User Manual for Terrabal Version 0.1

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1 Overview

This document is to serve as the users manual for the *Terrabal* model. This name derives from the Latin word for Earth, and from 'bal', short for balance (as this is a full energy and mass balance model). The fact that saying this name quickly sounds like 'terrible' is no mistake; it is important to remember that all models are wrong, and that some may be useful. It is hoped that this model falls into the wrong yet useful category.

The design principles for Terrabal are three-fold: 1) to maintain a modular system for interconnecting different hydrological process conceptualizations, 2) to allow for multi-scale model development, and 3) to provide a meanse to quickly and reproducibly compare model structure and algorithms.

2 Modules

Hydrological process conceptualizations are written into modules. Each module has a set of pre- and post-conditions that denote which variables are required and which are provided. Modules dependencies are then determined at runtime. Further, modules may be either 'element-parallel' or 'domain-parallel'. All element-parallel modules only require a single element with no dependency upon other elements, and can be batched together in a parallel pipeline, fullfilling depdency order. Domain-parallel requires elemetns to known other elements properties, and thus must be run separate.

3 Variable names

These are case sensitive.

Common name	**Internal model name**
Relative Humidity	RH
Air temperature	Tair
Timestep	timestep

References