STUDY OF ARAPUCA 'S RESPONSE DURING XE DOPING

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INTRO

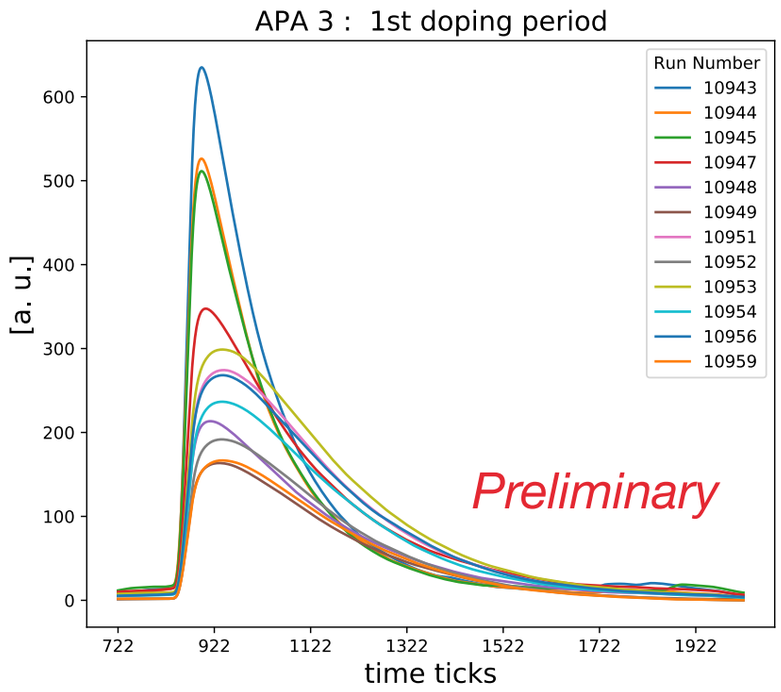
- Study the ARAPUCA's response during Xe doping and comparison wrt to X-Arapuca sensors
- Study of the average waveforms for both APA3 and APA6 Arapucas.
- Per each run:
  - noise removal, pedestal subtraction
  - simple event selection (no empty or saturated events)
  - computing average waveform per channel
  - calibration using single p.e mean area extracted in the given run
  - good wf selection signal above threshold (3*spe height)
  - sum of the 12 channels to compute the final average waveform and integral

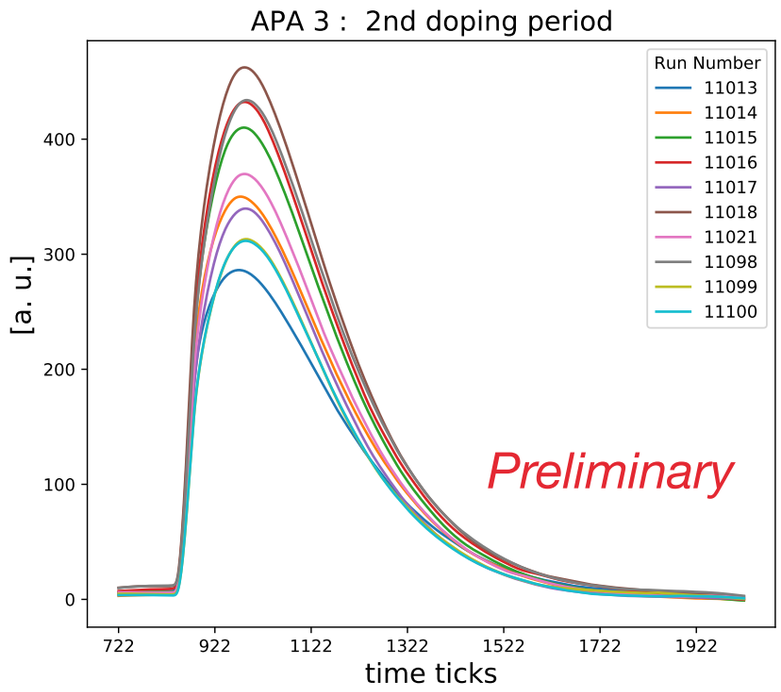
INTRO

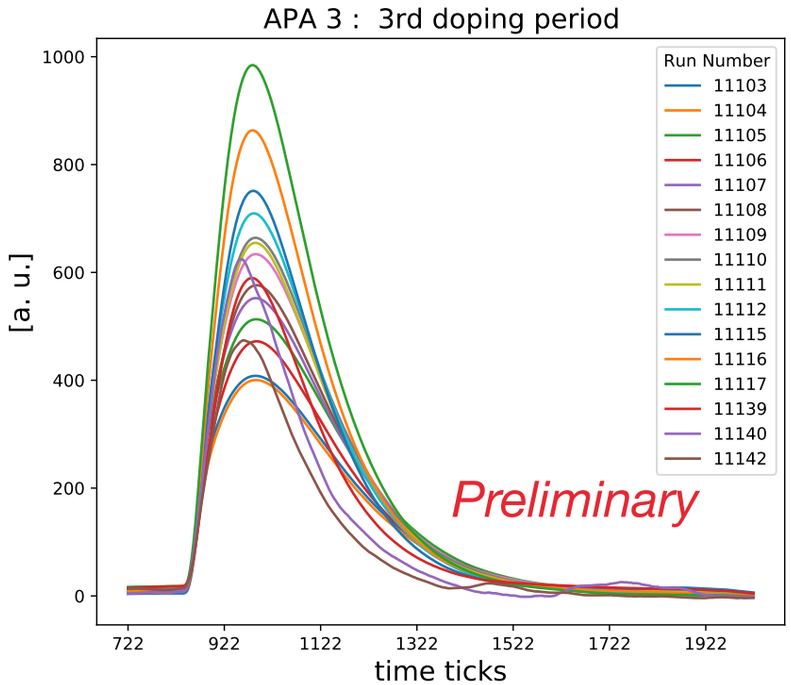
- Analysis performed over the set of runs taken with CRT trigger (Run list)
- Only 0 Field runs have been considered so far

