Climate Change Model

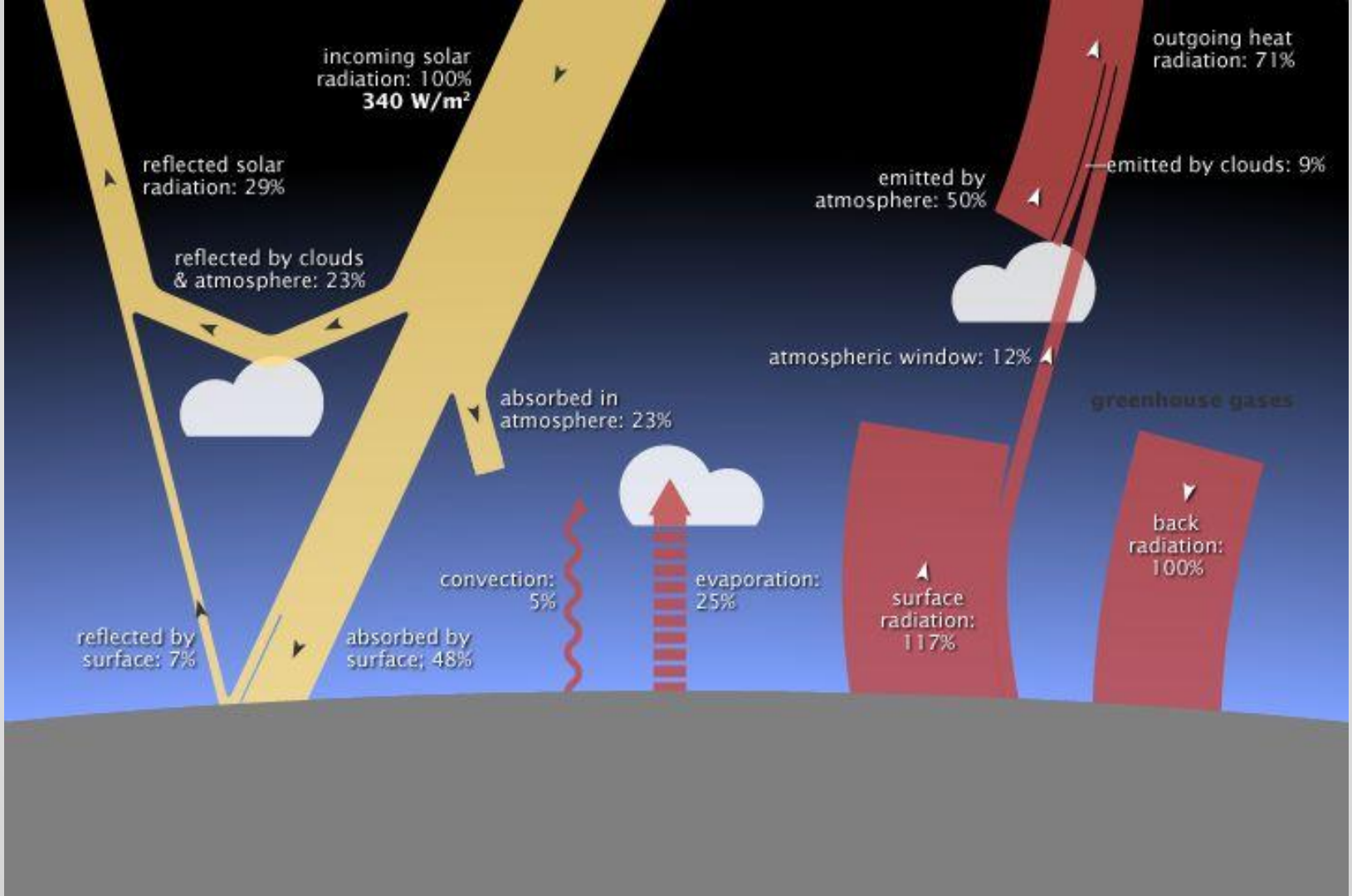
by Srinivasa Raghavendra Bhuvan Gummidi & Milan Šećerov

