

Issues for Parameterisation

Thoughts from Pomeroy

- Purpose –
 - parsimonious, stable, reliable modelling;
 - simple descriptions of nature to help develop large scale vision of the hydrological cycle
- Need for these descriptions is not new
 - Problems of lacking parameters and sparse observed variables are not new
 - Empirical/conceptual algorithms from early hydrological computational models dealt with this
- Highly spatially distributed physically intensive models have impossible information requirements for general application
- Still possible to learn from past experiences

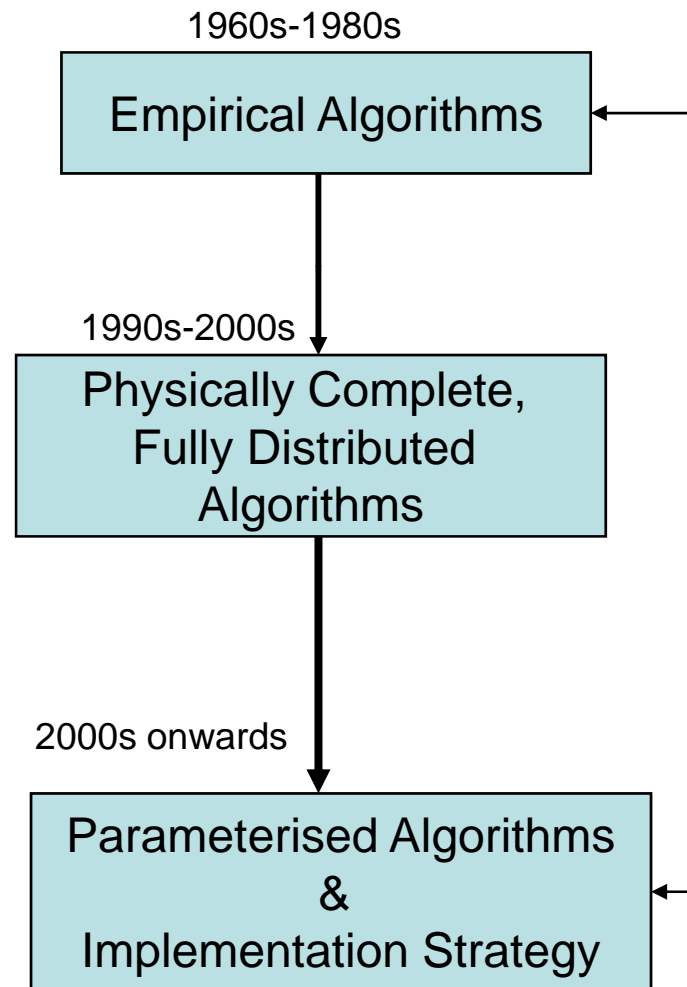
Parameterisation Process

Scientific Content

Poor understanding,
poor transferability,
simple concepts, no
scale consideration

Relatively complete
understanding, good
transferability, complex
concepts, spatially
distributed

Good understanding,
good transferability,
simplified concepts,
designed for scale of
application



Operating Characteristic

Easy to set parameters
from observations,
simple to apply, scale
implicit,

Parameters only set from
special observation
datasets, difficult to
apply, numerical stability
issues, flexible scale

Easy to set parameters
from available
observations, reasonably
simple to apply, scale
appropriate

BUT!

- Parameterisation is not just algorithm replacement
- Model Structure – new understanding may suggest improved structures of model (algorithm selection, algorithm flow, calculation sequence, basin assumptions, etc) so we must also change how our models operate as we learn– not just substitute better parameterisations of processes

4 Questions

- Are there scale independent parameters?
- Are there model independent processes and parameters?
- What is the relationship between actual and effective model parameters?
- Are there ecosystem level clusters of parameters?