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of the RA II WIGOS Satellite Project
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Far Eastern Federal University

Tajikistan report

Agency for Hydrometeorology
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Outline

I. Introduction
II. Short discription of NMHS activity
III. Current observational system overview
IV. Collection, processing and utilization of satellite data and products
V. Satellite data to address regional challenges

Introdution

Country overview

- Geography

Tajikistan is situated in Central Asia, between the latitudes 36 ° 40'N to 41 ° 05'N and longitudes 67 ° 31'E to 75 ° 14'E. The area of Tajikistan's territory is 143,100 sq.km. The general length of the state borders is 3,000 km.

Introduction

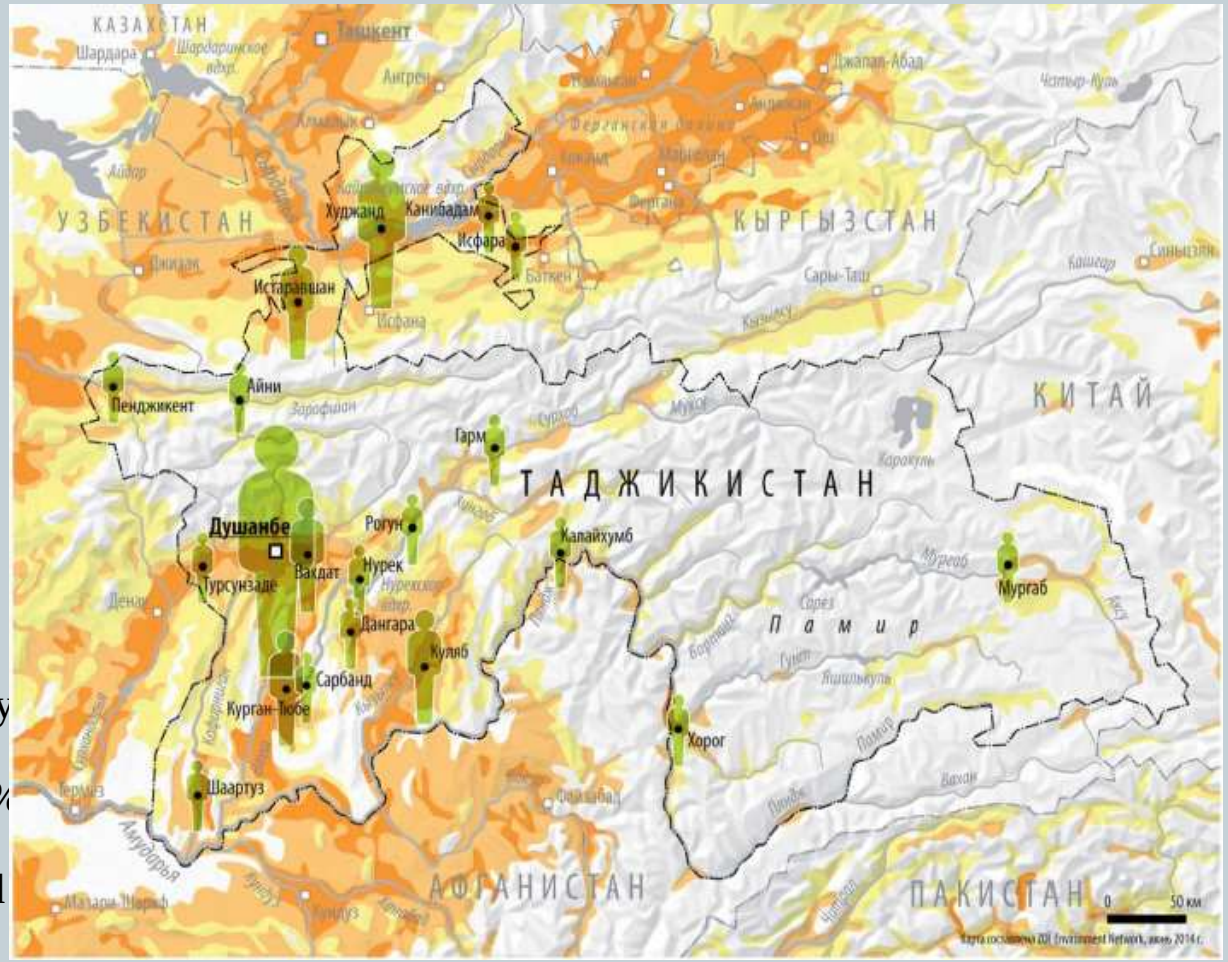
Tajikistan is a mountainous and landlocked country. Mountains occupy about 93% of the terrain, while about half of the territory is situated at an altitude of above 3,000 masl. The highest elevation of the republic is the peak of Ismoil Somoni (7,495 masl) in the Pamirs.

Tajikistan undoubtedly the most exposed to potential risk of flash flood. In the mountainous areas are glacier massifs with a total area of 8.4 km2, which is 8% of the territory of the Republic. In high-altitude zones of 2000 m and above in the winter time accumulate 2.2 m to 6.7 m. thickness of snow reserves depending on the heights of mountains.

Introduction

- **Population**

  According to the census conducted in 2014, the population of the republic is 8.1 million people, 1.5 times more than 10 years ago. For the last 60 years, the population has increased by 5 times. The increase of population is 22-25 people per 1000 inhabitants. Share of rural population in Tajikistan exceeds 70% of the total country population. Totally 49.5% comprise male, 50.5% female and over 35% of population are children aged from 0 to 15 years old



Introduction

- **Climate**

  Projected climate change in global and regional scales will have beneficial and adverse effects on both environmental and socio-economic systems, but the larger the changes and the rate of change in climate, the more the adverse effects predominate. In this regard, adaptation to climate change is of the highest importance.


Varzob


Shimkent, 2008

Introduction

The climate of Tajikistan is inherent in 4 levels: the aridity of the climate, the abundance of heat, a significant intra-annual variability of virtually all climatic elements. The climate of Tajikistan covers a wide range of temperatures, moisture conditions, precipitation patterns, the intensity of solar radiation. The average temperature, depending on the height of the terrain can be from + 17 ° C in the South to - 6 ° C and less in the Pamirs. The maximum temperature is observed in July, and the minimum in January. Particularly severe climate is the Eastern Pamir, where the absolute minimum reaches -63 ° C. In the South the absolute maximum air temperature reaches + 47 ° C

Introduction

- Major historical hydrometeorological disasters

  Natural disasters that occurred in Tajikistan over the past 10-12 years led to the deaths of about 1 million people, caused economic damage to more than 1 billion somoni, while mudslides and floods from 1998 to 1999, 2005 and 2010 was particularly devastating. In the period of severe drought in 2000-2001 affected some 3 million people (or half population of the country at that time). Natural hydrometeorological phenomena can cause significant harm to individual sectors of the economy and threaten people's safety. One of the more common are the following types of severe weather:

Heat of temperature +40 ° C and higher,

Visibility phenomena: fog, dust storms and haze,

Strong winds,

Convective phenomena: heavy precipitation and thunderstorms.

