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Research Topics (*relevant to the workshop*)

1. **Climate Change: Regional climate modelling & projection**
2. **Satellite rainfall application**
3. **Monsoon activities**

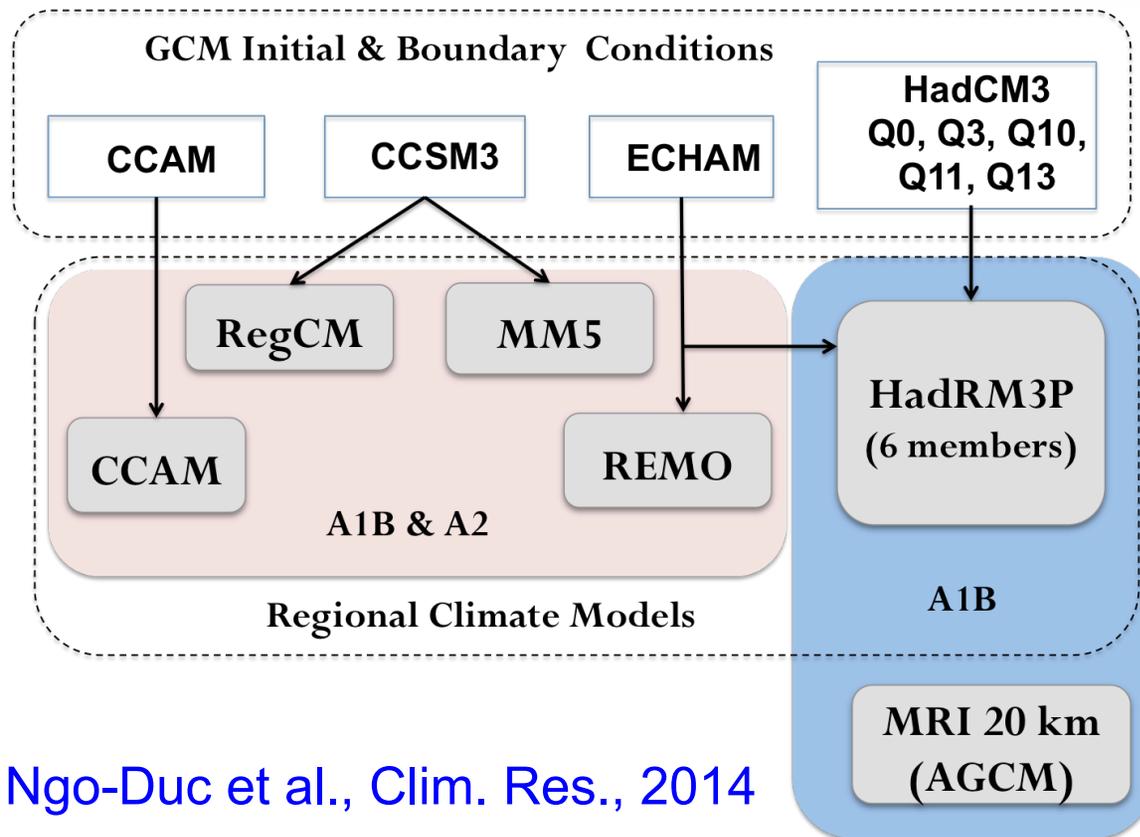
Lower Mekong Initiative Workshop, August 18-22, 2014

1. Climate Change

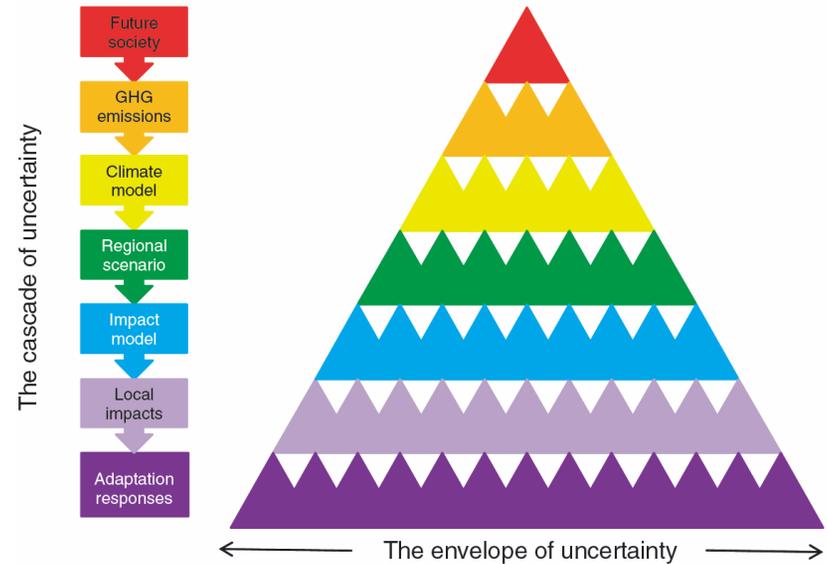
I'm focusing on:

1. Regional climate projections' uncertainties
2. Ensemble projection system for Vn
3. Southeast Asia climate downscaling activities

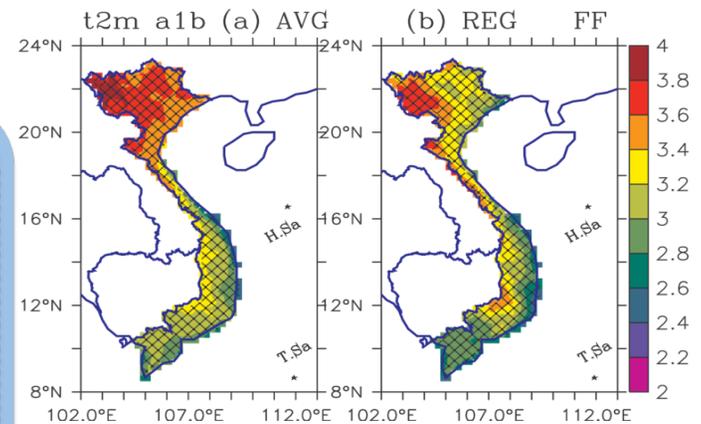
Ensemble projection system for Vn



Ngo-Duc et al., Clim. Res., 2014



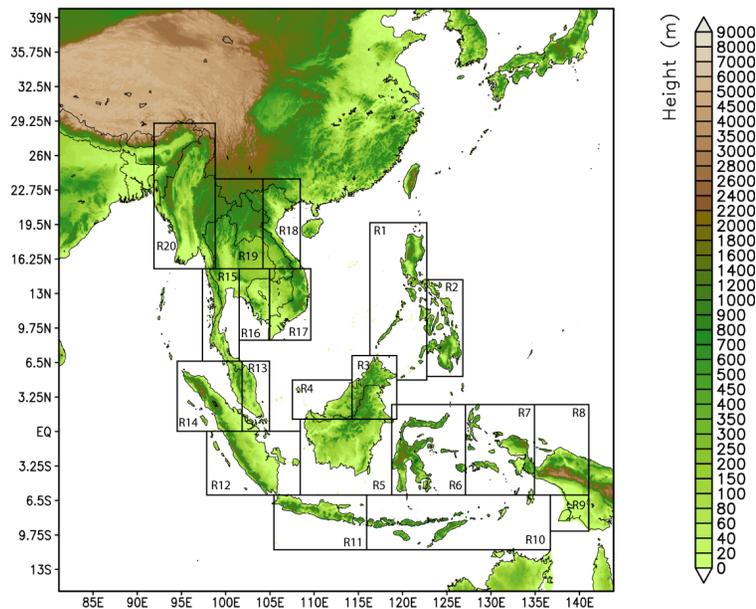
Wilby and Dessai (2010)



2080-2099 vs.
1980-1999, A1B
(09 members)



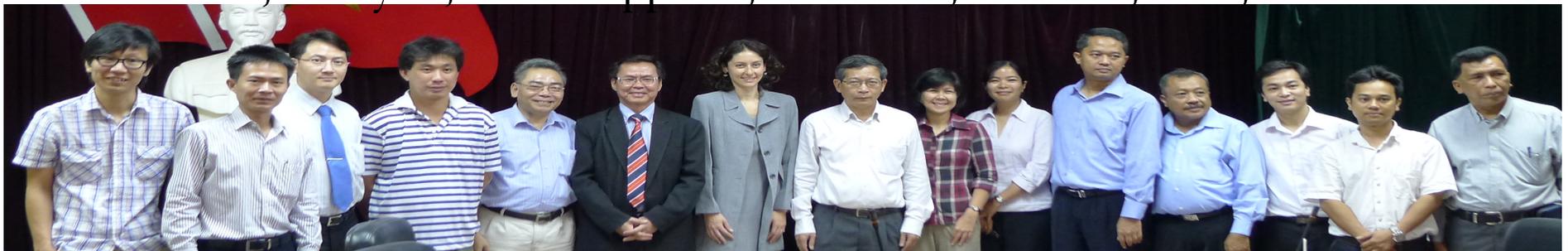
(Coordinated Regional Climate Downscaling Experiment)



