The Development of an Atmospheric River Catalog at the Center for Western Weather and Water Extremes

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Atmospheric rivers (ARs) can be generally defined as elongated regions of enhanced vertically-integrated water vapor transport, and are often associated with high-impact hydrometeorological events. As scientific interest in ARs has increased, the peer-reviewed literature has expanded rapidly in numerous directions. To identify ARs, many of these studies use different criteria, which differ along lines of feature geometry, thresholding variable (i.e., integrated water vapor [IWV] or IWV transport [IVT]), magnitude above threshold, and a number of other factors. Furthermore, these studies identify ARs within numerous atmospheric data sets, with different data assimilation schemes, physical models, and resolutions. The community would greatly benefit from a one-stop resource for obtaining, viewing, and comparing data related to the various methods and data sets used to analyze ARs.

The development of a web-based AR catalog at the Center for Western Weather and Water Extremes (CW3E) will be a major step towards addressing this issue. The catalog will consist of data related to ARs based on several published AR identification methods and computed within a number of atmospheric data sets, including reanalyses and model forecasts.

The AR Catalog will provide three primary types of data: time series, statistics, and graphics. Time series data and statistics will be point-based and provided for each data set grid point. Time series data will include, for each reanalysis or model time step, the date, the IVT, whether or not an AR is present, and other relevant information. Statistics will include information, for annual and monthly means, about the frequency, intensity, and duration of ARs. The graphics section will allow users to create images based on their selection of an identification method, a data set, a domain, and a date. The AR Catalog will be updated as new methods and data sets become available, and will serve as a commonly referenced baseline for researchers in the community.