

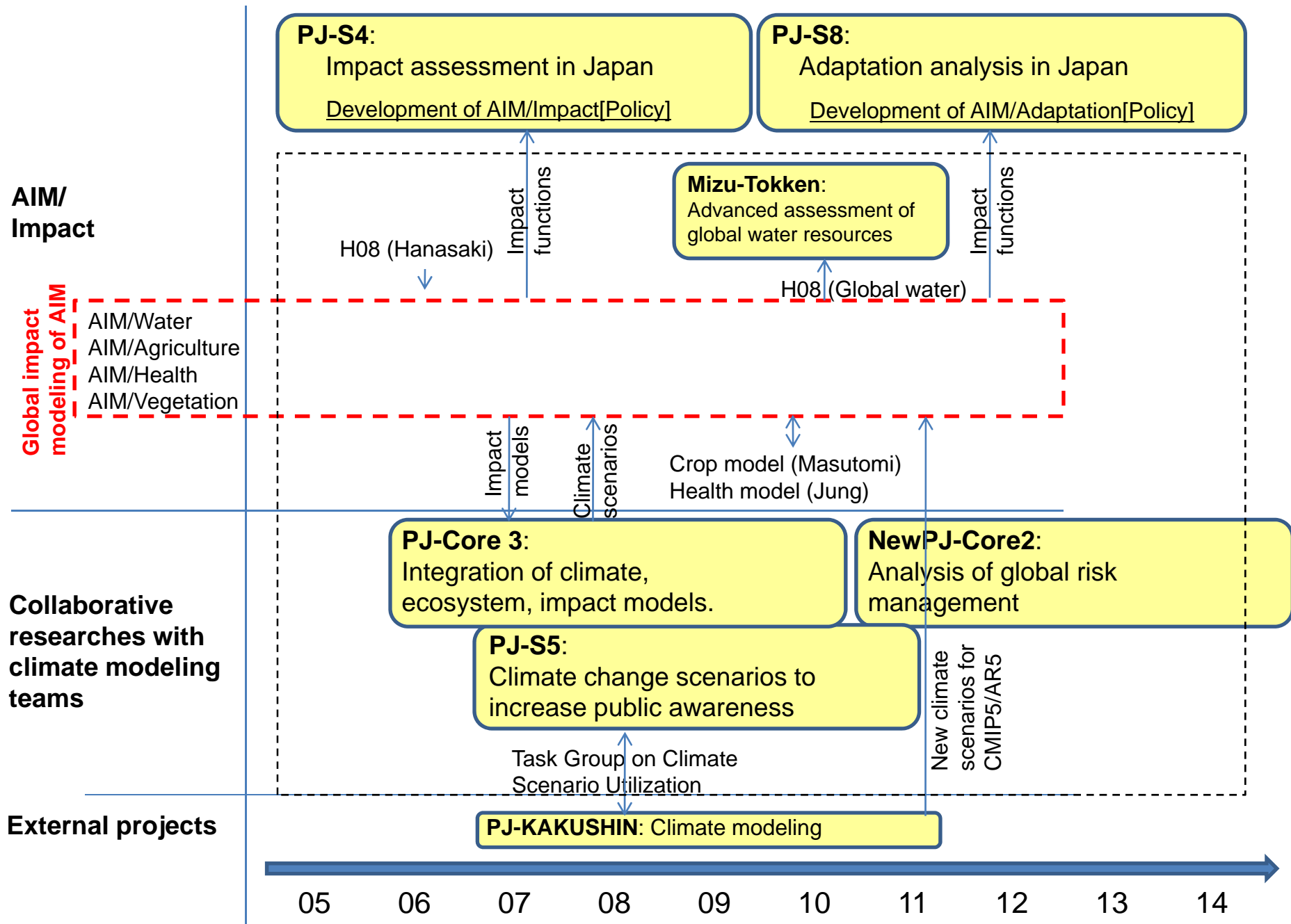
Global Impact Modeling

Kiyoshi Takahashi , Naota Hanasaki, Yasuaki Hijioka,
Takahiro Yamamoto, Yonghee Shin (NIES, Japan)

Yuji Masutomi (CESS, Japan)

