

Global Food Security Analysis using Satellite Remote Sensing Data

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Advisor

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The importance of studying food security

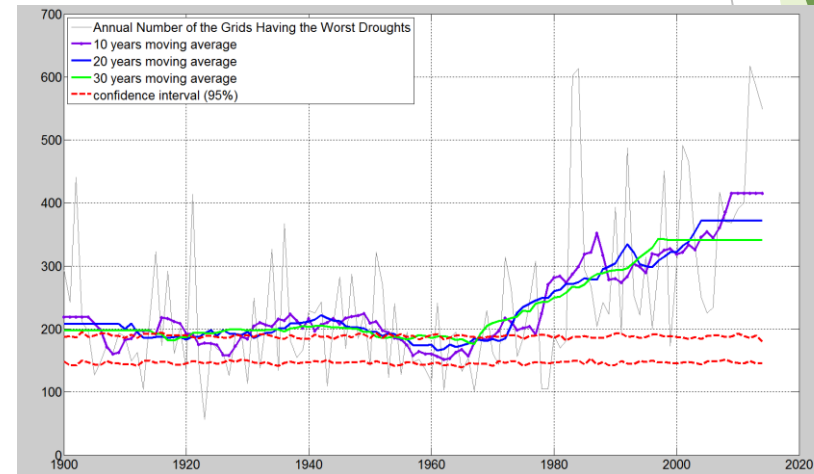
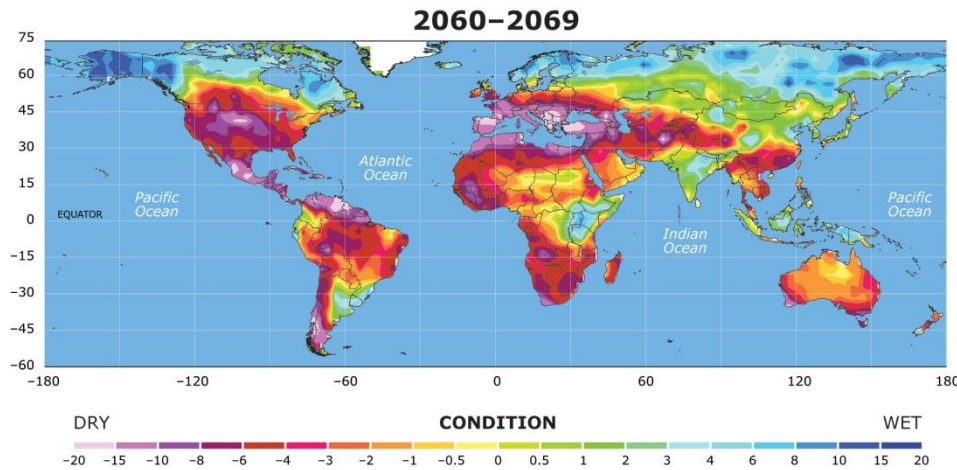
- **Drought** and precipitation are affecting agricultural production.
- Increased **population** and **income** growth fueled the global demand of crop yields
- Agricultural systems are degrading land, water, biodiversity and climate on a global scale.
- Population increase from 7 billion in 2011 to 9.2 billion in 2050.
- The objective of this project is to understand the relationship between population, economy and climate change in different countries and how it may impact accessibility to agricultural food production.



