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FMI Development Cooperation to Support NHMS development

COP24, 5.12.2018
Capacity building hub

More information:
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Programme

Welcome &Introduction:

- Matti Nummelin (Paris Committee on Capacity Building)

Overview of FMI capacity building projects

- Adriaan Perrels (Finnish Meteorological Institute)

Example Tajikistan

- Muzaffar Shodmonov (Tajikhydromet)

Q & A

FMI – some key figures

- public weather & climate services
- research & development
- consultancy
- ~700 employees
- international staff
- high diversity of disciplines
- designated WMO member for Finland (NMS)
- national IPCC contact point

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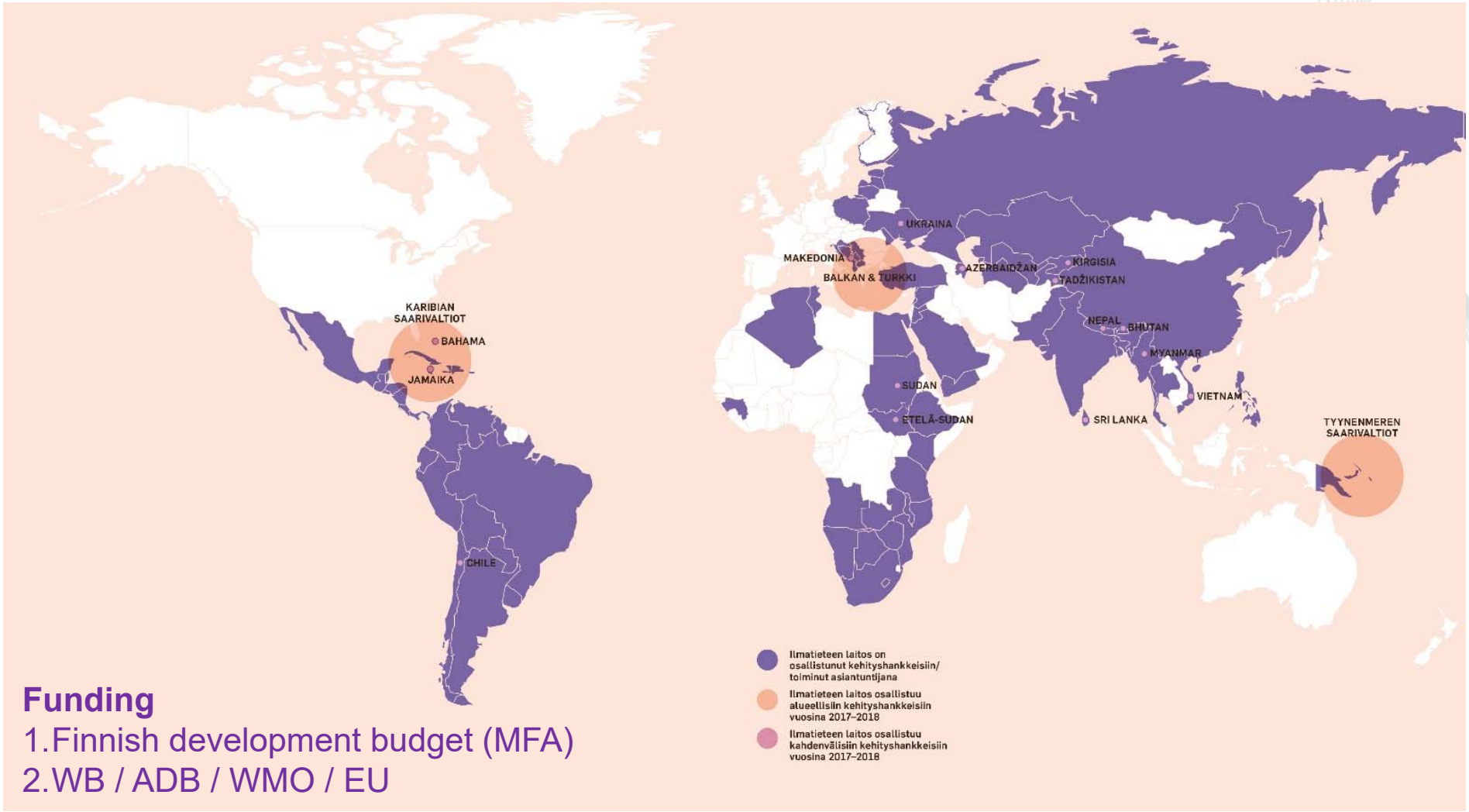
Since 1970 Development Projects in over 100 countries



