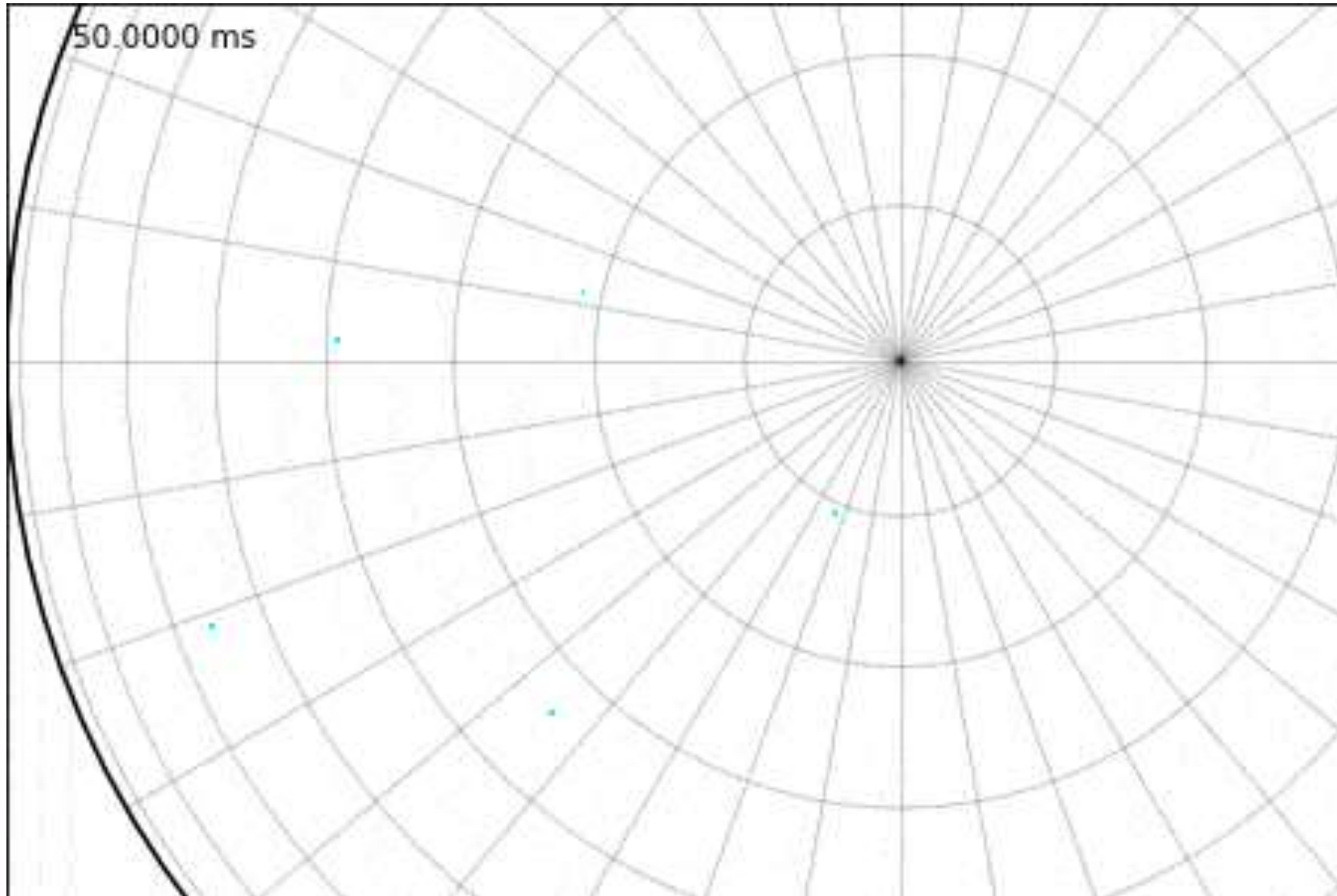
## Flash 3: LWA/LMA Elevation Angles and GLM Groups





