

Training Programs of WMO RTC in RF 2016

№	Theme of a Training Course	Table of Contents of a Training Course	Terms and Place of a Training Course
1. HYDROLOGICAL PROVIDING THE ECONOMIC COMPLEX			
1.1	Methods of hydro-logical forecasts. Provision of consumers with forecasting data. Generation of information resources of Ros-hydromet using the hydrologist-forecaster workstation	The organization of service of hydrometeorological forecasts. Modern methods of hydrological forecasting. Efficiency of hydrological forecasts. Calculation and forecasting of level river regime, other characteristics of water regime. Marketing in hydrological service. Formation of information resources of Roshydromet using the hydrologist-forecaster workstation. Access database. Practical training on formation of inquiries on the basis of Access. Analysis of concrete situations by results of work of users on places for formation of offers on elimination and completion of shortcomings of this software	25.01-06.02 Moscow
1.2	The organization and carrying out anti-hail works	Leading documents on the organization and carrying out anti-hail protection (AHP). Physical bases of prevention of a hail. Radar methods of detection of a hail. Macro - and microphysics of hail processes. Methods and technical means of AHP. Automated control systems for anti-hail operations. Ecological aspects of AHP. Methods of an assessment of physical and economic efficiency. Safety rules of carrying out AHP. Practical training on automated control systems for anti-hail operations. Examination and certification for results of check of theoretical preparation and existence of practical skills	28.03-09.04 Nalchik
1.3	Methods of oceanographic researches	Geography of the World Ocean. Applied oceanography. The main processes forming the hydrological mode of oceans, suburban and closed seas including shelf zones. Currents, turbulence, hashing of sea waters. Methods of calculation of parameters of the marine environment. Calculation of distribution of pollution in the marine environment from oil spills	04.04-09.04 Moscow
1.4	Engineering hydrological calculations	Normative and recommendatory documents in the field of hydrological calculations - their interrelation, appointment and tasks. Modern problems of engineering hydrological calculations and way of their decision. The certified dialogue computer system of engineering-hydrological calculations of HudroStatCalc, its application in practice	20.06-25.06 St.-Petersburg
1.5	Methods of the hydrometric accounting of a drain in regime and operational options. Use of the automated River Drain technology for calculation of daily expenses of water by preparation of a hydrological year-book	Methodical questions of assimilation and processing of hydrological data with use of the modern automated gages (the automated hydrological complexes), including calculations of daily expenses of water in the operational mode. Modern methods of the hydrometric accounting of a drain. A practical training on development of the automated River Drain technology for calculation of daily expenses of water	13.06-18.06 St.-Petersburg

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1.6	Organization and carrying out antiavalanche works	The main objectives of Roshydromet in the field of active influences on dangerous (including snegolavinny) hydrometeorological processes. Theory of an avalanche formation. Forecast of avalanche danger. A method and influences on a dream-golavinnye processes for the purpose of preventive descent of avalanches of adjustable volumes. Technical means of influence on a dream-golavinnye processes. Technique of an assessment of economic efficiency of works on precautionary descent of avalanches. Labor protection and safety measures. Mountain preparation	26.09-08.10 Nalchik
2. HYDROMETEOROLOGICAL MONITORING OF ENVIRONMENT			
2.1	Scientific and methodical ensuring monitoring of a hydrochemical state and marine pollution	Organization of monitoring of the marine environment. Intra laboratory quality control of measurements of indicators of composition of waters and ground adjournment. Techniques of the chemical analysis of gidro-chemical characteristics and the polluting substances in sea waters. An order of entering of data in the automated program complex of collection of information of a sea observation network (agrarian and industrial complex "Sea network"). Methods of quality control of hydrochemical data. Methods of a complex assessment of quality of sea waters. A state and dynamics of level of pollution of the marine environment in the Russian Federation	10.10-15.10 Moscow
2.2	Methods and control devices of radioactive pollution of environment	Supervision over a radioactive situation. Device and operation of new technical means of measurement. Order of processing, synthesis of data and informing consumers. Bases of construction, functioning and use of the uniform automated system of data collection about a radiation situation. A complex of software according to the analysis and data processing about a radiation situation. Standard bases, principles and organization of a network of supervision over radioactive environmental pollution. Scale - the spectrometer analysis, high-quality and quantitative definition of radionuclides. The radiochemical analysis, a plutonium definition technique - 238, 239. Definition total an alpha - activities of tests, an alpha - beta spectrometry	03.10-08.10 Obninsk

