National Climate Change Adaptation Measures in Korea

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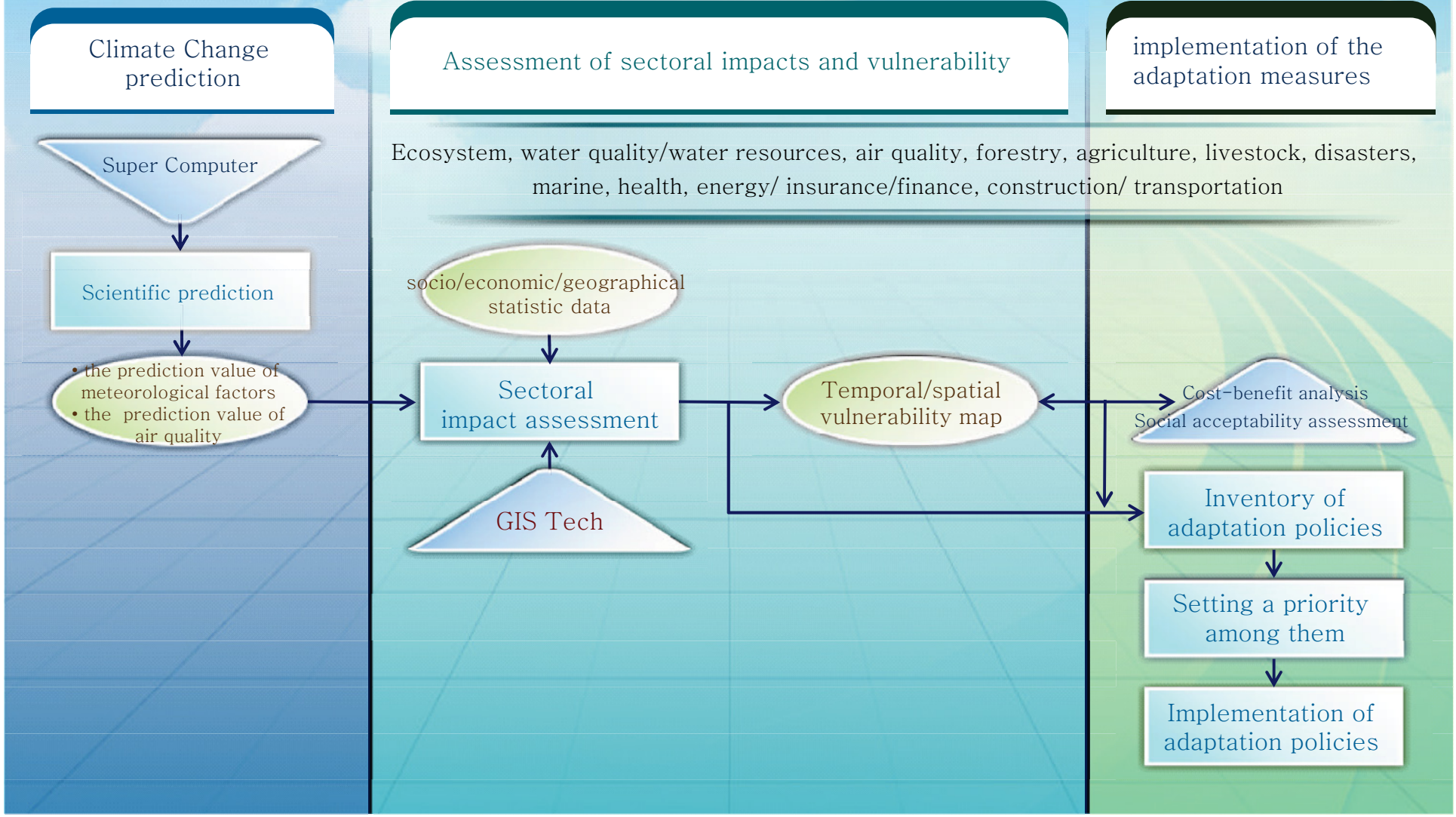
Procedures for Adaptation Measures

