Global Climate Change

Week 2
07/7/2017

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Summary

1. Lessons from Referencable Climate Change Models
2. Lessons from the other countries and global governance
3. Lessons from Amazon Rainforest Governance
4. Thoughts about "Sustainable economy"
5. Carbon Pricing
6. Website

Results

GLOBAL GOVERNANCE FRAMEWORK

Basic Thoughts	
Consider cost-benefit balance	Consider the domestic political factors
Change the finance distribution structure	Encourage green investments
Utilize the leadership of G20	Strengthen environmental policy stringency
Promotion of carbon pricing	Increase public support
Consider the fossil fuels exporter countries	Consider the differentiation of country mitigation needs
Timing and efficiency	.....

Detail

Climate Change Models

a. GCM (General Circulation Models)

Content:

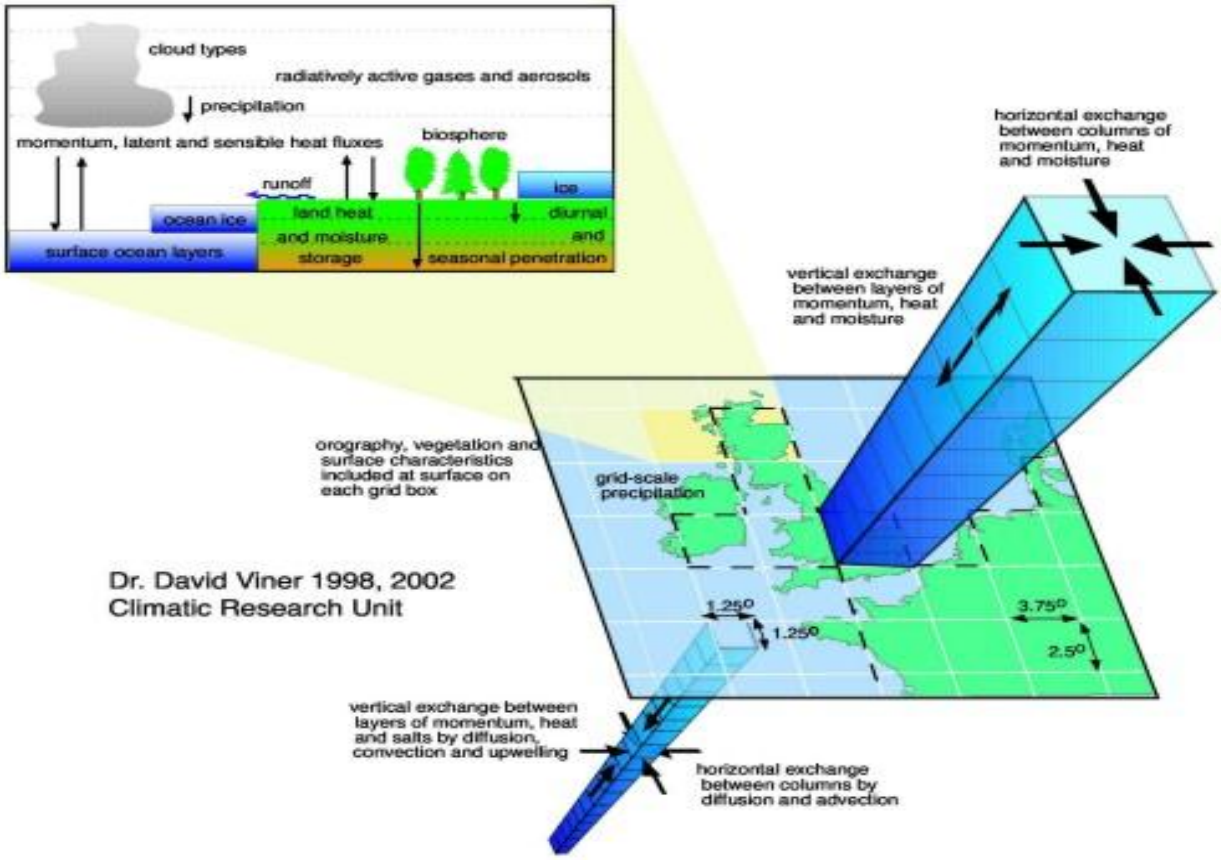
GCMs are used to represent physical processes in the atmosphere, ocean, cryosphere and land surface.

