

NOAA-NASA Joint Archive (NNJA): Publicly Accessible, Curated Observations

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Abstract

The NOAA-NASA Joint Archive (NNJA pronounced like the word ninja) is a publicly accessible, curated collection of Earth system observations spanning 1979 to present, created to accelerate reanalysis production, support development of artificial intelligence (AI) applications, and enable access to the observational record underlying modern reanalyses. A major highlight of the archive is the full range of Earth system observations in one accessible location. The archive encompasses atmospheric satellite radiances and conventional measurements, in-situ ocean profiles, ocean satellite retrievals, sea ice concentrations and freeboard retrievals, and land surface observations from over 60 sensors provided by NOAA, NASA, and their partners. The dataset extends into near-real time through continuous archival of the NOAA operational data. NNJA observations are distributed through Amazon Web Services in formats compatible with established data assimilation systems. While the atmospheric portion of the dataset is mature from years of atmospheric data assimilation, the oceanic portion is a new feature representing the shift to coupled data assimilation and the need for a full range of data inputs. The ocean data archive now includes insitu temperature and salinity organized by data instrument and satellite observations for ADT and SST. The data archive is growing and improving through usage in the ongoing reanalysis production at NOAA. Beyond the use in the next generation of reanalysis, we expect NNJA to be useful to the broader community as a comprehensive source of observational data.