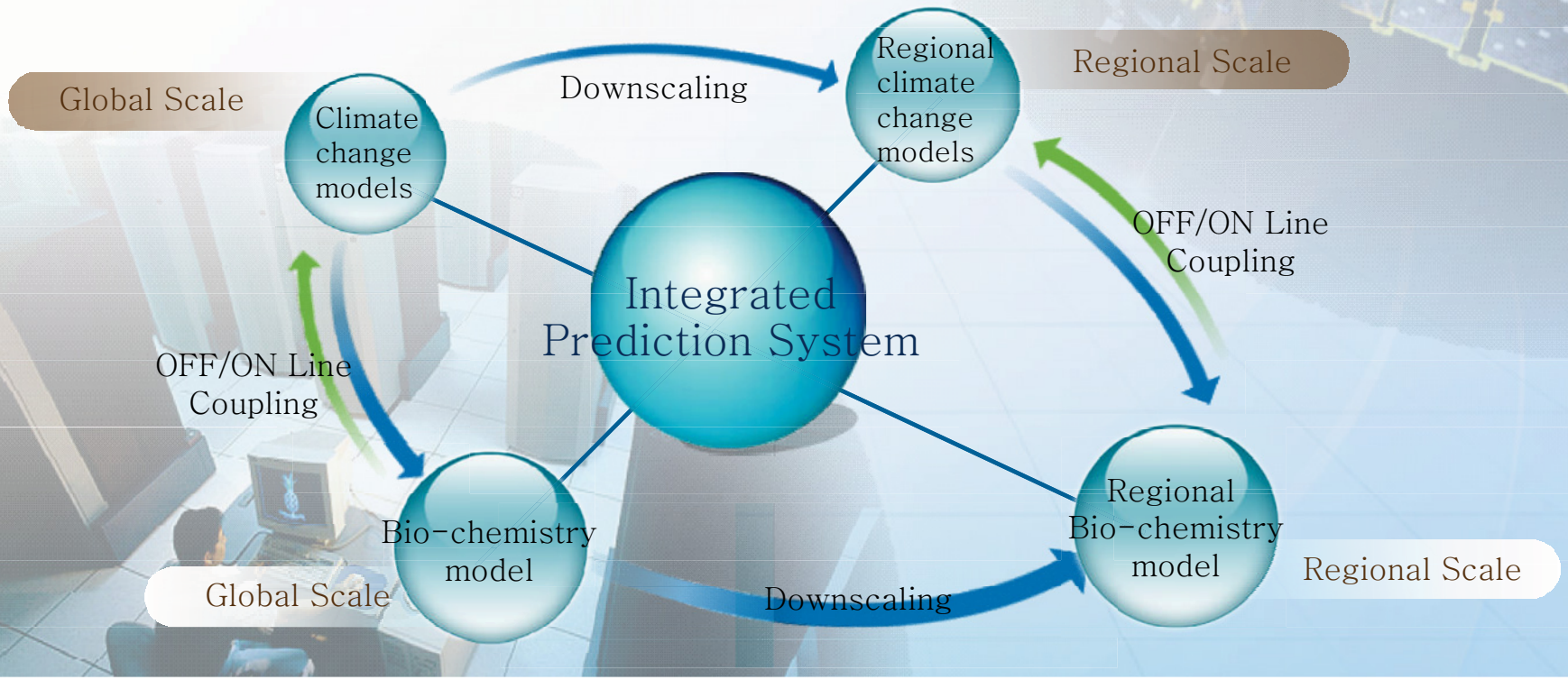


I. Science Based Climate Change Adaptation

Examplary climate change research

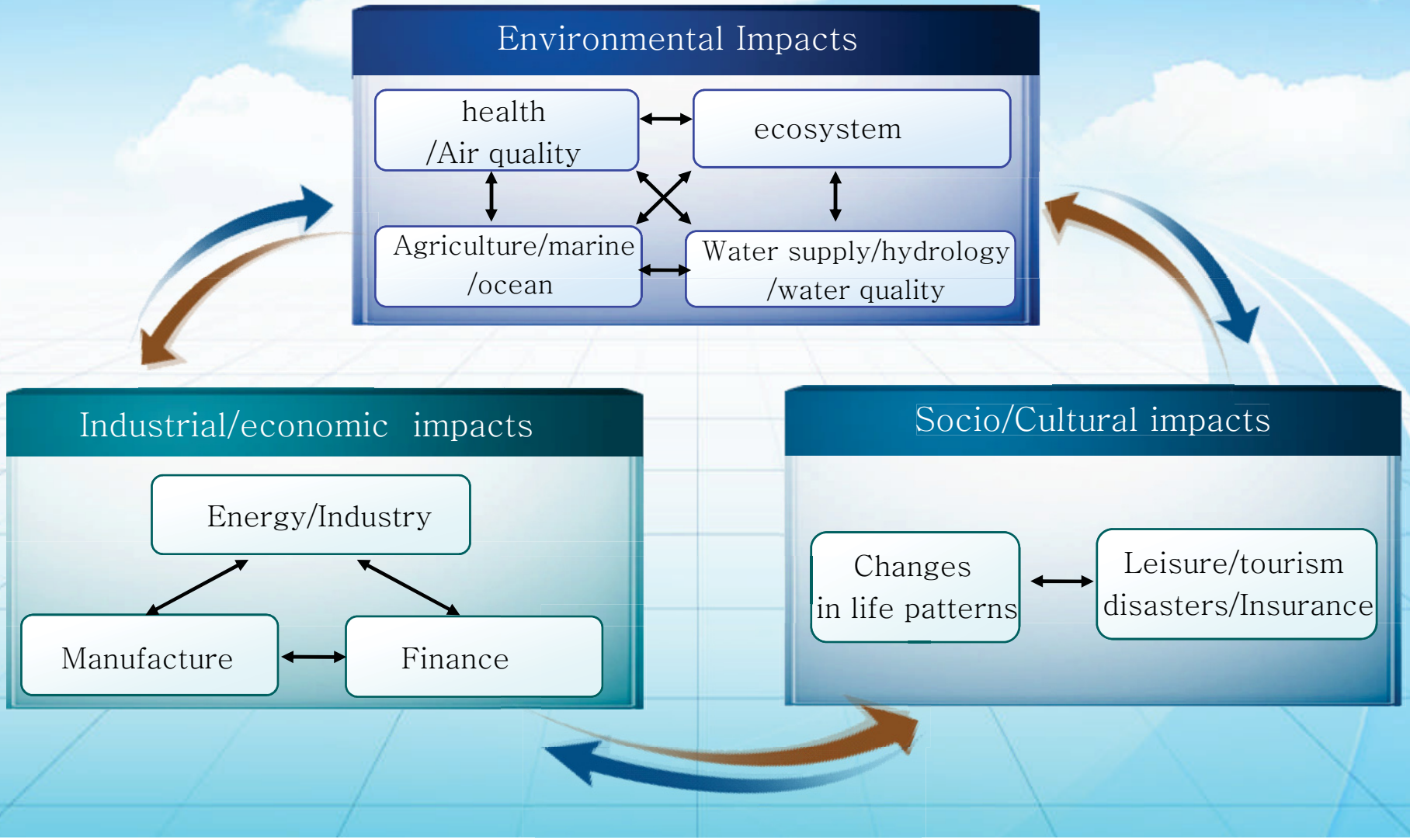
- Integrated modeling for climate change models with bio-chemical module
  - Estimation of a national climate scenario, employing a range of models
- Mid/long-term climate change monitorings

  (ground, aircraft, ship, satellites)