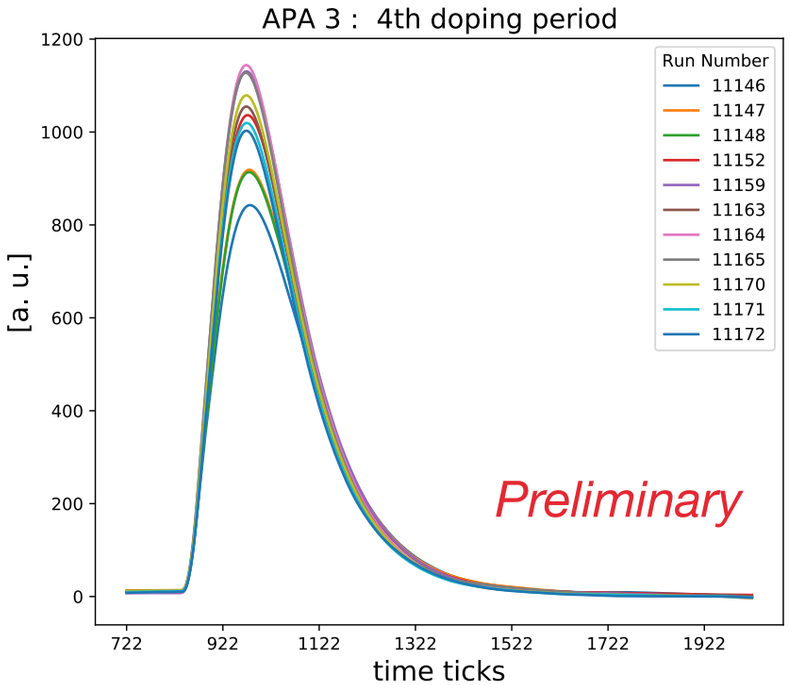
- Remarque: very different statistics available for APA6 and APA3. Current CRT trigger configuration favour beam side
- Fluctuations among run of the same period can be observed and are being investigated