Introduction

- Areas of adverse thermal regime (equal to and above 40°C) covers the entire flat part of the Country. Based on the analysis of observational data revealed a tendency to increase the number of days with temperature above 40°C in all the plains of the Country
- Over the period 2000 to 2010 were conducted 34% of mudflows. The greatest mudflow activity in April - May. Increased mudflow activity was noted in 2004. Powerful mudflows were also observed in the Republic in 1993 and 1998, when it was destroyed many objects of economy, roads, power lines, and caused huge damage.
- In recent years, the amount of damage increases. In the whole country in 2009 the amount of damage caused by natural disasters was 92 million somoni and for 6 months of 2010 was 230 million somoni.
- The damage caused natural disasters for the first half of 2014, amounted to 8 million USD

Introduction

- Major national economic sectors relying on NMHSs

- Committee of emergency situations
- Ministry of agriculture
- Ministry of energy and water resources
- Ministry of transport (air, road and rail)
- Ministry Of Health
- Committee Of Tourism
- Media (media)
- Committee of forestry
- Insurance agencies
- Ministry Of Defence

Short Discription of NMHS Activity

Please provide the description of the current mission, mandate (climate services, aviation services, hydrological, marine, environmental, air pollution, etc) of the NMHS.

Agency of Hydrometeorology is the governmental body specially authorized to solve tasks in the Hydrometeorology field in the Republic of Tajikistan. The main tasks of the Agency of Hydrometeorology is:

- Hydrometeorological support sectors of the economy of the Republic of Tajikistan
- Warning of the possibility of severe hydrometeorological events.
- Development and preparation of all types of hydrometeorological forecasts.
- Conduction of the systematic hydrometeorological observations and environmental monitoring.
- Maintaining the national Fund data on Hydrometeorology and pollution of the natural environment.
- The quantity, quality and accessibility of information products

Current Observational System Overview

I. Surface observations
II. Upper-air observations
III. Marine observations
IV. Aircraft-based observations
V. Satellite observations
VI. Weather Radar Observations
VII. Other observation platforms

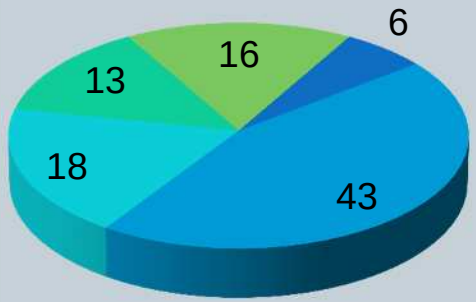
More information is available via the following link:
http://www.wmo.int/pages/prog/www/OSY/Gos-components.html

Current Observational System Overview

- Data acquisition system
- Surface meteorological network
- Meteorological radars (1992)
- Hydrological network – 96 posts
- Agrometeorological network - 35 stations
- Observation of pollution – 5 points
- Data processing system and forecast – ArcGIS, GISMeteo, CMACast
- Data transmission system – Mitra, UNIMAS
- Scientific-methodical hydrometeorological support
- The system of preparation of information products and interaction with consumers

The location of hydrological stations

The number of hydrological stations on basins



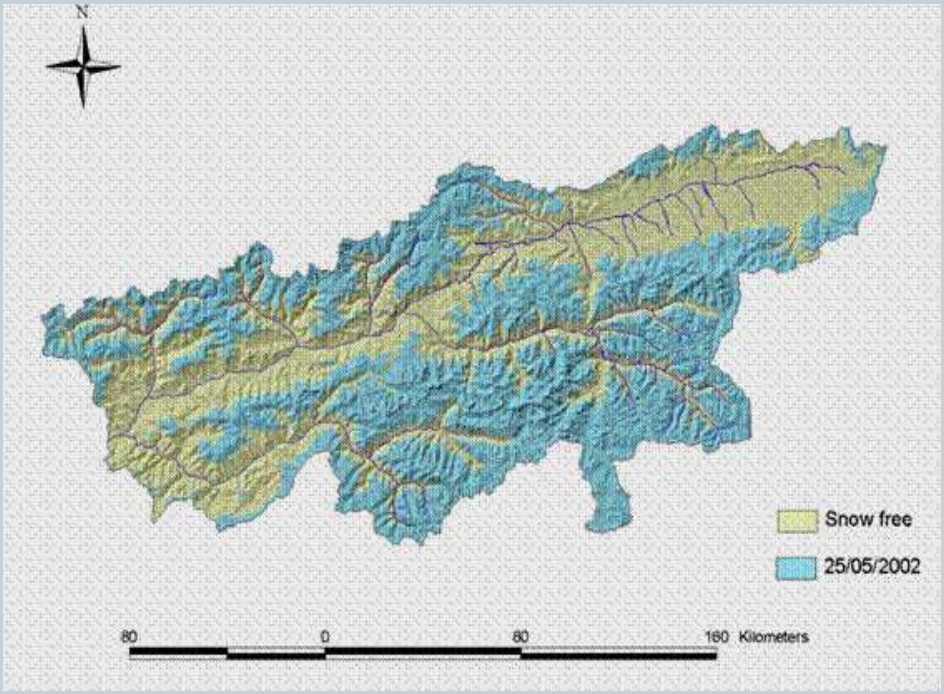
Сирдарё	Sirdar'yo
Панч	Pyanj
Вахш	Vakhsh
Кофарнихон	Kafirnigan
Зарафшон	

