The Predictive Ecosystem Analyzer - PEcAn

Started in 2013, the Predictive Ecosystem Analyzer (PEcAn) effort aims to enhance ecosystem science, policy, and management by informing them with the best data and models available. An essential part of this vision is the synthesis of existing data sources with ecosystem models. As ecosystem science has seen an explosion of available data and data types there is a need to be able to ingest and adapt data from a wide variety of sources. In collaboration with the Brown Dog effort the PEcAn and Brown Dog teams work to support this data ingestion, helping scientists keep pace with the rate at which the research community is generating new observations. One place PEcAn uses Brown Dog is to handle the processing of input data used to drive models, such as meteorological observations, from a raw source to the format that a particular ecosystem model needs. Because Brown Dog is a cloud service, it not only does this transformation, but does so without using the computational or storage capacity of the user's machine, making data more accessible to anyone regardless of the computational capabilities of their machine. This is critical for PEcAn users, who often only need a small local portion of a large (TB or more) global data set, which allows PEcAn to be run on laptops from field, where both storage and bandwidth are limited, and in the classroom. The ability of Brown Dog to record data provenance is also key for PEcAn users to ensuring data can be tracked down, scrutinized, and reused whenever needed. The PEcAn team will continue to build tools around Brown Dog in order to synthesize more environmental data with all ecosystem models and in turn make these data ingestion tools available to the larger ecological community through Brown Dog towards promoting reproducible ecosystem modeling and forecasting.

To learn more about PEcAn visit: https://pecanproject.github.io . PEcAn is developed as open source software with source available here: https://github.com/PecanProject/pecan .