APA 3 : AVERAGE WAVEFORMS

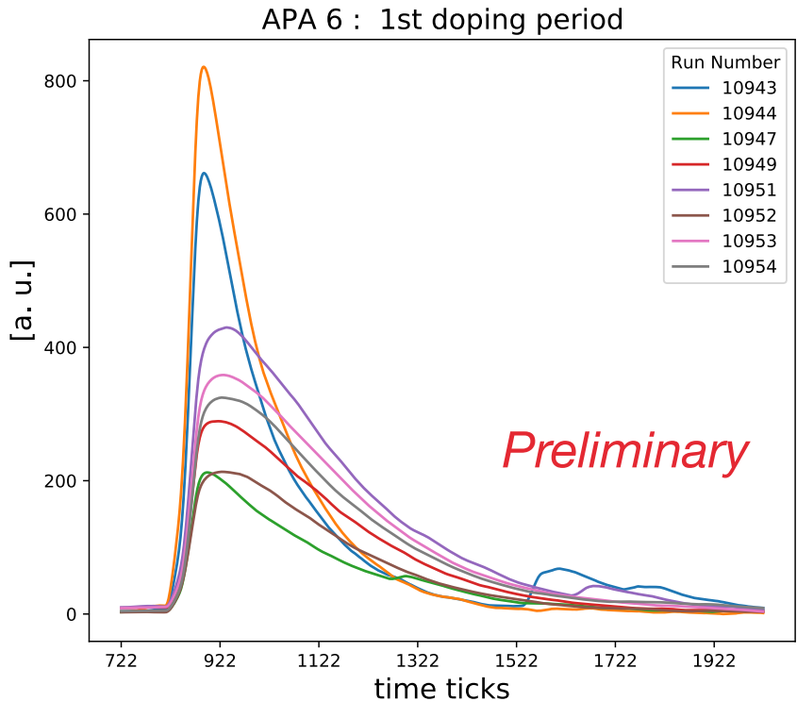


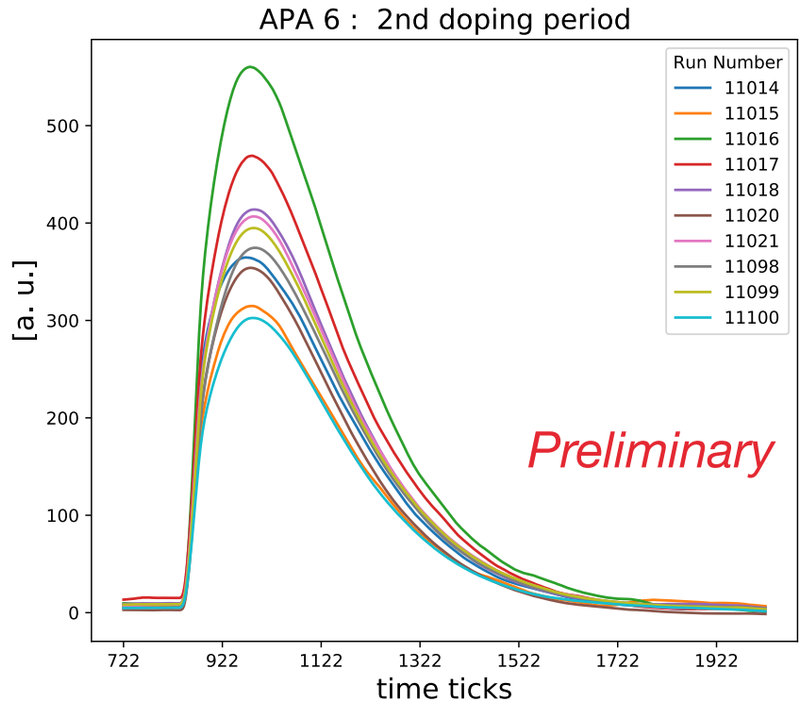


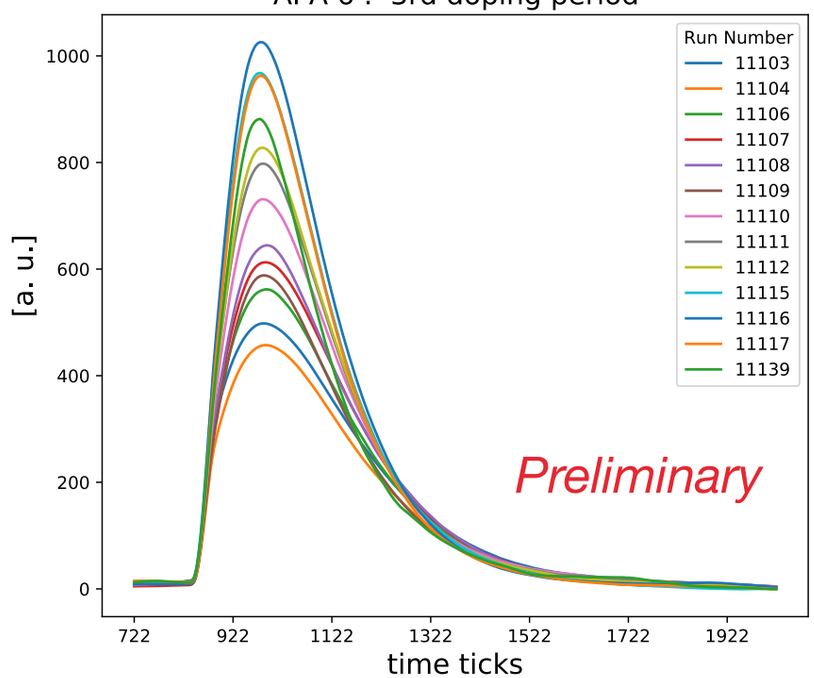


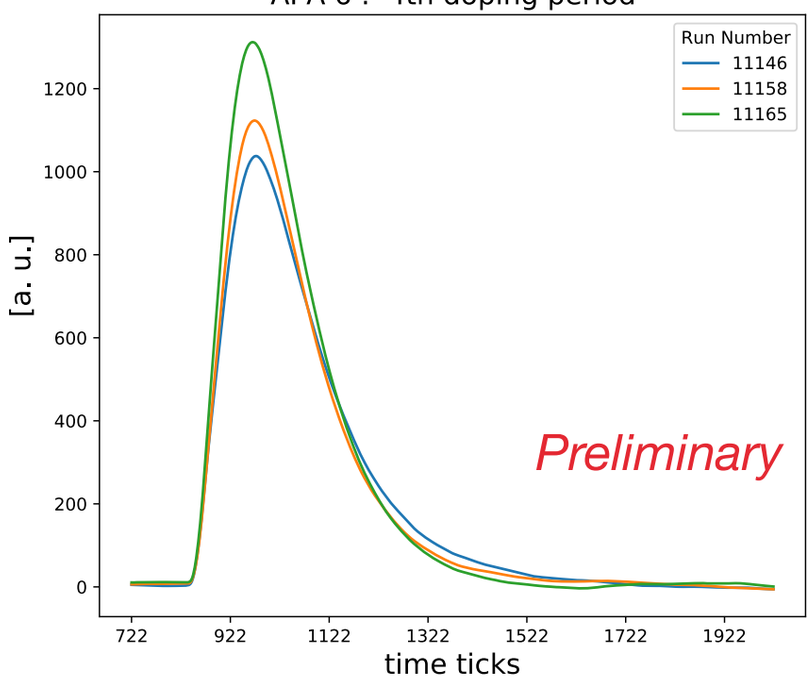


APA 6 : AVERAGE WAVEFORMS

