The First Global Summit of Research Institutes for Disaster Risk Reduction

THE NEW PARADIGM AND RECOMMENDATIONS ON RESEARCH FOR DISASTER RISK REDUCTION

Group of Atmospheric & Weather Related Disaster

Prof. Dr. Tomoharu Hori (DPRI, Kyoto University)

Atmospheric and Weather Related Disaster Group

Discussion and future agenda

MINUTES **24.11.2011** **15H30-17H30** **ROOM5**

MEETING CALLED BY	Group 3: Atmospheric and Weather Related Disaster/ Prof. Hori
TYPE OF MEETING	Group Discussions and recommendation
NOTE TAKER	Dr. Sameh Kantoush
ATTENDEES	Prof. Dr. Tomoharu Hori (DPRI, Kyoto University) Prof. Dr.Kenji Kawaike (DPRI, Kyoto University) Prof. Dr. Sumi Tetsuya (DPRI, Kyoto University) Prof. Dr. Hirohiko Ishikawa (DPRI, Kyoto University) Prof. Dr. Youske Yamashiki(DPRI, Kyoto University) Prof. Dr. Eiichi Nakakita (DPRI, Kyoto University) Dr. Sameh Kantoush(The German University in Cairo, Egypt) Dr. Hiroshi Teraguchi (DPRI, Kyoto University) Eng. Amir Reza Mansoori (DPRI, Kyoto University) Prof. Yaoming Ma(The Institute of Tibetan Plateau Research, China) Prof. Dr. M. Ushiyama (Shizuoka University) Dr. Mohamed Saber (Assuit University, Egypt) Prof. Dr.Kenji Tanaka (DPRI, Kyoto University) Prof. Dr. Satoru Oishi (Kobe University)

Discussion and future agenda

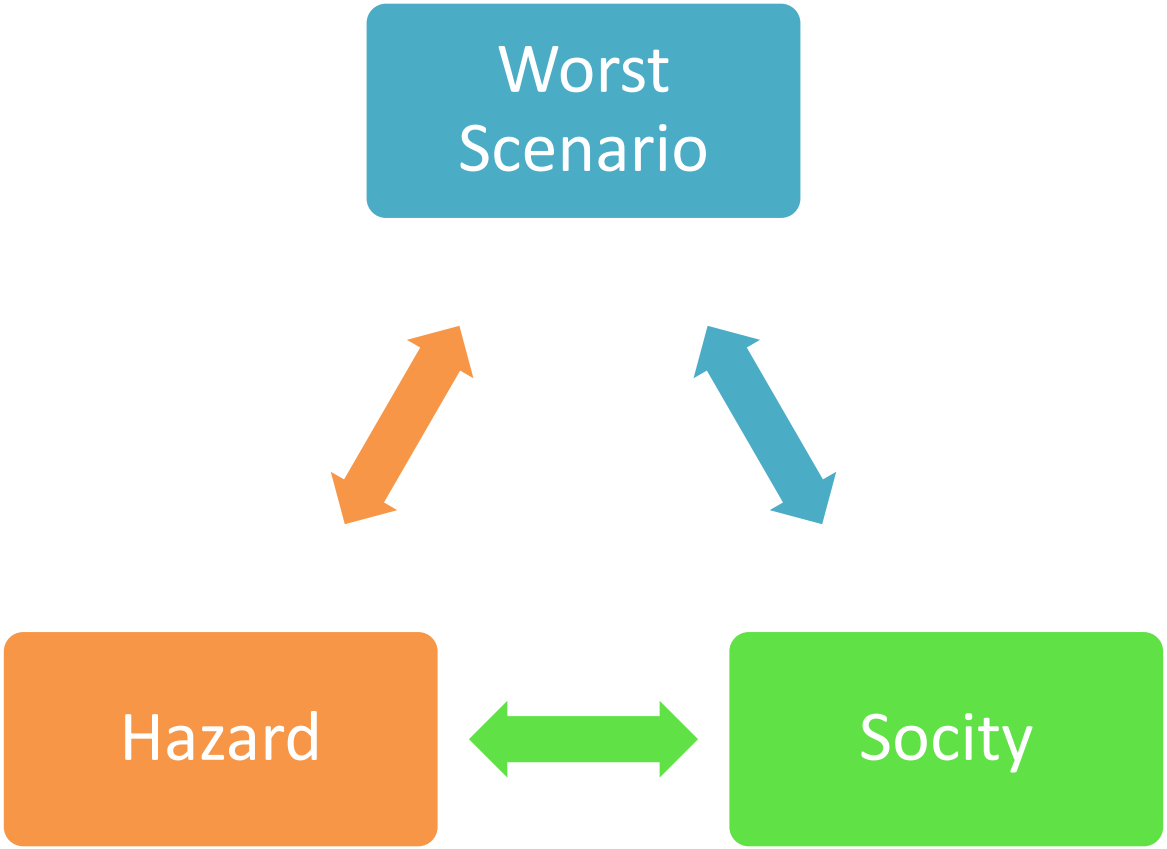
- Database for Flood related disaster
  - Scarcity of Observational data of Flash floods and hydrological data;
  - Documents for historical sever records (Magnitude, number of affected people. Economics losses), (ADORC and EM-DAT website);
  - Most of these data are not in numeric records, (Collecting of regional disseminated data from the sever and non sever records);
  - Using the automatic translation system (IT);
  - EX. Meta data for the disaster database in Brazil.