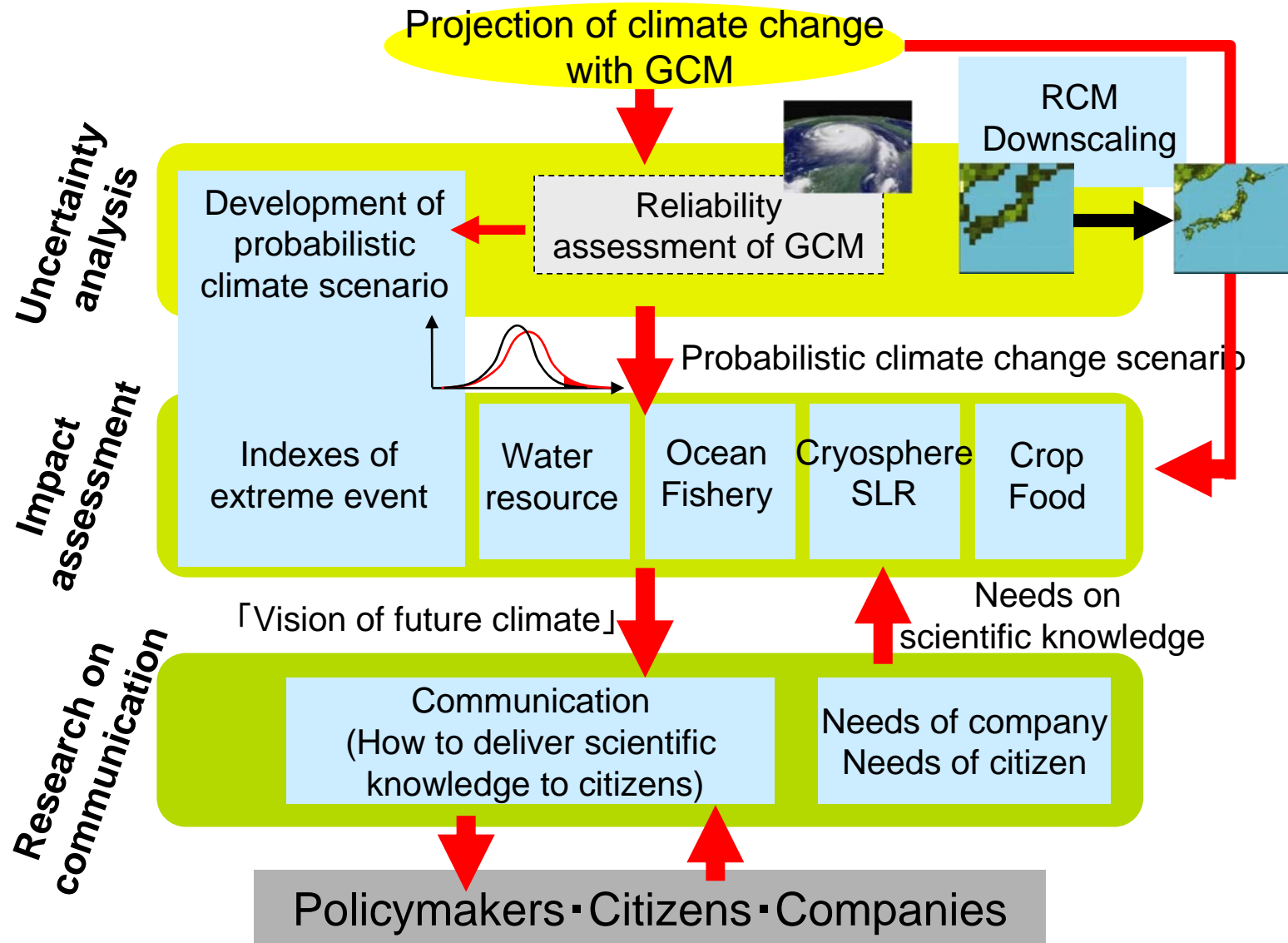
Huicheul Jung (KEI, Korea)

Global impact modeling of AIM and surrounding research projects

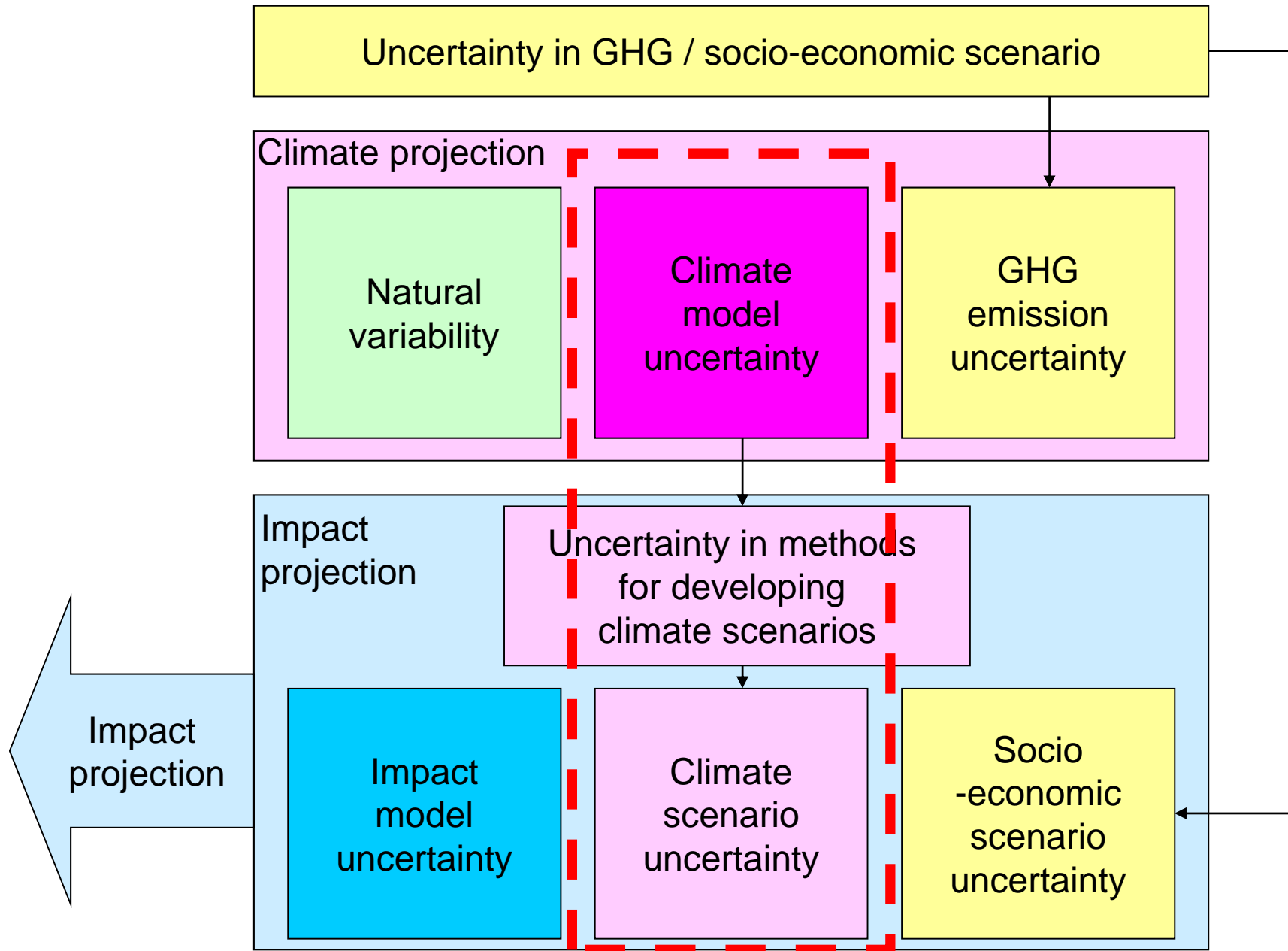


Scheme of the S-5 project (2007-2011)