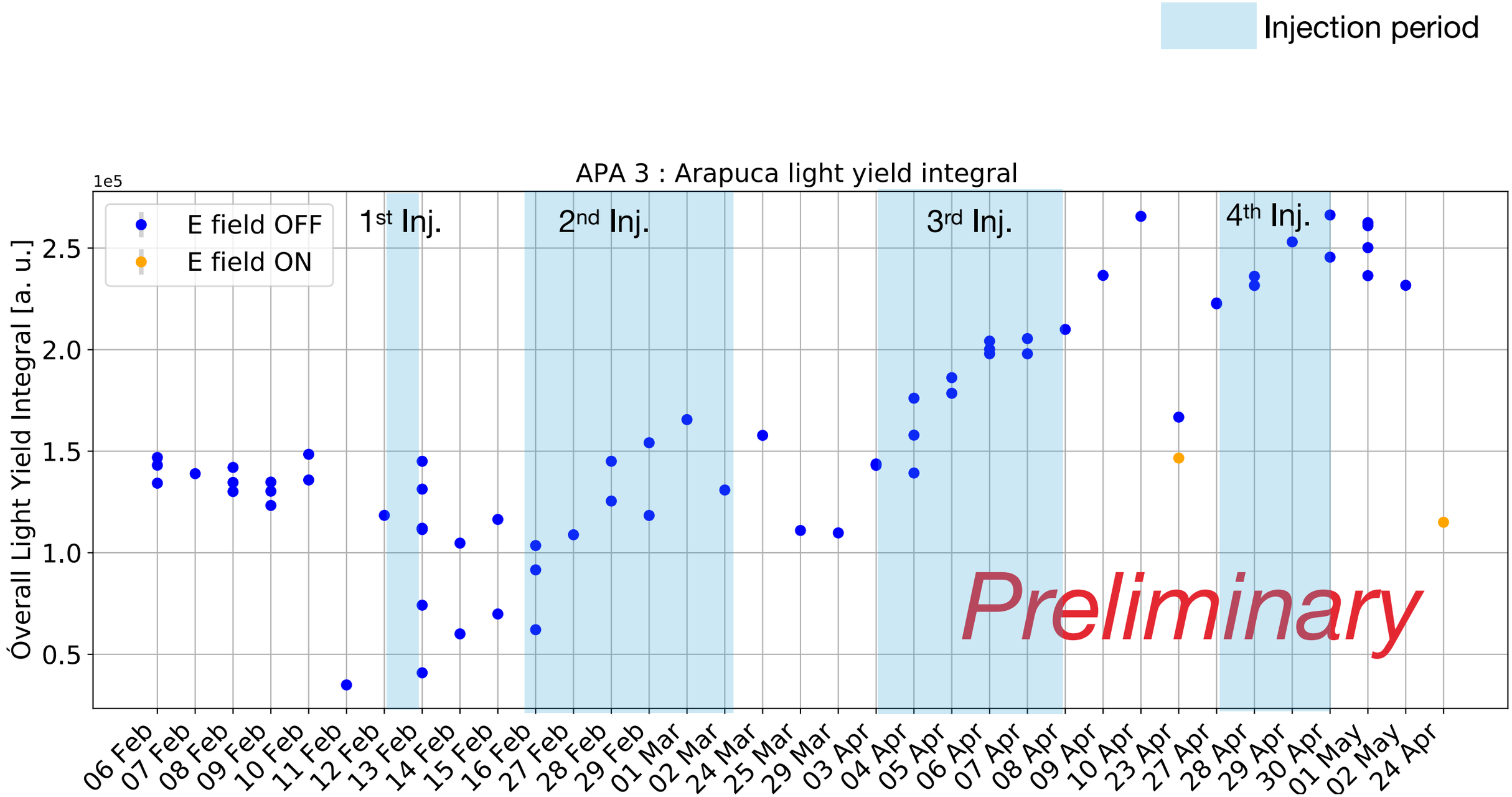








APA 3: AVERAGE WF INTEGRAL VS TIME



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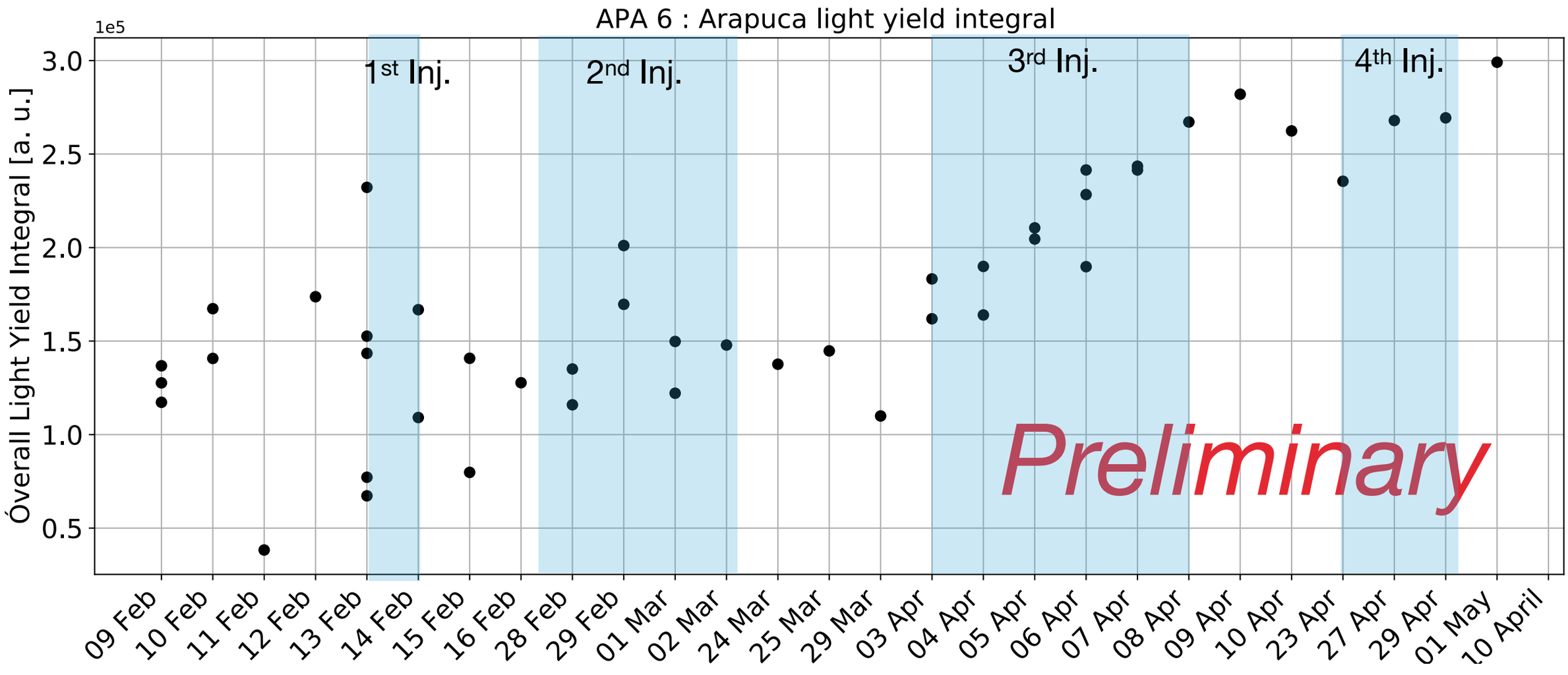
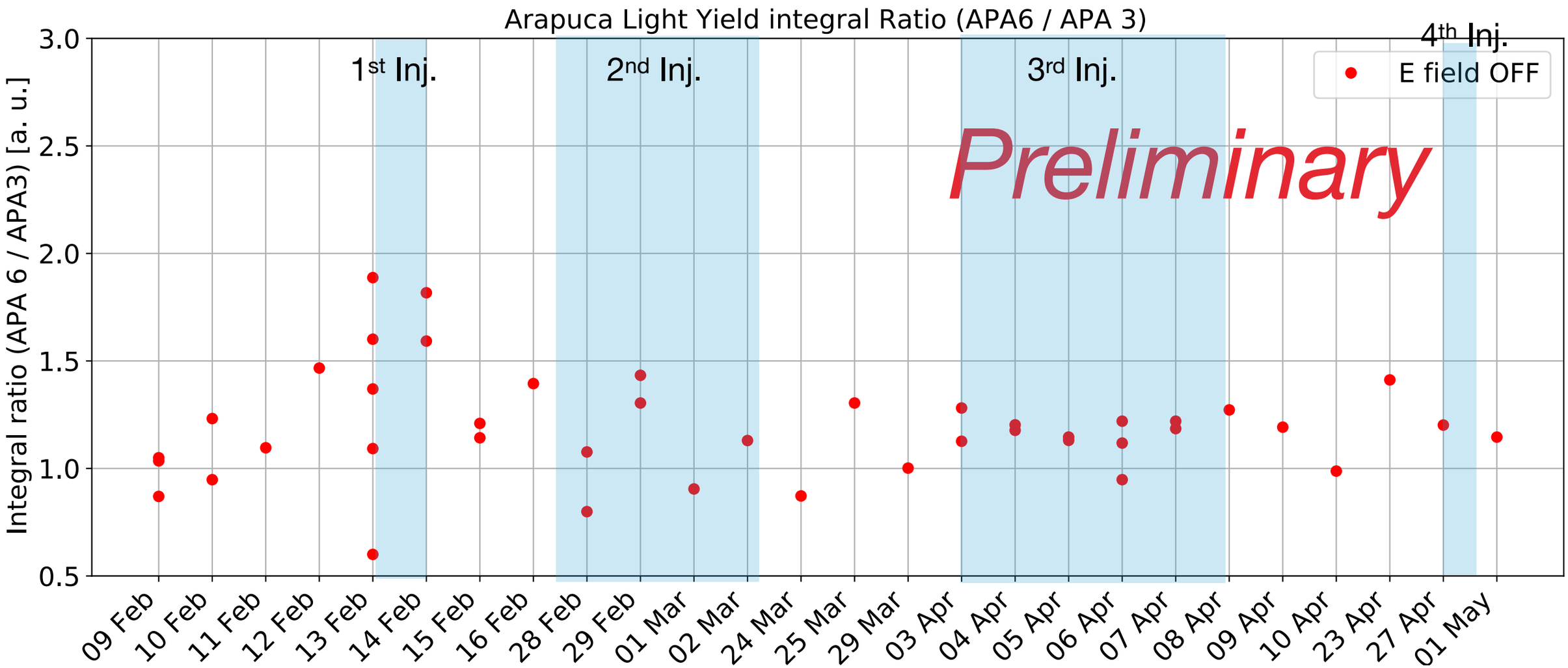
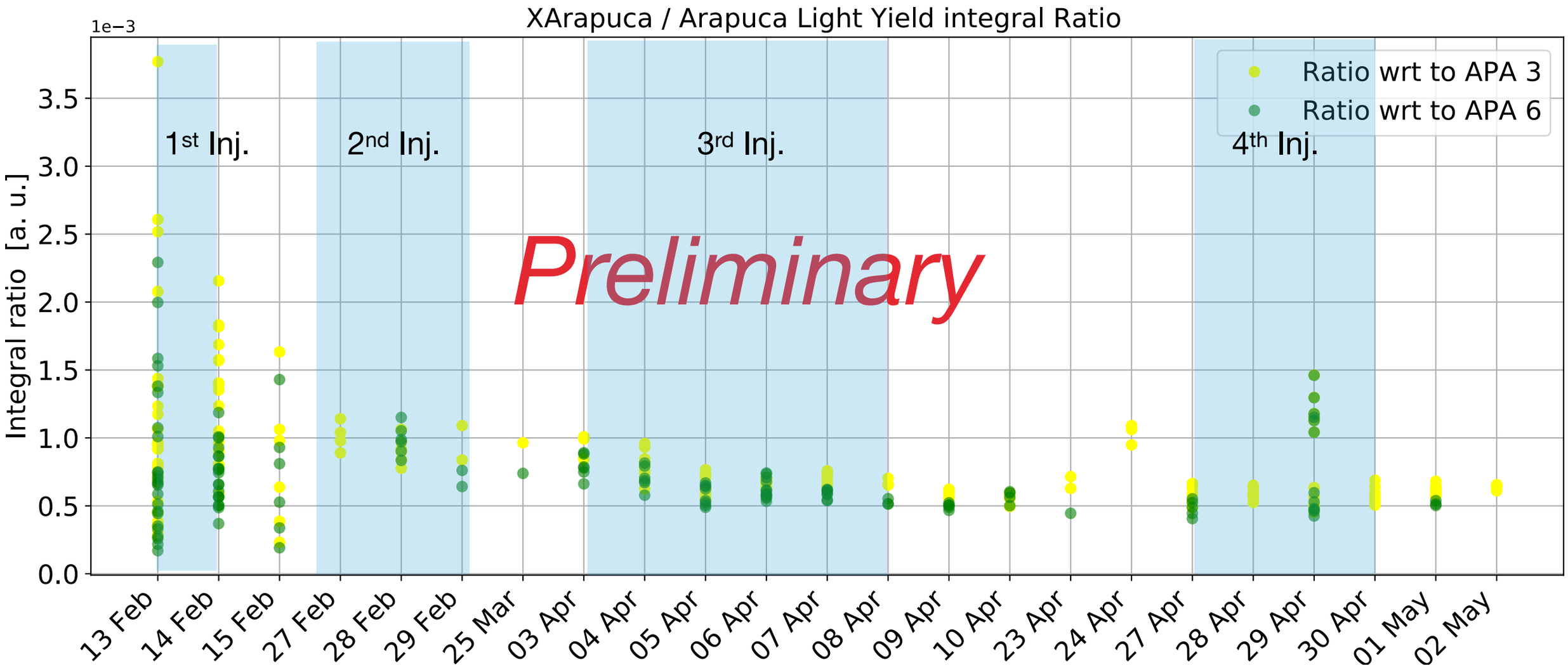


