Theme 4: Role of Science in Adaptive Development

～Define/What is the role of science in developing coherent and supportive policy?～

- Adaptation Forum 2010
  - 21 October 2010
- Bangkok, Thailand
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- Ibaraki University, Mito, Ibaraki, Japan

Content

- 1. Issues in adaptive support to developing countries
- 2. Role of science for adaptive development
- 3. An example for proving the necessity/effectiveness of adaptation against each issue
- 4. An approach in Japan to this issue

1. Issues in adaptive support to developing countries

Issues in adaptive support to developing countries(1)

- The order of priority of climate change support is lower than development support
  - 経済開発や貧困撲滅が最優先課題
  - 開発プロジェクトの担当者(先進国・途上国とも)が気候変動の問題を認識していない• 援助の成果が維持できない可能性
  - 気候変動による開発協力への悪影響や、開発協力による適応への悪影響の認識が(少)ない
- There is the political conflict between developed and developing countries
  - 基金の運営体制、資金配分、プロジェクト選定基準
  - 従来のODAに「追加的な」資金を求める途上国

Issues in adaptive support to developing countries (2)

- Less recognition from persons in charge of development cooperation
  - 気候変動は「環境」分野のみの問題との理解
  - 環境分野自体の優先順位の低さ
  - UNの国際交渉担当者と開発協力担当者が全く別
- Less closed cooperation between development and adaptation
  - 貧困削減と適応の相関関係の未解明
  - 通常の開発協力に含まれる適応効果についての認識がない
  - 適応に関連する部局間の連携が(少)ない
  - 緩和と適応の担当部局／省庁が異なる

Issues in adaptive support to developing countries (3)

- Few data and information for investigation
  - 基礎的な統計などが(少)なく、かつ共有されない
  - 幅広い分野にリサーチギャップが存在する
  - 将来予測には不確実性が伴う

- No suitable for estimating adaptation
  - 不十分なデータや人材でも活用できる方法が必要
  - 定性的な情報のみでどこまで判断できるか？
  - 開発援助との調整、統合をどう図るか？開発援助が有する適応効果をどう把握・評価するか？