Integrated research on climate change scenarios to increase public awareness and contribute to the policy process (S-5 project)



Various uncertainties contained in impact projection



Impact sectors covered in the S-5 project

- Hydrology and water resource [Univ. of Tokyo]
 - Risk of water shortage at global scale
- Ocean environment and fishery [Hokkaido Univ.]
 - Ocean ecological environment at global scale and fishery resources
 - Soundness of coral reef
- Polar ice sheet and sea level [Univ. of Tokyo]
 - Ice sheet in Greenland and Antarctica and its contribution to SLR.
- Agriculture and food [Natl. Inst. for Agri. Environ. Inst.]
 - Yield change of serials in east Asian region.
 - Environmental burden caused by agricultural activities (N-load)
 - Yield change of serials at global scale [NIES]
- Terrestrial ecosystem [NIES]
 - Terrestrial vegetation and carbon cycle

Example of impact assessment considering uncertainty of climate projection

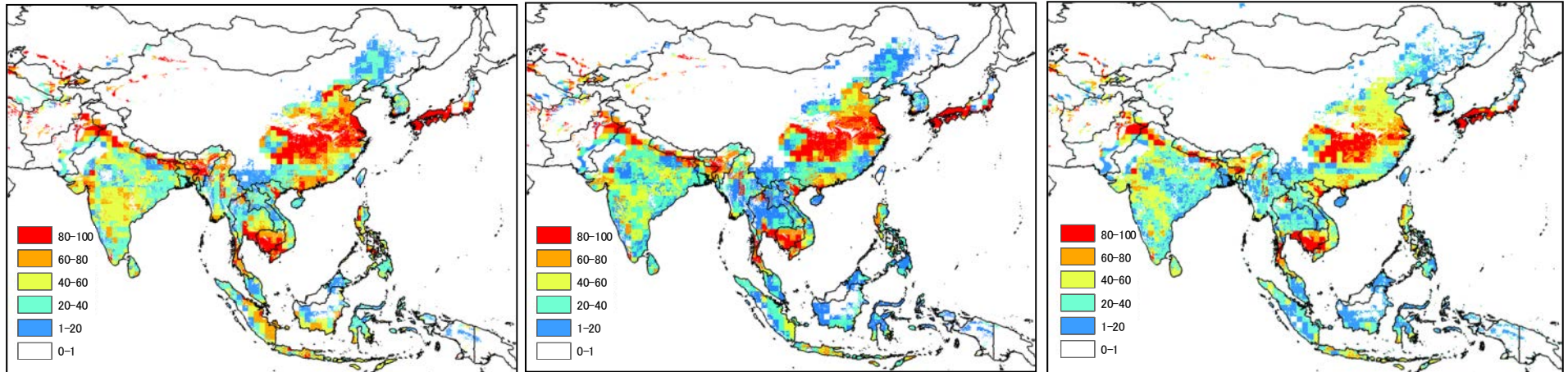
Impact on rice productivity

Crop productivity assessments using multi-GCM projections evaluated in IPCC-AR4

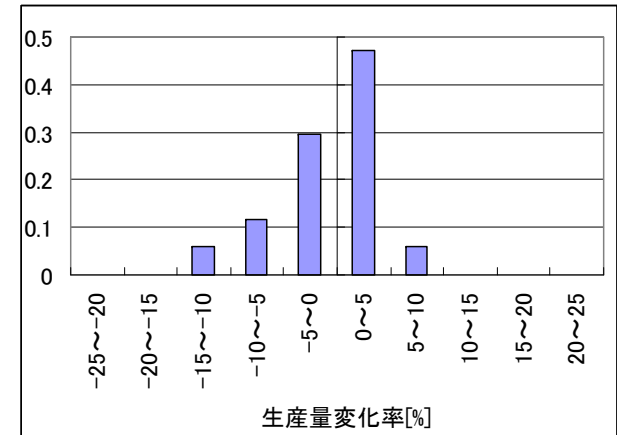
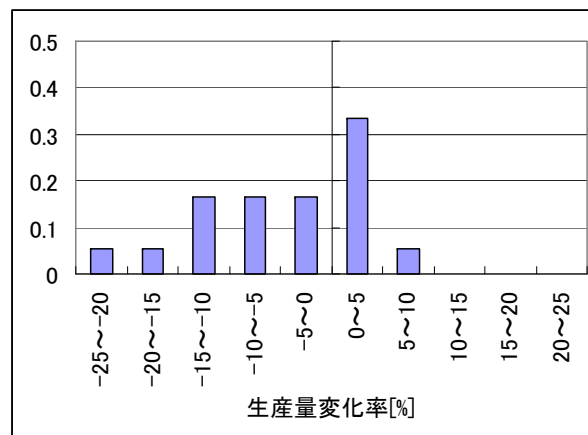
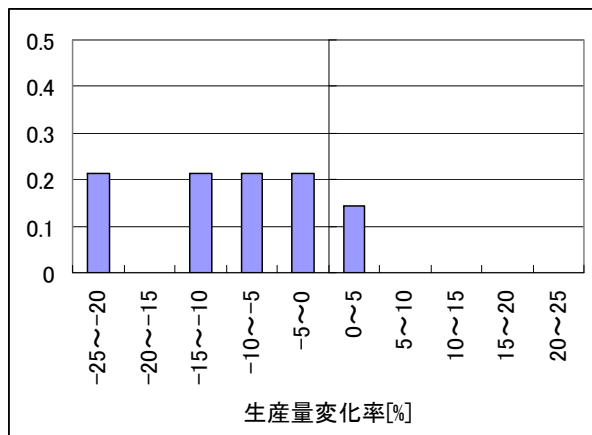
SRES-A2

