Risk Management To Sustain Water Resources

Jan 14, 2016

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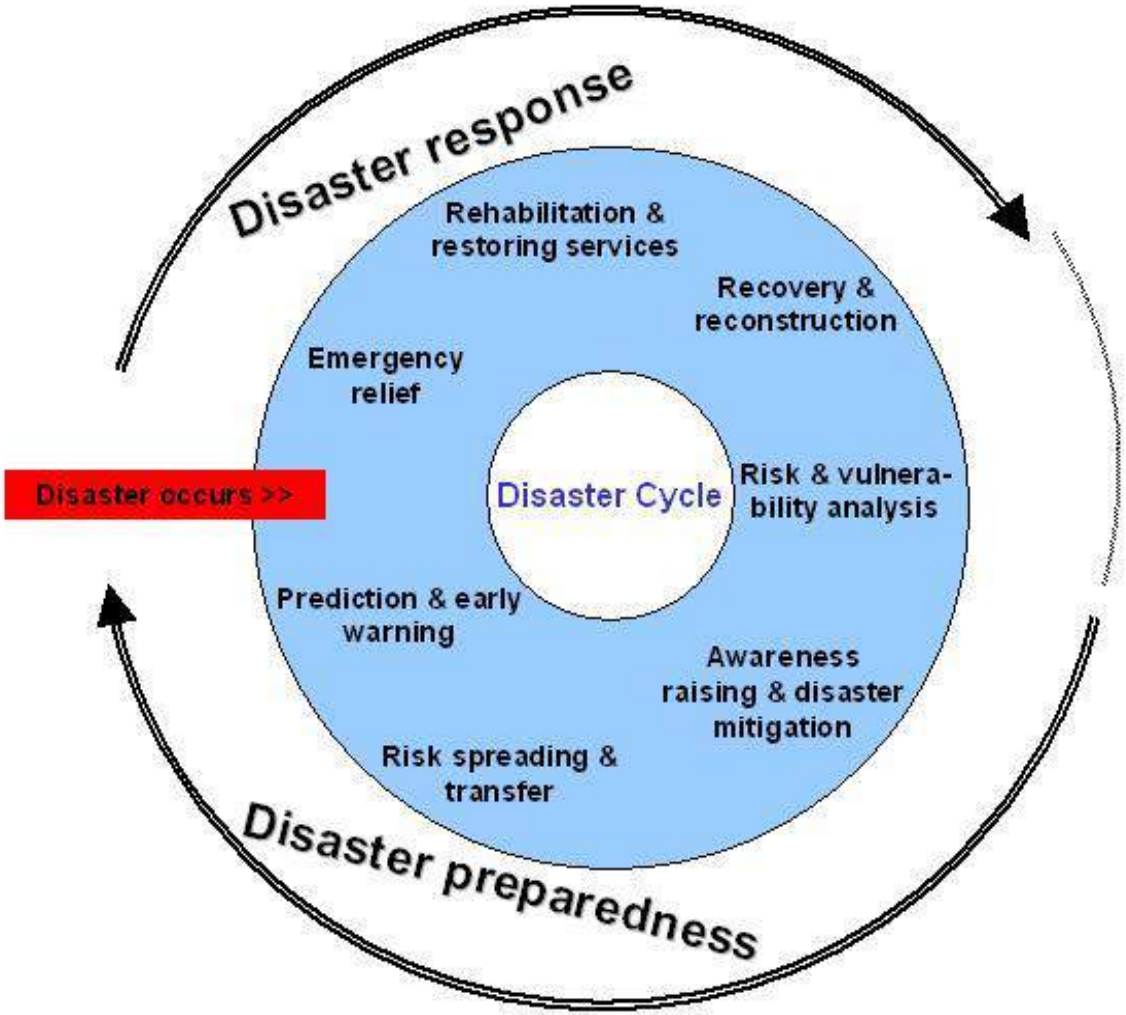
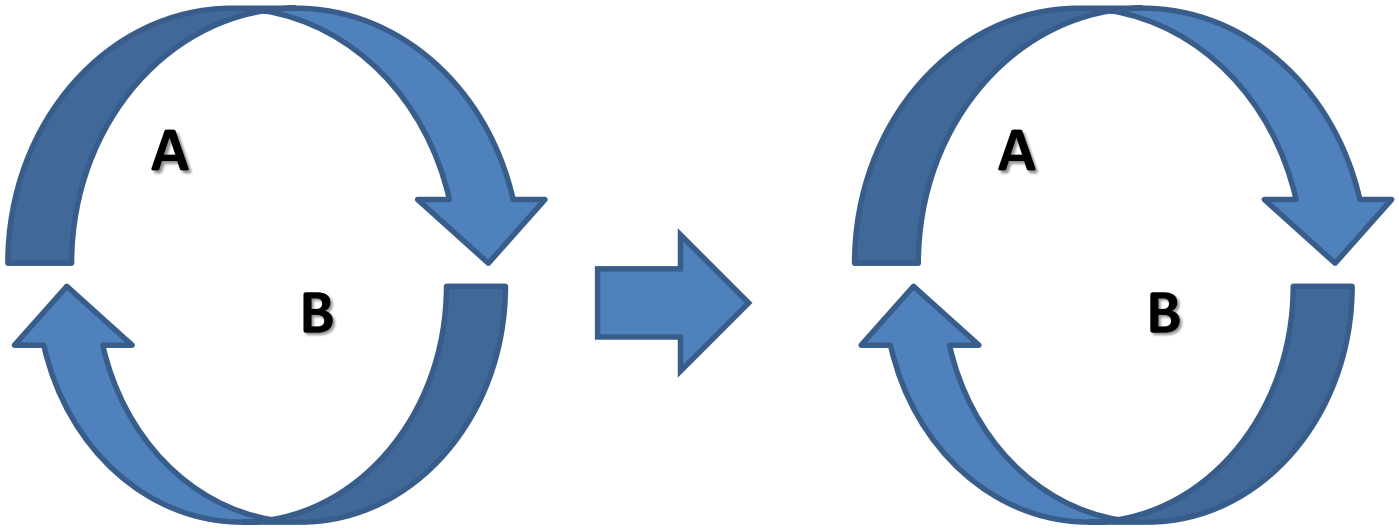
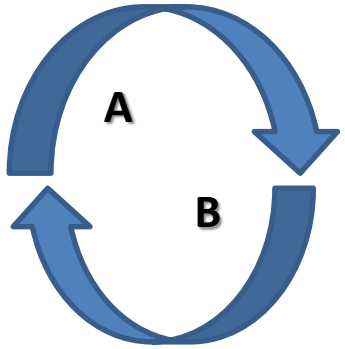


Fig. 1: The disaster cycle or disaster management continuum (after Warner 2002)

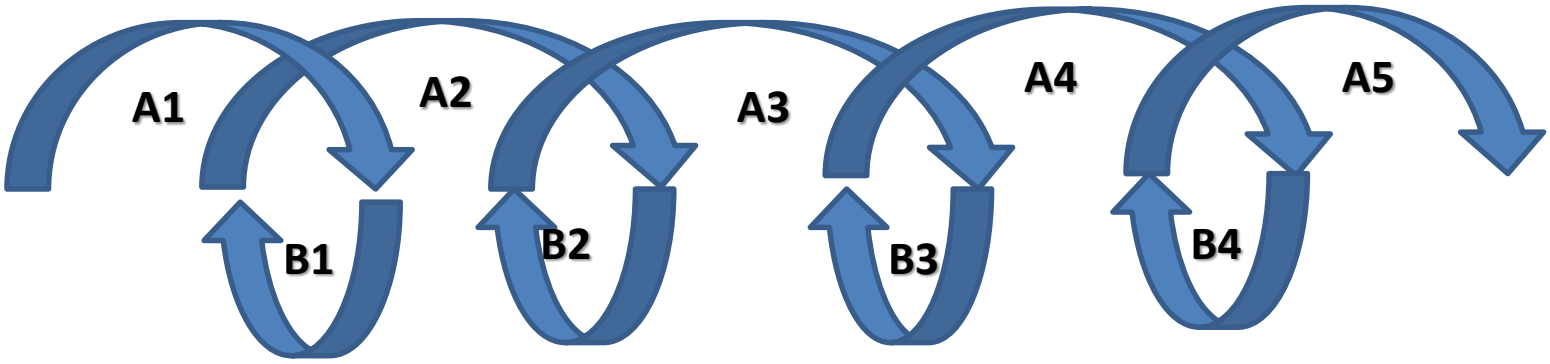


Disaster Risks → Respons

Know more Risks → Better Respons



Nature and Human always change...
The process of learning and respons also change
From static circular process of recovery into dynamic cyclic process of improvements



