



World Meteorological Organization
Working together in weather, climate and water

Regional Association VI, Forum Hydrology, Koblenz May 8 – 10, 2012

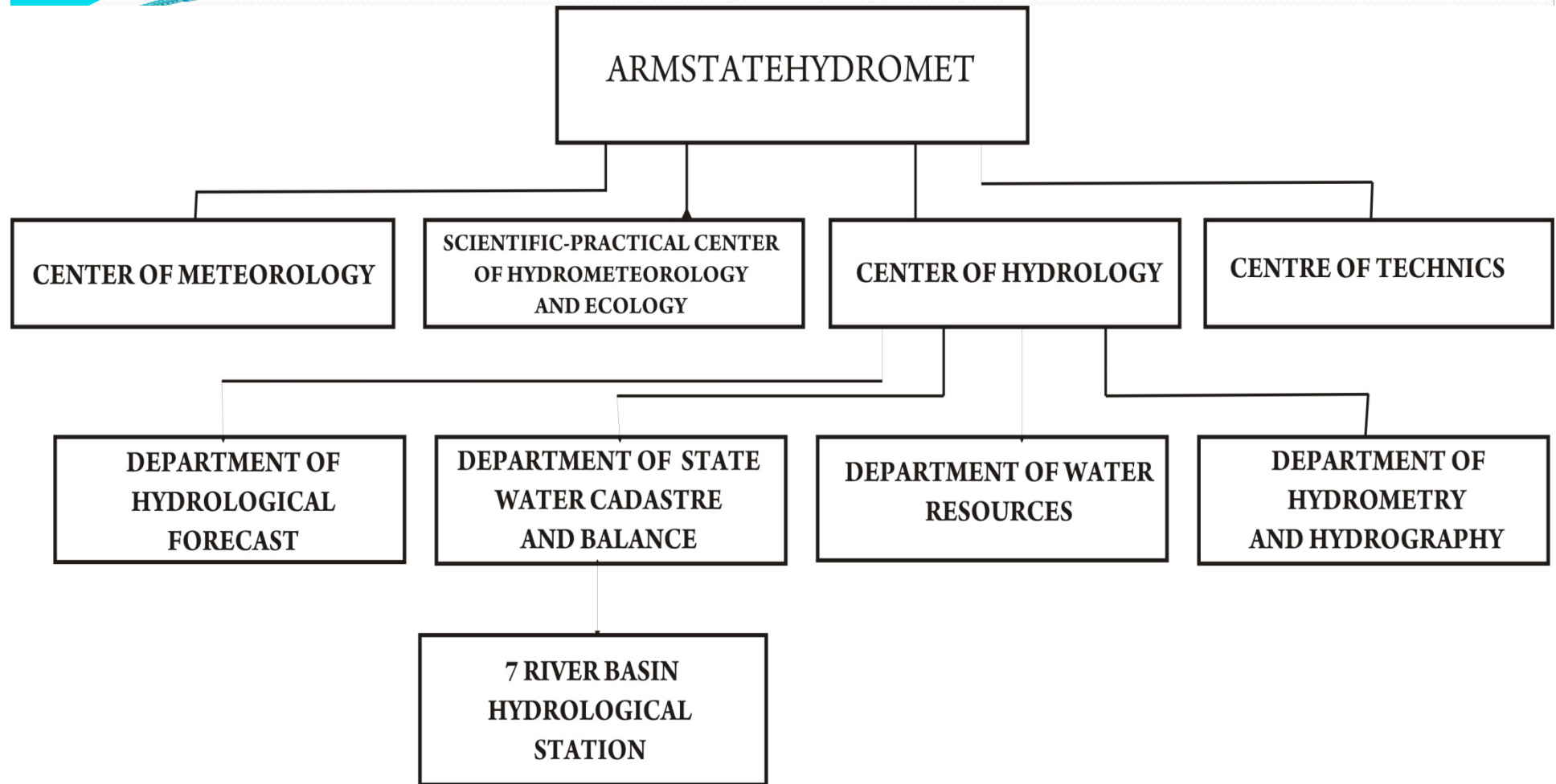


**MINISTRY OF EMERGENCY SITUATIONS OF
ARMENIA ARMENIAN STATE
HYDROMETEOROLOGICAL AND
MONITORING SERVICE**

Hydrology Forum Koblenz, May 8-10, 2012

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THE STRUCTURE OF ARMSTATEHYDROMET



