Pipeline Status

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Outline

- Daily production
- System evolution
- New Pipeline release
- Future changes
- Summary

Daily production

- "smooth" but
  - Failing observations
    - errors in ODF generation
    - crash in SAS tasks or pipeline scripts
    - "wrong" products identified in manual screening
  - Fixing methods:
    - Raw telemetry reprocessing to generate new ODFs (logged in ODS system)
    - "Manual" edition of ODF constituents (logged in Qcheck system)
    - Ignore exposures in pipeline processing (logged in PPS system)
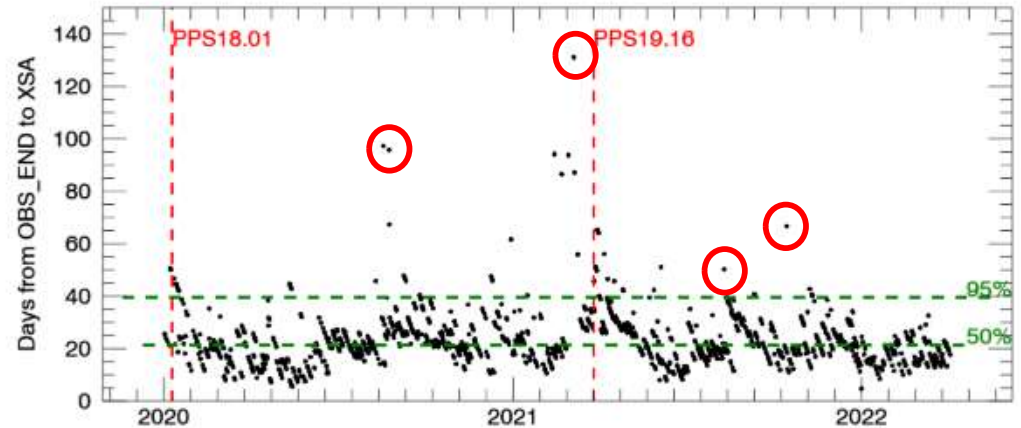
Pipeline System evolution