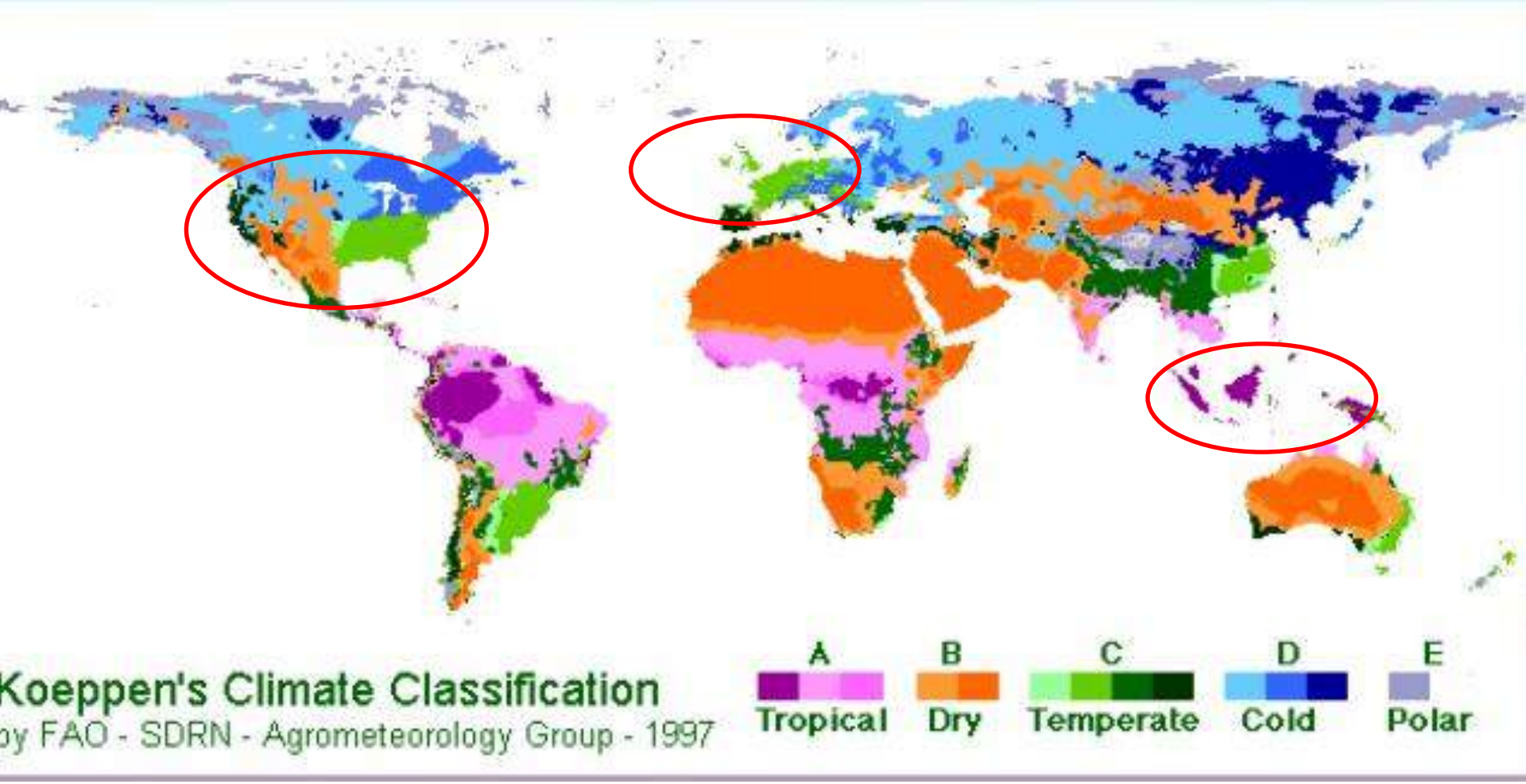
INVOLVEMENT OF ALL STAKEHOLDERS

Source: KMB KKP, 2004

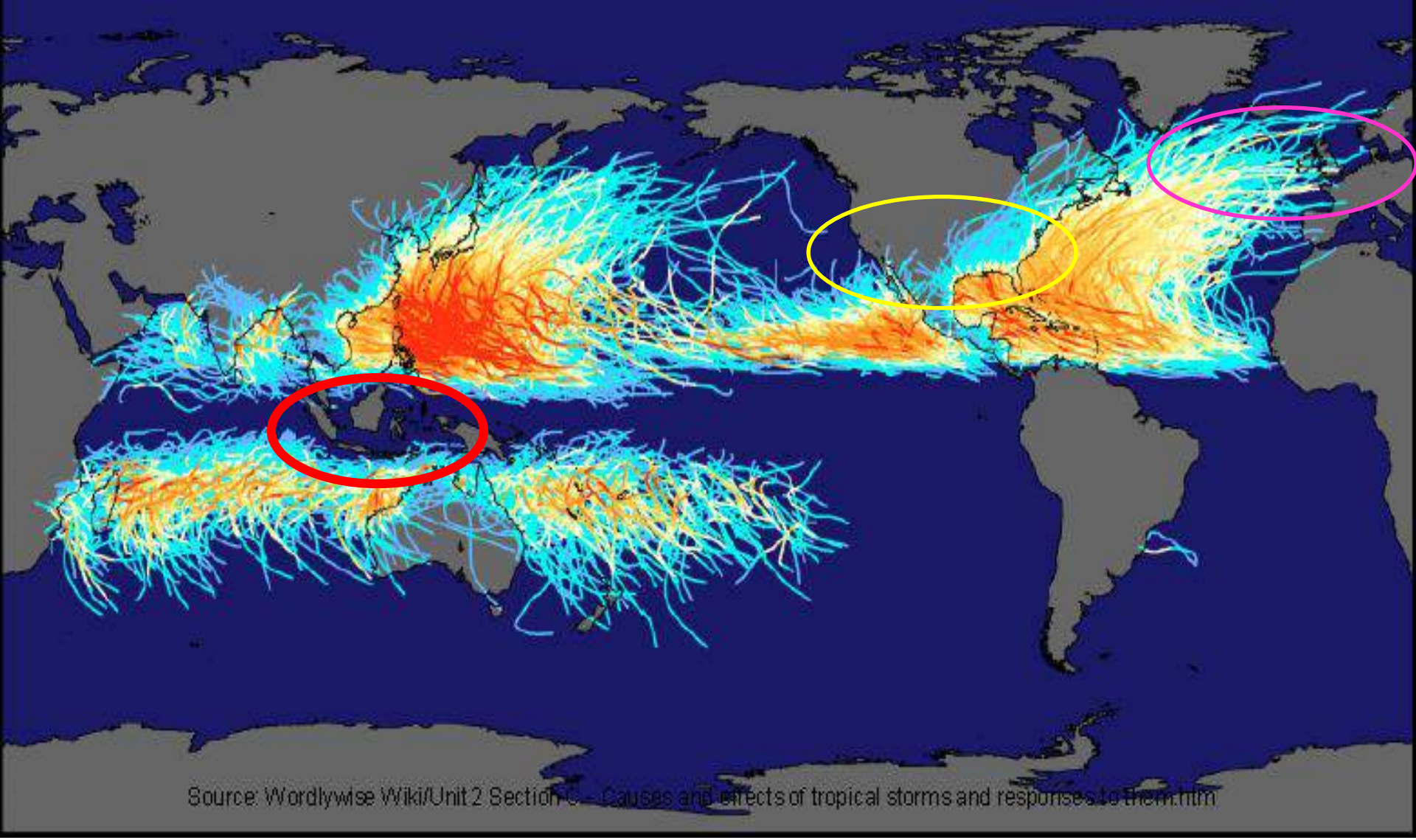
Basic Conception

- Risk management has two continuous cyclic process: assessing risks →developing solutions → assessing (new) risks →developing (new) sollutions...etc
- Risks should be assessed, by both qualitatively and quantitatively
- Vulnerabilities such as flood inundation and flood damages can be **quantified**.
- Other vulnerabilities (ecosystems) can be categorized **qualitatively** by stakeholders in terms of **'coping zones'** and relative degrees of **'risk tolerance.'**
- **Risk management options (solutions)** need to take into account both types of information.

Source: Modification of Olsen & Stakhiv, Application of framework to United States-Canada Great Lakes Study. AGWA