# Flash 4/5:

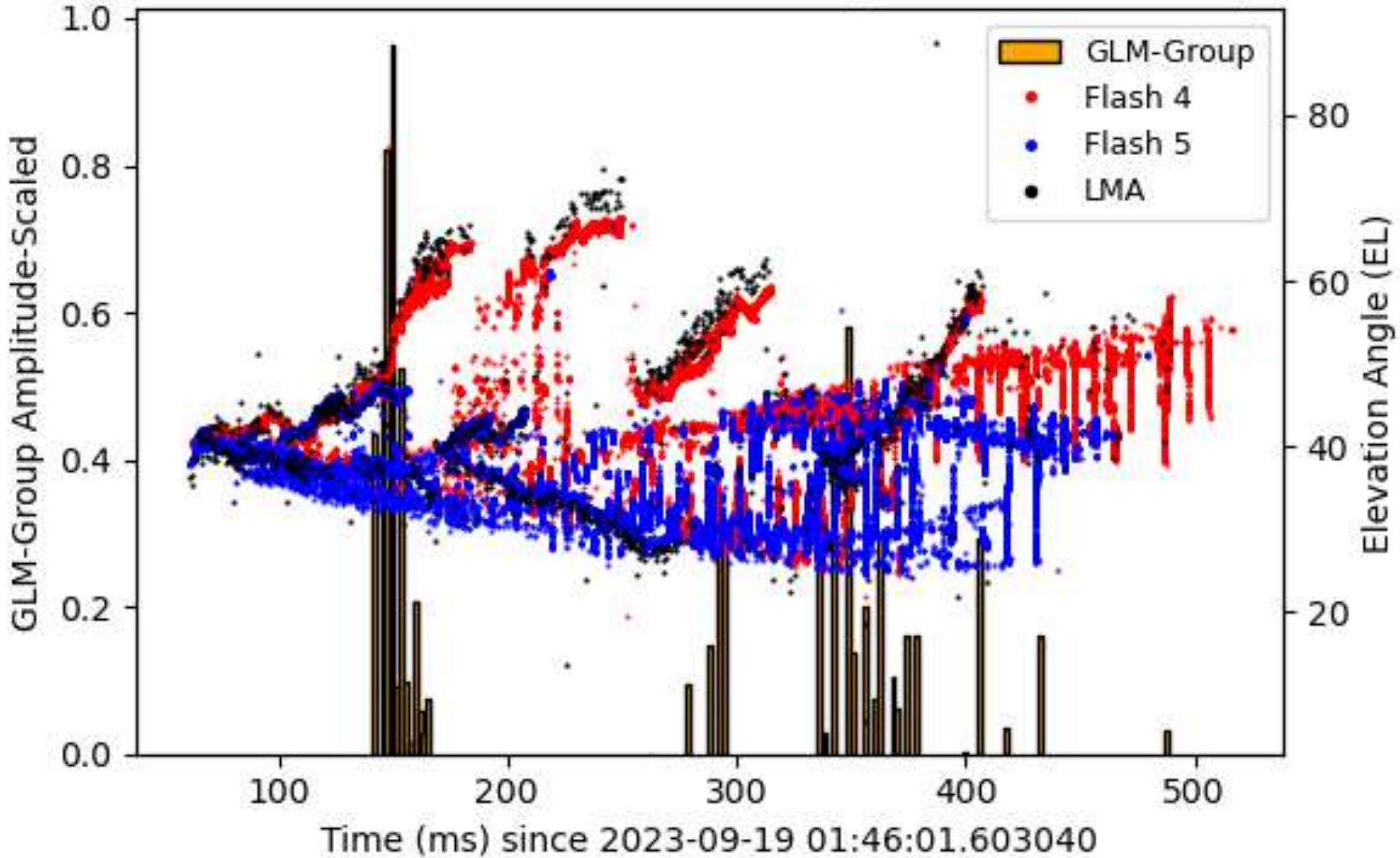
## Twin IC flashes





# Flash 4/5:

Flash4 and 5: LWA-LMA Elevation Angles and GLM Groups:

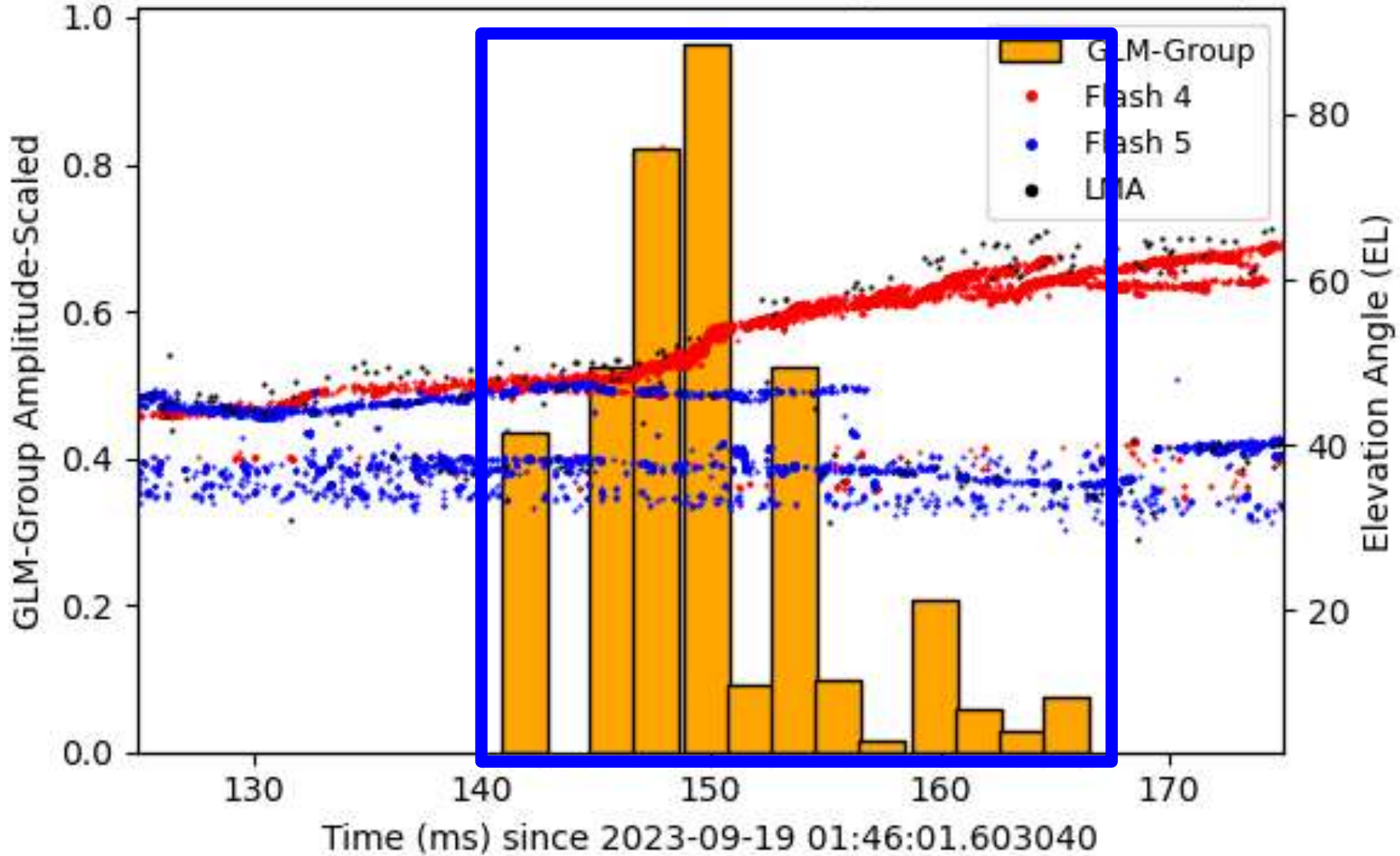






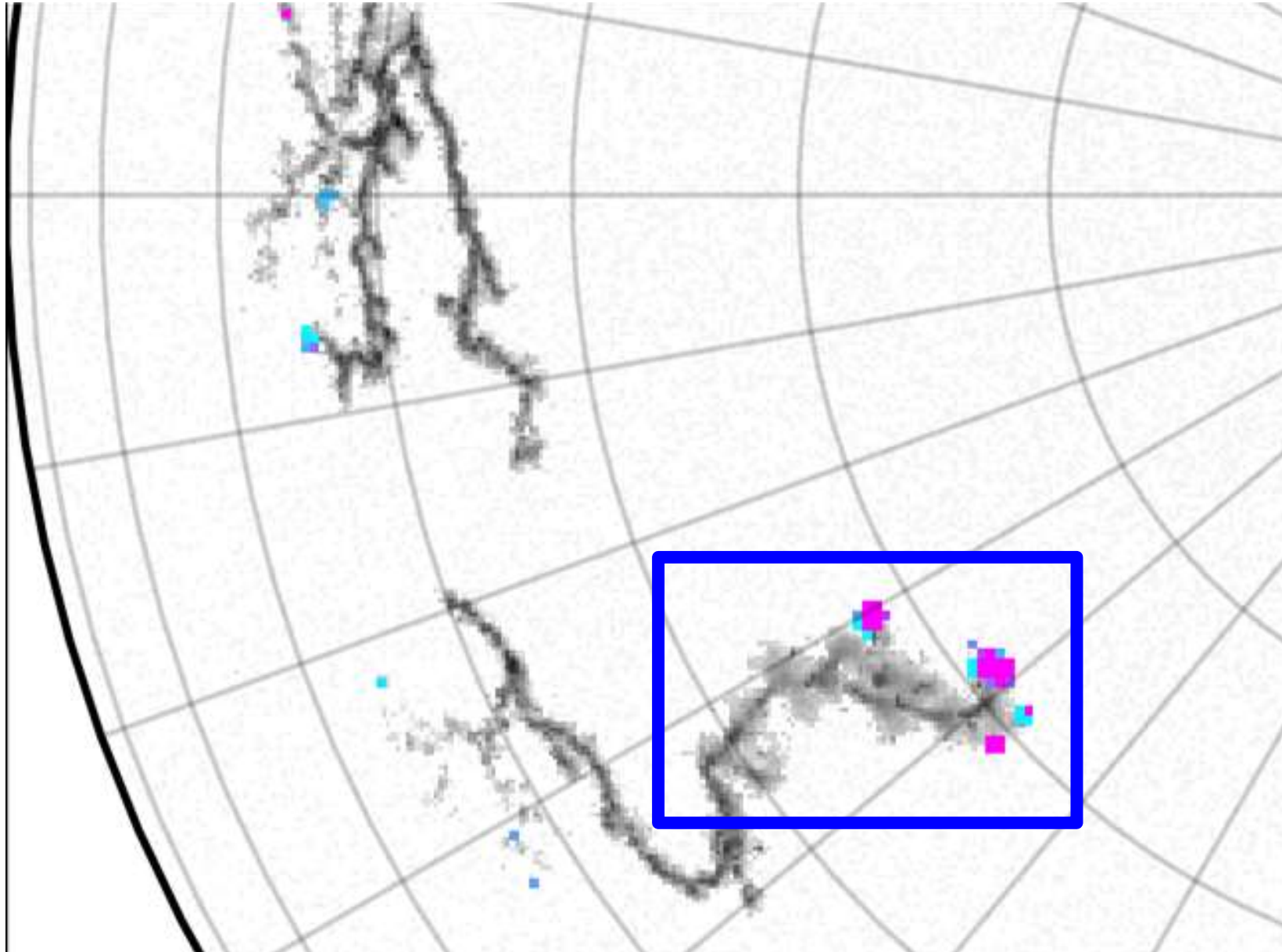
# Flash 4/5:

### Flash4 and 5: LWA-LMA Elevation Angles and GLM Groups:





# Flash 4/5:





# Summary

- GLM sees mostly K-changes
  - Not all K-changes are equal though
  - K-changes that initiate negative leaders tend to be GLM bright
- GLM sees some negative leaders too
  - It's not clear yet why some negative leaders are seen, and others are not
- GLM does not see positive leaders (needles)
  - Is anyone surprised?
- There's still a lot more work to do though
  - Fast antenna observations to look at current
  - What does the cloud look like?

