Leibniz-Institut für Astrophysik Potsdam

4XMM-DR13s

New features in the XMM-Newton serendipitous source catalogues from overlapping observations

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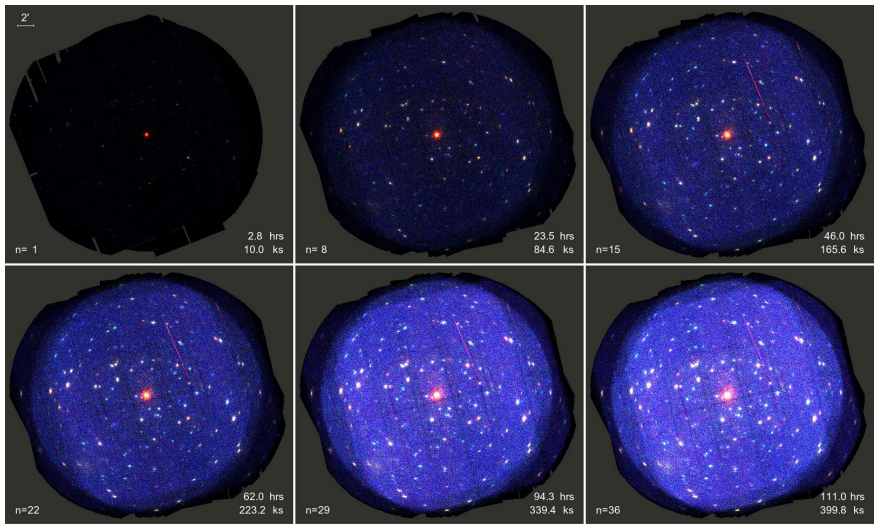
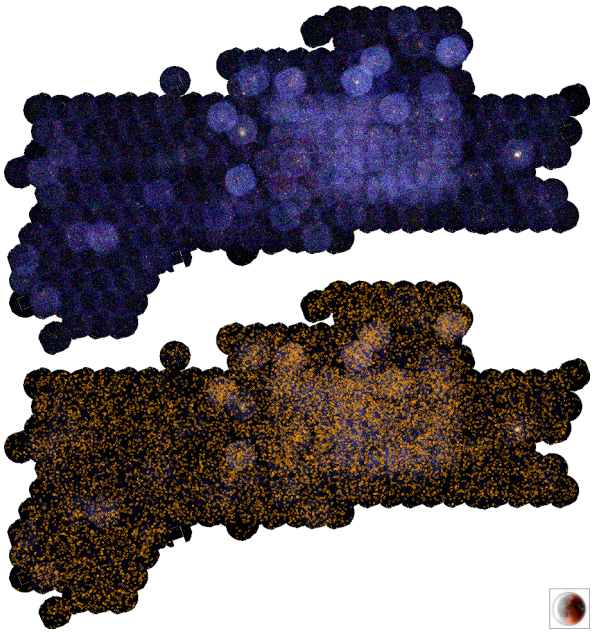
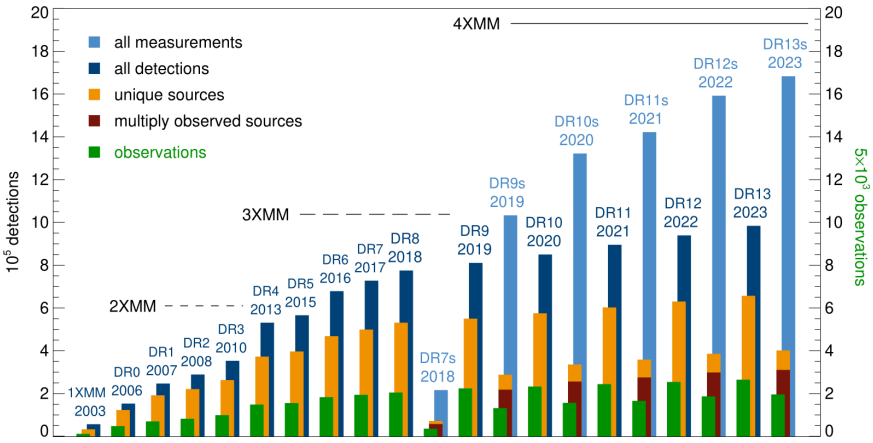
Since the early 2000s, the XMM-Newton Survey Science Centre (SSC) publishes catalogues of serendipitous sources detected in all public XMM-Newton observations. Making use of the cumulative exposure of the meanwhile more than 30% multiply covered XMM-Newton sky area, we develop dedicated stacked catalogues from simultaneous source detection in all overlapping observations. They are more sensitive to faint sources than detection runs on individual observations, and they provide information on long-term variability derived directly from the source-detection parameters. We compile and publish them on a yearly bases. The newest serendipitous source catalogues, 4XMM-DR13 from individual and 4XMM-DR13s from overlapping observations, became available with the beginning of this conference.



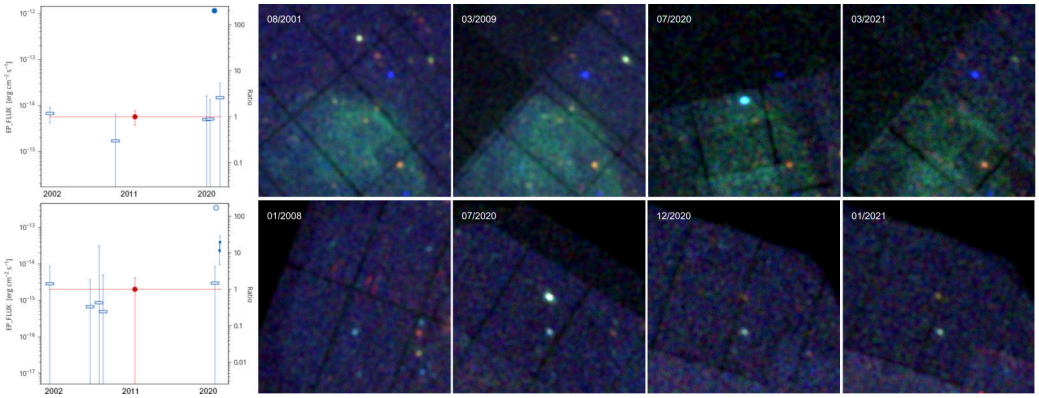
Digging deeper by stacking XMM-Newton observations. All images share the same brightness scale.



The largest stack: XMM-XXL-North. Orange circles in the lower panel mark detected sources.



Increasing content of the XMM-Newton serendipitous source catalogues.



Transient events in 4XMM-DR13s, each row centered on one object: flux light curve and false-colour images of selected observations. The blue symbols inform about short-term variability of the corresponding detections in the 4XMM-DR13 catalogue. Filled circles: high probability to be short-term variable. Open circles: consistent with constant flux. Boxes: too few counts to measure variability. Dots: no good detection in 4XMM-DR13, but included in DR13s.

New features in the recent editions of the catalogues from overlapping observations include

- PSF photometry on lower-quality exposures,
- updated all-EPIC fluxes,
- revised astrometry,
- additional variability measures,
- revised visual quality screening.

4XMM-DR13s is available from our SSC websites https://xmmssc.aip.de, from ESA's XSA interface, and from NASA's HEASARC archive.

Catalogue paper: Traulsen+ A&A 641, A137