The location of meteorological stations

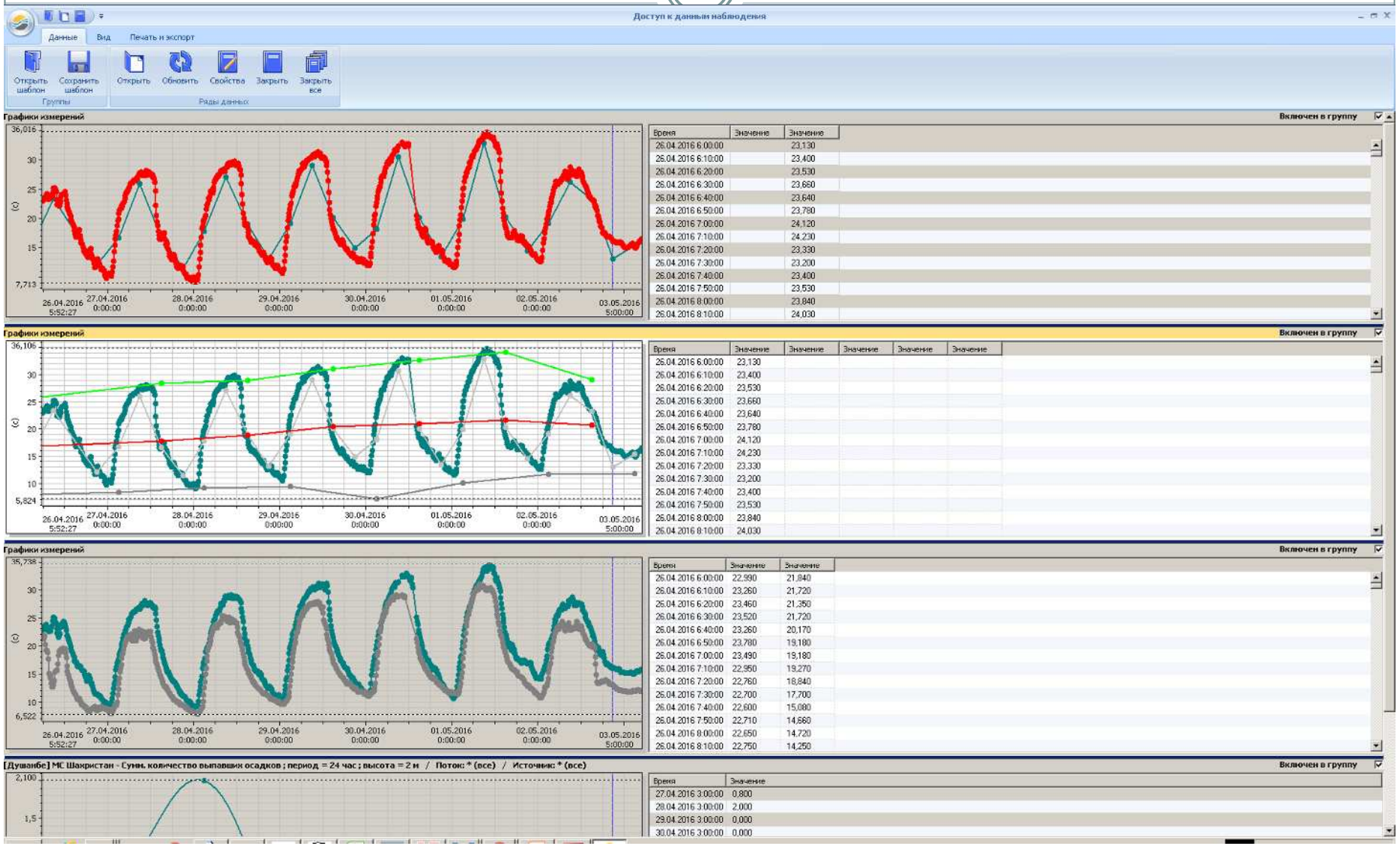
Remote observations

Helicopter observation

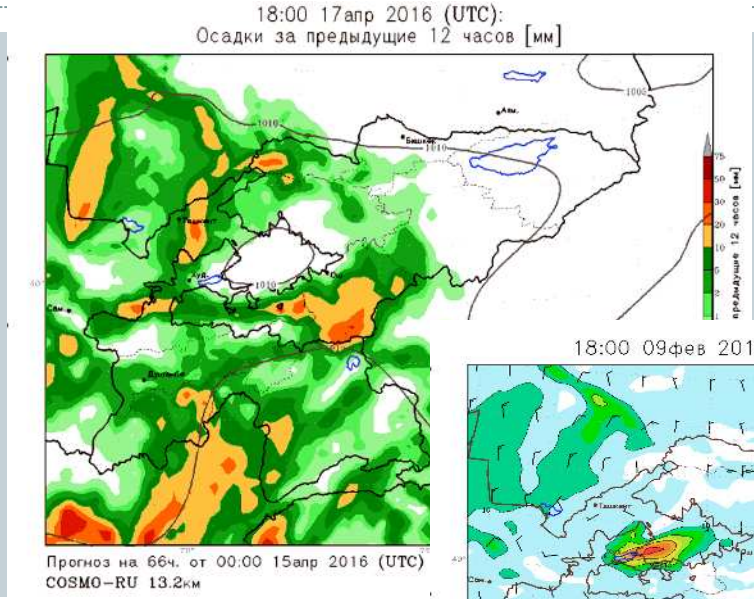
Satellite Image

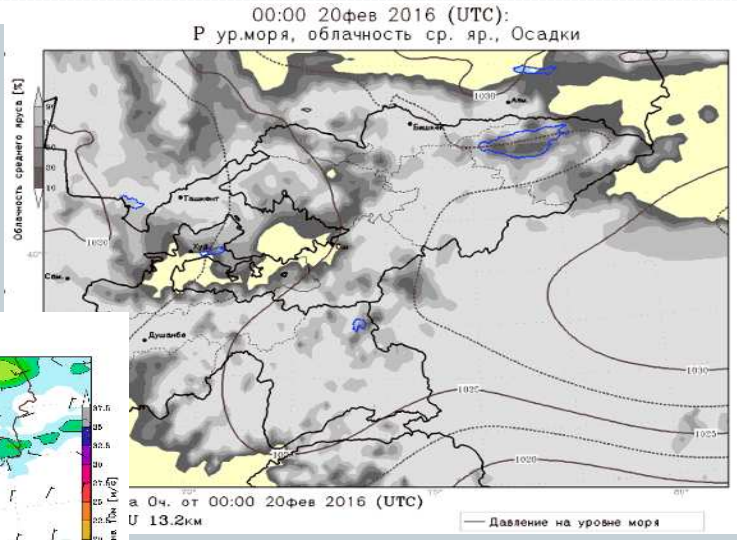


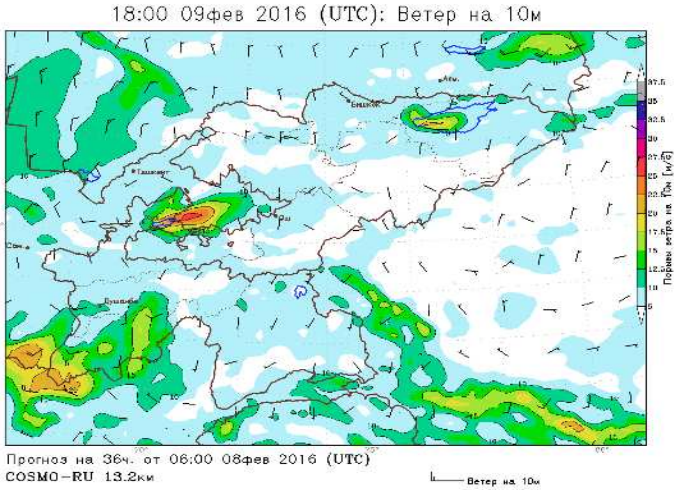
Automated station in Tajikistan

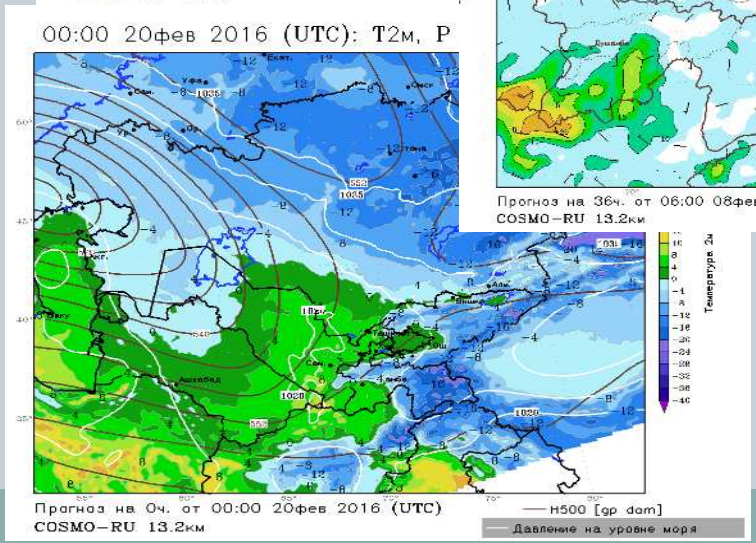


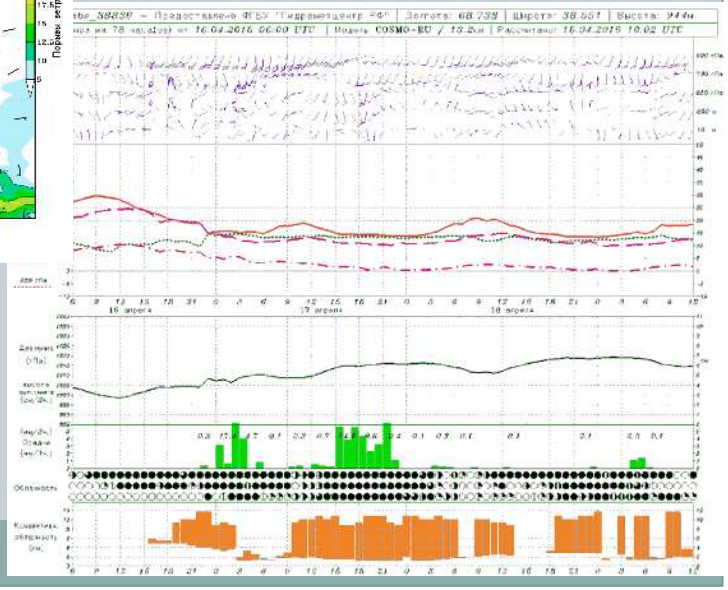
COSMO Products











Фактические данные Мете | МетеоАлерт

swfdp-ca.meteoinfo.ru/meteoalarm

Сервисы | WWW-Interface | COSMO | ENS meteograms | ECM | Relative humidity and w | Изображения с ИСЗ | Translate

SWFDP-CA

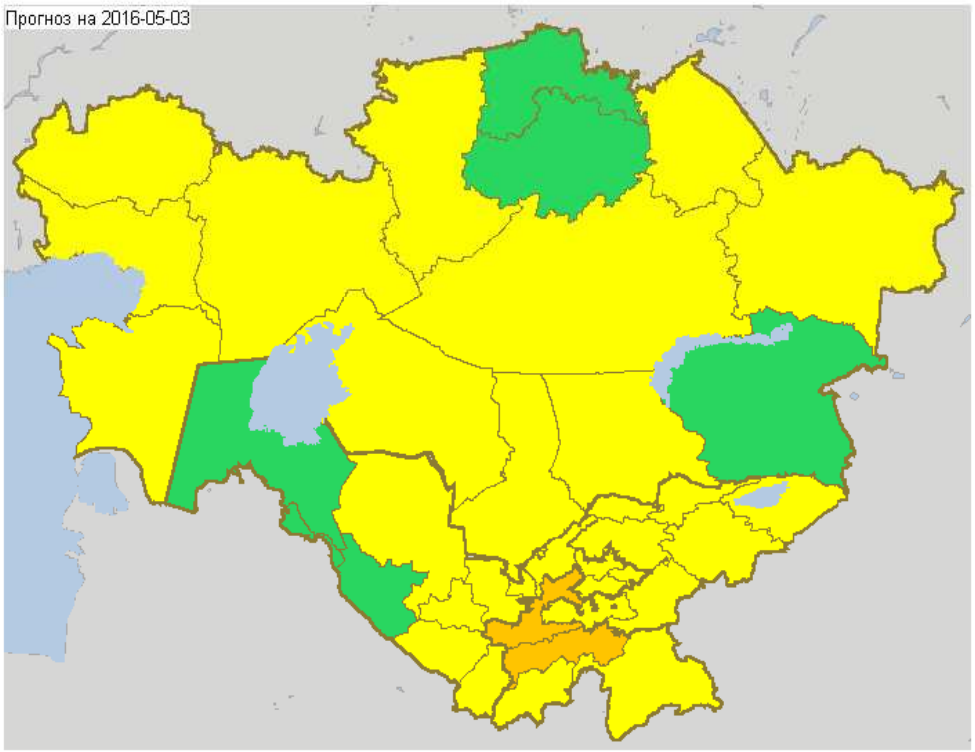
О проекте | **МетеоАлерт** | Фактическая погода | Прогнозы | События | Библиотека | Ссылки

ВЫЙТИ

- Режим редактирования
- Фактические данные МетеоАлерт
- Инструкция по работе с МетеоАлерт
- Архив
- Критерии для MeteoAlert: Казахстан
- Критерии для MeteoAlert: Кыргызстан
- Критерии для MeteoAlert: Таджикистан
- Критерии для MeteoAlert: Узбекистан