- Dynamically Downscaling global CMIP5 models, with the latest Representative Concentration Pathways (RCP) Scenarios for the region at 25 km.
- currently using one regional climate model (RegCM4)
- **Aims: latest climate projections for Southeast Asia at 25km, including Lower Mekong region**

www.ukm.my/iklim/seaclid-cordex-sea/

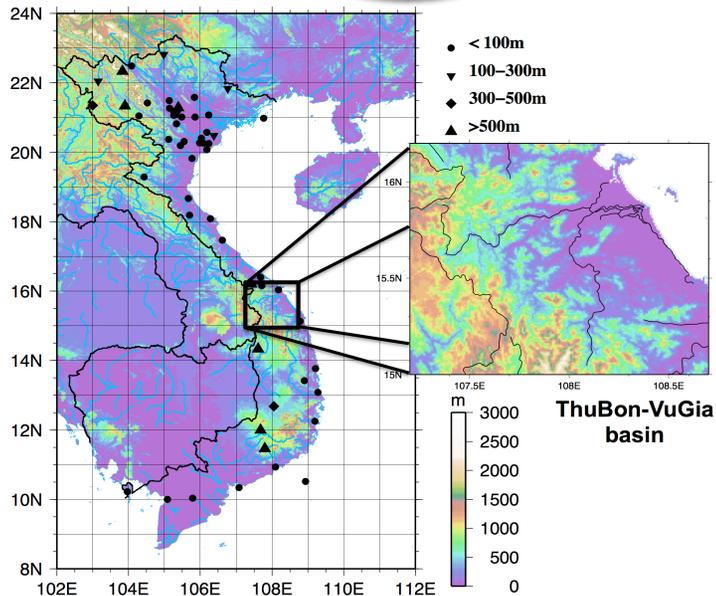
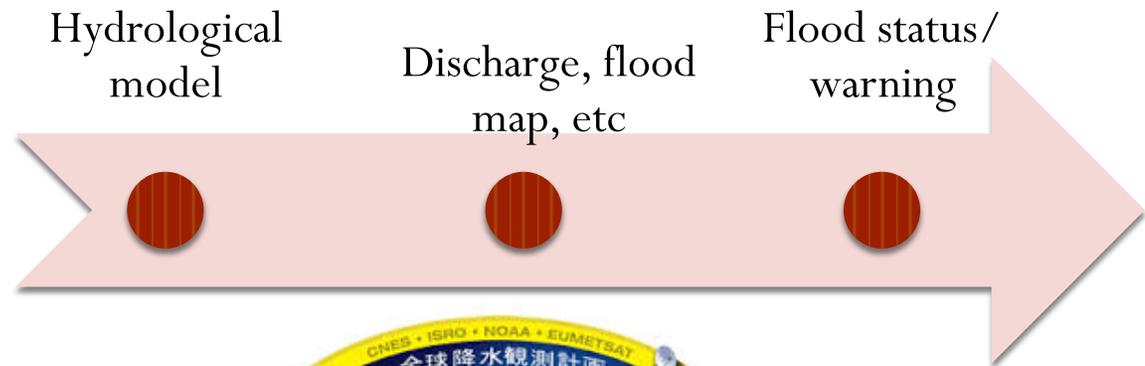
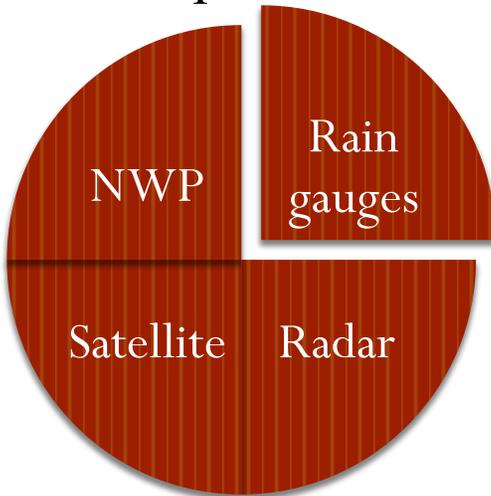
Vietnam, Malaysia, the Philippines, Indonesia, Thailand, Laos, Cambodia



