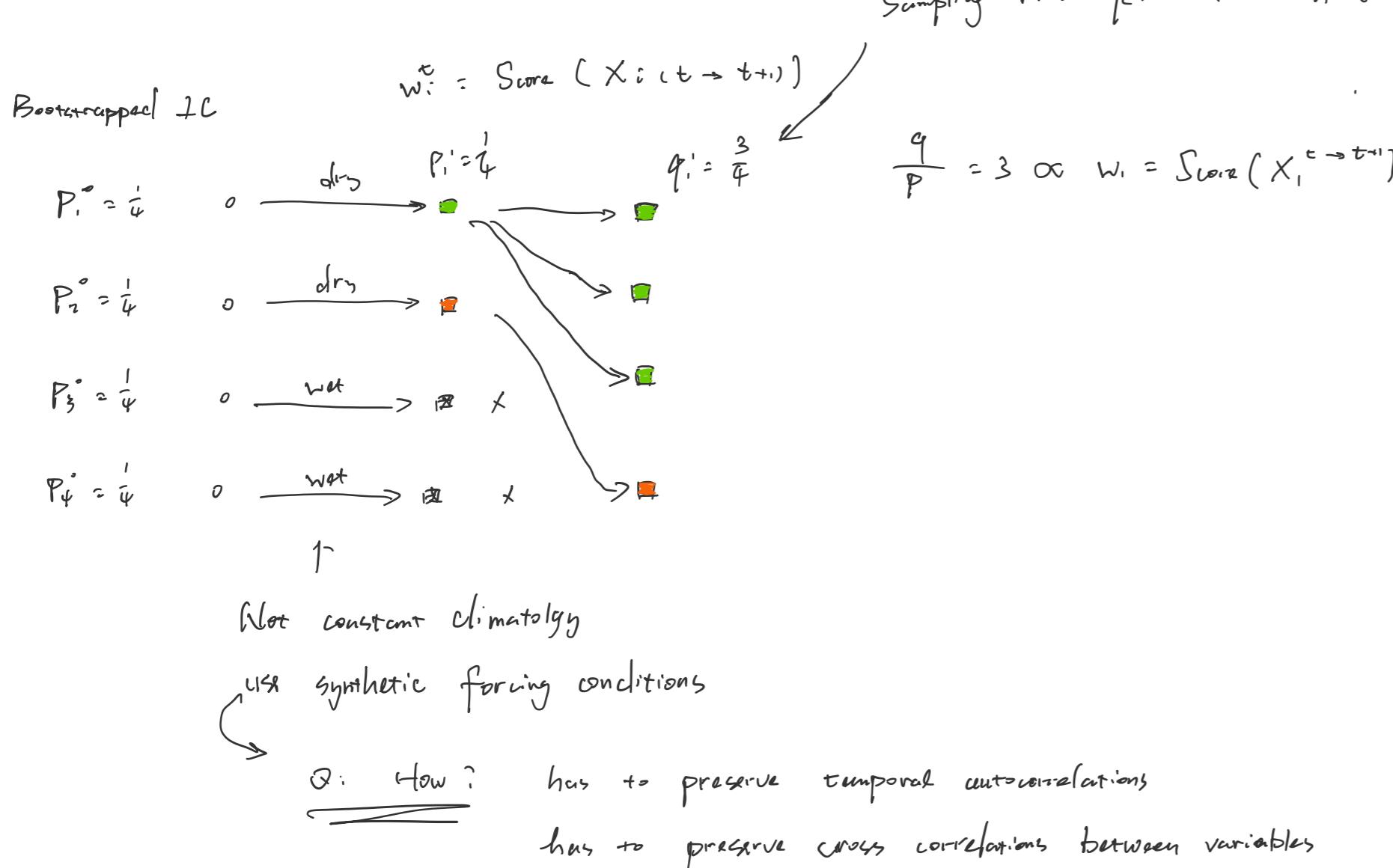


Rare event sampling idea

Friday, March 17, 2023 11:08

For a deterministic model:



Two perspectives using the Large Deviation Algorithm:

(Three)

1. Uniformly sampled ICS + climatological BCs : Enter the period with different initial state to explore traj. favorable of developing certain extreme conditions given constant climatological BCs
2. Given some specific ICS + uncertain BCs : Starting from the same starting point, explore traj. leading to certain extreme conditions to explore what BC forcing conditions leads to rare events
3. Combine 1 and 2. or design experiments

storyline

For example 1. Random ICS + { El Nino BCs, neutral BCs, La Nina BCs } Regional drought risks conditioned on large climate conditions (considering increased var in ENSO)

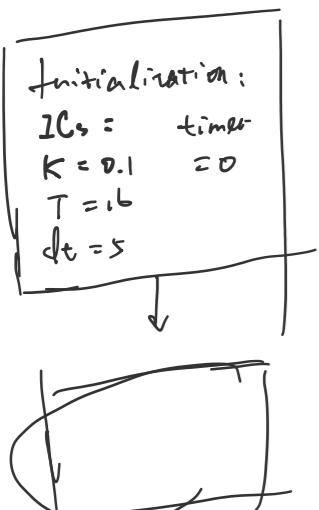
2. Random ICS + { 2014 BCs, climatological BCs } Storyline Analysis of the 2014 drought from a probabilistic perspective (Imagine Singapore hit by 2014 meteorological conditions more frequently in future, what is the actual risk?)

3. 25%th dry

50%th neutral ICS + uncertain BCs what is the dangerous zone (of ICS like soil moisture etc.) for entering long lasting droughts
75%th wet

4. Random ICS + { 1960 - 2020 uncertain BCs, 2020 - 2100 uncertain BCs } impacts of climate change on SG regional drought risks

Interfaces:



Interfaces:

```

-- init() --
preprocess: unifrcf --> traj
ICs = traj[0], traj[1], ...
K = 0.1
T = 16
timer = 0
dt = 5
    
```