SRES-A1B

SRES-B1



Probability of crop productivity decrease [%] (with CO2 fertilization; 2080s-1990s)

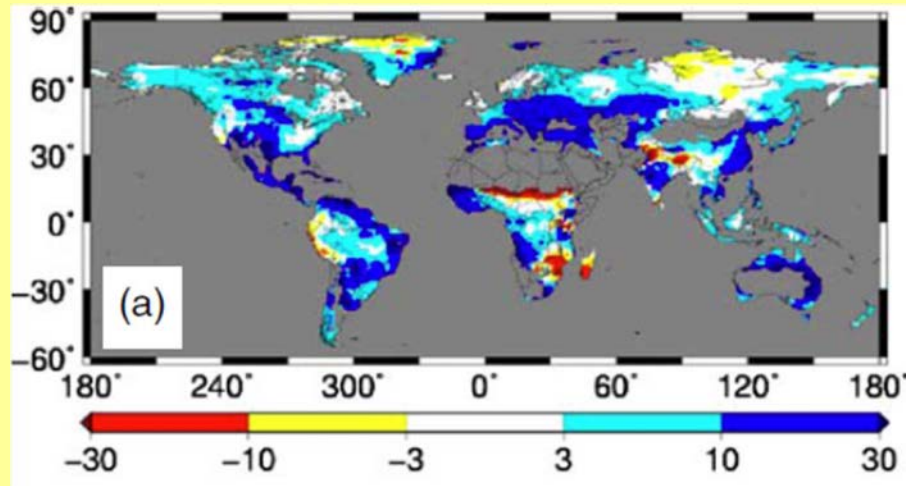


PDFs of estimated productivity change (Asia; with CO2 fertilization; 2080s-1990s)

Masutomi et al. (2009) Impact assessment of climate change on rice production in Asia in comprehensive consideration of process/parameter uncertainty in general circulation models. *Agriculture, Ecosystems and Environment*, 131, 281-291

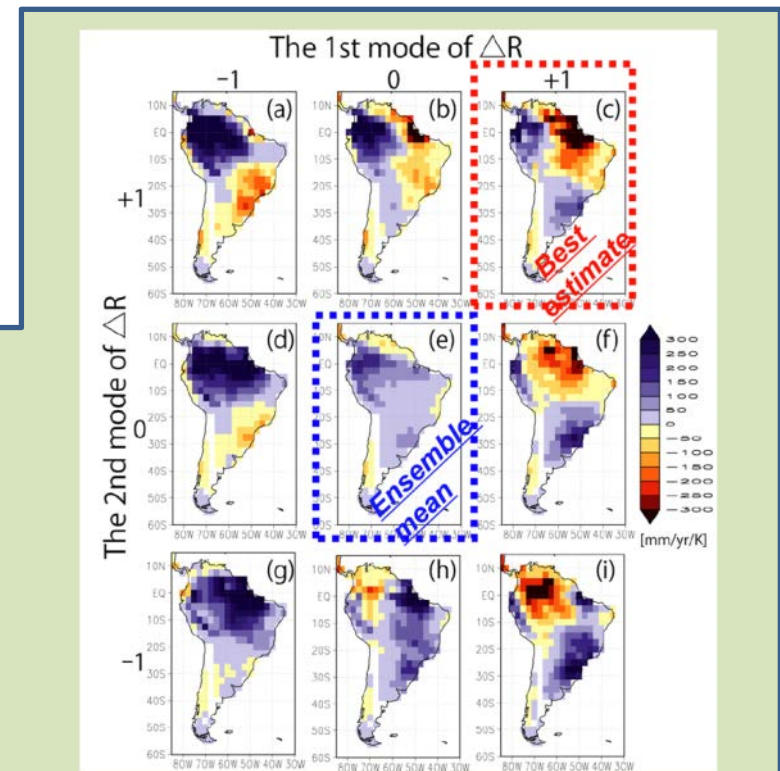
Collaborative researches with climate modelers

Applicability of pattern scaling

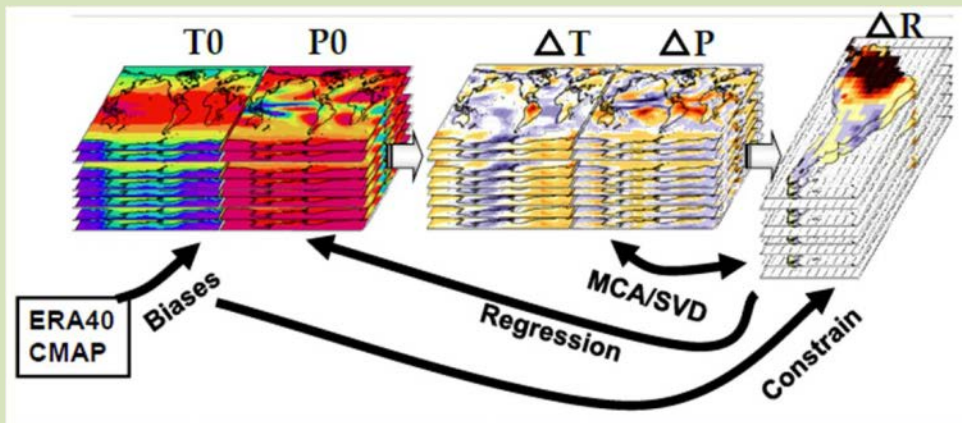


Biases of projected changes in mean annual runoff. (The differences of percent change of mean annual runoff from 1980–1999 to 2080–2099 between R-PS and R-A2 [%].)