Discussion and future agenda

- The impact of climate Change for disaster risk management
  - Lessons learned from recent disasters around the world
  - Adaptation of climate change
  - Reliance of future projection of sever (worst) hazard design level;
  - Simulation of the worst case scenarios is needed to find out the critical point value, this is a new paradigm to find out new countermeasure even we don't know the probability;
  - Economic impact assessment for such countermeasure;

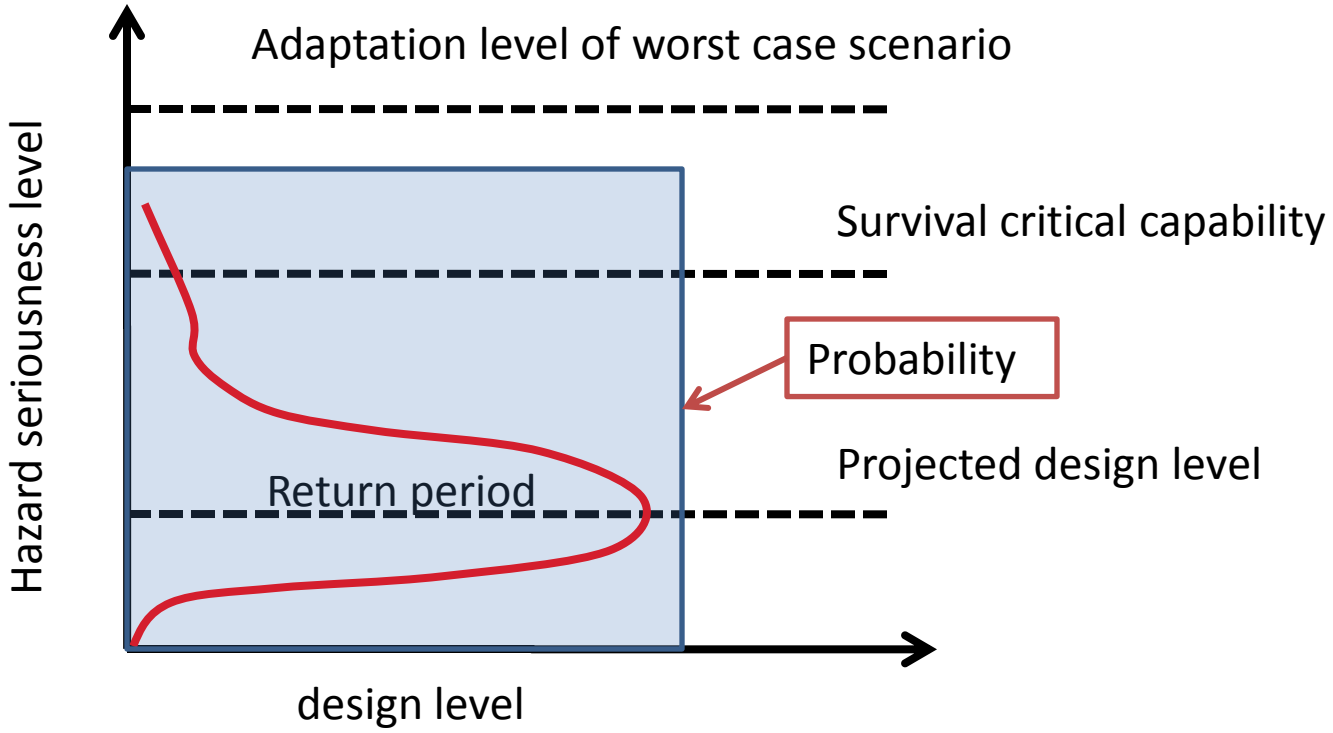
Discussion and future agenda

- The impact of climate Change for disaster risk management
  - ➢ We should discuss beyond the probability aspect (Changing the way of life)