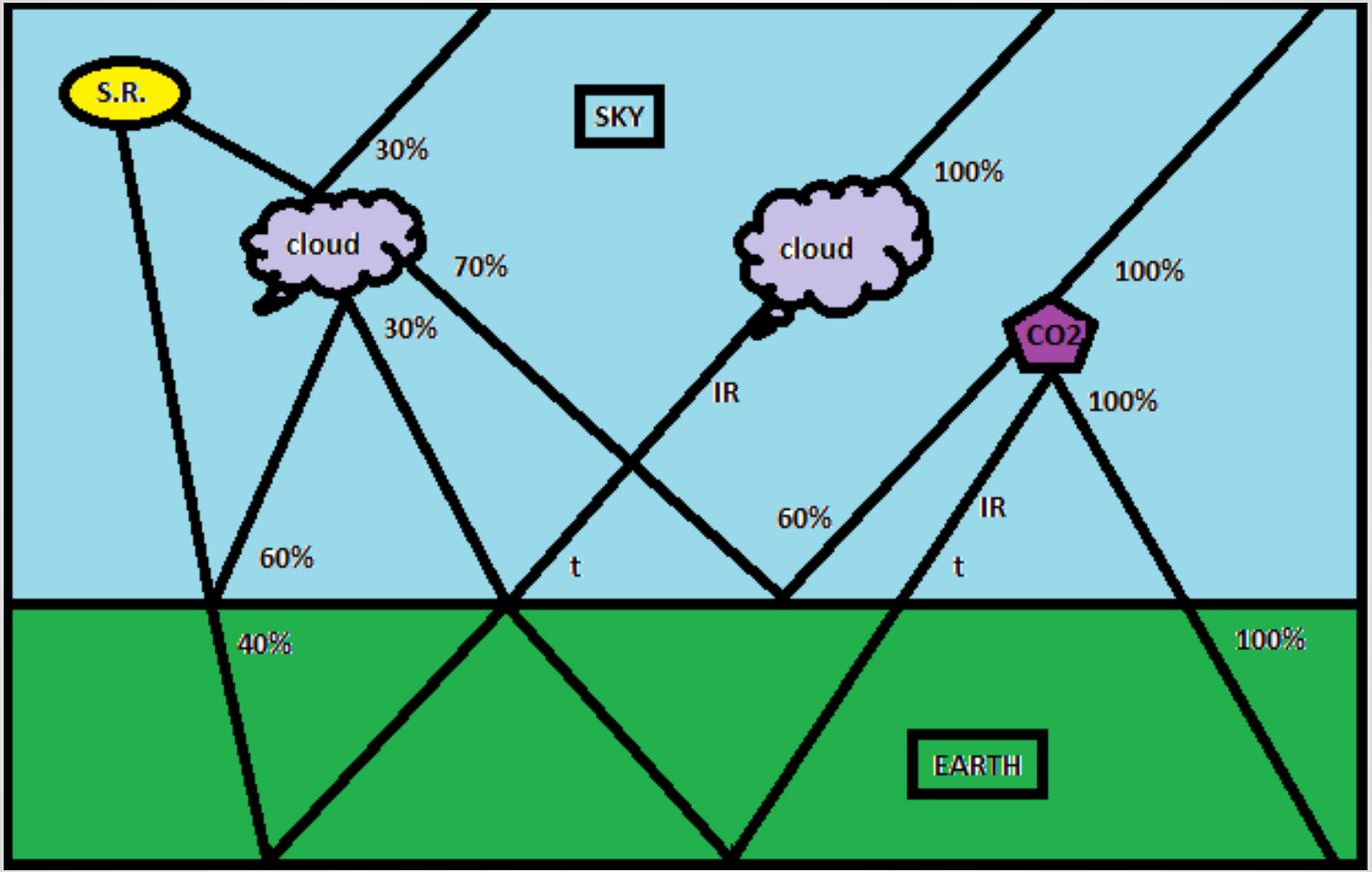
Introduction

- Climate Change
- Global Warming
- CO2
- Greenhouse effect

Introduction

- Sunrays
- Clouds
- Earth
- Albedo
- Infrared waves
- CO_2


incoming solar
radiation: 100%
340 W/m²
reflected solar
radiation: 29%
reflected by clouds
& atmosphere: 23%
absorbed in
atmosphere: 23%
reflected by
surface: 7%
absorbed by
surface: 48%
convection:
5%
evaporation:
25%
outgoing heat
radiation: 71%
emitted by clouds: 9%
emitted by
atmosphere: 50%
atmospheric window: 12%
greenhouse gases
surface
radiation:
117%
back
radiation:
100%

