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Revisiting the LISA science case in a changing astrophysical landscape

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While the basic LISA concept has changed little over the past 20 years, advances in astrophysics and cosmology over this time have been dramatic. Future missions such as JWST, Euclid, WFIRST and Athena will further reshape the landscape prior to the LISA launch in the 2030s, as may discoveries by gravitational wave detectors operating in other frequency bands. These developments require us to periodically revist the LISA science case, and identify new synergies with other observatories. For example, Euclid and WFIRST are expected to detect dozens of very high redshift (z ¿ 8) AGN, revealing the high mass tail of the early black hole population, while a suitably configured LISA mission could provide complimentary information about lower mass systems at these redshifts. Closer to home, recent surveys indicate that there are far fewer compact binary sources than originally estimated, which may be the one time where having fewer gravitational wave sources is a good thing as the foreground "noise" is reduced, while the number of resolved galactic sources is essentially unchanged. I will discuss these, and many other changes to the LISA science landscape, and consider how they might impact the science case and the mission design.