AVERAGE WF INTEGRAL RATIO : APA 6 / APA 3

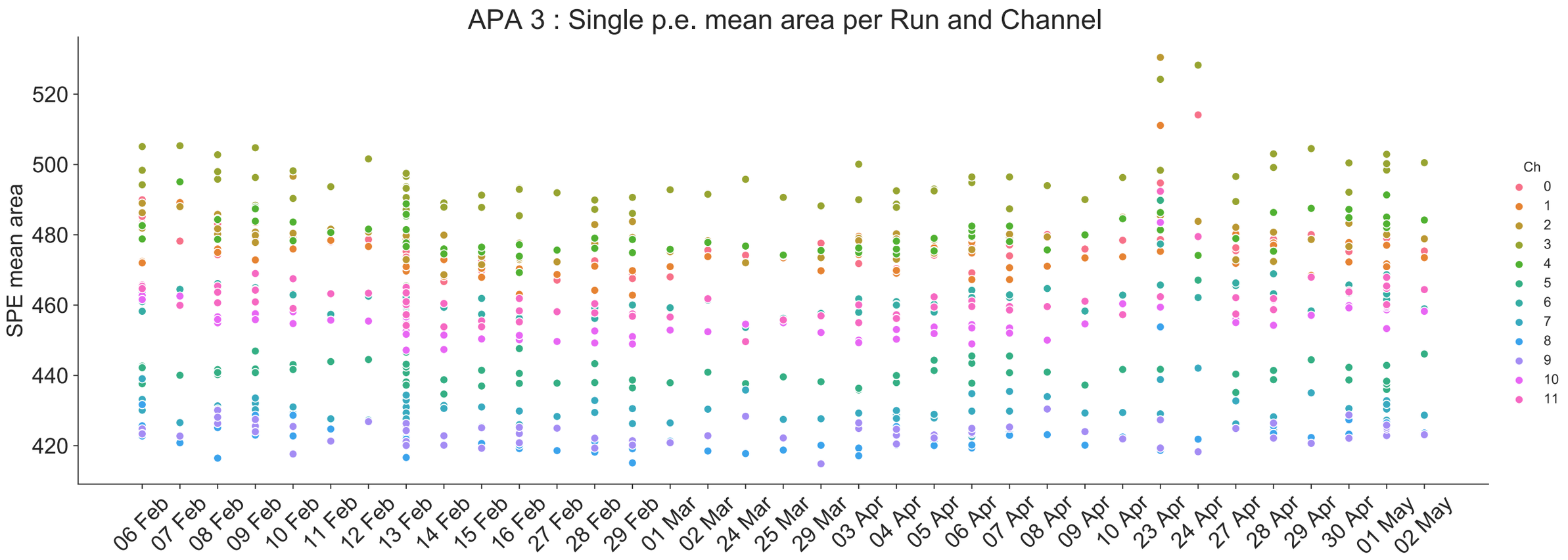


AVERAGE WF INTEGRAL RATIO : XARAPUCA / ARAPUCA

- X-Arapuca light integrals taken from Umut's studies
- Bare ratio! No calibration between X-Arapuca (NQ) and Arapuca are done so far
- Several points per day reflecting the number of runs taken. Work ongoing to have a unique combination between X-Arapuca (NQ) and Arapuca