Feeding the World

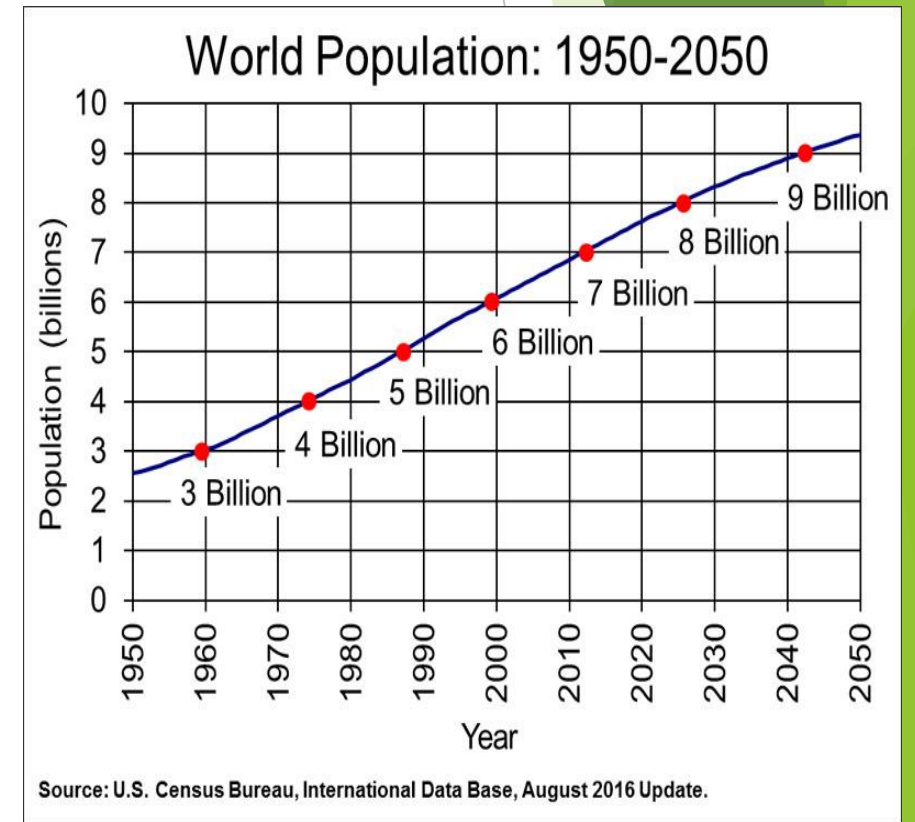
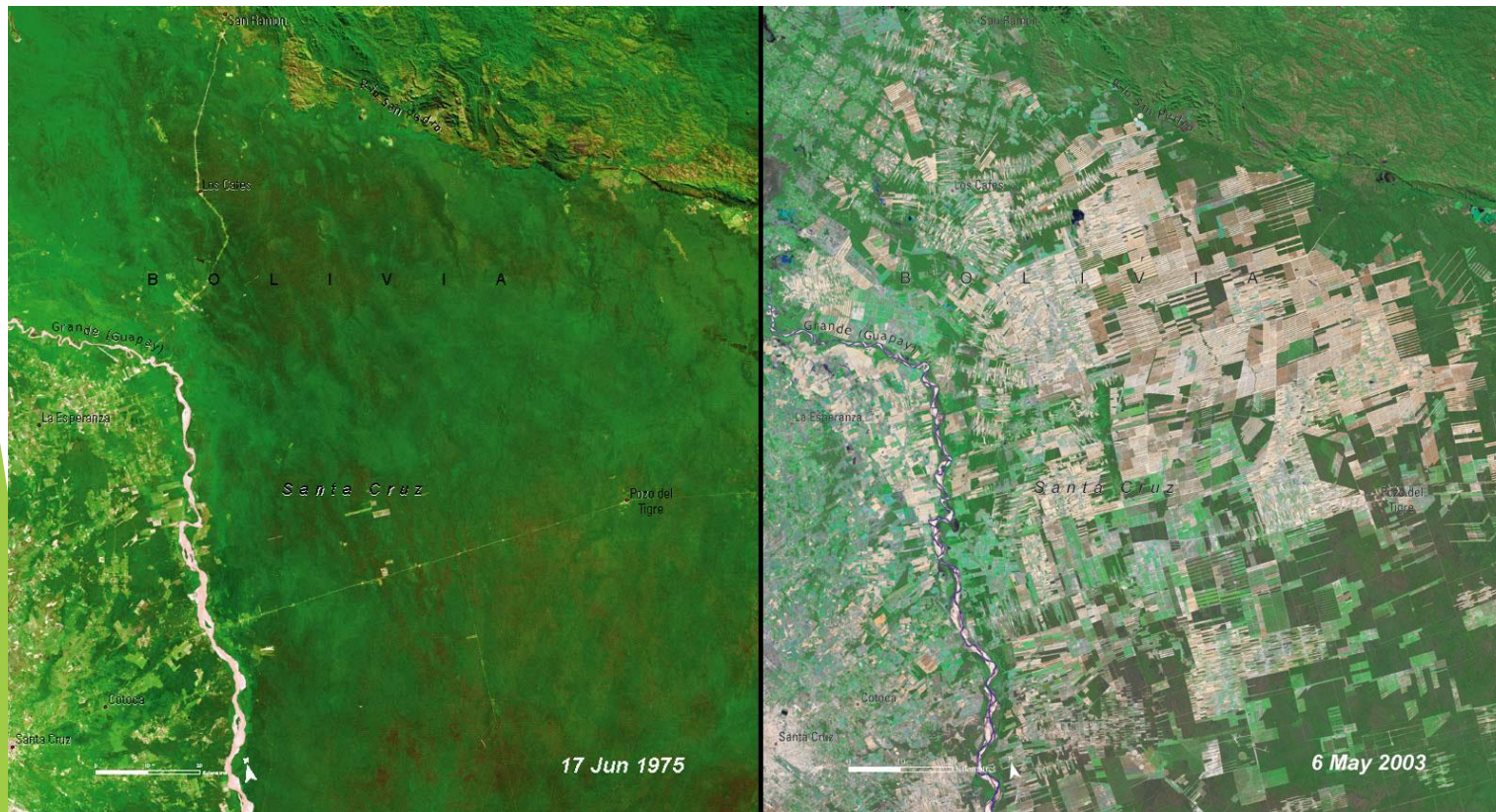
Drought

