

Transitioning the North American Land Data Assimilation System (NLDAS) into NCEP Operations

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ABSTRACT

Supported in part by the NOAA Climate Program Office and the NOAA Climate Test Bed (CTB), the North American Land Data Assimilation System (NLDAS) is a long-term, multi-institutional project initiated to provide improved land surface initial conditions for weather and climate models, and subsequently expanded to support multiple applications related to land surface hydrology. Begun as a research project in January 2000, it became quasi-operational in September 2008, and operational at NCEP in August 2014. The NLDAS development included Phase 1 to establish the NLDAS configuration, including a collection of soil and vegetation data, selection of land-surface models (LSMs), generation of surface forcing data sets, and model runs for a 3-year period, with evaluation/validation of model output. Phase 2 involved 30-year (1979-2008) retrospective and near real-time runs (2009-present) of four improved LSMs and surface forcing to generate energy and water fluxes, and state variables from those LSMs. The anomalies and percentiles from the 30-year climatologies for evapotranspiration, soil moisture, runoff/streamflow, and snow water equivalent have been comprehensively evaluated against observations, and are used to support US operational drought monitoring and prediction tasks such as the U.S. Drought Monitor, NCEP Climate Prediction Center drought information, and activities of the National Integrated Drought Information System. More than 34 years of surface forcing and model output data have been distributed by the NCEP/EMC NLDAS website (www.emc.ncep.noaa.gov/mmb/nldas), the NASA Goddard Earth Sciences Data Information Services Center (GES DISC, daac.gsfc.nasa.gov), the UCAR/NCAR Climate Data Guide (climatedataguide.ucar.edu/climate-data), and the USGS Geo Portal (cida.usgs.gov/gdp). The operational implementation provides more reliable and timely access to NLDAS products. This presentation summarizes experiences of NLDAS, status and format of current NLDAS products, and the future plans for NLDAS.