МетеоАлерт

2016-05-03 | 2016-05-04 | 2016-05-05



KZ

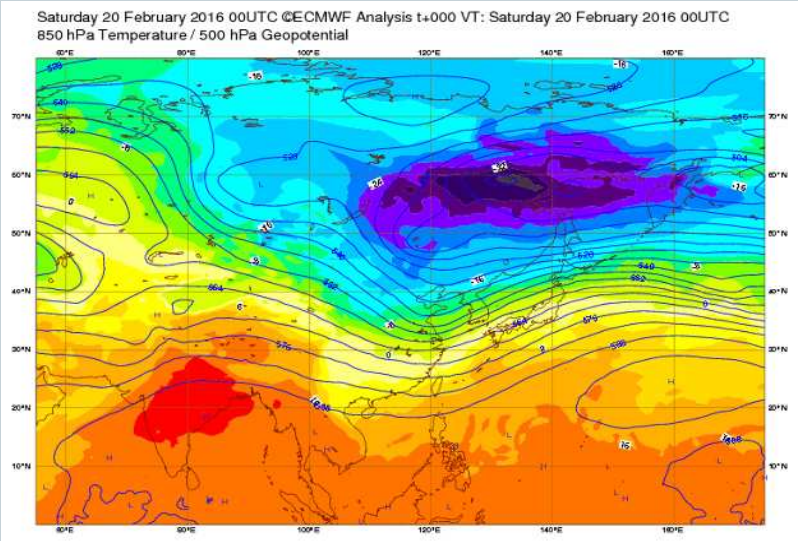
KG

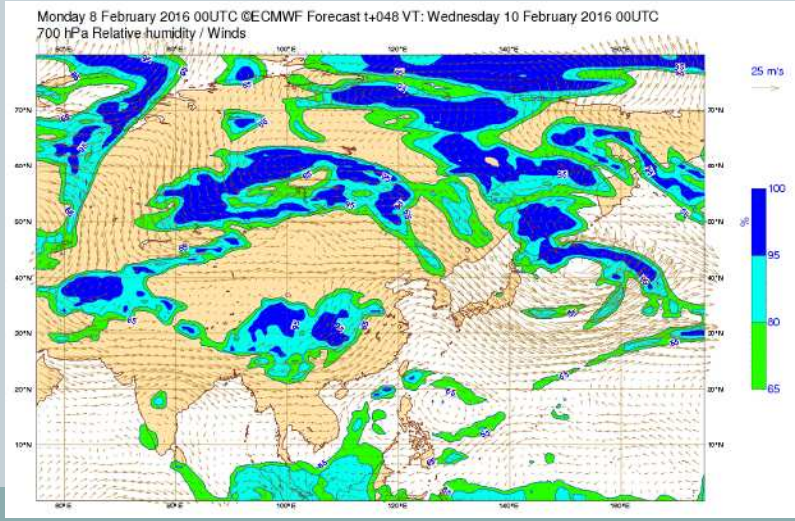
TJ

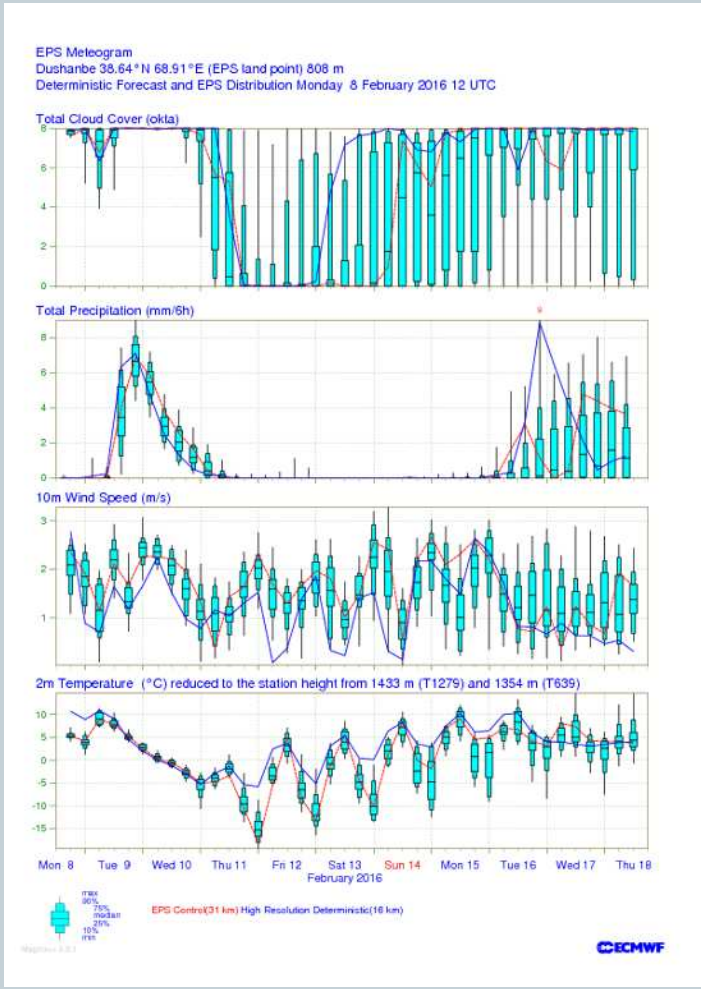
UZ

- Данные отсутствуют
- Оповещения о погоде не требуется
- Погода потенциально опасна
- Погода опасна. Имеется вероятность стихийных бедствий, нанесения ущерба
- Погода очень опасна. Имеется вероятность крупных разрушений и катастроф