Ⅰ. Science Based Climate Change Adaptation

Analysis of Sectoral Inter-relationship

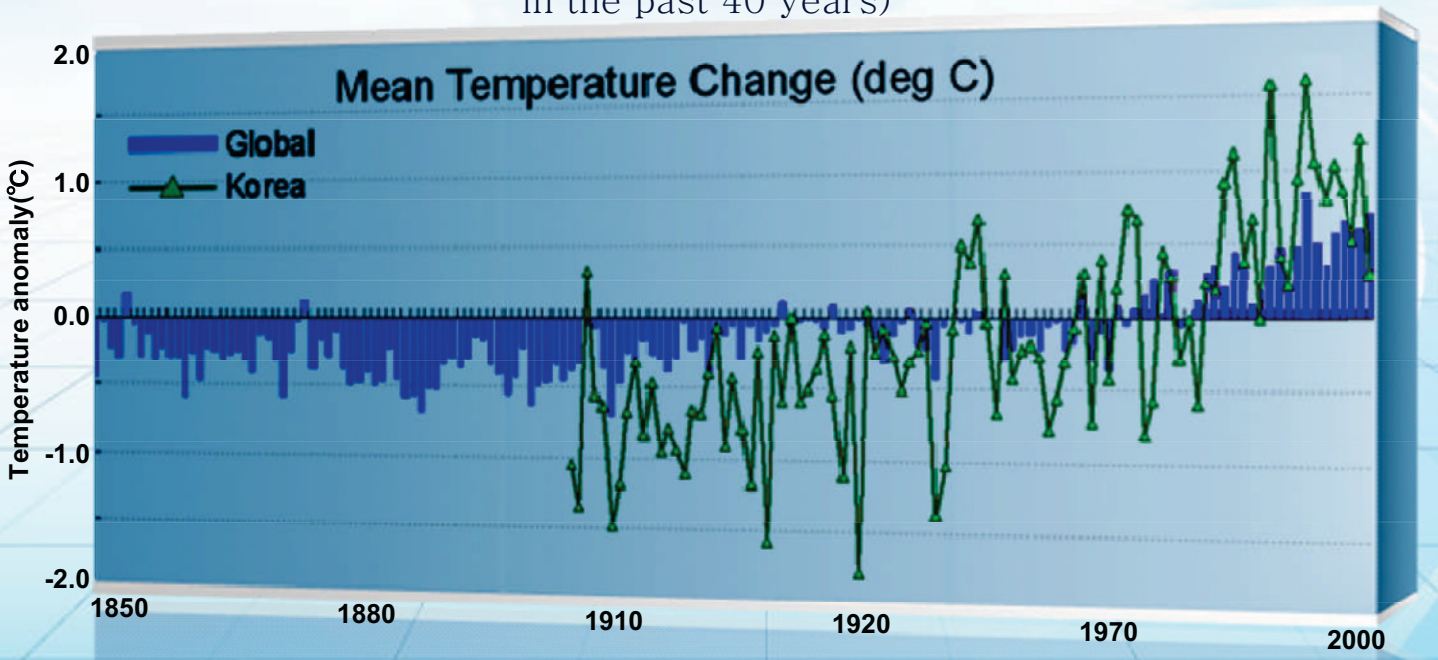


Ⅱ Impacts of Climate Change on Korea

Ⅱ. Impacts of Climate Change on Korea

Observed Climate Change on the Korean Peninsula

- Temperature rise: twice as the global mean temperature rise (1.5℃ up in the past 100 years)
- Sea level rise (Jeju Island) : Three times as the global mean sea level rise (22cm increase in the past 40 years)

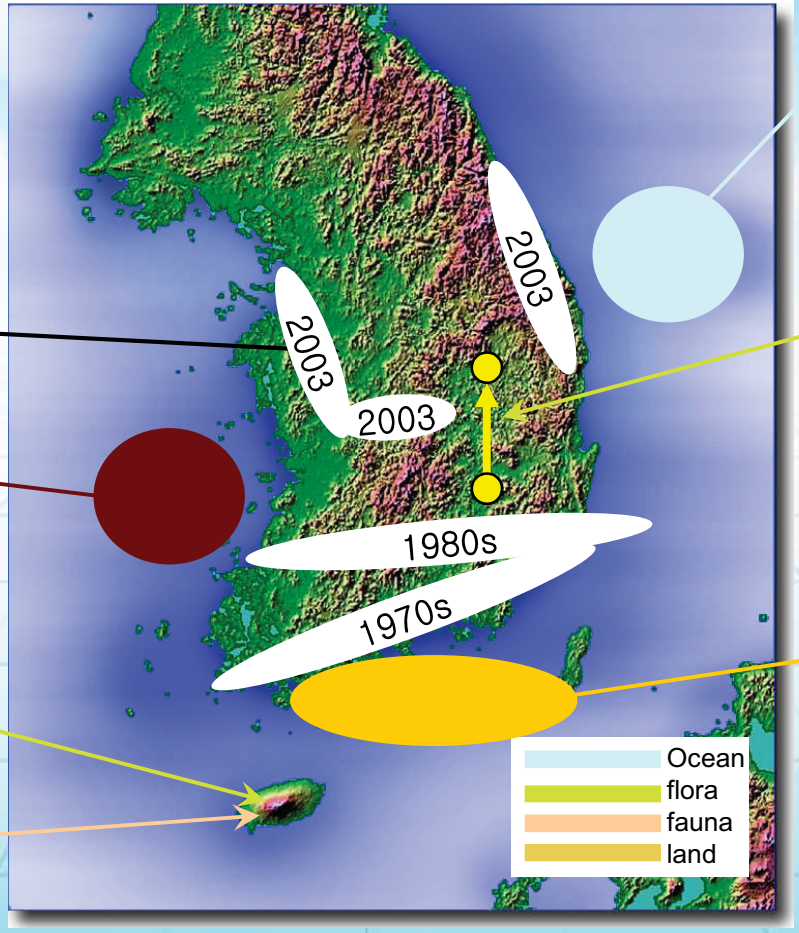


(METRI, 2005; NORI, 2006)

Ⅱ. Impacts of Climate Change on Korea

Observed Impacts of Climate Change over the Korean Peninsula

(Source: modified from the reports of several newspapers)



Garlic habitat shift

Subtropical Jellyfish

Early cherry blossom

Damage of pine forest by *Dendrolimus spectabilis*

Less cold water fish (Pollack, Cod, Sandfish)

More warm water fish (Squid, Bream, etc.)

