GUIDE TO BUILDING LANDLAB MODELS AND COMPONENTS

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1. Development Notes

This section has temporary notes used in sketching out ideas, etc. The idea is that as a design firms up, any useful text/tables/algorithms will be moved up into permanent sections of this guide.

1.1. **Sketch for an overall architecture.** Attributes of a *Landlab model*:

- Combines one or more Landlab components to simulate some process(es) of interest
- Can be run standalone (i.e., includes a main function)
- Can act as a CSDMS component; therefore it includes a BMI
- Has a grid that it shares with components (note: there may be exceptions to this for models that aren't grid-based, such as a storm-generator model)
- Is interoperable with Scott Peckham's "mini CMT"
- Has a very simple, easy to understand and easy to program overall design (so that user/developers can create it without needing to know arcane software concepts)
- Model "owns" most of the data (e.g., state variables) and gives these to its component(s) as arguments in function calls

Attributes of a *Landlab component*:

- Is implemented as a class
- Not standalone. If it needs a grid, it gets it from its owner-model.
- Owns/stores parameters that are specific to it, but generally does not own/store parameters/variables that are global or shared.
- Has an interface that is customized to suit the needs of the particular system being modeled (but may be "BMI-like")

1.2. **Sketch of a class-based design for models.**

Date: July 2013.