It can be mainly applied

1. to simulate the responds of the global climate system with increasing GHG (温室气体).
2. to provide geographically and physically consistent estimates of regional climate change which are required in impact analysis.
3. to depict the climate using a three dimensional grid over the globe.

Shortages

GCMs do not fully address some other uncertainties that, especially the range in estimates of future atmospheric composition.

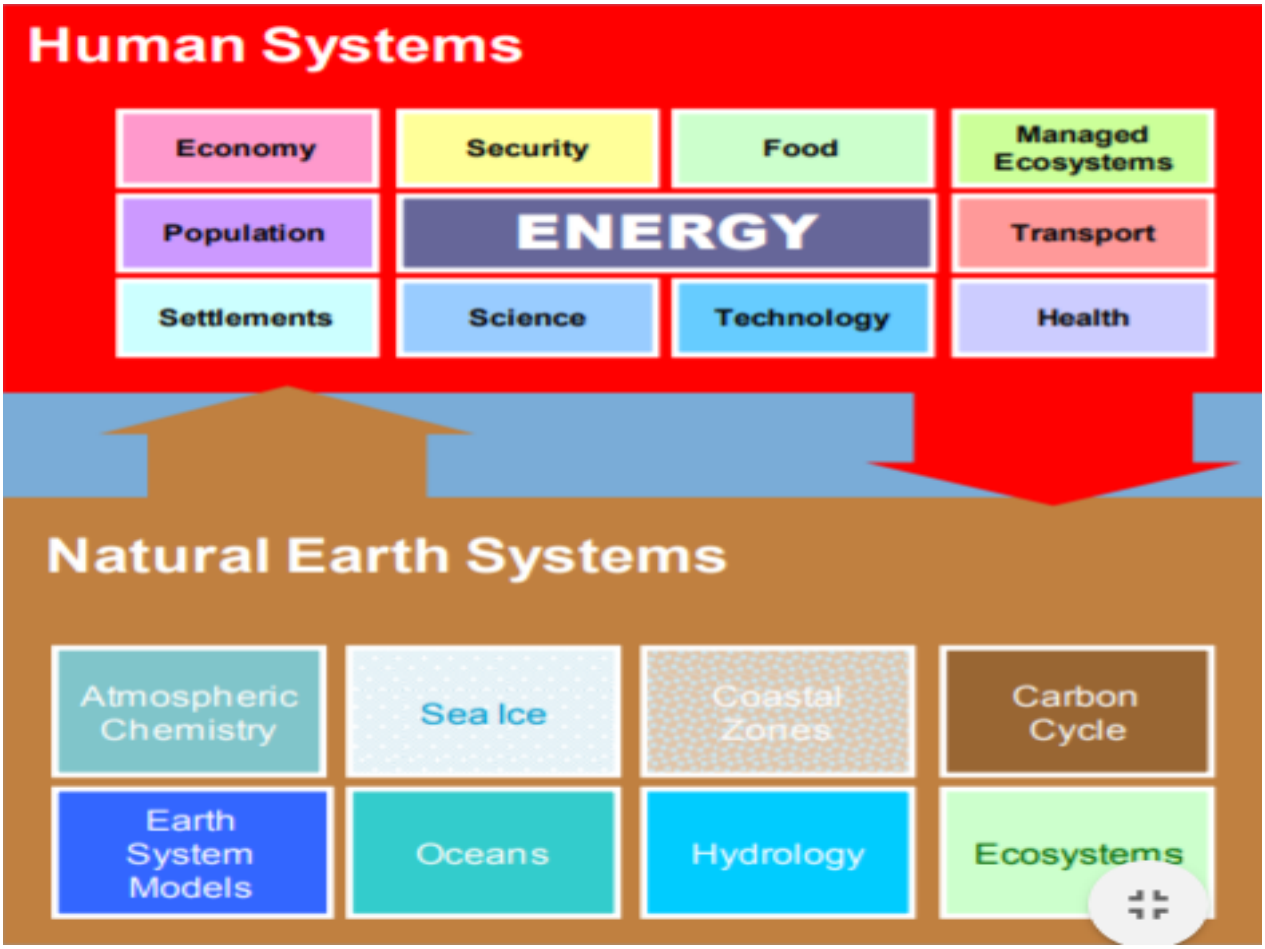


b. **IAM (Integrated Assessment Model)**

Content:

IAMs integrate human and natural Earth system climate science.

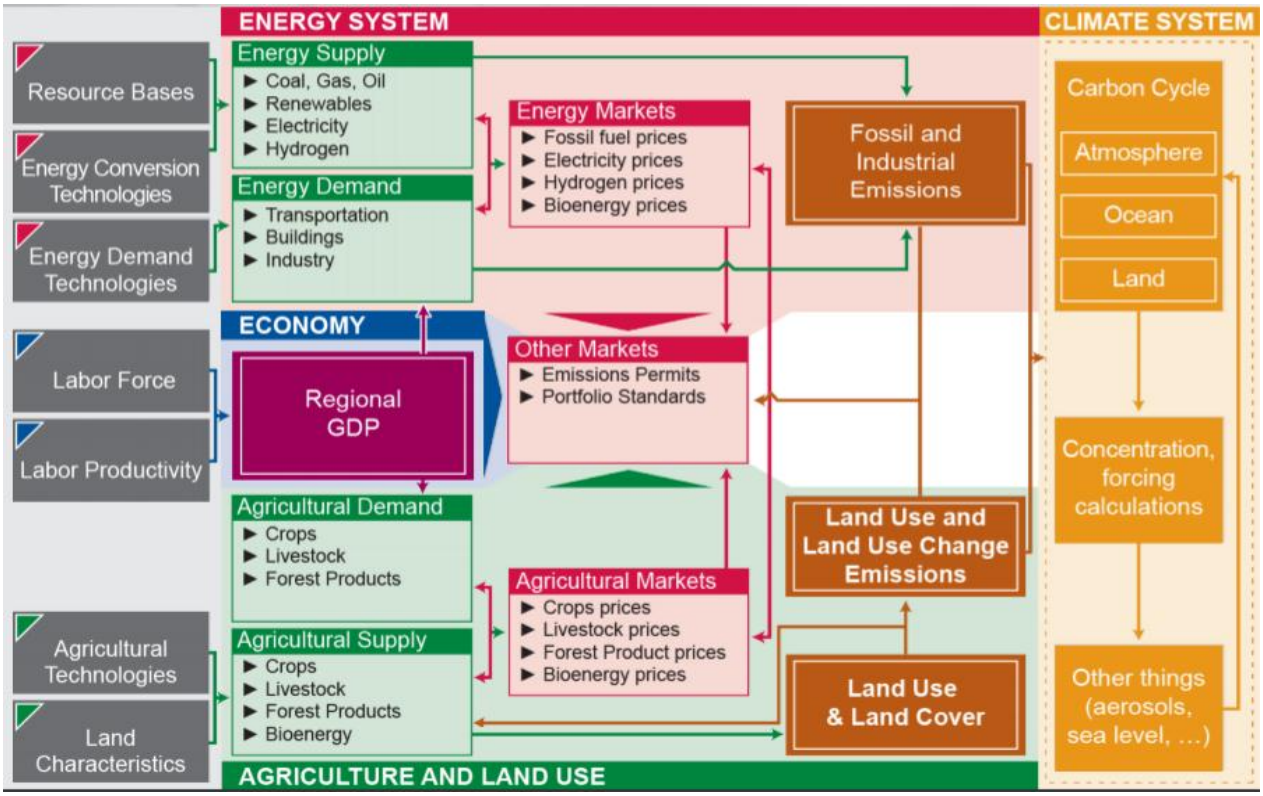
IAMs provide important, science-based decision support tools which support national international, regional, and private-sector decisions.