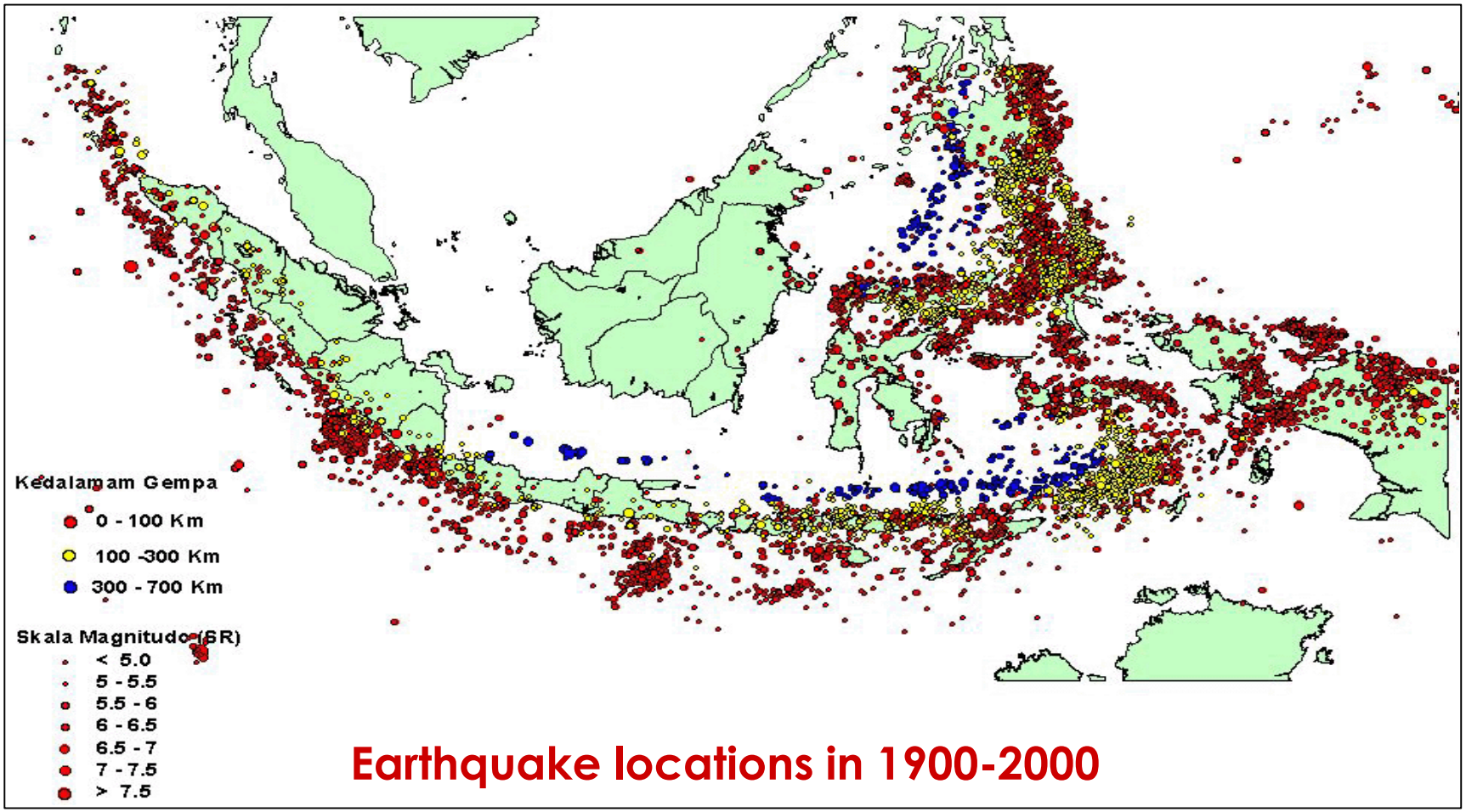


Mitigation and adaptation should be based on local environmental conditions and cultural values. This picture shows that no other archipelago or island country which has similar climate classification with Indonesia. Indonesia should collect its own reference on local environmental change and cultural conditions.



Theoretically tropical storms will only occur in the Northern and Southern parts of Indonesia. But recently there were more strong winds blew in wider areas in the country.