The observation system includes

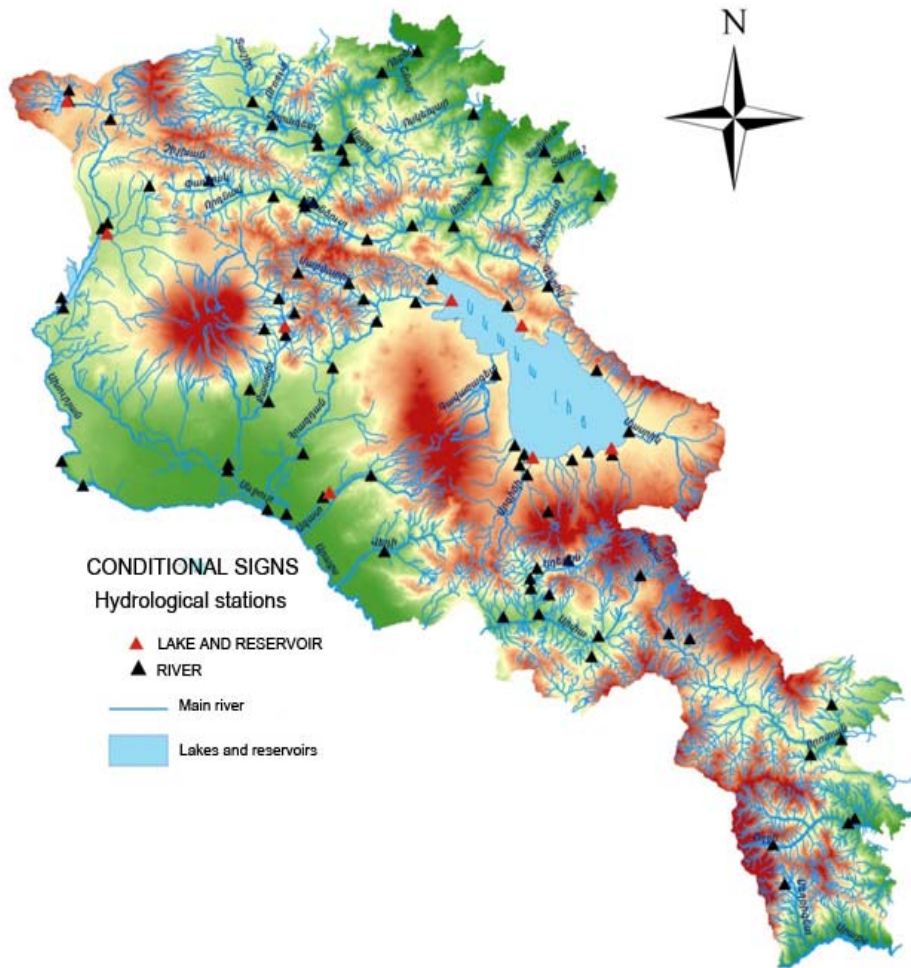
- **47 meteorological stations**
- **94 hydrological stations in 7 river basins.**

THE WATER RESOURCES OF ARMENIA



- There are about 9479 rivers and its tributaries in Armenia with the total length compounds about 23 thousand km. The river flow formed in the territory of Armenia is 6859 mln m³.
- The biggest freshwater lake is Sevan Lake, with the volume about 38.00 km³.
- 35 reservoirs are constructed, with total volume more than 1mln m³.

Hydrological network

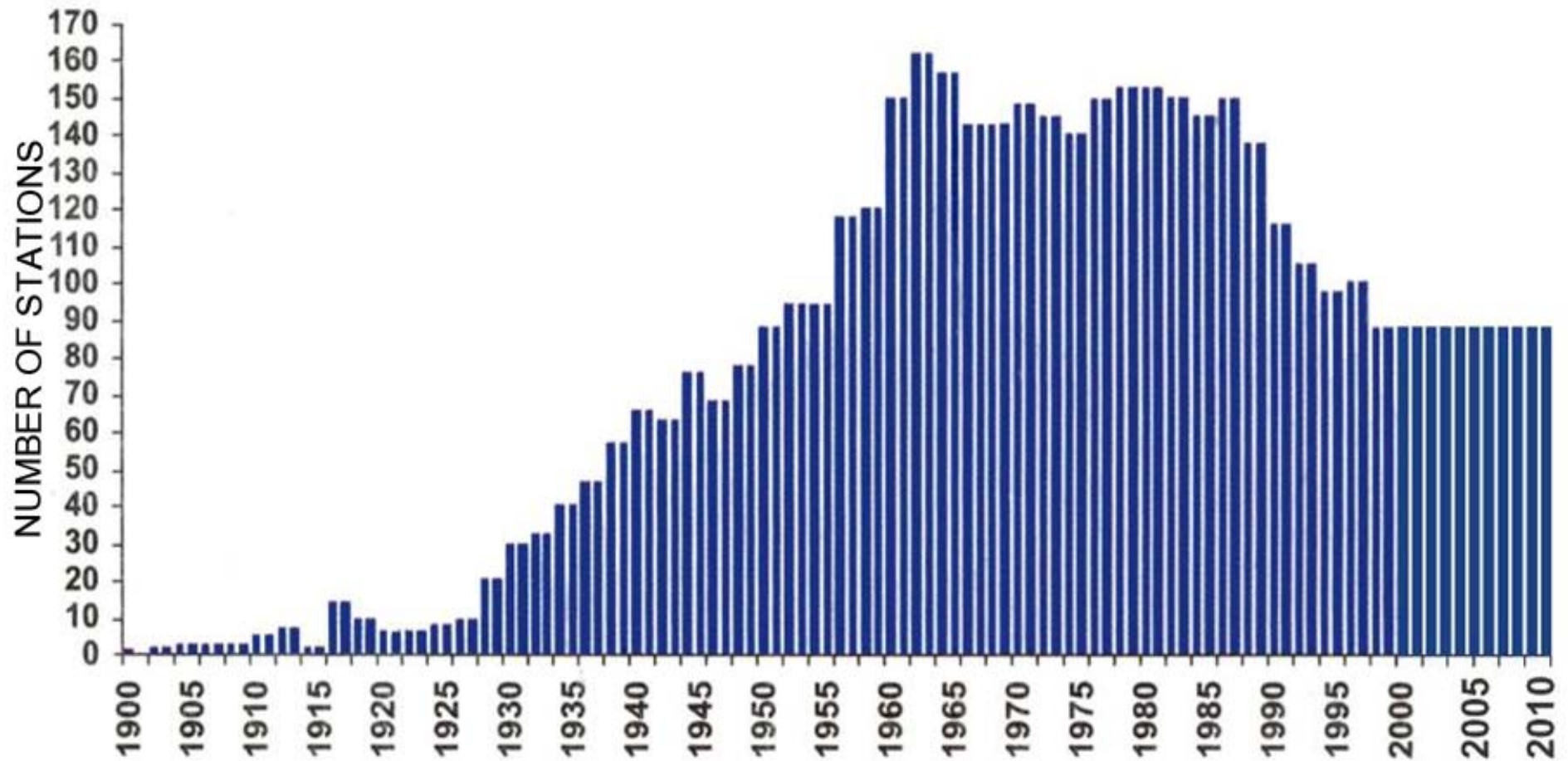


Hydrological measurements are performed in 7 river basins.

Hydrological network counts 94 gauging stations, out of which

- 86 river stations (3 - transboundary stations)
- 4 lake sites (Lake Sevan)
- 4 reservoir sites

Number of gauging sites



Observation system: Equipment in hydrological stations

- Different types of water level chart recorders have been installed in 20 hydrometric stations.
- There are 2 automatic hydrological stations which measure and collect data on air and water temperature, water level and water discharge (data transmitted to Armstatehydromet data center via satellite, access to data available at the web site, password protected)