2. Application of satellite rainfall

Streamflow modelling & early flood warning

- Precipitation is the key input



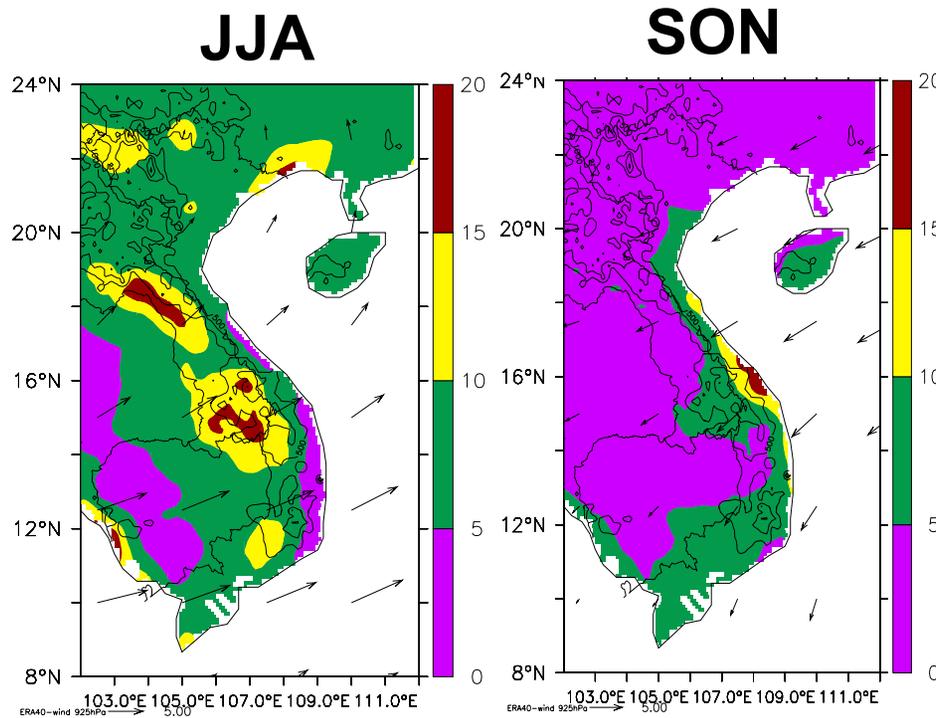
I'm focusing on:

1. Validation of GPM satellite rainfall for the region
2. Correction method for systematic bias of satellite rainfall
3. Application of satellite rainfall: streamflow modelling, monsoon studies, rainfall mechanism

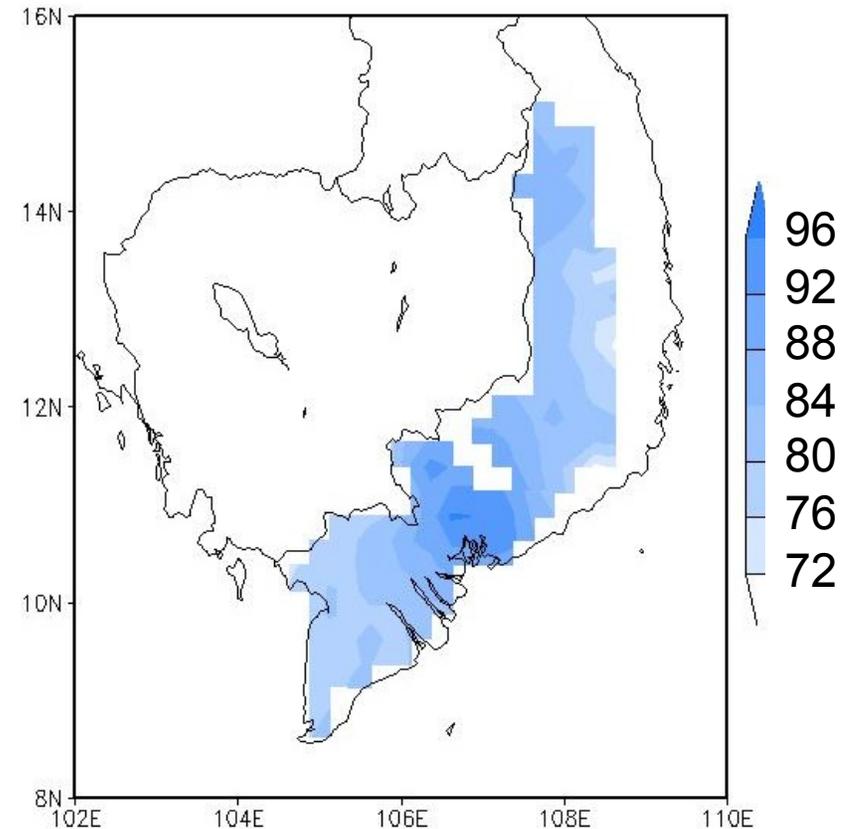
Ngo-Duc et al., Hydrol. Res. Lett., 2013

3. Monsoon

Nguyen-Le, Matsumoto, & Ngo-Duc (IJOC,2013)



The importance of monsoon over the Lower Mekong region



Summer monsoon rainfall amount /annual total rainfall (%)

I'am focusing on:

1. Monsoon onset/withdrawal date & its mechanism
2. Changes of monsoon activities: past and future
3. Impacts of monsoon

Challenges/barriers for our group

- **Computing resources:**

- Our current system (~1TFlops, 200TB): 3-4 year-old.
- Huge resources needed

- **Funding & human resources:**

- Part-time PhD & Msc. Students → not good for doing research
→ Scholarships needed for students
- Funding needed for Research exchange program
- Funding needed for International conference & workshop
- English skills to be improved

- **International collaboration:**

- Mainly **one-way** collaboration(donor-recipient relationship) → should be **two-way** (win-win) collaboration
- **International publications:** lack of data, lack of publications in our fields for our regions.