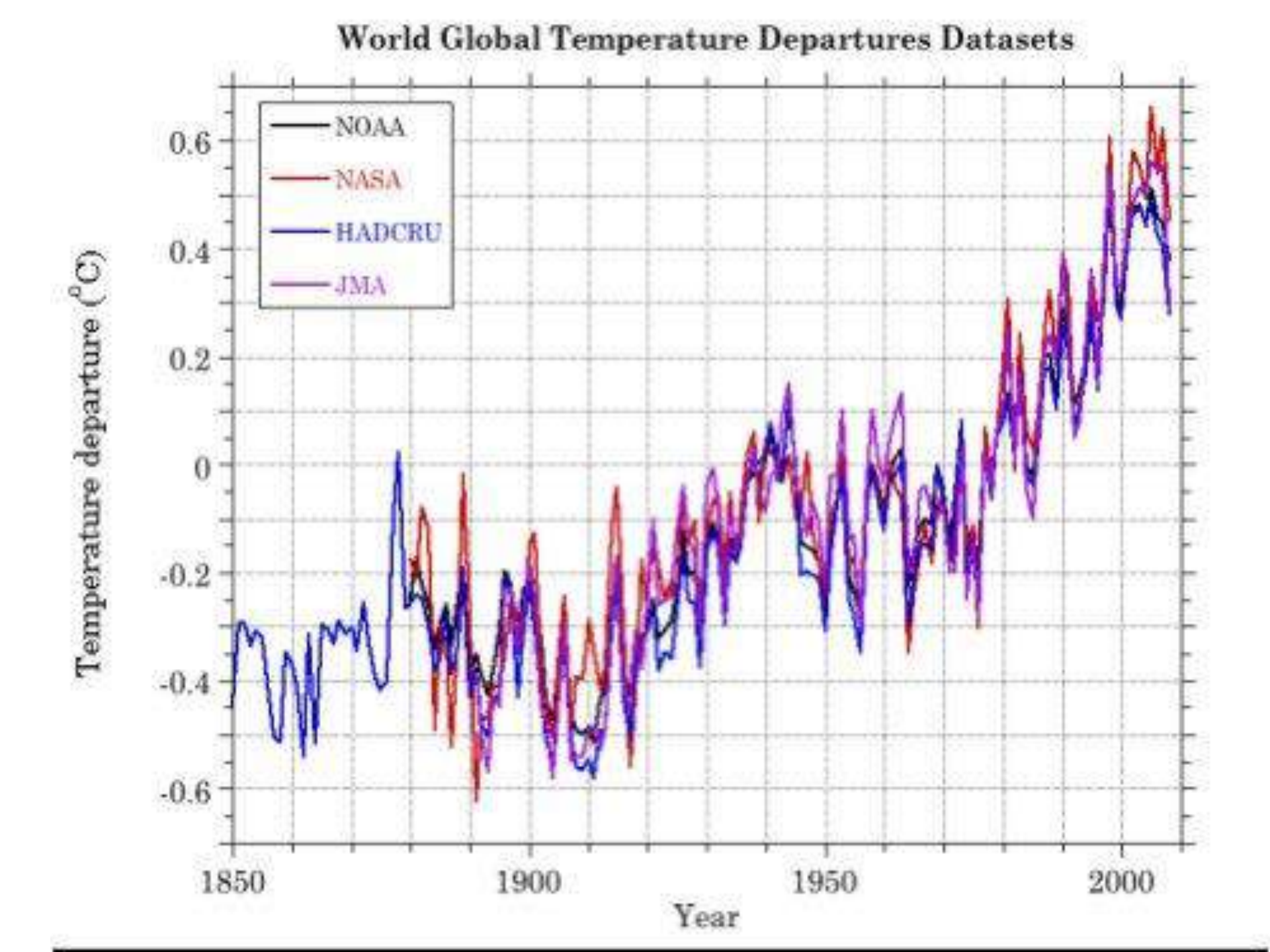
RING OF FIRE



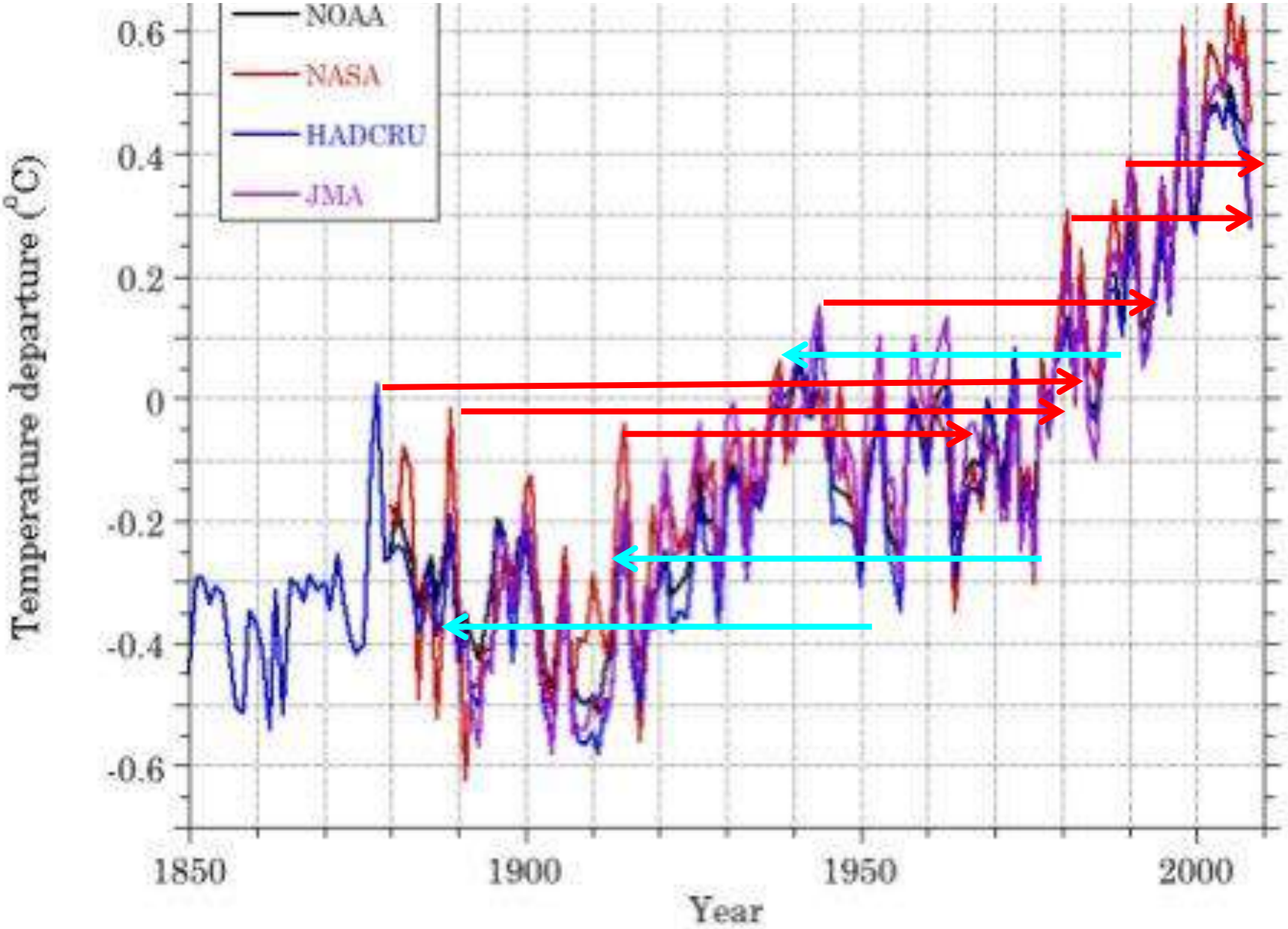
Earthquake locations in 1900-2000

Response to earthquake in Singapore shoud be different with Jakarta

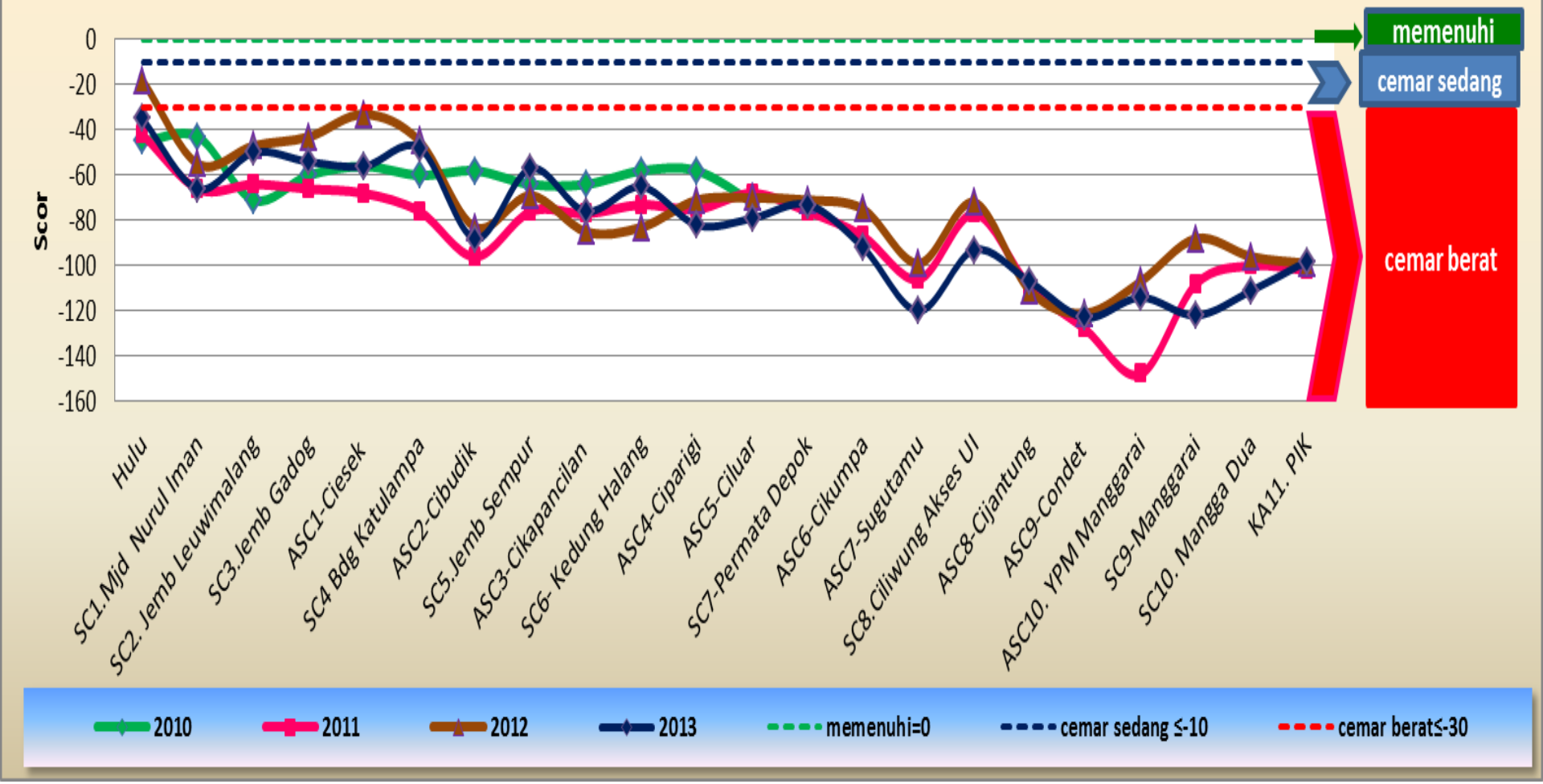
Source: Dmodified from KP - PMB - CCR Bali 2007


World Global Temperature Departures Datasets
NOAA
NASA
HADCRU
JMA
0.6
0.4
0.2
0
-0.2
-0.4
-0.6
Temperature departure (°C)
1850
1900
1950
2000
Year

Respond should be related to the extreem conditions , not only to average conditions



Status Mutu Hulu-Hilir DAS Ciliwung 2010-2013 Berdasarkan KMA kelas II PP 82/2001

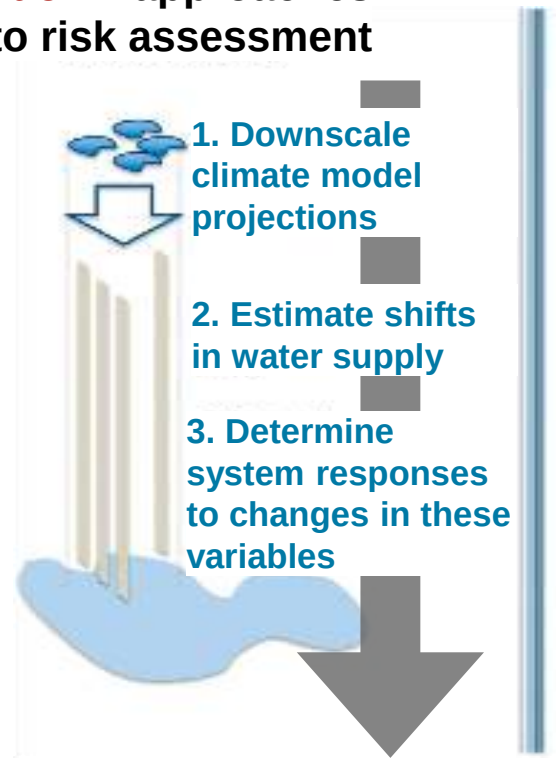


Sumber: KNLHK 2015

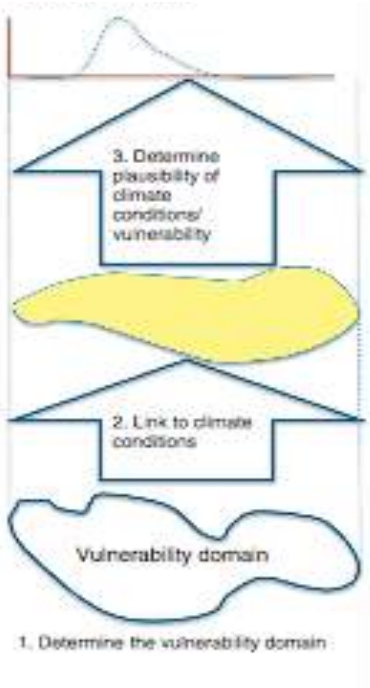
River management not only should concern on the potential flood to the lower level of the stream but also the control quality of each part (gate) of the river and for supporting the quality of life of the people and species who live in the water. This will include of how to keep sufficient water still flowing in the river.