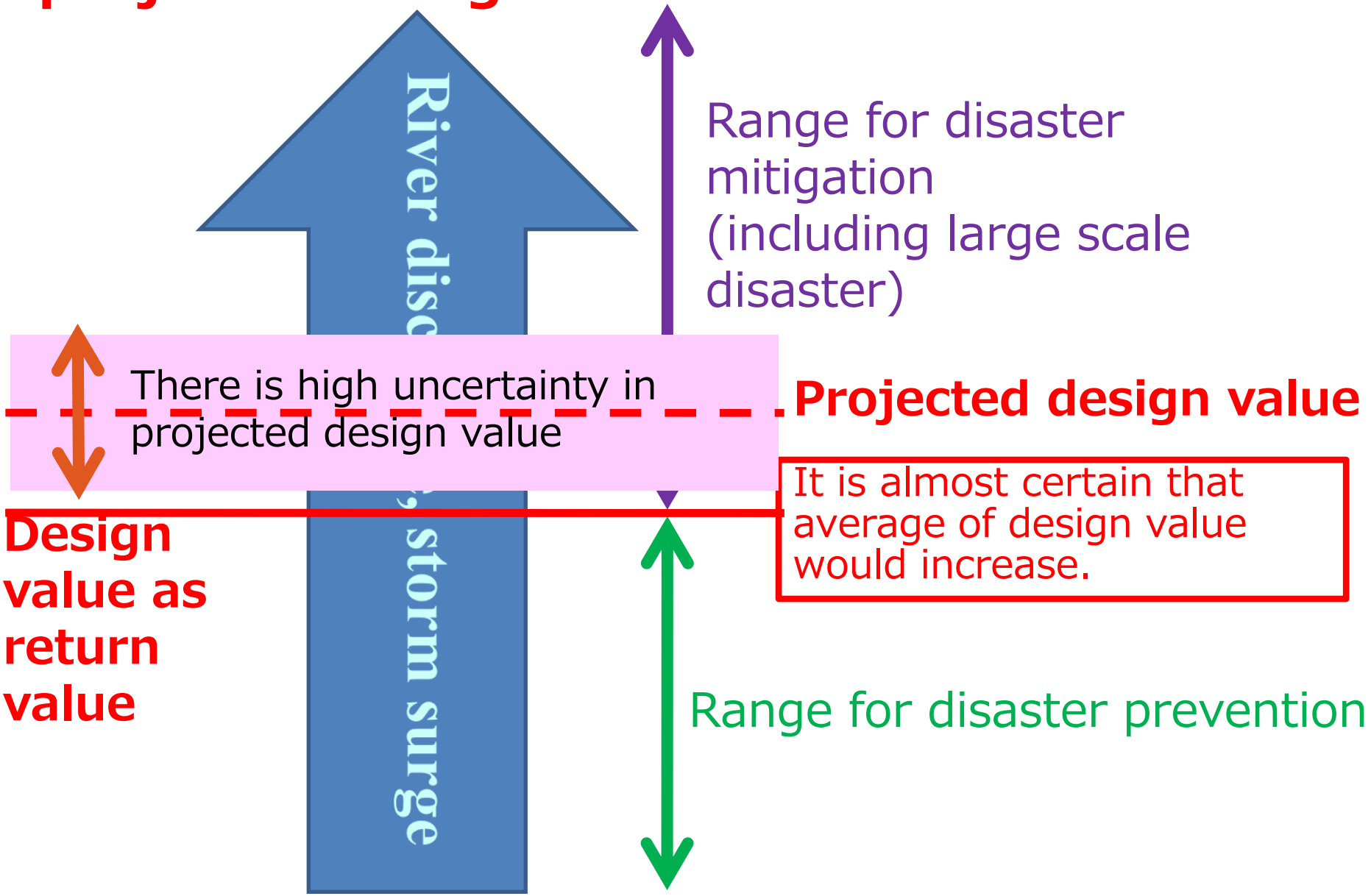


Discussion and future agenda

- The impact of climate Change for disaster risk management
  - There is a gab between level of hazard
  - Similarity with another records (impact assessment)



