



SWFDP-CA: current status, plans and issues

part 1: SWFDP-CA: introduction and overview of activities

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SWFDP GOALS



FOR NMHSs:

1. To improve the ability of NMHS's to forecast severe weather (FSW) events, incl. of increasing of the lead time of FSW
2. To improve the lead time of alerting these events
3. To improve the interaction of NMHSs with Disaster Management and Civil Protection authorities (DMCPAs), the media, each identified user sector, before, during and after severe weather events
4. To identify gaps and areas for improvements



FOR NWPCs:

To improve the skill of products from NWP Centres (NWPC) through feedback from NHMSs

Features of SWFDP-CA concepts



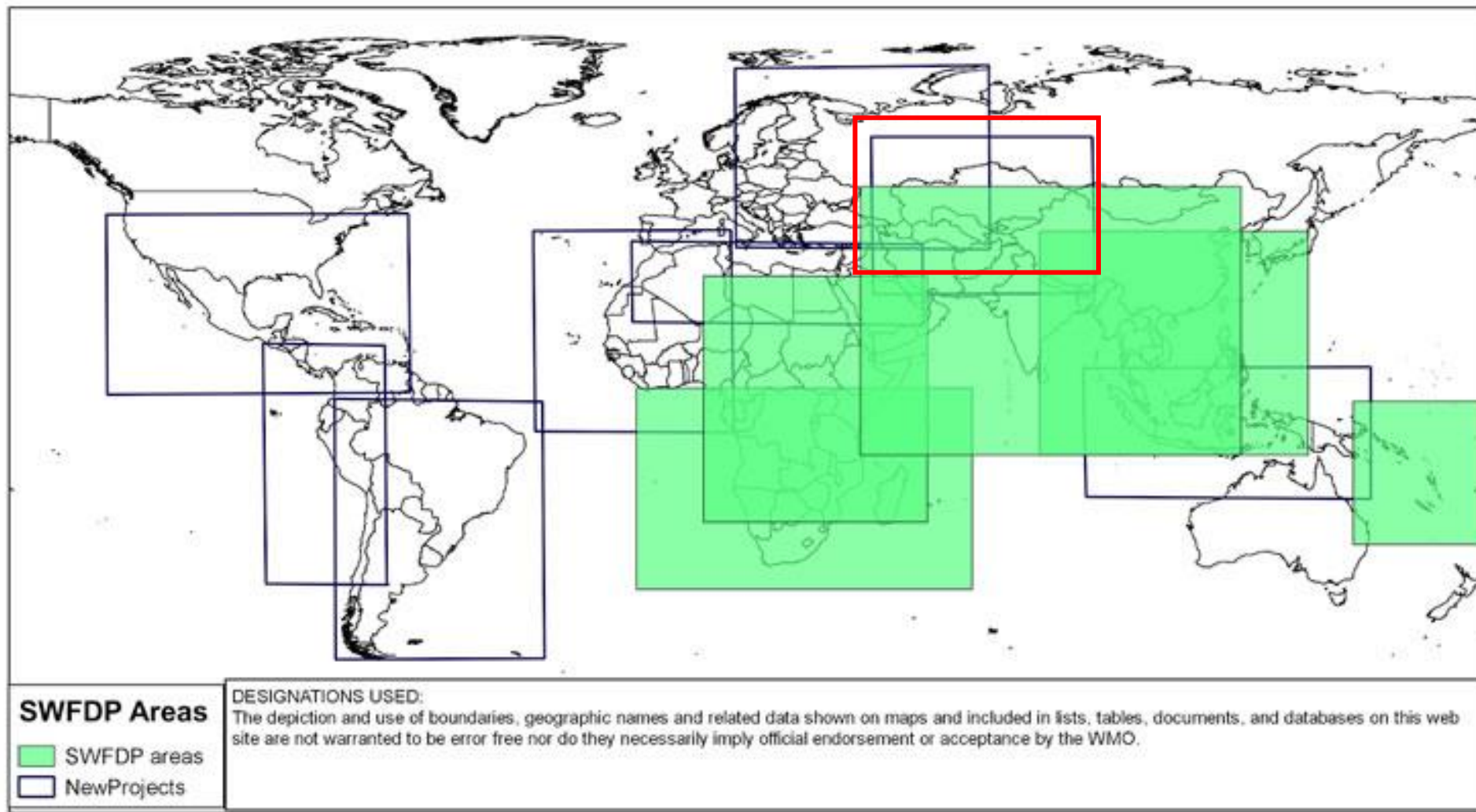
Principal concepts of SWFDP:

- There are lot of NHMSs without NWP development and with limited access to products NWP technologies.
- The NWP products present the large information resource for improving the challenge of SW prediction in NMSs
- The global EPS products have the high potential to use for organization of early warning systems
- The NWP global centers could be of great assistance, if they provide the access to NHMSc to Deterministic and EPS products prepared especially for some large areas
- The Cascadian flow of NWP products is the basis of SWFDP projects:
Global centers (NWP products)—Regional centers (interpretation)— National centers (warnings)



WMO SWFDP areas,

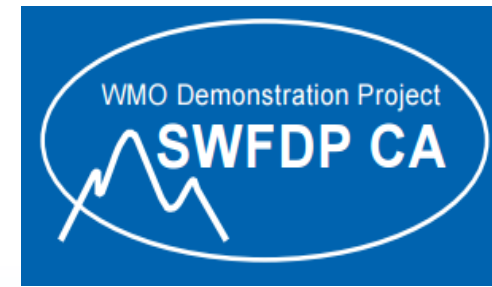
<http://www.wmo.int/pages/prog/www/swfdp//>



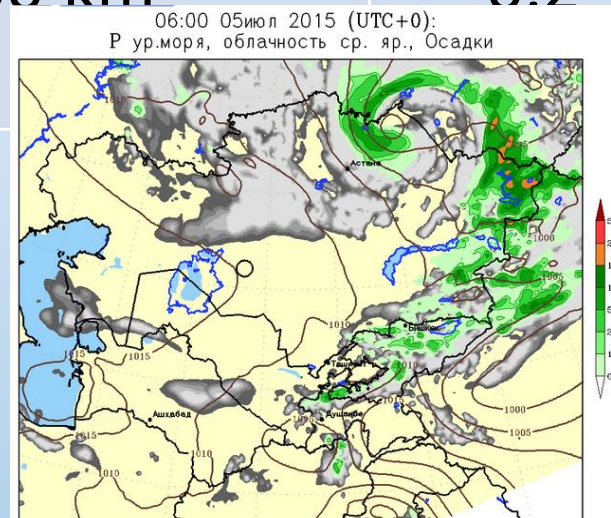
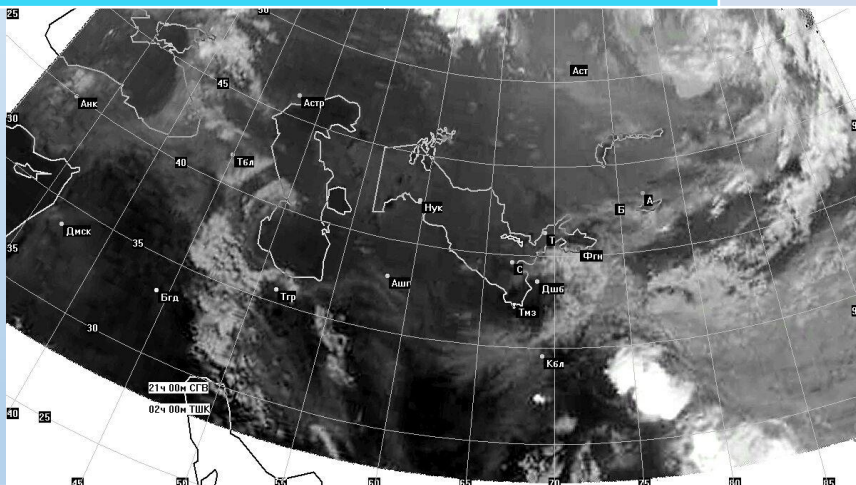
SWFDP-CA Domain:

Domain of influence of factors who produce the severe weather are out of ocean. Efficient influence of chain of high mountains. Lot of phenomena with β & γ mesoscale origin

Scales of SW phenomena in dependence on its origin

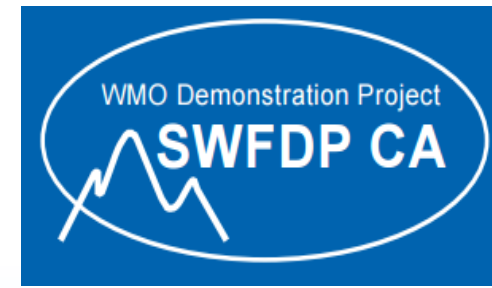


Origin	Frontal	LargeConvective +Frontal (*)	Convective or Orographic
Scale of phenomena	50-200 km	2 - 15 km	0.5 – 15 km
Area of SW Influence	100- 500 km	10 - 50 km	0.5 - 30 km
Dimension of NWP grids	20-100 km	0.2 – 8 km	0.1 - 3 km