APA 3: SINGLE P.E. STUDIES



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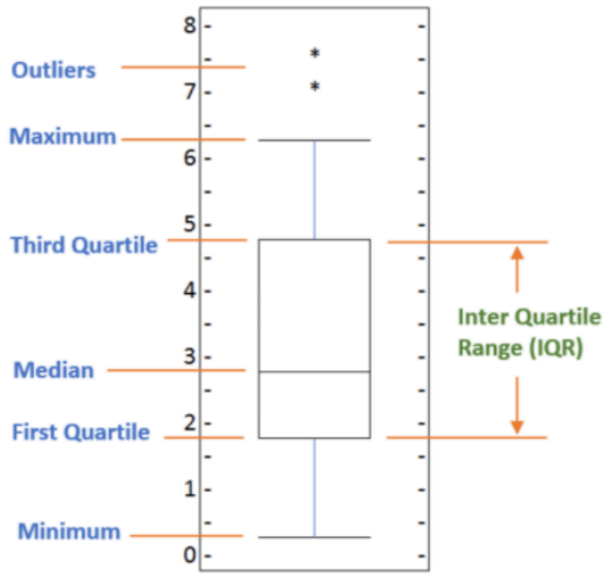
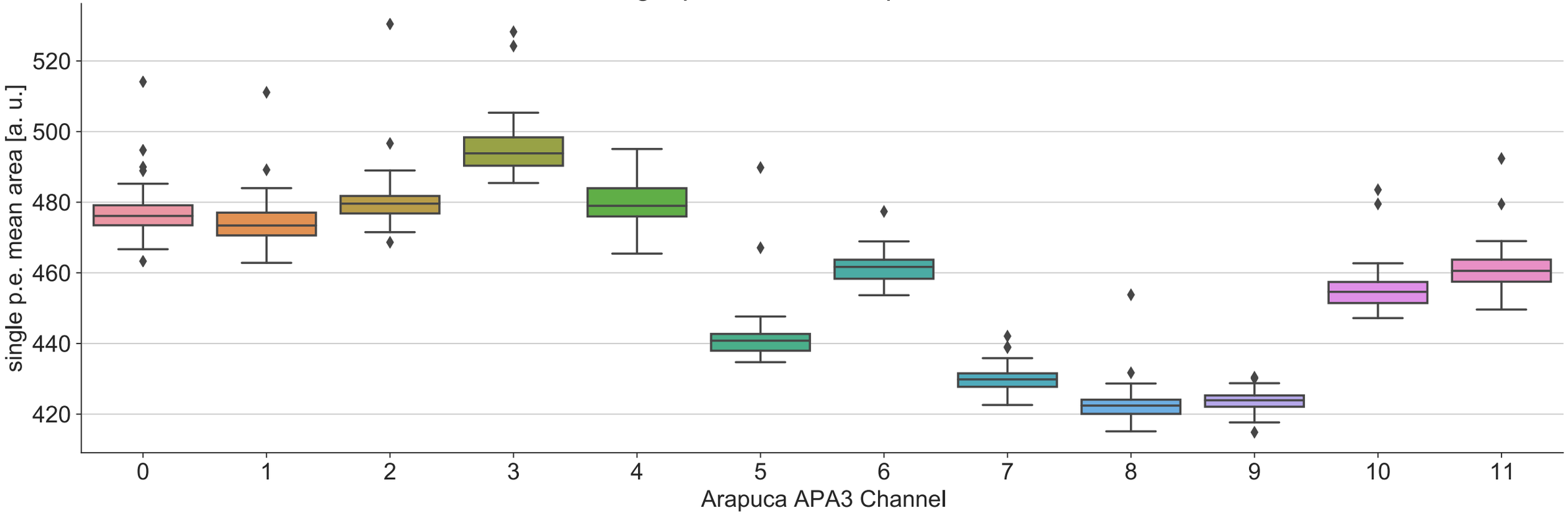
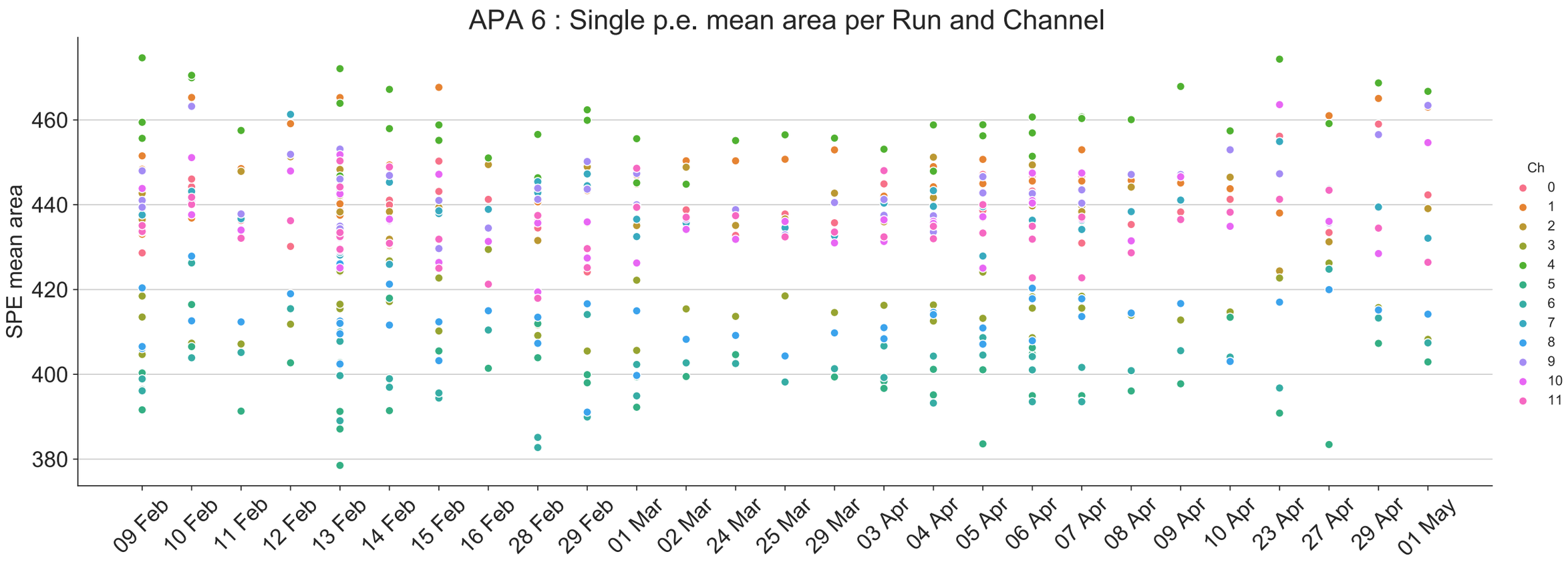