There is high uncertainty in projected design value

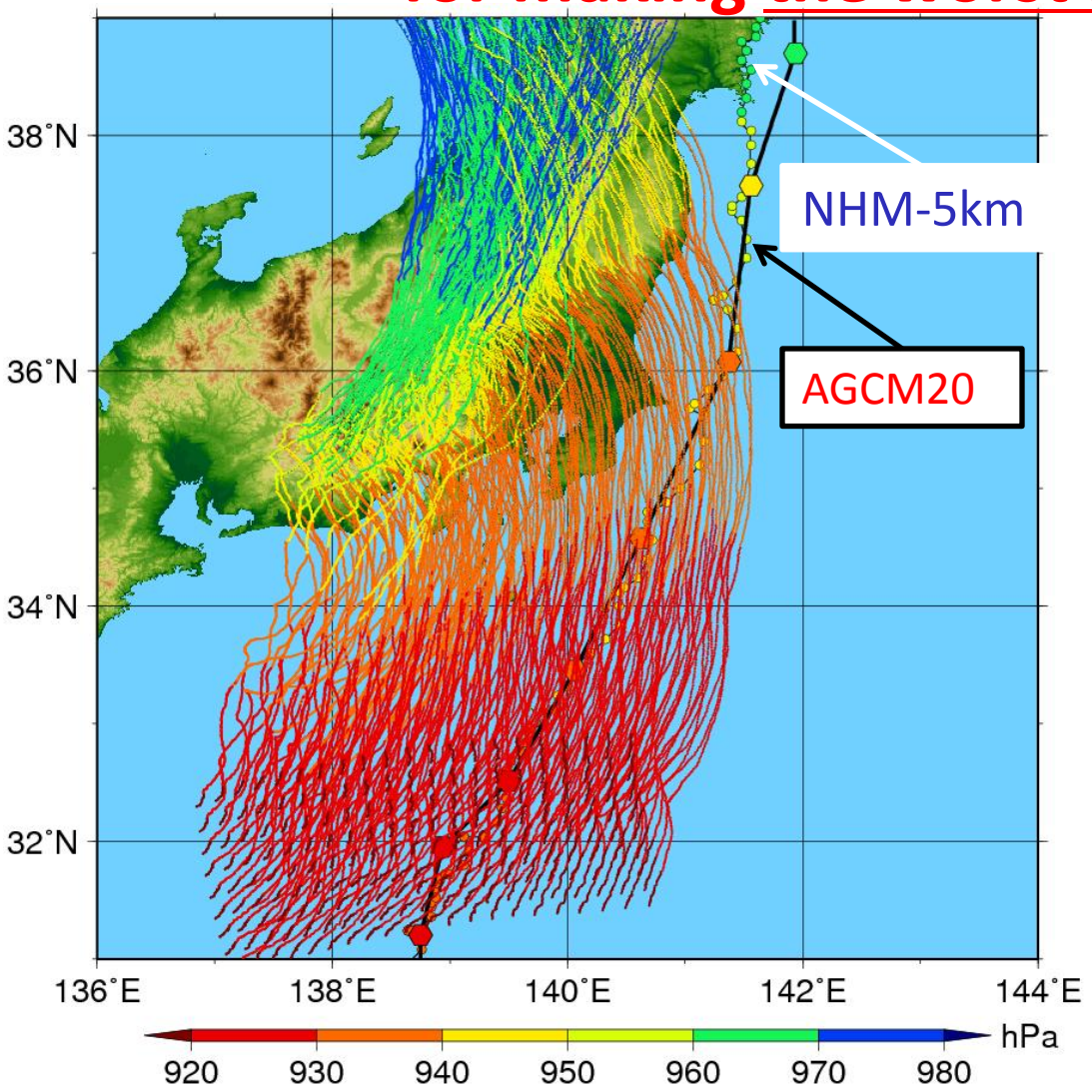


There is high uncertainty in projected design value

- We are almost sure that average of design value would increase.
- However, projected increase in design value is merely rough estimation,
- because the worst case typhoon for a specific river basin may not be realized (computed) in a single projected time series.

- Therefore, it is very important to estimate river discharge when worst case typhoon would pass through, even though we cannot estimate return period.