Shiogama et al. (2010) Emission scenario dependencies in climate change assessments of the hydrological cycle. *Climatic Change*, 99, 321-329.



Shiogama et al. (2010) Uncertainty propagation from climate change projections to impacts assessments: Water resource assessments in South America. IPCC expert meeting on assessing and combining multi model climate projections, p36-38.



Constraining climate projection uncertainty

Expected improvement of IAV studies

Climate risk assessment considering long-term feedback effects such as change in carbon cycle.

Projection of near-term impacts considering uncertainties on climate change due to natural variability.

More realistic consideration of extreme events in assessments of natural disasters

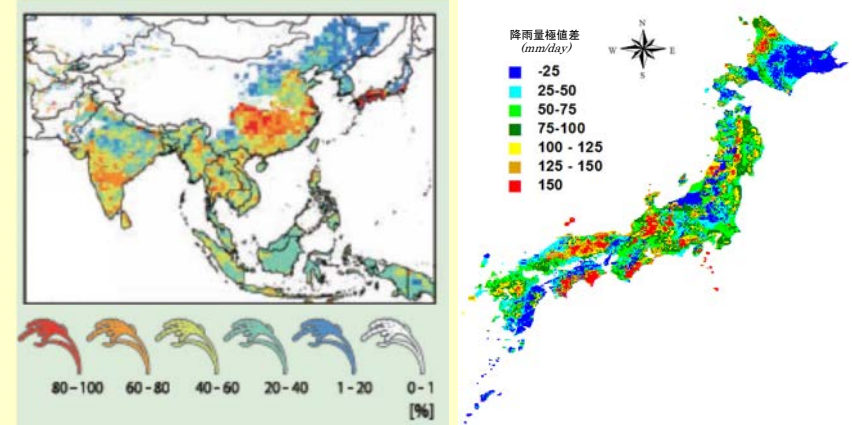
Provision of new climate projection

[Long-term] 280km Earth System Model (-2300)

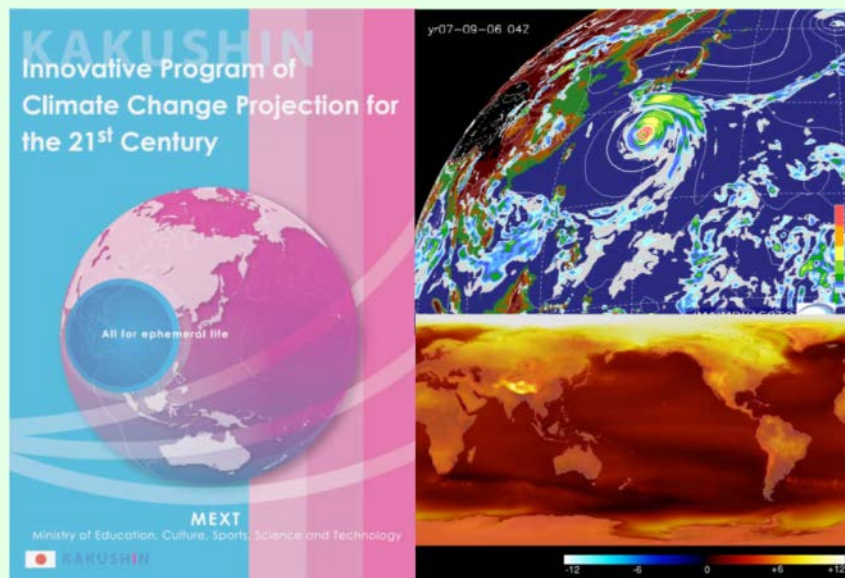
[Near-term] 50km AO-GCM (-2030)

[Extreme event] 20km time-slice experiments

Impact & Vulnerability Assessments



Climate Projections



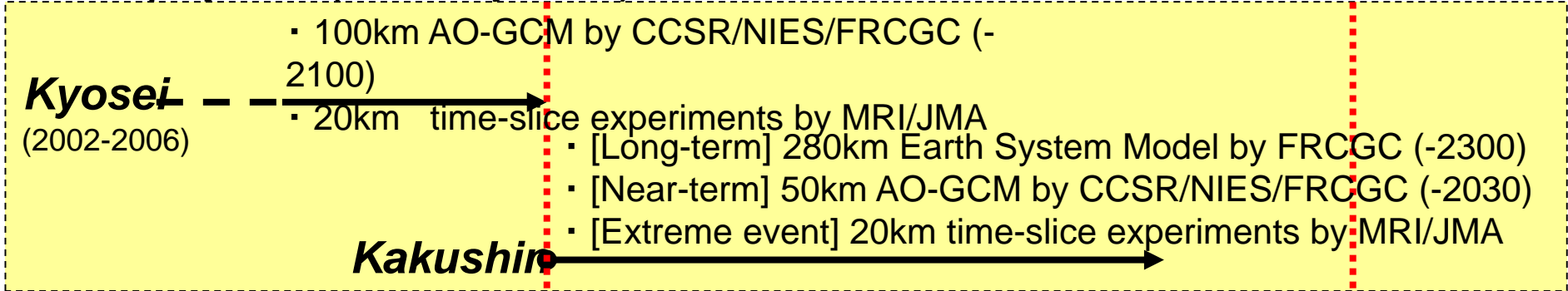
Task Group on Climate Scenario Utilization

- Co-ordination of data exchange
- Share of know-how on climate scenario utilization

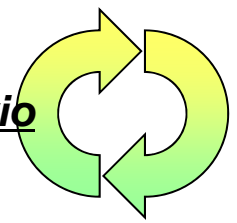
<http://hydro.iis.u-tokyo.ac.jp/wiki/tgcs/>
[Password] TGCSyomu

Collaborations between research projects

Climate projection (funded by MEXT)

