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ExArch: Climate analytics on distributed exascale data archives

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ExArch is exploring the challenges of developing a software management infrastructure which will scale to the multi-exabyte archives of climate data which are likely to be crucial to major policy decisions by the end of the decade. Climate science demands on data management are growing rapidly as climate models grow in the precision with which they depict spatial structures and in the completeness with which they describe a vast range of physical processes. For the Climate Model Inter-comparison Project 5 (CMIP5), a distributed archive is being constructed to provide access to what is expected to be in excess of 10 Peta-bytes of global climate change projections. The data will be held at computing centres and data archives around the world, but for users it will appear as a single archive described by one catalogue. The challenges raised by the CMIP5 archive will be reviewed. ExArch is developing a flexible processing framework, which capability to respond to user needs and support archive management.