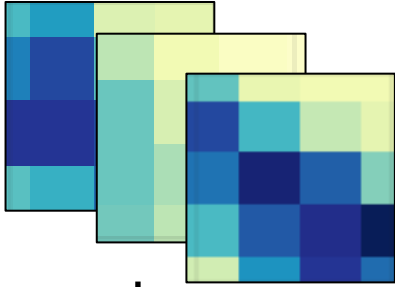


Meteorological forcing

(precipitation, air temperature, radiation, etc.)

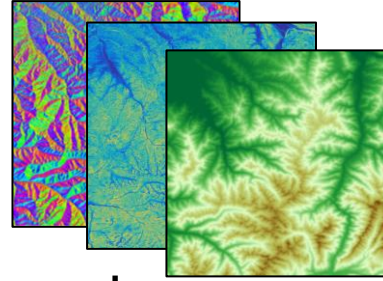
e.g., MERRA2



Topographic data

(DEM, slope, aspect, etc.)

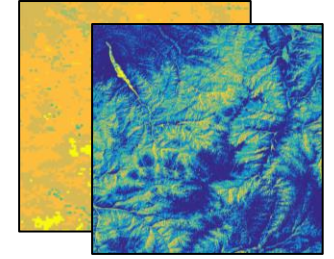
e.g., SRTM,
ASTER



Landcover data

(landcover, forest cover fraction, etc.)

e.g., GLCF,
AVHRR



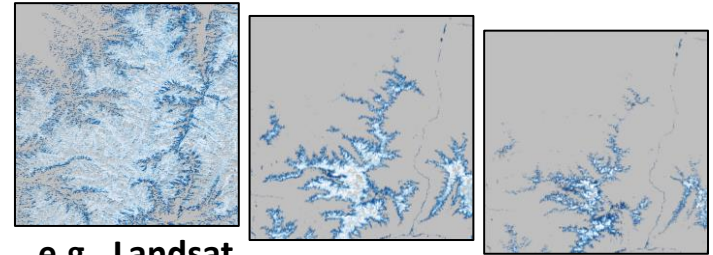
**Forcing
downscaling/uncertainty^{54,58}**

Resampling to uniform or multi-resolution model grid⁶⁵

Generation of prior (open-loop) estimates

- Parameter uncertainty
- Land Surface Model-Snow Depletion Curve [LSM-SDC]
- Prior fSCA/SWE and other snow-related estimates

**Fractional Snow
Covered Area (fSCA)
Observations^{48,49}**



Reanalysis step

- Bayesian update; condition prior estimate on remotely-sensed fSCA
- Using Particle Batch Smoother (PBS³²)
- Landsat fSCA assimilation
- Posterior fSCA/SWE