(*)for non-tropical area

The NWP products for SWFDP



Origin of event	Frontal	Large Convective + Frontal	Small convective or Orographic
Area of SW Influence	100 - 500 Km	10- 50 Km	500m - 30 Km
Basic NWP	Global NWP	Regional mesoscale NWP	«Local» mesoscale NWP
The sources	NWP Centres: GTS, Links to NWP centers websites	LAM products	LAM (less 3 km) & Postprocessing: Indices

All regional SWFDP subprojects have their own unique forecasting challenges

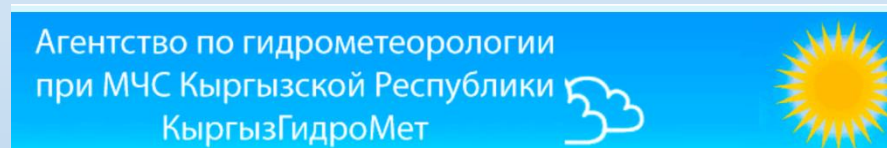


In Case of SWFDP-CA:

- big amounts of SW events have the origin depending on local factors
- impact of High Resolution LAM is significantly important as the global NWP EPS results
- The RSMC of CA is able to develop the processing and emission of LAM NWP products
- The NMCs have the developed structures of forecasting



ЦЕНТР ГИДРОМЕТЕОРОЛОГИЧЕСКОЙ СЛУЖБЫ
ПРИ КАБИНЕТЕ МИНИСТРОВ РЕСПУБЛИКИ УЗБЕКИСТАН (УЗГИДРОМЕТ)



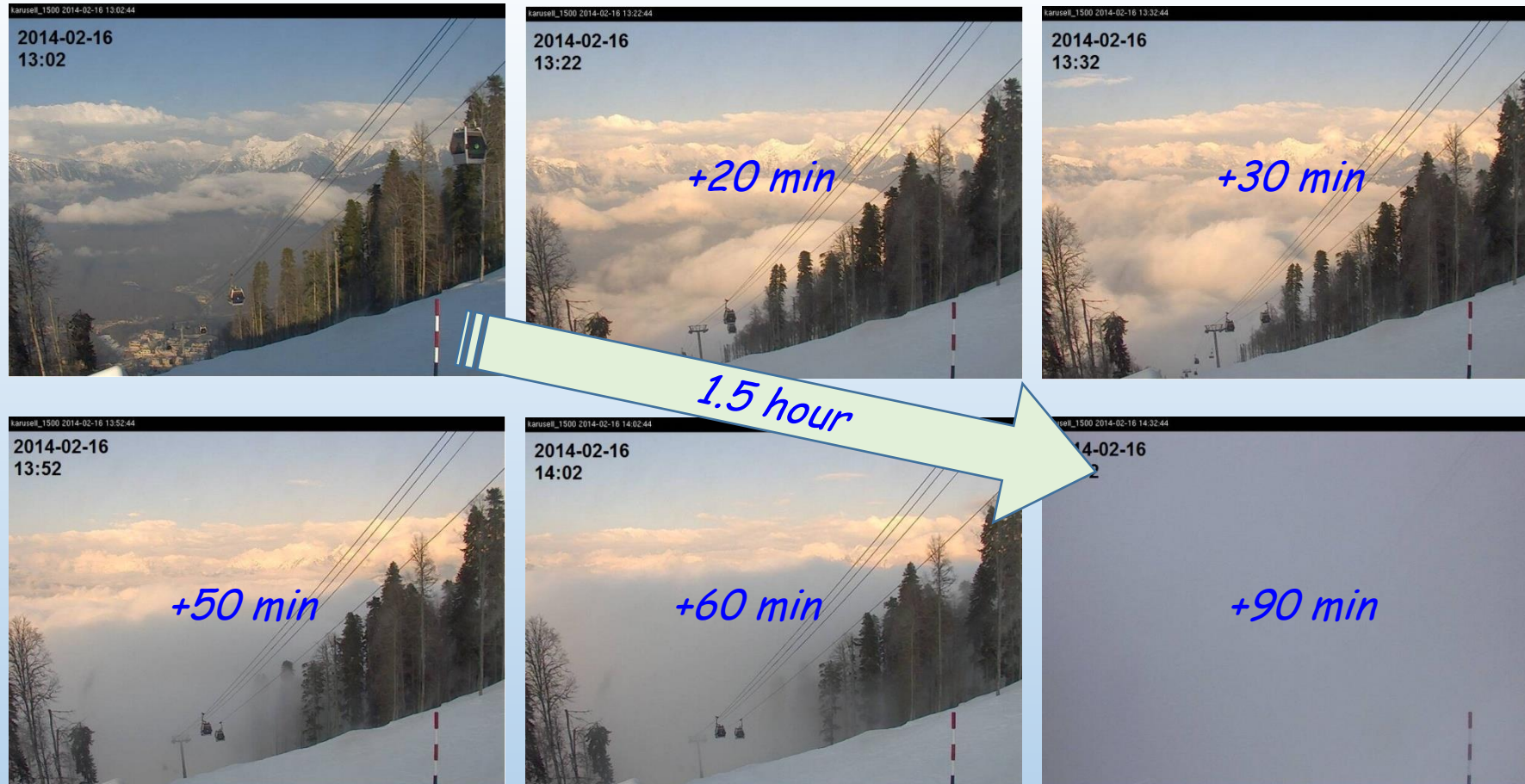
RSMC: Taschkent (UZBEKISTAN)