- Current system

    - Development under git system

    - Execution on Univa grid engine

        - Software installation in each execution node

        - Grid scheduler

- DevOps model

    - Dockerisation/containerization of pipeline modules and ancillary software

    - Reduce dependencies on hardware infrastructure and OS

    - Easier and faster deployment on any system permitting containers

    - More flexible development and validation

    - CI/CD environment

XMM-Newton Pipeline – DevOps model (CI / CD)
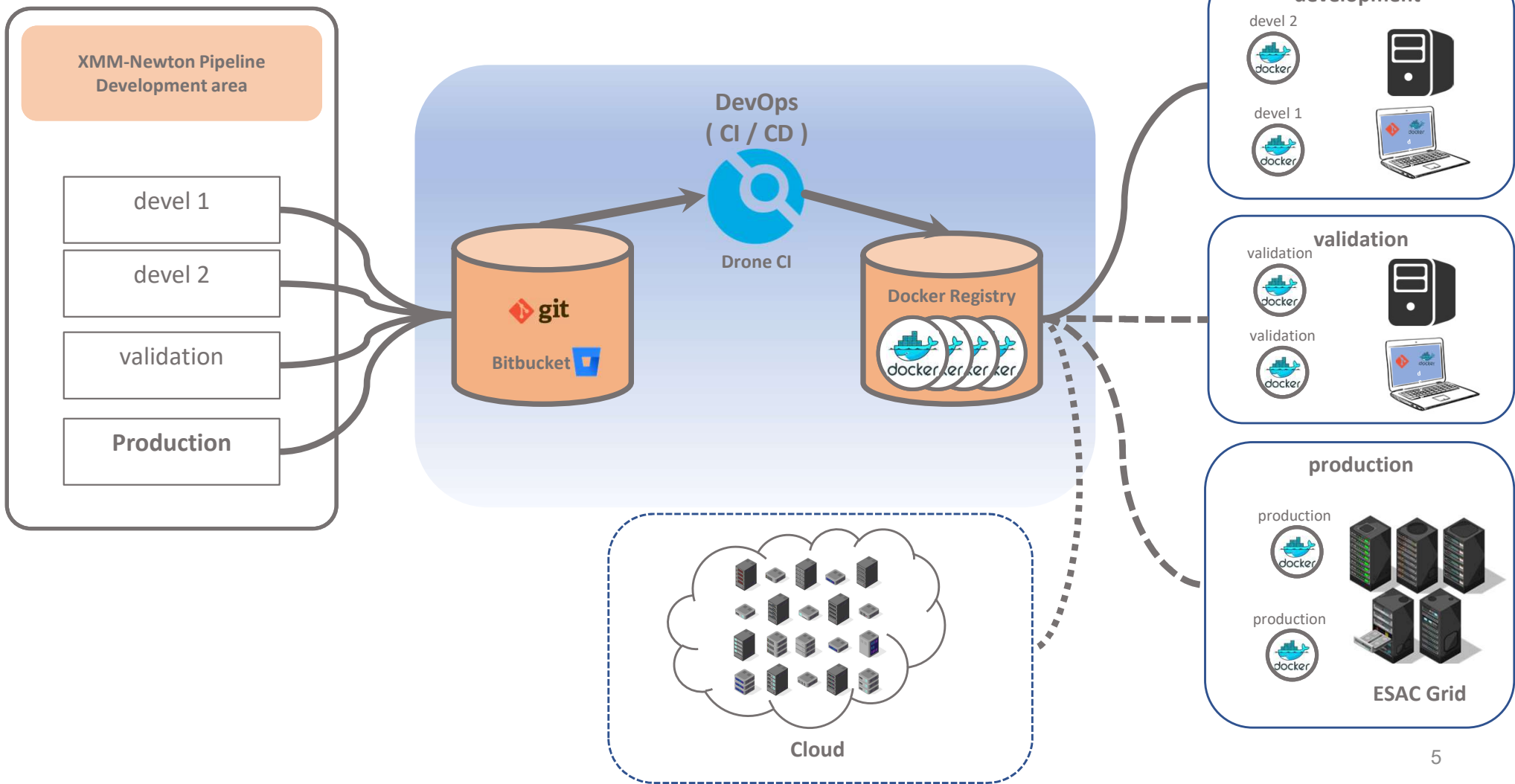
New pipeline release

- Still on Univa grid engine (new grid system being installed with docker capabilities under discussion)

- SAS manifest xmmsas_20211130_0941 (= SAS_20.0.0 public release)

- Bug fix: Effective area files for PN Timing/Burst spectra corrected
  - Input parameters non-defaulted in "badpixfind" and "badpix" for pn Timing and Burst modes

- Bug fix: Wrong OM source list in PINDEX PPS file

- Calculation of redistribution matrix for individual EPIC source spectra included in the code as an option in pipeline execution (not activated yet)