Barriers to adaptation application

- Insufficient recognition for adaptation

➤Government/ Politics

Shortage of data (Weather, inf., VA)
Reliable methodology

➤Science/ Technology

- Development policy /Priority
- Adaptation fund

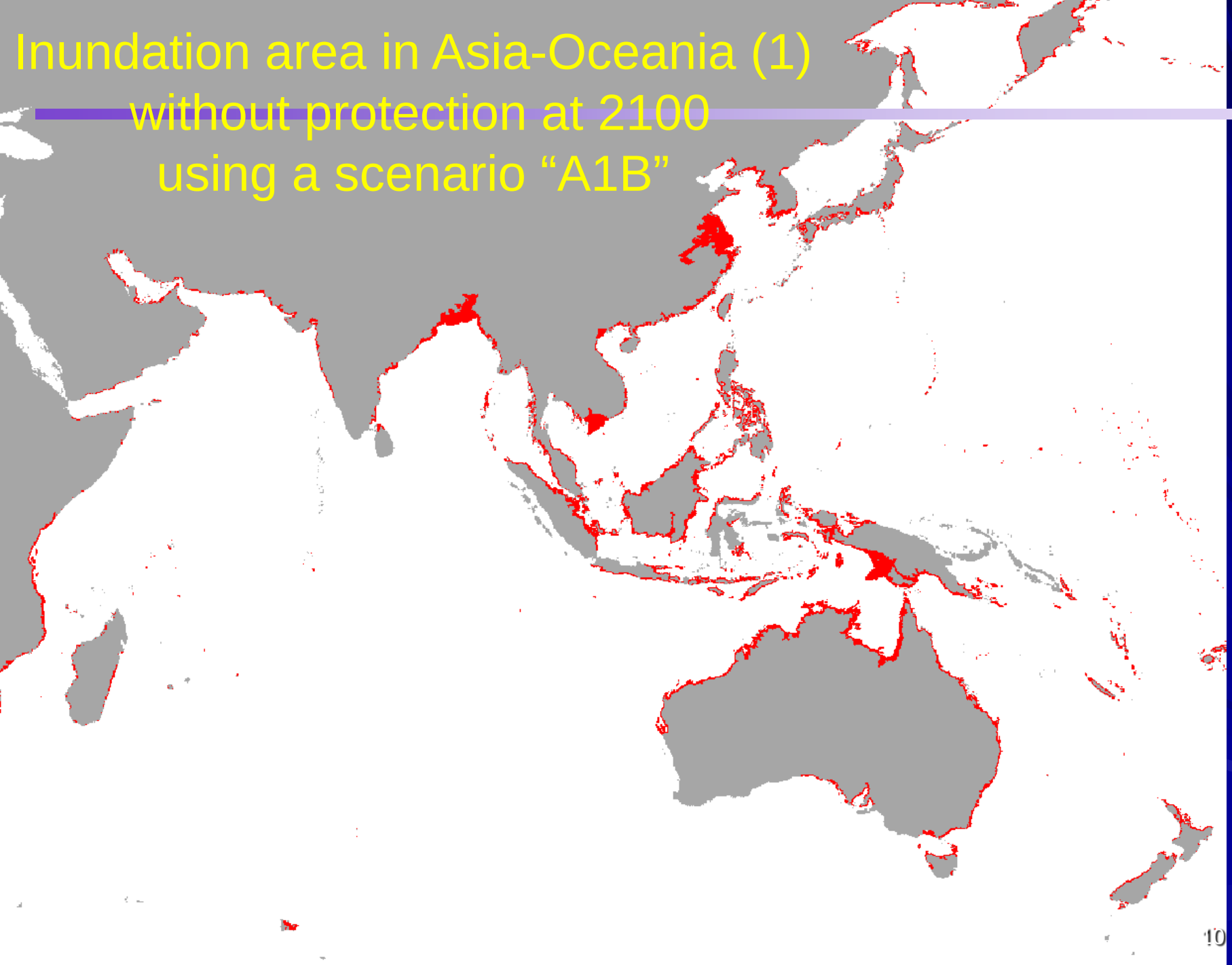
➤Negotiation

2. Role of science for adaptive development

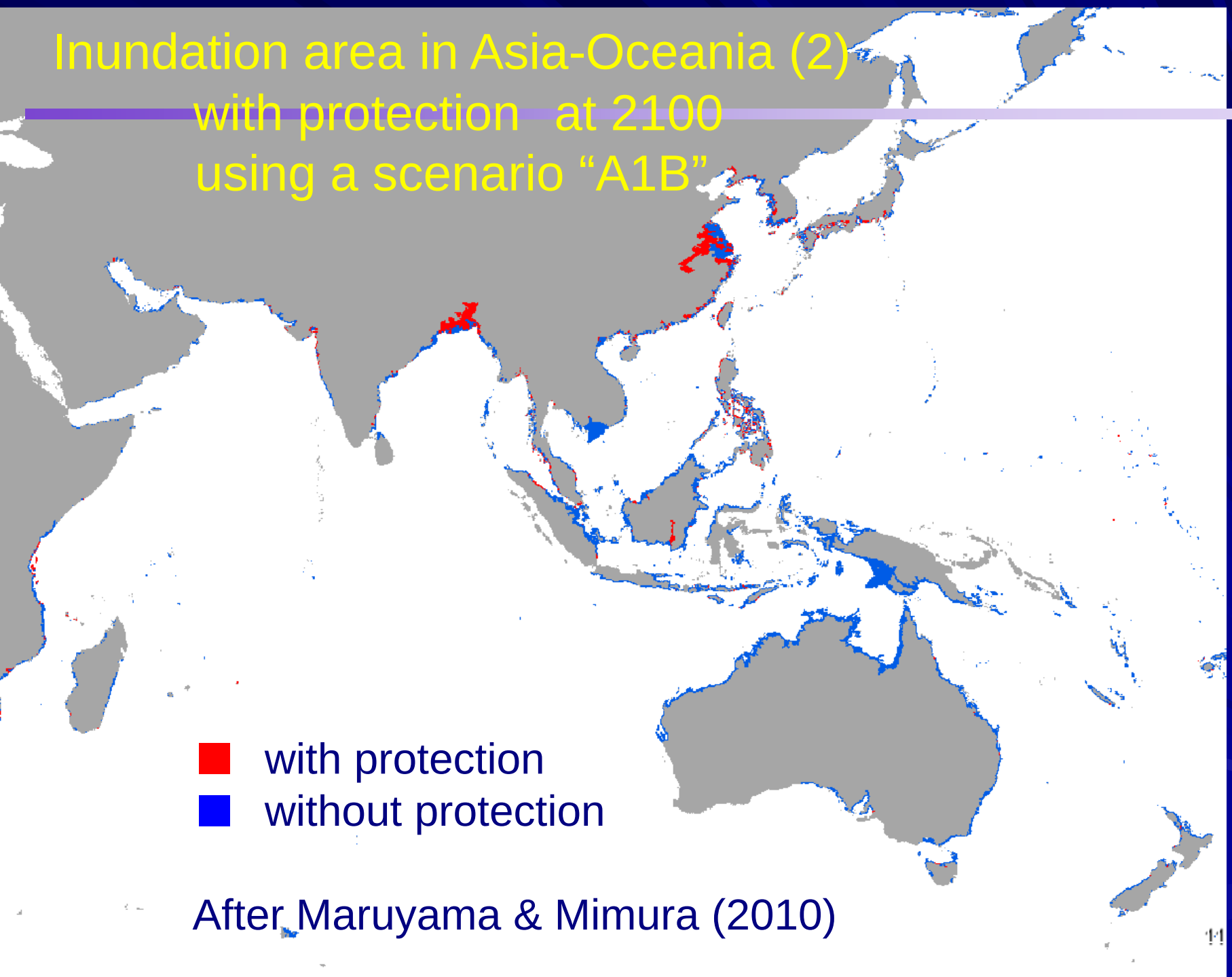
- Propose adaptive measures suitable for situation of each objective site
- Present the methodology for estimating vulnerability and adaptability
- **Prove the necessity of adaptation against each issue**
- Reflect the scientific and/or engineering achievement to the policy
- Increase the knowledge and wisdom for citizens and policymakers