c. GCAM (Global Change Assessment Model)

Content:

GCMs is another global integrated assessment model, which links economic, energy, land-use and climate systems. It integrated the economic assumption, energy system, agriculture and land-use system, emissions, policies, climate system and solution algorithm to forecast the climate condition in the future (to 2100).



IPCC Assessment Reports

联合国气候变化专门委员会

The recent one: AR5

There are three reports including *Physical Science Basis* (自然科学基础), *Impacts, Adaptation and Vulnerability* (影响、适应和脆弱性 A.全球和行业方面； B.区域方面) and *Mitigation of Climate Change* (减缓气候变化) and a synthesis report.

In synthesis report, there are four topics:

1. Observed Changes and Their Causes
2. Future Climate Changes, Risks and Impacts
3. Future Pathways for Adaptation, Mitigation and Sustainable Development
4. Adaptation and Mitigation

In addition, the population size, economic activity, lifestyle, energy use, land use patterns, technology and climate policy influence the anthropogenic GHG emissions (人为二氧化碳排放).

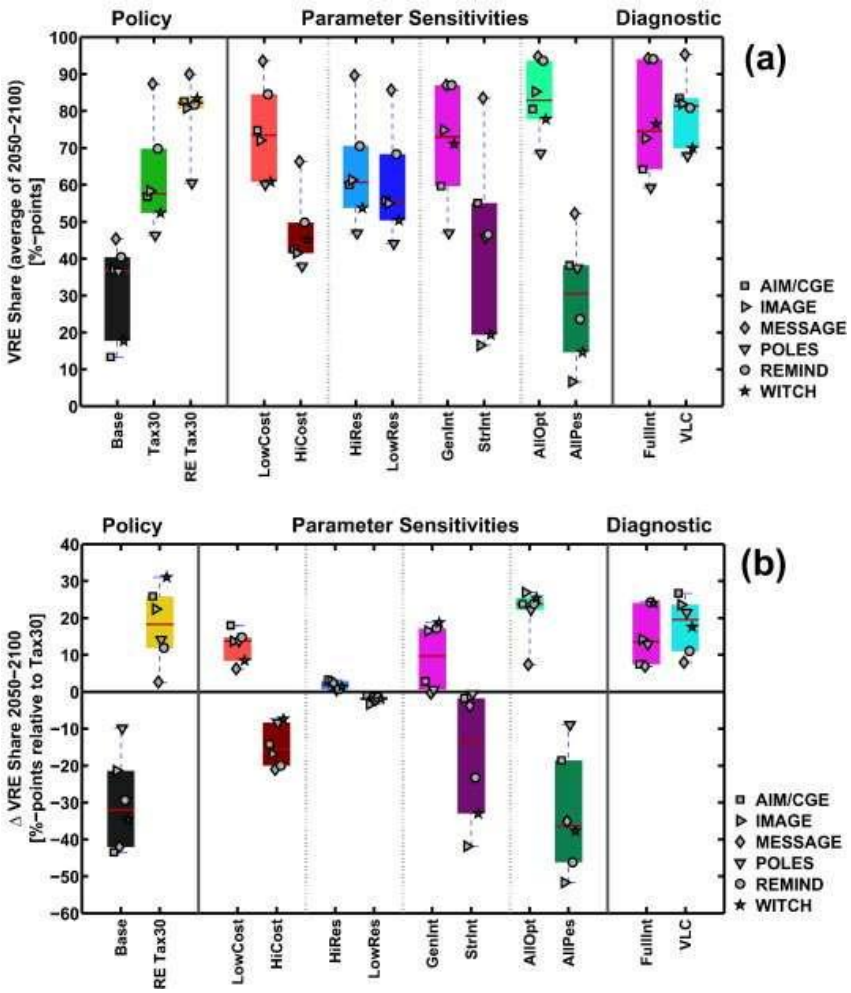
The Best Technological Method to Control Climate Change