- Drought **frequency** and **extent** is increasing globally.
- Droughts have direct and indirect **unfavorable impacts** on food security.



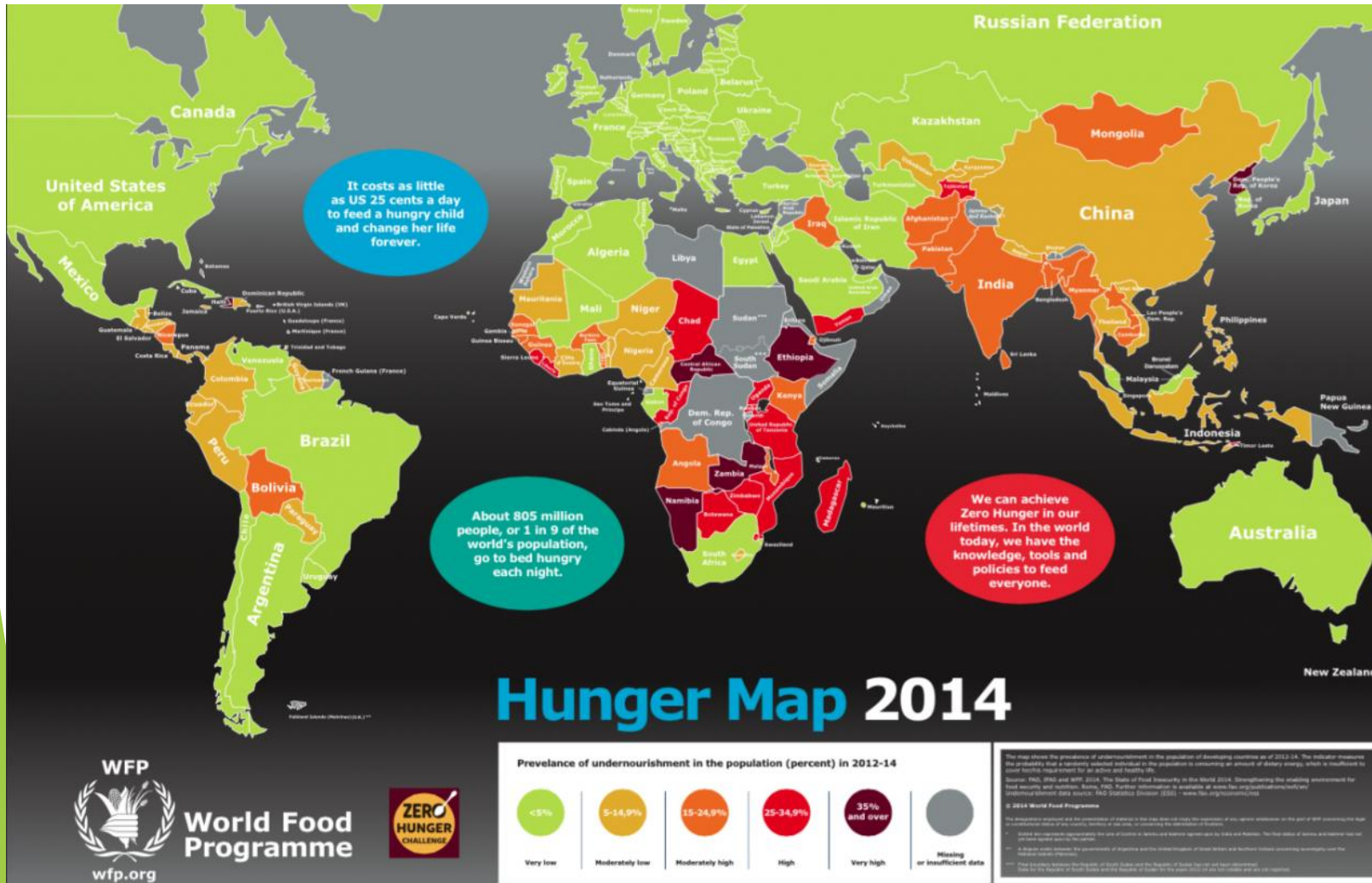
Population

- Population **increase** from 7 billion in 2011 to 9.2 billion in 2050
- Increased population and income growth fueled the **global demand of crop yields**



Global Hunger Index

Nearly one in nine people worldwide are chronically undernourished, and 3.1 million children younger than 5 die of malnutrition each year.



66 million children **go to school hungry** across the developing world, preventing them from reaching their fullest potential.



Poor nutrition **causes 45% of deaths** in children under 5. That's 3.1 million children each year.



Food Insecurity Factors

- We consider **crop yield** as a good measure for food security.
