

NAP Status in Japan

Michihiro Oi

Ministry of the Environment, Japan



1. Climate Change Impacts in Japan
2. formulation of NAP and its M&E
3. Climate Change Adaptation Act



Observed Climate Change in Japan

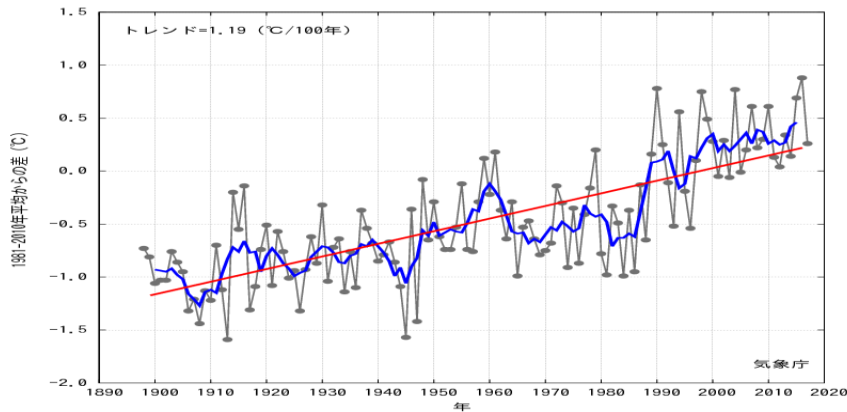
Temperature

- Annual mean temperature increased **1.19°C per 100 years.**
- **Extremely Hot Day (> 35°C) increased.**

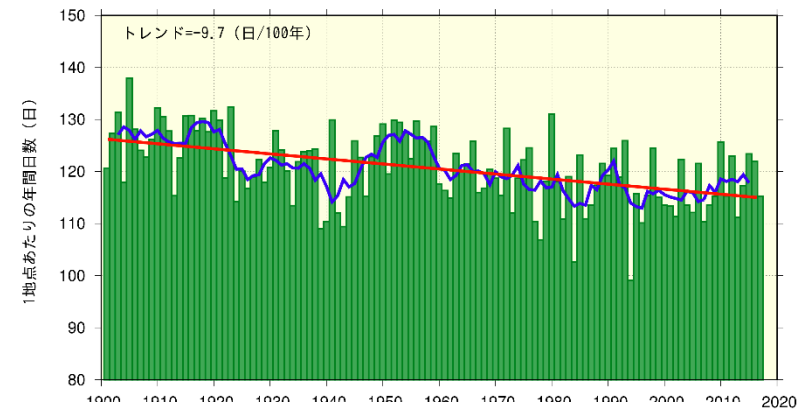
Precipitation

- Days with precipitation decreased
- Days with heavy precipitation (> 100 mm/day) increased

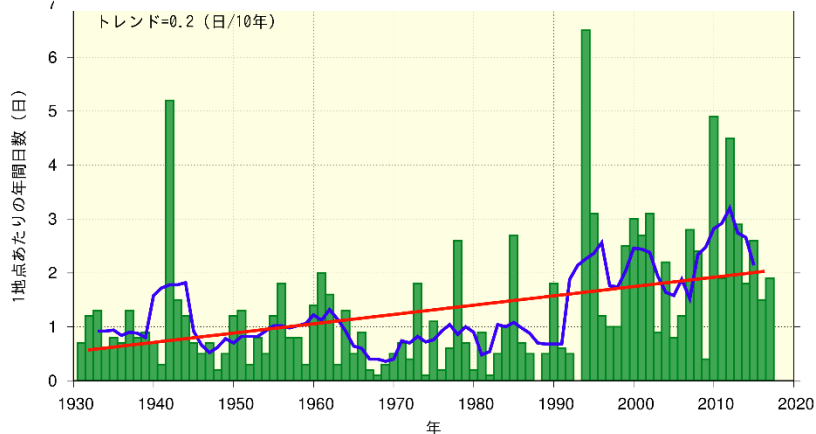
Annual Japan Average Temperature



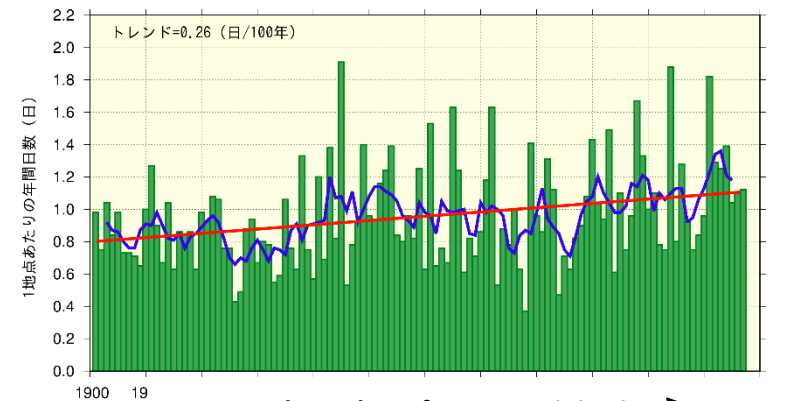
[51地点平均] 日降水量1.0mm以上の年間日数



Annual Number of Days with Maximum Temperature $\geq 35^{\circ}\text{C}$



Number of Days of Precipitation



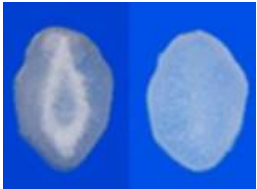
Annual Number of Days Precipitation $\geq 100\text{mm}$



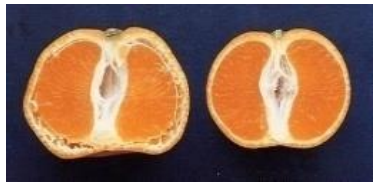
Climate Change Impacts in Japan

Agricultural Crops

Degradation of Quality of crops e.g. rice grains and fruits



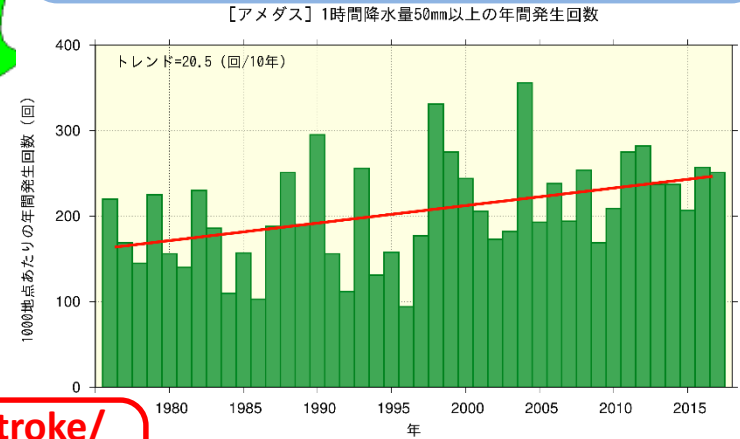
Immature grains when daily mean temperature exceeds 27 degree in ripening period. Especially Kyushu district is serious because of rising temperature.



Oranges' skin and pulp are separated due to high temperature and increase rainfall after ripening

Extreme climatic events/ Disasters

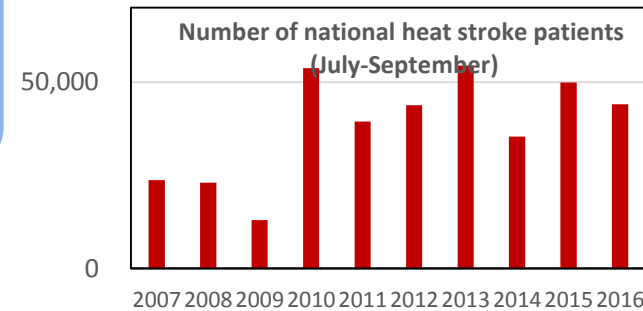
Increase of short-time rainfall intensity causes serious disasters such as flooding and land-sliding



Heat Stroke/ Infectious diseases

Heat stroke patients in summer has been 40,000 and 50,000 since 2010

Tiger mosquitoes, vector of dengue fever is expanding to north.



Ecosystems

Coral reef whitening, damaged by the increased seawater temperature



Expansion of suitable habitat for Japanese deer causes damage on vegetation





Formulation of NAP in Japan

Expert Committee on Climate Change Impact Assessment
under Central Environment Council (2 Jul. 2013)

- Projection of climate change and its impacts in Japan
- Reviews for more than 500 papers by 57 experts
- Assessment for 56 items in 7 thematic areas
- Expert judgement on significance, urgency and confidence levels

Cf. for mitigation policies:

- *Law for Promoting Countermeasures on Global Warming (1998)*
- *Plans for Promoting measures on Global Warming: updated and strengthened for the KP target, for 2020, and for 2030 and beyond (2016)*

Report on Climate Change Impact Assessment in Japan (10 Mar. 2015)

- Inter-Ministry Meeting for Climate Change Adaptation (11 Sep. 2015)
- Public consultation

National Adaptation Plan decided by the Cabinet (27 Nov. 2015)

1st Trial Monitoring Report (11 Oct. 2017)

Climate Change Impact Assessment (July 2013)

[Significance] ● Very High ◇ Not "Very High" —: N/A (currently cannot be assessed)
[Confidence] ● High △ Medium □ Low —: N/A (currently cannot be assessed)

[Urgency] ● High △ Medium □ Low —: N/A (currently cannot be assessed)

Chapter	Section	Sectors	Significance	Urgency	Confidence	Chapter	Section	Sectors	Significance	Urgency	Confidence	Chapter	Section	Sectors	Significance	Urgency	Confidence				
Agriculture, Forestry, Fisheries	Agriculture	Paddy field rice	●	●	●	Water environment, Water resources	Water resources	Water supply (Surface water)	●	●	△	Human health	Heat stress	Risk of Mortality	●	●	●				
		Fruit trees	●	●	●			Water supply (Groundwater)	◇	△	□			Heat stroke	●	●	●				
		Barley/Wheat, Soybean, Feed crops..	●	△	△			Water demand	◇	△	△		Infection	Vectorborne diseases	●	△	△				
		Vegetables	—	△	△		Natural Ecosystems	Terrestrial ecosystems	Alpine / Subalpine zone	●	●			△	Water- and food-borne diseases	—	—	□			
		Livestock Farming	●	△	△				Natural forests/ Secondary forests	●	△			●	Other infectious diseases	—	—	—			
		Plant Pests, Weeds	●	●	●				Countryside-landscape (Satouchi-Satoyama)	◇	△		□	Combined impacts (warming and air pollution)	—	△	△				
	Water, Land and Agricultural Infrastructure	●	●	△	Planted forests	●			△	△	Impacts on vulnerable populations		—	●	□						
	Sediment, Landslide..	●	●	△	Damage from Wildlife	●			●	—	Health impacts without leading to clinical symptoms		—	□	□						
	Storm surges Tidal waves	●	●	●	Material Balance	●			△	△	Industrial / Economic activities		Industrial / Economic activities	Manufacture	◇	□	□				
	Coastal Erosion	●	△	△	Freshwater ecosystems	Lakes / Marshes	●	△	□	Energy Demand and Supply				◇	□	△					
	Water supply (Surface water)	●	●	△		Rivers	●	△	□	Commerce				—	—	□					
	Timber production (e.g. Plantations)	●	●	□		Marshlands	●	△	□	Construction				—	—	—					
	Forest Forestry	Forest Forestry	Planted forests	●	△	△	Coastal ecosystems	Subtropics	●	●		△		Medical	—	—	—				
			Natural forests/ Secondary forests	●	△	●		Temperate / Subarctic	●	●		△		Finance, Insurance	Finance, Insurance	●	△	△			
			Non-wood forest products (e.g. Mushrooms)	●	●	□		Marine ecosystems	Marine ecosystems	●	△	□	Tourism		●	△	●				
			Fishes	Fishes	Migratory fish stocks (Ecology of fishes..)	●	●		△	Phenology	Phenology	◇	●	●	Others	Other impacts (e.g. Overseas impact)	—	—	□		
					Marine ecosystems	●	△		□		Shifts in Distribution and Populations	Native species	●	●		●	Life of Citizenry, Urban Life	Urban Infrastructure, Lifeline	Water supply, Transportation..	●	●
					Coastal ecosystems	●	●	△	Alien species			●	●	△		Life with sense of culture & history			Phenology	◇	●
					Propagation and Aquaculture..	●	●	□	Natural disasters, Coastal areas	Floods		●	●	●	Traditional events / Local industry			—	●	□	
					Freshwater ecosystems	●	△	□		Water-related disasters	Inland waters	●	●	△	Others	Impact on life due to Heat stress		●	●	●	
					Sea-level rise	●	△	●		Storm surges, Tidal waves	Storm surges, Tidal waves	●	●	●		Storm surges, Tidal waves		Sea-level rise	●	△	●
					Storm surges, Tidal waves	●	●	●	Storm surges, Tidal waves	Storm surges, Tidal waves	●	●	●	Coastal Erosion				●	△	△	
	Coastal Erosion	●			△	△	Sediment-related disasters	Sediment, Landslide..	●	●	△	Others	Strong wind..	●	△		△				
	Other	Other			Risk of Mortality	●	●	●	Water environment, Water resources	Water environment, Water resources	Lakes/Marshes, Dams(Reservoir)		●	△	△	Human health	Heat stress	Risk of Mortality	●	●	●
					Heat stroke	●	●	●			Rivers		◇	□	□			Heat stroke	●	●	●
Damage from Wildlife			●	●	—	Coastal areas & Closed sea areas	◇	△			□	Vectorborne diseases	●	△	△						
Shifts in Distribution and Populations			●	●	●																



■ Key strategies

1. **Mainstreaming adaptation** into government policies
2. Enhancement of **scientific findings**
3. Promotion of understanding and cooperation through **sharing and providing information on climate-related risks**
4. Promotion of adaptation in **local governments**
5. Promotion of **international cooperation** and contribution

■ Period

- Considered with long-term perspective till the end of 21st century,
- showing the basic direction of measures in about coming 10 years.

■ Basic approach

- List policies and measures for adaptation in each thematic area.
- Because of uncertainties, implementing iterative risk management for decision making based on changes in social environment.



Monitoring & Evaluation of NAP

- **Implementation of trial monitoring** agreed at the Inter-Ministry meeting (June 2016)
- Self-monitoring on implemented measures in FY2016 by each ministry and agency
- **1st Trial monitoring report** accepted at Inter-Ministry meeting (11 October 2017)

Monitoring summary

- **Understanding of the progress status of all implemented measures in 2016** about 7 areas in MAP:
(1) Agriculture, Forests/Forestry and Fisheries, (2) Water Environment/Water Resources, (3) Natural Ecosystems, (4) Natural Disasters/ Coastal Areas, (5) Human Health, (6) Industrial/Economic Activity, (7) Urban Life.
- **Setting indicators to understand the progress status for the 38 out of 56 measures.**

Future issues and direction

- **Continuous annual monitoring at the Inter-Ministry meeting** and announcement of the report.
- **In principle, indicators will be set up for all implementation measures to grasp the progress.**
- Continues consideration to be able to evaluate effectiveness of adaptation measures in the future.

- **2nd Monitoring report in 2018 (to be published in coming months)**



Climate Change Adaptation Act (June 2018)

1. Comprehensive Adaptation Programme

- Set up clear roles of national and local governments, private sectors, and citizens to promote climate change adaptation efforts.
- National government shall formulate **National Adaptation Plan (NAP)** to promote adaptation in all sectors. The national government should develop methodologies for monitoring and evaluation (M & E) of the progress of adaptation efforts.
- MOE shall implement **climate change impact assessments, every 5 years**. The NAP needs to be revised accordingly.

Promotion of effective adaptation measures in various fields through reliable scientific information

Agriculture, Forestry, Fisheries

Human Health

Water Environment and Resources

Industries and Economic Activity

Natural Ecosystems

Life of Citizens

Natural Disasters

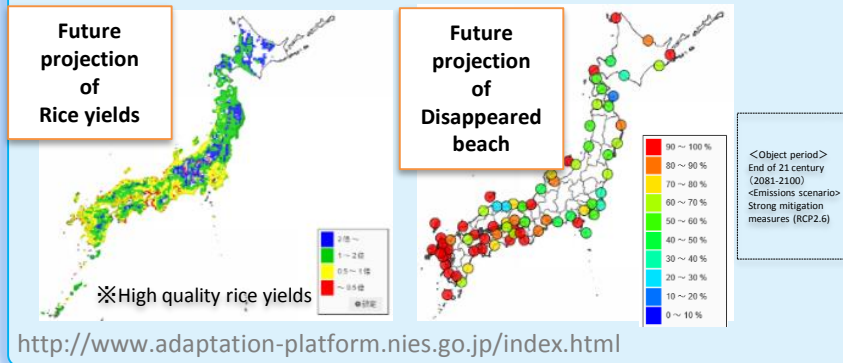
Based on scientific findings of future impact projections ...

- Develop agricultural products with high-temperature-resistant varieties
- Set up fishing grounds based on the changes of fish distribution.
- Maintain embankment and flood control facility.
- Develop flood risk maps.
- Promote heat illness prevention measures.

2. Information Platform

- The National Institute for Environmental Studies (**NIES**) operates Climate Change Adaptation Platform (**A-PLAT**) as center of excellence.

Example of the main contents of A-PLAT



3. Adaptation in Local Areas

- Local governments (Prefectures and municipalities) are asked to formulate **Local Climate Change Adaptation Plans**.
- Prefectures and municipalities should assign **Climate Change Adaptation Center** as a local climate change data collection and provision center.
- Local stakeholders can organize **Regional Councils** to promote adaptation measures locally in a cooperative manner.

4. International Actions and Business

- Promote International cooperation.
- Promote adaptation business.



Summary

- Adaptation is relatively new but urgent issue in Japan.
- Climate Change Impact Assessment Report (2013) and NAP (2015) triggered inter-ministerial work on adaptation. Annual M&E is on-going regarding the progress of NAP.
- New Climate Change Adaptation Act coming into force in Dec. 2018. NAP will be reformulated under the CCAA.
- CCAA aims at promoting adaptation actions in local, national and international level. Technical support based on latest scientific knowledge and information is needed.