NMCs: KAZHYDROMET, KIRGIZHYDROMET, UZHYDROMET, TADJHYDROMET

Low visibility event

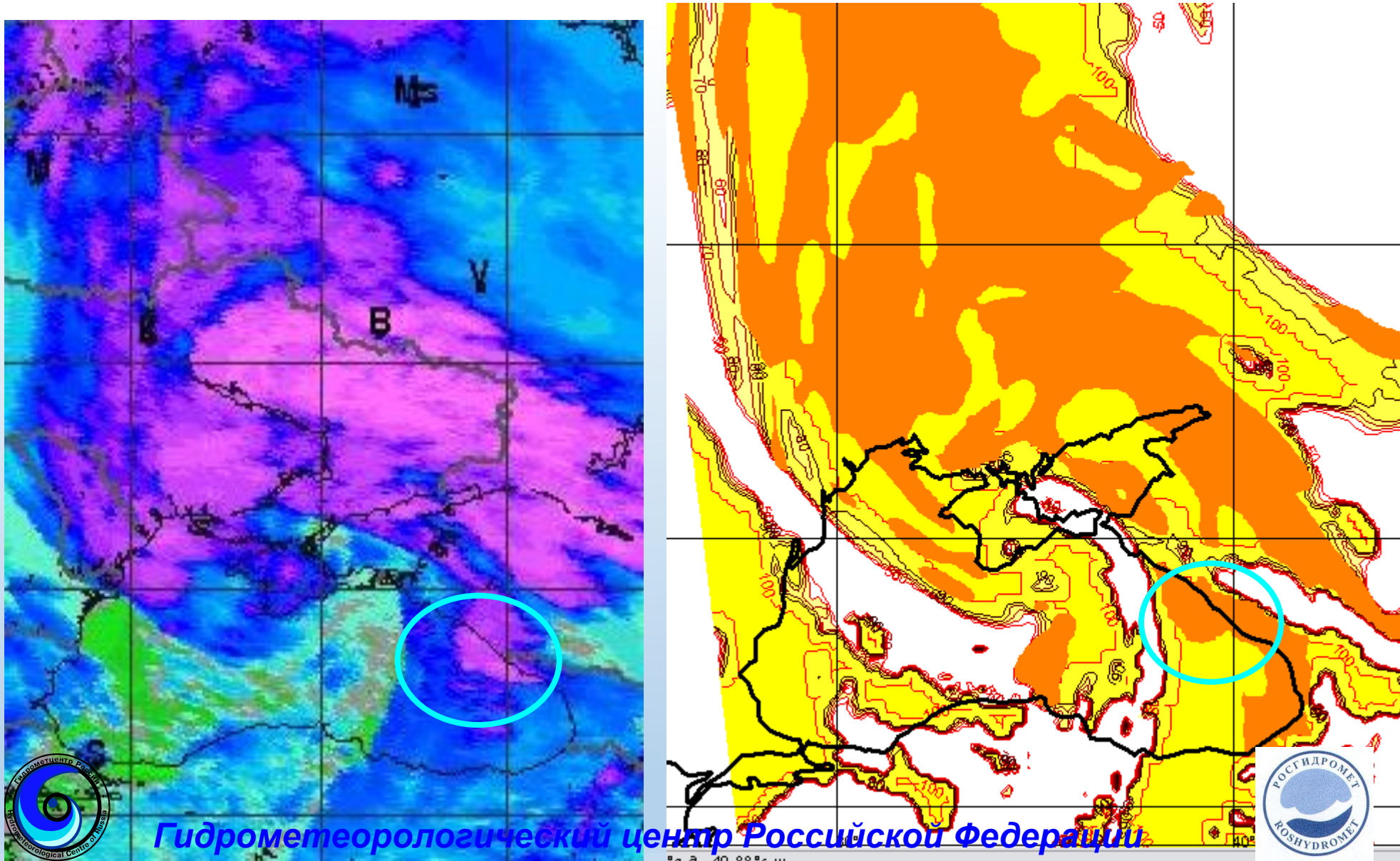
Cloudiness formation due to adiabatic cooling of the moisture air during it rise along the slope of the valley