<http://oiswww.eumetsat.org/webapps/publicdcp/dcpAdmin.do>

- 2 other automatic hydrometric stations operate at r.Araks-s.Surmalu and r.Debed-s.Ayrum these stations have international significance. Water level and temperature are measured and transmitted to Armstatehydromet through the GSM connection
- There are also gauge and cableway/or bridge sites

HYDROLOGICAL MEASUREMENT STATIONS



r.ARAKS-s.SURMALU



ch. ARPA-SEVAN-s.COVINAR



r.AKHURIAN-s.BAGARAN



r.VOROTAN-s.TATEV

HYDROLOGICAL MONITORING

following hydrological elements are measured at hydrological stations

- Water level (gauge/or recorder)
- Water temperature
- Ice phenomena, types
- Water evaporation at 11 stations
- Water discharge (measurements are made 25-35 times per year, as per the regulation). Water discharge is measured by the area-average velocity principle. The velocity measurement is conducted by current meters and floats.

HYDROLOGICAL PRODUCTS

- Average, maximum, minimum water discharge, level and flow
- Forecast of spring flood flow, maximum discharges and discharges during vegetation period.
- Forecast of the dates of starting and ending of flood, and date of passing maximum discharges.
- Volume of reservoirs
- Forecast of level change of the Lake Sevan, which has a strategic and economic importance for the RA.
- Water balances

Hydrological products

- Provision of users with operative data
- Development of Hydrological annuals
- Development and issue of hydrological bulletins, warnings and forecasts (daily, decade, monthly).

MAIN USERS:

- RA GOVERNMENT
- **MINISTRIES (Ministry of Emergency Situations, Ministry of Agriculture of the RA, Ministry of Energy and Natural Resources, Ministry of Nature Protection, Water Resources Management Agency, Ministry of Territorial Administration, State Committee of Water System of the RA)**
- LOCAL AUTHORITIES
- MASS MEDIA
- PRIVATE COMPANIES
- PUBLIC

*Some examples of hydrometeorological hazards
reported in Armenia river Razdan 2004 March*





Aghstev 2007 April 30

Recent improvements, due to international assistance and cooperation

1. Thanks to the partnership with NVE /Norway/ we participated in trainings

- *“Land use and hazard mapping”*
- *“Estimate the potential for small hydro power plants”*

Flood modelling is being implemented with support of NVE

2. Number of stations were equipped within the framework of **USAID** projects:

- Automatic measuring and transmitting instruments were installed at 2 river stations in the frame of *“Strengthening Sustainable Water Management for Enhanced Environmental Quality Custody Transfer”* project, which helped to rise precision of data and their real time transmission.
- One hydrological station (Pambak-Shirakamut) has been constructed *in 2008* by the *P.A. Government Services in the frame of South Caucasus Water Program*
- One automatic station was installed on the r.Debed-s.AYRUM by *DAI* organization

MAIN PROBLEMS AND WEAKNESSES

Financing: annual budget is very low and strongly oriented towards personnel costs

- **Human resources:** scientific and technical qualifications of the staff doesn't meet the current requirements; lack of training provided to the staff (modern technologies)
- **Technical capacities :**
- Deterioration of equipment and outdated technologies
- Lack of modern monitoring equipment and forecasting methods
- Lack of appropriate software for data analysis and calculations
- Absence of electronic data base and urgent need to rescue large amount of hydrological data
- **Insufficient scientific and research activities**
- Provision of limited services to people and national economy
- **Lack of International, regional cooperation and data exchange/sharing**

Regional and institutional cooperation with NMHSs would lead to better services, higher scientific levels,

Data sharing is essential for production of good-quality weather and hydrological services for national purposes

NEEDS to improve hydrological service: (Financial and technical assistance is requested)

1. Technical modernization of hydrological observation network:
 - Re-equipment and extend geographically existing observation network;
 - Automation of observation network
 - Regular calibration of existing instruments
 - Measurements on the surface of the lake Sevan hydrological buoys (floato), which will increase the accuracy of water balance assessment for the lake Sevan
2. Creating of hydrological database
3. Application of modern data processing tools and appropriate softwares
4. Strengthening of telecom system, information transmission in real time;
5. Improve mechanisms of data sharing/exchange between countries
6. Training of the personnel.



**THANK YOU FOR YOUR
ATTENTION**