Using Calculus Method

The three maintain method is:

1. Energy recycling
2. New energy
3. Energy reservation

Diving the each of the three methods to some other specific methods step by step, analyzing the factors by mathematical model to find the most significant method in each step, then the best global method can be found.

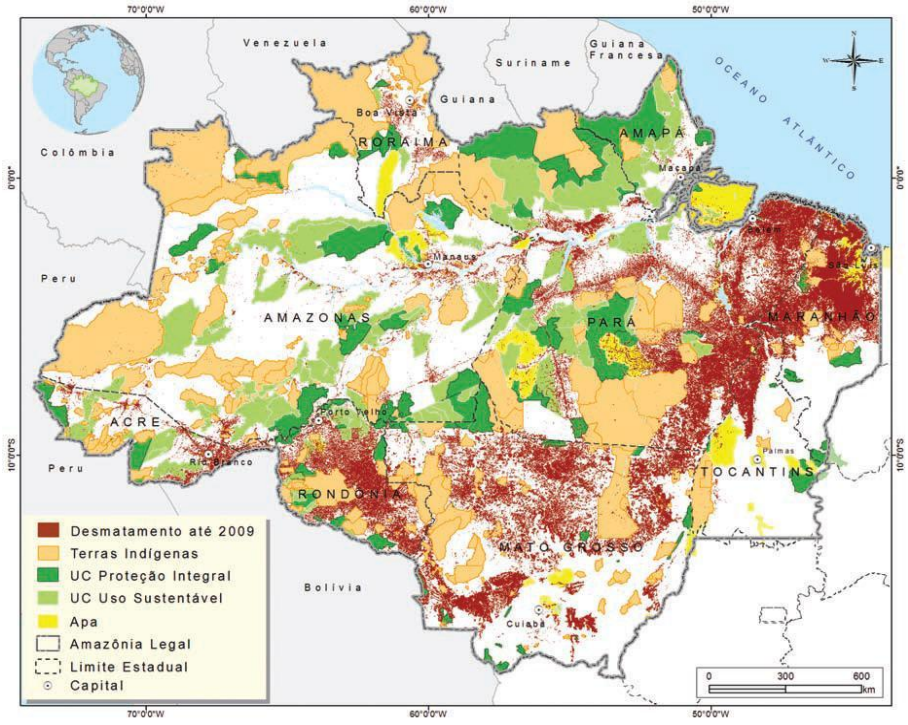


Amazon Rainforest Governance

- Wide-scaled deforestation, and about 75% of the plain land is occupied by low-efficient pastures.
- De-formative economy structure: illegal logging.
- Wide-scaled violence in Brazil.

Consumption of natural resources ≠ **Economy Development (GDP)**

1. a valuable nature conservation approach with large swathes of territory legally protected from any economic and human activity outside indigenous peoples.
2. an approach that has focused on conversion or degradation of forests for the production of either protein commodities or tropical timber at the forest frontier.
3. **What is the third way?**



Domestic Politics Analysis and Nation's Policies on Climate Change

Countries we investigated

U.K. Japan Singapore U.S. Brazil Germany China…

Form of Government

|Vertically: the relationship between center & local: Single and Federalism
|Horizontally: relationships between different state organs
|Supreme Power: Monarchy & Republican System
|Administrative and Legislative: Parliamentary & Presidential
|Party System: Single-Party, Two-Party, Multi-Party