Fruit cultivation area shift (i.e., Apple)

Coastal Sea Surface Temp. ~ 0.02℃/year

Early red tide !!

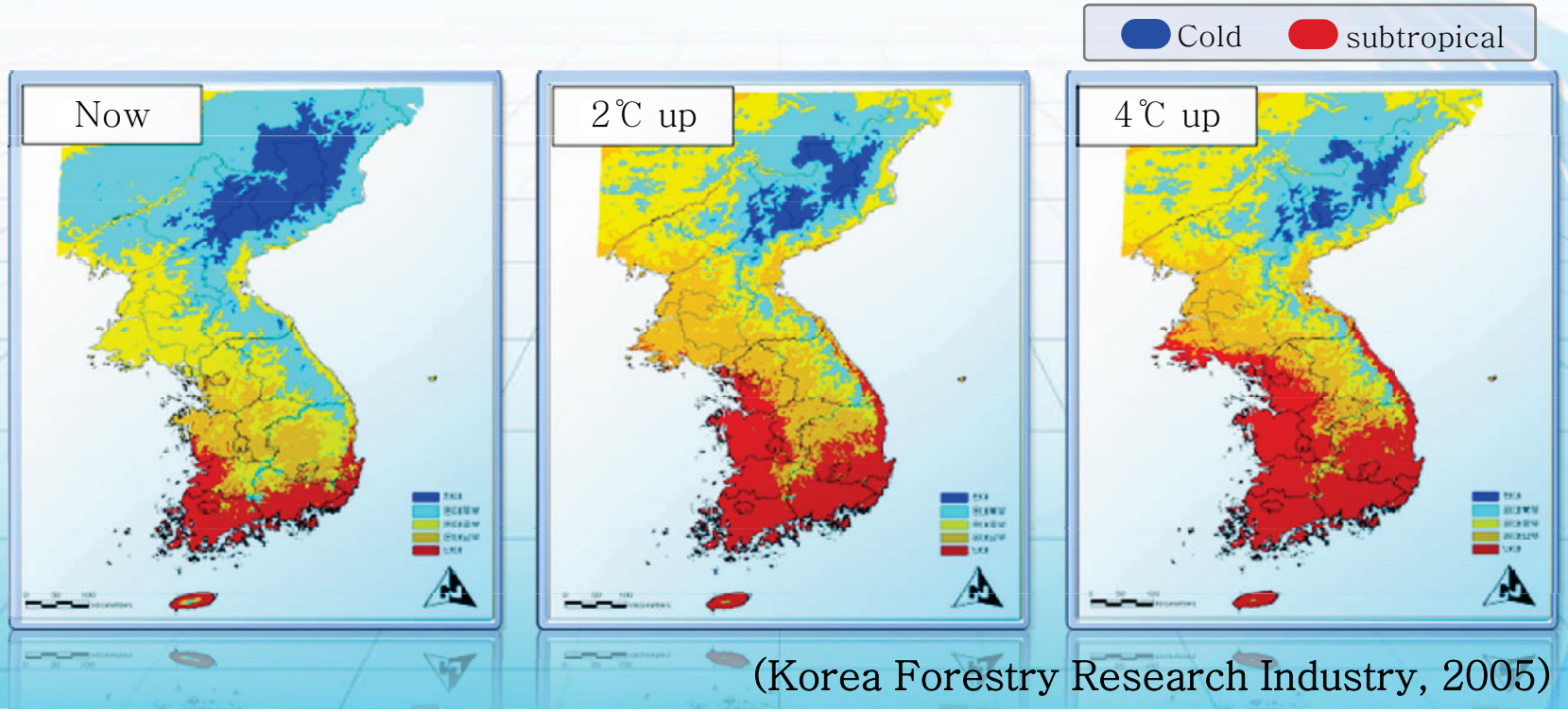
Also, Summer Epidemic breaks out early !!