Future changes

- Apply results from EPIC Filter Wheel Closed data analysis to background estimate for image creation and products for spectral analysis
- Astrometric rectification of EPIC images and events after cross-correlation of detected sources with external catalogues (under investigation)
- Sensitivity maps on flux units based on Cash statistics
- Units of OFFAX column in EPIC source lists (for next bulk reprocessing)
- Alignment of pipeline processing of OM data with current "ad-hoc" processing for catalogue production (in the long-term)
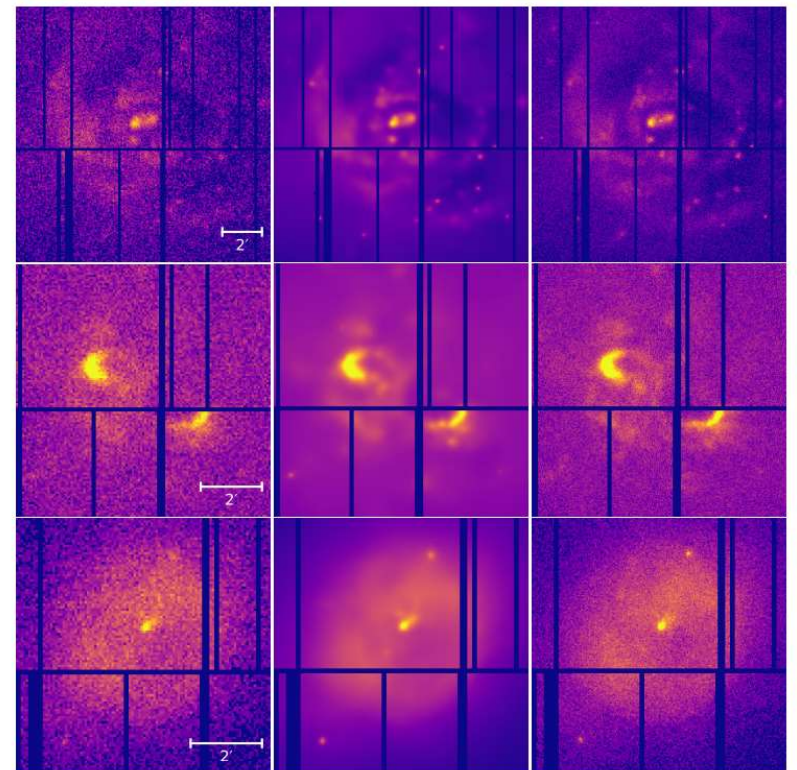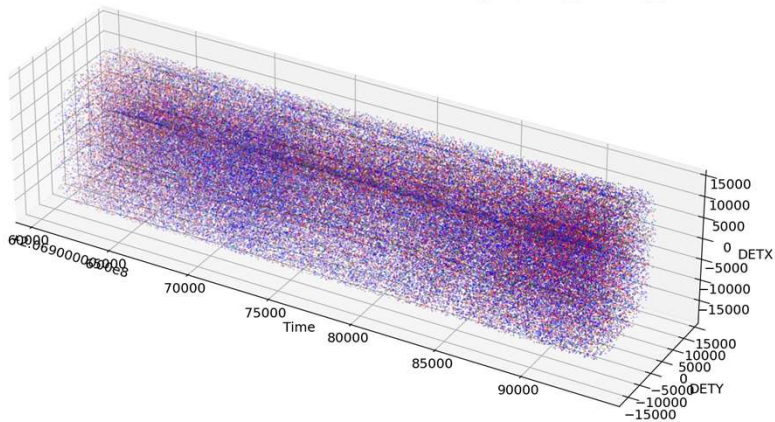
Incorporate new products or algorithms demanded or suggested by users

Rejection of flaring background events
in EPIC pn camera (K. Frohnapfel)

3D Plot of Position over Time original_data
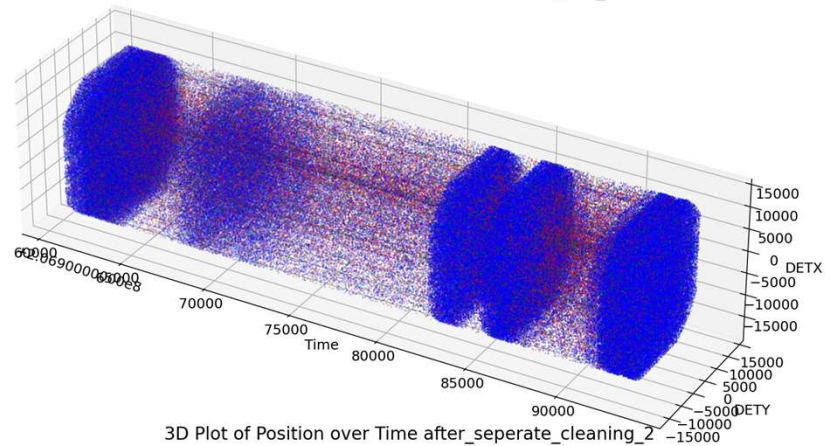
3D Plot of Position over Time after_seperate_cleaning_2

Super-Resolution and De-Noising
in XMM-Newton images
(S. Sweere https://arxiv.org/abs/2205.01152)

Summary

• Smooth daily operation

• New Development and Operations model

• Migration into a new operations infrastructure

• Ease use and interpretation of PPS products

• New methods, algorithms, technologies…