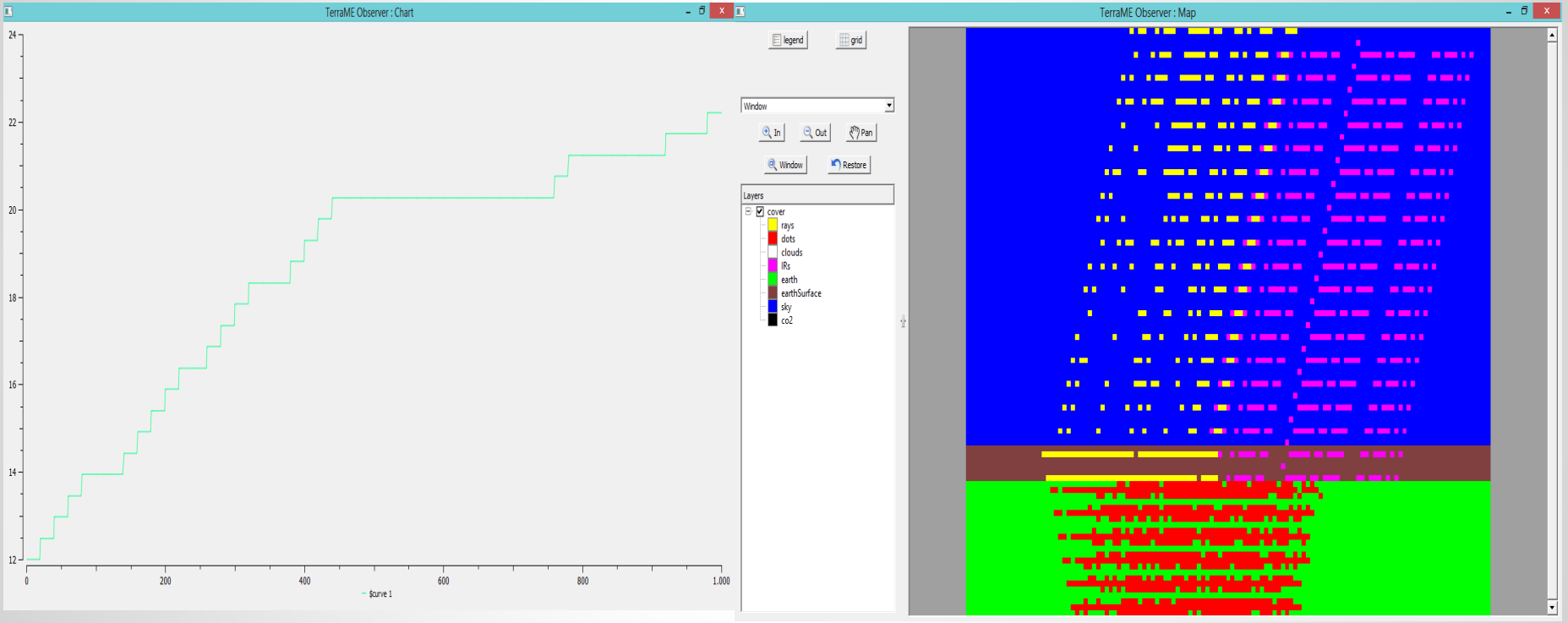

S.R.
SKY
30%
cloud
70%
30%
cloud
100%
100%
CO2
100%
IR
60%
t
60%
IR
t
40%
100%
EARTH

Model

- Cellular Automata based model
- Uses the TerraMe concepts of Neighborhood, environment, society and Timer,etc.
- Helps in understanding the effects of different parameters in global warming like carbon dioxide concentrations, cloud cover,etc
- Assuming that the entire earth has same albedo and earth can be heated uniformly