Top-down vs. bottom-up approaches

top-down approaches to risk assessment



decision-scaling risk assessment



3. Assess plausibility and test vulnerability

2. Assemble multiple climate data sources and link to breaking points

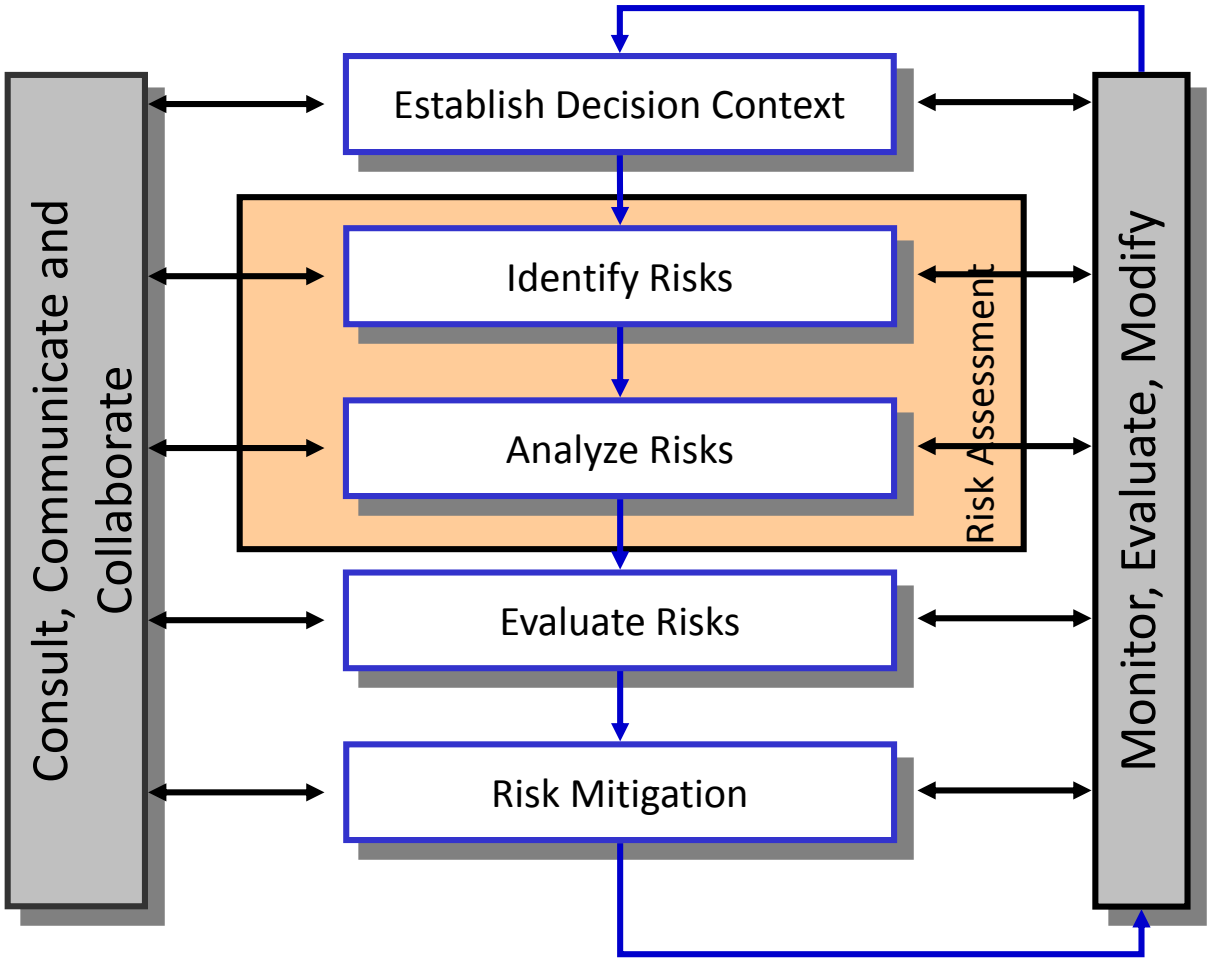
1. Define your system's breaking points

AGWA Alliance for Global Water Adaptation alliance4water.org

Weaver et al., 2012, *WIREs Climate Change*

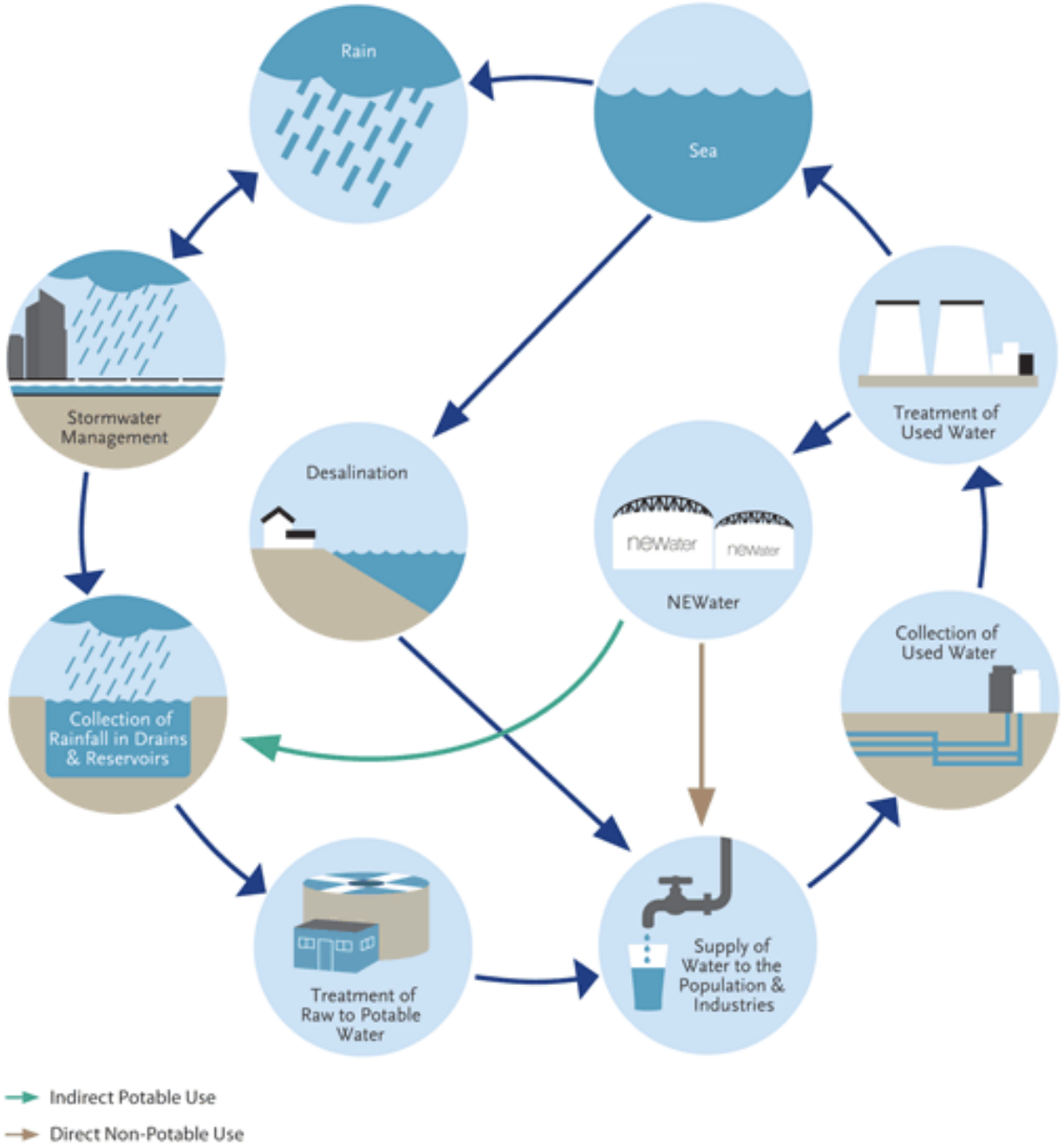
When water issues will affects all tier of management, and all the citizen concerned to get better services ,both top down and bottom-up should work together

