APEX

Jimmy Williams, Evelyn Steglich, Susan Wang, Javier Osorio, Jaehak Jeong, Thomas Gerik

Website

http://epicapex.tamu.edu/apex/

Description

The Agricultural Policy/Environmental eXtender (APEX) model was developed for use in whole farm/small watershed management. The model was constructed to evaluate various land management strategies considering sustainability, erosion (wind, sheet, and channel), economics, water supply and quality, soil quality, plant competition, weather and pests. Management capabilities include irrigation, drainage, furrow diking, buffer strips, terraces, waterways, fertilization, manure management, lagoons, reservoirs, crop rotation and selection, pesticide application, grazing, and tillage. Besides these farm management functions, APEX can be used in evaluating the effects of global climate/CO2 changes; designing environmentally safe, economic landfill sites; designing biomass production systems for energy; and other spin off applications. The model operates on a daily time step (some processes are simulated with hourly or less time steps) and is capable of simulating hundreds of years if necessary. Farms may be subdivided into fields, soil types, landscape positions, or any other desirable configuration.

The individual field simulation component of APEX is taken from the Environmental Policy Integrated Climate (EPIC) model. Various components from CREAMS (Knisel, 1980) and SWRRB (Williams, et al., 1985) were used in developing EPIC and the GLEAMS (Leonard, et al., 1987) pesticide component was added later. Since the 1985 National RCA application (Putman, et al., 1988), the model has been expanded and refined to allow simulation of many processes important in agricultural management (Sharpley and Williams, 1990; Williams, 1995).

Screen shots
Scientific articles


Technical information

Operating system(s): Windows, Linux (command-line app, no GUI)

Licence: freely available

Output(s): detailed water balance, sediment, fate and transport of sediment/N/P/C and chemicals, crop growth, soil water content, soil temperature, soil organic carbon pools, net ecosystem exchange

User Manual:
