THE UNIVERSITY OF MELBOURNE
DEPARTMENT OF INFRASTRUCTURE ENGINEERING
UNIVERSITY OF MELBOURNE

APSIM Simulation Uncertainties

Research Problems and Objectives

APSIM prediction accuracy highly related to the reliable forcing data, calibration and model deficiency.

Prior knowledge about how uncertain the model key state variables and predicted yield will be when perturbing different influential forcing data and model parameters, and how state variables uncertainty affect yield propagation at different phenological stages are needed.

APSIM deviation sources

Category		Caused by
Forcing data	Environmental condition responses	Temperatures above or below the optimal temperature.
		Elevated CO_2
	Initial conditions	The inaccurate data describing the soil water and nitrogen resources.
	Management	Delayed sowing date.
		Decreased planting density.
Parameter settings	Soil Properties	Soil water properties derived from soil texture instead of field-measured.
	Cultivar traits	Sensitive parameters set inaccurately.
Model deficiencies	Soil water simulation	The simulation of SM is better for the surface layer; Model does not account from the effect of soil cracking.

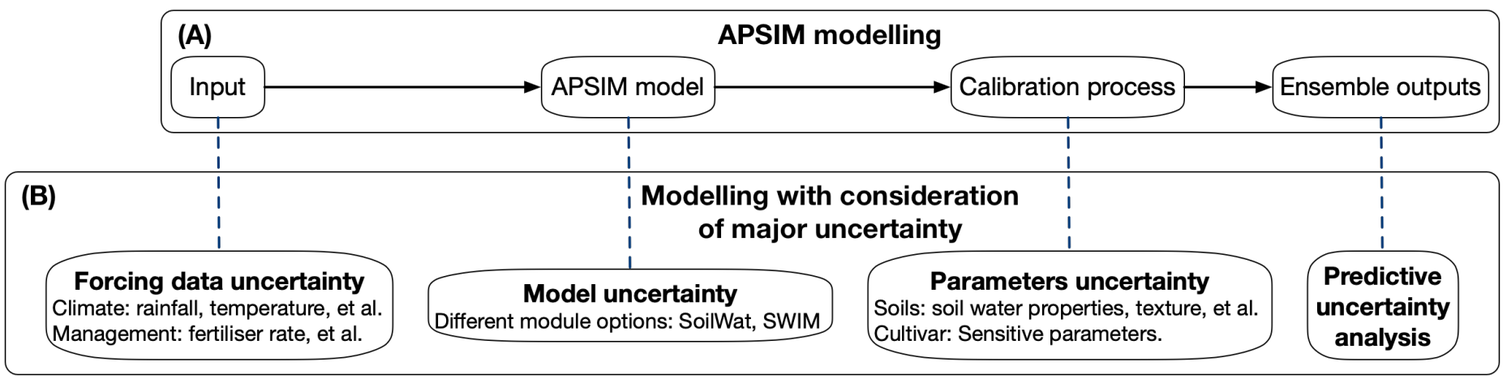

Figure. APSIM modelling flowchart: (A) modelling process (B) framework of incorporating major uncertainty in modelling.

Discipline : Environmental Engineering

More Information

Shirui Hao (shiruih@student.unimelb.edu.au)
PhD Candidate
Level 3, Building 381, 333 Exhibition Street, VIC 3000
Department of Infrastructure Engineering
Supervisors: A/Prof. Dongryeol Ryu, Prof. Andrew Western, Dr. Eileen Perry