APRU-IRIDES MULTI-HAZARDS VIRTUAL SUMMER SCHOOL
JULY 22

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Japan is fighting against flooding and use such experience to support other countries.
1. TORRENTIAL RAINFALL IN JULY 2020
ON-GOING 梅雨
RAINFALL FROM JULY 3 - 17

Record high July 1-10
✓ Total rainfall throughout the country: 216.1 mm/station
✓ The number of monitoring stations recorded over 50mm/hr: 82
Inundated area: 2060Ha
Flooded houses: 6,100
TORRENTIAL RAINFALL IN JULY 2020
ON-GOING

As of July 18
✓ Death 77
✓ Missing 7
✓ Damaged houses over 15,000
✓ 2,277 people at evacuation centers
1. TYPHOON HAGIBIS 2019
TAMAGAWA RIVER, BETWEEN TOKYO AND KAWASAKI, OCT 12 SAT
FROM TOKYO SOUTHERN BOARDER
EVACUATION CENTER
FLOODING FORM
TAMAGAWA RIVER
INLAND URBAN FLOODING IN DENENCHOFU
2. RECORD-BREAKING RAINFALL
EFFECT OF CLIMATE CHANGE?

10 years ago
EFFECT OF CLIMATE CHANGE?

YES

Sea temperature
DAMAGE THROUGHOUT THE CENTRAL AND EAST JAPAN

140 areas in 71 rivers
12 areas in 7 rivers (National)
128 areas in 67 rivers (Pref.)
DAMAGE

104 died, 3 missing
70-80% are the elderly
30% in vehicle
Inundated houses: > 100,000
Dyke broken
12 sites in 7 rivers managed by national gov.
127 sites managed by pref. gov.
3. HOW COULD BE TOKYO PROTECTED?
A. WHAT ARE RISKS IN TOKYO?
TYPHOOON KATHLEEN (1947)
KILLED >1,100, FLOODED > 300,000 HOUSES
FLOODING RISK FROM TONEGAWA RIVER

- Death toll: 2,600
- Isolated: 1.1 million
- Inundated: 530km²
- Flooded houses: 680,000

日本の災害対策 [2019/3/5閲覧]
http://www.bousai.go.jp/1info/pdf/saigaipamphlet_je.pdf
FLOODING RISK FROM ARAKAWA RIVER

Flooding area (km²): 110
Population in flooding area: 1,200,000

Flooding height:
- 5.0m < H
- 2.0m < H ≤ 5.0m
- 1.0m < H ≤ 2.0m
- 0.5m < H ≤ 1.0m
- H ≤ 0.5m

Dike break point: Ginza

Flood risk from Arakawa River
Water levels were at critical level

Tonegawa 21.0  20.7

Record high 2019

ARAKAWA 11.3  12.8

Record high 2019
RISK IN TOKYO METROPOLITAN
TYphoon KATHLEEN (1947)
KILLED >1,100, FLOODED >
300,000 HOUSES
B. DAMS STORED FLOODS IN UPSTREAM

Dams store 145 million m³
Tonegawa River

New Yanba Dam store 75 million m³

Dam store 45 million m³
Arakawa River
YANBA DAM TRIAL OPERATION
STORE 75 MILLION M3
YANBA DAM TRIAL OPERATION
STORE 75 MILLION M3
C. RESERVOIRS STORED IN MIDDLE STREAM

- Watarase Reservoir stored 160 million m³
- Arakawa Reservoir stored 90 million m³
- Reservoirs stored 35 million m³
第一調節池
第二調節池
第三調節池
R1.10.13上空から撮影
D. CHANNELS DIVERTED FLOODS IN LOW STREAM
UNDERGROUND TUNNEL
12MILLION M³
【台風19号】

ARAKAWA CHANNEL
EFFORTS FOR THE PAST CENTURY

7 Dams TONEGAWA
1957-1990

New Yanba Dam trial operation

3 Dams ARAKAWA
1999, 2011, 2004

Watarase Reservoir
1989

Tonegawa Reservoir
1960

Diversion Channel
1930 Arakawa
2006 Tunnel

Arakawa Reservoir
2003
3. JICA PROJECTS USING JAPANESE EXPERIENCE
A. VIETNAM
MAKING RESILIENT SOCIETY IN CENTRAL REGION

Purpose: to establish disaster management system focusing on community-based activities

1. Strengthening capacities of local governments
2. Formulating manuals of community-based DM
3. Developing measures to protect river banks from erosion
4. Strengthening capacities of central government
RIVERBANK EROSION
1 COMMUNITY BASED ACTIVATES

Participants

- local gov.
- Women, Youth, Fishermen, Farmers

Hazard Mapping
EVACUATION DRILL
DM EDUCATION
2 COUNTERMEASURES AGAINST BANK EROSION
PRACTICES

a) Technical capability
b) Material availability
b) Financial reasonability
3 CAPACITY BUILDING

Hazard mapping
CBDRM
Bank erosion
B. Metro Manila
KEY MESSAGE

Japan is fighting against flooding and use such experience to support other countries.
THANK YOU
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