3. An example for proving the necessity/effectiveness of adaptation against each issue

Inundation area in Asia-Oceania (1) without protection at 2100 using a scenario “A1B”

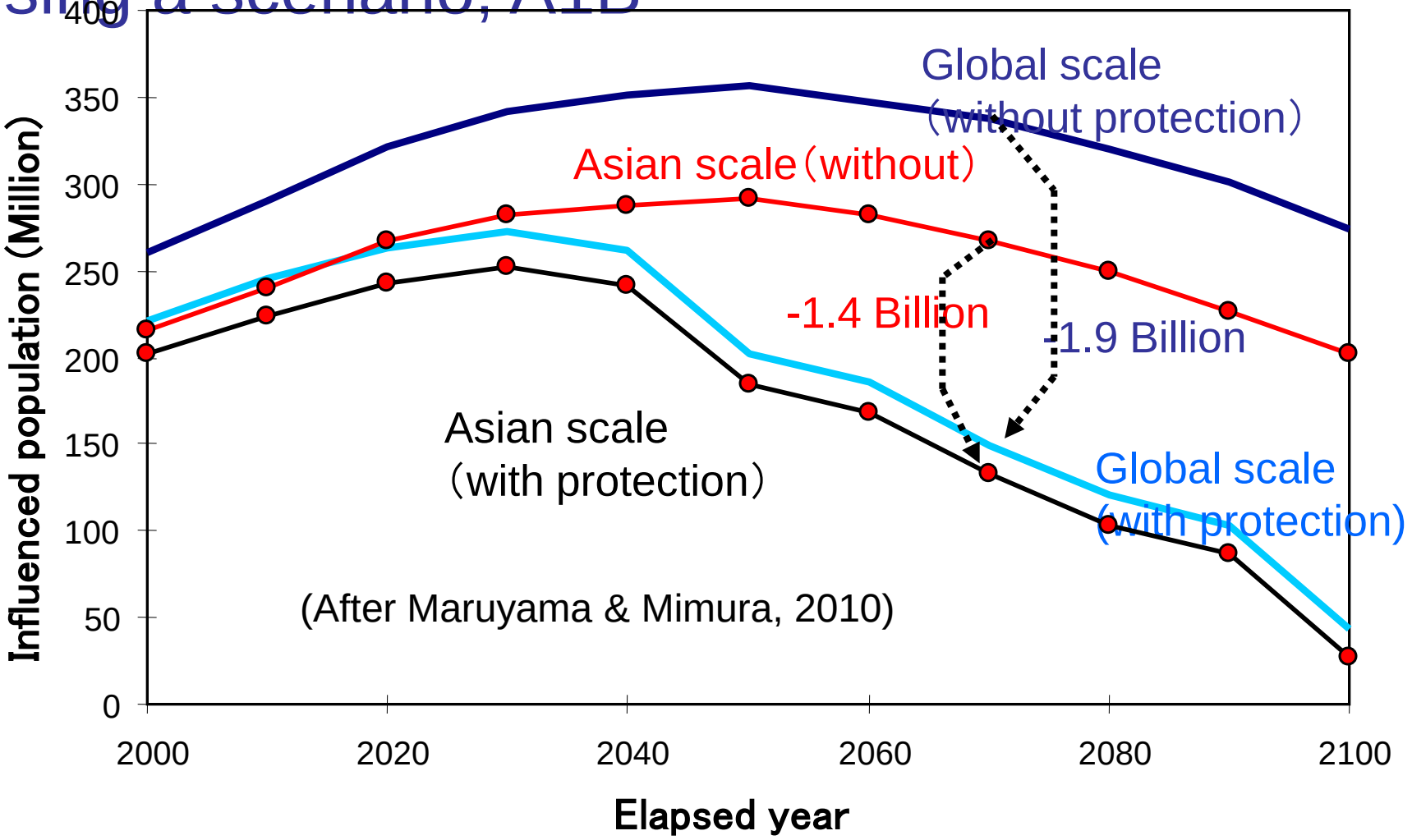


Inundation area in Asia-Oceania (2)
with protection at 2100 using a scenario “A1B”



After Maruyama & Mimura (2010)

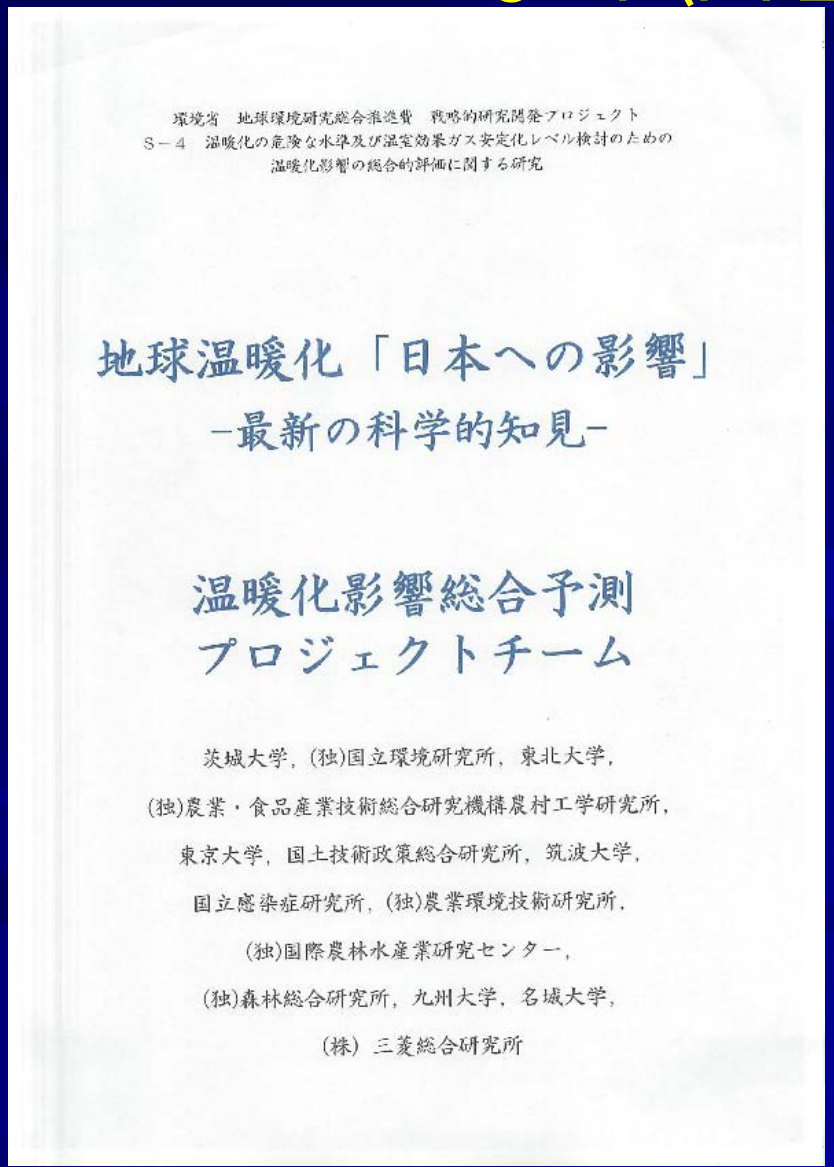
Influenced population in global and Asian scales Using a scenario, A1B