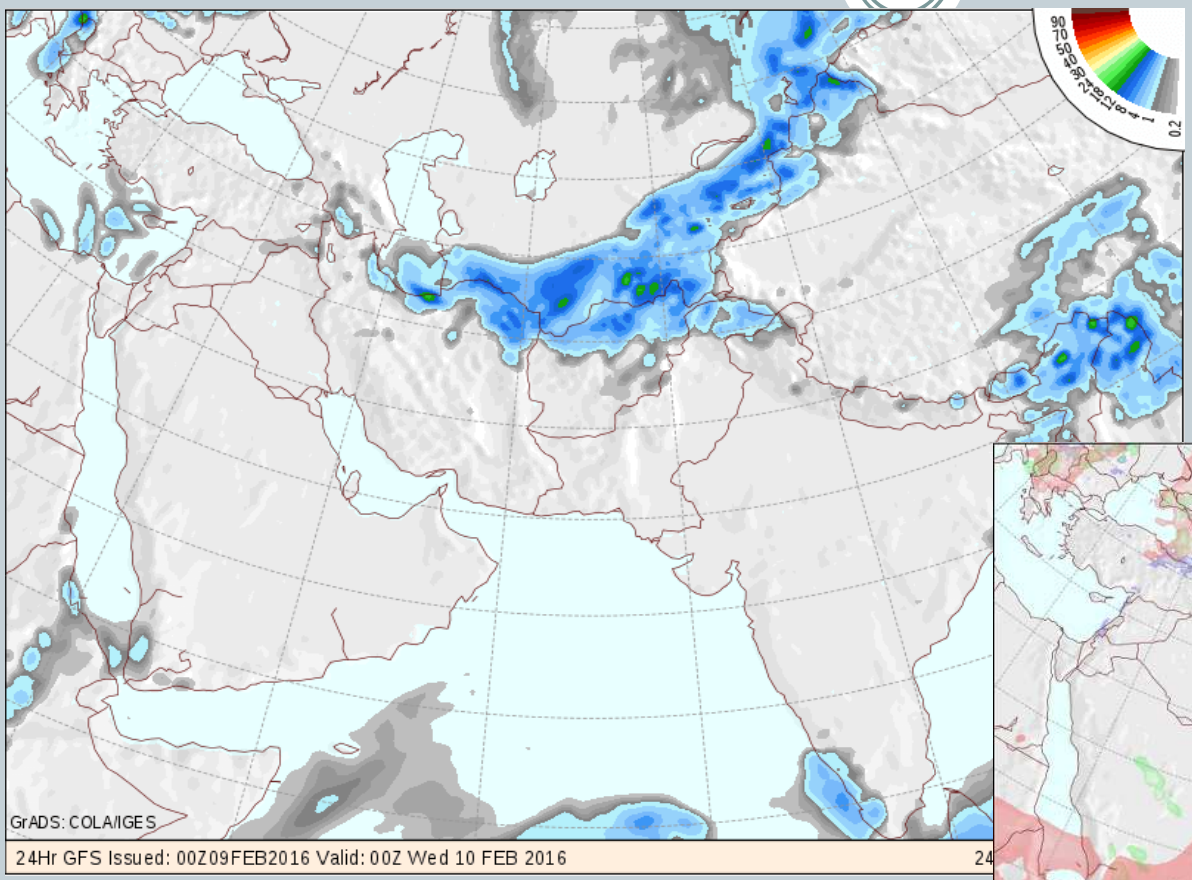
ECMWF model products

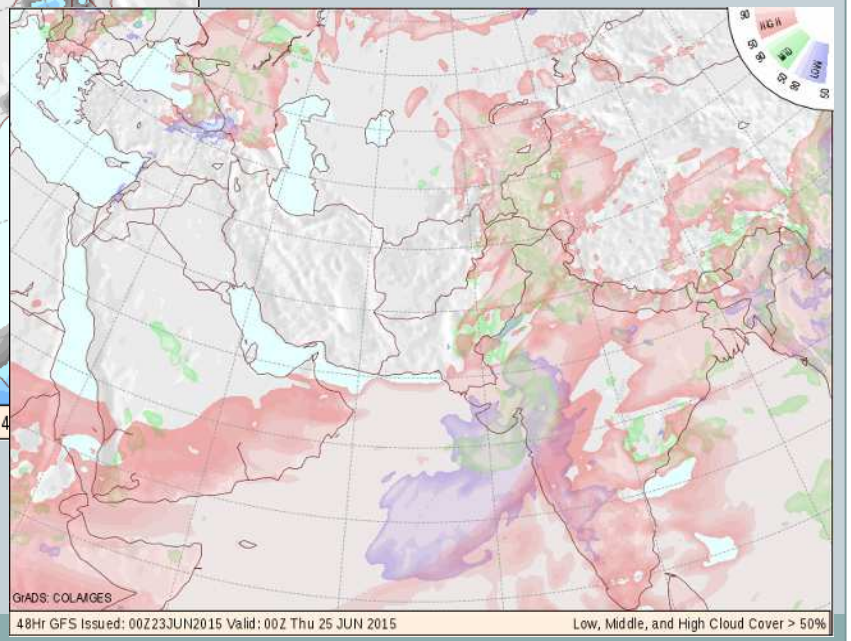




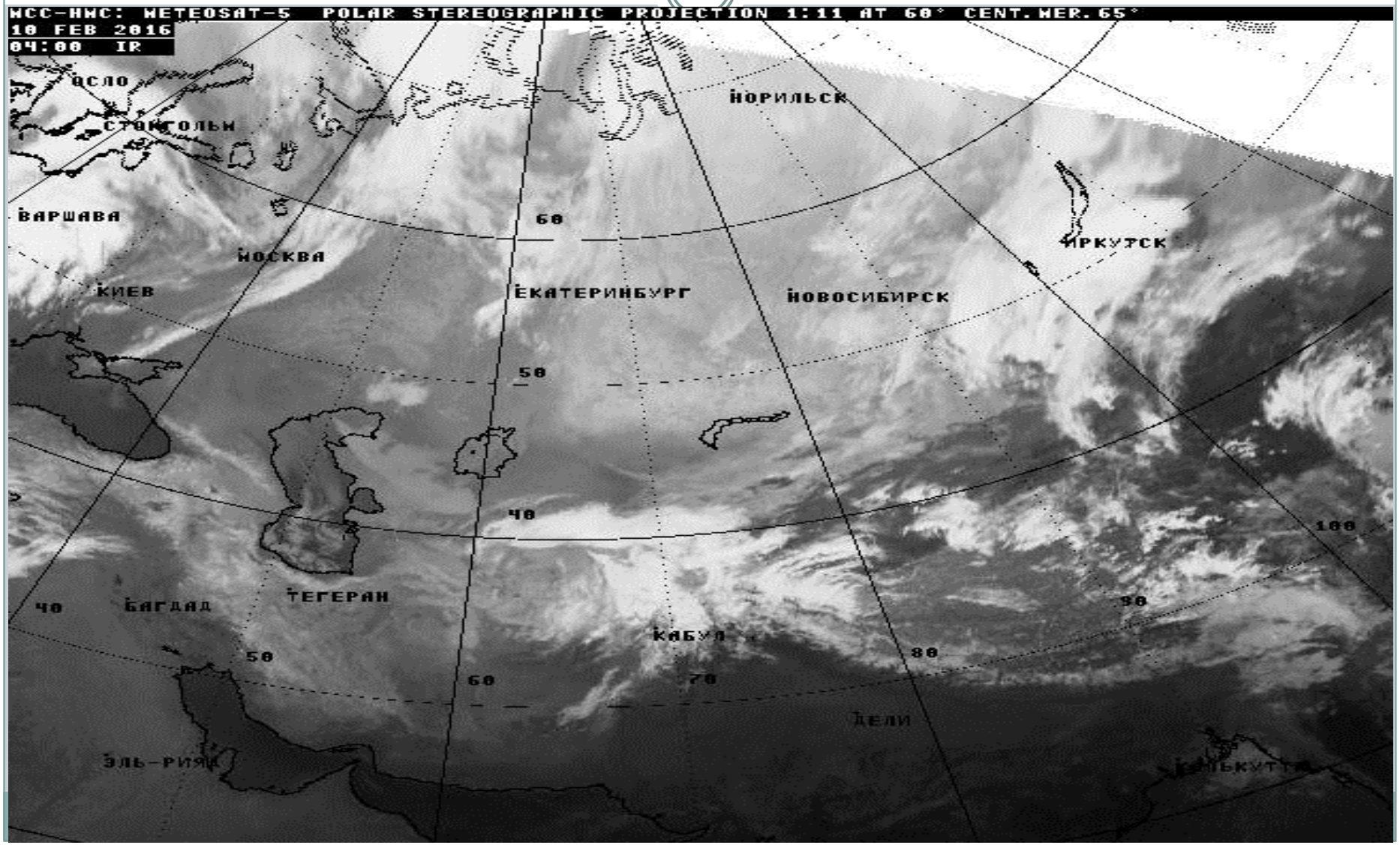


Maps of precipitation and clouds

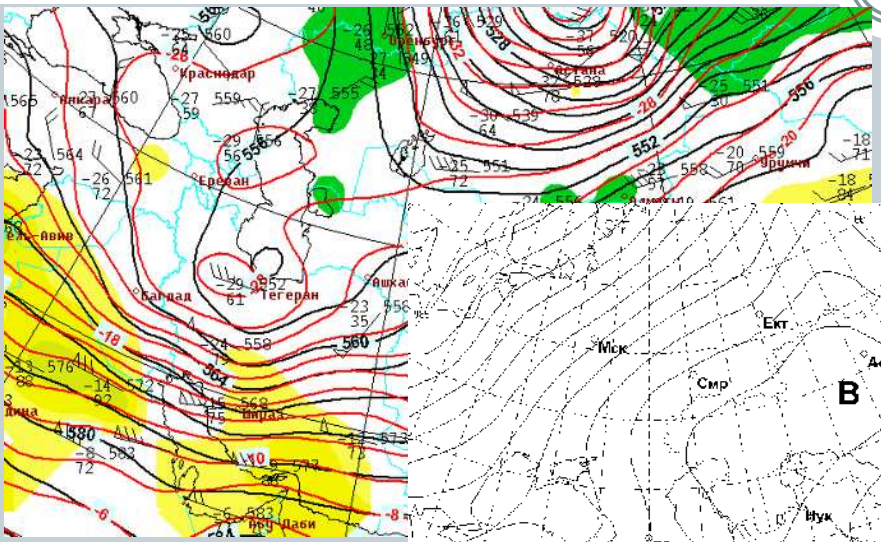


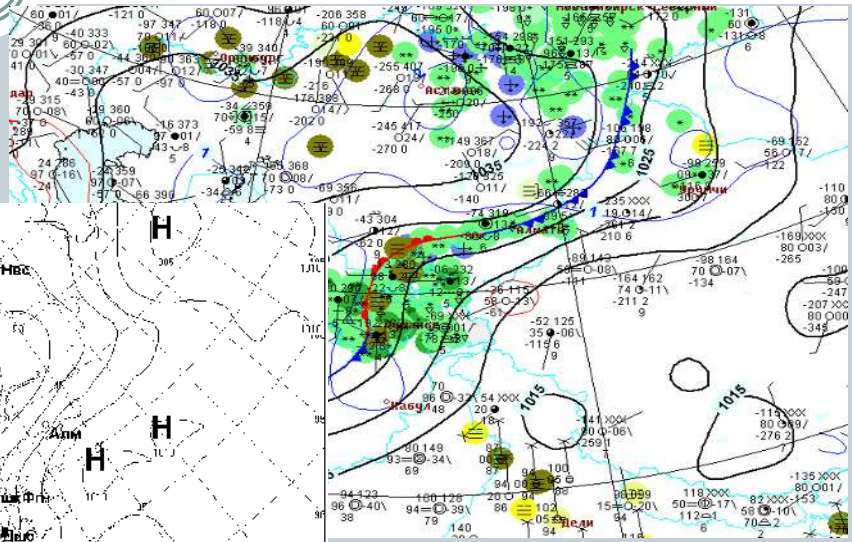


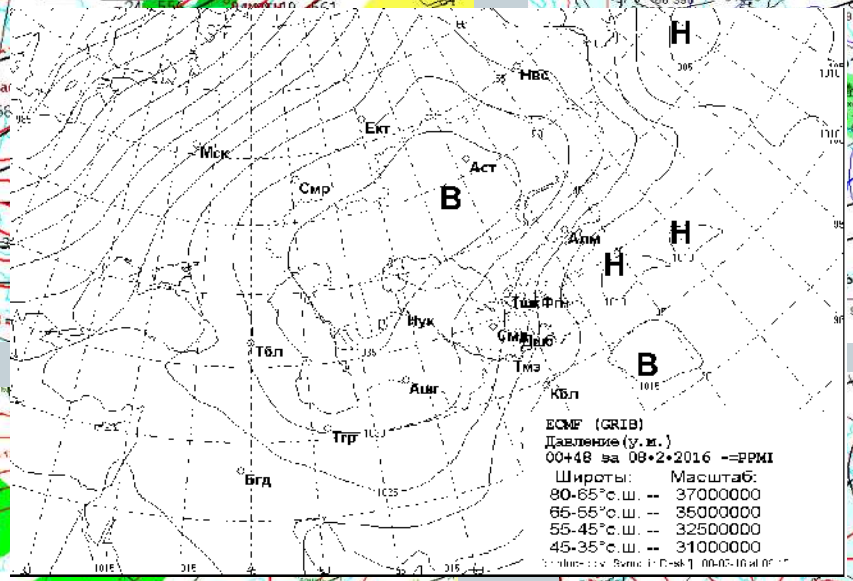
Satellite image of METEOCAT - 5

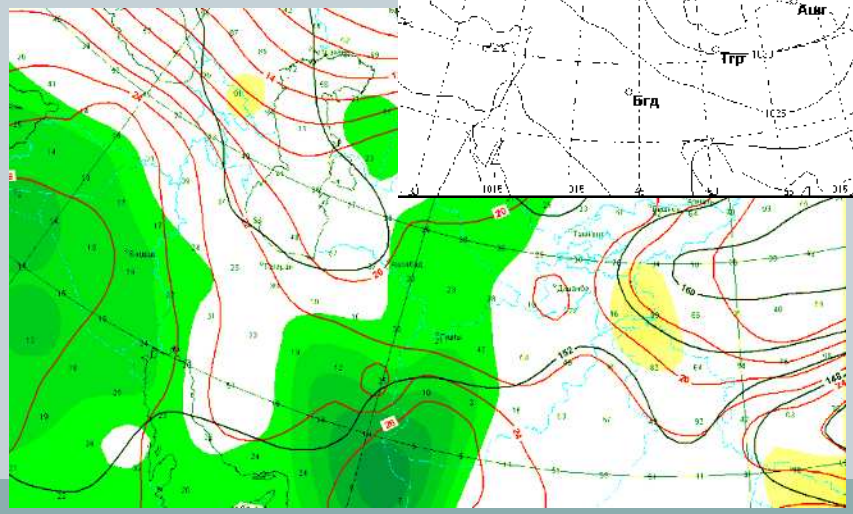


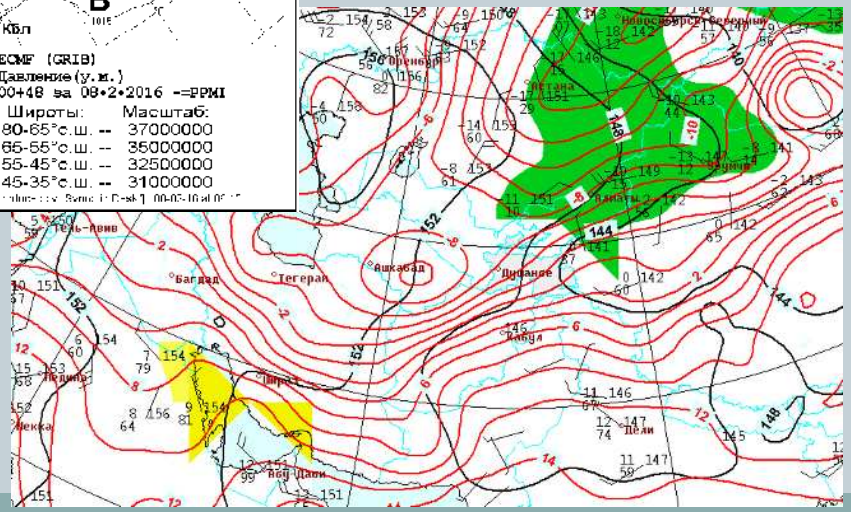
Products of GISMeteo