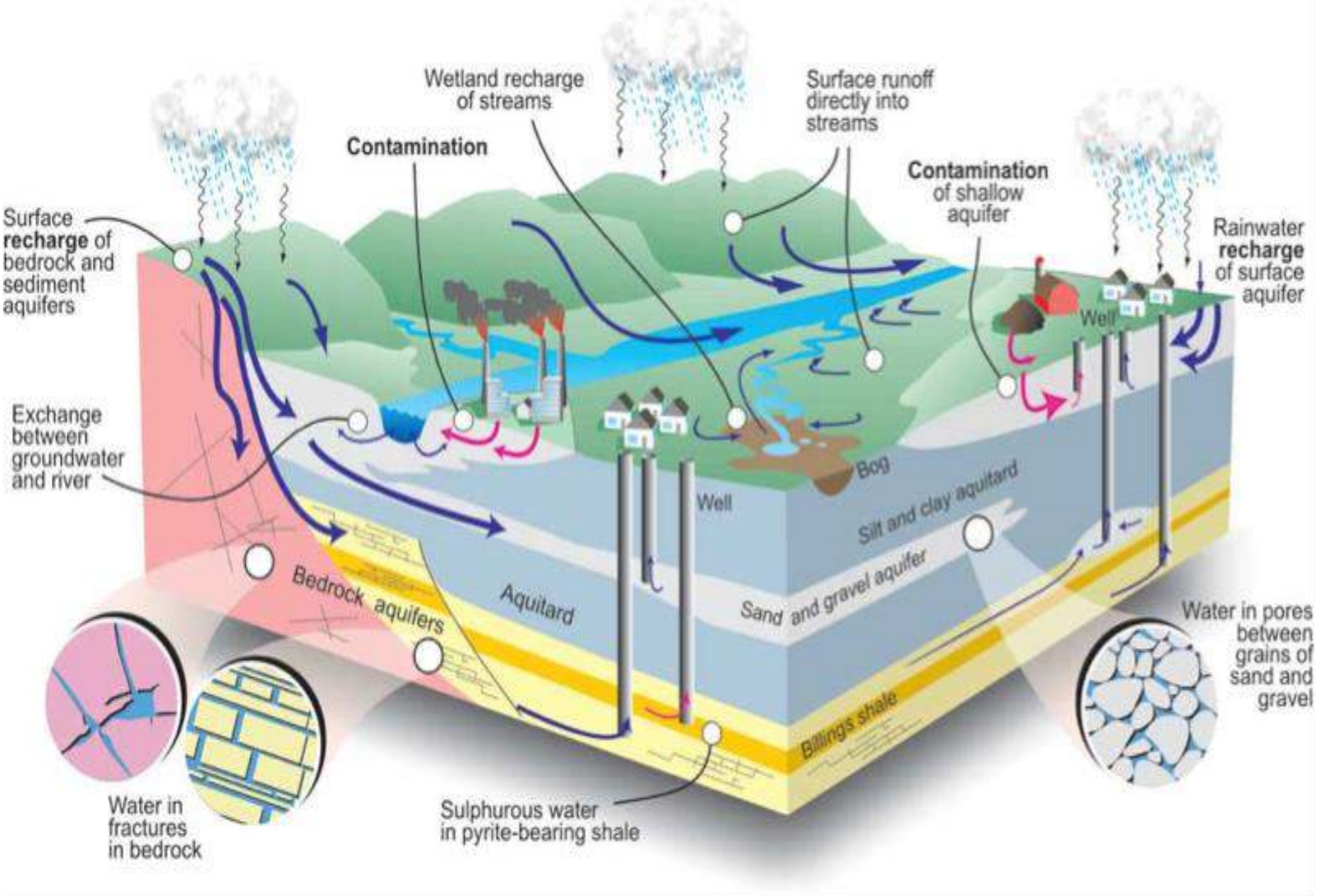
Risk-Informed Decision Making



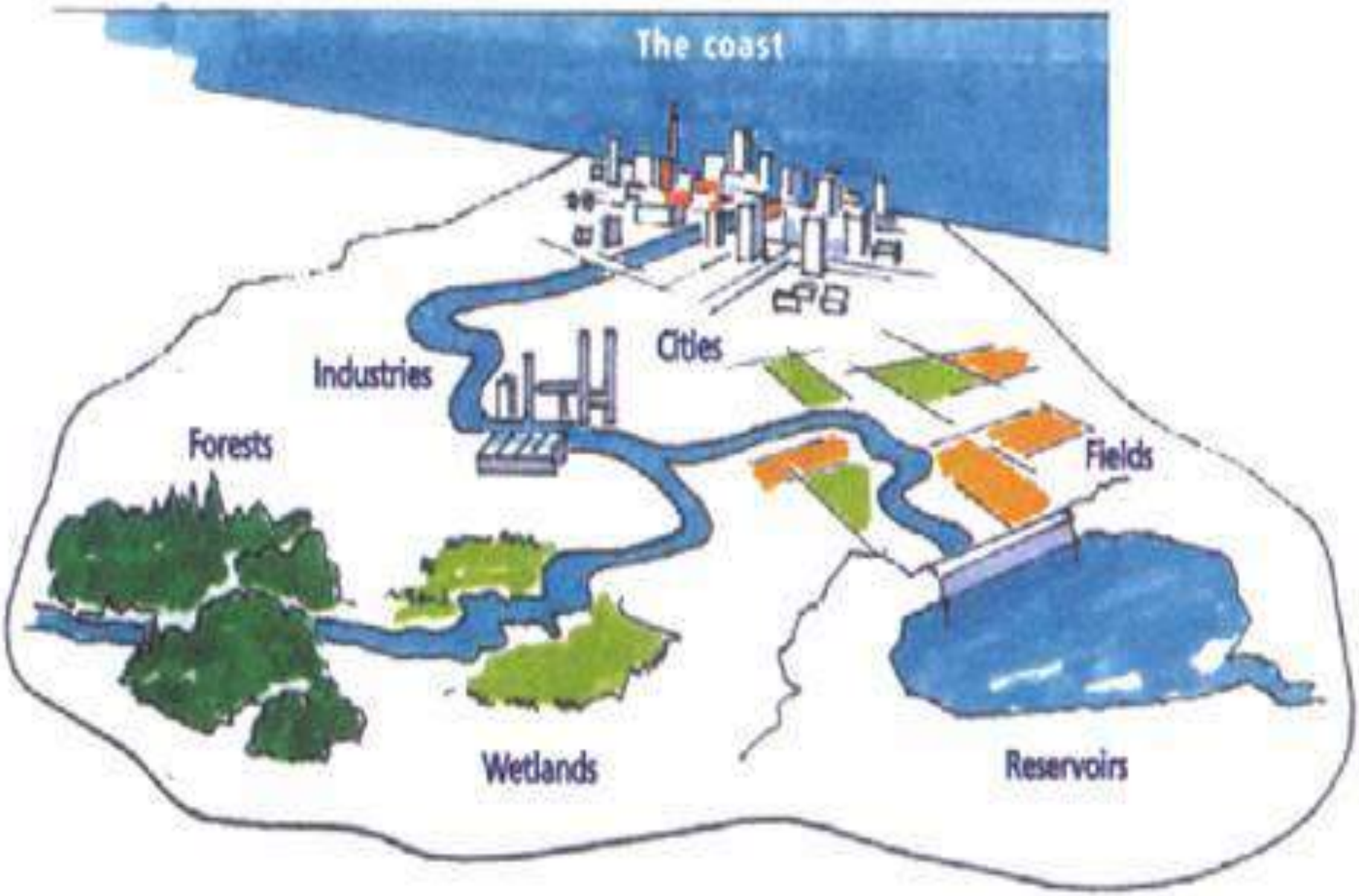
AGWA Alliance for Global Water Adaptation alliance4water.org

Adapted from ISO 31000- Risk Management—Principles and Guidelines

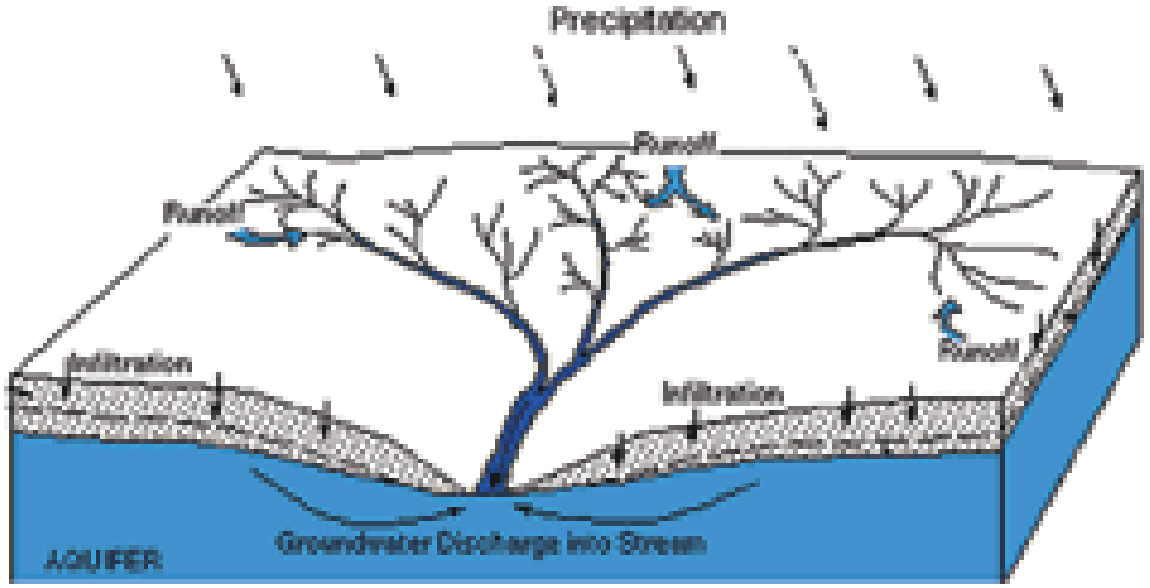

Rain
Sea
Stormwater Management
Desalination
NEWater
Treatment of Used Water
Collection of Rainfall in Drains & Reservoirs
Collection of Used Water
Treatment of Raw to Potable Water
Supply of Water to the Population & Industries
Indirect Potable Use
Direct Non-Potable Use



Source: International Society for Environmental Information Sciences (ISEIS)