Decreasing tendency after 2030 in economical damage using A1B is almost the same as in the case using B1 scenario

4. An approach in Japan to this issue

Interim report of strategic project S-4 (FY2006-FY2009)



環境省　地球環境研究総合推進費　戦略的研究開発プロジェクト
S－4　温暖化の危険な水準及び温室効果ガス安定化レベル検討のための
温暖化影響の総合的評価に関する研究

地球温暖化「日本への影響」
－最新の科学的知見－

温暖化影響総合予測
プロジェクトチーム

茨城大学，(独)国立環境研究所，東北大学，
(独)農業・食品産業技術総合研究機構農村工学研究所，
東京大学，国土技術政策総合研究所，筑波大学，
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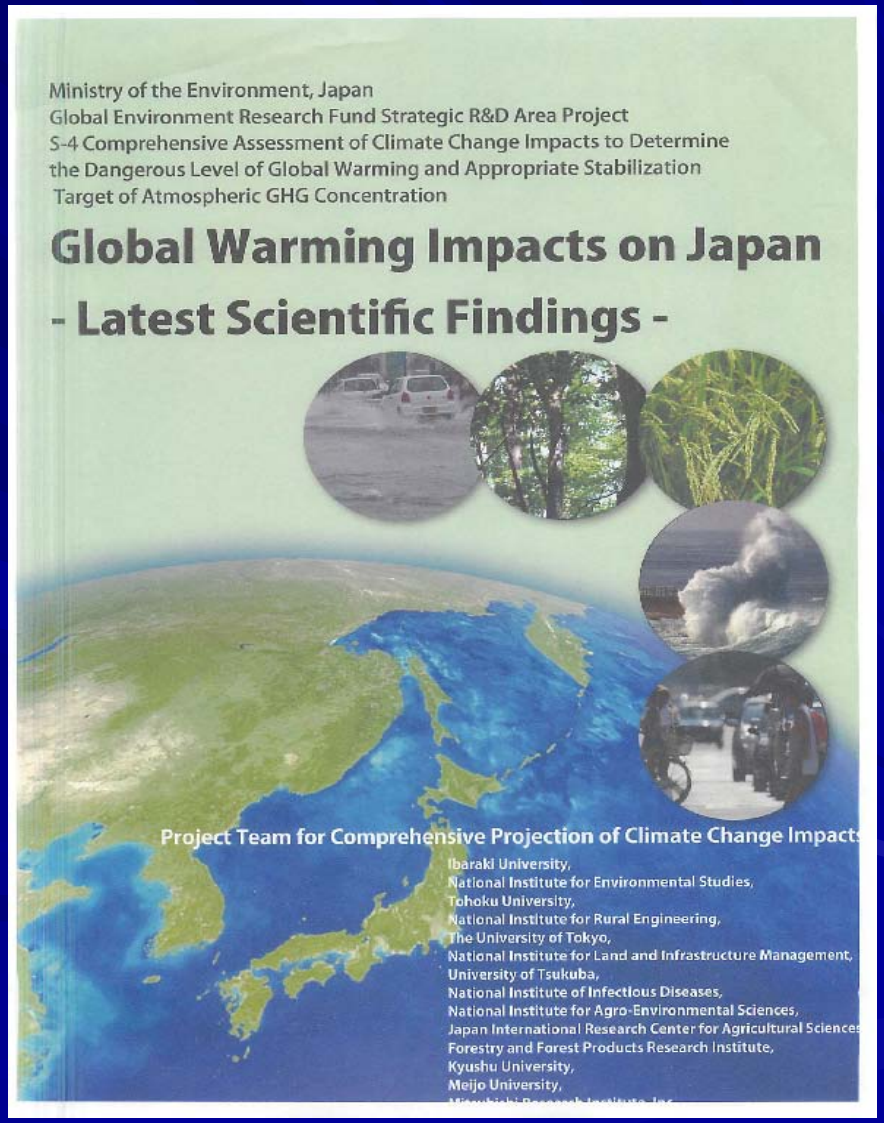
(独)森林総合研究所，九州大学，名城大学，
(株) 三菱総合研究所