February, 16-17, 2014

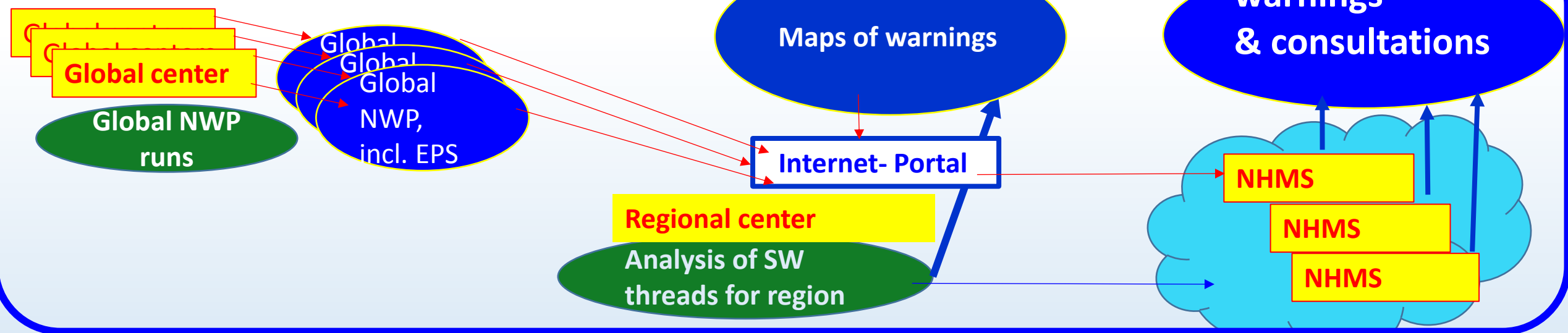


Camera shots at Gornaya Karusel-1500

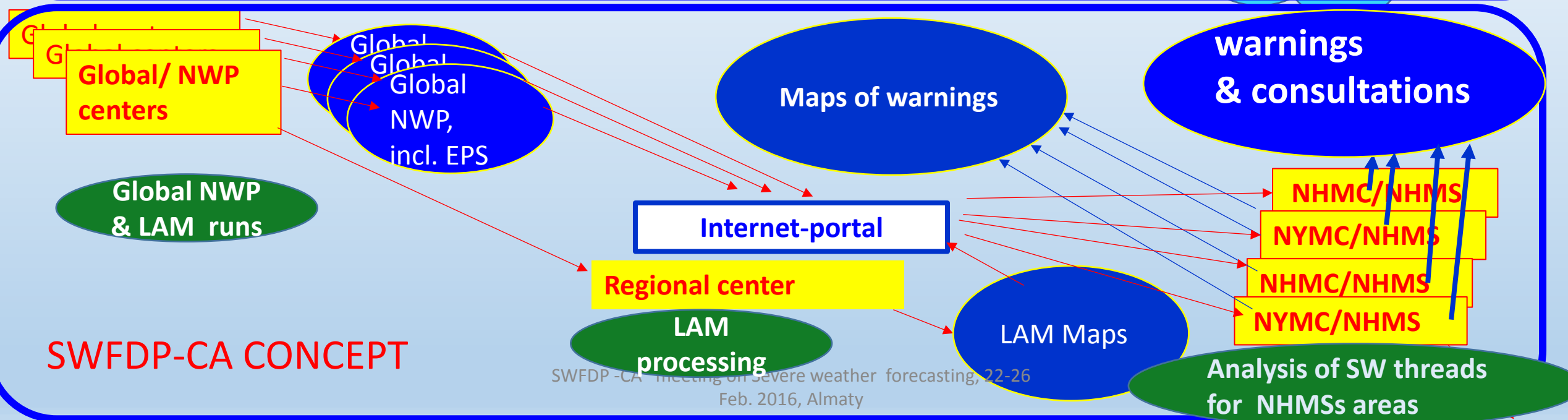
The high convective cloudiness-
the meteosat radiative temperature, 30 h forecast