APA 3 : Single p.e. area mean per Run and Channel



APA 6: SINGLE P.E. STUDIES



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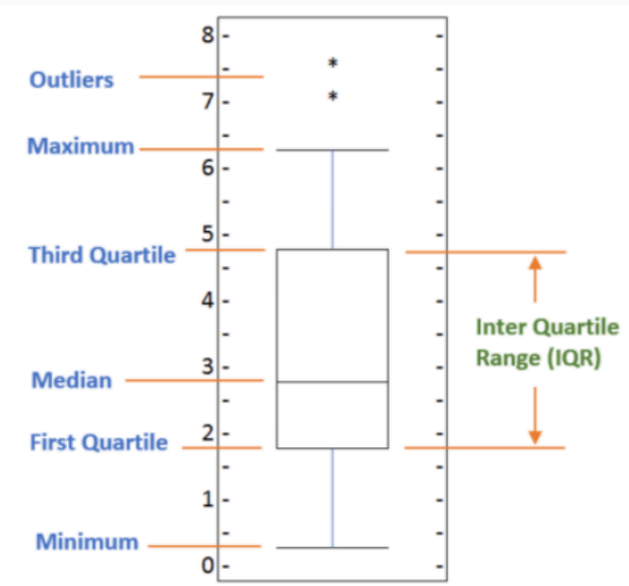

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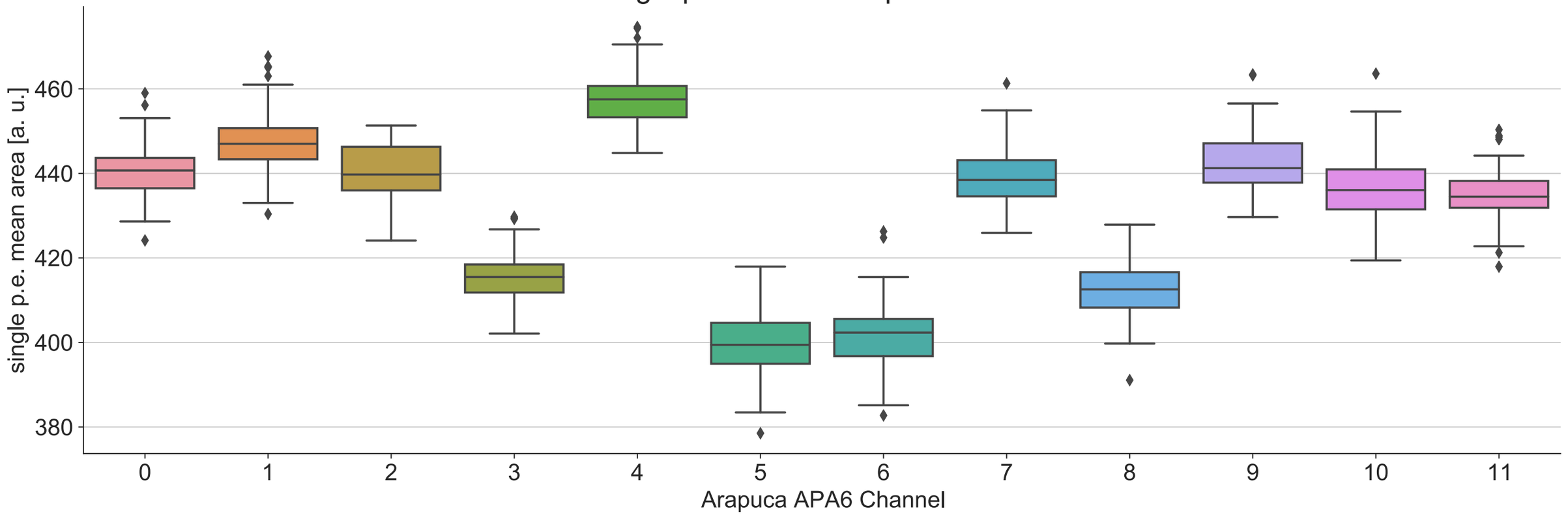
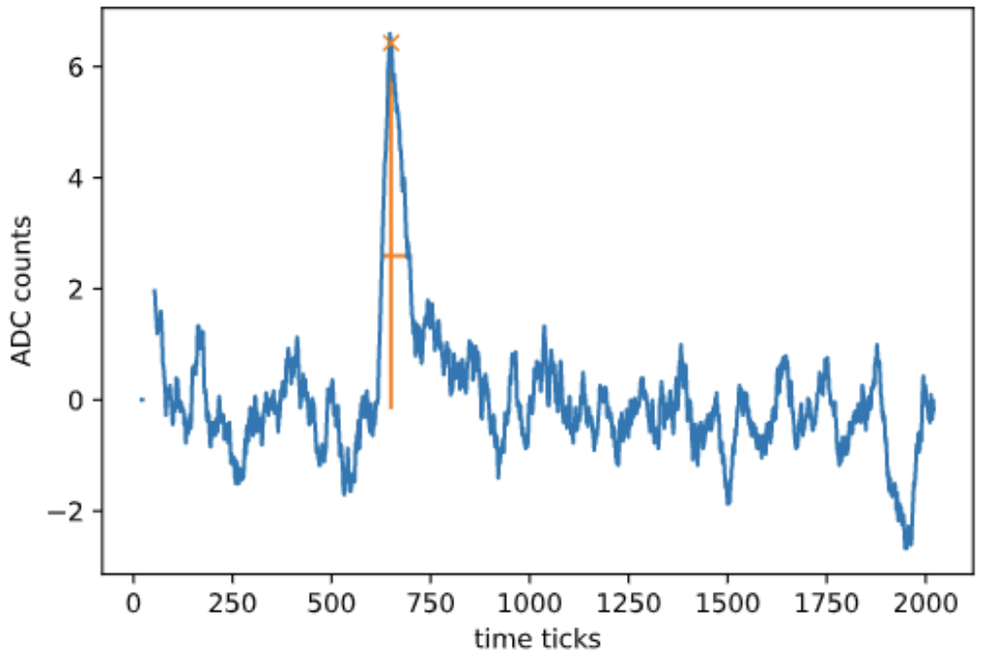