Ministry of the Environment, Japan
Global Environment Research Fund Strategic R&D Area Project
S-4 Comprehensive Assessment of Climate Change Impacts to Determine the Dangerous Level of Global Warming and Appropriate Stabilization Target of Atmospheric GHG Concentration

Global Warming Impacts on Japan
- Latest Scientific Findings -

Project Team for Comprehensive Projection of Climate Change Impacts

Ibaraki University,
National Institute for Environmental Studies,
Tohoku University,
National Institute for Rural Engineering,
The University of Tokyo,
National Institute for Land and Infrastructure Management,
University of Tsukuba,
National Institute of Infectious Diseases,
National Institute for Agro-Environmental Sciences,
Japan International Research Center for Agricultural Sciences
Forestry and Forest Products Research Institute,
Kyushu University,
Meijo University,

Location of adaptation in S-4 research

Improvement of Impact Projection

Water

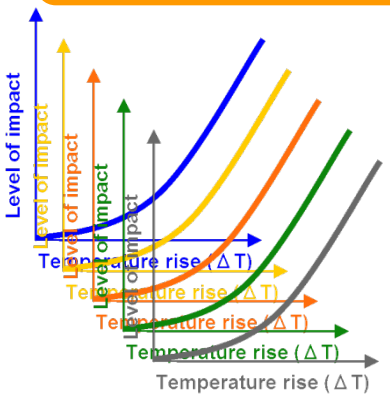
Human health

Agri.

Forests

Coasts

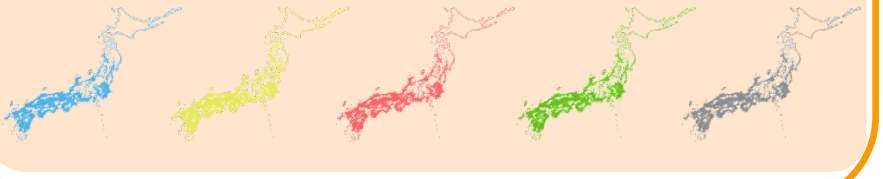
Development of Impact Functions



Risk Map

Without adaptation measures

With adaptation measures



Adaptation measures

Integrated Assessment

Common scenario

Climate scenario

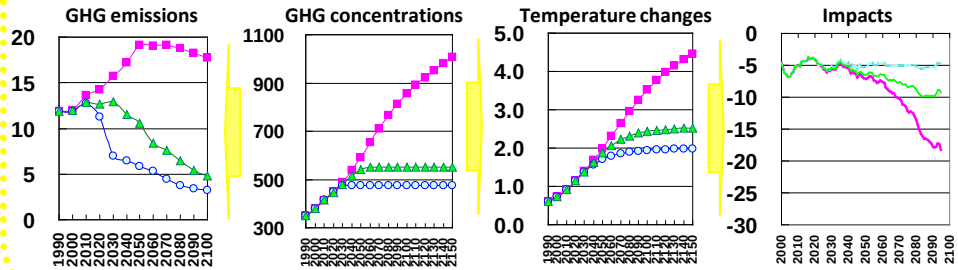
Population scenario

Economic assessment

Proposal of economic assessment method

Development of monetary assessment basic unit

Integrated assessment model



Strategic Project S-8 (FY2010-FY2014) in Japan

- Highly advanced methodology for estimating global change impacts
- Downscaling to the local area
- Indices for vulnerability and adaptability
- **International networks for adaptation**

Outline of S-8

Socio-economic Scenario

Climate Scenerio

【Theme 1】Reliable Evaluation for Global Warming Impacts

Downscaling of climate scenarios

Economic analysis

Synthetic evaluation model

Simplified evaluation methodology

Wide-ranged evaluation methodology

Feedback to community

Feedback to developing countries

【Theme 2】Community-based Impacts Evaluation and Adaptation Policies

Community-based consortium

【Theme 3】Indices for Evaluating Vulnerability and Adaptability in the Asia-Pacific Region

International network in the Asia Pacific Region

Providing scientific finding to decision making for domestic & foreign policies

Role of science for adaptive development

- Propose adaptive measures suitable for situation of each objective site
- Present the methodology for estimating vulnerability and adaptability
- Prove the necessity of adaptation against each issue
- Reflect the scientific and/or engineering achievement to the policy
- Increase the knowledge and wisdom for citizens and policymakers