

Philippines as Research Hub on Global Health Innovations to deal with Climate Change and Natural Disasters

Shinichi Egawa, MD, PhD, FACS

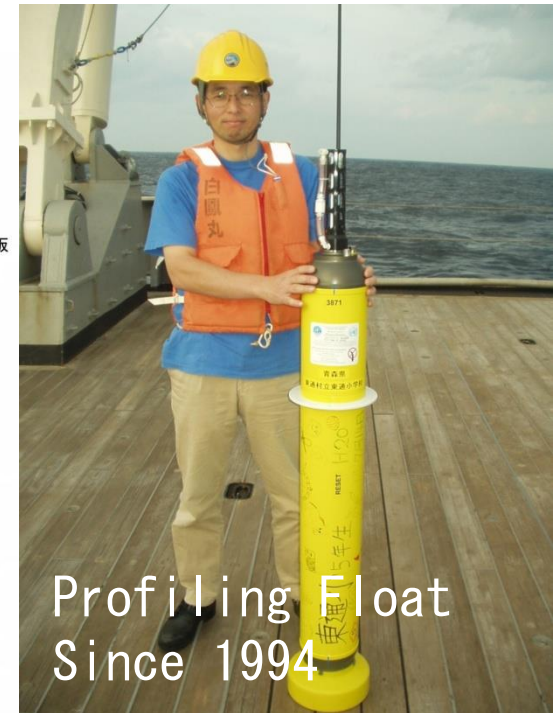
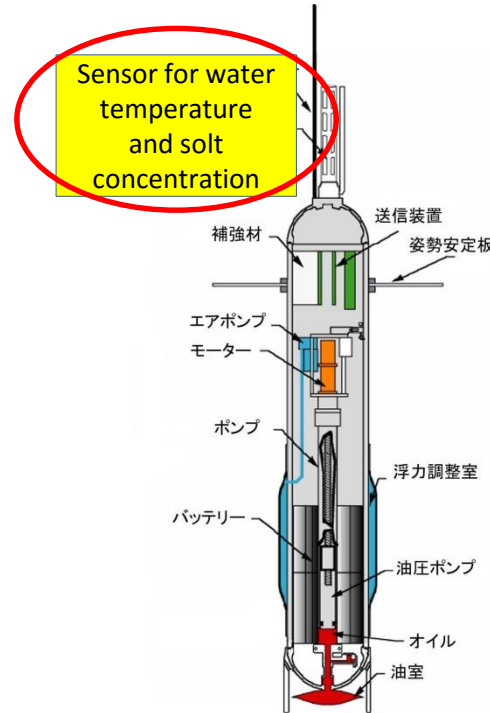
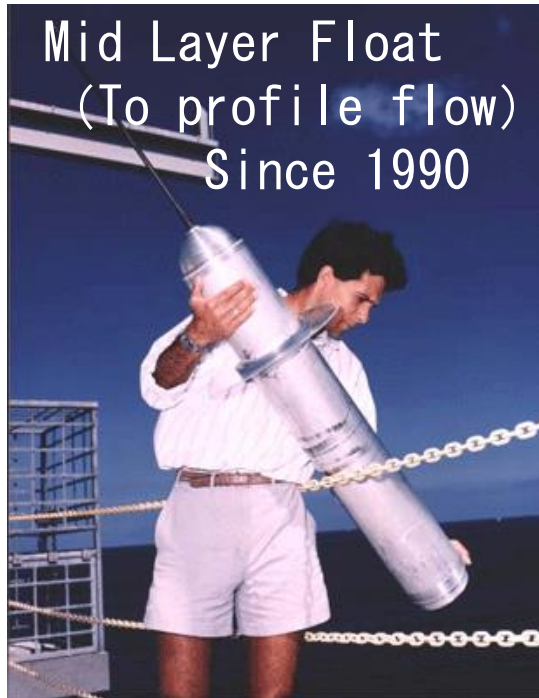
Professor

International Cooperation for Disaster Medicine

IRIDeS, Tohoku University



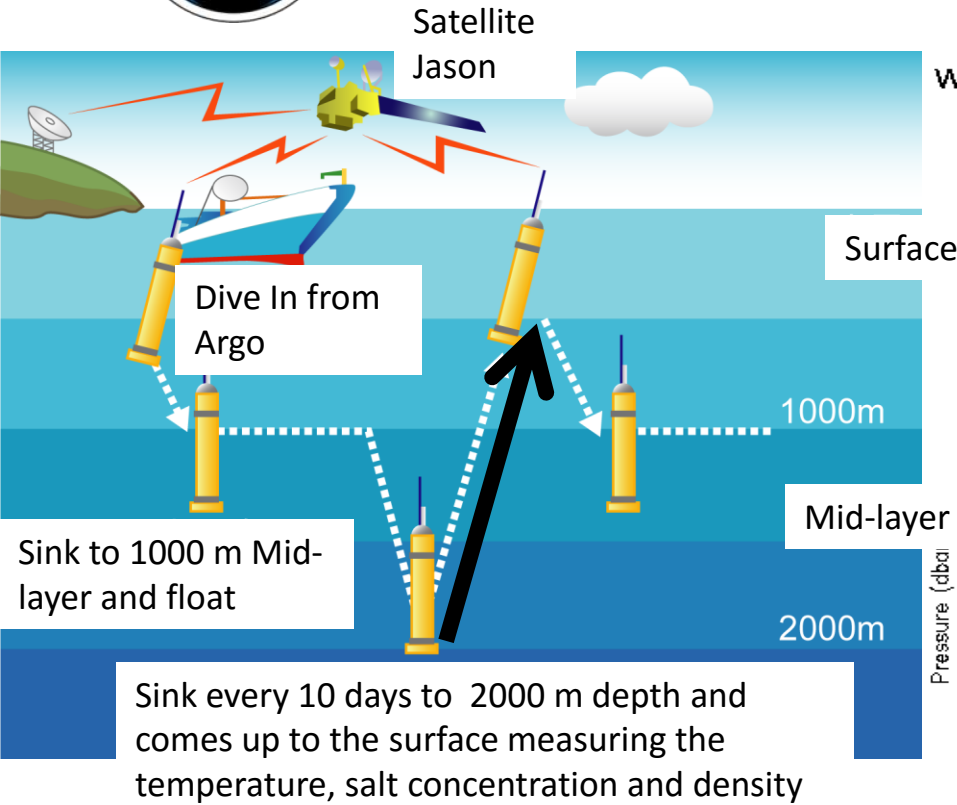
Profiling Robot that made Argo possible



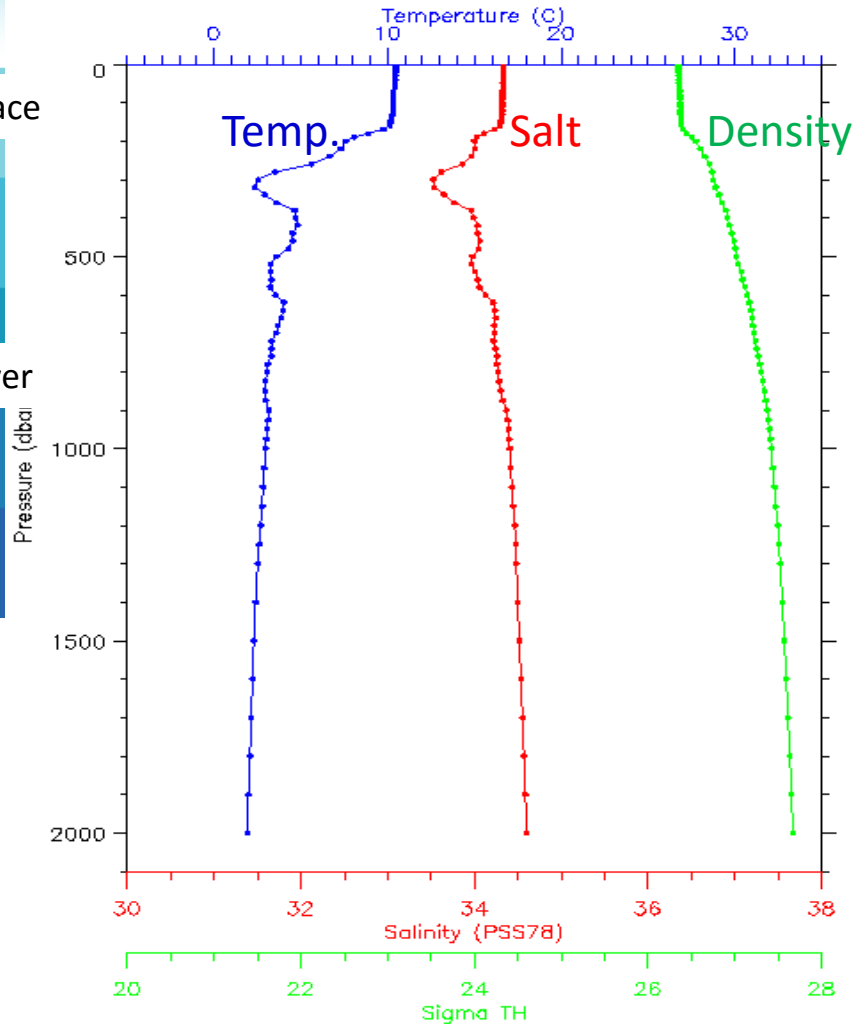
Courtesy of Prof. Toshio Suga
Tohoku University Graduate School of Science, IRIDeS



Profiling Robot that made Argo possible



WMO ID:2900707 Profile:26
Date(UTC):2008/04/09 04:33 Lat.39.638N Lon.151.730E

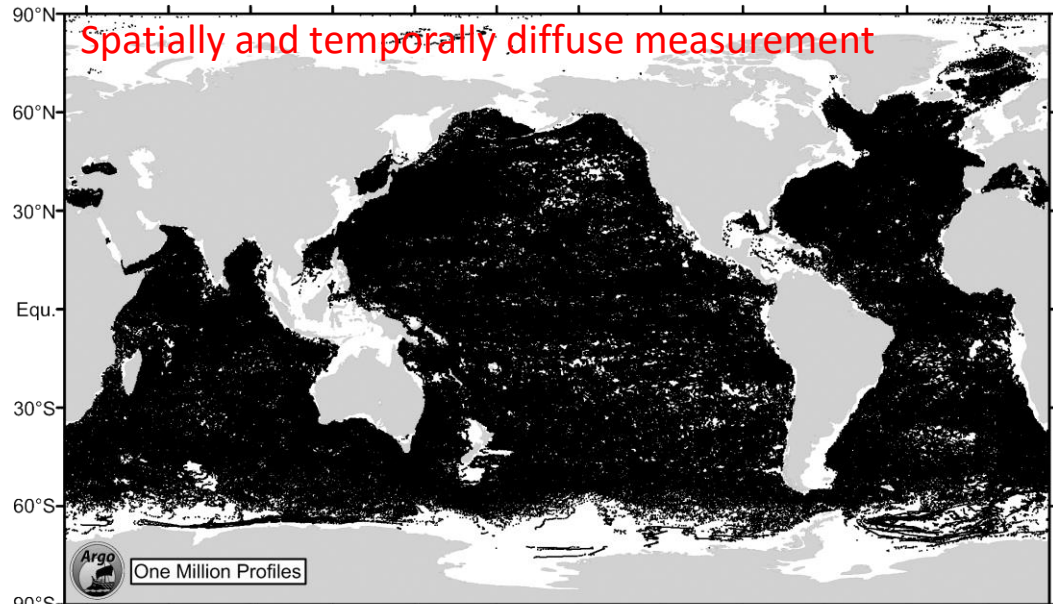




More than 1 M profiles are available

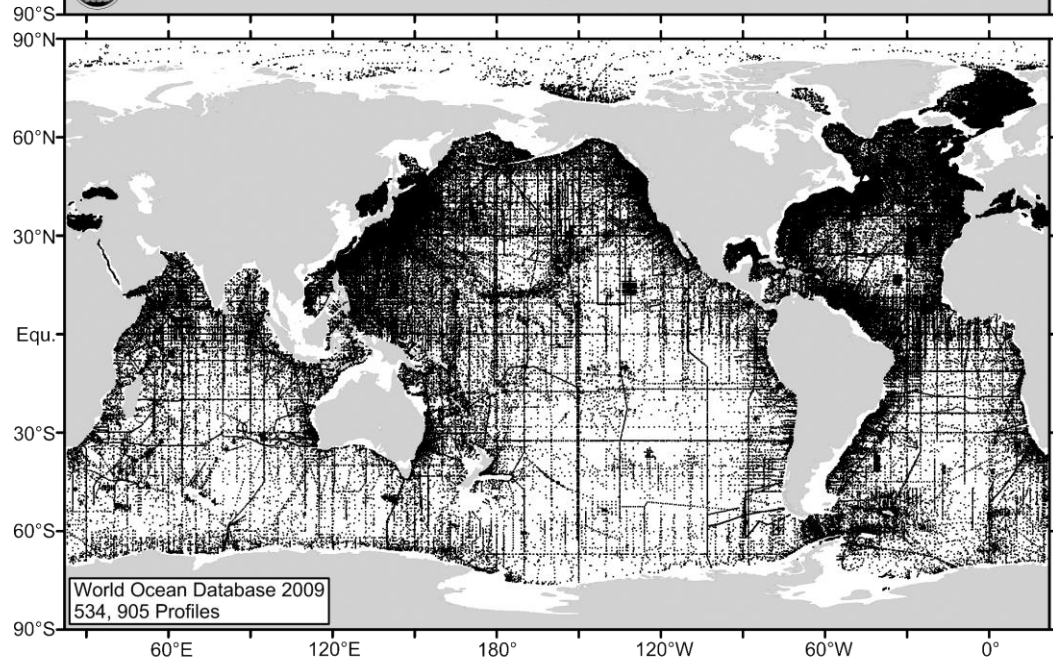
1997-2012

>1 million



1870-

0.5 million



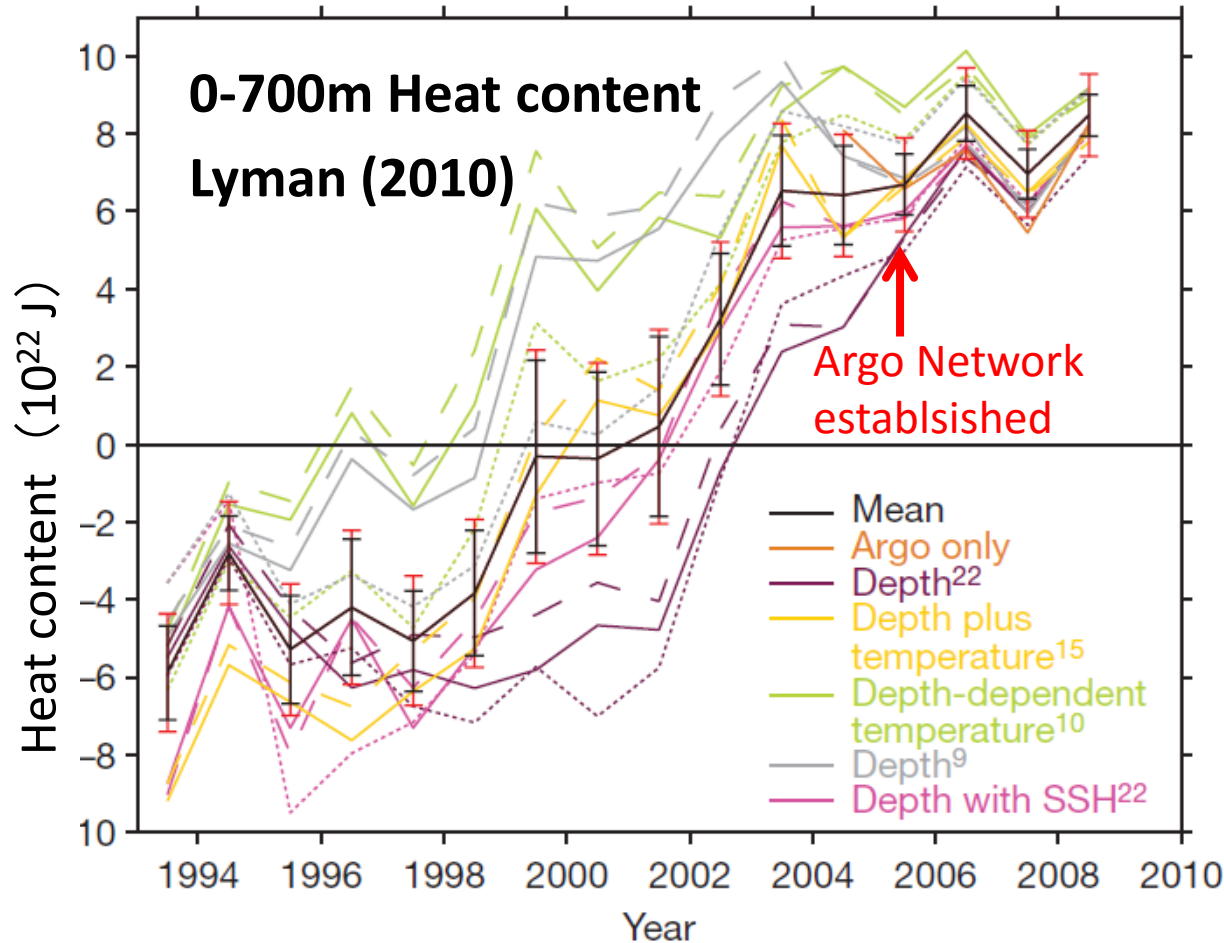
Courtesy of Prof. Toshio Suga
Tohoku University Graduate
School of Science, IRIDeS



Result of Argo 1

Correct measurement of heat storage of the ocean

$2 \times 10^{22} \text{J}$: 800,000 time of one year product of a nuclear power plant

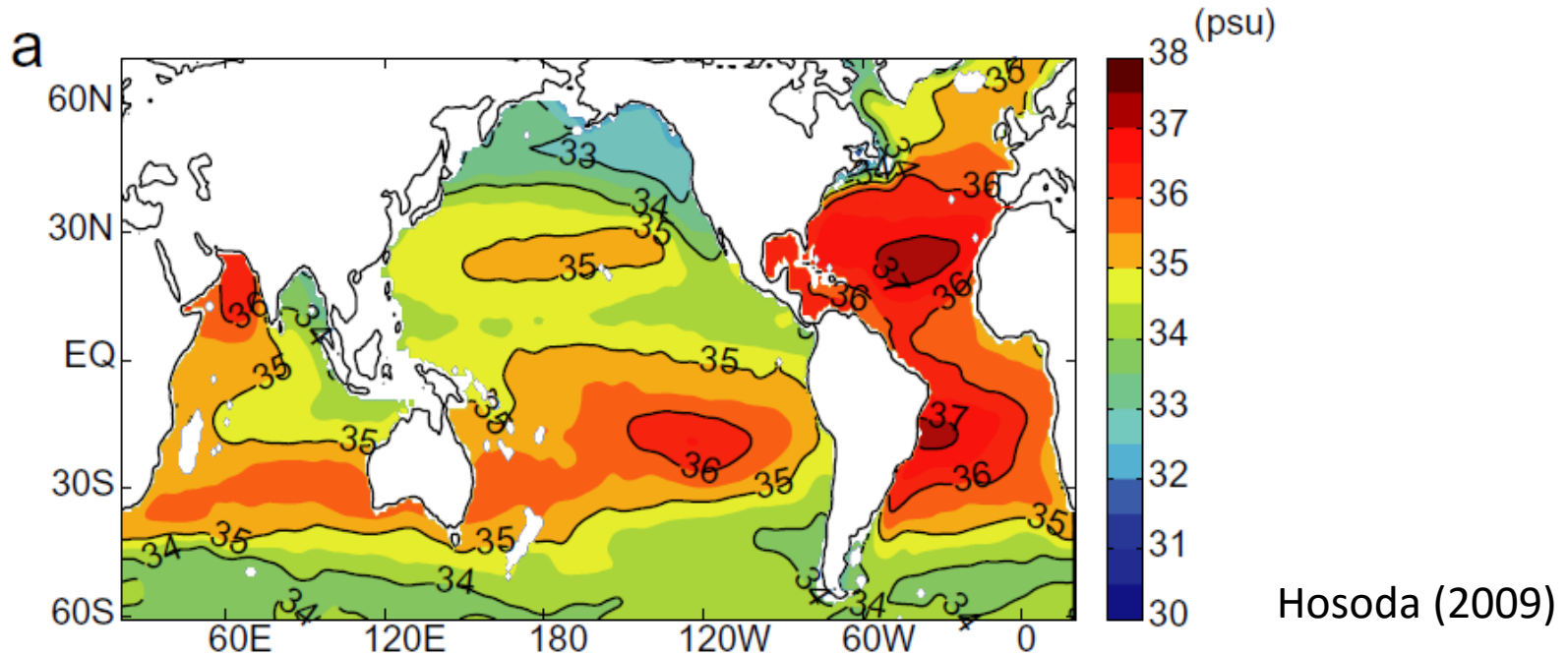




Results of Argo 2

Global change of salt concentration

Salt Concentration: Gram of salts in 1kg of sea water. 35g = 3.5%



Evaporating Area -> More salt

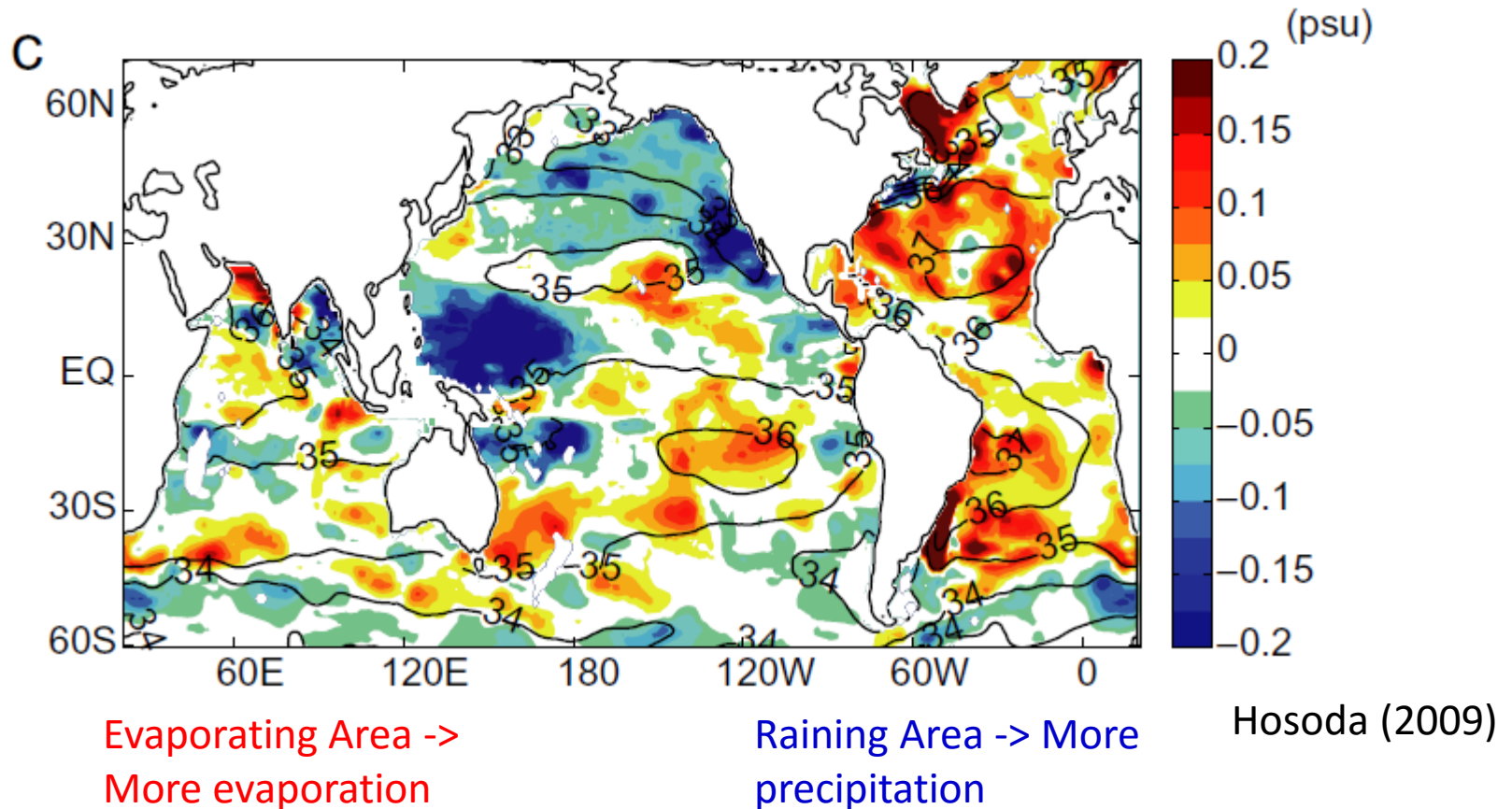
Raining Area -> Less salt

Salt concentration is natural rain meter!



Results of Argo 2

Change within this 30 years (2003-2007) – (1960-1989)

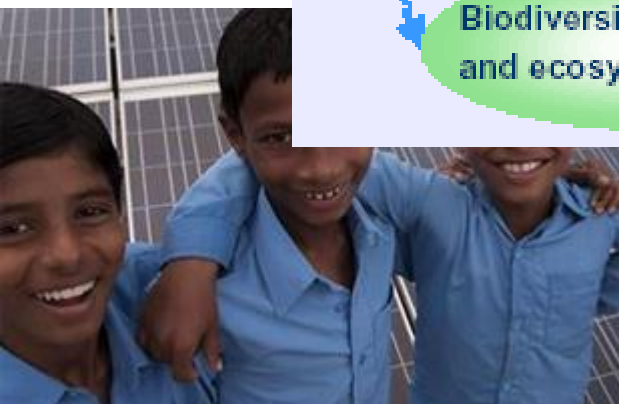
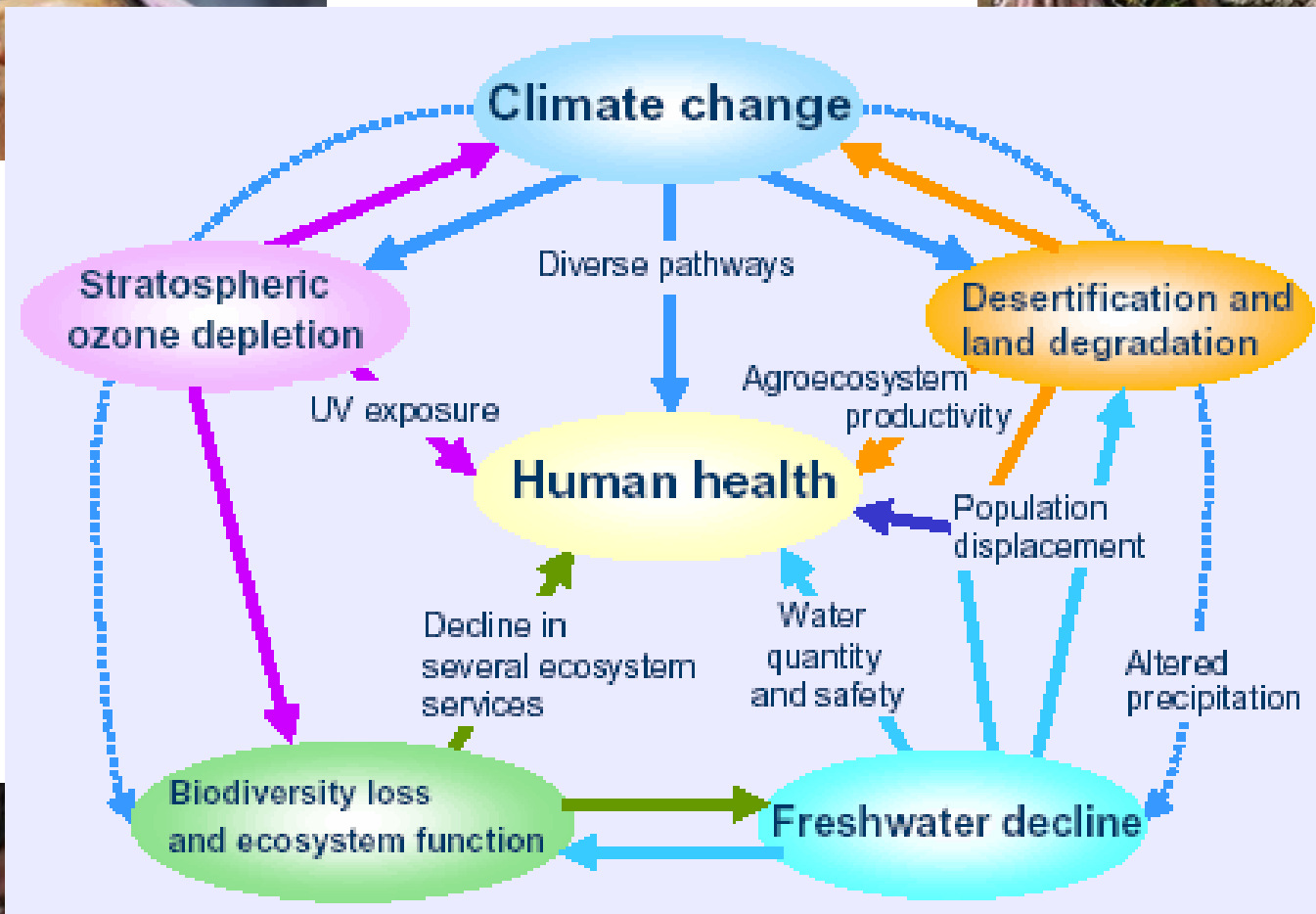


Global warming increased the air holding capacity of vapor to strengthen the global circulation of water (Increasing the precipitation)



Heatwaves and Health: Guidance on Warning-System Development

WHO WMO



Pictures from WHO website

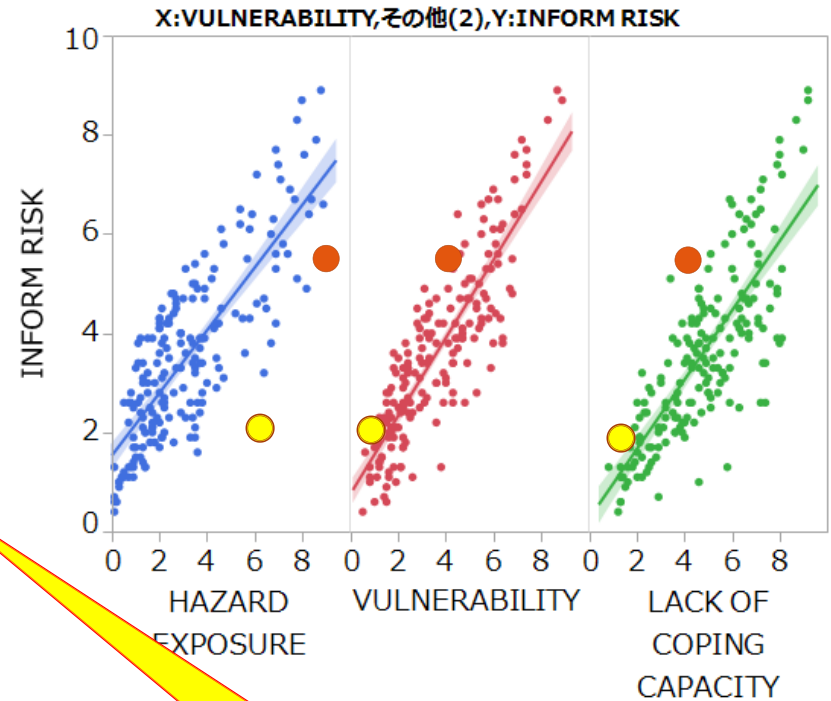
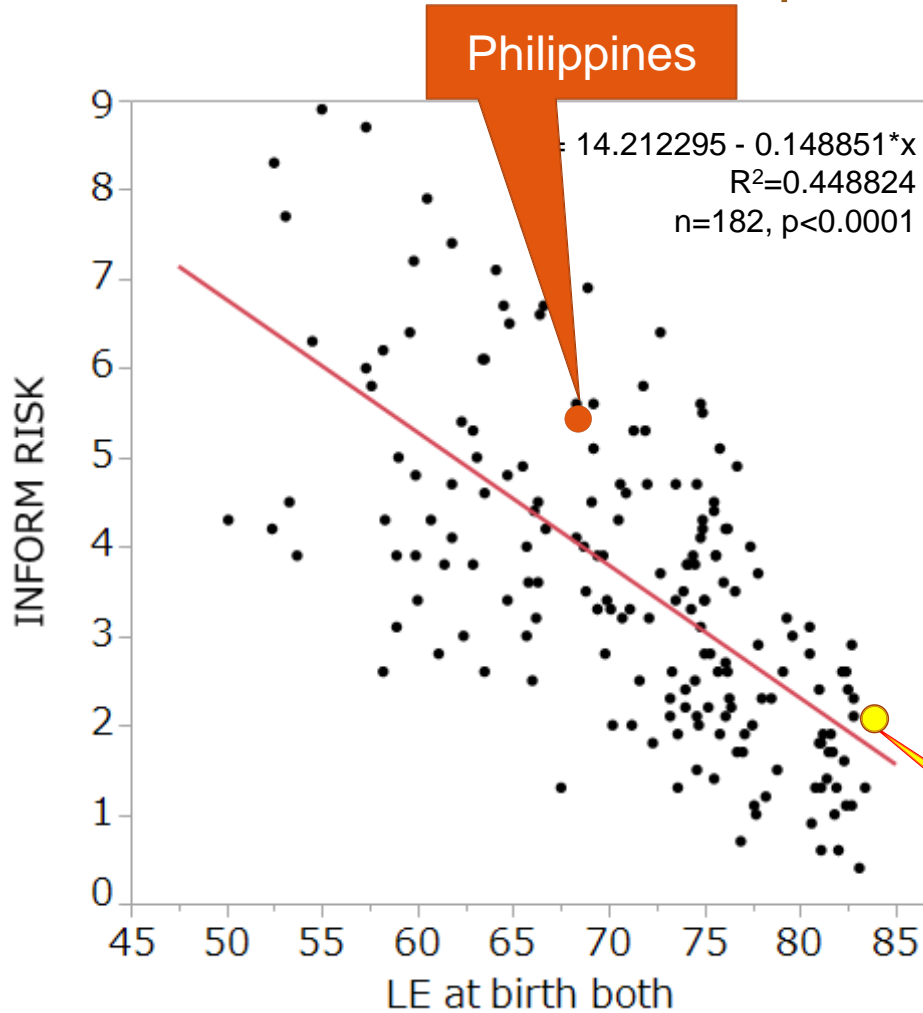
International Research Center for Disaster Medicine



Change of the community

Health indicator and disaster risk

Correlation of Life Expectancy and INFORM Risk



Data Source: INDEX FOR RISK MANAGEMENT RESULTS 2016, <http://www.bestliferates.org/blog/life-expectancy/>

Age distribution in Japan, Philippines and Nepal

50 years

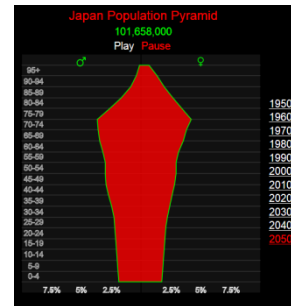
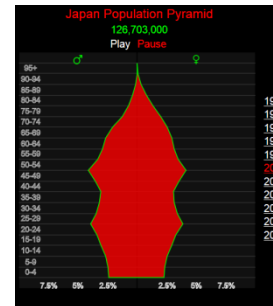
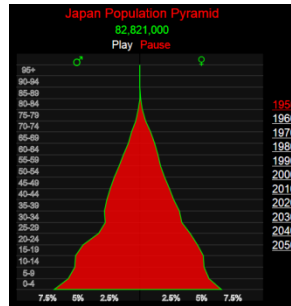
50 years

1950

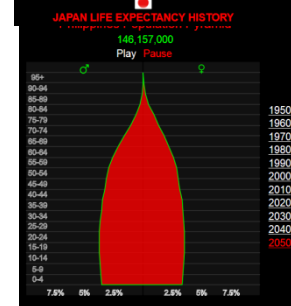
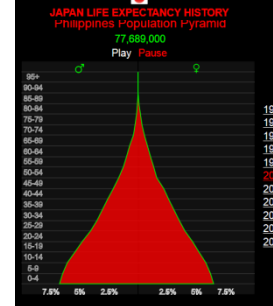
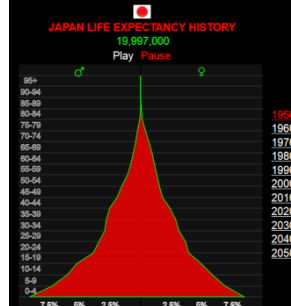
2000

2050

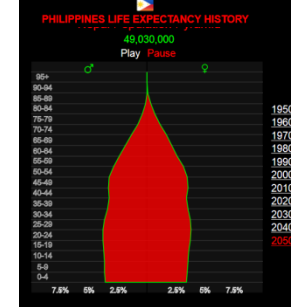
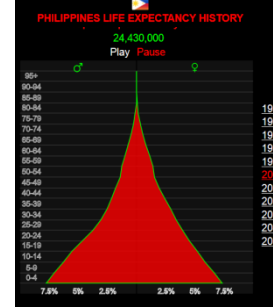
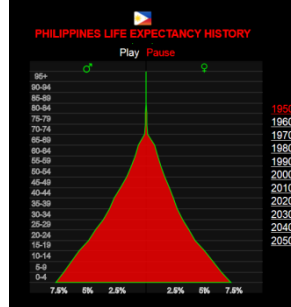
Japan



Philippines



Nepal



World Health Rankings

<http://www.worldlifeexpectancy.com/country-health-profile/>

Division of International Cooperation for Disaster Medicine

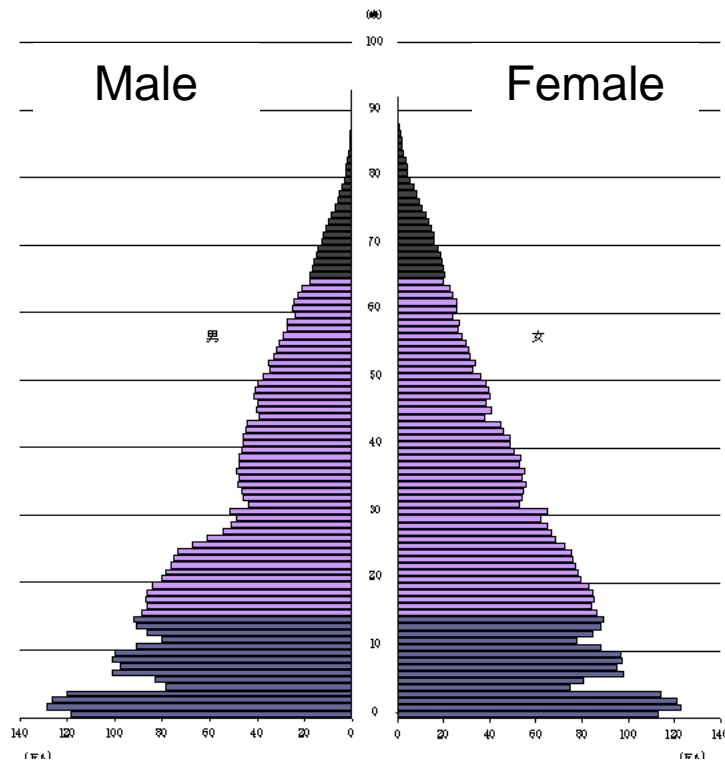
Age distribution in Japan

Statistics Bureau Japan

1950

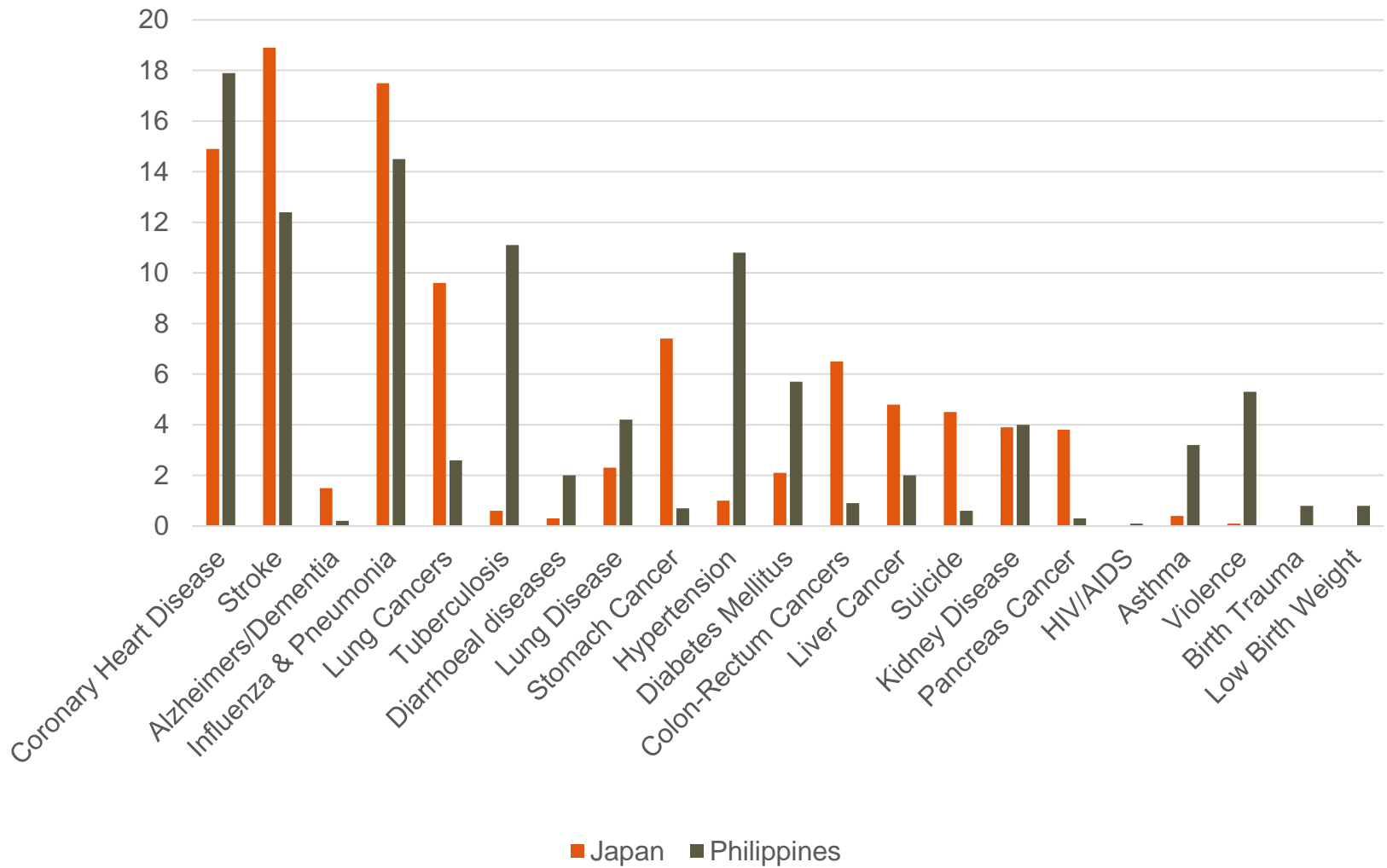


2010



Leading causes of death

% of Total



Source: WHO 2011, World Health Rankings

Division of International Cooperation for Disaster Medicine

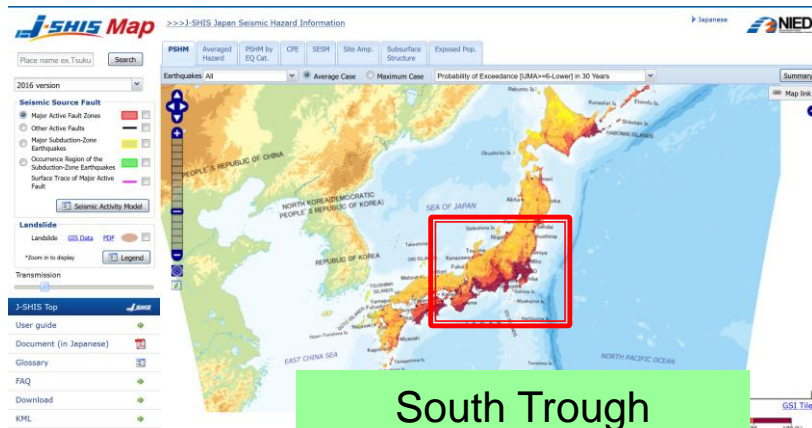


Change of the community

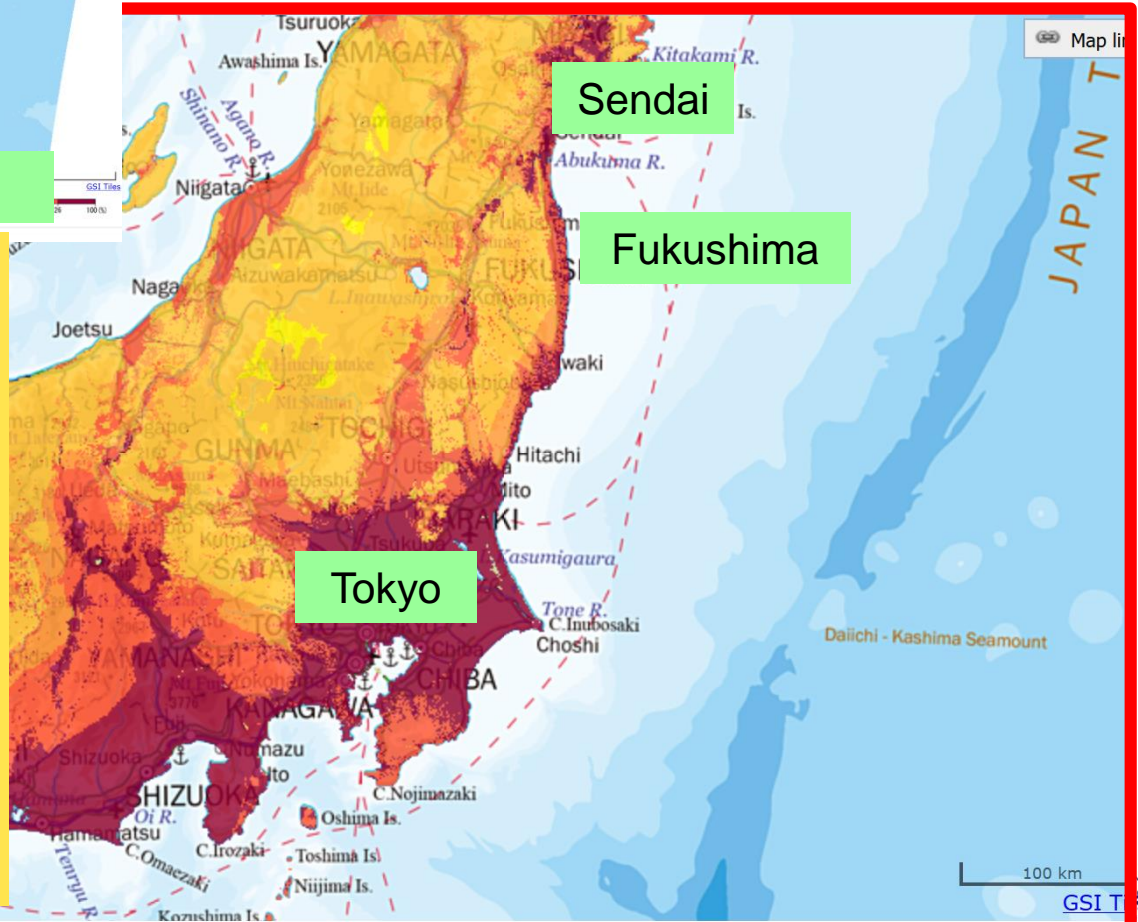
Zero casualty is not zero damage to health

Destructive earthquake hazard map of Japan

Probability of MMI VIII-XI within 30-years as of Jan. 1, 2016



South Trough



It is predicted that there is a 70 percent possibility of an earthquake directly hitting Tokyo within the next 30 years. Are you prepared?

<http://www.j-shis.bosai.go.jp/map/?lang=en>



Difference of medical needs

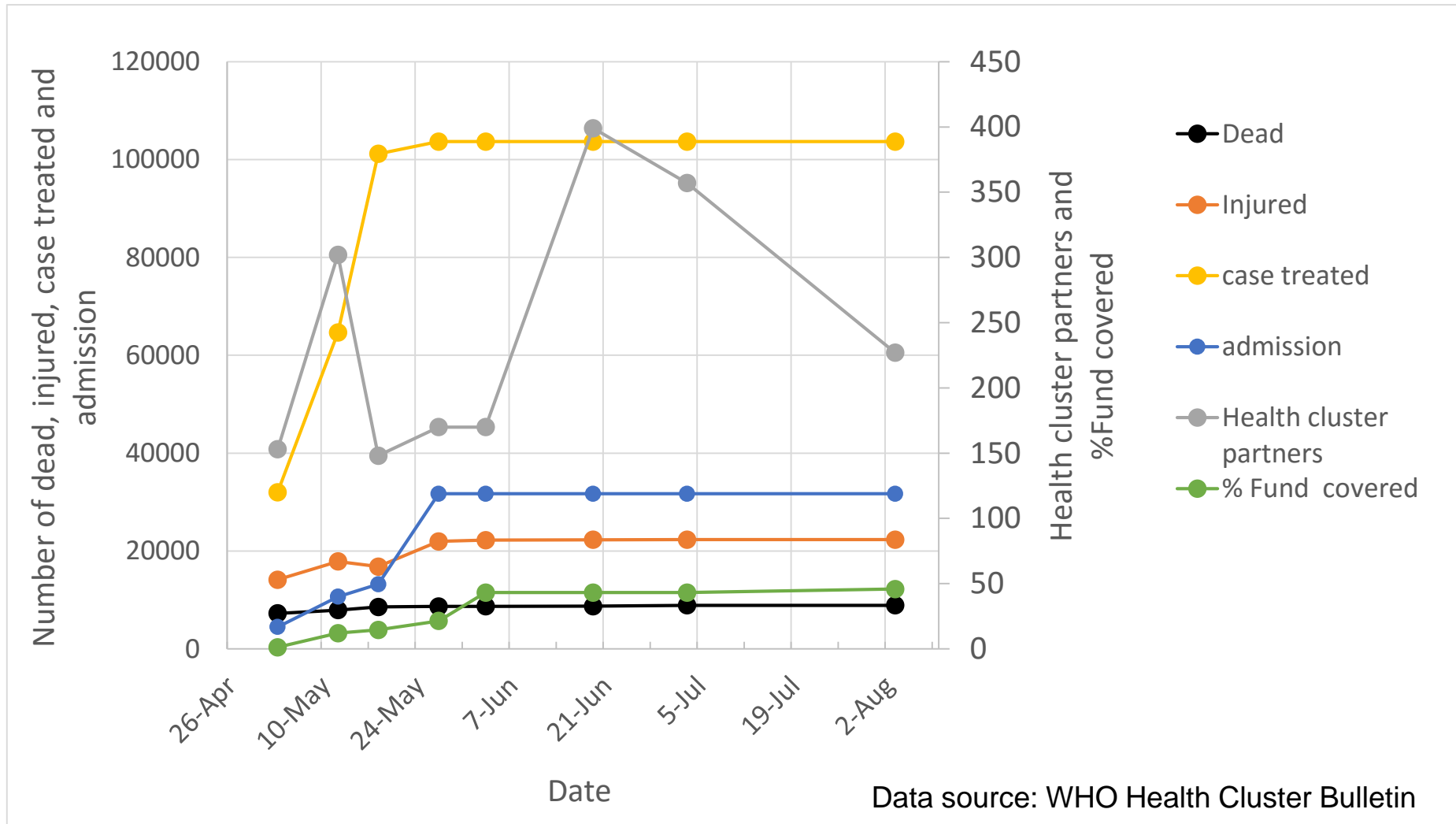
	Injured (a)	Dead or lost (b)	Peak evacuated population
Hanshin-Awaji Earthquake	43,800	6,433	307,200
Great East Japan Earthquake	5,942 ↓	19,582 ↑	488,000

Oct 24, 2011 Japan Gov.

- Less injury, but many other health needs lasted long.
- Health sector could not be functional without collaboration with other sectors.
- Radiation disaster compromised the situation
- Huge impact on the mental health of affected people and responders.
- Hospitals were severely damaged and needed support.
- Lack of education of disaster medicine resulted in inefficiency

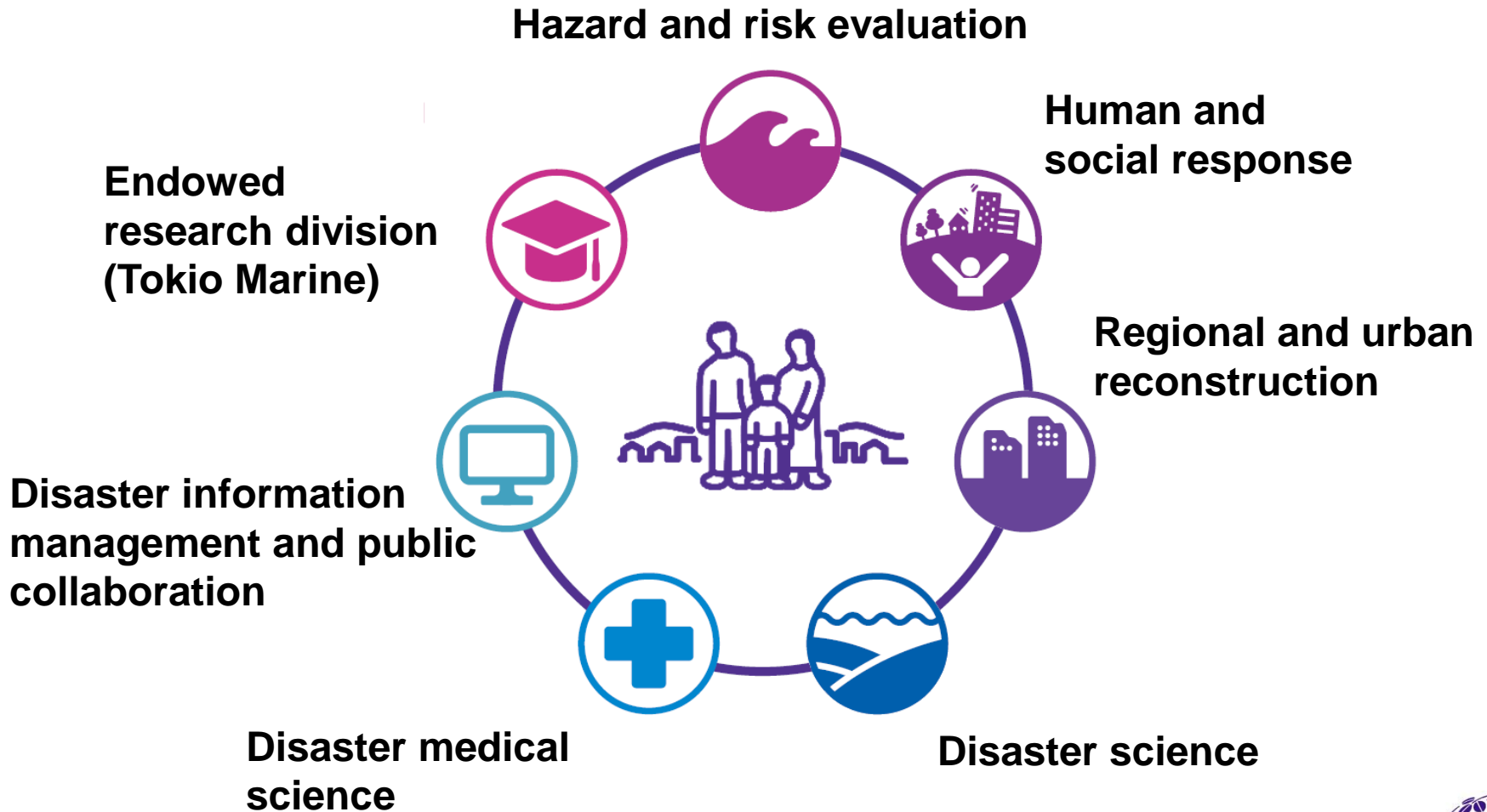
Human damage in Nepal

Apr. 25, 2015 M7.8 Gorkha Earthquake



Data source: WHO Health Cluster Bulletin

IRIDeS



IRIDeS investigates on Typhoon Haiyan Disaster

Onset: Nov. 8, 2013
Investigation: 2014-2015

Second
Report

International Research Institute of Disaster Science (IRIDeS)



14 March 2015

"IRIDeS Fact-finding missions to Philippines"

TOHOKU University
2015

Analysis on

- Hazard and damage
 - Remote sensing
 - Simulation
 - Surveillance
 - Hospitals
- Response
 - Warning and evacuation
 - Medical management
 - Infectious disease
 - Mental health
- Reconstruction
 - Safe hospital
 - Settlement
- Education


http://irides.tohoku.ac.jp/topics_disaster/haiyan-typhoon.html

IRIDeS investigates on Nepal Earthquake Diaster

Onset: Apr. 25, 2014, M7.8
Aftershock: May 12, 2014, M7.2
Investigation: 2015-2016


Analysis on

- Hazard and damage
 - Remote sensing
 - Structural and water resource
 - Logistics
 - Hospitals
- Response
 - ODA/NGO
 - Medical management
 - Infectious disease
 - Mental health
- Reconstruction
 - Housing
 - Settlement
- Education





Research Report

IRIDeS Fact-finding and Relationship-building Mission to Nepal



International Research Institute of Disaster Science
Tohoku University
Sendai, Japan
13 March 2016



TOHOKU UNIVERSITY IRIDeS

<http://irides.tohoku.ac.jp/media/files/archive/NepalResearchReport-s.pdf>

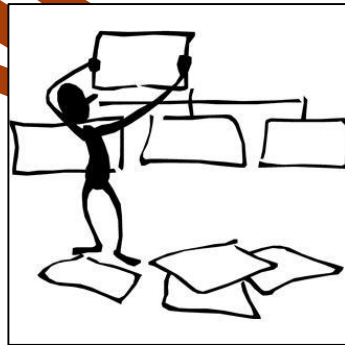
Coordination of Emergency Medical Teams

Affected People

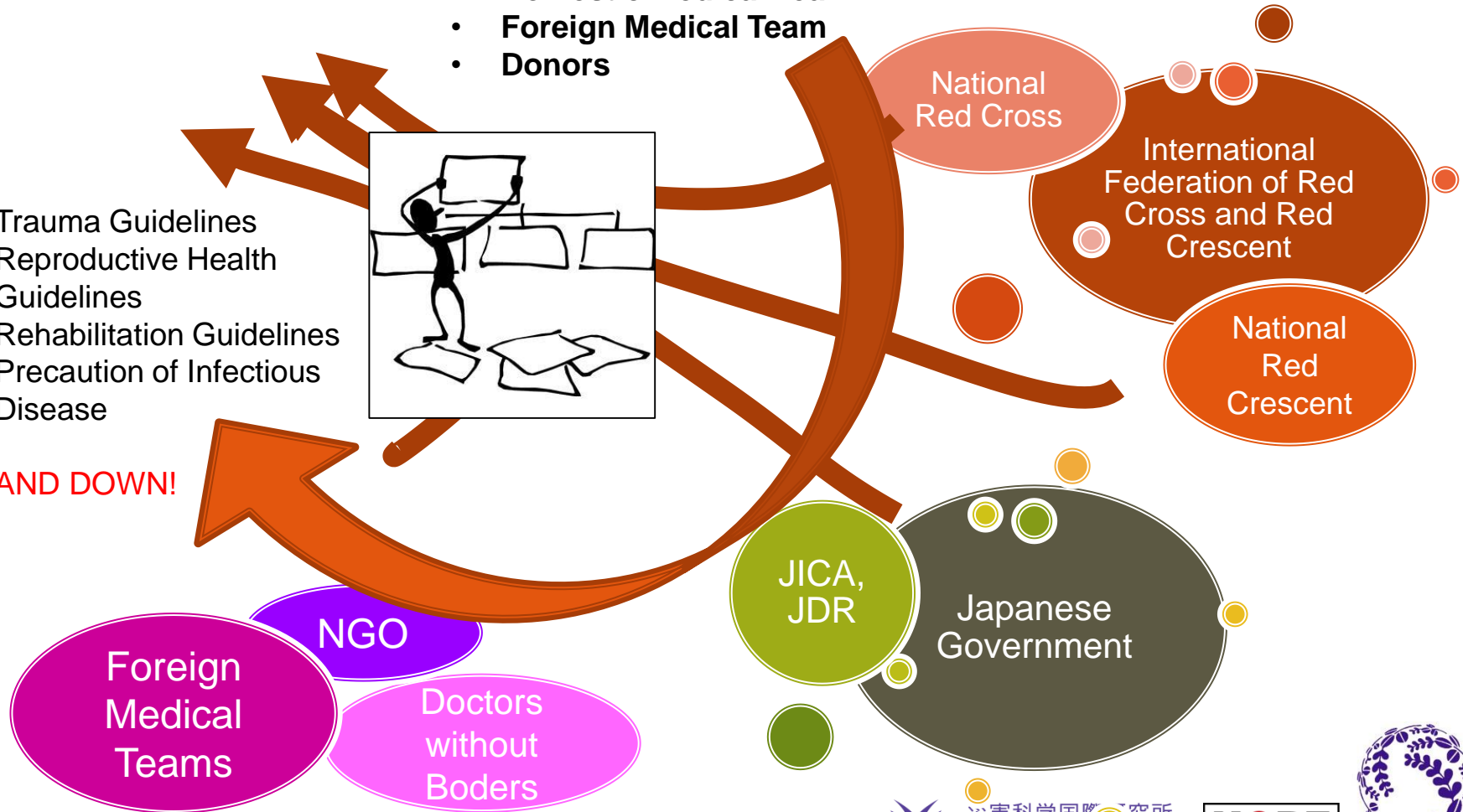
Health Cluster Meetings

- Ministry of Health and Population
- WHO
- Domestic Medical Team
- Foreign Medical Team
- Donors

- Trauma Guidelines
- Reproductive Health Guidelines
- Rehabilitation Guidelines
- Precaution of Infectious Disease



STAND DOWN!



International Workshop on Education of Disaster Medicine and Public Health

Feb 9, 2016



Delegates and students in Human Security Course



Discussion



World Café Discussion

Outcome: core competencies of general health care providers in DMPHP

1. Leadership and Management
2. Teamwork
3. Respect to the culture of affected area
4. Communication and the Access to the information and resources.
5. Basic knowledge of disaster medicine including patient safety and mental health
6. Physical and mental self management
7. Preparedness against disaster

Health Innovation for climate change and disaster

Health centered paradigm of R&D with S&T based on Sendai Framework

- To reduce the hazard exposure
 - Existing and emerging hazard
 - Early warning
 - Environmental intervention
- To reduce the vulnerability
 - Inclusive DRR (Disability, Aged, Children and youth, Women, Indigenous people)
 - Sustainable urbanization
 - Creation of healthy community
- To increase the coping capacity
 - Universal health coverage
 - Increase the accessibility to mental and physical health service
 - Install disaster medicine in general health curriculum
 - Longevity with well-being