Ⅱ. Impacts of Climate Change on Korea

Climate zones shift in future

Climate zone shift

- In 2030 (2℃ rise) : shift of subtropical zone to northward
- In 2065 (4℃ rise) : most residential areas change into the subtropical zone

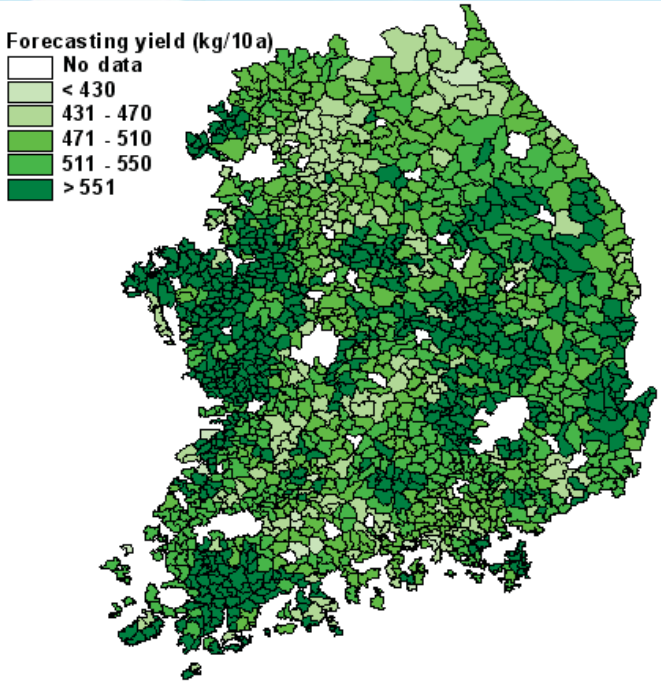


(Korea Forestry Research Industry, 2005)

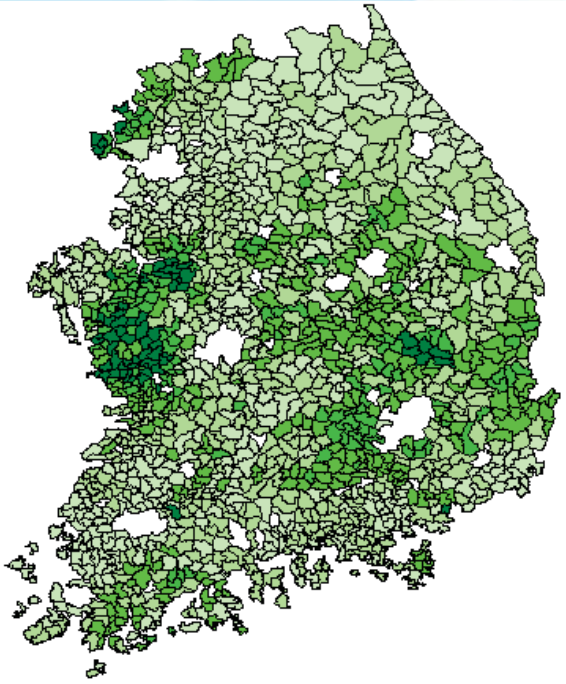
Ⅱ. Impacts of Climate Change on Korea

Change of rice yield in future

•[1971-2000 average]



•[2080s forecasting]



Overall yield of rice : 14.9% (802 kg/ha) decrease !!

(Source: Korea Environment Institute, 2006)

Ⅱ. Impacts of Climate Change on Korea

Sectoral Impacts on Korea

•Environ./
•Health

Air quality

- Increases in PM10 and O_3 Concentrations and Asian Dust

Water resources

- River water rise

Water quality

- increases in turbid water caused by soil loss
- Fish kills and eutrophication caused by reduced dissolved oxygen (DO)

Health

- Heavy death toll by the heat waves (a total of 2,127 during the last decade)
- Increases in malaria patients (5 in '94 → 2,051 in '06)

Ⅱ. Impacts of Climate Change on Korea

Sectoral impacts on Korea

•Ecosystem

Land

- Shift of vegetation zones (a 5km northward shift of the broad-leaved forest per year)
- Reduction of biodiversity (Alpine plants of Halla Mt. in danger of extinction)
- Northward shift of cultivation region (Apples : Daegu→ Yeongwol, Green tea: Bosung→Gosung, Hallabong : Jeju→Geoje)
- Early spring blooming (shortening of the flowering times for forsythia and azalea by about 20 days for the past 80 years)
- Increases in plant diseases (Pine wilt disease, Ussur Brown Katydid, Oak wilt, and acacia tree etiolation)
- Reduction in crop productions and harvesting areas

Ocean

- Decrease in arctic fishes (pollack, Cod)
- Increase in warmer water fish (squid, porgies)
- Increases in red tides, whitening events and the appearance of noxious jellyfish