Digging deeper: The first catalogue of X-ray detections from stacked XMM-Newton observations

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From all publicly available observations of Europe's X-ray space telescopes XMM-Newton since 1999, the XMM-Newton Survey Science Centre Consortium has been generating catalogues of individual detections and published the most recent incarnation 3XMM-DR7 June 1st. The AIP contributes and maintains the source-detection software used to process them. About a third of the XMM-Newton sky was observed more than once. In order to achieve ultimate sensitivity in these sky regions, we have now developed a new standardized approach to source detection on images of multiple pointings, making use of maximum likelihood fitting like the 3XMM catalogues and introducing a new algorithm to model the background emission. The full procedure is open to all users as a new task of the XMM-Newton Science Analysis System software. Currently, we are compiling the first catalogue of stacked detections. It is based on about 2000 observations with reasonably low background level which overlap by 20% or more in area and are grouped in more than 400 stacks. We are detecting at least 5% more sources than in the individual pointings. Our new catalogue provides enhanced parameters of the abundant faint objects and gives information about long-term variability for the first time directly from source detection.