SIBERIA Capabilities (V8.30, October, 2005)

Process	Details	
Fluvial Erosion	• Transport limited based on sediment diameter with tracking of diameter in eroded/deposited sediment and re-entrainment of eroded sediment. Detachment limitation on transport capacity. Sediment characteristics space varying (see Layers below).	V8.30
	• True sediment tracking for cosmogenic nuclide and pollutant tracking.	Early 2006
Mass Movement	• Nonlinear diffusive transport with Ahnert slope threshold.	V8.30
	• Event scale simulation of landslides and debris flows.	2007
Climate	• Incorporated through effective parameterisation of fluvial erosion that yields average annual erosion. Spatially variable rainfall.	V8.30
	• True climate input (known or stochastic).	Mid 2006
Hydrology	• Simple empirical regional flood frequency relationship, or runoff coefficient, based on area.	V8.30
	• Runoff event simulation based on input climate (see Climate above).	Mid 2006
Soils	• Generalised Heimsath model	V8.30
Vegetation	• Cover factor as per USDA erosion models	V8.30

	• Stochastic bushfire model for groundcover removal	Mid 2006
Tectonics	• Time and spatially varying vertical only uplift.	V8.30
	• Lateral strike/slip and lateral deformation	No
Layers	• Spatially varying layers of materials (e.g. geology strata, containment capping layers) with tracking of the movement of these materials by fluvial erosion	V8.30
	• Ditto for existing mass movement model.	Mid 2006
	• Dynamic management of layers of deposited materials and their characteristics	V8.30
Computational	• D8 and d∞ drainage analysis on a square grid (can't do rectangular grid, for instance, SRTM data w/o regridding)	V8.30
	• Standards based (openMP, PVM) parallel processing on clusters and multiprocessor supercomputers	Temporarily unavailable
	• Highly portable code (F95)	V8.30
	• Can be run with and w/o GUI interface (for batch processing)	V8.30
	• GIS like input of time and space varying capabilities (not ARC shape files)	V8.30