Tibetan Agriculture & Climate Change

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Medicine Mountains
Meili or Menri

Research Site: Eastern Himalayas
Tibetan Culture
Tibetan People
Tibetan agriculture in the eastern Himalayas

- **High villages:**
  - Greater area
  - Greater diversity
  - More traditional crops: barley, buckwheat, turnip
  - Also, more new world maize & potatoes

- **Lower villages:**
  - Commercial ag
  - More wheat

(nr) = no road
(r) = road

(Salick et al. 2005)
IPCC Fourth Assessment Report

Projected Patterns of Temperature Changes

- 5-6°C temperature increase
- 20-30% precipitation increase
- Glacial retreat

Sacred glacier of Khawa Karpo
How is Climate Change affecting Tibetan Agriculture?

Methods:

- Participatory maps and annual cycles
- Historic photographs
- Semi-structured interviews
  - Villagers
  - Monks: local, prefecture, and Lhasa
  - Tibetan doctors
  - “experts”: meteorologists, agriculturalists, foresters, conservationists, etc.

Follows from: Tibetan perspectives on Climate Change Byg and Salick 2009
There had been no information on climate change from government or in media.
Results

Climate change is rapidly affecting the environment near Khawa Karpo:
- warming temperatures
- reduced snow pack
- receding glaciers
- increasing and increasingly variable precipitation
- avalanches and landslides
- changing seasons

As a result, climate change rapidly affects Tibetan agriculture.
Climate change rapidly affects Tibetan agriculture:

- Crops are changing
  - lowland crops (e.g., vegetables, peaches and walnuts) being grown at higher elevations
  - highland crops (e.g., buckwheat) being abandon in the lowlands.
  - new crops are taking over (e.g., grapes).
- Crop varieties are changing dramatically (e.g., increases in winter wheat and barley, decrease of traditional varieties)
- Planting and harvesting seasons are earlier
  - Tibetan calendar that predicts these is altered
- Diseases and pests (e.g., rats, flies, mosquitoes) are increasing
- food is spoiling (affecting human health)
- Organic matter is breaking down quickly, changing soil management
- Forests are extending upward to higher elevations
- non-timber forest products (e.g., mushrooms and medicinal plants) are changing distributions and phenologies.
Crops are changing

- lowland crops are grown at higher elevations
  - vegetables
  - peaches
  - walnuts
  - rice

- highland crops (buckwheat) abandoned in lowlands

- new crops taking over (grapes)
Crop varieties are changing

- Traditional crops less well adapted
- Government varieties can now be grown
- Winter wheat and barley
Planting and harvesting seasons are earlier with 2-3 crops/year and less fallow.
Diseases and pests increasing

- rats
- flies
- mosquitoes
- crop disease
- animal disease
- food spoils
Soil management

- Organic matter is breaking down more quickly
Non-timber products
changing distributions and phenologies
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Confounding factors

- Government policies
  - Logging and hunting bans
  - Steep land conversion
  - Production goals
  - Tourism
  - Road building
  - New crop/variety introductions
  - Rice and animal production
  - National Parks
  - Cash crops and market economy
  - Dam building
  - Etc.
Tibetan perceptions of climate change

Climate change is a moral & religious issue that reveals people’s feeling of powerlessness:

- *The mountains are not as beautiful any more, and they do not protect people as they used to* (man, 29 years)

- *I am worried that the earth will be destroyed if the snow disappears completely* (woman, 85 years)

- *If the snow disappears, people will disappear from the earth* (man, 57 years)
Climate Change is basic to Tibetan cosmology: 1. massive earthquakes 2. a great flood 3. fire will consume Mt. Shumi 4. a colossal wind storm will extinguish the universe.

Offerings and prayers are ceremonially presented to Lu in order to control weather and disease.

The Tibetan Calendar predicts weather and agricultural cycles based on Tibetan astrology and pragmatic consultations with experienced farmers subscribing to traditional knowledge.
Tibetan Agriculture and Climate Change

Tibetans

- Are affected by climate change
- Agriculture
- Adapt
- Mitigate
Tibetans adapt to Climate Change
Tibetans mitigate Climate Change

Carbon negative livelihoods!

Aforestation

Traditional conservation

Increase soil carbon (OM)
Tibetan Agriculture and Climate Change

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Tibetan Agriculture and Climate Change

Indigenous peoples have a right to participate and a role to play in climate change discussions and policy.

Tibetans
- Are affected by climate change
- Agriculture
- Adapt
- Mitigate
Indigenous Peoples and Climate Change

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