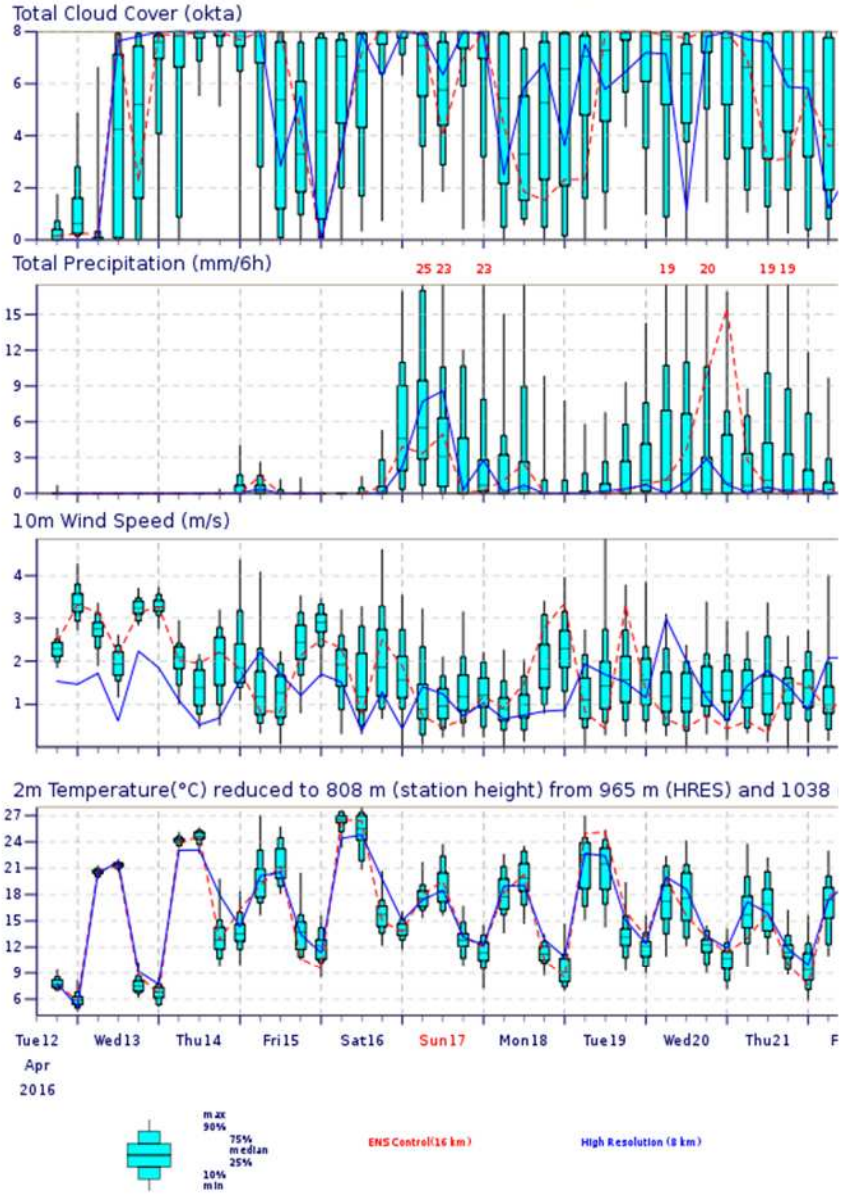




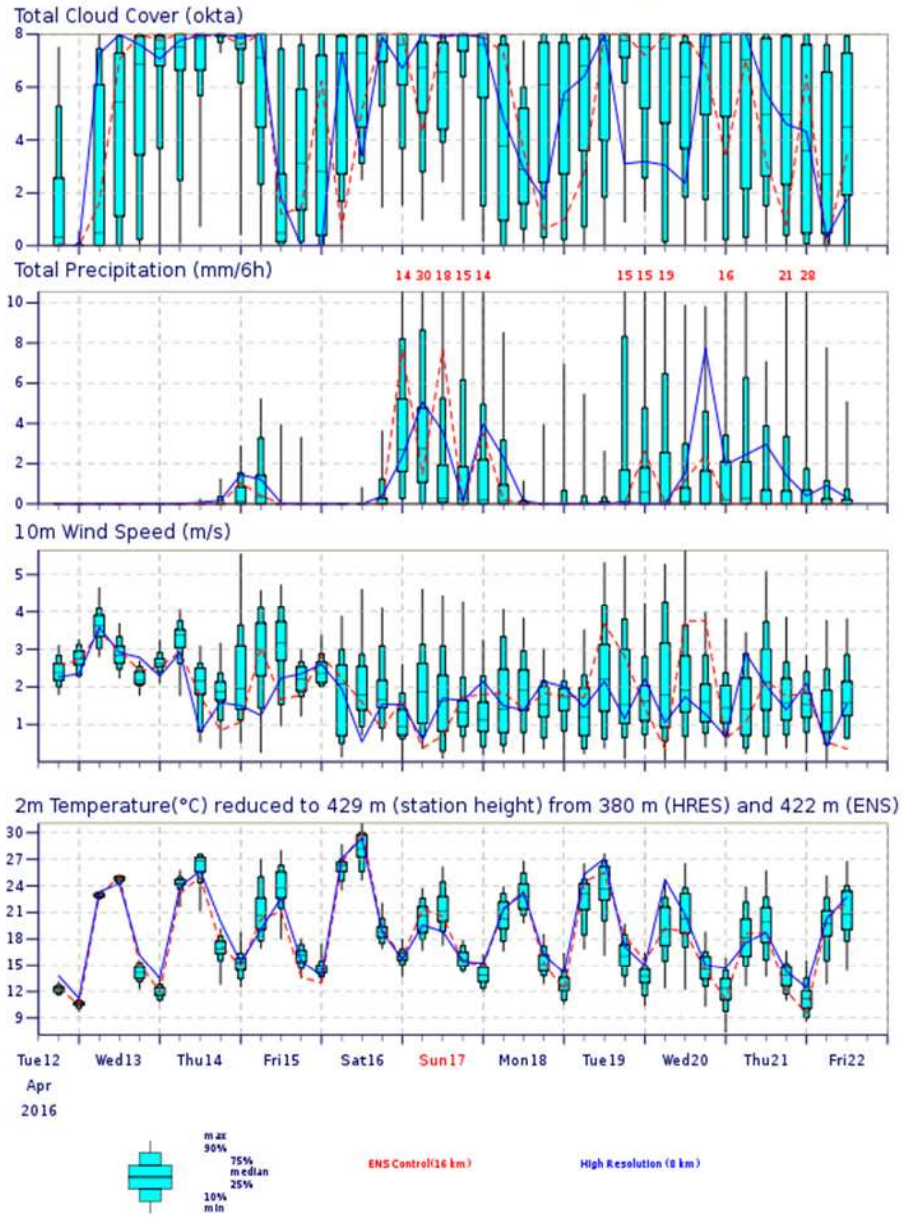




ENS Meteogram
Dushanbe 38.59°N 68.84°E (ENS land point) 808 m
High Resolution Forecast and ENS Distribution Tuesday 12 April 2016 12 UTC



ENS Meteogram
Kurgan Tyube 37.74°N 68.7°E (ENS land point) 429 m
High Resolution Forecast and ENS Distribution Tuesday 12 April 2016 12 UTC



In operational practice for forecasting hazard and hydrometeorological phenomena SYNOPTIC method is used the lead time from 36 to 72 hours.

- Ground data (52 meteorological stations and hydrological posts, 72);2) SYNOPTIC maps:RingAbsolute topography;Relative topography;
- Meteograms:
- ZyGrib
- ECMWF
- COSMO-CA
- The GIS METEO technology (Forecaster workstation);
- Satellite images: METEOSAT-5-8
- Problems in forecasting: No weather radar, No upper-air information; No - automated workplaces (AWP); No model long-term weather forecasts (monthly and seasonal)