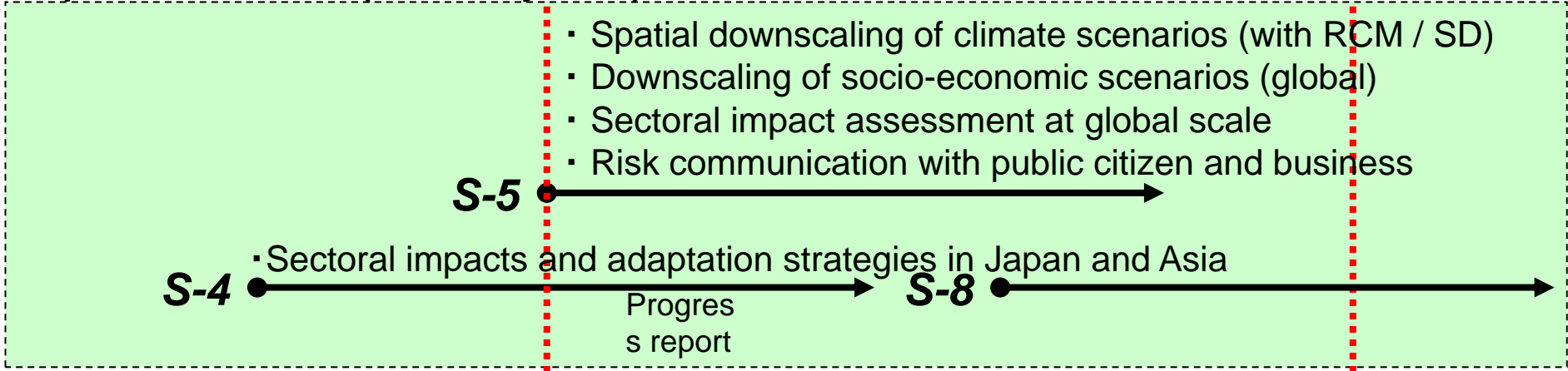


Task Group on Climate Scenario Utilization

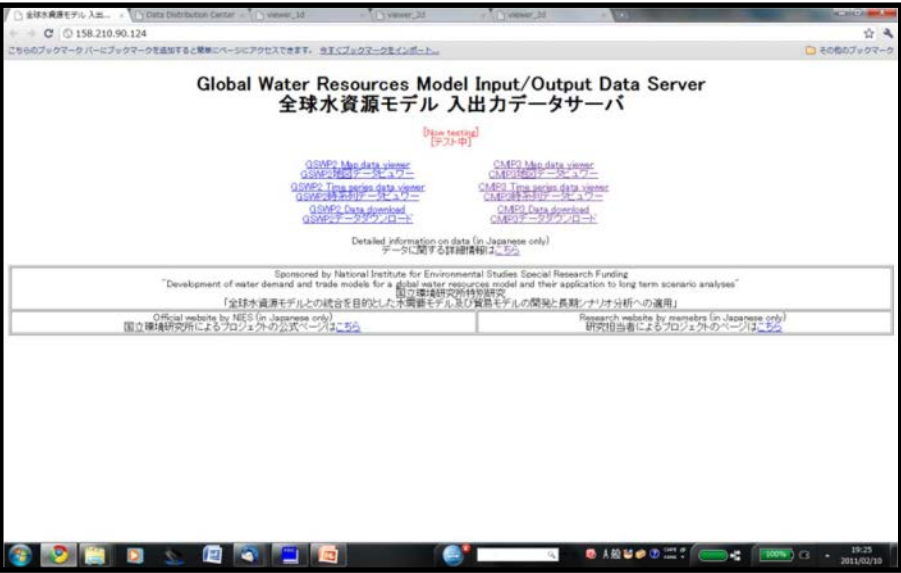


- Co-ordination of data exchange
- Share of know-how on climate scenario utilization

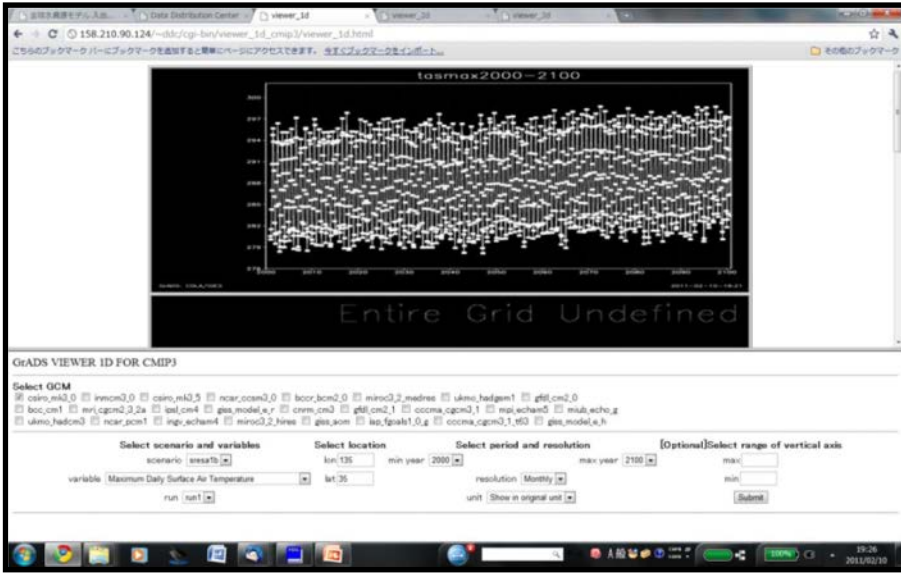
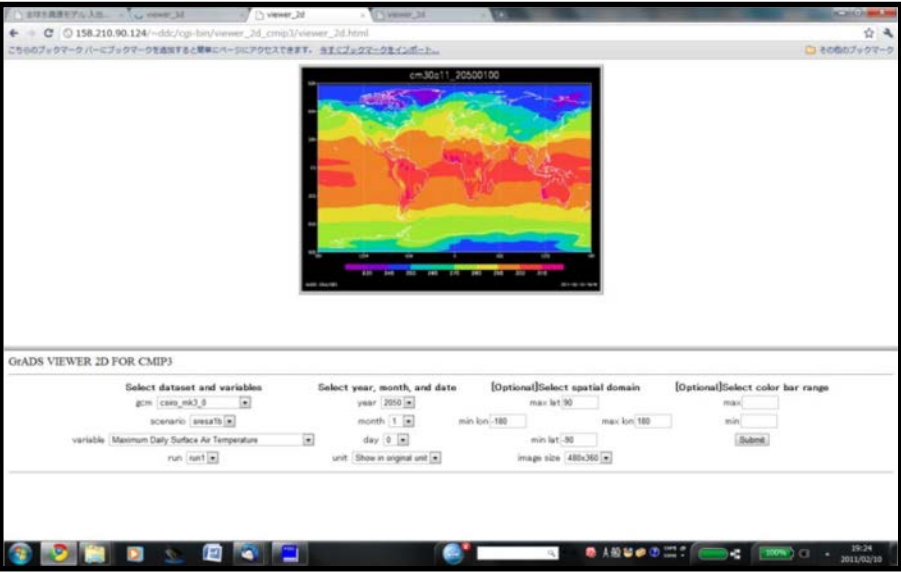
Impact assessment (funded by MOE)