Virtual Shifting of typhoon's initial position
- for making the worst scenario -



Ishikawa et al (2009)

Virtual Shifting of typhoons initial position by keeping potential vorticity same

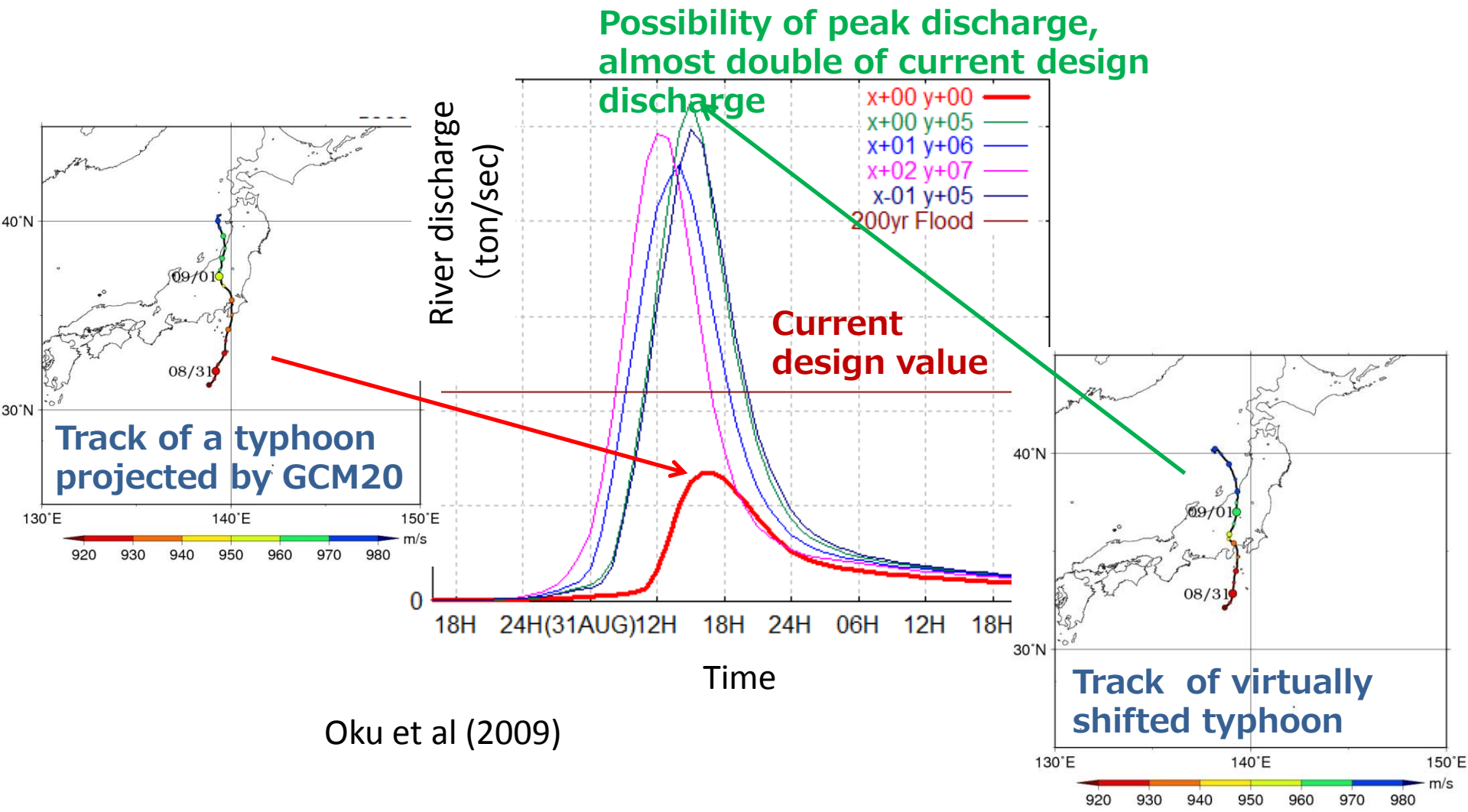
(a vorgas method)