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3. METEOROLOGICAL PROVIDING AVIATION DIVISIONS			
3.1	Organization of aviation meteorological service	<p>Guidance on aviation meteorological service, ICAO arranging/ methodical documents. Arrangement of AMC/AMCC activity. Technical facilities, requirements for supplying AMC/AMCC with technical facilities at airports. Workstation of KRAMS systems. Economic aspects of aviation meteorological service. Certification of airports. ICAO requirements for airports. Investigation of aviation incidents and preconditions to them. Standards of competence the aviation meteorological person (AMP) developed by WMO. System of an assessment of competence of AMP as part of quality management system</p>	<p>14.03-19.03 03.10-08.10 Zheleznodorozhny</p>
3.2	Meteorological forecasting for aviation service	<p>Phenomena of weather, dangerous to aircraft, and modern methods of their forecasting. Numerical models of the atmosphere as scientific basis of the aviation forecast. Aviation climatology.</p> <p>Use of radar and satellite data by drawing up aviation forecasts. Application the Internet - technologies at meteorological ensuring flights of aircrafts.</p> <p>Use of DMRL-S for identification of the phenomena of weather, forms of overcast, intensity and type of rainfall, dangerous to aircraft, during various seasons of year. Efficiency of DMRL-S in identification of the masked cumulus cumulonimbus clouds, zones of strong frosting, strong turbulence, wind shifts.</p> <p>Monitoring of METAR, TAF and verification of weather forecasts on airfields. Forms of representation and terminology of aviation weather forecasts. Questions of use and development of means of communication and software. The Quality Management System (QMS) in the field of meteorological service of civil and experimental aviation on the basis of requirements of the state standard specification P ISO standard 9001-2008 (ISO 90001:2008). The standards of competence of the aviation meteorological personnel (AMP) developed by VMO. System of an assessment of competence of AMP as part of quality management system.</p> <p>Use of radar data in practice of the analysis of synoptic processes and atmospheric fronts, and also by drawing up forecasts of TAF and TREND for airfield, forecasts of GAMET for routes and areas of flights, when releasing preventions on airfield and warnings of wind shift, at consultation of crews of aircrafts on point of a departure and a route, and also at consultation of bodies of Department of Internal Affairs.</p> <p>Training in GAMTs</p>	<p>21.03-02.04 07.11-19.11 Zheleznodorozhny</p>

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3.3	Development and quality management system introduction in the field of meteorological service of aircraft	Development and introduction of quality management system in the field of meteorological service of civil and experimental aviation on the basis of ISO 9001-2008 (ISO 90001:2008) GOST P standard requirements. Management of documentation. Organization and carrying out internal audits. Standards of competence the aviation meteorological person (AMP) developed by WMO. System of an assessment of competence of AMP as part of quality management system.	21.11-03.12 Zheleznodorozhny
4. METEOROLOGICAL PROVIDING BRANCHES OF ECONOMY			
4.1	Processing and use of the satellite data at drawing up the hydro-meteorological forecasts	Study of modern and perspective technologies of processing and use of satellite data in real-time work. Use of space data at hydrometeorological provision of economical activity. Modern and perspective technologies of processing and use of meteorological satellite data in weather forecasts.	01.02-06.02 Zheleznodorozhny
4.2	Methods of short-term, medium-term and long-term weather forecasting. Forecaster workstation	The organization of service of hydrometeorological forecasts. Modern methods of hydrological forecasting. Efficiency of hydrological forecasts. Calculation and forecasting of level river regime, other characteristics of water regime. Marketing in hydrological service. Formation of information resources of Roshydromet using the hydrologist-forecaster workstation.	08.02-20.02 17.10-29.10 Zheleznodorozhny
4.3	Ensuring modern needs of various categories of consumers for climatic production and information	Providing consumers with climatic information and production taking into account possible climate changes. Description of infrastructure of the main sectors of economy and social sphere, formulation of requirements of these structures to climatic information. Cataloguing of main types of specialized climatic information. The methods of calculation of specialized climatic characteristics and normative documents including climatic parameters. Methods of calculation of climatic resources and risks. An economic justification of adoption of social and economic decisions on the basis of the accounting of climatic information, including decisions on adaptation	11.04-23.04 St.-Petersburg

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4.4	Methods of the research of the ozone layer of the Earth. Instruments and methods of observation , data processing and analysis	The characteristic of ozone in nature and its meaning in the natural balance. The reasons of destruction of ozone and international efforts on its prevention. Current state of the ozone layer. Questions of the ozone layer monitoring, including space methods of receiving the data of the General Contents of Ozone. Ozonometric observations, observations for the General Contents of Ozone at the stations; modern techniques of observations for the General Contents of Ozone; bases of processing and analyzing of the data of the General Contents of Ozone; the equipment on manufacturing ozonometric observations; metrological principles of observations of the General Contents of Ozone; practical training.	20.06-02.07 St.-Petersburg
5. DEVELOPMENT AND OPERATION OF MEANS IN HYDROMETEOROLOGY			
5.1	Methods and facilities of agro meteorological observations. Methods of processing and control of agro meteorological data. Agro meteorological forecasting and service of f the users, concerned with agro- meteorological data	Specialties of arranging the agrometeorological observations in modern conditions. The basic methods of agrometeorological observations and new means of measurement. Estimated methods of definition of agrometeorological parameters. Methods of monitoring. The program and methodology of inspection of stations/posts. Software on evaluation and transmitting of agrometeorological data. Agrometeorologist workstation. Agroclimatic processing of the results of observations. Studying of new and advanced methods of agro meteorological forecasts and interpretation of agrometeoro-logical data. Problems of arranging the agro- meteorological observations in new conditions of economy. Information provision of the system of agricultural insurance under state support. Sustainable development of agricultural production and information hydrometeorological support of insurance of weather risks in agriculture. Features of organization a agrometeorological of supervision. Methods and ways of account a agrometeorological of constants. Methods of the control of humidity of ground. Technology of the automated control of humidity of ground. Development of the new program "Construction of maps of a degree of humidifying " The methodical management of a network of agrometeorological supervision, development of methods of production of supervision on the basis of modern technical means. Development and introduction of the automated technologies of collecting and processing of regime agrometeorological information (the ARMAGRO complex, technology of control of humidity of the soil).	04.04-16.04 Obninsk

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5.2	Introduction in modern climatology: applied aspects. Influence of climate on population health	Climate, climate changes, their consequences and need of society for climatic information, base concepts, main problems. Influence of the extreme climatic phenomena (including waves of heat and cold, flood) on population health. Transmissin (i.e. transferred by carriers) diseases and influences of climate changes on their distribution. Possibilities of adaptations and problem of supervision	20.06-25.06 Moscow
5.3	The methodical management automated by meteorological, aktinometrichesky and heatbalance networks of supervision in modern conditions	Modern approaches to creation of a meteorological network. National and state observant network. Complex modernization of a meteorological network: results and prospects. The organization of functioning of the automated meteorological network. Methods and practice of the management by a network: control of a condition of points of supervision, qualities of results of supervision, inspections, introduction of electronic forms of technical documentation. Standard and legal documents of functioning of an observant network. The automated technology of obtaining meteorological and aktinometrichesky information: collecting, control, processing and accumulation	04.04-16.04 St.-Petersburg
5.4	The automated DMRL-S Doppler radar: - engineering service of the DMRL-S Doppler meteorological radar; - use of information of the DMRL-S Doppler meteorological radar in synoptic practice	Appointment and structure of the equipment of DMRL-S. Description of the device and work (hardware and software). Maintenance, organization of supervision. Standard documentation of DMRL-S (RD, magazine of supervision, form, etc.). Control of data transmission in the VSS network of Roshydromet. Use of data of DMRL-S for the analysis and a weather forecast	23.05-28.05 11.04-16.04 Dolgoprudny
5.5	The automated AGK hydrological complex. Acoustic Doppler profilograf	Automated Hydrological Complexes (AHC): types, technical specification and device. Controler, programming and reprogramming of the controler, control, change of regulations of measurements and data transmission. Device, operation and service of acoustic Doppler profilograf of Rio Grande, Strim Pro and River Ray. Software of WinRiver	13.06-18.06 St.-Petersburg

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5.6	Modern methods and means of checking. Regulatory base of documentation on metrology and hydrologies	<p>Methods and means of checking of meteorological measuring instruments. Mobile and stationary testing laboratories. The staticized standard documentation on checking of measuring instruments of meteorological appointment. Checking automation. Checking by means of the automated system of checking (ASP) which is a part of MAPL. ASP MAPL database. Checking by means of electronic systems of checking of ESP-1-ESP-4 which are a part of SPL. SPL database</p> <p>Standard documentation (RD, P, MT) on checking of measuring instruments of hydrological appointment. Checking of measuring instruments. CPH6000 pressure calibrator. Checking of measuring instruments of speed of a water stream, water level on GGI standards</p>	<p>21.03-26.03 St.-Petersburg</p> <p>28.03-02.04 St.-Petersburg</p>
5.7	The use of mobile equipment topogeodesic hydrological laboratory to perform work on the hydrological stations	Studying of the electronic tacheometer, satellite equipment, digital level. Check of geodetic devices. Prolozheniye leveling and takheometrichekikh of the courses. Performance of supervision of GPS/GLONASS by the equipment. Downloading of field data on the personal computer and their processing	<p>20.06-25.06 Valdai (VF GGI ground)</p>
5.8	Space system of collecting and data transmission of Roshydromet. Methods and means of reception and data processing polar and orbital, geostantsionarnykh of an artificial satellite of new generation. Application of satellite information in applied hydrometeo-ologicheskyy tasks (virtual satellite laboratory http://meteovlab.meteorf.ru)	<p>Structure of space system of collecting and data transmission of Roshydromet. Technical means of ensuring of collecting and data transmission, software, installation and adjusting.</p> <p>Studying of technologies of reception and processing of satellite data, including in the international formats.</p> <p>Satellite sounding of the atmosphere. The diagnosis of rainfall on satellite pictures of overcast. An assessment of the direction and speed of a wind according to space information. The diagnosis of synoptic situation on space pictures. The diagnosis of the dangerous hydrometeorological phenomena according to satellite data. Space methods of environmental monitoring</p>	<p>In process of completing of group Zheleznodorozhny</p>
5.9	Metrology and its tasks in system of Roshydromet	Forms of metrological control and supervision, types of checkings of measuring instruments. Services and bodies of metrological control and supervision. Main objectives of meteorological services: accreditation of metrological services on the right of checking of measuring instruments; the guide to quality of meteorological services, akreditiro-bathrooms on the right of checking of measuring instruments. Physical quantities and their measurements, types and methods, errors. Testing schemes and their types, intertesting intervals. Means of measurements and their error. Methods of checking of measuring instruments, standards, service equipment. Checking of measuring instruments of gidrometeorologicheskyy appointment, standard documentation on checking of measuring instruments of hydrometeorological appointment. Standards, testing equipment. Checking of the equipment of MAPL which arrived within the Project with the help	<p>25.05-30.05 St.-Petersburg</p>

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5.10	The automated means of primary processing and replenishment of information resources the current agrome-teorologichesky information of stations, posts	<p>he agrometeorologist observer's automated workplace - the program and technological AR-MAGRO complex. The general review of the automated means, the ARMAGH functions. Data input in PEVM from books of supervision. Information processing and obtaining reporting tables with agrometeorological data. Data processing and obtaining operational daily and decade telegrams. Processing and obtaining operational daily and decade telegrams. Formation of the moved files and import of data. Accumulation of data for receiving an agrometeorological year-book and long-term storage. The block of control of data of humidity of the soil in the AR-MAGRO complex (by RD 52.33.559-2010 technique).</p> <p>Accumulation of data for long-term storage. The AGROEZheGODNIK Program and Technological Complex (PTC) which is carrying out formation of tables of an agrometeorological year-book of information without primary data (BPD) and the database of reports (DR) of the AR-MAGRO complex. Formation of BPD and BDO across the territory of TsGMS (UGMS). Information processing and formation of tables of an agrometeorological year-book. Saving of tables in BDO and in the form of text files in the REPORTS folder. Conclusion of tables to the press</p>	12.09-17.09 Zheleznodorozhny