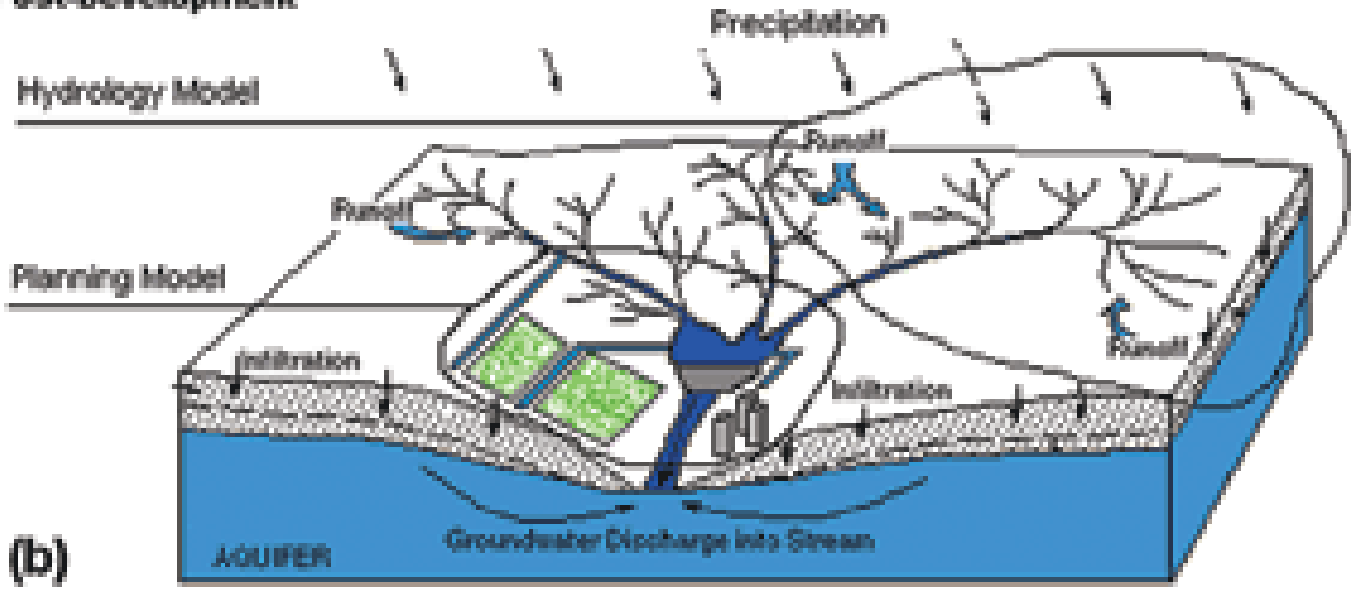

The coast
Industries
Cities
Forests
Fields
Wetlands
Reservoirs

Pre-Development

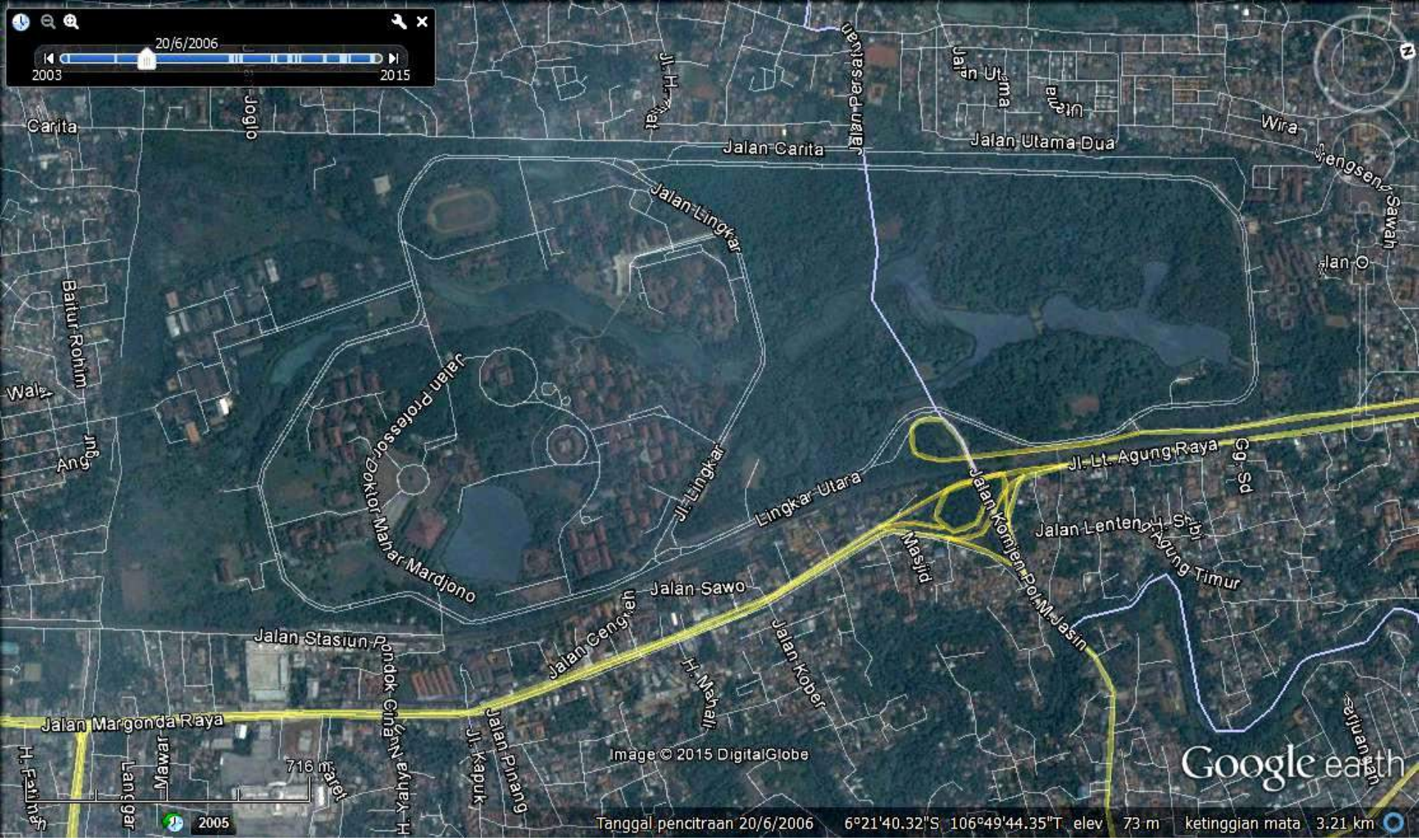


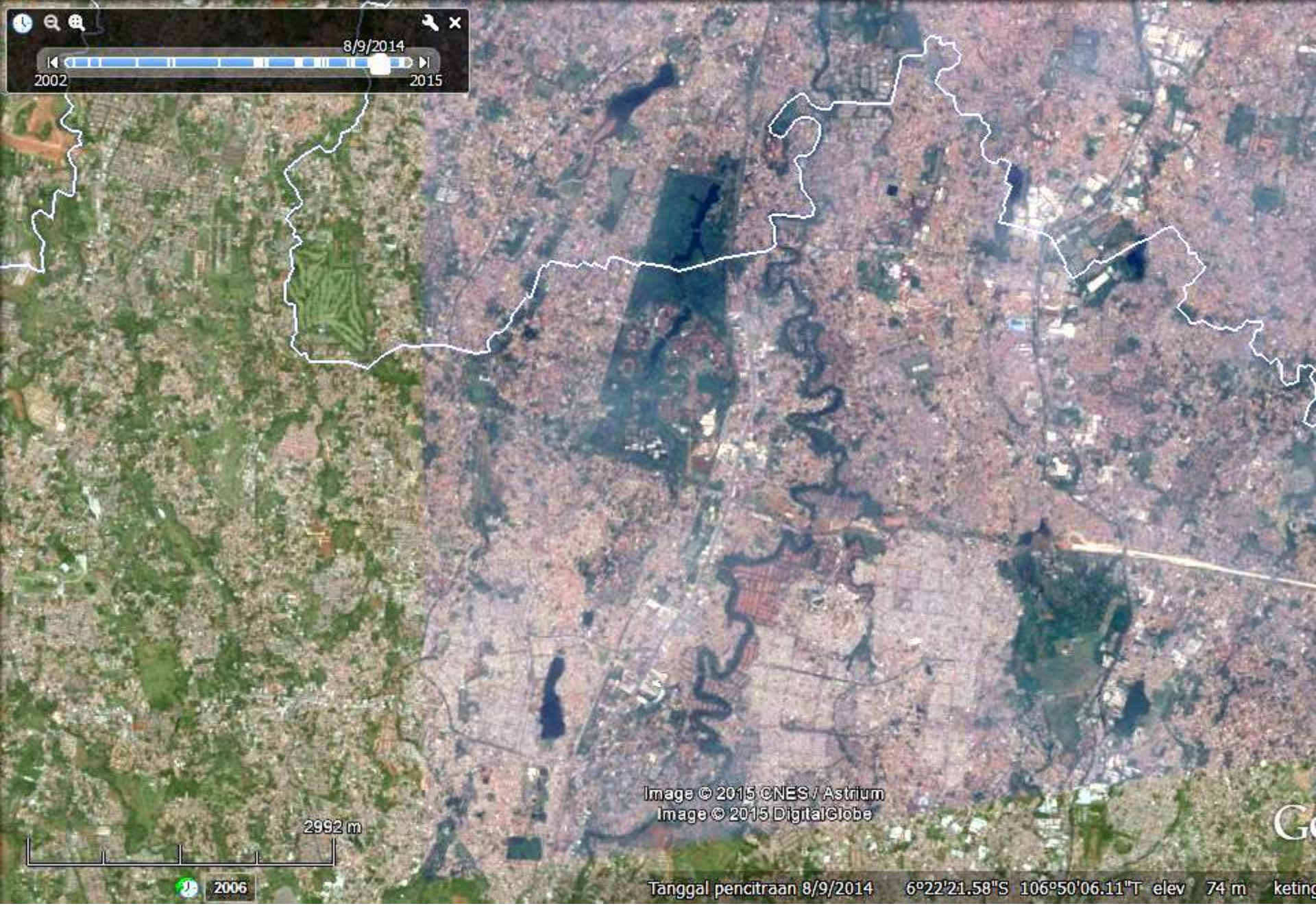
(a)

Post-Development



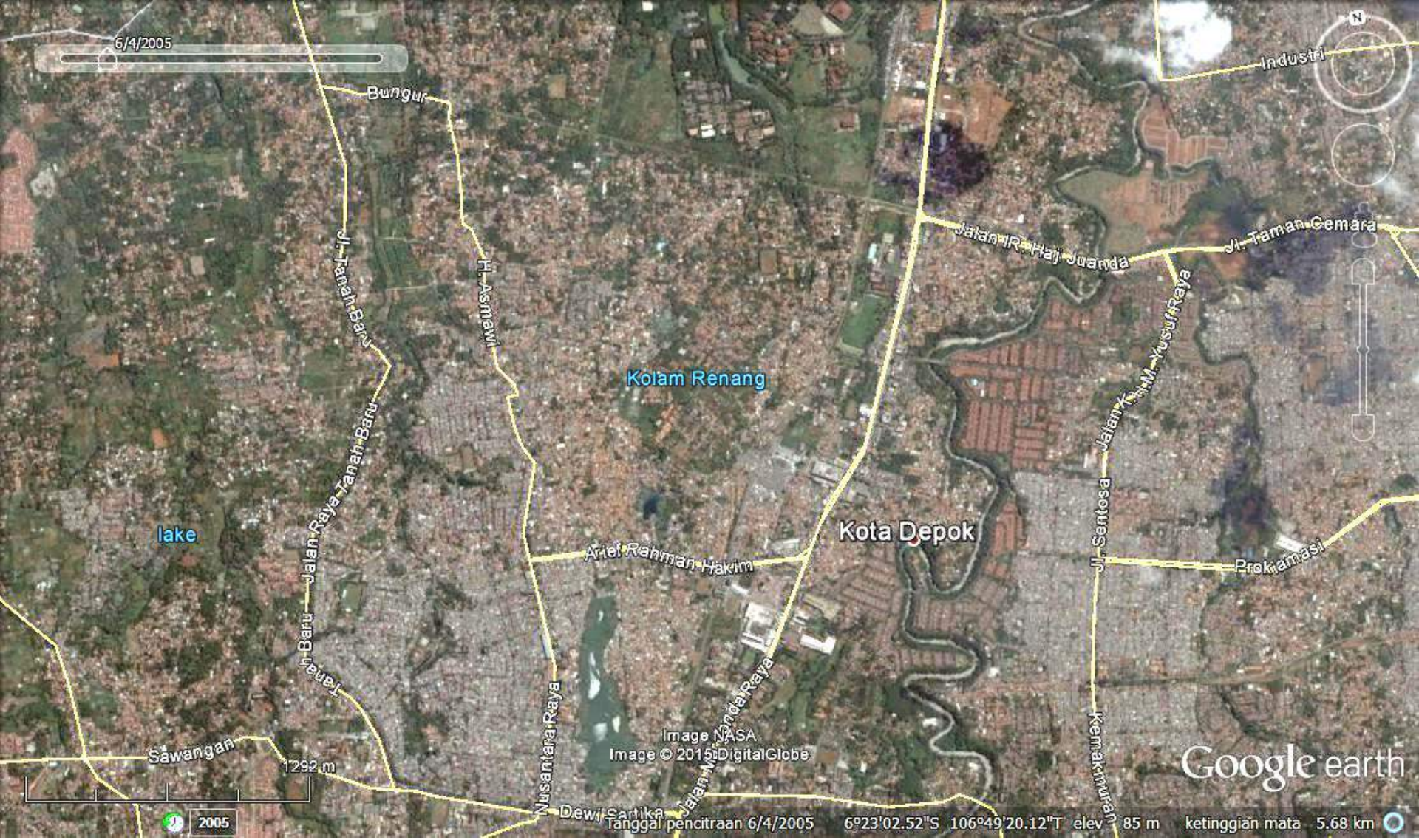
(b)