Development of data sharing server for promoting advanced usage of climate projections



- Observed/Projected climate data archive
- Basic tools for data retrieve, visualization and analysis



Risk communication in S-5 project

- Annual forum for dialogues between media persons and researchers on climate change risk.
- The 3rd forum is due at 23rd February 2011. This year's theme is how to interpret and communicate climate projections.
 - There will be a press release of the new results of KAKUSHIN project's climate simulations for CMIP5/AR5 contribution on the same day just after the forum.



The 2nd forum was held in March 2010.
The theme was the 2 degree target.

環境省環境研究総合推進費戦略的研究プロジェクトS-5
「地球温暖化に係る政策支援と普及啓発のための気候変動シナリオに関する総合的研究」

参加費
無料

第3回温暖化リスクメディアフォーラム

地球温暖化予測の見方・伝え方 —最新の予測を的確に伝えるために—

[ホーム](#) [プログラム](#) [参加申し込み](#) [アクセス](#)

開催趣旨

気候モデルによる地球温暖化予測は、温暖化対策や影響予測の基盤となる重要な情報である一方、解釈が難しい情報でもあります。今回の温暖化リスクメディアフォーラムでは、地球温暖化の予測結果のよりよい表現について、温暖化予測の専門家とメディア関係者で議論したいと思います。

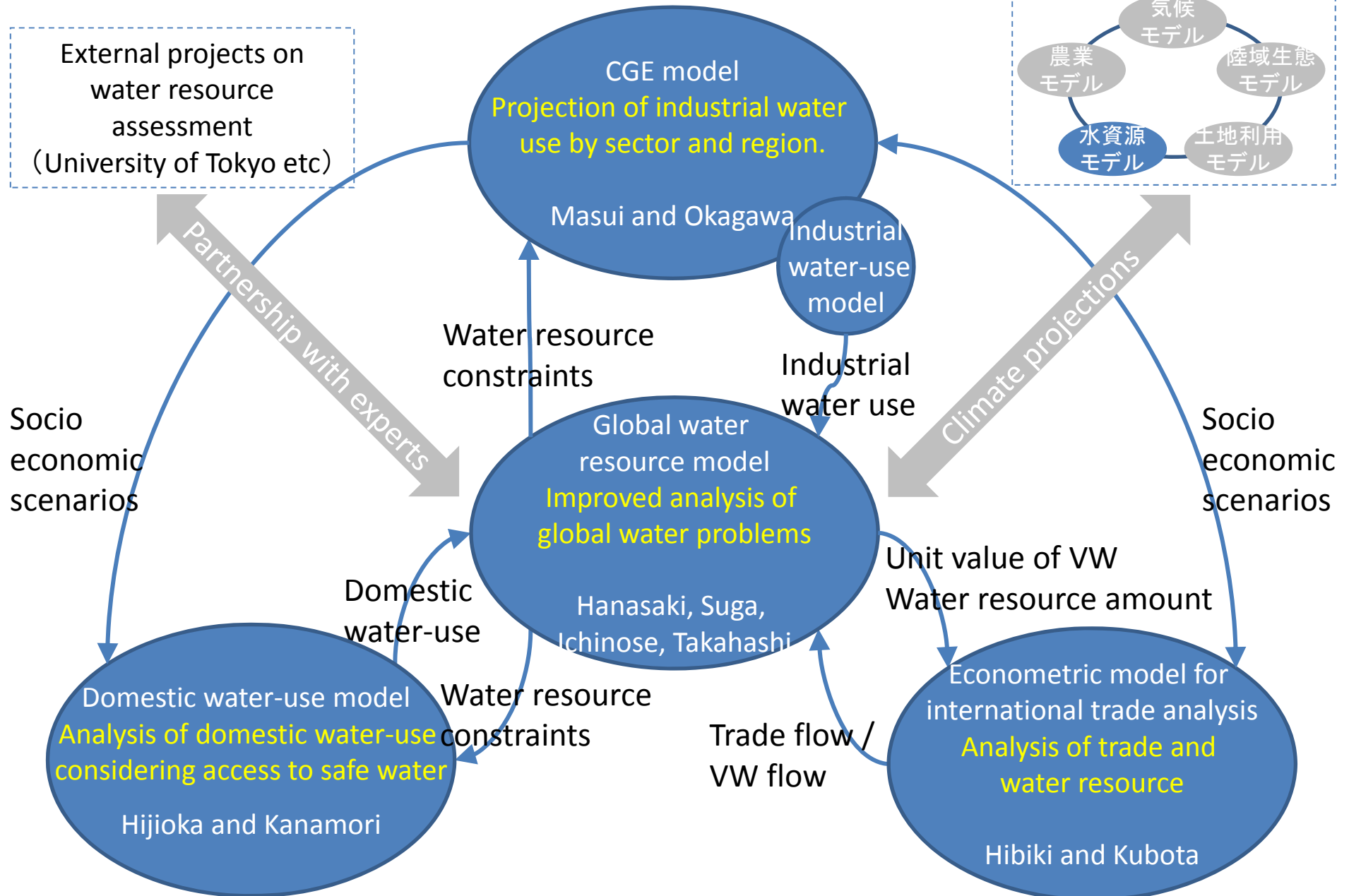
また、今後発表される予定のIPCC第5次評価報告書の温暖化予測伝達の参考となるよう、第5次評価報告書に向けた予測実験の概要の説明や、第4次評価報告書の時点での記者会見を基に書かれた記事を振り返る時間も設けました。

