AUTOMATED OBSERVATIONS IN THE REPUBLIC OF BELARUS

LOCATION OF AUTOMATIC WEATHER STATIONS AND AUTOMATED WEATHER OBSERVING SYSTEMS on the territory of Belarus

In Belarus Hydromet developed strategy of development of the state hydrometeorological network, which includes the organization of the transition from manual to automated ground-level meteorological observations. In recent years, in various regions of Belarus automated weather systems and automatic stations have been installed, as well as hydrological station. Currently 50 from meteorological stations in Belarus automatic observations provided 36, representing 72 percent of the total demand. Current automatic weather observing systems provide the production of virtually all major meteorological parameters: wind, visibility, barometric pressure, air temperature and humidity, rainfall, soil temperature at various levels, as well as providing production solar radiation observations. Recently Hydromet provides implementation automatic hydrological stations. The main producers of Automated Weather Observing System (AWOS) and Automatic Weather Station (AWS) are the companies “Peleng” (Belarus) and Vaisala (Finland).

Standard equipment and capabilities of the use Automated Weather System

- **S-03 Automatic Weather Station**
  - Current automatic stations allow to provide a continuous collection of information on the following meteorological parameters of the atmosphere: temperature and humidity; wind direction and speed; amount of rainfall; soil temperature; atmospheric pressure; radiation. AWS provides automatic generation of weather reports and their transmission to data collection and processing centers.

- **S-01 Automated Weather System**
  - Belarus is using now AWOS with expanded and flexible configuration that allows the connection of additional meteorological sensors without substantial modernization of the meteorological system.
  - Current AWOS type S-01 provides continuous collection and processing of weather information coming from the sensors (unmeasured automatically meteorological parameters can be entered manually), the formation of standard and warning messages, sending messages in data collection centers, the exchange of information with the program ARM-metrology, the formation of the regime summaries, archiving of meteorological information.

Possibility of connecting different sensors to the Automated Weather Observing System

- **Peleng SF-03**
  - Cup anemometer and wind vane measures wind speed and direction (instantaneous, extreme, mean), displays of measurement results on PC workstation monitor.
  - Wind speed range for 3s running means 0,3 - 60 m/s; wind direction range for 3s running means 0 - 360°

- **Ceilometer SD-02-2006**
  - Measures cloud-base height.
  - Operation principle is based on atmospheric backscatter measurement.
  - Cloud-base height range: 15 - 7 000 m

- **Peleng SL-03**
  - Nephelometer measures MOR and displays of measurement results on PC workstation monitor.
  - Measured MOR range: 10 - 30 000 m
  - Displayed MOR range: 0 - 50 000 m

- **Peleng SF-11**
  - Precipitation Gauge measures solid, liquid and mixed precipitation.
  - Minimal precipitation amount measured 0,2 mm;
  - Maximal precipitation amount measured (before bucket emptying): 125 mm (summer season)
  - 25 mm (winter season)

Automated actinometric observations – use the Actinometric Station

- **SF-14 Actinometric Station**
  - Belarus Hydromet operates actinometric stations type SF-14 for automatic measurement of radiation parameters of the ground surface and the calculation of direct solar radiation, global solar radiation, long-wave radiation balance, ground albedo. The composition of actinometric stations includes: actinometer Peleng SF-12, pyranometer Peleng SF-06, net radiometer Peleng SF-8, the sun tracking device PSS-1.

Automation of meteorological measurement processes meteorological data collection and processing will allow to create a single automated state hydrometeorological observation network in the Republic of Belarus.