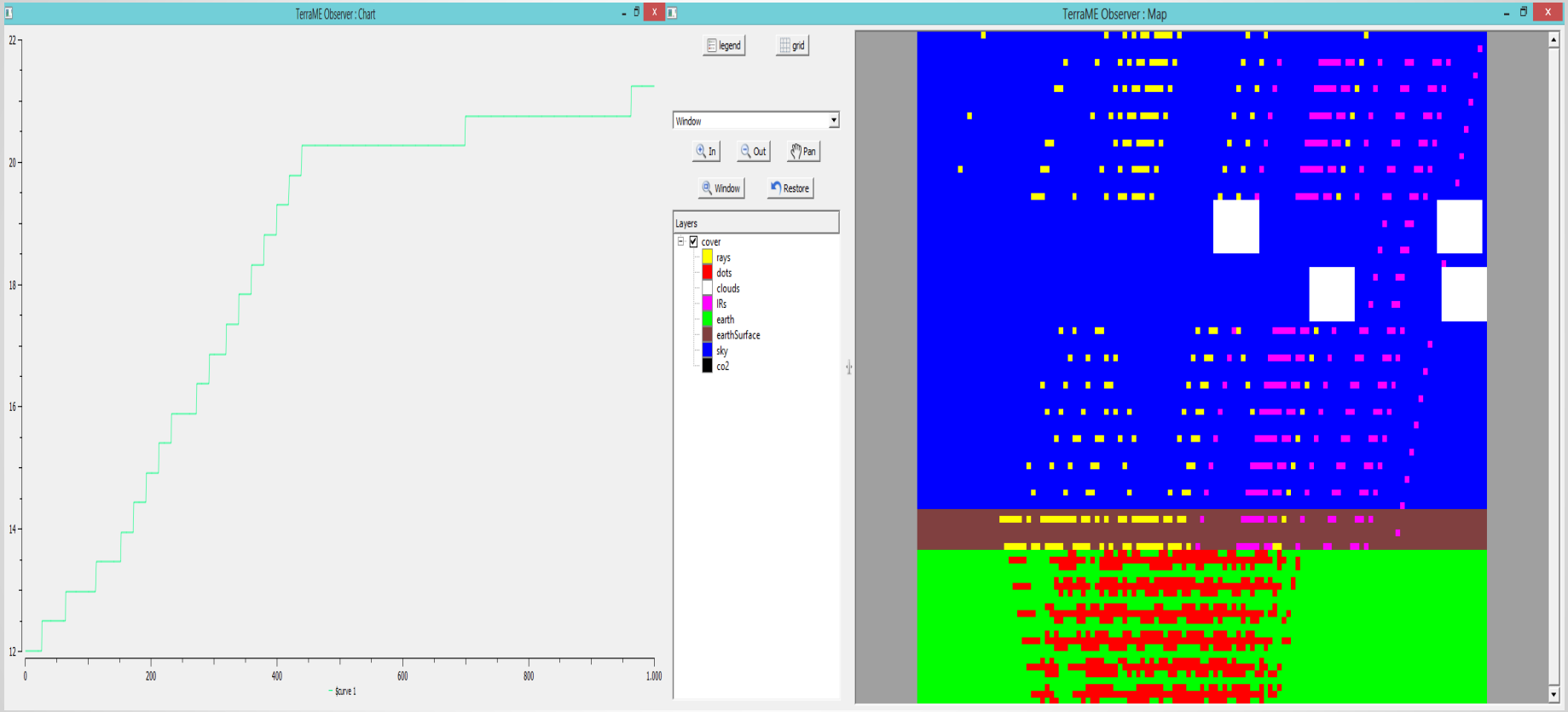
Running the model...