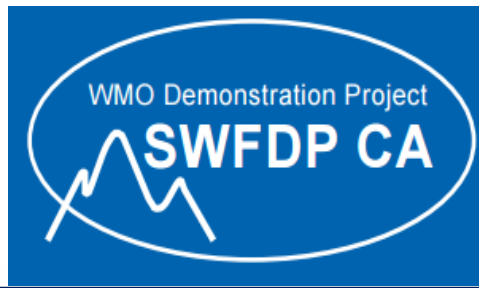
STANDARD SWFDP CONCEPT



SWFDP-CA CONCEPT



SWFDP-CA components



Forecasting: NMCs, NWPCs

Technological: RSMC, NWPC, NMCs

Daily job of forecasters and trainers

- Analysis of all matters, incl. skill of NWP products
- Placing ALARM CA data
- Preparing of maps of synoptical analysis
- Case-studies descriptions
- Preparing of the SWFDP-CA reports
- **Seminars and field Trainings for forecasters**

Development of technologies:

- Development of SWFDP CA site:
 - To provide the fast access to efficient information for SW events forecasting,
 - To improve the exchanges of data and of challenges between NMCs
- Development of systems of processing of LAM output
- Development of COSMO-LAM Technology in RSMC Tashkent
- **Trainings for IT staff**

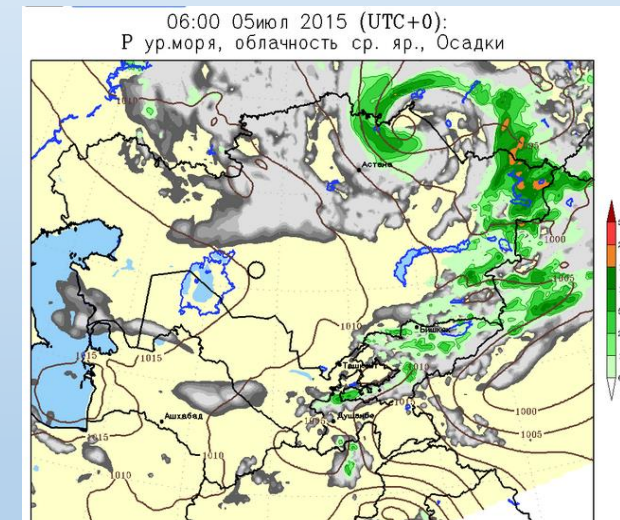
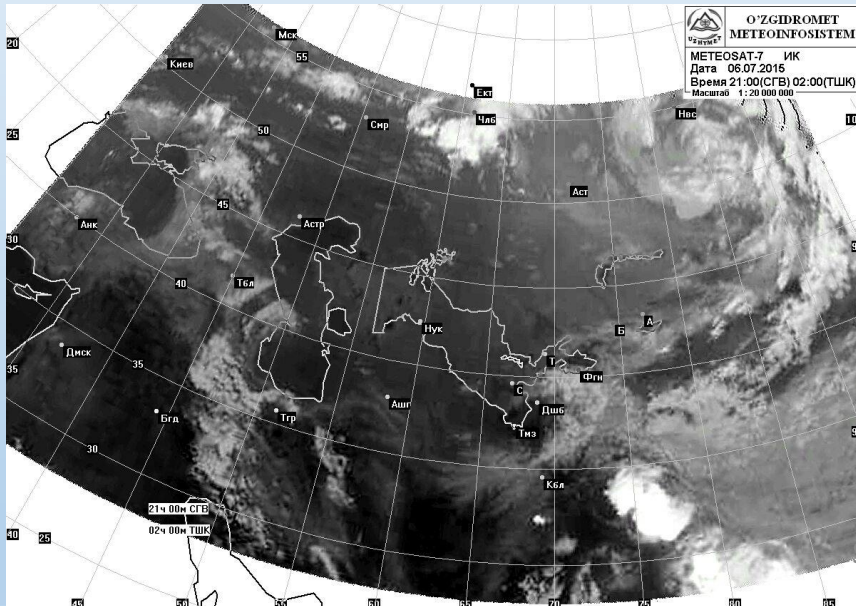
2. RMSC & WMO & Global centers:

To create the unified information exchange

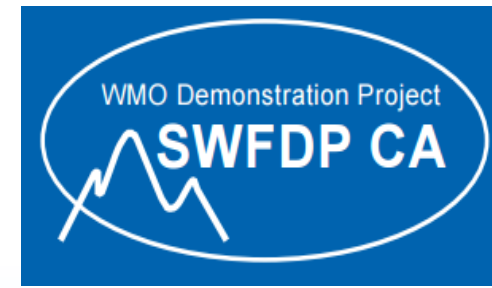
Whole region: unified web-site

Portal SWFPD:

- links to NWP centers websites
- placement or links to synoptic map for whole region
- placement or links to satellite images
- interactive ALARM CA system
- archiving



The NWP products for SWFDP



Origin of event	Frontal	Large Convective	Small convective/Orographic
Area of SW Influence	100 - 500 Km	10- 50 Km	500m - 30 Km
Basic NWP	Global NWP	Regional mesoscale NWP	Local mesoscale NWP
The sources	NWP Centres: GTS, Links to NWP centers websites	LAM products	LAM (less 3 km) & Postprocessing: Indices

Activities of SWFDP CA-1



N	Period	Activities	Deliverables
1	JJA 2015	<ul style="list-style-type: none"> ➤ Planning of practical SWFDP CA realization ➤ Seminars for SWFDP CA planning and introducing training: <p>Preparing of matters, feed-back from 4 HNMSs and WMO</p>	<ul style="list-style-type: none"> ➤ First General SWFDP CA Seminar: forecasters with WMO and Project government representatives: 8-12 July 2015, Moscow ➤ First SWFDP CA Seminar: IT personal: 10-16 July 2015, Moscow, ➤ First versions of Web-sites for SWFDP CA
2	SON 2015	<ul style="list-style-type: none"> ➤ Adaptation of LAM technology of COSMO-participant (Roshydromet) for issue of COSMO LAM product for CA region: Selection of Area and kind of products ➤ Development of two Internet-sites with products for forecasters for CA region ➤ Development of ALARM-CA ➤ Field training in Astana (Kazhydromet) ➤ Practical 10-day learning-seminar for IT staff 	<ul style="list-style-type: none"> ➤ The adapted COSMO-Ru version was implemented ➤ The two web- sites with operational products were developed on resources of Roshydromet. The LAM products and some information of NHMSs begun available for NHMSs ➤ The First version of interactive ALARM-CA started with feed-back from forecasters of NHMSs ➤ Field training in Kazhydromet: practical aspects of ALARM-CA work, use of mesoscale products, the quarterly reports for WMO, lectures and discussions with Numeric department, 17-20 Sept 2015, Astana ➤ The Practical learning seminar for IT staff: Introduce to LAM technologies and Web-sites operation support- 10-20 Nov. 2015, Moscow

➤ LOOK NEXT PAGE!

