

The Impact Of Climate On Food Security

Ehsan Najafi

PhD Candidate of Civil Engineering – Water Resources

Prof. Reza Khanbilvardi

Chair of NOAA CREST, Dept. of Civil Engineering, The City College of New York,

Please watch this:



What is food security?

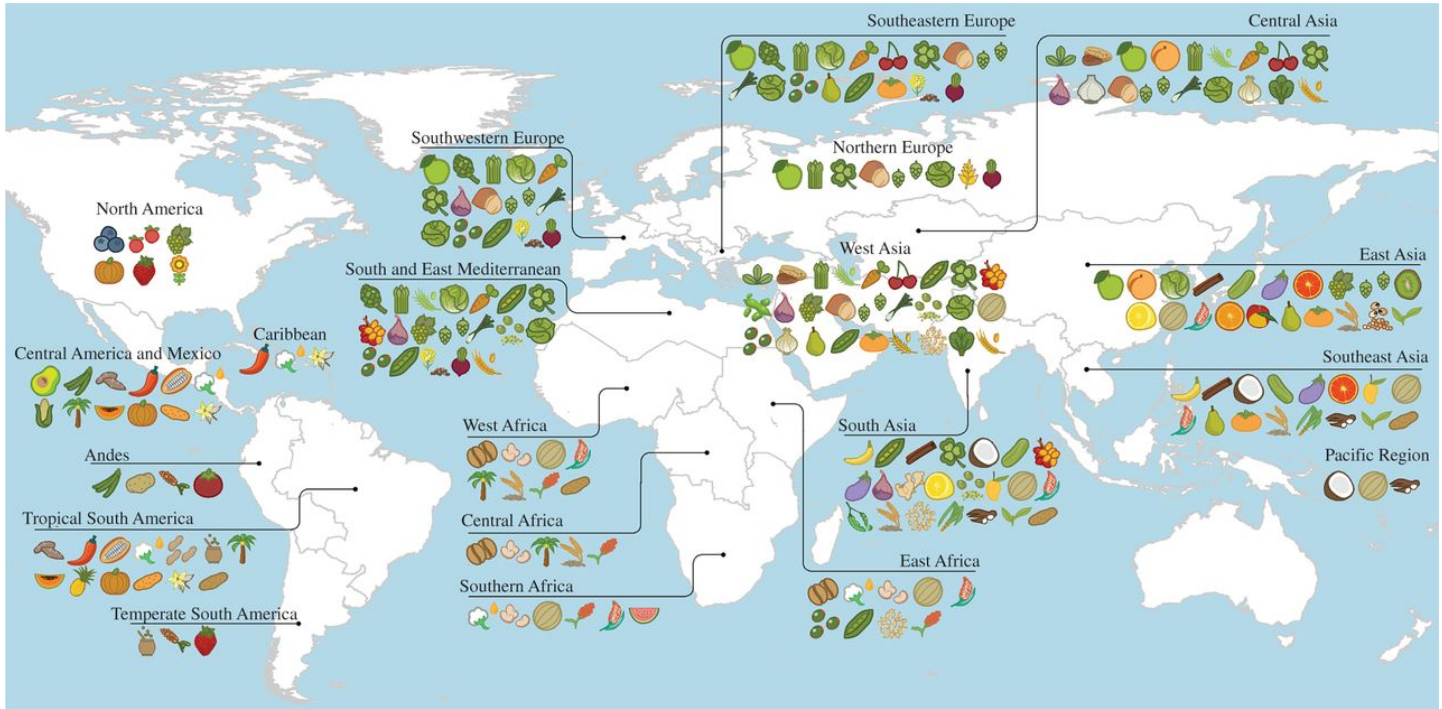
When all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food.