- What factors impact food security?
Climate change, drought, population, income,...



Methodology

Investigate the trends in different parameters of global food insecurity like population, income, crop yields, and climatic conditions for past 10 years of selected countries



Remote based data MODIS normalized difference vegetation index (NDVI) data from NASA, the relationship between the crops yield data and major climatic indicators will be examined.

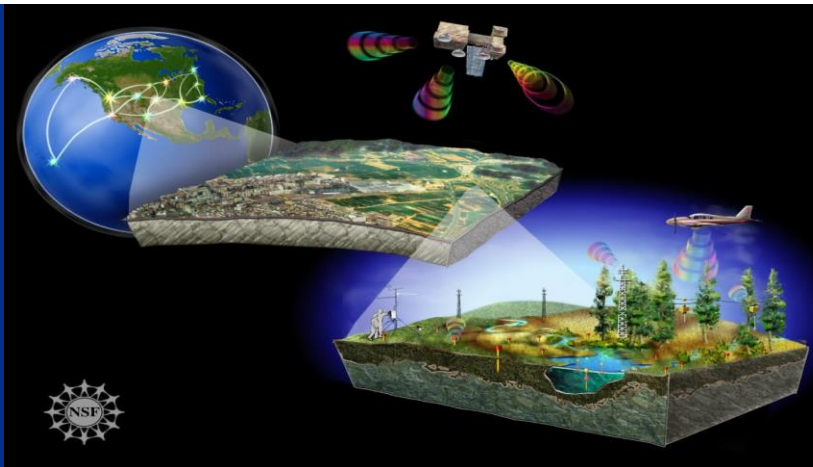
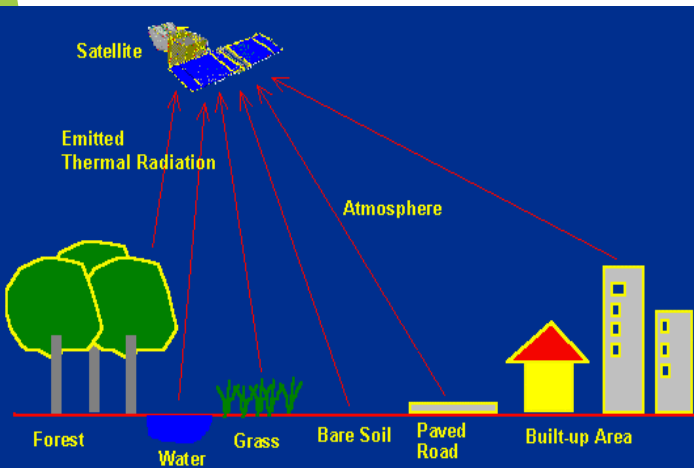


The Palmer Drought Severity Index (PDSI) will applied to quantify the severity of droughts.



Relate to Gross National Income (GNI) and population by World Bank for interested countries.

Technology used: MATLAB, GIS, Remote Sensing.





Thank You