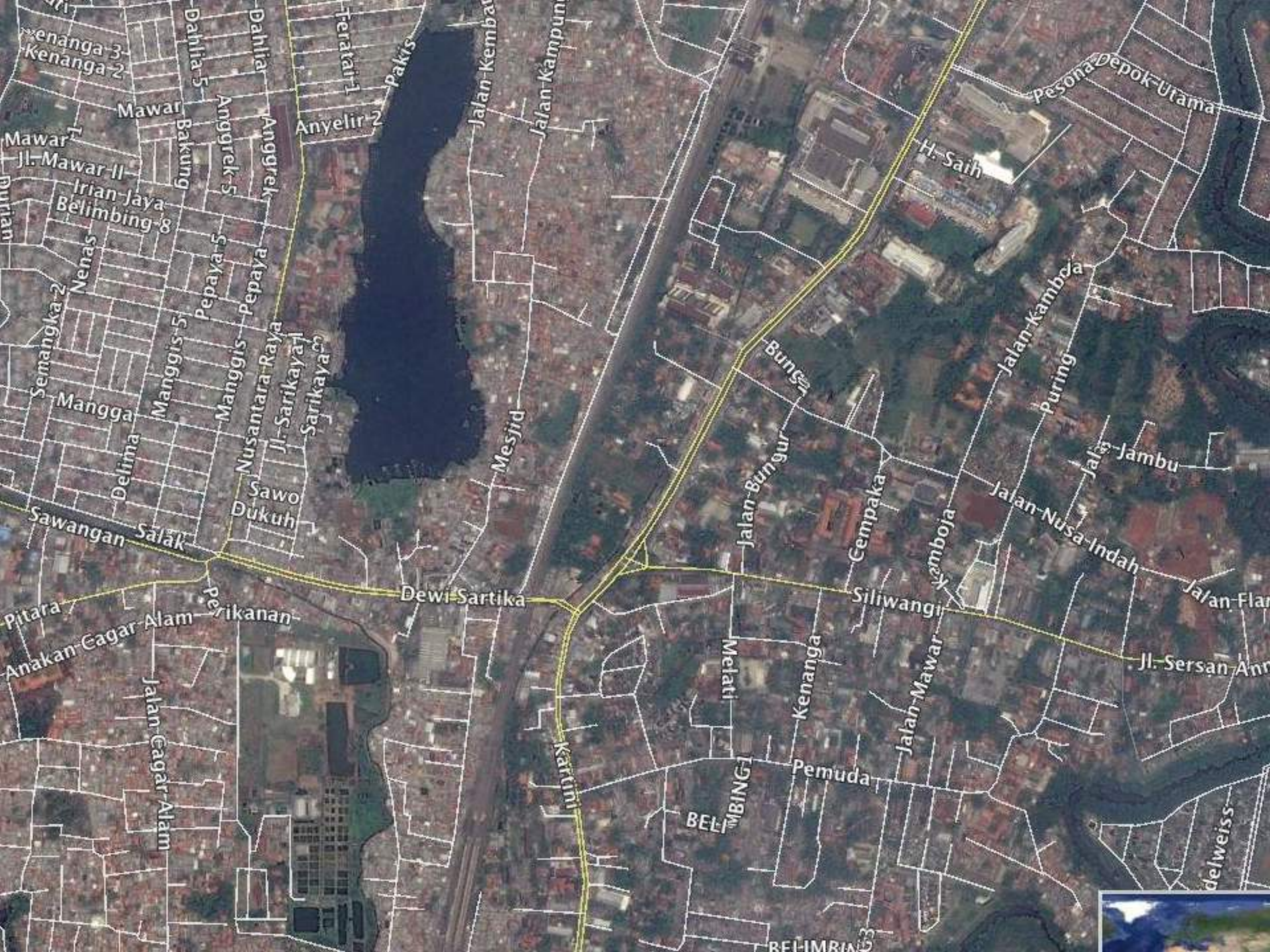

20/6/2006
2003
2015
Carita
Joglo
Jl. H. Amat
Jalan Perjuangan
Jalan Utama
Jalan Utama Dua
Wira
Jalan Carita
Jalan Lingkar
Baitur Rohim
Jalan Professor Doktor Mahar Mardjono
Jl. Lingkar
Lingkar Utara
Jl. Lt. Agung Raya
Jalan Lenteng Agung Timur
Masjid
Jalan Sawo
Jalan Stasiun Pondok Cina
Jalan Cengkeh
H. Mahali
Jalan Kober
Jalan Margonda Raya
Jl. Kapuk
Jalan Pinang
Image © 2015 DigitalGlobe
Google earth
716 meter
2005
Tanggal pencitraan 20/6/2006
6°21'40.32"S 106°49'44.35"T elev 73 m
ketinggian mata 3.21 km


8/9/2014
2002
2015
Image © 2015 CNES / Astrium
Image © 2015 DigitalGlobe
2992 m
2006
Tanggal pencitraan 8/9/2014 6°22'21.58"S 106°50'06.11"T elev 74 m


7/1/2014
Cinere Raya
Bukit Cinere
Erha
Brigif
Lenteng Agung Barat
Nusantara
Jalan Kiwi
Jl. Cibubur
Akses Ui
Prof. Latrapane
Moh. Kafi 2
Moh. Kafi 1
Krukut Raya
Bungur
Duta Pelni
Jl. Radar Auri
Cibubur
Jl. Taman Cemara
Jl. IR Haji Juanda
Jl. Gas Alam
Pramuka
K.H. Asmawi
Nusantara Raya
Tanah Baru
Depok City
Proklamasi
Keadilan
Sawangan
Jalan Keadilan
Siliwangi
Kemakmuran
Kebahagiaan
Depok City
Kartini
Citayam
Image © 2015 DigitalBolge
2335 m
Google earth


Jalan Professor Doktor Mahar Mardjono
Jalan Professor Doktor Bahder Djohan
Jl. H. M Tohir
Jl. Kapuk
Kapuk
H. Yahya Nuih
Karet
Jl. Mawar
Mawar
Langgar
Jalan Stasiun Pondok Cina
Jalan Pembangunan
Baitur Rohim
Jalan Garuda
Wale
Kepundang
Kecapi
Angsa
Menteng
Jalan Al Hidayah
Jl. Majapahit
Merak
Kedasian
Kh Ahmad Dahlan
H. Fatimah
Jl. Gobang
Dahlia
Mahoni


6/4/2005
Bungur
Jl. Tanah Baru
Jalan Raya Tanah Baru
H. Asmawi
Kolam Renang
Jalan R. Haji Juanda
Jl. Taman Gemara
Jalan K. H. M. Yusuf Raya
Industri
lake
Kota Depok
Ariel Rahman Hakim
Jl. Sastra
Proklamasi
Jalan Raya Tanah Baru
Nusantara Raya
Jalan Margonda Raya
Kemakmuran
Sawangan
1292 m
Dewi Sartika
Image NASA
Image © 2015 DigitalGlobe
Google earth
2005
Tanggal pencitraan 6/4/2005
6°23'02.52"S 106°49'20.12"T elev 85 m
ketinggian mata 5.68 km


Kenanga 2
Mawar
Mawar 1
Jl. Mawar II
Irian Jaya
Belimbing 8
Dahlia 5
Bakung
Anggrek 5
Anggrek
Teratai 1
Pakis
Anyelir 2
Pesona Depok Utama
H. Saih
Nenas
Semangka 2
Pepaya 5
Pepaya
Manggis 5
Manggis
Mangga
Delima
Nusantara Raya
Jl. Sarikaya 1
Sawo
Dukuh
Sawangan
Salak
Mesjid
Dewi Sartika
Pitara
Perikanan
Anakan Cagar Alam
Jalan Cagar Alam
Jalan Bungur
Cempaka
Jalan Kamboja
Puring
Jambu
Jalan Nusa Indah
Siliwangi
Melati
Kenanga
Jalan Mawar
Kartini
Pemuda