Dynamic downscale by RCM

Worst case impact assessment on

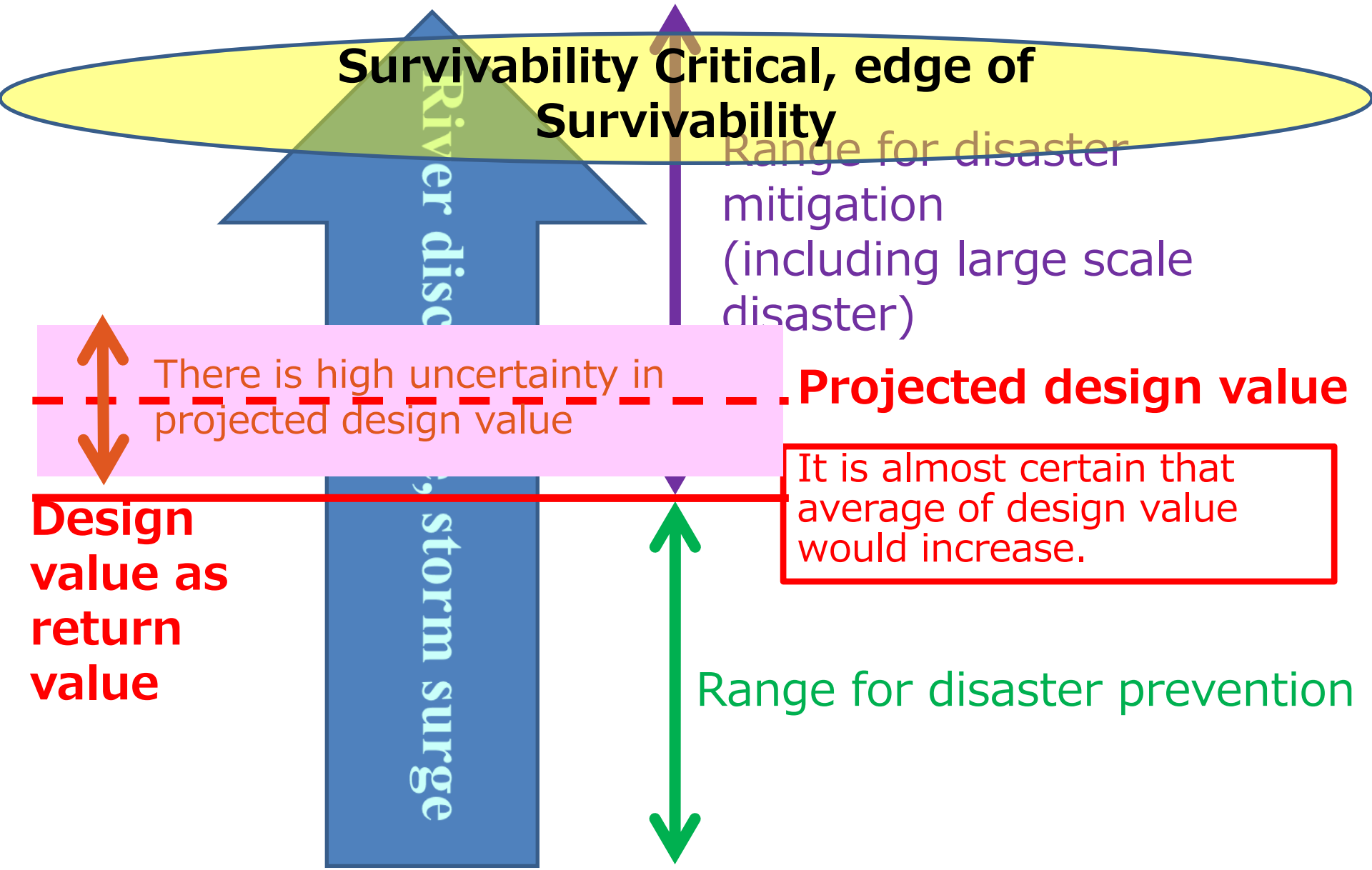
- Land : extreme wind and rainfall
- Ocean : storm surge and wave height

River Discharge by the virtual shifting of typhoon which was projected by GCM



Oku et al (2009)

Heading to adaptation



Important things heading to adaptation (1)

- **Importance of understanding the meaning of GCM/RCM output**
  - GCM and RCM do not predict daily weather in near future and of the century.
  - They project statistics of forcing on hazard.
  - GCM and RCM with the super-high spacio-temporal resolutions makes it possible to evaluate extreme hazard (ex. Max. discharge).
  - However, this does not mean that we can evaluate the changes in the high specio-temporal resolutions .

Important things heading to adaptation (2)

- **Importance of discrimination between design hazard and risk management on it**
  - We can get approximate projection on changes in return period of extreme events. However, there is a risk that the return period does not have enough accuracy. Also, there is no guarantee that quite extreme events could not be projected within limited number of ensembles as GCM output. In this sense, it may be difficult to project correct design hazard for water management and flood control so on.
  - On the other hand, the risk management deal with phenomena beyond what we are expecting as design hazards.
  - In this sense, it is very important to take into account the result from the worst case scenario as a one of the forcing for risk management on climate change.

شكراً

Vielen Dank

Thank you for your attention

ありがとうございます