Policies

Mitigation: Reducing emissions

(Legislation, Constitution, Emission budget, New tech, Trade scheme, Commercial operation…)

Adaptation to climate change

(anticipating the adverse effects of climate change and taking appropriate action to prevent or minimize the damage they can cause, or taking advantage of opportunities that may arise)

Measures to Control Global Warming

intergovernmental agreement

1. Conference&Goals

* 联合国人类环境会议： United Nations Conference on the Human Environment 1972
* 联合国千年发展目标：Millennium Development Goals (MDGs) 2000-2015
* 联合国可持续发展目标：Sustainable Development Goals（SDGs）2015-2030

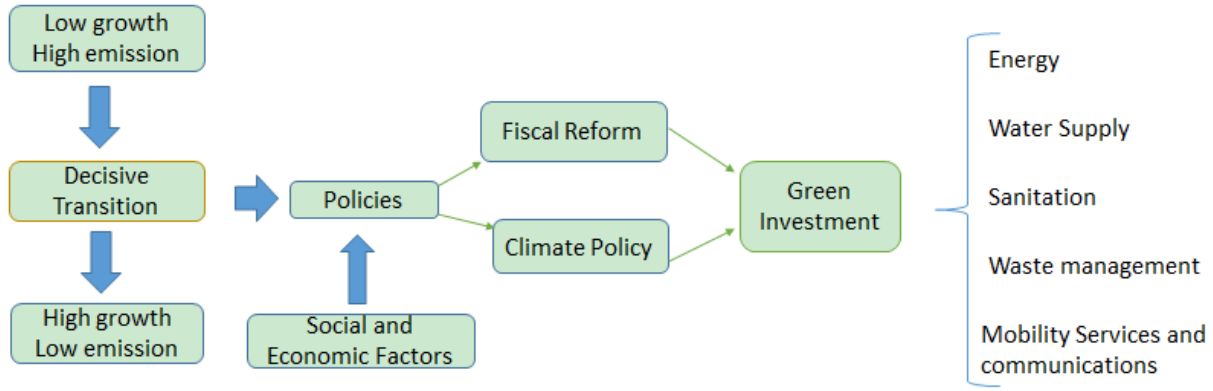
2. Contents

* **Basic contents** (e.g. time/member states/goals details/……)
* **Background & Histroy** (e.g. reasons/key roles/……)
* **Evaluation** (e.g. advantages/disadvantages/comment/……)
* **Relationship & cooperation with** (e.g. NGO/transnational corporation/celebrity/……)

Conclusion:

1. **Establish a framework that is interest-driven and keep it in check.**
2. **Actions of nations should consist with the purpose of the international framework.**
3. **Realize the importance of multinational companies and NGO and combine the international framework with business.**

Sustainable Economy (Political Perspective)



Think about: Categories of countries
reliance on fossil fuels (net importers or exporters) or level of development (advanced or emerging economies)?

Carb on Pricing (Economic Perspective)

2 main types: ETS(emission trading system) & carbon tax

Supporter: 74 countries, 23 subnational jurisdictions, and more than 1,000 companies and investors expressed support for a price on carbon, among which 40 countries and more than 20 cities, states and provinces are using carbon pricing mechanisms, the schemes cover half of their emissions(13% of GHG)

Difficulties:
1) increase expenditures: the failure of carbon emission tax on airplanes brought up by EU

2) slow down the growth of economy: the rejection on carbon tax bill in France in 2009

3) lack of supports from the public: unwilling to participate for the US and Japan

Next week:
- ☐ How to solve the challenges?
- ☐ How to motivate more countries adopt carbon pricing system?

Sources: World Bank
Organization--The Carbon Pricing Leadership Coalition:
https://www.carbonpricingleadership.org/

Plan For Next Week

1. Use SPSS to run the model analysis
2. Further study on sustainable economy
3. Design the future development plan of carbon pricing
4. Country conflicts and plan for synergies
5. Version 1-future global governance framework