SAS/ETS® Interfaces for Time Series Data

Dynamically Import Data with SAS/ETS Access Engines

Overview

Forecasting and econometric models are often improved by incorporating additional variables into the model. SAS/ETS now includes nine access engines that enable you to query, process, and retrieve free and proprietary time series data directly from third-party data providers. These access engines afford you the convenience of directly converting imported data to SAS® data sets.

NOAA Data (SASENOAA)

The SASENOAA interface engine enables you to retrieve severe weather data from the National Oceanic and Atmospheric Administration (NOAA) Severe Weather Data Inventory (SWDI) web service. This service offers access to weather data such as tornado vortex signatures, mesocyclone signatures, digital mesocyclone algorithm data, hail data, storm cell structure, preliminary local storm reports, and data about severe thunderstorms, tornadoes, flash floods, and special marine warnings. An example of mapping NOAA hail data near and around Waco, Texas, on May 21, 2011, is shown in Figure 1.

Figure 1: Hail Storm Data – Waco, TX

The retrieved hail data are shown on the Google Map, with each hail event location represented by a dot on the map. You can hover your mouse pointer over each dot to read the data for that location. You can specify the weather data time series or storm events that you want to retrieve based on date range and weather station location.

WWO Data (SASERAIN)

The SASERAIN interface engine enables you to retrieve weather data from the World Weather Online (WWO) website. WWO offers access to time series of weather data such as temperature, precipitation (rainfall), weather description, weather icon, and wind speed. These time series are updated at intervals that you select and are based on geographic locations that you specify. The following LIBNAME statement requests today’s local weather for the five cities listed in the QUERY= option and depicted in Figure 2:

Libname rain saserain "U:\rain940\test"
query='Johannesburg,South Africa;Cape Town,South Africa;Durban,South Africa;Nelspruit,South Africa;Polokwane,South Africa' tp=24 num_of_days=1;

Figure 2: Weather Data for Five South African Cities
QUANDL Data (SASEQUAN)

The SASEQUAN interface engine enables you to retrieve economic and other time series data from the QUANDL website, which offers over 10 million data sets. For example, Figure 3 shows the annual data (2000–2012) retrieved by requesting the Quandl code in the IDLIST= option in the SASEQUAN LIBNAME statement as follows: IDLIST='FLAMUS/SHARKS_SOUTHAFRICA'.

Figure 3: Number of Shark Attacks in South Africa

Some of the available data sets are listed by source at the following web page: [https://blog.quandl.com/free-data-on-quandl](https://blog.quandl.com/free-data-on-quandl). There are also many premium data sets offered by QUANDL as a subscription service. You can select multiple QUANDL data sets by specifying a list of Quandl codes in your LIBNAME statement. You can aggregate higher-frequency data series to a lower frequency by specifying the lower frequency in your LIBNAME statement.

FRED Data (SASEFRED)

The SASEFRED interface engine enables you to retrieve economic data from the Federal Reserve Economic Data (FRED) website, which is hosted by the Economic Research Division of the Federal Reserve Bank of St. Louis. The FRED databases contain more than 61,000 economic time series from 48 national and international sources, both public and private. These time series are updated at annual, quarterly, monthly, weekly, and daily intervals.

CRSP Data (SASECRSP)

The SASECRSP interface engine enables you to access and process time series, events, portfolios, and group data that reside in Center for Research in Security Prices (CRSPAccess data). Currently, the SASECRSP engine supports access to CRSP US Stock Databases and CRSP Indexes Databases.

CCM Data (SASEXCCM)

The SASEXCCM interface engine enables SAS users to access the Center for Research in Security Prices (CRSP)/Compustat Merged Database (CCM), which is created from data delivered via Compustat's Xpressfeed product, the CRSP US Stock (STK) Database, and the CRSP US Indexes (IND) Database. CRSP data contain historical descriptive information and market data about more than 27,000 stocks (inactive and active companies) from the NYSE, Amex, NASDAQ, and Arca exchanges. Compustat data contain thousands of annual and quarterly income statements, balance sheet, cash flow, pension, supplemental, and descriptive data items for active and inactive companies.

FAME Data (SASEFAME)

The SASEFAME interface engine provides a seamless interface between Fame and SAS data that enables you to access and process time series, case series, and formulas that reside in a Fame database. Fame is an integrated, front-to-back market data and historical database solution for storing and managing real-time and high-volume time series data that are used by the financial, energy, and public sectors, and also by third-party content aggregators, software vendors, and individual investors.

Haver Analytics Data (SASEHAVR)

The SASEHAVR interface engine is a seamless interface between Haver Analytics and SAS data processing that enables you to read economic and financial time series data that reside in a Haver Analytics DLX (Data Link Express) database. The Haver Analytics DLX economic and financial database offerings include US economic indicators, specialized databases, and financial indicators; data about industry, industrial countries, emerging markets, and international organizations; forecasts and as-reported data; and data about US regional services.

FactSet Data (SASEXFSD)

The SASEXFSD interface engine enables you to access both FactSet data and FactSet-sourced data that are provided by the FactSet OnDemand service (formerly known as FASTFetch). This service provides access to many FactSet data sources and to other databases.