Inferences



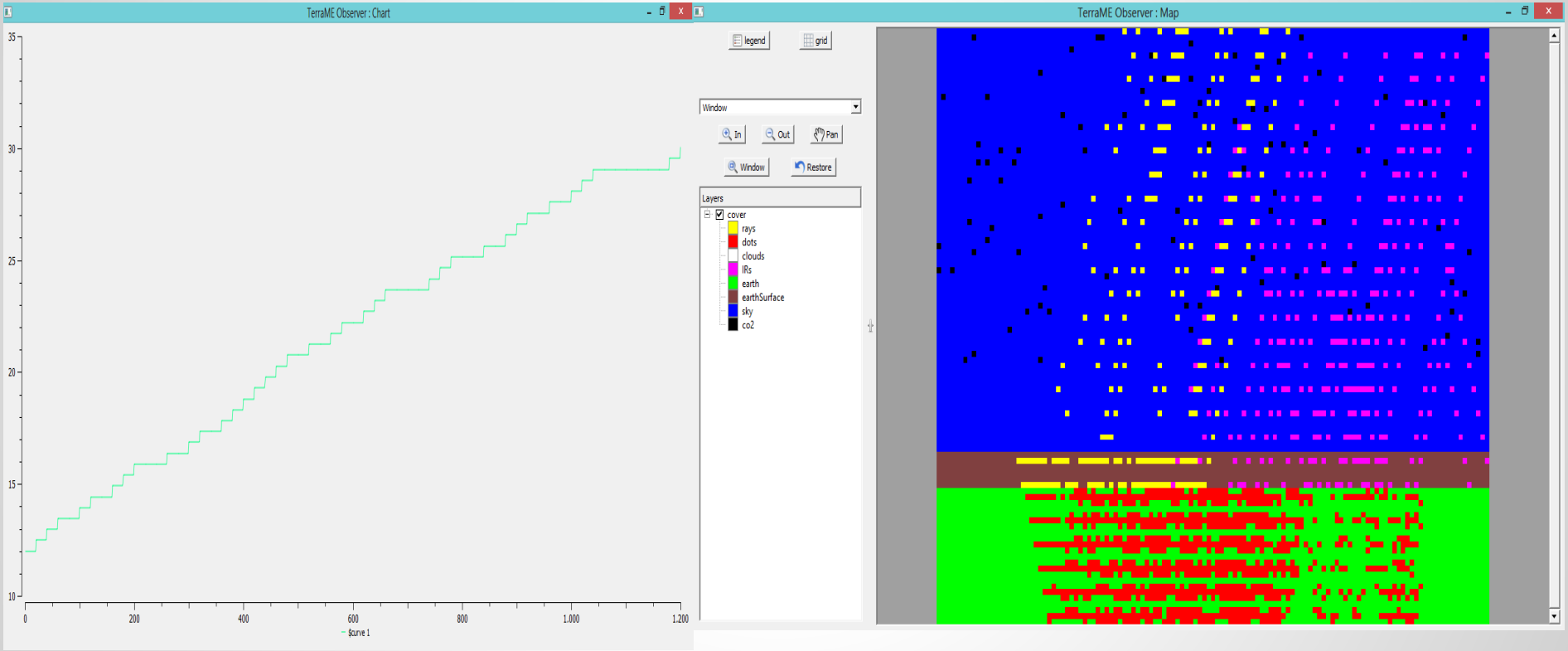
When there are no clouds and no co2 molecules(Albedo: Earth-0.6 & Clouds-0.7)

Inferences



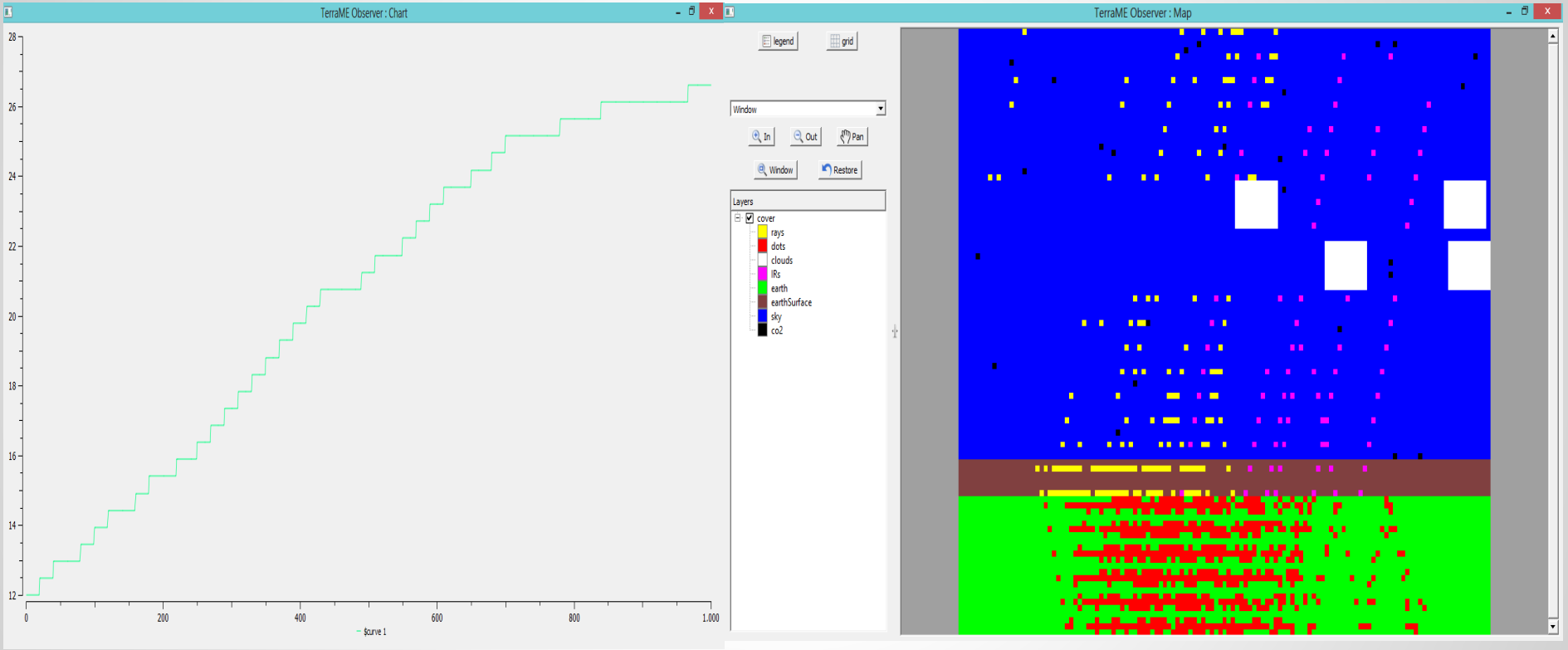
When there are two clouds and no co2 molecules(Albedo: Earth-0.6 & Clouds-0.7)