Funding

1.Finnish development budget (MFA)

2.WB / ADB / WMO / EU

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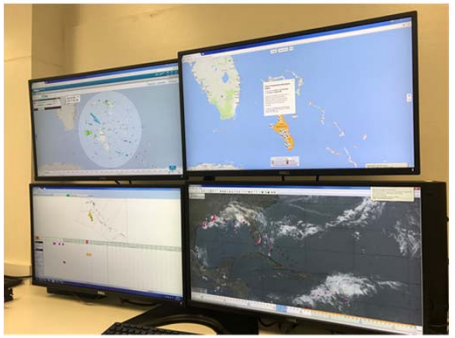
FMI Development Projects

- **Institutional Capacity Building**
  - Training
  - Technical Assistance
  - Feasibility and Socioeconomic Studies
- **Instruments and network development**
  - Automatic Weather Stations
  - Weather radars & lightning detection
  - Weather satellites
  - Data management
- **Numerical Weather Prediction models**
- **Verification and validation methods**
- **Quality Management Systems**
- **Weather services & products**
- **Energy studies, hydro, wind & solar**
- **Air quality measurements and modelling**
- **FMI SmartMet Weather Information System**

Blogi: Meteorologiaa maailmalla

Lue kuulumisia kehitysyhteistyöprojekteista eri puolilta maailmaa! Viimeisimpänä kokemuksia Tyyneltämereltä 7 viikon



MetServiceJA
@MetserviceJA
Seurataan

Prime Minister Andrew Holness tells our Director Evan Thompson:

"It's good for us to have these kinds of technology at our disposal, where we can know and plan."

#SmartAlertReactions #WeatherReady #ClimateSmart

Käännä kielestä englanti

Key elements of capacity building

- Typically a *twinning context* – meaning **long term partnership**, entailing:
  - mutual visits, longer term deployment, and regular remote interaction
- Such twinning projects address and link 4 pillars
  - Infrastructure
  - Organisation
  - Service products
  - Education & training
- Cooperation examples
  - MFA - ICI projects (inter-institutional cooperation),
  - World Bank and Asian Development Bank
  - PPP structures

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Why to support weather, climate and hydrological services?

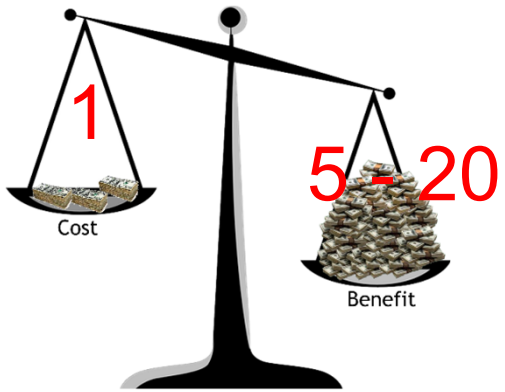
Finnish Development Policy 2016 -

4.2 Priority areas governing our action

Finland will strive to ensure, for its part, that during the current government term

- **I** the rights and status of women and girls have strengthened;
- **II** developing countries' own economies have generated jobs, livelihood opportunities and well-being;
- **III** societies have become more democratic and better-functioning;
- **IV** food security and access to water and energy have improved, and natural resources are used sustainably.

Socio-economic benefits



Estimated benefit-cost ratios

Country	economic sector	cost-benefit ratio	Reference
Australia	general public (willingness to pay analysis) in Sydney	1 : 4	Anamann and Lellyett (1996)
Croatia	overview of all sectors	1 : 3 (at least)	Leviäkangas et al. (2008)
Denmark	overview of all sectors, 3 case studies	Many detailed examples with good net benefits; aggregate picture lacking	The Ministry of Transport and Energy (2006)
Finland	overview of all sectors	1 : 5	Leviäkangas and Hautala (2009)
	transport	1 : 10 and higher	Nurmi et al. (2012) internal FMI study (on-going for other sectors)
Nepal	mainly agriculture; transport and hydropower also considered	around 1 : 10	Perrels (2011)
Russia	overview of all sectors	1 : 3–1 : 4	Bedritsky and Khandozko (2001)
Switzerland	overview, all sectors	1 : 5	Frei (2010)
	transport sector	1 : 10	Frei et al. (2012)
United Kingdom	general public (willingness to pay analysis)	1 : 7	Met Office (2007)
	meteorological infrastructure – satellite	1 : 5–1 : 20	Joo et al. (2011)
USA	transport sector (winter road maintenance)	1 : 2–1 : 3	Ye et al. (2009)
	general public (willingness to pay analysis)	1 : 6	Lazo et al. (2009)

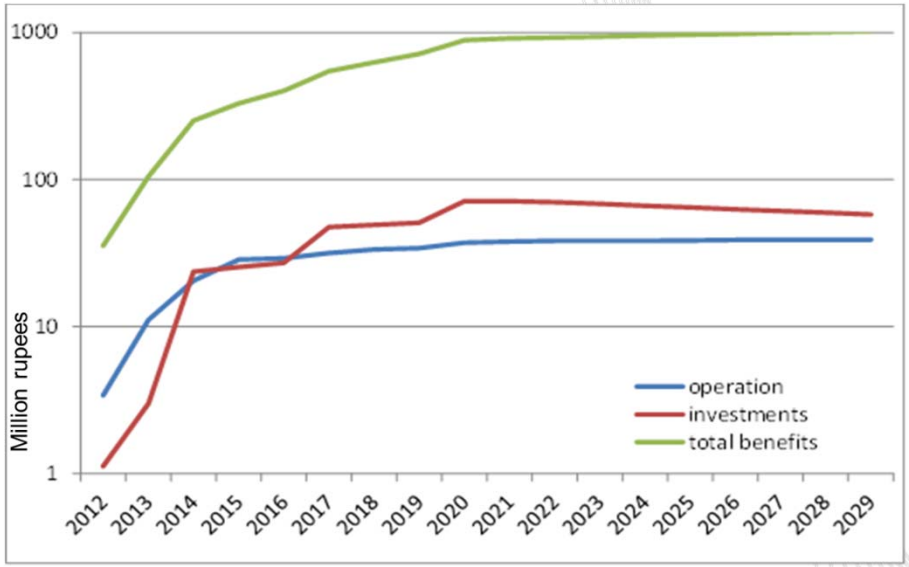
Source: Perrels et al 2013
doi:10.5194/asr-1-1-2013

Estimates for improved service in Nepal

Also qualitative estimates can be useful!

Sector / theme	Importance (+ ....++++)	Economic benefit estimates
Agriculture	++++	improved ability to secure harvests of paddy rice and cereals due to 2 days ahead weather forecasts ~ approx. 800 million rupees/year (~ € 8 million) when all regions are serviced; saving of livestock and of cash crops represent additional significant benefits
Electric power supply	++ / ++++	in conjunction with good hydrological observation and modelling system further system optimisation could be achieved, also for demand side management benefits can be generated; value can exceed easily 10 million rupees per year, with significant upward potential depending on dedicated services
Public health and citizen safety	++++	better monitoring and warning regarding vector borne diseases; better monitoring and warning for citizens and their properties regarding dangerous extreme weather events; significant benefits from prevented damage, in some years even very large benefits
Civil aviation and tourism	++ / ++++	improved weather services support confidence among tourists for safe travel to and in Nepal and thereby generates benefits by supporting further growth of tourism and by helping to prevent accidents. benefits easily surpass tenths of millions of rupees per year, but could develop to much larger sums
Road transport	+ / ++	traffic on the still sparsely developed road system inside and across districts is sensitive to adverse weather conditions in terms of safety and loss of value of cargo; furthermore building and maintenance of local roads can be more cost-efficient when regional weather forecasts are available

Source: Perrels 2011



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Nepal - FNEP ICI-Projects

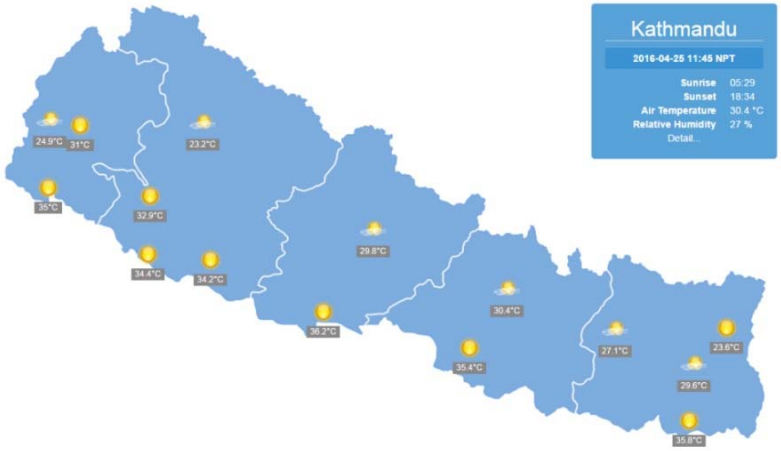
Finnish-Nepalese Project for Improved capability of the Government of Nepal to respond to the increased risks related to the weather-related natural disasters caused by climate change

Beneficiary Department of Hydrology and Meteorology (DHM) in Nepal

Cooperation with WB PPCR (Pilot Programme for Climate Resilience)

FNEP1 (2/2010 – 12/2012)
- Strategical planning & socioeconomic benefits
- Institutional role of DHM in EWS and DRR
- customer service capacity

FNEP2 (5/2013 – 5/2016)
- weather forecast and service processes
- customer relations and weather and climate services
- data management and quality control



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FNEP – Project highlights

New observation technology

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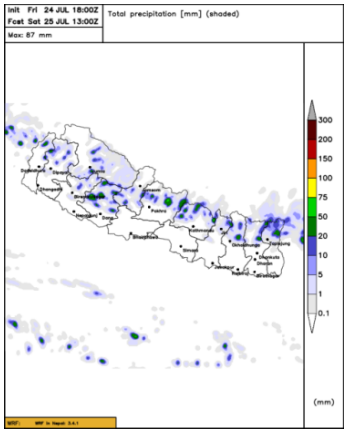
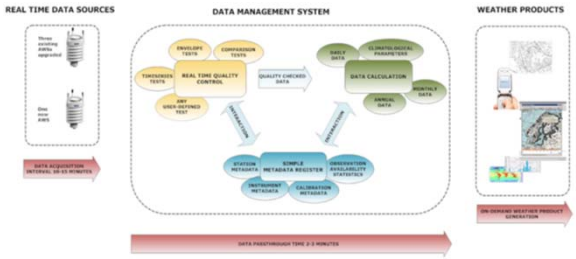
Operational NWP system and new end-products



New operational data management system



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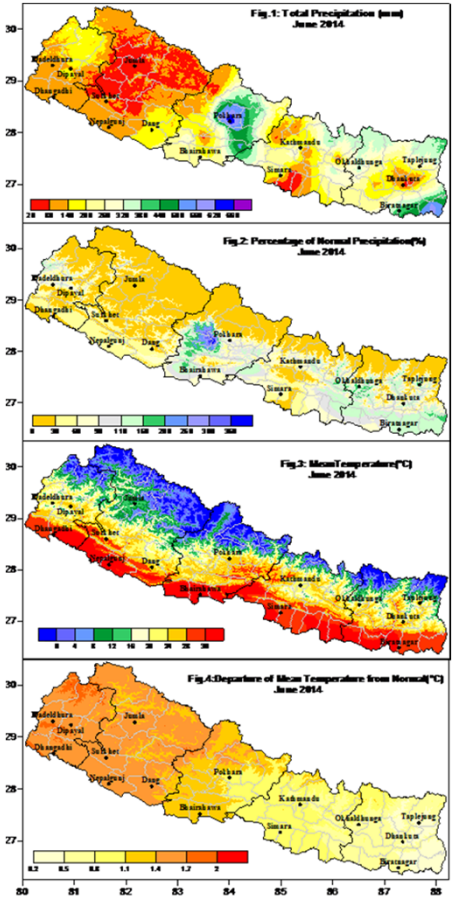
Enhanced climate services



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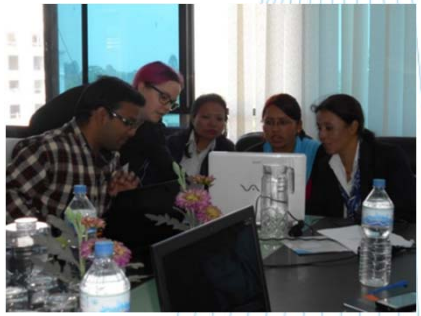
Enhanced DHM capacity



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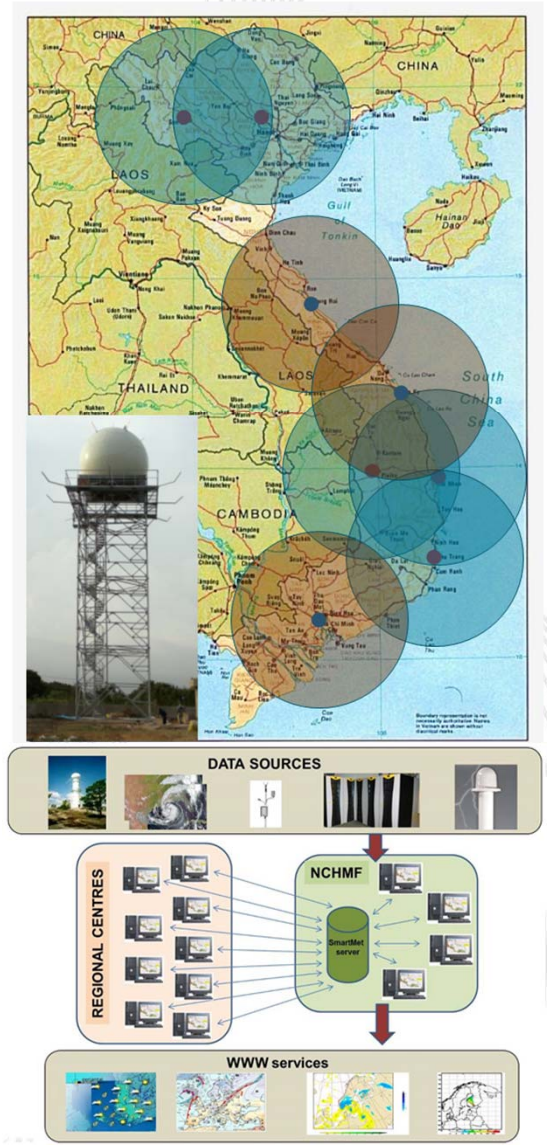
Upgrading the Rainfall Detection Capabilities of NHMS, Vietnam (2017 - 2019)

- Funding Finnish Concessional Credit program, 20.2 MEUR (PPP)
- Prime contractor VAISALA, FMI subcontractor
- Strengthen the capability of Vietnam in managing the impacts of climate change and weather events
  - improve the current weather radar observation network with 5 new modern weather radars (dual polarized C-band)
  - upgrade of 3 old weather radars
  - weather radar central site and composite
  - Country-wide lightning detection system
  - Weather Information System SmartMet
  - Extensive training component
- Implementation started in 2017
- Cooperation and coordination with WB VN-Haz



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SmartMet Early Warning Services in the Pacific

- Installations of early warning system SmartMet Alert together with FMI-built forecaster workstation software SmartMet in the region (Fiji, Papua New Guinea, Samoa, Solomon Islands, Tonga, Vanuatu)
- Result: Comprehensive and modern, digitalized forecast and warning dissemination system in utilization
- New services and effect:
  - Weather forecast and warning services dissemination as automatized text messages, tweets and Facebook messages
  - Warning information mobile app: Automatic notification if mobile phone user is inside warning area.

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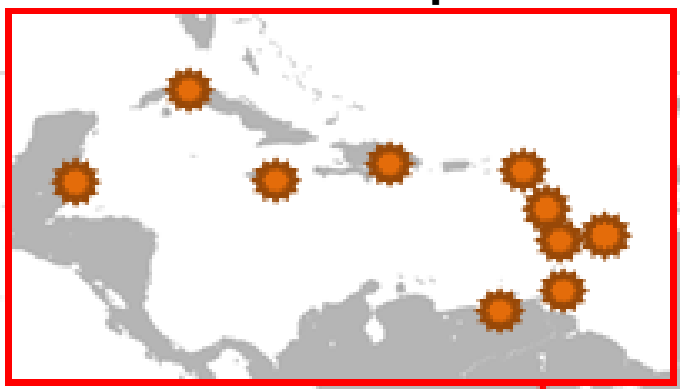
SmartMet
early warning services in the Caribbean

- Implementation and development of early warning services in SHOCS II - project 2013-2015 in the Caribbean region
- Installation of FMI systems SmartMet (in 10 countries) and SmartAlert (3 countries)

SmartMet adopters



SmartAlert adopters

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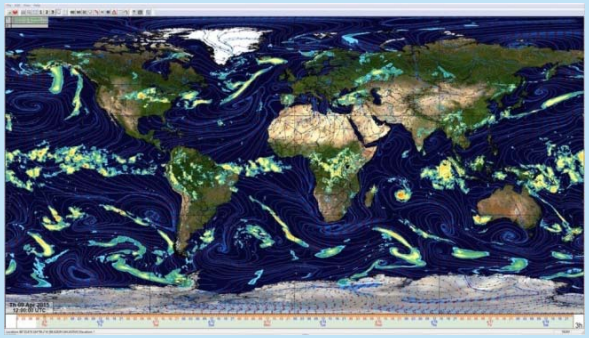
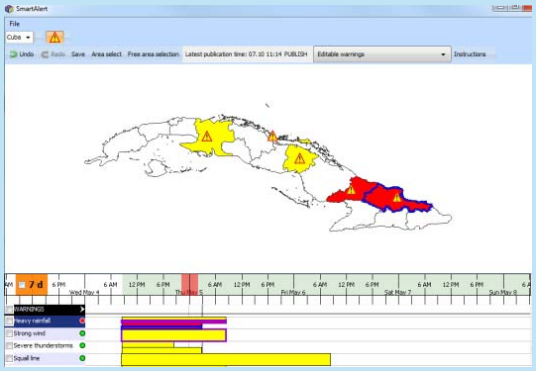
SmartMet in Cuba

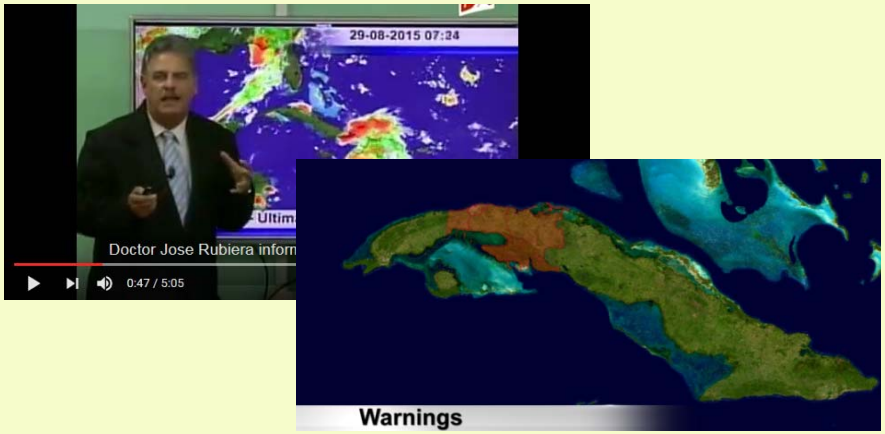
- Comprehensive and modern, digitalized forecast and warning dissemination system integrated with TV presentation software.