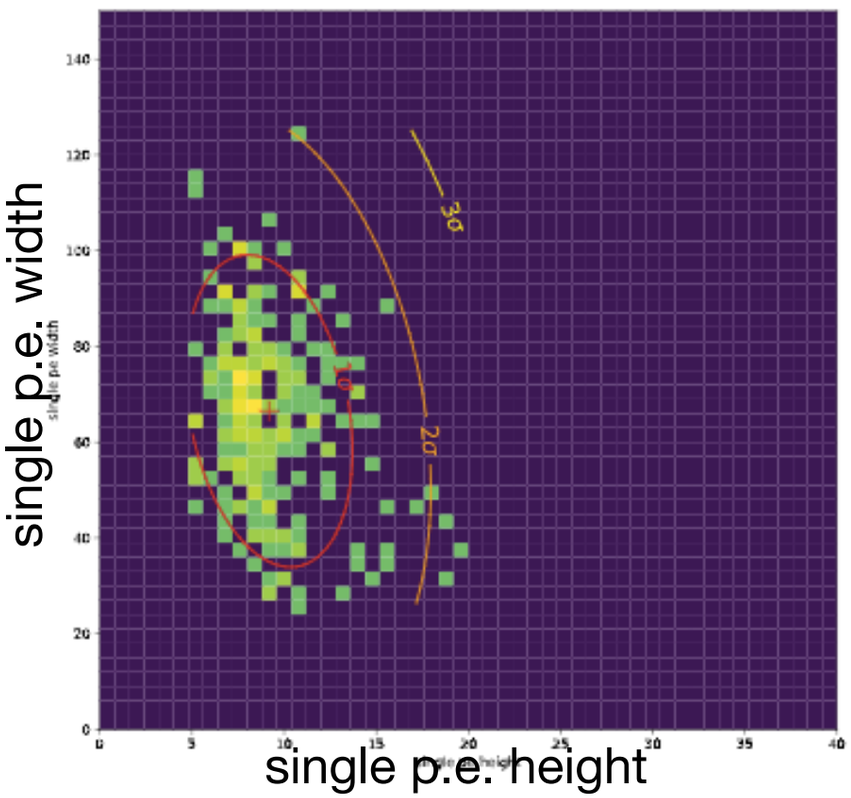
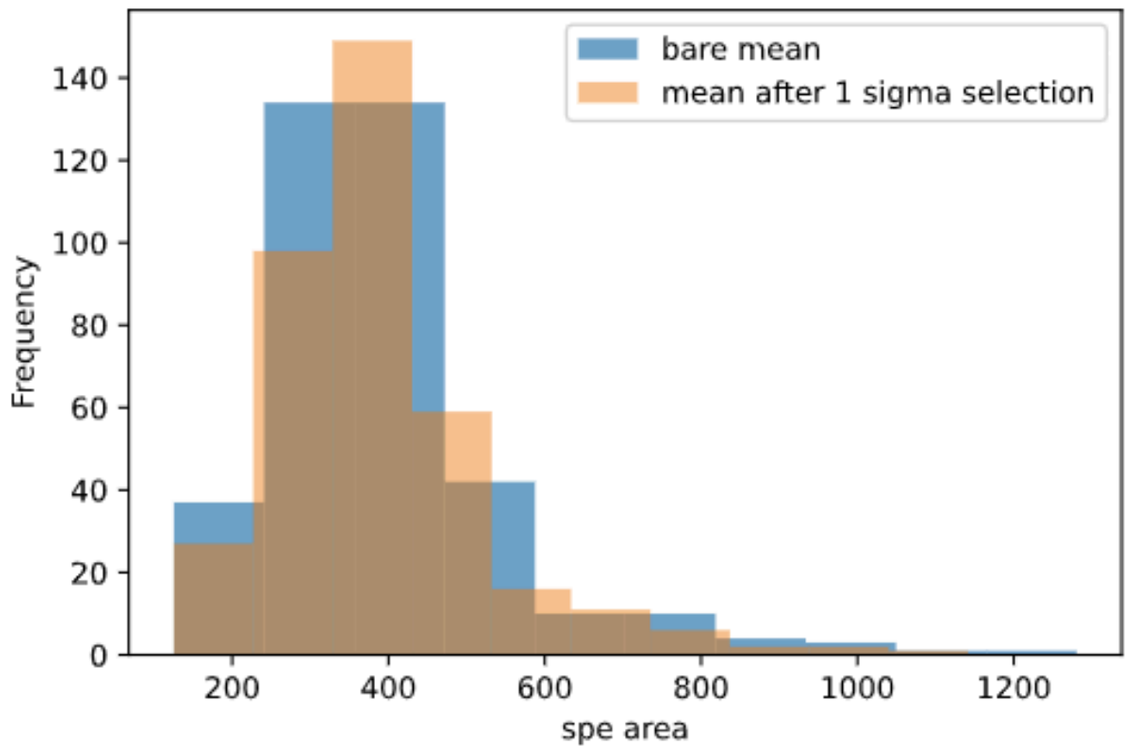
SUMMARY

- Overview of the Arapuca's response during Xe doping
- Similar light seen by the two TPC sides
- Stable response wrt to the X-Arapuca (NQ)
- To do: closer look to some runs to understand fluctuation of the integral (analysis?)

ADDITIONAL

SOME DETAILS ABOUT THE SINGLE P.E. SELECTION



Example of single p.e.

Ch 5 , run 11099