Inferences



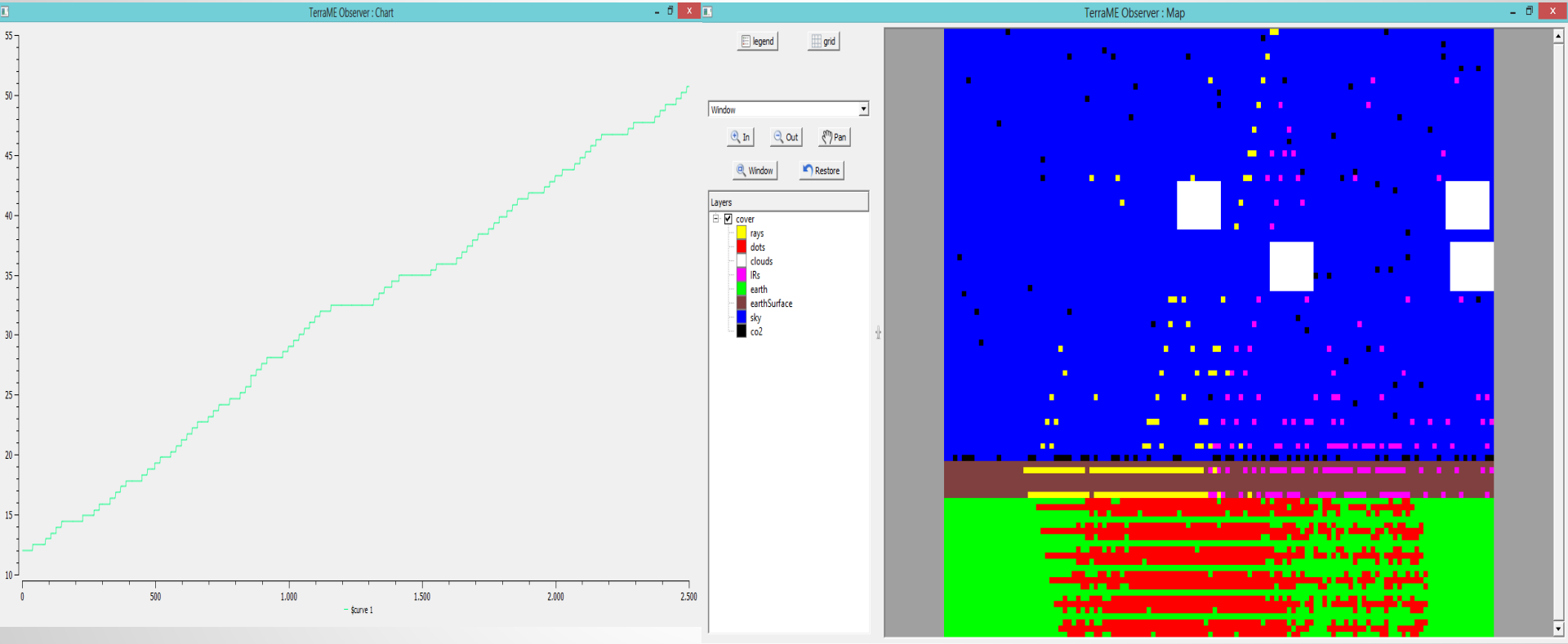
When there are no clouds and 100 co2 molecules(Albedo: Earth-0.6 & Clouds-0.7)

Inferences



When there are two clouds and 25 co2 molecules(Albedo: Earth-0.6 & Clouds-0.7)

Inferences



When there are two clouds and 100 co2 molecules(Albedo: Earth-0.6 & Clouds-0.7)

Thank You! Comments?