FMI SmartMet systems in Cuba

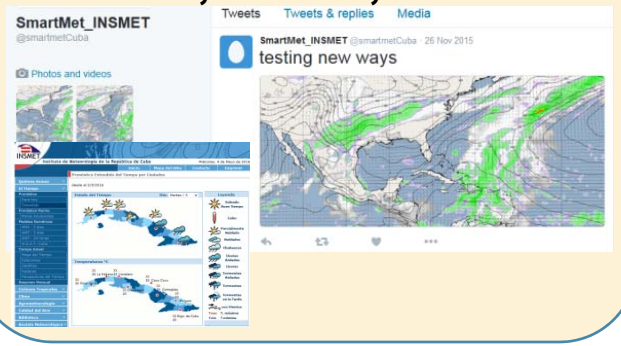




TV presentation software



Public forecasts, www, twitter, etc.



Dissemination of warnings

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FINTAJ (2014 – 2020)
Finnish-Tajikistan Meteorology Projects

- ICI-projects FMI – Tajikhydromet, funded by MFA Finland
- Development work through twinning partnership

1. Improved capacity to provide Climate Services
2. Improved air quality observation system
3. Improved strategic and technical planning capacity
4. Improved capacity of Tajikhydromet staff on modern observation technology and weather service process
5. Glacier & snow monitoring and research

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Resuming glacier monitoring in Kyrgyzstan and Tajikistan with Finland's support

- Components in the FINKMET- and FINTAJ projects Funded by the MFA of Finland 2018 – 2020
- Beneficiaries: Kyrgyz- and Tajikhydromet
- Pilot expeditions performed 2018 on the Turgan Aksuu glacier in Kyrgyzstan and GGP glacier in Tajikistan:
  - Initiation of glacier mass balance measurements
  - Establishing AWS observations for weather monitoring
  - Piloting UAV's for glacier surface area monitoring
  - Snow collection to study the effect of atmospheric pollutants on glacier melting

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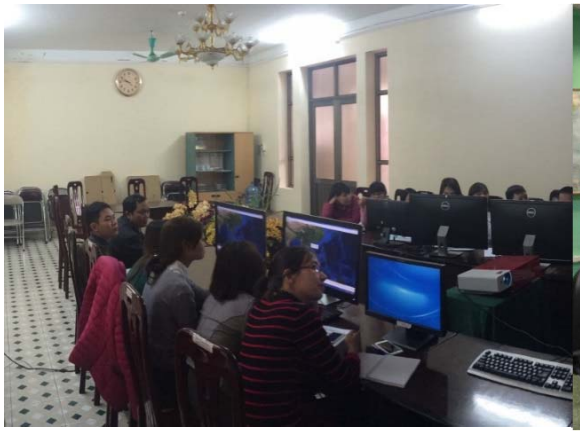
Training to ensure sustainability

Tonga

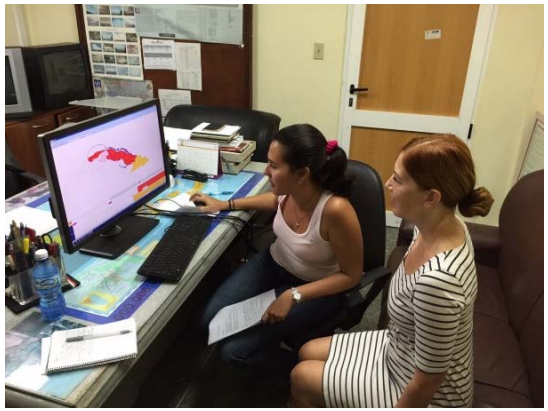
Vietnam



Jamaica

Papua New Guinea

Cuba



Peru