But:

- Population increase
- World hunger on the rise
- Droughts and climate change



Crops ↔ Climate



- | | | | | | | | | |
|-----------------------|----------------------|----------------|------------|------------------|------------------------|-----------------------|--------------|----------------|
| alfalfa | beans | clover | eggplants | hops | melons | pears | rice | sunflower |
| almonds | blueberries | cocoa beans | faba beans | kiwi | millets | peas | rye | sweet potatoes |
| apples | cabbages | coconuts | figs | leeks | oats | pigeonpeas | sesame | taro |
| apricots | carrots | coffee | garlic | lemons and limes | olives | pineapples | sorghum | tea |
| artichokes | cassava | cottonseed oil | ginger | lentils | onions | potatoes | soybean | tomatoes |
| asparagus | cherries | cowpeas | grapefruit | lettuce | oranges | pumpkins | spinach | vanilla |
| avocados | chickpeas | cranberries | grapes | maize | papayas | quinoa | strawberries | watermelons |
| bananas and plantains | chillies and peppers | cucumbers | groundnut | mangoes | peaches and nectarines | rape and mustard seed | sugarcane | wheat |
| barley | cinnamon | dates | hazelnuts | mate | | | | yams |

What crops?

- **wheat**



- **Maize**



- **Rice**

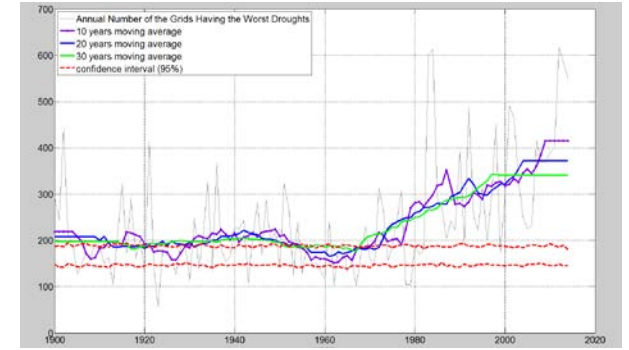


- **Barley**

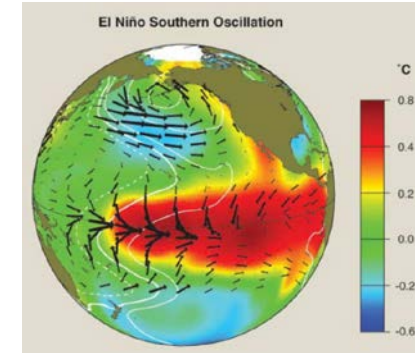


What climatic patterns?

- **Drought**



- **ENSO**



- **Climate change**



Where can we find the dataset?

FAO



FOOD AND AGRICULTURE
ORGANIZATION
OF THE UNITED NATIONS

NOAA



NASA



WORLDBANK



WORLD BANK GROUP

How can we study this topic?

- Statistics and Mathematics
- Programming
- ArcMap

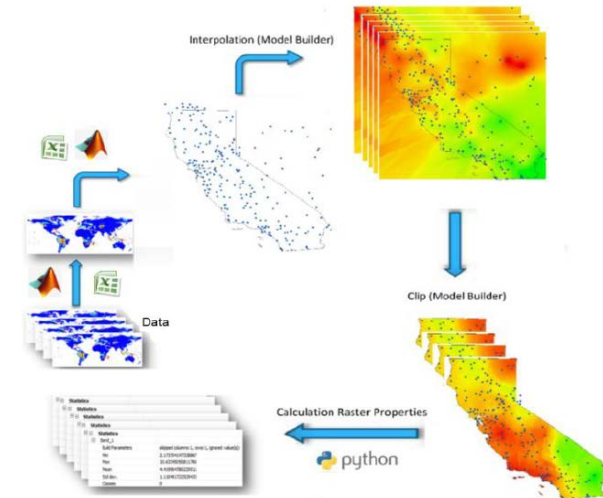
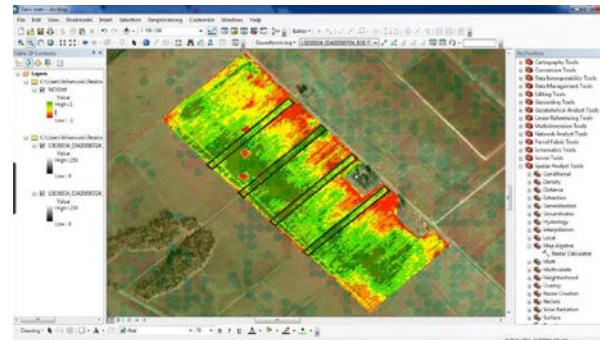


Figure 5. Schematic view of the iterative processes for drought calculation