SWFDP -CA meeting on Severe weather forecasting, 22-26 Feb. 2016, Almaty

Activities of SWFDP CA-2

N	Period	Activities	Deliverables
3	DJF 2015-2016	<ul style="list-style-type: none"> ➤ Development of web-sites ➤ Preparing of the sets of global deterministic and Ensemble NWP for CA region in Roshydromet global NWP centre ➤ Guidelines for forecasters how to use the ALARM-CA, feed-back from 4 HNMSs ➤ Development of ALARM-CA ➤ Field trainings in Uzhydromet/RSMC Tashkent ➤ Field Training in Kirgzyhydromet ➤ Preparing of description of weather phenomena for quarterly reports for WMO ➤ Second 	<ul style="list-style-type: none"> ➤ The permanent improving of web-sites asia.meteorf.ru and www.swfdp-ca.meteoinfo.ru: More comfortable data presentation tools, including of the access to the global NWP products (Deterministic and EPS) from Roshydromet. ➤ Adaptation of asia.meteorf.ru for transfer and operational maintenance in RSMC Tashkent (Uzhydromet) ➤ The guidelines for using of ALARM CA were prepared taken to the NHMSs forecasters ➤ The new version of ALARM CA with more detailed area division was prepared (on the testing now). ➤ The new computer technique of Uzhydromet was tested, the necessary tools and software were implemented together with leading computer experts of Roshydromet during the field training in RSMC Tashkent (Dec 2015) ➤ The field training for IT staff of Uzhydromet: the full cycle of runs of COSMO model was realised on the Uzhydromet computer technique. The asia.meteorf.ru was transferred to RSMC Tashkent (Dec 2015) ➤ The field trainings for forecasters of Uzhydromet and Kirgzyhydromet: Use of ALARM-CA, use of NWP products, Case-study descriptions (Dec 2015, Tashkent & Feb2016, Byshkek) ➤ The Second General SWFDP CA Seminar: 21Feb-4Marth 2015, Almaty ➤ The reports for 3-th Qt from NHMSs were prepared

Activities of SWFDP CA-plans



N	Period	Activities	Deliverables
1	MAM 2016	<ul style="list-style-type: none"> ➤ COSMO software development: postprocessing extension and tests (Indices for warnings) for case study ➤ Development of ALARM CA ➤ Implementation of access to Global centers products ➤ Training for IT staff: Processing of results of LAM runs ➤ The case study and quarterly WMO reports. ➤ Preparing of matters for Field training in NHMS Tadjikistan 	<ul style="list-style-type: none"> ➤ Tested software for indices for SW events on basis of COSMO. Case studies ➤ The new version of ALARM CA with extended detailing of NHMS's areas ➤ Training for IT-staff in RSMC Tashkent: processing of results of runs of LAM (COSMO), including automatic visualization and placing online ➤ The Quarterly WMO SWFDP CA reports from HNMSs ➤ Field training in NHMS Tadjikistan Use of ALARM-CA, use of NWP products, Case-study descriptions
3		<ul style="list-style-type: none"> ➤ LOOK NEXT PAGE! 	<ul style="list-style-type: none"> ➤ SWFDP -CA meeting on Severe weather forecasting, 22-26 Feb. 2016, Almaty ➤ Development of configuration of COSMO-model for CA region for preliminary calculations. ➤ Organization of regular transfer of boundary data from DWD ➤ Development of ALARM CA ➤ Training for IT staff: Processing of results of LAM runs, incl. visualization ➤ The case study and quarterly WMO reports.

Activities of SWFDP CA-plans



N	Period	Activities	Deliverables
3	JJA-SON 2016 DFM 2017	<ul style="list-style-type: none"> ➤ Development of configuration of COSMO-model for CA region (full domain, 14 km and mountain domain, about 2 km) for preliminary calculations. Organization of regular transfer of boundary data from DWD ➤ Development of ALARM CA ➤ Transfer to maintenance of Web-site and SWFDP portal in RSMC Taschkent& development of web-technologies ➤ Organization of operational flow of COSMO-Ru results to RSMC Taschkent. Processing of The case study and quarterly WMO reports. ➤ Analysis of skill of forecasts of events of available COSMO-14 km products with results of global NWP modelind ➤ Trainings, seminars 	
		<ul style="list-style-type: none"> ➤ SWFDP -CA meeting on Severe weather forecasting, 22-26 Feb. 2016, Almaty Development of configuration of COSMO-model for CA region for preliminary calculations. Organization of regular transfer of boundary data from DWD Development of ALARM CA 	
		<ul style="list-style-type: none"> Training for IT staff: Processing of results of LAM runs, incl. visualization The case study and quarterly WMO reports. 	

Table of recommended LAM NWP products in concept of SWFDP

Precipitation (3, 6, 12, 24 sum)
T2m,
Wind 10m
Wind gust
T max, T min (as postprocessing product)
MSPL
Cloudiness of middle and low levels
Bottom of convective cloudiness
Snow depth, SWE
New snow depth for 6 and 24 hours
Parameters on levels 925, 850, 700, 500 hPa: U,V, T, H, R%
Vertical velocity on levels 850, 700, 500
K index, CAPE, CIN, Showatler Index (+ others-?), SKEW-T
Meteogrammes