地球温暖化報道に関わる多数の方々のご参加をお待ちしております。

開催日	2011年2月23日(水)午前11時30分—午後1時30分(終了後、7階701号室で懇親会を行います)
会場	都市センターホテル 6階606号室(東京メトロ 永田町駅徒歩3分)
対象	地球温暖化を扱うメディア関係者および研究者
主催	東京大学サステナビリティ学連携研究機構、(独)国立環境研究所

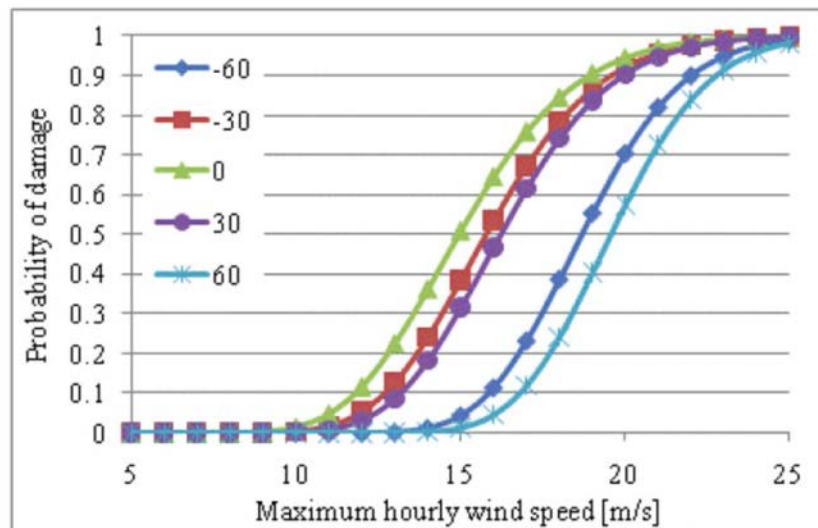
Several reports on this annual forum and its derivatives have been submitted to the special issue of “Japanese Society for Science and Technology Studies” and are expected to be published this year.

Research project on advanced assessment of global water resource (FY2009-2011; Mizu-Tokken)

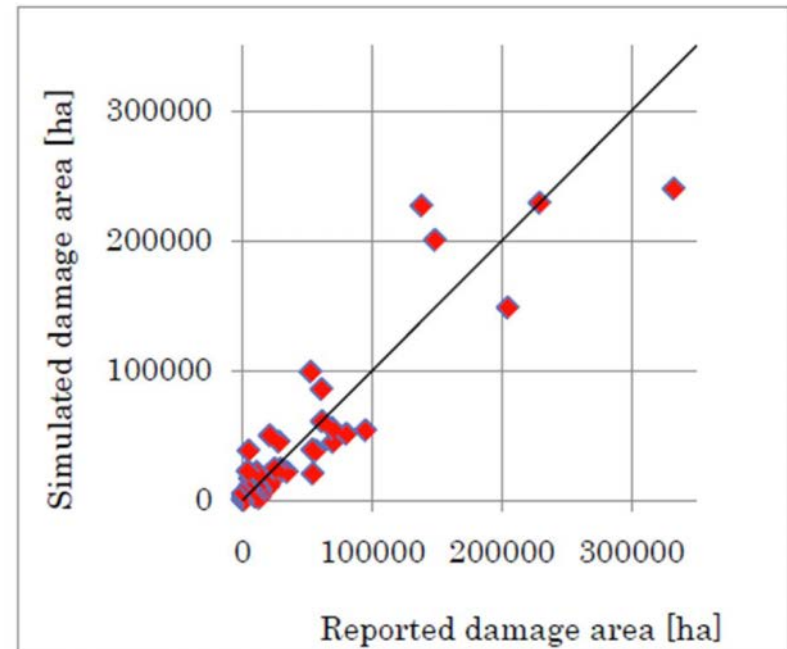


Collaborative study on crop model improvement
-Consideration of extreme events effect (typhoon) -

- Development of a method for estimating paddy rice area damaged due to typhoon (tropical cyclone).



Fragility curves to estimate typhoon damage area for different growth stages.



Comparison between reported and simulated typhoon damage areas.

FY2011 and further

- New 5-year research project on global risk assessment and management.
- Contribution to the development of integrated scenarios of climate change.
 - Advanced application of SSPs and CMIP5 experiments based on RCPs.
 - Consideration of feedbacks of climate change impacts to development through the link with core economic model.
- Better estimates of impact and adaptation costs at global scale and application of those estimates for discussing adaptation finance.
- Participation to impact model comparison projects.

Rough sketch of new project on analysis of global risk management

